Newland Homes

carl TONKS consulting

Collin Lane, Willersey Extension.

Technical Note 1;

Transport Statement.

1. INTRODUCTION

1.1 **cTc** is commissioned by Newland Homes to provide advice and advocacy in regard to their proposed residential development at Collin Lane, Willersey. Involvement in this site has been ongoing for over 4 years, including a grant of consent for development of some 50 dwellings on the site. Current proposals are for an additional 40 dwellings on adjacent land, to be accessed via the committed development scheme and using the approved site access.

1.2 The previously agreed Transport Statement for the approved development is included herewith as Appendix A.

2. TRIP GENERATION

2.1 In order to examine implications of providing an additional 40 dwellings attached to this scheme, additional traffic generation has been forecast using the previous, agreed TRICS analyses. A summary of the expanded TRICS analysis, now for a combined total of 90 dwellings, is shown in Table 2.1, below, whilst the full TRICS report was included in the previous Transport Statement and can be seen at Appendix A.

Table 2.1, Summary of Multi-Modal Residential Trip Generation Forecast Using TRICS.

Mode	Trip Rate per Dwelling				Scale (dwellings)	Trips			
	AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep		Arr	Dep	Arr	Dep
Pedestrian	0.043	0.171	0.061	0.044	90	4	15	5	4
Cyclist	0.005	0.017	0.014	0.014		0	2	1	1
Bus	0.003	0.018	0.018	0.005		0	2	2	0
Vehicle Occupants	0.211	0.66	0.548	0.325		19	59	49	29
Car Driver*	0.16	0.442	0.421	0.244		14	40	38	22

**Car driver figures clearly equate to the number of cars*

2.2 The above table confirms a low level of total two-way traffic from the site as a result of the proposals. 54 two-way trips are forecast in the AM Peak Hour and 60 in the PM Peak Hour; this equates to only an average of one vehicle in both directs every 1 minute and 6 seconds in the AM Peak and every 1 minutes in the PM Peak.

2.3 These forecast Peak Hour trips form the basis of further capacity analyses described in Section 3, below.

3. CAPACITY ANALYSIS

3.1 The previously agreed PICADY analyses, submitted in the 2014 Transport Statement form the basis for capacity analyses for the current proposals of an additional 40 dwellings (90 dwellings total).. A summary of these capacity analyses is shown in Table 3.1, below, with the full PICADY report included herewith as Appendix B.

Table 3.1: Summary of PICADY Analysis.

Scenario	Period	Arm	Max RFC	Max Queue
2019 + Development	AM Peak Hour	Site Access	0.08	0.1
		Collin Lane	0.01	0.0
	PM Peak Hour	Site Access	0.05	0.1
		Collin Lane	0.04	0.1

3.2 The above summary of the PICADY analysis for 90 dwellings at the site confirms significant amounts of spare capacity at the site access junction will remain subsequent to the proposals.

4. CONCLUSION

4.1 The analyses performed herein utilise previously agreed trip rates and an agreed traffic capacity model to forecast impact associated with providing an additional 40 dwellings at this site. These calculations have therefore examined the operation of the proposed site access junction assuming a total of 90 dwellings is accessed via the proposed junction. This report has clearly shown that the proposals result in:

- Low levels of trip generation; and,
- Significant levels of spare capacity at the site access junction.

4.2 As a result, this report concludes that there are no reasonable objections to the proposals on highways grounds

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Project Name:		Collin Lane, Willersey Extension.	
Project Number:		2017-F-033	
Report Title:		Technical Note 1 – Transport Statement	
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APPENDICES

APPENDIX A

Previous Transport Statement

TRANSPORT ASSESSMENT

for

NEWLAND HOMES

PROPOSED RESIDENTIAL DEVELOPMENT

at

COLLIN LANE, WILLERSEY

carl TONKS consulting

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D	PICADY Reports

Client:		Newland Homes	
Project Name:		Collin Lane, Willersey	
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1. INTRODUCTION

1.1 **carl TONKS consulting** is commissioned by Newland Homes to advise on transportation issues associated with their proposed residential development on existing agricultural land adjacent to Collin Lane, Willersey in Gloucestershire. The site is located on the western edge of the residential area of Willersey.

1.2 The appropriate scope of assessment has been discussed and agreed with highways officers of Gloucestershire County Council prior to undertaking the analyses described in this Report.

1.3 This report describes the assessments undertaken and discussions held with local highways officers. It concludes that, Willersey is a rural village, although close to several rural service centres which provide significant services, including employment and retail. Willersey is served by rural bus services and there is no issue of traffic impact associated with the proposals, which are supportive of local and National development transport policy.

1.4 This report is structured such that;

- **Chapter Two** will describe the site location and adjacent infrastructure;
- The development proposals are discussed in **Chapter Three**, which also considers associated trip generation;
- **Chapter Four** examines the forecast operation of the local transport infrastructure following completion of the proposed development;
- **Chapter Five** will consider relevant policy matters; whilst,
- **Chapter Six** considers the site's sustainability credentials and identifies Green Travel initiatives which would be appropriate for this site; and finally,

- A summary of the report is presented in **Chapter Seven**, which subsequently draws conclusions from this assessment.

2. SITE LOCATION AND LOCAL INFRASTRUCTURE

2.1 Site Location

2.1.1 The proposed development site is located on the western side of the village of Willersey, adjacent to and to the north of Collin Lane. The site location is illustrated in Figure 2.1.

2.2 Local Infrastructure

Highway

2.2.1 Colin Lane forms a radial route into the centre of Willersey and connects at its western end with the A44 at a roundabout junction accessing Broadway (to the south) and Evesham (to the north).

2.2.2 Located on the western side of Willersey, the site has residential properties to its north-east and south-east. Immediately to the east of the proposed development site are church land and public open space with agricultural land to the north and south. The site until recent years operated as a commercial nursery and is now predominantly agricultural in nature. A number of machinery storage facilities in the form of barns and garages still exist, along with some greenhouses.

2.2.3 The site's southern developable boundary fronts the rear of a residential garden, which is within the same ownership as the development site. Proposals are to take access from Collin Lane through this existing garden. The proposed location of this is within an existing 30mph speed limit. Further west, the National Speed Limit of 60mph applies outwith Willersey and the change in speed limit is located approximately 42m west of the proposed site access centre-line. East of this point and across the site frontage, Collin Lane is subject to a 30mph speed limit into the village.

2.2.4 In the vicinity of the proposed site access, Collin Lane has a carriageway width of approximately 5.6m. No footways are currently provided at this location, although wide verges are present. These are currently grass with sporadic planting and are within the adopted highway.

2.2.5 Approximately 45m to the east of the proposed site access an unsurfaced access track of approximately 4.0m width provides vehicular and pedestrian access to the rear of the proposed development site, comprising storage buildings for agricultural vehicles and machinery associated with the former use of this site for agricultural and nursery purposes. This track also provides access through the site to agricultural land beyond. It is understood that a right of access exists to this land to the rear and this is required to be retained.

2.2.6 East of the above access track lies a plot of church land. This is fronted by a highway verge, albeit narrower than that located further west. On the southern side of Collin Lane, opposite the allotments is a development of two houses with driveway access onto Collin Lane. No footway is provided on either side of Collin Lane adjacent to these properties.

2.2.7 To the east of these properties is the junction of Collin Lane with Collin Close. Collin Close provides the sole access to a significant scale residential development (45 houses) and is provided with carriageway widths of approximately 5.5m, with narrow footways on both sides. East of the junction with Collin Close, Collin Lane is provided with a narrow footway on the southern side only.

2.2.8 Further to the east, Collin Lane heads into the central part of Willersey. A narrow footway continues to be provided on the southern side of the carriageway, whilst the northern side has a narrow verge and hedging. No street lighting is provided.

2.2.9 A little under 200m east of the proposed site access junction is a four arm mini-roundabout junction at which Collin Lane meets Main Street (B4632). B4632 continues to leave the village further to the east, whilst Badesley Lane heads north, towards Wickhamford. In the vicinity of this roundabout junction are located bus stops on Collin Lane (eastbound) and High Street (north and southbound). These bus stops are within convenient walking distance of the proposed development.

Road Safety

2.2.10 **cTc** has acquired the most recent five years' road traffic accident injury accident statistics for this area of Willersey and the accident report is contained as Appendix A. This confirms a generally excellent road safety record with the exception of the nearby mini-roundabout junction between Collin Lane and Main Street, where 4 collisions are observed during the 5 year period. These accidents are described in Table 2.1, below.

Table 2.1; Summary of Five Year Accident Record

Location	Year	Severity	N° vehicles	Description
Collin Lane Main Street junction	2013	Slight	2	Vehicle failed to give way. Resultant collision caused struck vehicle to overturn.
	2011	Slight	2	Two goods vehicles, both failed to give way and collided.
	2011	Slight	2	Goods vehicle failed to give way and struck car which consequently left the road.
	2009	Slight	2	Two cars clipped one another during lane change.

2.2.11 **cTc** has visited this junction in order to examine likely causes for the recent accident record. As discussed above, the junction is formed as a mini-roundabout arrangement and the centre island is a simple white painted, over-runnable circle. The junction has an inscribed circle diameter (ICD) of typically around 15m and the central island is of the order of 1m in diameter with circular direction arrows provided. Markings are faded and visibility of these on approaching the junction is poor.

2.2.12 A review of the accident records confirms a reoccurring characteristic of failure to give way at the min-roundabout junction and it is **cTc**'s view that a combination of small size and poor visibility of the road markings contribute to a lack of awareness of the correct priority at this junction. Drivers approaching the junction from all directions appear to perceive they have priority, causing heightened conflict and resulting in collisions.

2.2.13 This matter is discussed further in regard to the proposed development, in Section 3.4 of this report.

Public Transport

2.2.14 Willersey benefits from a number of bus stops, many of which are provided with service information boards. The closest of these is located on Collin Lane, adjacent to the mini-roundabout junction with Main Street.

2.2.15 A high number of services pass through Willersey and offer convenient accessibility of nearby towns and villages by means other than the private car. Table 2.1, below, summarises bus services in Willersey.

Table 2.1; Bus Services in Willersey

Service Nº	Route	Daily Freq¥
Hedgehog	Willersey to Mickleton	3
	Mickleton to Willersey	3
	Willersey to Stratford upon Avon	3
	Stratford upon Avon to Willersey	3
22	Willersey to Moreton in March and Broadway	3
	Moreton in March and Broadway to Willersey	3
	Willersey to Stratford and Chipping Camden	3
	Stratford and Chipping Camden to Willersey	3
Rural 4	Willersey to Broadway, Wickhamford & Evesham (Mon-Fri)	6
	Broadway, Wickhamford & Evesham to Willersey (Mon-Fri)	6
	Willersey to Broadway, Wickhamford & Evesham (Sat)	5
	Broadway, Wickhamford & Evesham to Willersey (Sat)	5
-	St Catherines School (term time only)	1
	Chipping Camden School (term time only)	1

2.2.16 Of particular significance are services to Evesham and Stratford as these provide major local service centres, offering employment and retail facilities within convenient bus journey from the proposed development site.

2.3 Local Facilities

2.3.1 Willersey is a rural village and as such major facilities, such as large foodstores and secondary schools are located in larger nearby towns. Notwithstanding this, given its small size, Willersey is well provided with local facilities, including;

- Willersey C of E Primary School;
- 2x public houses (Bell Inn and New Inn);
- Village shop;
- Willersey Garage and Petrol Filling Station; and,
- local employment.

2.3.2 The above facilities are all located within convenient walking and/or cycling distance of the proposed development site.

2.5 Local Traffic Flows and Speeds

2.5.1 The roads immediately adjacent to the site boundary comprise minor rural roads only and traffic flows are reflective of this. In compiling this assessment, a classified Automatic Traffic Counter (ATC) survey was commissioned in order to advise on traffic flow, speed and composition. The results of this survey are summarised in Table 2.2, below.

Table 2.2; Summary of Results of Classified ATC Survey; Collin Road Willersey (2014)

Period	Direction	Flow	Speed (mph)	
			Mean	85th %ile
AM Peak Hour*	Westbound	99	38.8	45.2
	Eastbound	128	39.2	45.6
PM Peak Hour*	Westbound	128	40.1	46.1
	Eastbound	270	40.0	46.5
Weighted Interpeak**	Westbound	85	37.6	43.8
	Eastbound	83	37.7	43.9
Daily*	Westbound	1,248	39.0	45.2
	Eastbound	1,340	39.1	45.4

* *5 day average*

** *Hourly figures; 5 day average of 10:00 – 11:00, 11:00 – 12:00, 14:00 – 15:00 and 15:00 – 16:00. Speeds weighted according to traffic flow*

2.5.2 The above summary of the survey data indicates only low levels of traffic demand, which is reflective of the rural location. Vehicle speeds recorded in this survey are, however, high, particularly in light of the 30mph speed limit which is in force at this location. **cTc** consider this to be due to the proximity of the speed limit change, located only 42m to the west of the proposed site access. The stretch of road between the site frontage and the commencement of National speed limit (60mph) is of rural character, with no development frontage. Westbound traffic begins to accelerate towards the 60mph speed limit, whilst eastbound traffic is still slowing down.

2.5.3 The detailed ATC Report is provided as Appendix B.

2.6 Summary

2.6.1 The above review confirms that Willersey is a sustainable village, with daily services including Primary School, leisure and local retail available within convenient walk and cycle range of the proposed development site. More major services such as Secondary education and major retail uses are conveniently accessible by bus.

2.6.2 Traffic flows adjacent to the site boundary are low, although speeds are high.

2.6.3 The road network in and around Willersey is demonstrably safe in operation, with the exception of the mini-roundabout junction of Collin Lane with Main Street, which is the location of an accident cluster, comprising a number of failure to give way accidents. It is **cTc**'s view that these are likely to have been caused by a lack of clarity or visibility of the road markings, leading to a mis-understanding amongst drivers of the necessity to give way.

3. DEVELOPMENT PROPOSALS AND ASSOCIATED TRIP GENERATION

3.1 Development Proposals and Access Arrangements

3.1.1 Proposals for development of this site comprise up to 50 dwellings, accessed via a simple priority T-junction on Collin Lane. Figure 3.1 illustrates the proposed development and access arrangements.

3.1.2 The proposed site access will be provided to a carriageway width of 5.5m and a footway of 2.0m width will be provided on the eastern side. This will connect with a proposed new footway heading to the east on Collin Lane for a distance of approximately 85m.

3.1.3 Available visibility splays at the proposed site access junction have been measured on two separate visits to the site. During September, the splays measured;

- 2.4m x 72m to the left (east); and,
- 2.4m x 178m to the right (west).

3.1.4 Previous measurements made earlier in the year (March) identified the same visibility to the right, although to the left the visibility measured 2.4m x 82m, the additional 10m being available due to reduced impingement of the adjacent bushes onto the highway verge.

3.1.5 Visibility requirements for new residential junctions in locations on roads such as Collin Lane are specified in Manual for Streets, which determines that the visibility 'y' distance, measured along the carriageway edge is determined according to the Stopping Sight Distance of passing traffic on the major road, which in turn is defined by the speed of that traffic. A further adjustment for average bonnet length determines a safe stopping distance, which is applied as a standard for visibility splays for the proposed new junction.

3.1.6 The following equation is identified for calculating Stopping Site Distance;

$$SSD = vt + \frac{v^2}{(2\,(d + 0.1a))}$$

v = 85th percentile speed (km/h)
t = reaction time = 1.5s
d = deceleration = 4.41ms^{-2}
a = gradient = 0%

3.1.7 Onto the calculated Stopping Site Distance is added 2.4m to allow for bonnet length, resulting in the required visibility splays identified below;

- Visibility splay to left (westbound traffic) = 75.1m; and,
- Visibility splay to right (eastbound traffic) = 75.6m.

3.1.8 The above calculations allow for the observed speeding vehicles and should be considered in light of Gloucestershire County Council's normal requirements within a 30mph speed limit, of 2.4m x 50m.

3.1.9 When measured earlier in the year, the available visibility splays exceeded those required to meet standards, based on the MfS calculation and therefore allowing for the observed speeding traffic. Following a summer of growth, however, impingement of the adjacent bushes had reduced available visibility to marginally below the calculated standard. Two options are available to address this;

1. The impediment to visibility is caused by bushes overhanging the adopted highway verge and these could therefore be trimmed to reduce the impediment caused. Clearly, prior to the period of high growth during the summer months, adequate visibility was available and it is a simple matter to address this issue.
2. The available visibility is only marginally below that required to match the recorded 85th percentile speeds, which are themselves significantly in excess of the speed limit at this location and action should therefore be taken to reduce existing traffic speeds on Collin Lane.

3.1.10 In the terms of MfS it is perverse to design specifically to cater for vehicles in a residential environment, which are travelling very significantly above the speed limit and a better approach would be to implement measures to encourage lower vehicle speeds at this location. Such measures are discussed in Section 3.4, below.

3.2 Forecast Trip Generation

3.2.1 Trip generation by all modes has been forecast for these proposals, using the TRICS database. TRICS is a National standard source of trip generation information and is entirely appropriate for use in this instance. The geographic and site specific selection parameters employed in TRICS have been set in order to reflect the rural village location of this site in middle England, resulting in values of specific relevance to these proposals.

3.2.2 The resultant multi-modal forecasts are summarised in Table 3.1, below. Full TRICS reports are contained as Appendix C.

Table 3.1; Summary of Multi-Modal Trip Generation Forecast Using TRICS

Mode	Trip Rate per dwelling				Scale (dwellings)	Trips			
	AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour	
	Arr	Dep	Arr	Dep		Arr	Dep	Arr	Dep
Pedestrian	0.043	0.171	0.061	0.044	50	2	9	3	2
Cyclist	0.005	0.017	0.014	0.014		0	1	1	1
Bus	0.003	0.018	0.018	0.005		0	1	1	0
Car Passenger	0.051	0.218	0.127	0.081		3	11	6	4
Car Driver*	0.160	0.442	0.421	0.244		8	22	21	12

* *Car driver figures clearly equate to the number of cars and have been adopted in the subsequent PICADY junction analyses as representative of traffic generation.*

3.2.3 The peak hour traffic generation forecast in the above calculation demonstrates a small reduction in comparison with accepted levels of hourly traffic generation in more urban locations. That is a common characteristic, which reflects a peak spreading effect, whereby residents requiring to commute to nearby towns will often leave earlier to more efficiently complete the journey to work, hence peak traffic generation tends to be spread over a period longer than an hour, hence reducing the hourly rate by spreading over adjacent hours.

3.3 Trip Distribution

3.3.1 Given its location in a rural village with relatively limited services, it is inevitable that some of the trips generated by these proposals are likely to be accessing services and facilities in larger settlements, predominantly Evesham, Broadway, Chipping Camden and Moreton in Marsh.

3.3.2 The site location, on the village edge, is likely to lead to the profile of traffic passing the site frontage being reflective of the village as a whole in terms of its directional assignment. On that basis, generated traffic has been distributed at the proposed site access junction in the same directional proportions as existing traffic on Collin Lane.

3.3.3 The resultant forecast distribution of generated traffic is illustrated in Figure 3.2.

3.4 Proposed Off-Site Highway Works

3.4.1 Further to the discussion in Chapter Two and in Section 3.2, above, the following issues are judged worthy of attention;

- significant accident cluster at the nearby roundabout of Collin Lane / Main Street; and,
- unusually high vehicle speeds past the site frontage.

3.4.2 Although traffic generation of the proposed development is small in scale and off-site traffic impact is therefore extremely unlikely, Newland Homes is keen to mitigate any potential for traffic associated with its proposed development to cause issue for local residents. On that basis, the following off-site highway improvements are proposed;

- slight raising of the central island at the mini-roundabout junction of Collin Lane with Main Street, in combination with repainting the markings and white surfacing of the island, in order to improve the visibility of the island and give-way markings at each entry;

- implementation of enhanced gateway signage adjacent to the commencement of 30mph speed limit, combined with painted narrowing of the carriageway;
- construction of a new footway on the northern side of Collin Lane, heading east to a point adjacent to the allotments, at which the existing verge becomes too narrow to support construction of an appropriate width of footway. At the termination of the proposed footway, dropped kerbs will be provided on both sides of the carriageway; and,
- trimming of hedgerows within the adopted highway and adjacent to the proposed access junction.

3.4.3 As part of the gateway treatment it may be considered desirable by the County Council to implement a "step-down" speed limit west of Willersey. At present the speed limit drops from the National speed limit of 60mph, to 30mph in a single step, just over 40m from the proposed site access junction. Such a large step-down is generally considered undesirable in modern design terms and a step down of, say 40mph over a length of maybe 200m prior to commencement of the 30mph limit would encourage gradual deceleration of approaching traffic and result in a significant drop in speed of vehicles entering Willersey and passing the proposed site access. This is likely to reduce vehicle speeds throughout the route into the village on Collin Lane, thereby assisting the proposed improvement at the junction with Main Street in terms of accident reduction. It is seen as providing a major road safety benefit to the village.

3.4.4 The above measures are targeted at;

- increasing awareness of the presence of the mini-roundabout, hence give-way to the right on entering the junction of Collin Lane with Main Street. Such measures should improve compliance with the correct priority rules at the mini-roundabout and hence improve highway safety at this, the only accident cluster on the neighbouring highway network;

- implementation of a clearer village gateway at commencement of the 30mph speed limit, a short distance west of the proposed site access, is anticipated to reduce vehicle speeds for traffic entering the village;
- support for a 40mph buffer speed limit on entering the village on Collin Lane would further encourage a lowering of vehicle speeds, with resultant road safety benefits; and,
- improving the pedestrian route into the village centre, making walking a safer and more convenient means of accessing the village centre.

4. OPERATIONAL ASSESSMENT, POST DEVELOPMENT

4.1 Pedestrian and Cycle Trips

4.1.1 Newland Homes' proposals for residential development of this site include construction of a footway on the northern side of Collin Lane, enabling pedestrians from the proposed development to walk in the direction of the village centre and bus stops safely and segregated from passing traffic. The proposed footway will continue to the nearby church land, at which points dropped kerbs on both north and south footways will permit ease of safe crossing of Collin Lane, thence continuing eastwards adjacent to the southern side of the carriageway.

4.1.2 The local highway network carries typically low traffic volumes and, combined with a generally excellent road safety record, this makes cycling an attractive and safe means of travel for trips around the village. The proposed village gateway should reduce vehicle speeds, thereby further enhancing safety for cyclists.

4.1.3 Other highway improvements proposed by Newland Homes at the village entrance gateway and the existing roundabout junction to the east (and described below) will encourage lower traffic speeds which is also considered preferential to both pedestrian and cycle journeys associated with the proposed development.

4.1.4 The proposed construction of a stretch of footway east from the proposed site access junction, combined with dropped kerbs to assist with crossing Collin Lane, improves the convenience and safety of walking to and from the village centre, including local shop, primary school and the village pubs.

4.1.5 These proposed local improvements will lead to cycling and walking being the most convenient form of travel for local trips within the village.

4.2 Public Transport

4.2.1 Excellent rural bus services cater well for trips from Willersey to nearby service centres, particularly Broadway and Evesham. These provide a realistic alternative to the private car for journeys to secondary education, work and shopping trips.

4.3 Highway Operation

4.3.1 The forecast distribution of generated traffic is described above, in Chapter Three. Combining the forecast generated traffic with the low levels of observed traffic results in traffic flows easily accommodated across the local network.

4.3.2 Chapter Three describes the off-site highway improvements proposed at the junction of Collin Lane with Main Street and the proposed gateway treatment at the village entrance. In combination, these improvements are anticipated to reduce local vehicle speeds and improve road safety at the nearby mini-roundabout junction. These improvements will more than off-set any potential impact due to forecast additional traffic generated by the proposals. The resultant road safety improvements should present a net benefit for the safety of operation of the local road network.

4.3.3 The operational capacity of the proposed site access junction has been examined using PICADY computer software. Traffic demand has been forecast to a design horizon of 2019, five years post application. Base traffic flows have been factored using TEMPRO local forecasts for north Gloucestershire. The factors are;

- AM Peak Hour factor 2014 – 2019 = 1.0493
- PM Peak Hour factor 2014 – 2019 = 1.0541

4.3.4 Following application of the above factors to the base traffic identified in the ATC survey, the forecast distribution of generated traffic illustrated in Figure 3.2 have been added to provide the forecast traffic turning movements illustrated in Figure 4.1.

4.3.5 Results of the PICADY analyses are summarised in Table 4.1, below, with the detailed PICADY reports contained as Appendix D.

4.3.6 These analyses clearly demonstrate very significant spare capacity and that the proposed development will result in no undue impact on the operation of the adjacent highway network.

Table 4.1; Summary of PICADY Results for the Proposed Site Access Junction - 2019

Period	Arm	Max RFC	Max Queue
AM Peak Hour	Collin Lane (west)	-	-
	Site Acccess	0.048	0
	Collin Lane (east)	0.006	0
PM Peak Hour	Collin Lane (west)	-	-
	Site Acccess	0.027	0
	Collin Lane (east)	0.023	0

5. POLICY CONSIDERATIONS

5.1 Introduction

5.1.1 This Chapter will consider transport related policy and guidance, both local and National. Key policy objectives will be compared with the proposed development design in order to identify the level of policy compliance of the proposals.

5.2 Local Policy and Guidance

5.2.1 The Cotswold District Council website describes the current status of the District's Local Development Scheme and identifies that **"The current LDS, covering the period from March 2009 to March 2012 is now considered out of date. Work is ongoing to produce a revised LDS and it will be available to view on the website as soon as possible after it has been approved."**

5.2.2 It is clear that at present there is no statutory development plan in Cotswold District. Reference to the Council's website under the heading **"Forward Planning"** identifies an anticipated Public Consultation in early June, however, there is no reference to any draft document on which to consult. It is therefore understood that the consultation is still to take place and is likely to comprise publication of broad draft strategies for subsequent public comment, but that these strategies are not currently in the public domain.

5.2.3 It is clear therefore that the Planning Policy context in which this proposal remains to be considered is currently in flux, with published documents acknowledged as outdated and the statutory requirements concerning their replacement having been significantly altered with publication of the National Planning Policy Framework (NPPF). Local policy documents relevant to this Report are therefore considered to comprise the following County Council documents;

- Local Transport Plan for Gloucestershire 2011 – 2026 (LTP3);
- LTP Progress Report 2012; and,

- Manual for Gloucestershire Streets.

5.2.4 Each of these documents is reviewed in turn, below, with particular regard to the proposals for development of up to 50 dwellings in Willersey.

5.3 Gloucestershire Local Transport Plan 2011 – 2026 (LTP3)

5.3.1 Gloucestershire's LTP3 is entitled **"Promoting a safe and sustainable transport system"** and was adopted in April 2011. The title mirrors the Plan's key emphases, which were identified in the final public consultation, undertaken during 2010, when the public identified their requirements of the Plan to promote **"…a well maintained transport network with high quality public transport providing them with good access to services, reduced traffic congestion, and strong promotion of road safety through a mixture of enforcement and education."**

5.3.2 The analyses described above demonstrate that the road network local to the proposed development site operates safely and that traffic generation of the proposals is sufficiently low as to suggest no material likelihood of generating a road safety concern. Furthermore, the assessment of local public transport services and adjacent infrastructure presented in Chapter Two identifies that the site offers opportunities for sustainable access to facilities and destinations generating regular visits. It is clear that the proposed development site provides **"good access to services"**, as required in LTP3.

5.3.3 LTP3 focuses much consideration on issues of road safety and identifies a steadily falling road death and casualty rate in recent years. Clearly, in order to ensure this encouraging trend continues it is necessary to give careful consideration to use of routes on which accident issues or characteristics are evident. The development proposals include measures to improve road safety on the highway network in Willersey. Traffic generation forecasts identify only low levels of traffic associated with the proposals and the historic accident records confirm excellent safety across the local network, save for the nearby junction of Collin Lane with Main Street.

5.3.4 In regard to public transport accessibility, LTP3 identifies that **"Although most areas of the County have access to a bus service, very rural areas may only have a very infrequent service, therefore reducing accessibility levels to key services in comparison to that provided by traditional scheduled public transport services."** An **"Access Matrix"** is presented in LTP3, which identifies accessibility using public transport services and is defined at a 2008 base. Accessibility is defined according to three categories;

- **"Red - 10% poorest access"**;
- **"Amber - Next 25% poor access"**; and,
- **"Green - Other areas"**.

5.3.5 In light of its rural location it would be reasonable to expect Willersey to fall in the red classification and in fact it is on the border of the red and amber classifications. The bus services in Willersey are summarised in Table 2.1, above and demonstrate a good level of accessibility to nearby service centres, making travel by public transport a realistic alternative for many journeys to school, work and commercial (retail) facilities. This reflects the observations presented in Table 2.1 and Section 4.2 of this Report; that given its rural location the application site is well served by public transport.

5.3.6 Under the Heading **"Development Pressures"**, LTP3 acknowledges the misalignment of timing between LTP and Development Plan cycles; **"At the time of writing, the District Councils are currently reviewing their development projections. Therefore, LTP3 will need to be flexible to take account of the Local Development Frameworks when they are finalised. The review of LTP3 scheduled for 2013/14 will allow for this."** The above stated 2013/14 review is not yet complete.

5.3.7 Notwithstanding this, the document continues to identify some requirements for transport expenditure in association with future and forthcoming developments; **"Proposers of new development will have to ensure that they meet accessibility criteria set out in the supporting document Guidance on Contributions Related to Accessibility: www.gloucestershire.gov.uk/ltp3"**

5.3.8 It is the above statement which is considered most critical and applicable to the proposals, as this sets out the County's criteria when defining development accessibility and any necessity for funding contributions from a development promoter. The document **Guidance on Contributions Related to Accessibility** is now replaced by Gloucestershire County Council's Local Developer Guide. The latter being adopted by the Council in February 2014.

5.4 Local Developer Guide

5.4.1 The Local Developer Guide sets out the County's position and approach to the issue of the Community Infrastructure Levy (CIL), introduced in the NPPF as a means by which Planning Authorities and Highway Authorities can obtain funding from developers for key infrastructure liabilities.

5.4.2 A key component for determining appropriate CIL contribution levels is a clear and quantifiable statement of a district's infrastructure position in terms of;

- the provision and quality of infrastructure (including transport facilities) in a District;
- the scale and profile of development anticipated in the Local Development Framework; and,
- the degree to which development can realistically be deemed to increase demand and pressure on existing infrastructure.

5.4.3 By considering all of the above factors it will be possible for each planning authority, in liaison with the relevant transport authority, to determine an appropriate level of contribution associated with a specified scale of development (eg. Contribution per dwelling). The County's Local Developer Guide concludes that, in the absence of a complete and adopted Development Framework, along with adopted Local Transport Plan, it is not possible to define CIL contributions which would adequately stand scrutiny.

5.4.4 In the absence of a defined CIL structure, the Local Developer Guide falls back on the more traditional method of negotiating bespoke contributions in light of a calculated transport impact. It is appropriate for a development to fund infrastructure improvements in order to offset impact resultant from the development; necessary to make acceptable an otherwise unacceptable proposal. The assessments presented in this TA serve to demonstrate the operational implications of the proposed development and incorporate infrastructure improvements in the form of;

- proposed new footway provision on the northern side of Collin Lane;
- proposed road safety improvements at the junction of Collin Lane with Main Street; and,
- a proposed village gateway improvement on Collin Lane in order to encourage a reduction in vehicle speeds.

5.4.5 The above measures will address the forecast impacts of the proposed development, resulting in net benefits to local residents in terms of the operation of the local transport infrastructure.

5.5 LTP Progress Report 2012

5.5.1 The Progress Report reviews performance against targets identified in the LTP 2011 – 2026. These include transport asset management and operational targets in addition to performance criteria in terms of target modal splits, air quality and similar transport related issues. The 2012 Progress Report remains the most up to date available on the County Council's website.

5.5.2 The first two chapters concentrate predominantly on matters of asset management, including infrastructure condition and maintenance issues. Chapter Three concentrates on Sustainable Economic Growth, although once again this is predominantly in regard to the County's infrastructure assets and deals predominantly with specific major public transport and accessibility schemes. Predominantly, these are in larger centres within the County and none are directly relevant to Willersey.

5.5.3 Chapter Four is titled Good Access to Services and as has been clearly demonstrated earlier in this report, the proposed development site is well located in terms of accessibility to services, with frequent bus services to nearby major service centres and a village shop, primary school and pubs easily accessible in the village. The development can be expected to generate additional demand for the existing bus services connecting Mickleton to neighbouring centres, in particular Evesham, Broadway and Chipping Camden.

5.5.4 The LTP Progress Report continues to discuss Travel Planning and the requirement for Travel Plans in support of development proposals. These proposals in Willersey will be supported by a Residential Travel Plan, which will identify the availability of sustainable modes and discourage single-occupancy car travel.

5.5.5 In Chapter Six, under the heading A Greener Healthier Gloucestershire, the LTP Progress Report discusses health issues, primarily air quality. Unsurprisingly given its rural location, Willersey is not within a designated Air Quality Area.

5.5.6 The Progress Report continues to review the County's performance against LTP targets and, under the heading Target Performance is a plan of the County identifying bus accessibility to major towns, at an April 2012 base. In this plan, Willersey is identified in the 30 – 45 minutes accessibility zone, which is mid-point in the range. In light of its rural location, this is clearly an excellent rating and confirms that Willersey presents a highly sustainable village.

5.6 Manual for Gloucestershire Streets (2nd Edition)

5.6.1 Under the heading Status and Application, Manual for Gloucestershire Streets (MfGS) identifies its purpose both as a stand-alone document and in regard to other policy documentation, where it states that;

"*Manual for Gloucestershire Streets* (MfGS) sets out the principles that Gloucestershire County Council will apply to the design and construction of transport infrastructure associated with new development…MfGS is not intended to duplicate national guidance documents such as *Manual for Streets*, *Manual for Streets 2*, or the *Design Manual for Roads and Bridges*. Where appropriate, reference will be made to these, and other, guidance documents, but their content will not be replicated within MfGS."

5.6.2 It is clear from this quotation that MfGS is intended to be compliant with and sit within the envelope of National design guidance presented in MfS and DMRB. The proposals will be considered in light of these documents below.

5.6.3 MfGS defines a street in terms of its multiplicity of uses and demands. It identifies that parts of the transport infrastructure network serve the primary purpose of catering for transportation of people or goods, but that these are not streets; they comprise typically rail or main highway links, whereas the context of a street is more multi-functional and its design needs to therefore cater for a range of uses. It promotes a legible hierarchy of streets and roads, designed in such a way as to safely promote the function most appropriate for and required of the hierarchical status of each piece of infrastructure (ie. transport/residential/multi-modal).

5.6.4 The Design Process is specified in MfGS, which identifies the first key stage as Objective Setting in which the street's role will be clearly identified.

5.6.5 Stage Three of the process is titled Design and advocates a collaborative approach in order to maximise the potential for all issues and priorities to be adequately reflected in the ultimate layout. The approach should be a qualitative one, in favour of the traditional quantitative, formulaic approach to highway design and this reflects the advice in MfS.

5.6.6 MfGS continues to develop detailed design guidance for development infrastructure, focusing on the contribution that appropriate street design can make to the Quality of a Place or development. The principles espoused in MfGS reflect those typically followed by Newland Homes in designing their developments; of high quality and identity. These principles will be followed in developing the detailed design of the on-site street network.

5.7 National Policy and Guidance

5.7.1 National planning policy is specified in the National Planning Policy Framework (NPPF), published in March 2012 and this replaces the multiple policy documents previously published as Planning Policy Guidance (PPG) and Planning Policy Statements (PPS). NPPF therefore presents the national planning perspective, including transport issues previously discussed in PPG13; Transport.

5.7.2 Design guidance for developments such as that promoted herein is presented in Manual for Streets and Manual for Streets 2.

5.8 NPPF

5.8.1 In Chapter 1; Introduction, NPPF sets out its own role as ***"The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities."*** Thus, NPPF provides an outline within which local policy is intended to operate. Local policy and design documents should comply with NPPF but it is not intended that NPPF should unnecessarily constrain locally distinctive policy.

5.8.2 Paragraph 14 of NPPF states **"At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking.**

…

For decision-taking this means

- **approving development proposals that accord with the development plan without delay; and**
- **where the development plan is absent, silent or relevant policies are out of date, granting permission unless:**

  any adverse impacts of doing so would significantly or demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or

  specific policies in this Framework indicate development should be restricted."

5.8.3 The presumption in favour of sustainable development applies to these proposals in Willersey, which are demonstrably sustainable (in travel terms). As identified in Paragraph 5.2.1, above, the LDS is acknowledged as out of date and clearly, in the absence of any over-riding breaches of policy, the current proposals ought to be granted permission.

5.8.4 In terms of key transport-related planning policies identified in NPPF, Paragraph 17 states that planning should **"actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable."**

5.8.5 If rural settlements are to prosper, there is a need to provide rural homes for upcoming generations and in the terms of Paragraph 17 of NPPF, such rural development should be provided at locations well served by public transport and with the ability to walk and cycle to key facilities and destinations. Chapter Four, above, identifies that the proposed development site is well served by public transport and destinations within Willersey are readily accessible on foot and by bicycle. It is clear that the presumption in favour of sustainable development applies to these proposals in Willersey.

5.8.6 In Paragraph 32, NPPF identifies that **"All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:**

- **the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;**
- **safe and suitable access to the site can be achieved for all people; and,**
- **improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of the development are severe."**

5.8.7 Newland Homes' proposals in Willersey are located conveniently for existing public transport services and provide safe and suitable access by all modes. Examination of forecast traffic generation and highway operational assessment have demonstrated only immaterial levels of impact, although the developer is committed to providing road safety improvements to the location of an adjacent accident cluster, along with a proposed new footway and speed reduction measures by means of a village gateway. These improvements will clearly result in a net benefit to the local transport infrastructure.

5.8.8 At Paragraph 35, NPPF identifies that **"…developments should be located and designed where practical to**

….

- **give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;**
- **create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;**

…."

5.8.9 The detail of the site layout will be completed in line with the requirements of the Manual for Gloucestershire Streets and will therefore promote accessibility by sustainable modes, as also espoused in NPPF.

5.8.10 It is clear from the review above that the proposals are wholly compliant with transport issues discussed in NPPF and, in line with the presumption in favour of sustainable development, should therefore gain planning permission.

5.9 Manual for Streets and Manual for Streets 2

5.9.1 Manual for Streets (MfS) was published in 2007 and heralded the introduction of a step-change in estate road design principles. The advice and guidance provided in MfS was based specifically on research undertaken on residential streets with 30mph speed limits and saw a whole-scale redefinition of a number of predominant highway design principles. Following publication of MfS it rapidly became clear that the scale of change now applied to roads of speed limit 30mph and below left a "yawning gap" in design principles for roads above 30mph and Manual for Streets 2 (MfS2) subsequently investigated issues of wider application of such principles and concluded that MfS principles are rightly applicable on most roads at speed limits up to 40mph.

5.9.2 The primary principles espoused in the Manual for Streets method of highway design can be summarised as;

- **"Applying a user hierarchy … with pedestrians at the top"**;
- **"Emphasising a collaborative approach to the delivery of streets"**;
- **"Recognising the importance of the community function of streets as spaces for social interaction"**;

- **"Promoting an inclusive environment"**;
- **"Reflecting and supporting pedestrian and cyclist desire lines"**;
- **"Developing masterplans and preparing design codes"**;
- **"Establishing a clear vision and setting objectives for schemes"**;
- **"A locally appropriate balance should be struck between the needs of different user groups"**;
- **"Creating networks of streets that provide permeability and connectivity"**;
- **"Moving away from hierarchies of standard road types"**;
- **"Developing street character types"**;
- **"Encouraging innovation"**;
- **"Using quality audit processes"**;
- **"Designing to keep vehicle speed at or below 20mph"**; and,
- **"Using the minimum of highway design features"**.

5.9.3 The above comprehensive list can be neatly summed up as reducing the dominance of roads and hence the car and returning the residential environment to a multi-functional role to better serve residents' lifestyle, health, safety and wellbeing.

5.9.4 Newland Homes is a company which is headed by architects and the design process places particular focus on quality of environment and design. The design of the proposed development will focus on ensuring an inclusive environment which is both in keeping with the character of Willersey and provides a safe and attractive environment for pedestrians and cyclists. This will be entirely in line with the primary thrust of MfS.

5.10 Summary of Policy Consideration

5.10.1 The above consideration has clearly demonstrated that Newland Homes' proposals for a residential development in Willersey are entirely compliant with local and National transport related policy, including;

- LTP3;
- MfGS;

- NPPF; and,
- MfS.

5.10.2 Although in a rural village location, the site is sustainable in terms of opportunities for sustainable travel to facilities generating regular visits and there are no material policy reasons for objection to these proposals. The presumption in favour of sustainable development applies and, hence, the proposals should be granted planning permission.

6. SUSTAINABILITY AND GREEN TRAVEL PLAN

6.1 Sustainability

6.1.1 Section 2.3, above, confirms that Willersey is well served by public transport, making facilities attracting regular journeys readily accessible by sustainable modes. The infrastructure in Willersey provides for safe and convenient movement by pedestrians and cyclists, including routes into central Willersey, its facilities and bus stops. The developer's proposal includes construction of a new stretch of footway on the northern side of Collin Lane, towards the centre of Willersey, further enhancing safety and convenience of pedestrian movement in and around the village, including to and from the local bus stops.

6.1.2 Allowing for its rural village location, therefore, this development site is highly sustainable.

6.2 Green Travel Plan

6.2.1 In addition to the inherent sustainable character of this location, in order to further promote use of sustainable modes for required travel associated with this development, a Residential Travel Plan is proposed in support of the development. In order to accurately reflect the travel requirements of residents, the detail of the Travel Plan should be compiled only after the development is occupied and it is proposed that a detailed travel survey be undertaken within 6 months of full occupation of the development. This survey should illustrate in detail the actual travel requirements of residents, including;

- frequency of travel;
- reason for travel;
- time of travel;
- number of residents undertaking the same (or similar) journeys;
- mode of travel;
- reason for mode-choice;
- car ownership;

- bicycle ownership and proficiency; and,
- willingness and ability to change travel patterns.

6.2.2 Based on the findings from the travel survey, a Residential Travel Plan will be developed to the satisfaction of Gloucestershire County Council, as local Highway Authority. Initiatives to be considered in this Travel Plan will be determined by the results of the survey, but may include some or all of the following;

- a public transport information pack for all residents;
- the development will be designed to encourage sustainable modes for local travel, using pedestrian and cycle-friendly infrastructure;
- information on health benefits of cycling to be provided for all residents;
- each house to have a specific location for storing a bicycle or bicycles;
- opportunities for walking to the local primary school, including "walking bus" will be publicised amongst residents of the development; and,
- residents will be encouraged to car share and from the travel survey a database can be compiled to engage residents with others undertaking similar journeys and at similar times (for example, journeys to work).

6.2.3 The above is intended to be neither restrictive, nor constraining, but is indicative of the kind of initiative which may be applied.

7. SUMMARY AND CONCLUSIONS

7.1 Summary

7.1.1 This Transport Assessment investigates the potential for transport issues arising in regard to proposals by Newland Homes for development of up to 50 dwellings on existing agricultural land, adjacent to residential streets in Willersey, in Gloucestershire.

7.1.2 The site has been demonstrated to be well connected to the adjacent residential area by means of a proposed priority junction on Collin Lane. This will be combined with construction of additional off-site footway, road safety improvements at the nearby junction of Collin Lane with Main Street and speed reduction measures by means of a new village gateway feature on Collin Lane.

7.1.3 Given its rural village character, Willersey is well served by public transport and bus stops on Collin Lane and Main Street are easily accessible on foot from the site, making nearby major service centres, including Evesham, Stratford, Broadway, Moreton in Marsh and Chipping Camden readily accessible by public transport. Local facilities are provided in Willersey, including a village shop, primary school and leisure. These are easily and conveniently accessible on foot and by bicycle from the proposed development site.

7.1.4 In light of its rural village location, the proposed development site is highly sustainable.

7.1.5 Local roads through Willersey typically exhibit excellent safety records, although an accident cluster is evident at the junction of Collin Lane with Main Street. The proposals include mitigation of this existing issue. In combination with the above, transport infrastructure serving Willersey is of a high quality, providing high levels of safe and convenient accessibility.

7.1.6 Traffic flows in Willersey are observed to be low, although traffic speeds are surprisingly high. The proposals include measures to encourage a reduction in vehicle speed by means of constructing a gateway feature at the village entrance on Collin Lane. Traffic generation of the proposed development is not of sufficient scale to generate any concerns regarding highway operation and there is no requirement for off-site capacity improvements resultant from the proposals.

7.1.7 A review of relevant local policies has confirmed that the LDS is acknowledged as being out of date and that documentation associated with the County's LTP3 confirms that developer contributions by means of CIL are inappropriate at the present time due to a lack of adopted development plan.

7.1.8 The level of public transport services available to residents of Willersey enables ready accessibility of nearby major service centres by sustainable modes. Furthermore, those who choose to use a car can do so in the absence of congestion or hazards; a situation which will not be impacted on by these proposals.

7.1.9 Appropriate highway and infrastructure design guidance is provided in Manual for Gloucestershire Streets, which is now in its second edition and this both agrees with and dovetails the advice and guidance provided in Manual for Streets and Manual for Streets 2. The approach and philosophy advocated in these documents emphasises inclusive design and an active street environment as design foci and this approach mirrors the priorities typically adopted by the applicant; Newland Homes.

7.1.10 Transport related emphases in NPPF focus first and foremost on sustainability, with a presumption in favour of approval for residential developments which are demonstrated to be sustainable. As discussed at length in this report, these proposals are eminently sustainable and the presumption in favour clearly therefore applies.

7.2 Conclusions

7.2.1 The above detailed considerations have clearly demonstrated that the proposals by Newland Homes for development of up to 50 dwellings in the village of Willersey in Gloucestershire are entirely compliant with policy and practical consideration and that there is therefore no defensible transport related ground for objection to this planning application.

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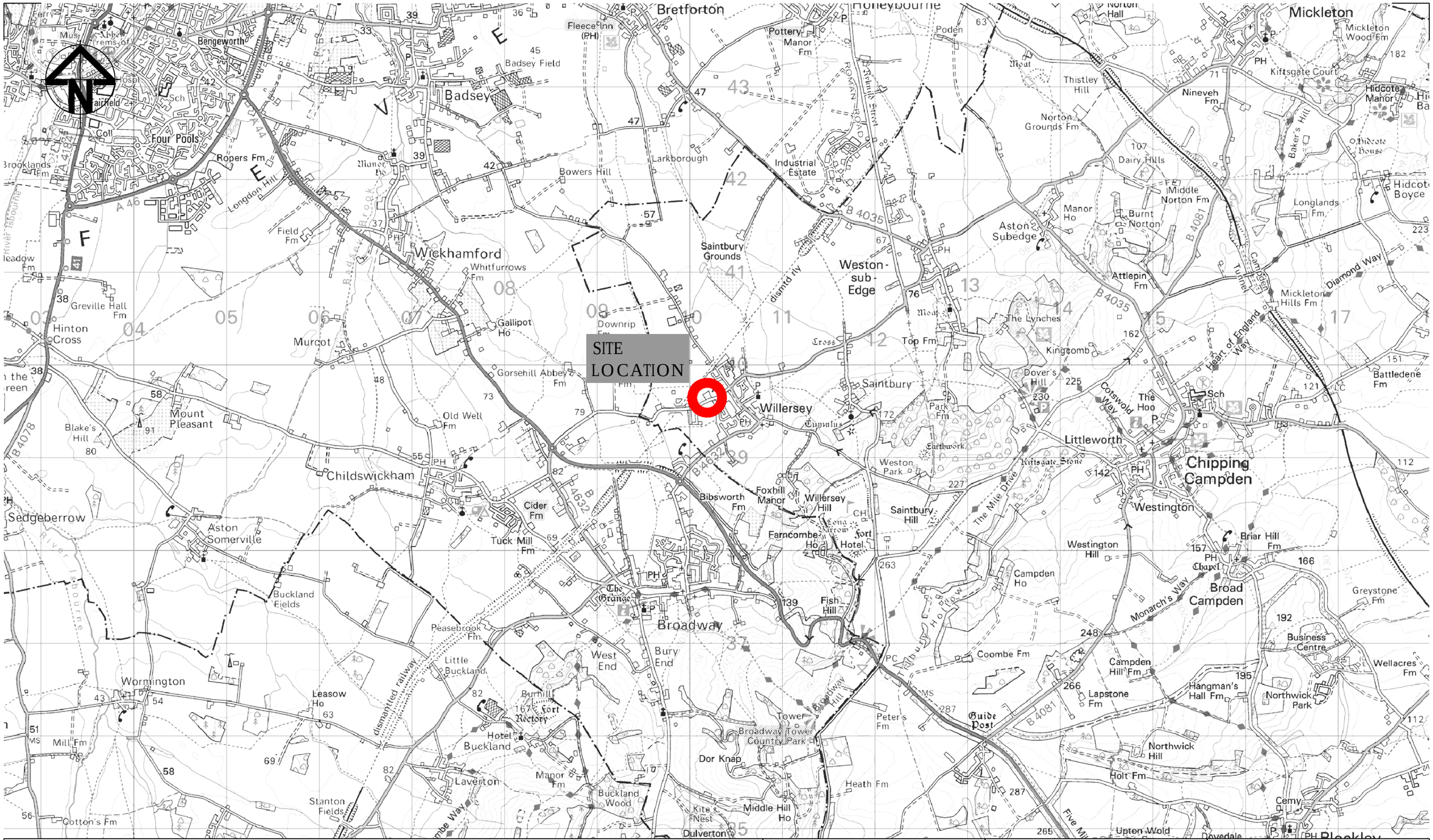
FIGURES



NOTES

NEWLAND HOMES

COLLIN LANE
WILLERSEY

SITE LOCATION

FIG 2.1 | N.T.S. | -

2014-F-005-001

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THE QUINARY

COLLIN LANE

Playing Field

Willowmere

Harvest Piece

Grass

Gravel

Vegetable Patch

Conifer Line

Post & Rail Fence Ht 1.2

Bushes

Hedge Ht 1.8

5.50

2.00

1.00

R6.00

R6.00

INSET
SCALE 1:250

NOTES

SITE BOUNDARY

PROPOSED AREA OF NEW FOOTWAY CONSTRUCTION

PROPOSED CARRIAGEWAY

PROPOSED KERB

REVA- IMPORT OF TOPO SURVEY AND IMPORT OF ARCHITECTôS LAYOUT

NEWLAND HOMES

COLLIN LANE
WILLERSEY

PROPOSED ACCESS ARRANGEMENT

FIG 3.1 | 1:1250 | A

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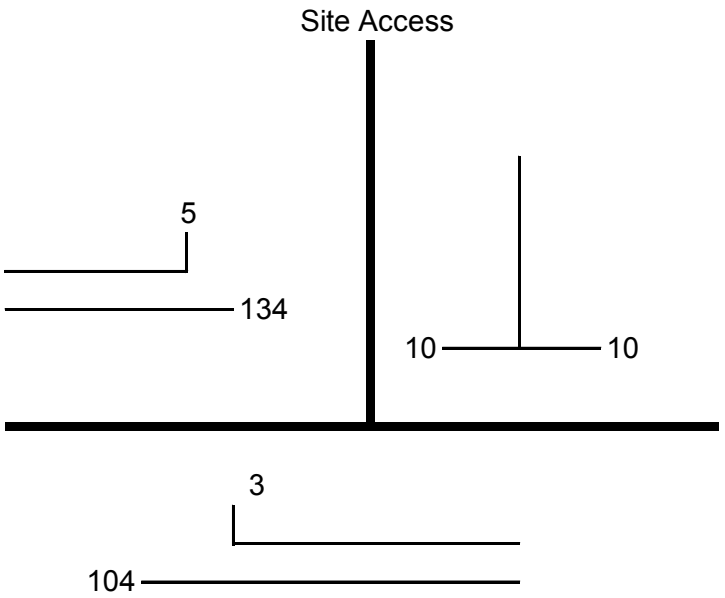
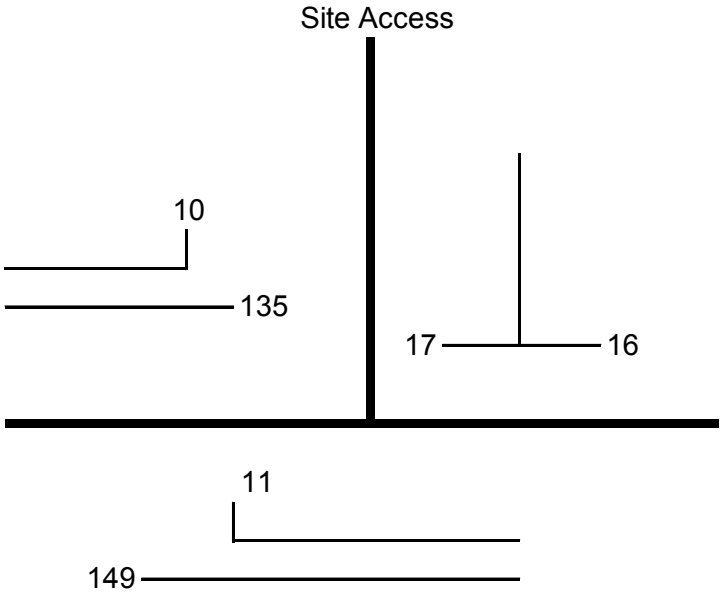
AM Peak Hour
08:00 - 09:00



PM Peak Hour
17:00 - 18:00



Project:	Willesey
Number:	2014-F-005
Report Title:	Transport Assessment; Proposed Residential Development, Collin Lane, Willersey
Figure Number:	4.1
Title:	Forecast Turning Movements - 2019

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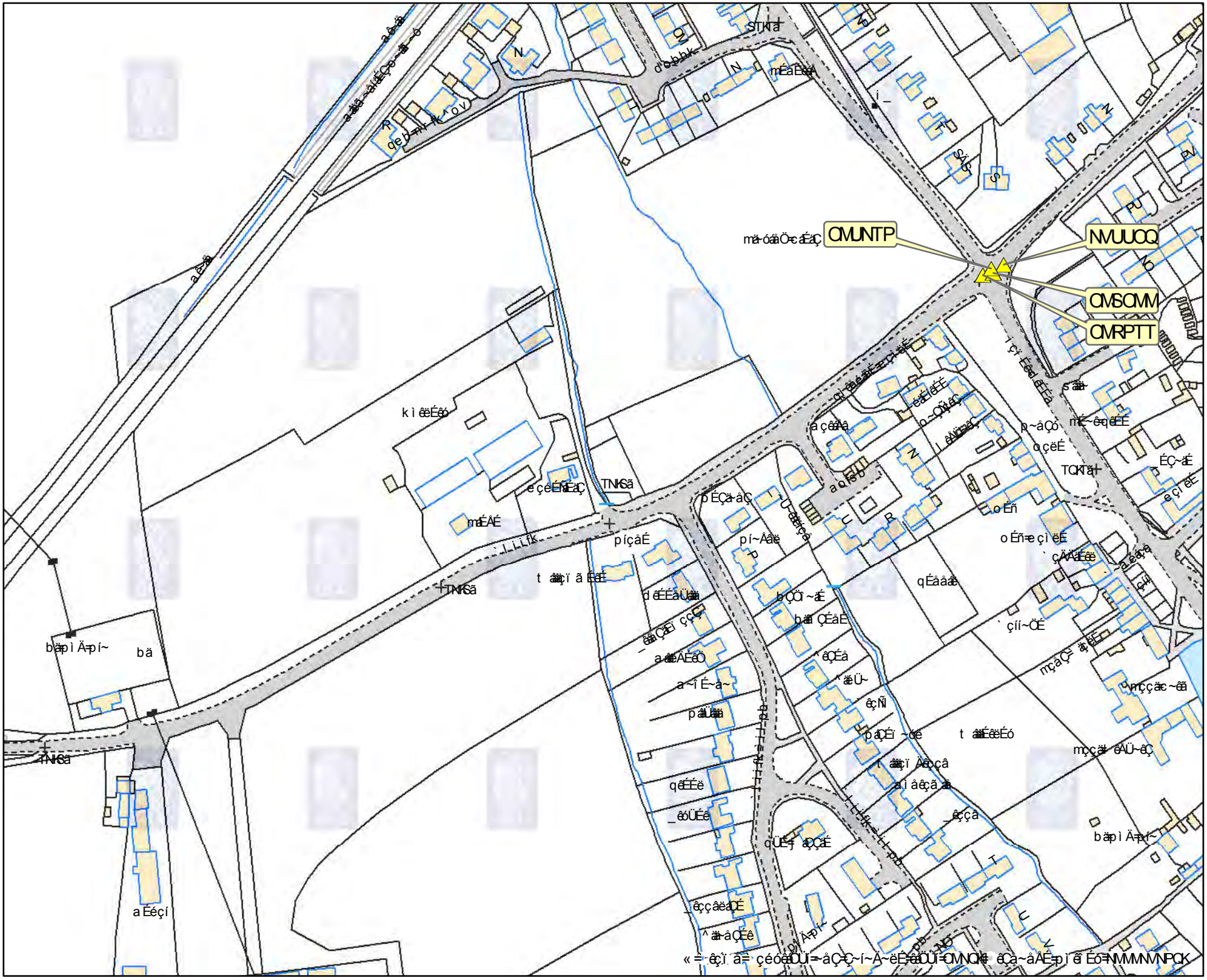
APPENDICES

APPENDIX A

ROAD TRAFFIC ACCIDENT RECORD



Collision Plan Site:

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Data Range:

g~åì ~ëó=OMMV=J
a ÉÅÉã ÄÉê=OMNP

Date Produced:

OCQMVSKOMNQ

Collision Plan Key

- c~í~ä
- pÉääçì ë
- päÜÜí

Drawn by: g=k Éääåå ÖÉê

Team: ^ fm

Scale: NVOPNO

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RoadSafety Gloucestershire

RTA2480 Detailed Collision Report

Compiled from an original report by Gloucestershire County Council

Accident Investigation and Prevention Section

Database as at 24-JUN-14

Collisions within GLOUCESTERSHIRE

For period 01-JAN-2009 TO 31-DEC-2013

DETAILED COLLISION REPORT

Ref	198824	Severity	SLIGHT		
Day	THURSDAY	Date	28 MAY 2009	Time	1924
Light	DAYLIGHT	Weather	FINE	Surface	DRY
Grid ref	410425 239769	Major rd	B 4632	Minor rd	3 114
Control	G WAY/UNCONTROLLED	Junction	ROUNDABOUT	Speed lim	30
Lighting	LIGHTS	Condition	NONE	C'way	ROUNDABOUT
UNIFI Ref	C/003019/09	Type	R	Hazard	NONE

LOCATION

COLLIN LANE WILLERSEY, BROADWAY WORCESTERSHIRE(AT JUNCTION WITH BADSEY LANE)

DESCRIPTION

V1 HAS CLIPPED V2 WHILST CHANGING LANES

VEHICLE DETAILS

No	Type	Manoeuvre	From-to	Driver Age
1	Car	GO AHEAD OTHER	N S	51
2	Car	GO AHEAD OTHER	N S	51

CASUALTY DETAILS

No	Severity	Casualty Age	Veh	Further Details
1	SLIGHT	51	2	DRIVER

DETAILED COLLISION REPORT

Ref	205377	Severity	SLIGHT		
Day	WEDNESDAY	Date	24 AUG 2011	Time	0808
Light	DAYLIGHT	Weather	FINE	Surface	DRY
Grid ref	410415 239764	Major rd	3 114	Minor rd	3 114
Control	G WAY/UNCONTROLLED	Junction	MINI R ABOUT	Speed lim	30
Lighting	LIGHTS	Condition	NONE	C'way	ROUNDABOUT
UNIFI Ref	C/001998/11	Type	R	Hazard	NONE

LOCATION

BADSEY ROAD WITH COLLIN LANE, WILLERSEY, CHELTENHAM, GLOUCESTERSHIRE

DESCRIPTION

V2 HAS APPROACHED FROM THE RIGHT OF V1 ONTO THE ROUNDABOUT. V1 HAS T BONED V2 OFF THE CARRIAGEWAY INTO A GARDEN

VEHICLE DETAILS

No	Type	Manoeuvre	From-to	Driver Age
1	Goods veh over 3.5T up to 7.5T mgw	GO AHEAD OTHER	NW SE	44
2	Car	GO AHEAD OTHER	SW NE	45

CASUALTY DETAILS

No	Severity	Casualty Age	Veh	Further Details
1	SLIGHT	44	1	DRIVER

DETAILED COLLISION REPORT

Ref	206200	Severity	SLIGHT		
Day	THURSDAY	Date	17 NOV 2011	Time	1000
Light	DAYLIGHT	Weather	OTHER	Surface	WET
Grid ref	410420 239765	Major rd	B 4632	Minor rd	3 114
Control	G WAY/UNCONTROLLED	Junction	MINI R ABOUT	Speed lim	30
Lighting	LIGHTS	Condition	NONE	C'way	ROUNDABOUT
UNIFI Ref	C/002719/11	Type	GR	Hazard	NONE

LOCATION

BADSEY ROAD WILLERSEY,NEAR BROADWAY(AT MINI ROUNDABOUT WITH COLLIN LANE)

DESCRIPTION

BOTH VEHICLES APPROACHING MINI ROUNDABOUT. V1 CONTINUED OVER ROUNDABOUT AS V2 WAS GOING FROM THE OFFSIDE OF V1. VEHICLES HAVE COLLIDED

VEHICLE DETAILS

No	Type	Manoeuvre	From-to	Driver Age
1	Van up to 3.5 T mgw	GO AHEAD OTHER	S N	56
2	Goods veh over 7.5 T mgw	GO AHEAD OTHER	S N	44

CASUALTY DETAILS

No	Severity	Casualty Age	Veh	Further Details
1	SLIGHT	56	1	DRIVER

DETAILED COLLISION REPORT

Ref	208173	Severity	SLIGHT		
Day	MONDAY	Date	16 SEP 2013	Time	0801
Light	DAYLIGHT	Weather	FINE	Surface	WET
Grid ref	410419 239767	Major rd	B 4632	Minor rd	B 4632
Control	G WAY/UNCONTROLLED	Junction	MINI R ABOUT	Speed lim	30
Lighting	LIGHTS	Condition	NONE	C'way	SINGLE CWAY
UNIFI Ref	C/001710/13	Type	R	Hazard	NONE

LOCATION

WILLERSEY, BROADWAY, WORCESTERSHIRE (ON THE B4632 ROUNDABOUT AT BADSEY FIELD)

DESCRIPTION

V1 WAS SAID TO BE BLINDED BY THE SUN AND FAILED TO GIVE WAY TO V2 CAUSING A COLLISION V2 ENDED UP ON ITS OFFSIDE

VEHICLE DETAILS

No	Type	Manoeuvre	From-to		Driver Age
1	Car	TURNING LEFT	E	S	61
2	Car	GO AHEAD OTHER	S	N	25

CASUALTY DETAILS

No	Severity	Casualty Age	Veh	Further Details
1	SLIGHT	61	1	DRIVER

Collision Types

Letter	Description of Collision
A:	Animal accident.
B:	Deliberate action / Police vehicle involvement.
C:	Pedal cyclist accident.
D:	Right turn crash into an opposing vehicle.
E:	Overtaking: vehicle in front turning right.
F:	Right turning vehicle hit from behind.
G:	Vehicle from side road hits vehicle approaching from its right.
H:	Vehicle from side road hits vehicle approaching from its left.
I:	Single vehicle accident.
K:	Overtaking: vehicle hits vehicle travelling opposite direction.
L:	Overtaking: vehicle hits vehicle travelling same direction.
M:	Miscellaneous, including reversing and bus.
N:	Overtaking: vehicle in front turning left.
P:	Pedestrian accident.
Q:	Head to tail collision.
R:	Roundabout accident.
T:	Head to head collision, not overtaking.
U:	Collision when vehicle does ‘U’ turn.
V:	Accident when vehicle leaving verge.
W:	Collision with or due to parked vehicle.
Z:	Two Wheeled Motor Vehicle accident.

APPENDIX B

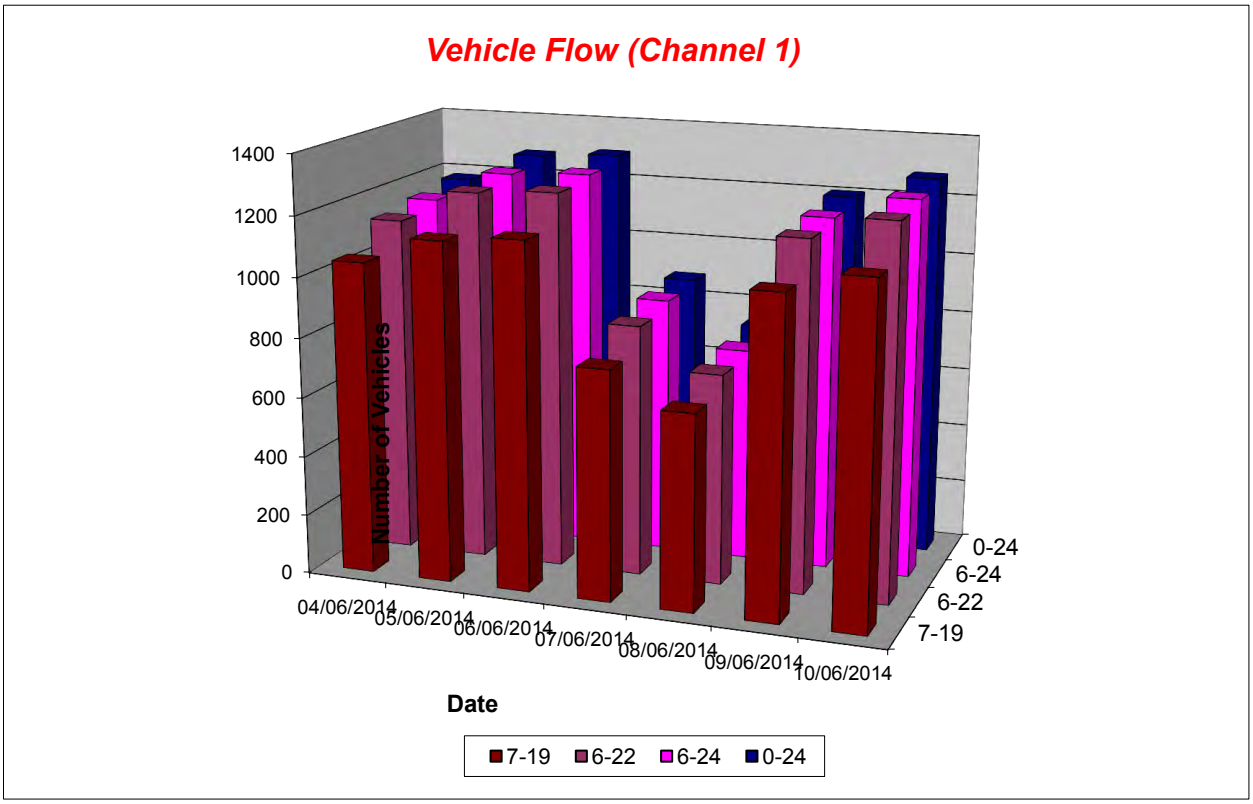
DETAILED ATC REPORT

Willersey ATC, Collin Lane

Channel 1 - Westbound **Vehicle Flow** **Week 1**

Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday	5 Day Ave	7 Day Ave
1	3	1	3	5	6	2	2	2	3
2	1	0	1	2	5	1	0	1	1
3	1	1	0	1	5	2	0	1	1
4	2	2	2	0	0	0	0	1	1
5	5	4	6	1	0	5	5	5	4
6	13	12	10	4	1	10	13	12	9
7	22	24	19	11	5	24	23	22	18
8	97	114	97	28	15	88	96	98	76
9	100	102	89	54	22	98	105	99	81
10	87	97	90	79	48	51	82	81	76
11	83	70	82	93	86	91	82	82	84
12	69	82	89	82	62	78	75	79	77
13	69	75	85	73	88	80	73	76	78
14	61	82	79	75	57	59	87	74	71
15	82	79	99	76	62	83	84	85	81
16	83	85	142	50	52	79	92	96	83
17	109	109	127	48	73	119	122	117	101
18	142	168	110	60	46	145	142	141	116
19	64	73	69	51	44	86	84	75	67
20	37	44	47	34	20	43	50	44	39
21	18	23	13	16	15	23	21	20	18
22	9	15	22	13	12	21	24	18	17
23	13	11	8	16	8	7	12	10	11
24	10	7	7	8	4	8	6	8	7

7-19	1046	1136	1158	769	655	1057	1124	1104	992
6-22	1132	1242	1259	843	707	1168	1242	1209	1085
6-24	1155	1260	1274	867	719	1183	1260	1226	1103
0-24	1180	1280	1296	880	736	1203	1280	1248	1122



Willersey ATC, Collin Lane

Channel 1 - Westbound **Average Speed** **Week 1**

Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
1	46.7	52.0	44.7	49.8	45.8	38.5	38.5
2	42.0	-	36.0	48.0	53.2	53.0	-
3	32.0	31.0	-	46.0	41.2	40.0	-
4	37.5	44.0	42.0	-	-	-	-
5	34.4	40.0	39.7	44.0	-	39.8	41.4
6	43.3	35.5	40.7	38.8	44.0	43.7	41.4
7	38.9	39.3	40.9	36.5	33.6	43.4	41.3
8	40.1	39.7	41.7	40.6	43.1	40.5	42.0
9	39.4	37.2	41.1	38.5	36.6	38.6	38.0
10	34.7	37.4	39.0	37.9	37.4	37.9	38.3
11	32.4	40.1	37.6	38.5	34.9	37.9	37.2
12	36.3	38.6	38.2	39.0	38.2	37.9	36.6
13	36.1	37.6	37.8	38.6	38.7	38.4	37.2
14	36.4	37.9	39.4	37.8	38.4	38.5	37.8
15	36.3	37.3	38.9	39.5	37.3	37.5	37.0
16	36.0	37.6	40.8	39.5	36.7	38.4	37.0
17	38.1	39.0	40.4	38.5	36.3	39.3	39.2
18	38.9	39.9	42.2	41.4	36.0	39.4	40.9
19	41.0	42.1	41.3	39.8	38.9	42.1	40.8
20	39.2	41.6	41.1	42.8	40.0	41.6	41.1
21	37.8	41.4	44.0	39.0	43.1	41.6	42.7
22	36.6	39.0	39.0	40.2	37.8	39.0	40.0
23	34.5	40.5	42.1	40.4	42.0	46.1	39.2
24	40.4	45.0	37.4	37.6	44.3	44.4	43.5
10-12	34.2	39.3	37.9	38.7	36.3	37.9	36.9
14-16	36.2	37.4	40.0	39.5	37.0	37.9	37.0
0-24	37.5	38.9	40.1	39.2	37.8	39.3	39.0

7 Day Ave	38.9

Channel 1 - Westbound **85th Percentile**

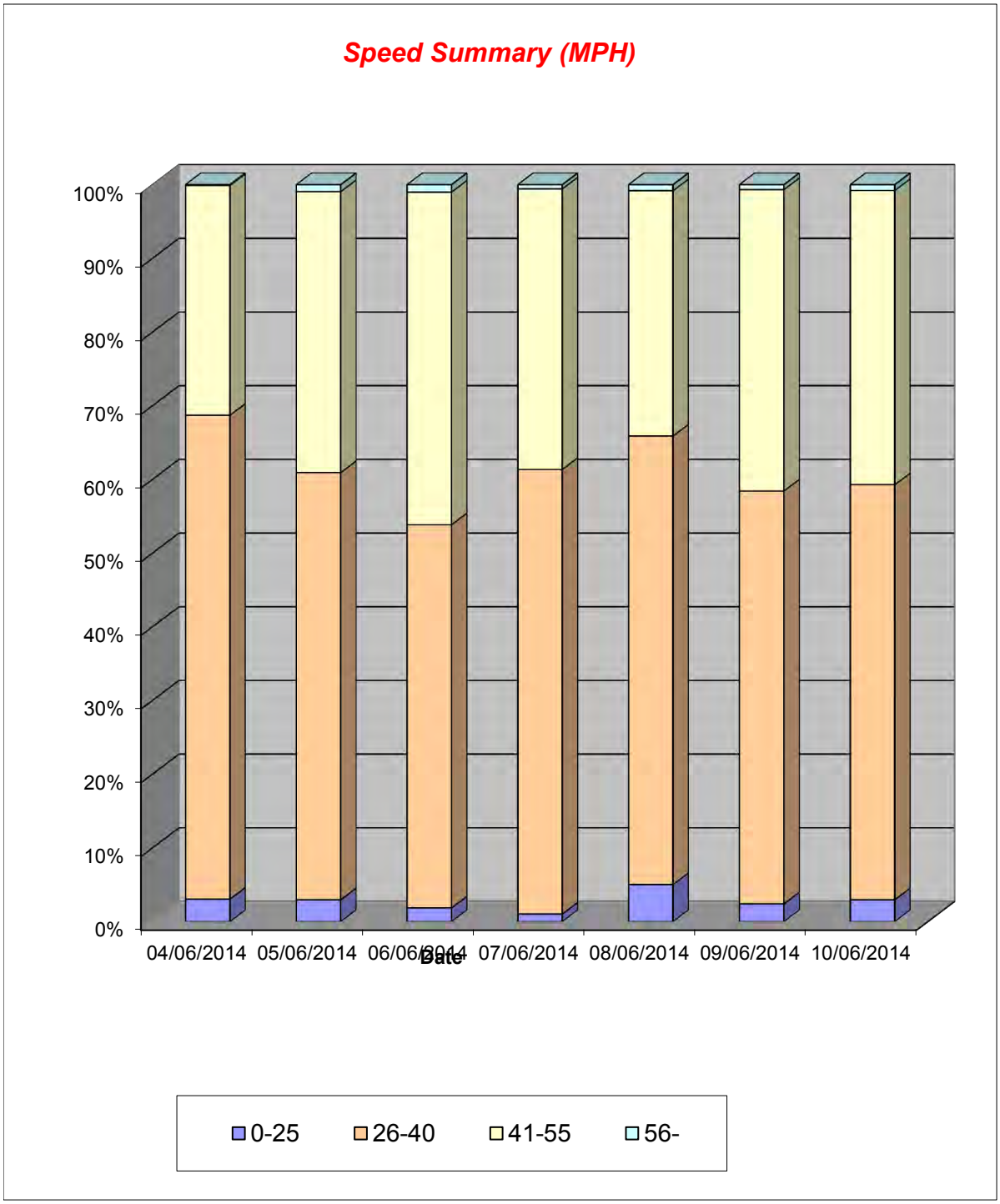
Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
1	48.0	-	50.0	61.2	49.3	45.2	40.3
2	-	-	-	48.7	58.8	-	-
3	-	-	-	-	49.4	40.0	-
4	38.6	44.7	45.5	-	-	-	-
5	36.8	45.1	41.0	-	-	43.2	46.8
6	49.8	42.7	45.7	41.6	-	49.7	48.0
7	44.9	45.6	50.0	43.0	46.4	49.6	48.4
8	46.0	47.0	47.0	48.0	48.9	44.0	47.8
9	45.0	44.0	47.0	44.0	41.0	45.0	45.0
10	40.0	41.0	44.7	43.3	44.0	42.0	44.0
11	38.7	45.0	43.7	44.0	41.3	44.0	42.0
12	42.8	44.0	45.0	44.0	45.9	43.5	42.0
13	42.0	42.9	44.0	44.0	45.0	43.0	45.0
14	44.0	44.0	45.0	43.0	43.6	46.0	44.0
15	42.0	43.0	45.0	44.8	44.9	43.0	43.6
16	42.7	44.0	48.0	44.7	43.0	45.0	45.0
17	44.0	45.8	48.0	44.0	41.2	46.0	45.0
18	45.0	46.0	49.0	47.0	41.3	46.0	45.0
19	46.0	49.2	49.0	44.0	44.6	47.0	47.6
20	45.0	49.0	47.1	48.0	44.8	49.7	46.0
21	43.4	47.7	48.2	44.3	52.0	48.8	45.0
22	41.4	46.8	43.9	45.2	43.4	43.0	45.0
23	39.6	44.5	48.8	46.8	47.8	53.0	41.4
24	47.0	54.1	40.2	42.0	50.6	48.0	51.0
10-12	38.7	45.0	43.7	44.0	41.3	44.0	42.0
14-16	42.0	44.0	47.0	45.0	43.1	44.0	44.0
0-24	44.0	45.0	47.0	45.0	44.0	45.0	45.0

7 Day Ave	45.0

Willersey ATC, Collin Lane

Channel 1 - Westbound **Speed Summary** **Week 1**

Speed (MPH)	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
0-25	36	38	24	9	37	29	38
26-40	775	742	674	531	448	674	721
41-55	368	488	585	335	245	492	511
56-	1	12	13	5	6	8	10
TOTAL	**1180**	**1280**	**1296**	**880**	**736**	**1203**	**1280**



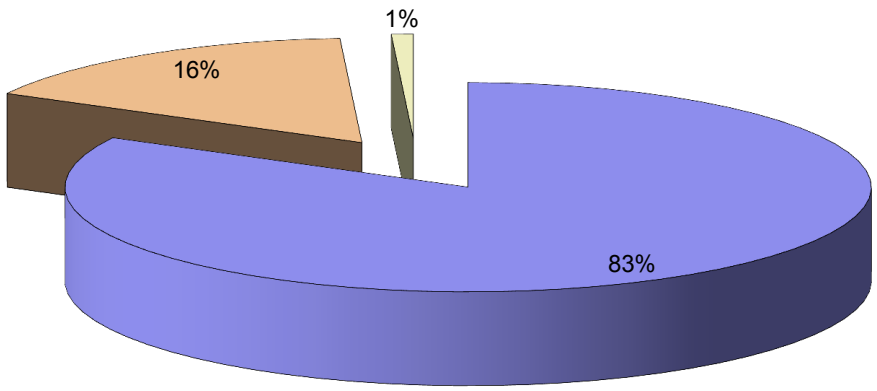
Willersey ATC, Collin Lane

Channel 1 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
04/06/2014				
7-19	818	211	17	**1046**
6-22	892	223	17	**1132**
6-24	911	227	17	**1155**
0-24	926	237	17	**1180**
05/06/2014				
7-19	902	210	24	**1136**
6-22	994	224	24	**1242**
6-24	1009	227	24	**1260**
0-24	1024	232	24	**1280**
06/06/2014				
7-19	926	219	13	**1158**
6-22	1014	232	13	**1259**
6-24	1028	233	13	**1274**
0-24	1044	239	13	**1296**
07/06/2014				
7-19	681	87	1	**769**
6-22	747	95	1	**843**
6-24	768	98	1	**867**
0-24	778	101	1	**880**
08/06/2014				
7-19	602	53	0	**655**
6-22	648	59	0	**707**
6-24	659	60	0	**719**
0-24	674	62	0	**736**
09/06/2014				
7-19	876	171	10	**1057**
6-22	979	179	10	**1168**
6-24	992	181	10	**1183**
0-24	1007	186	10	**1203**
10/06/2014				
7-19	907	213	4	**1124**
6-22	1018	220	4	**1242**
6-24	1035	221	4	**1260**
0-24	1051	225	4	**1280**

Average				
7-19	816	166	10	**992**
6-22	899	176	10	**1085**
6-24	915	178	10	**1103**
0-24	929	183	10	**1122**

Total Vehicle Class Distribution

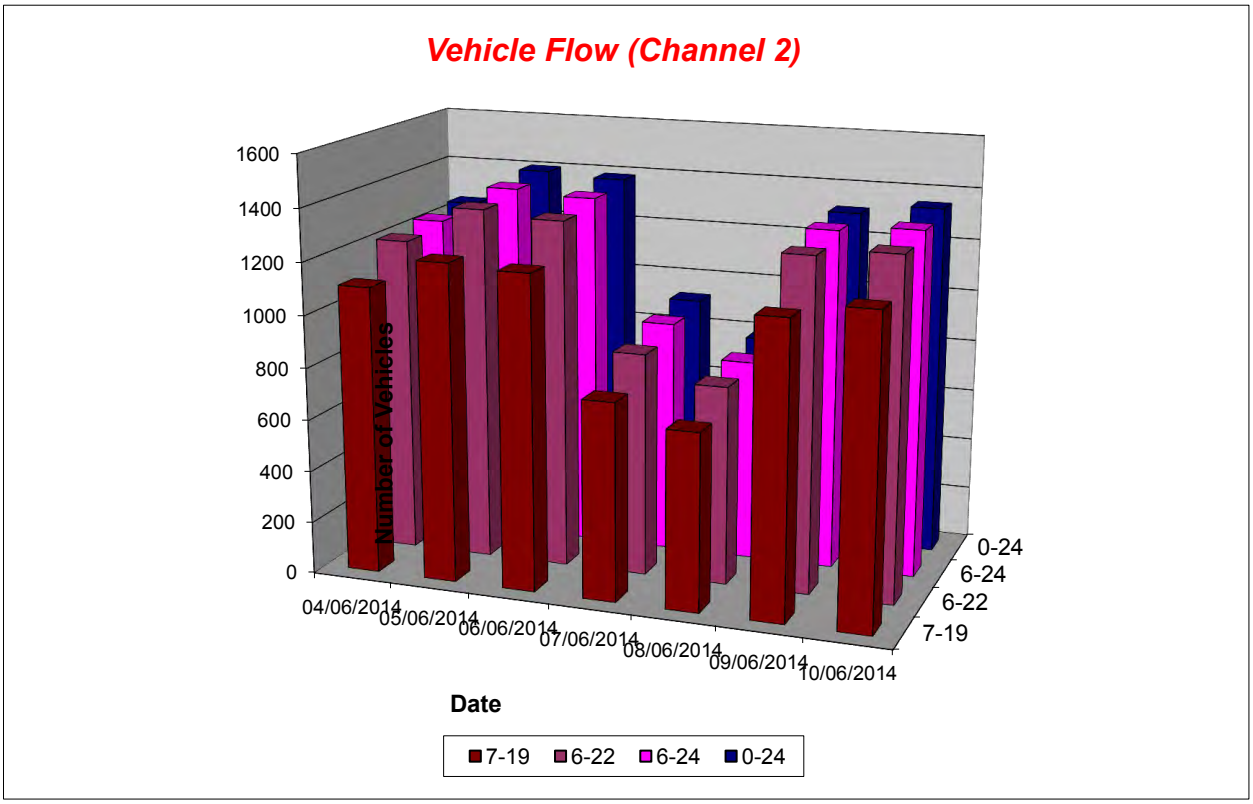


Willersey ATC, Collin Lane

Channel 2 - Eastbound **Vehicle Flow** **Week 1**

Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday	5 Day Ave	7 Day Ave
1	2	0	5	4	8	1	5	3	4
2	1	2	0	3	2	0	2	1	1
3	2	2	2	0	1	0	2	2	1
4	1	1	1	0	1	1	0	1	1
5	4	4	3	1	0	3	2	3	2
6	6	10	10	14	2	2	12	8	8
7	44	50	52	18	6	56	40	48	38
8	138	153	143	25	8	126	118	136	102
9	118	121	121	49	20	123	156	128	101
10	85	82	91	69	57	75	86	84	78
11	78	94	76	68	75	83	89	84	80
12	72	77	87	81	76	76	73	77	77
13	90	90	93	65	76	67	88	86	81
14	80	86	79	77	78	81	73	80	79
15	81	91	83	82	72	74	69	80	79
16	91	90	100	48	52	79	95	91	79
17	102	126	106	69	81	116	116	113	102
18	115	127	127	62	48	141	132	128	107
19	53	81	98	63	36	79	79	78	70
20	33	35	37	44	28	40	52	39	38
21	15	35	24	21	24	30	14	24	23
22	20	19	18	16	25	28	21	21	21
23	14	20	16	22	11	19	22	18	18
24	7	5	14	20	3	12	4	8	9

7-19	1103	1218	1204	758	679	1120	1174	1164	1037
6-22	1215	1357	1335	857	762	1274	1301	1296	1157
6-24	1236	1382	1365	899	776	1305	1327	1323	1184
0-24	1252	1401	1386	921	790	1312	1350	1340	1202



Willersey ATC, Collin Lane

Channel 2 - Eastbound **Average Speed** **Week 1**

Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
1	39.5	-	46.6	42.5	41.3	55.0	45.2
2	47.0	41.0	-	46.0	46.0	-	43.5
3	44.5	43.0	49.0	-	49.0	-	43.5
4	41.0	28.0	42.0	-	42.0	41.0	-
5	39.0	40.5	36.7	44.0	-	39.0	42.5
6	43.3	42.1	44.4	42.3	27.5	52.0	45.0
7	41.6	42.7	41.5	38.8	41.7	42.4	43.7
8	38.9	40.4	41.8	39.7	44.1	39.2	40.3
9	38.2	38.3	40.4	41.2	41.3	39.1	39.7
10	34.5	38.7	38.0	38.4	37.9	39.1	38.5
11	35.3	38.2	38.4	39.2	36.6	37.6	38.1
12	37.5	38.4	37.0	37.4	39.1	36.5	38.9
13	35.6	38.8	38.5	39.6	36.3	40.0	38.1
14	36.5	38.8	38.9	40.4	38.0	38.4	38.7
15	36.3	39.0	39.5	40.8	40.0	38.2	39.5
16	35.8	38.3	38.5	41.0	40.3	37.2	36.6
17	37.3	39.3	39.6	39.4	37.4	38.2	38.7
18	38.2	39.3	40.9	42.4	36.8	40.7	40.5
19	39.3	41.9	40.5	40.0	40.5	41.0	41.3
20	37.7	39.4	40.0	40.4	40.9	42.4	39.1
21	38.6	41.3	38.3	43.9	40.8	41.7	42.9
22	37.6	37.5	36.6	39.9	40.9	40.5	39.6
23	36.5	39.6	40.8	40.7	41.5	41.2	42.1
24	37.1	40.4	42.5	43.3	41.3	42.3	47.0

10-12	36.3	38.3	37.6	38.2	37.8	37.1	38.4
14-16	36.0	38.6	39.0	40.8	40.1	37.7	37.8
0-24	37.3	39.4	39.7	40.1	38.7	39.3	39.5

7 Day Ave	39.1

Channel 2 - Eastbound **85th Percentile**

Hr Ending	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
1	39.9	-	50.8	46.2	44.9	-	50.8
2	-	43.8	-	48.7	48.8	-	47.4
3	50.5	43.7	49.7	-	-	-	43.9
4	-	-	-	-	-	-	-
5	46.2	48.7	40.9	-	-	44.2	45.0
6	47.3	47.0	49.7	48.3	37.7	53.4	49.4
7	48.6	48.0	49.0	46.2	49.3	48.0	50.2
8	45.0	47.0	48.0	45.4	47.9	45.3	47.5
9	44.0	48.0	46.0	48.0	46.0	45.0	45.0
10	40.0	44.0	43.0	45.0	45.0	45.0	44.3
11	40.5	45.0	44.0	45.0	42.9	43.7	43.0
12	44.0	44.6	44.0	42.0	45.0	43.0	45.0
13	40.0	45.7	45.0	45.0	43.8	45.1	45.0
14	42.3	44.0	45.0	45.0	45.0	45.0	44.0
15	43.0	46.0	45.0	45.0	45.0	45.1	46.8
16	41.0	44.0	44.2	47.0	45.0	43.3	43.9
17	42.0	45.0	46.0	45.0	44.0	46.0	44.0
18	44.0	47.0	47.0	48.0	45.0	48.0	46.0
19	45.0	50.0	47.0	46.0	47.5	46.0	48.0
20	41.4	48.8	47.2	47.6	47.0	48.3	44.0
21	48.5	48.0	44.0	50.0	47.6	46.7	47.0
22	42.2	46.5	45.4	47.5	45.4	45.0	46.0
23	40.2	46.2	46.8	45.0	50.0	48.0	47.0
24	41.9	46.4	50.3	49.0	50.9	45.4	53.8

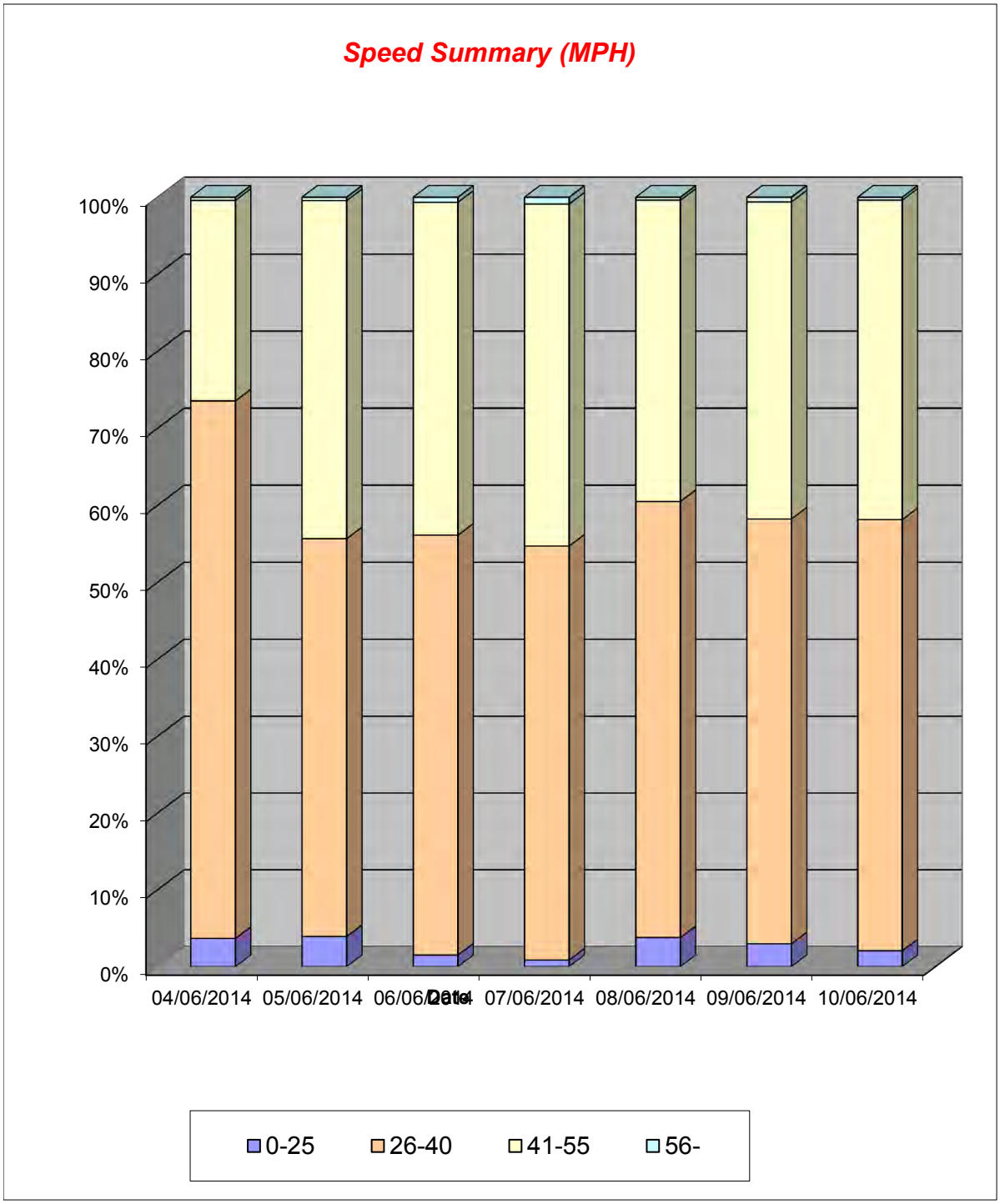
10-12	40.5	45.0	44.0	45.0	42.9	43.7	43.0
14-16	42.0	45.0	45.0	45.7	45.0	45.0	44.0
0-24	43.0	46.0	46.0	47.0	45.0	46.0	46.0

7 Day Ave	45.0

Willersey ATC, Collin Lane

Channel 2 - Eastbound **Speed Summary** **Week 1**

Speed (MPH)	04/06/2014 Wednesday	05/06/2014 Thursday	06/06/2014 Friday	07/06/2014 Saturday	08/06/2014 Sunday	09/06/2014 Monday	10/06/2014 Tuesday
0-25	46	55	21	8	30	39	28
26-40	875	725	757	496	448	725	757
41-55	326	615	599	409	309	540	560
56-	5	6	9	8	3	8	5
TOTAL	**1252**	**1401**	**1386**	**921**	**790**	**1312**	**1350**

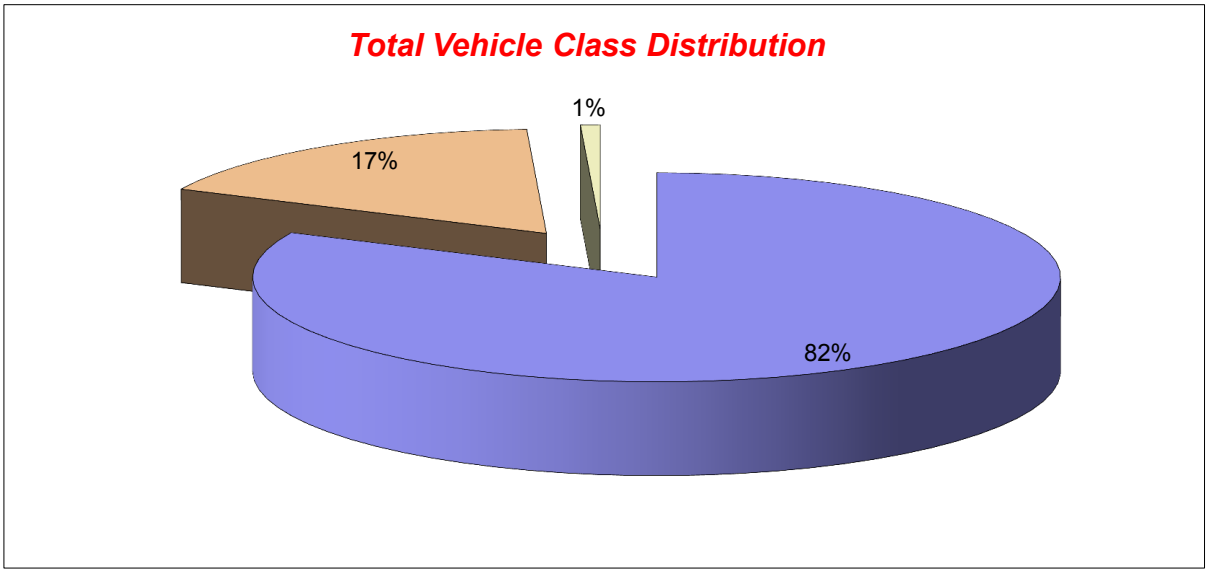


Willersey ATC, Collin Lane

Channel 2 - Eastbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
04/06/2014				
7-19	886	201	16	1103
6-22	977	221	17	1215
6-24	995	224	17	1236
0-24	1008	227	17	1252
05/06/2014				
7-19	982	224	12	1218
6-22	1108	236	13	1357
6-24	1130	239	13	1382
0-24	1144	244	13	1401
06/06/2014				
7-19	959	234	11	1204
6-22	1071	253	11	1335
6-24	1098	256	11	1365
0-24	1115	260	11	1386
07/06/2014				
7-19	656	99	3	758
6-22	741	113	3	857
6-24	778	118	3	899
0-24	798	120	3	921
08/06/2014				
7-19	610	67	2	679
6-22	686	74	2	762
6-24	699	75	2	776
0-24	711	77	2	790
09/06/2014				
7-19	874	232	14	1120
6-22	1006	253	15	1274
6-24	1031	259	15	1305
0-24	1035	262	15	1312
10/06/2014				
7-19	930	239	5	1174
6-22	1043	253	5	1301
6-24	1068	254	5	1327
0-24	1086	259	5	1350

Average				
7-19	842	185	9	1037
6-22	947	200	9	1157
6-24	971	204	9	1184
0-24	985	207	9	1202



APPENDIX C

TRICS REPORTS

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	2 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	2 days
	NT	NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WO	WORCESTERSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
10	WALES		
	CF	CARDIFF	1 days

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

Filtering Stage 2 selection:

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

Parameter: Number of dwellings
Actual Range: 101 to 237 (units:)
Range Selected by User: 100 to 300 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 22/09/12

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

Selected survey days:

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

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

Selected survey types:

Manual count	13 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)	6
Edge of Town	7

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

Selected Location Sub Categories:

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

Filtering Stage 3 selection:

Use Class:

C3	13 days

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

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	7 days
20,001 to 25,000	2 days
25,001 to 50,000	1 days

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

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	1 days
75,001 to 100,000	4 days
100,001 to 125,000	3 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	5 days
1.1 to 1.5	8 days

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

Travel Plan:

No	13 days

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

LIST OF SITES relevant to selection parameters

1 CF-03-A-02 MIXED HOUSES CARDIFF
DROPE ROAD

CARDIFF
Edge of Town
Residential Zone
Total Number of dwellings: 196
Survey date: FRIDAY 05/10/07 Survey Type: MANUAL

2 CH-03-A-06 SEMI-DET./BUNGALOWS CHESHIRE
CREWE ROAD

CREWE
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 129
Survey date: TUESDAY 14/10/08 Survey Type: MANUAL

3 EX-03-A-01 SEMI-DET. ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Edge of Town
Residential Zone
Total Number of dwellings: 237
Survey date: TUESDAY 13/05/08 Survey Type: MANUAL

4 LN-03-A-01 MIXED HOUSES LINCOLNSHIRE
BRANT ROAD
BRACEBRIDGE
LINCOLN
Edge of Town
Residential Zone
Total Number of dwellings: 150
Survey date: TUESDAY 15/05/07 Survey Type: MANUAL

5 LN-03-A-02 MIXED HOUSES LINCOLNSHIRE
HYKEHAM ROAD

LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 186
Survey date: MONDAY 14/05/07 Survey Type: MANUAL

6 NT-03-A-03 SEMI DETACHED NOTTINGHAMSHIRE
B6018 SUTTON ROAD

KIRKBY-IN-ASHFIELD
Edge of Town
Residential Zone
Total Number of dwellings: 166
Survey date: WEDNESDAY 28/06/06 Survey Type: MANUAL

7 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.)

8 SF-03-A-02 SEMI DET./TERRACED SUFFOLK
STOKE PARK DRIVE
MAIDENHALL
IPSWICH
Edge of Town
Residential Zone
Total Number of dwellings: 230
Survey date: THURSDAY 24/05/07 Survey Type: MANUAL

9 SF-03-A-03 MIXED HOUSES SUFFOLK
BARTON HILL
FORNHAM ST MARTIN
BURY ST EDMUNDS
Edge of Town
Out of Town
Total Number of dwellings: 101
Survey date: MONDAY 15/05/06 Survey Type: MANUAL

10 SH-03-A-04 TERRACED SHROPSHIRE
ST MICHAEL'S STREET

SHREWSBURY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 108
Survey date: THURSDAY 11/06/09 Survey Type: MANUAL

11 TV-03-A-01 HOUSES & FLATS TEES VALLEY
POWLETT ROAD

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 225
Survey date: THURSDAY 14/04/05 Survey Type: MANUAL

12 WO-03-A-03 DETACHED WORCESTERSHIRE
BLAKEBROOK
BLAKEBROOK
KIDDERMINSTER
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 138
Survey date: FRIDAY 05/05/06 Survey Type: MANUAL

13 WO-03-A-06 DET./TERRACED WORCESTERSHIRE
ST GODWALDS ROAD
ASTON FIELDS
BROMSGROVE
Edge of Town
No Sub Category
Total Number of dwellings: 232
Survey date: THURSDAY 30/06/05 Survey Type: MANUAL

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

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	13	170	0.084	13	170	0.303	13	170	0.387
08:00 - 09:00	13	170	0.160	13	170	0.442	13	170	0.602
09:00 - 10:00	13	170	0.175	13	170	0.225	13	170	0.400
10:00 - 11:00	13	170	0.153	13	170	0.195	13	170	0.348
11:00 - 12:00	13	170	0.188	13	170	0.177	13	170	0.365
12:00 - 13:00	13	170	0.201	13	170	0.191	13	170	0.392
13:00 - 14:00	13	170	0.197	13	170	0.169	13	170	0.366
14:00 - 15:00	13	170	0.184	13	170	0.182	13	170	0.366
15:00 - 16:00	13	170	0.314	13	170	0.214	13	170	0.528
16:00 - 17:00	13	170	0.335	13	170	0.202	13	170	0.537
17:00 - 18:00	13	170	0.421	13	170	0.244	13	170	0.665
18:00 - 19:00	13	170	0.275	13	170	0.225	13	170	0.500
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.687			2.769			5.456

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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	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.

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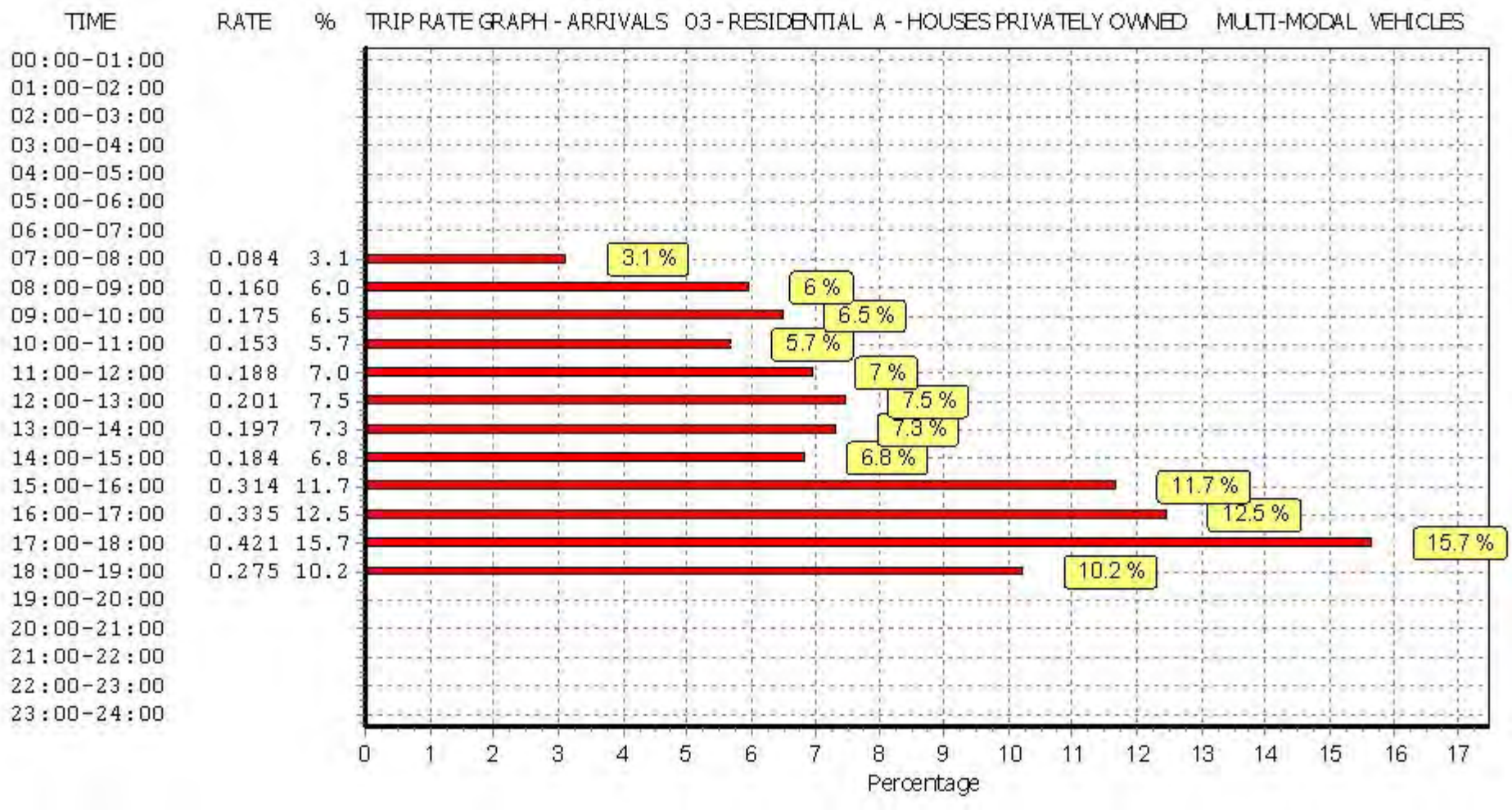

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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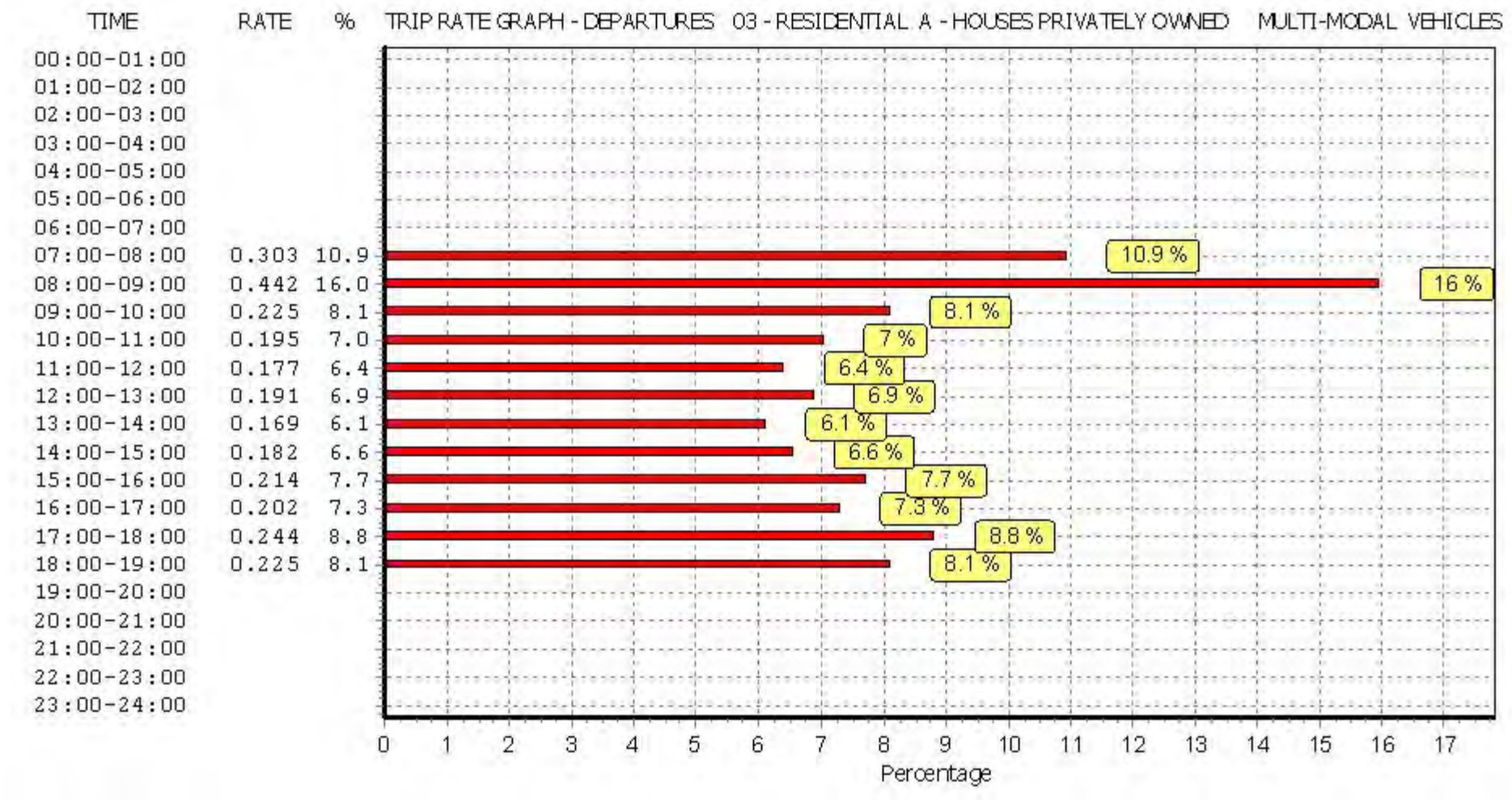

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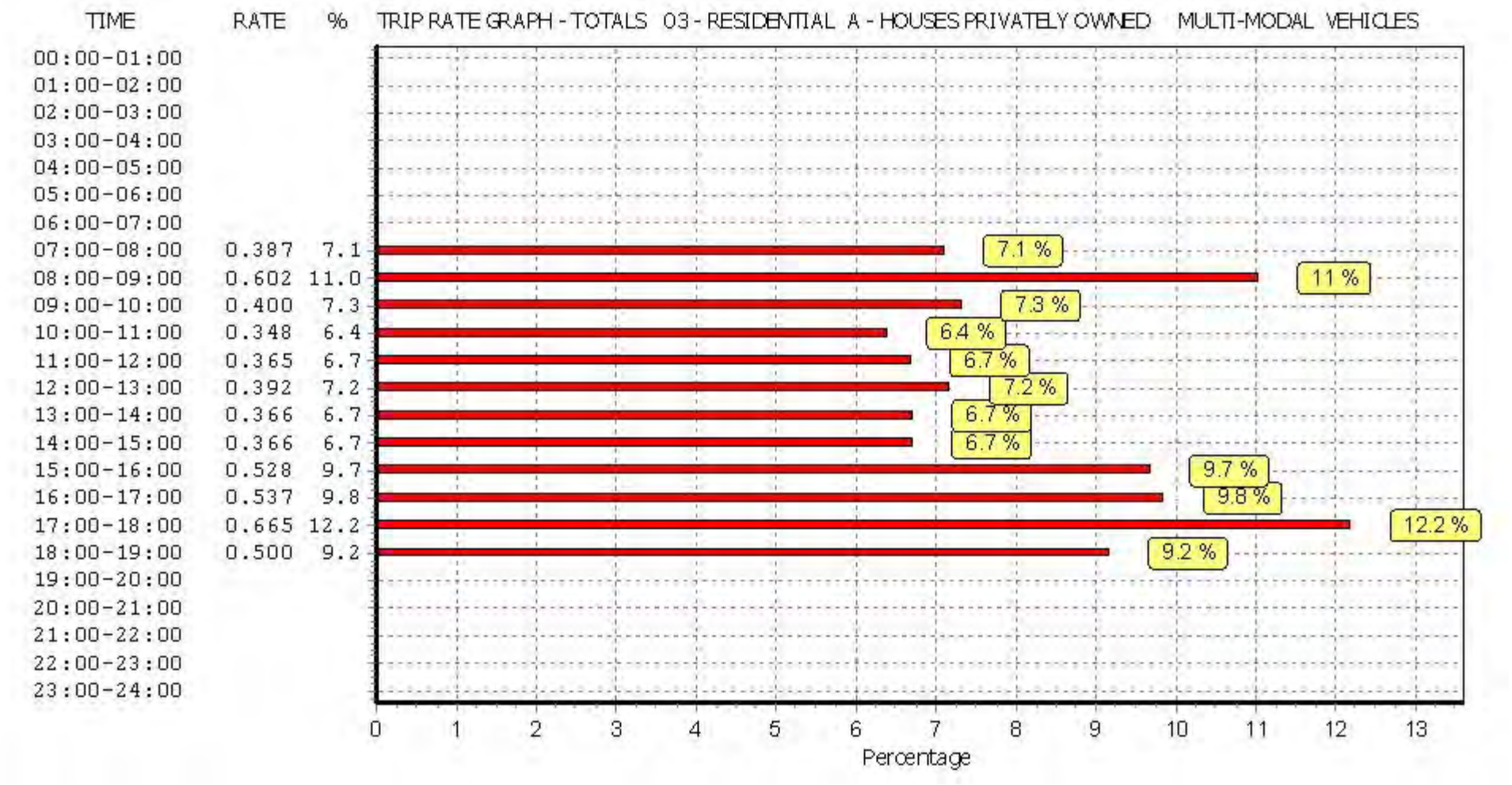

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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	13	170	0.004	13	170	0.003	13	170	0.007
08:00 - 09:00	13	170	0.003	13	170	0.003	13	170	0.006
09:00 - 10:00	13	170	0.004	13	170	0.003	13	170	0.007
10:00 - 11:00	13	170	0.003	13	170	0.003	13	170	0.006
11:00 - 12:00	13	170	0.001	13	170	0.002	13	170	0.003
12:00 - 13:00	13	170	0.006	13	170	0.005	13	170	0.011
13:00 - 14:00	13	170	0.003	13	170	0.006	13	170	0.009
14:00 - 15:00	13	170	0.002	13	170	0.003	13	170	0.005
15:00 - 16:00	13	170	0.002	13	170	0.001	13	170	0.003
16:00 - 17:00	13	170	0.002	13	170	0.001	13	170	0.003
17:00 - 18:00	13	170	0.000	13	170	0.001	13	170	0.001
18:00 - 19:00	13	170	0.000	13	170	0.000	13	170	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.030			0.031			0.061

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Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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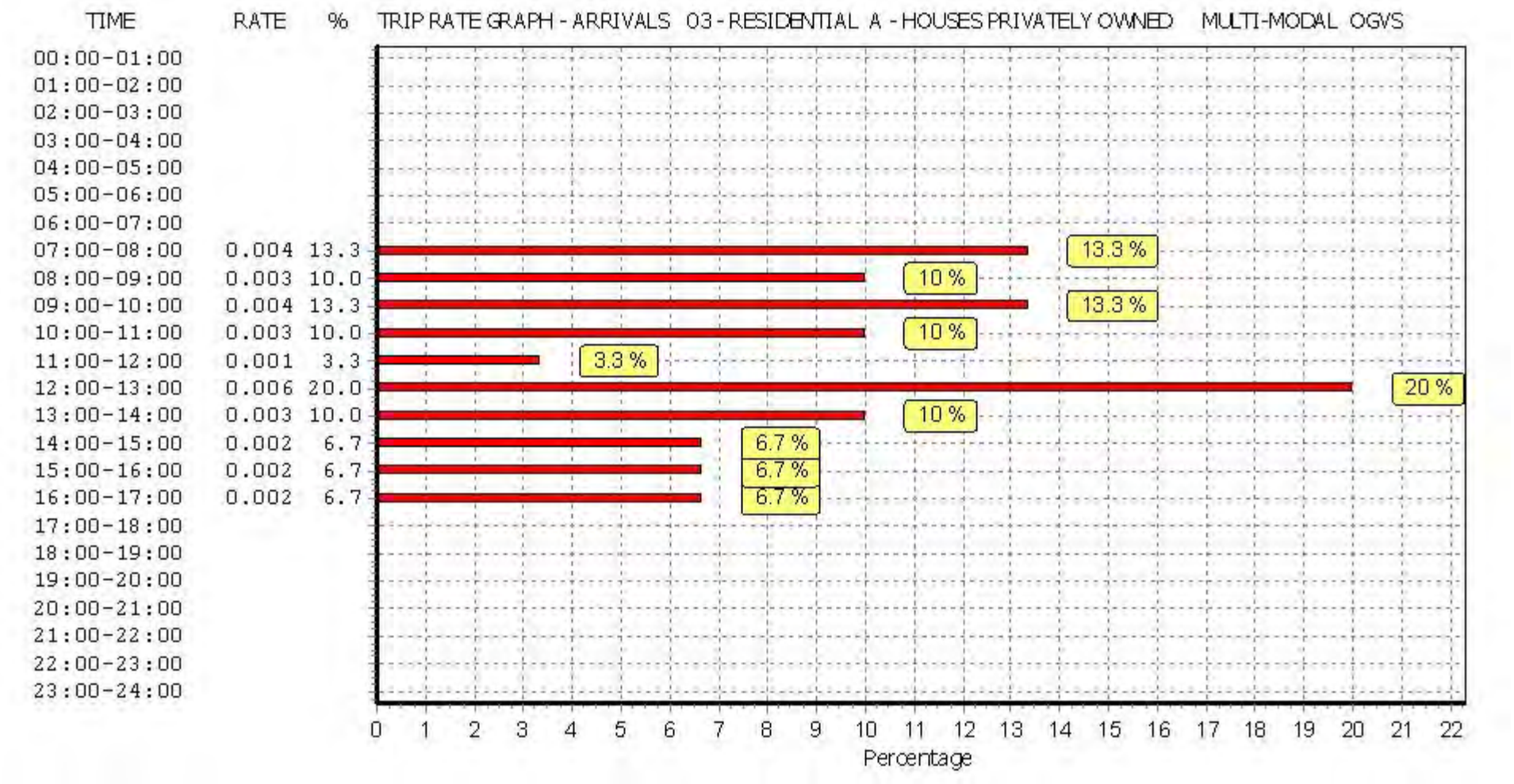

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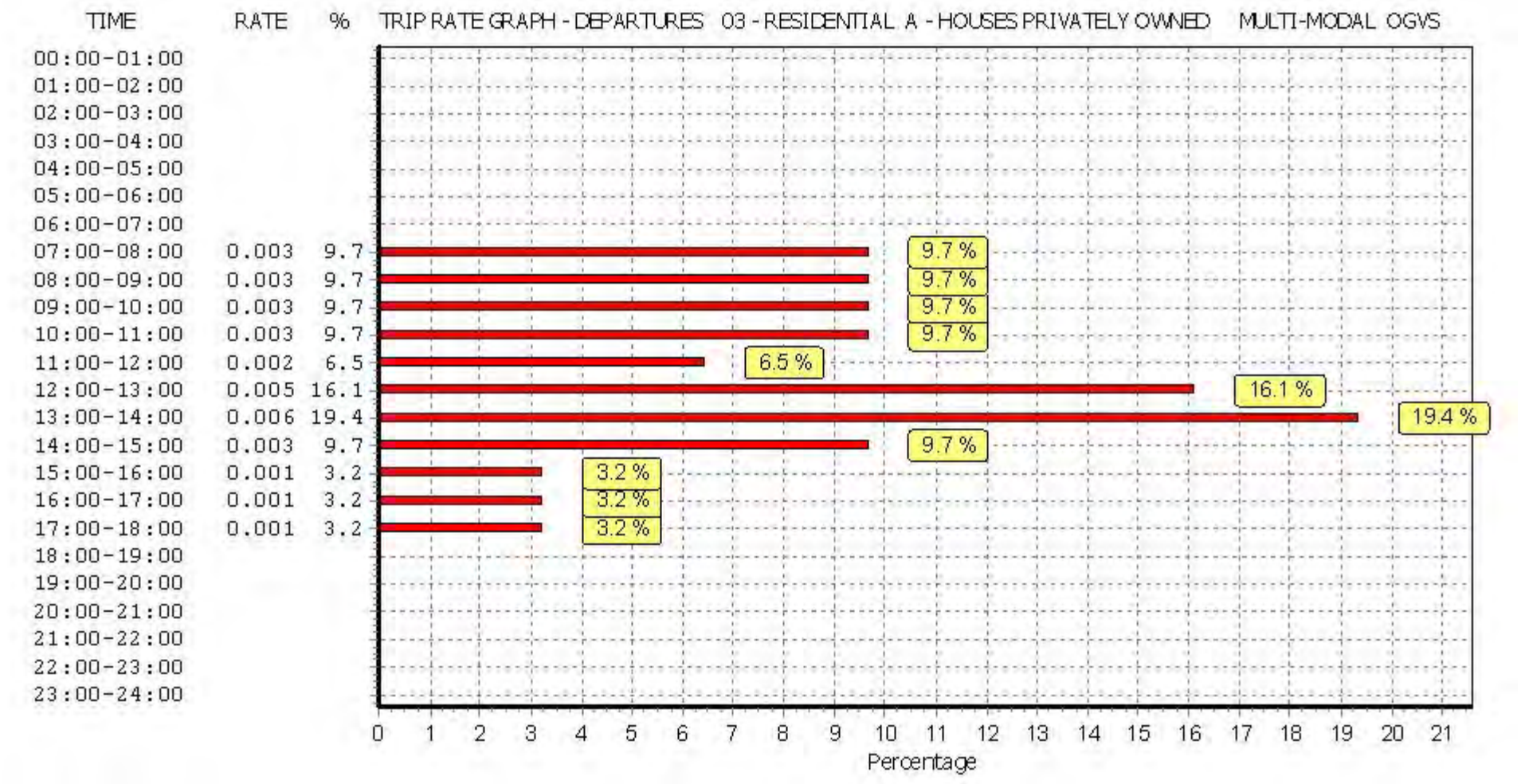

This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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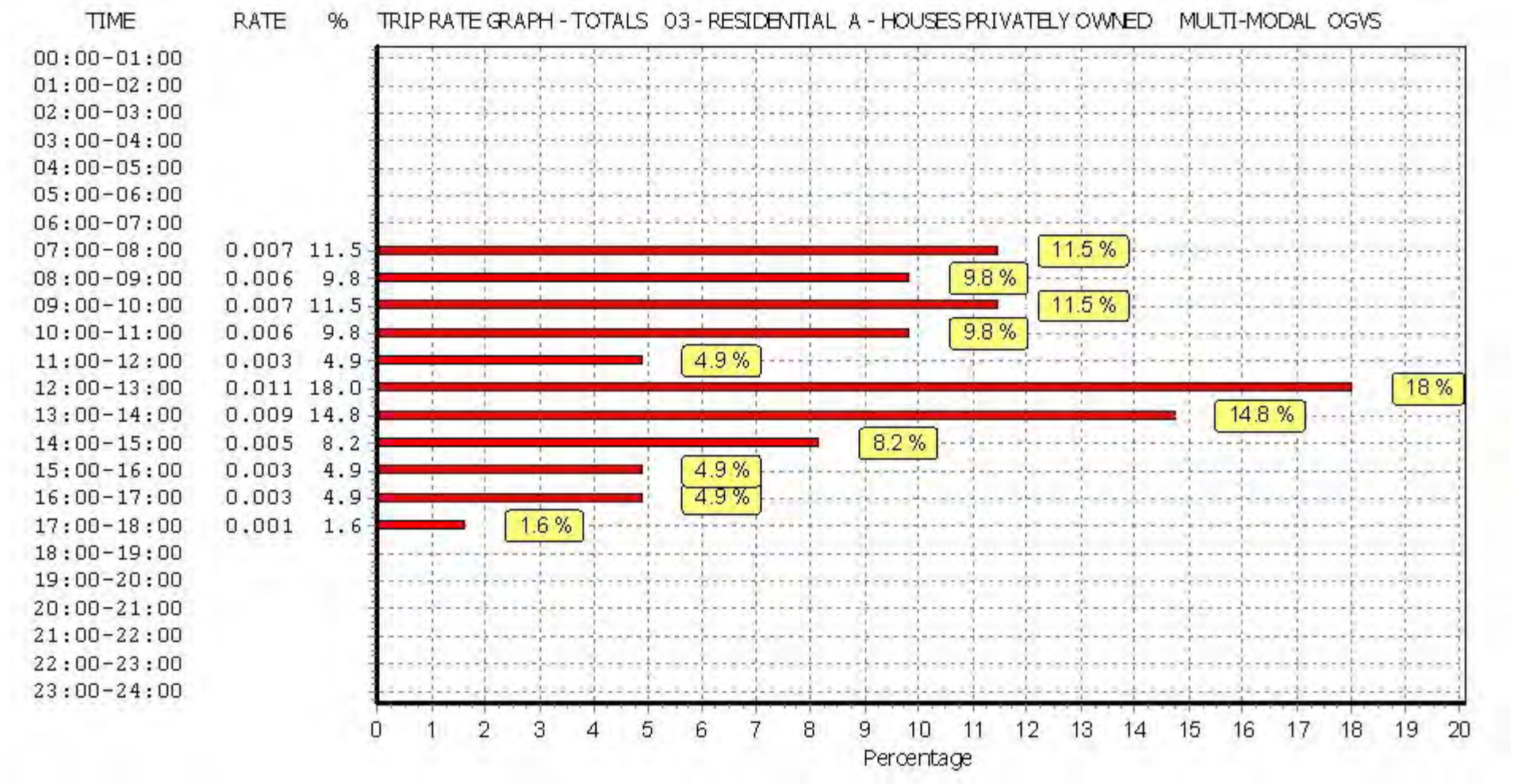


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

TRIP RATE 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	13	170	0.000	13	170	0.000	13	170	0.000
08:00 - 09:00	13	170	0.001	13	170	0.001	13	170	0.002
09:00 - 10:00	13	170	0.000	13	170	0.000	13	170	0.000
10:00 - 11:00	13	170	0.000	13	170	0.000	13	170	0.000
11:00 - 12:00	13	170	0.000	13	170	0.000	13	170	0.000
12:00 - 13:00	13	170	0.000	13	170	0.000	13	170	0.000
13:00 - 14:00	13	170	0.000	13	170	0.000	13	170	0.000
14:00 - 15:00	13	170	0.000	13	170	0.000	13	170	0.000
15:00 - 16:00	13	170	0.001	13	170	0.000	13	170	0.001
16:00 - 17:00	13	170	0.000	13	170	0.000	13	170	0.000
17:00 - 18:00	13	170	0.000	13	170	0.000	13	170	0.000
18:00 - 19:00	13	170	0.000	13	170	0.000	13	170	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.002			0.001			0.003

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.

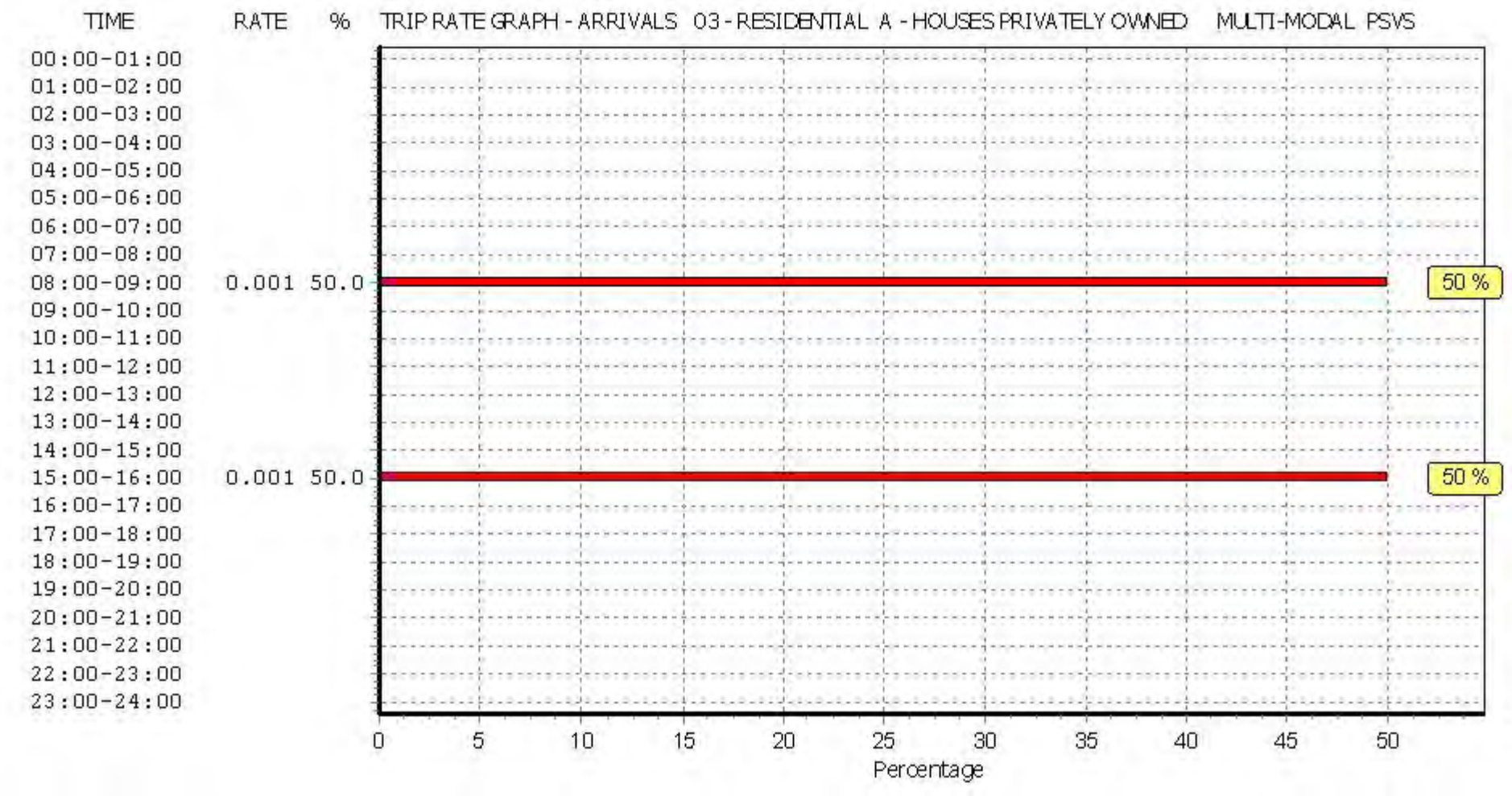
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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

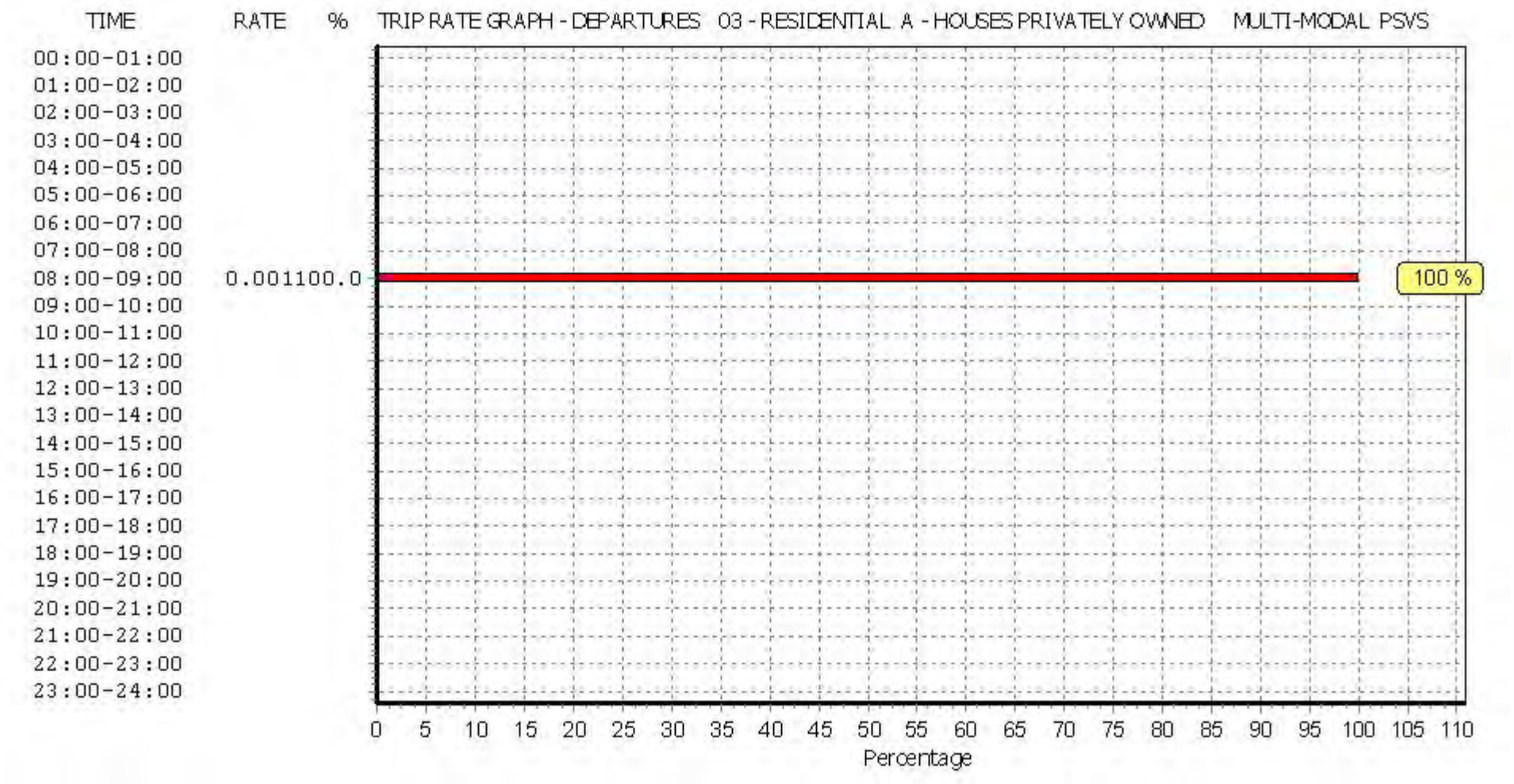
Trip rate parameter range selected:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704

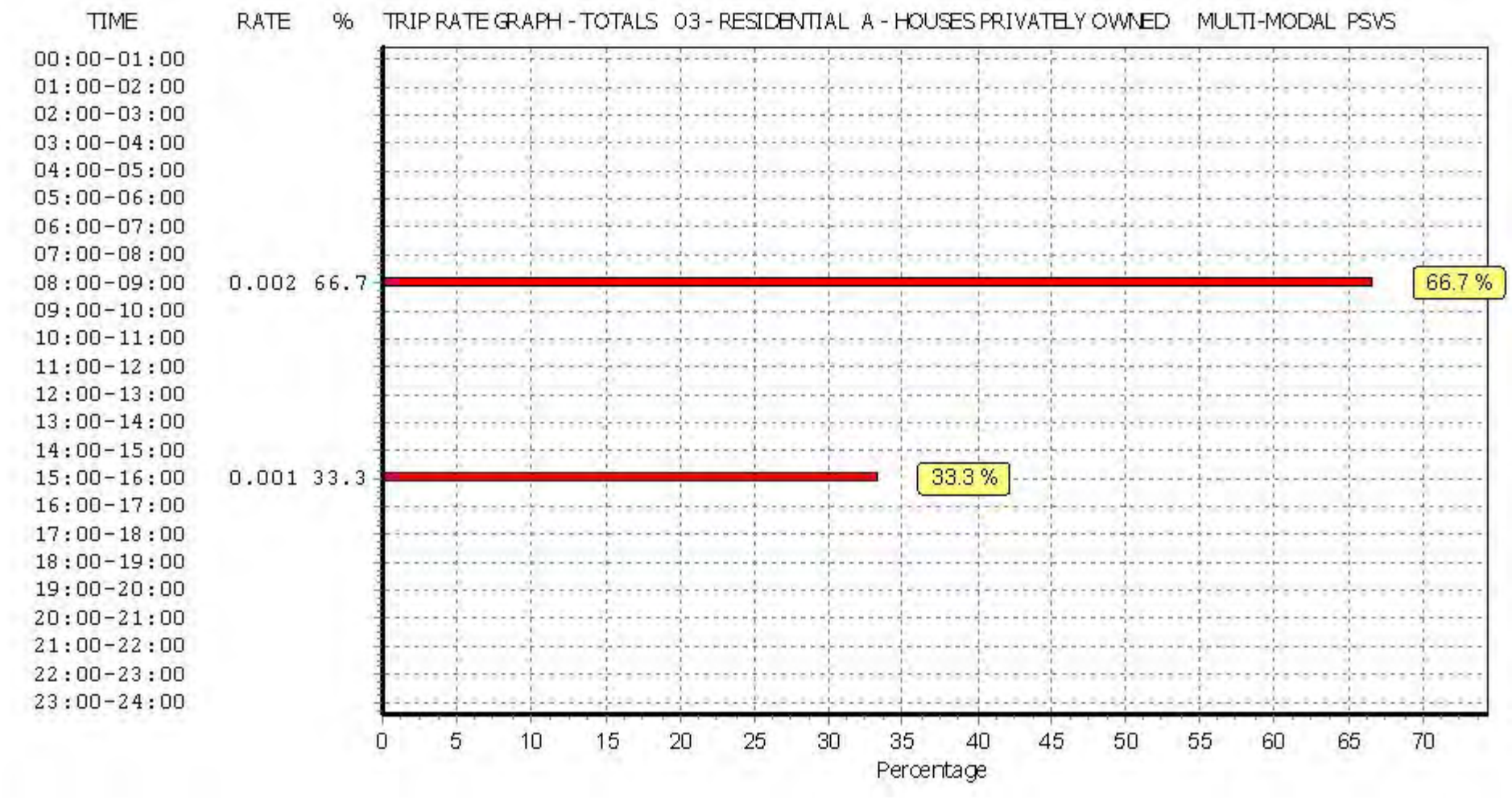


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	13	170	0.007	13	170	0.008	13	170	0.015
08:00 - 09:00	13	170	0.005	13	170	0.017	13	170	0.022
09:00 - 10:00	13	170	0.004	13	170	0.004	13	170	0.008
10:00 - 11:00	13	170	0.001	13	170	0.005	13	170	0.006
11:00 - 12:00	13	170	0.005	13	170	0.003	13	170	0.008
12:00 - 13:00	13	170	0.005	13	170	0.005	13	170	0.010
13:00 - 14:00	13	170	0.005	13	170	0.005	13	170	0.010
14:00 - 15:00	13	170	0.004	13	170	0.003	13	170	0.007
15:00 - 16:00	13	170	0.019	13	170	0.012	13	170	0.031
16:00 - 17:00	13	170	0.013	13	170	0.007	13	170	0.020
17:00 - 18:00	13	170	0.014	13	170	0.014	13	170	0.028
18:00 - 19:00	13	170	0.014	13	170	0.007	13	170	0.021
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.096			0.090			0.186

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.

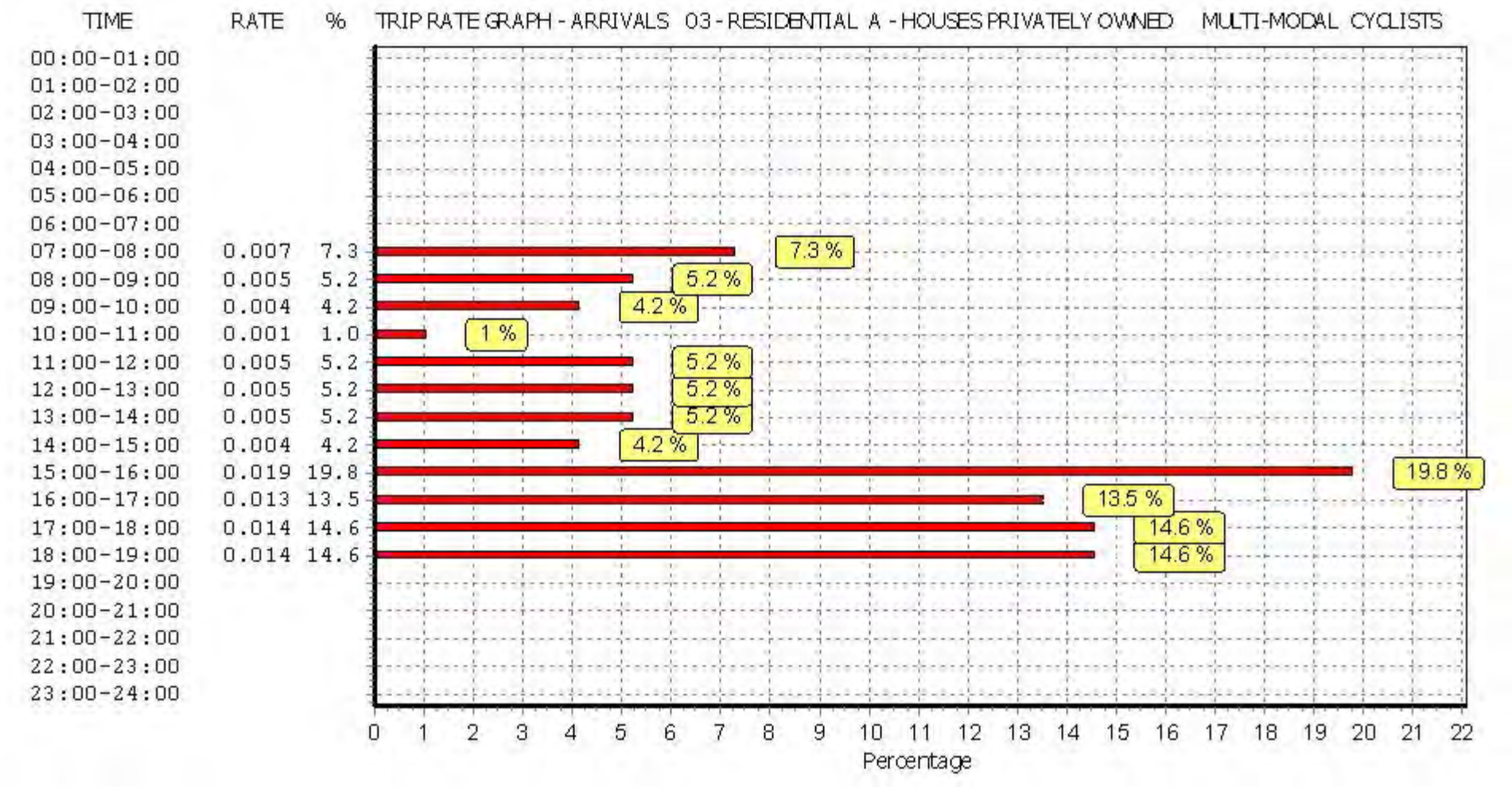
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

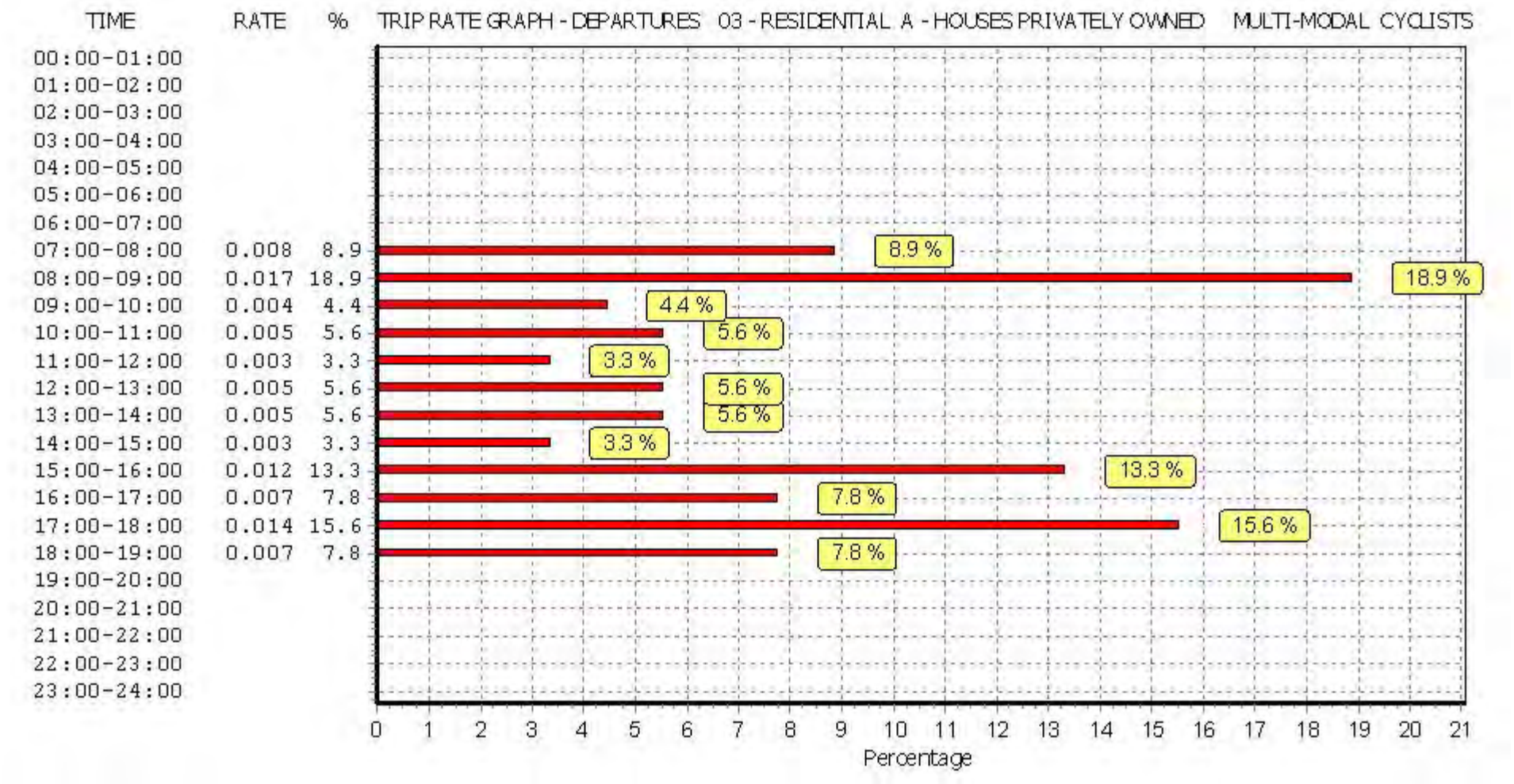
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



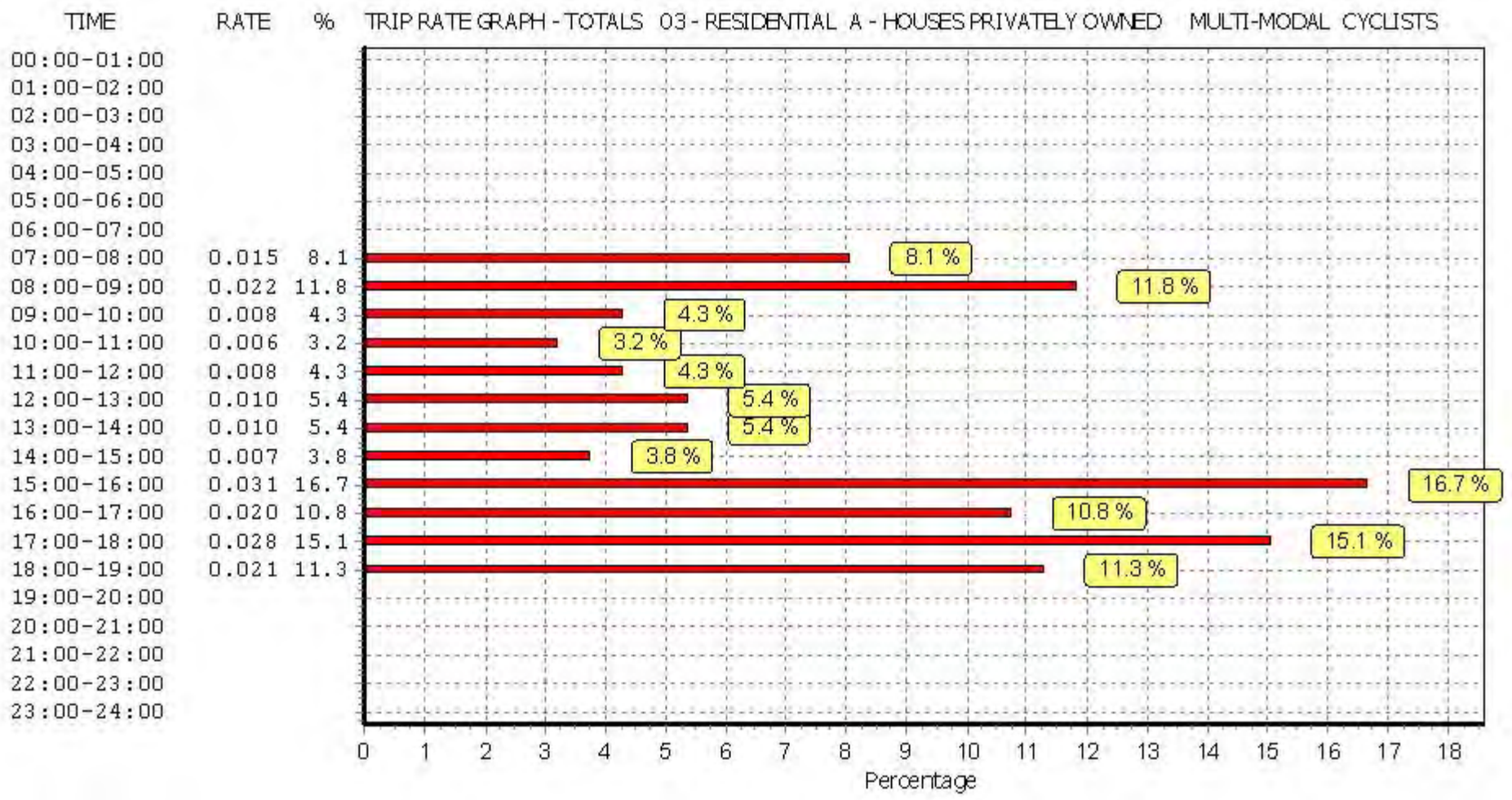
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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	13	170	0.093	13	170	0.357	13	170	0.450
08:00 - 09:00	13	170	0.211	13	170	0.660	13	170	0.871
09:00 - 10:00	13	170	0.206	13	170	0.287	13	170	0.493
10:00 - 11:00	13	170	0.193	13	170	0.251	13	170	0.444
11:00 - 12:00	13	170	0.232	13	170	0.225	13	170	0.457
12:00 - 13:00	13	170	0.250	13	170	0.241	13	170	0.491
13:00 - 14:00	13	170	0.254	13	170	0.214	13	170	0.468
14:00 - 15:00	13	170	0.238	13	170	0.229	13	170	0.467
15:00 - 16:00	13	170	0.502	13	170	0.300	13	170	0.802
16:00 - 17:00	13	170	0.460	13	170	0.296	13	170	0.756
17:00 - 18:00	13	170	0.548	13	170	0.325	13	170	0.873
18:00 - 19:00	13	170	0.367	13	170	0.330	13	170	0.697
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.554			3.715			7.269

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.

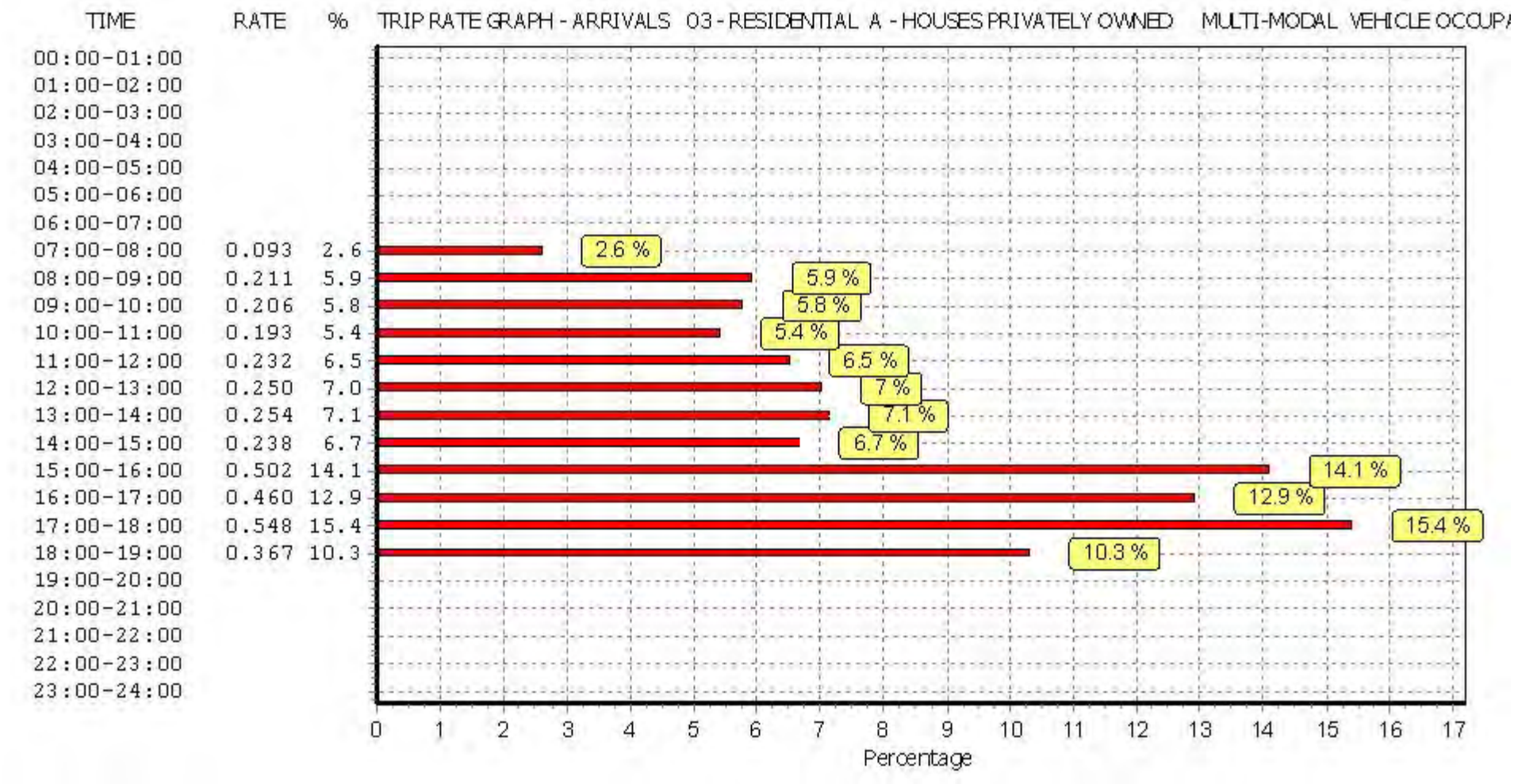
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

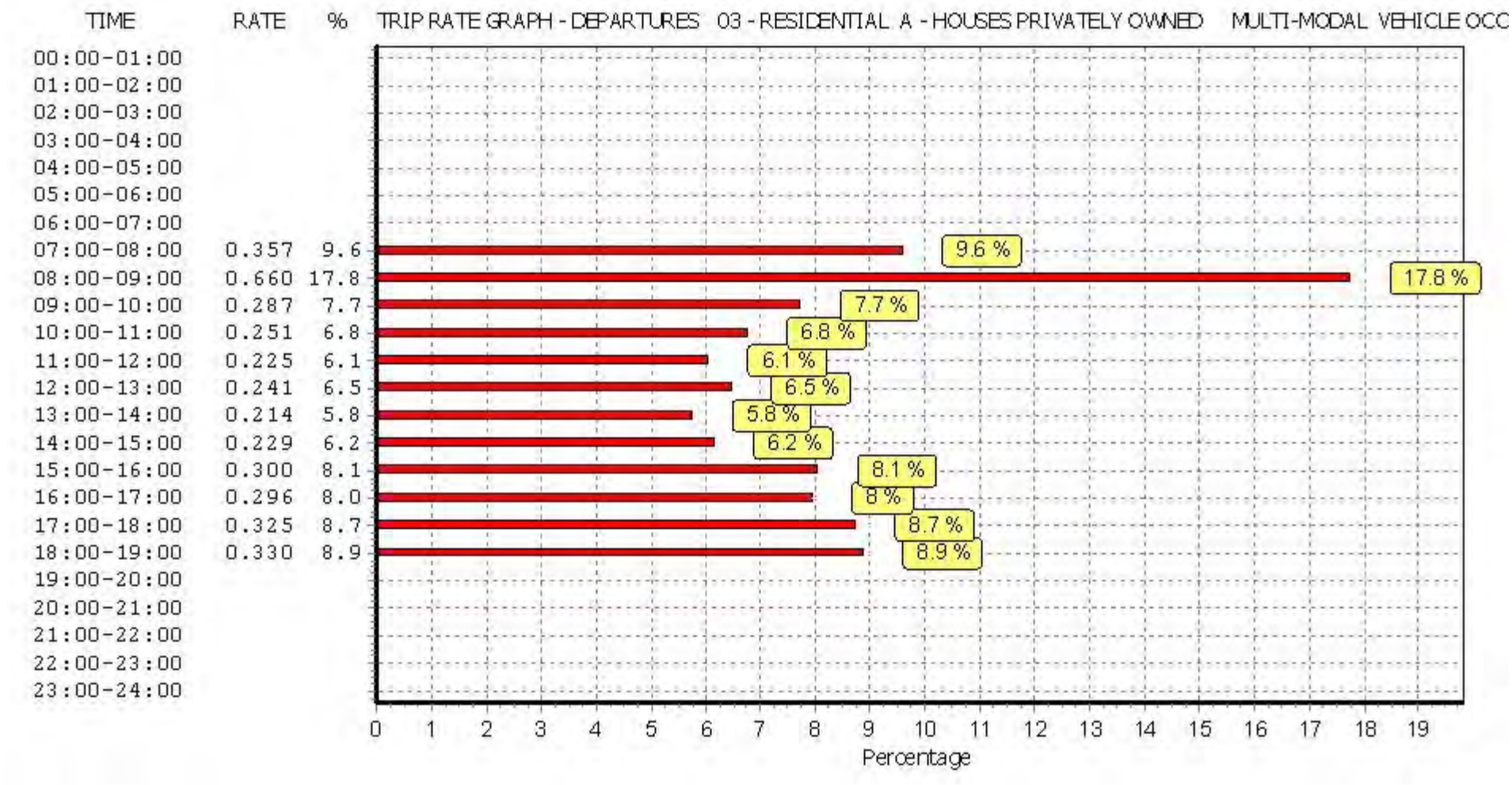
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



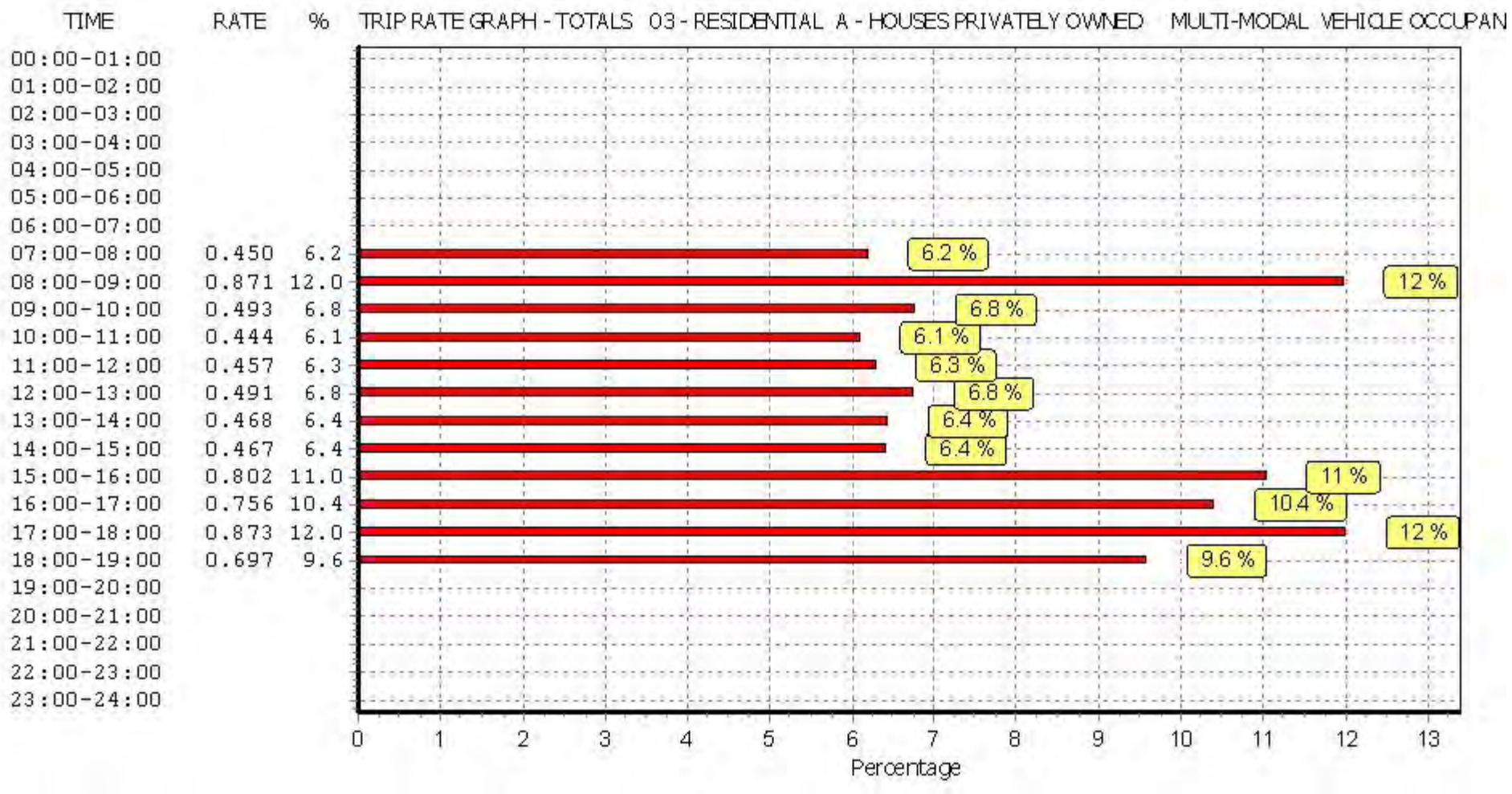
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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	13	170	0.029	13	170	0.053	13	170	0.082
08:00 - 09:00	13	170	0.043	13	170	0.171	13	170	0.214
09:00 - 10:00	13	170	0.039	13	170	0.054	13	170	0.093
10:00 - 11:00	13	170	0.035	13	170	0.034	13	170	0.069
11:00 - 12:00	13	170	0.028	13	170	0.038	13	170	0.066
12:00 - 13:00	13	170	0.033	13	170	0.030	13	170	0.063
13:00 - 14:00	13	170	0.028	13	170	0.028	13	170	0.056
14:00 - 15:00	13	170	0.039	13	170	0.036	13	170	0.075
15:00 - 16:00	13	170	0.186	13	170	0.062	13	170	0.248
16:00 - 17:00	13	170	0.067	13	170	0.047	13	170	0.114
17:00 - 18:00	13	170	0.061	13	170	0.044	13	170	0.105
18:00 - 19:00	13	170	0.052	13	170	0.046	13	170	0.098
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.640			0.643			1.283

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.

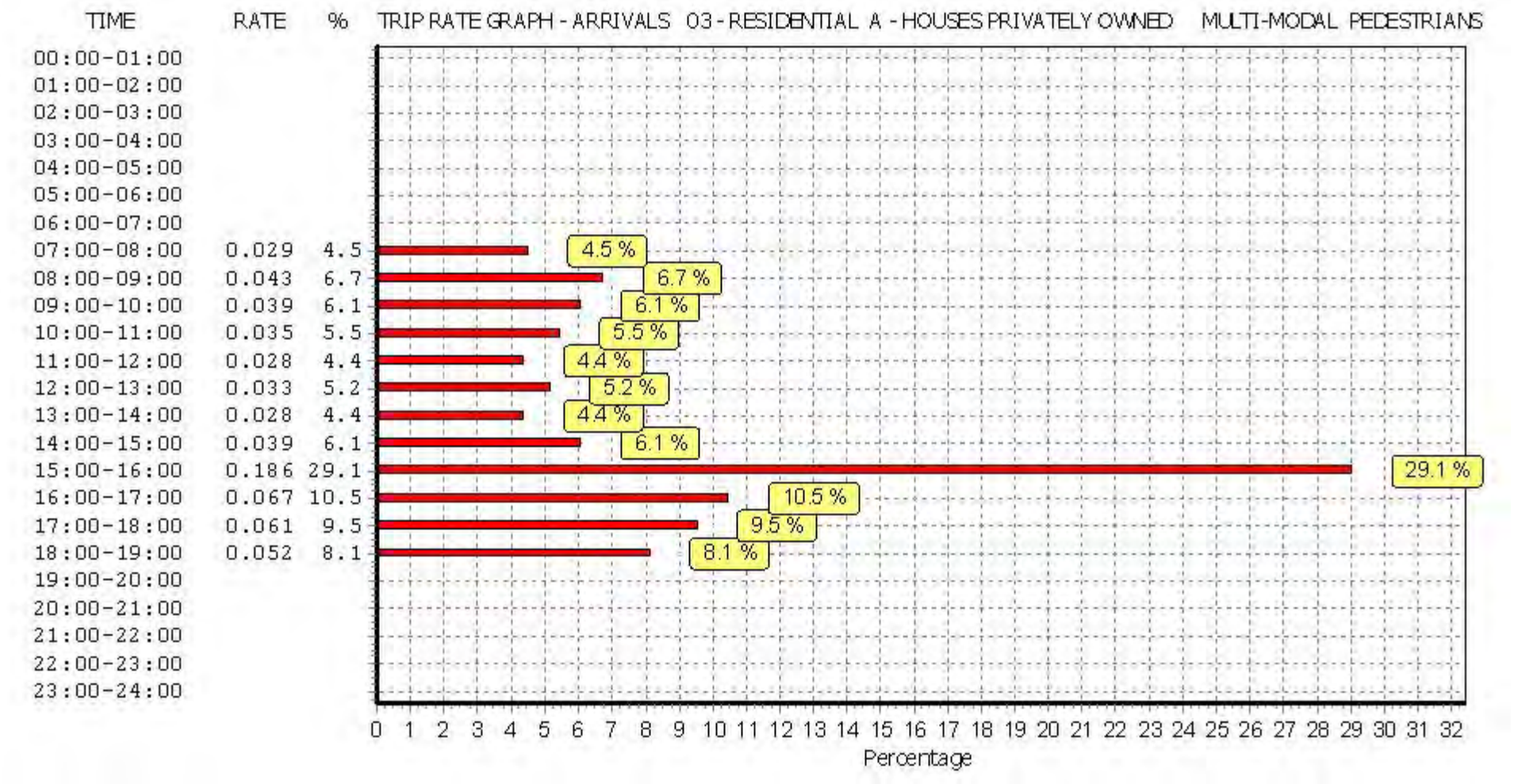
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

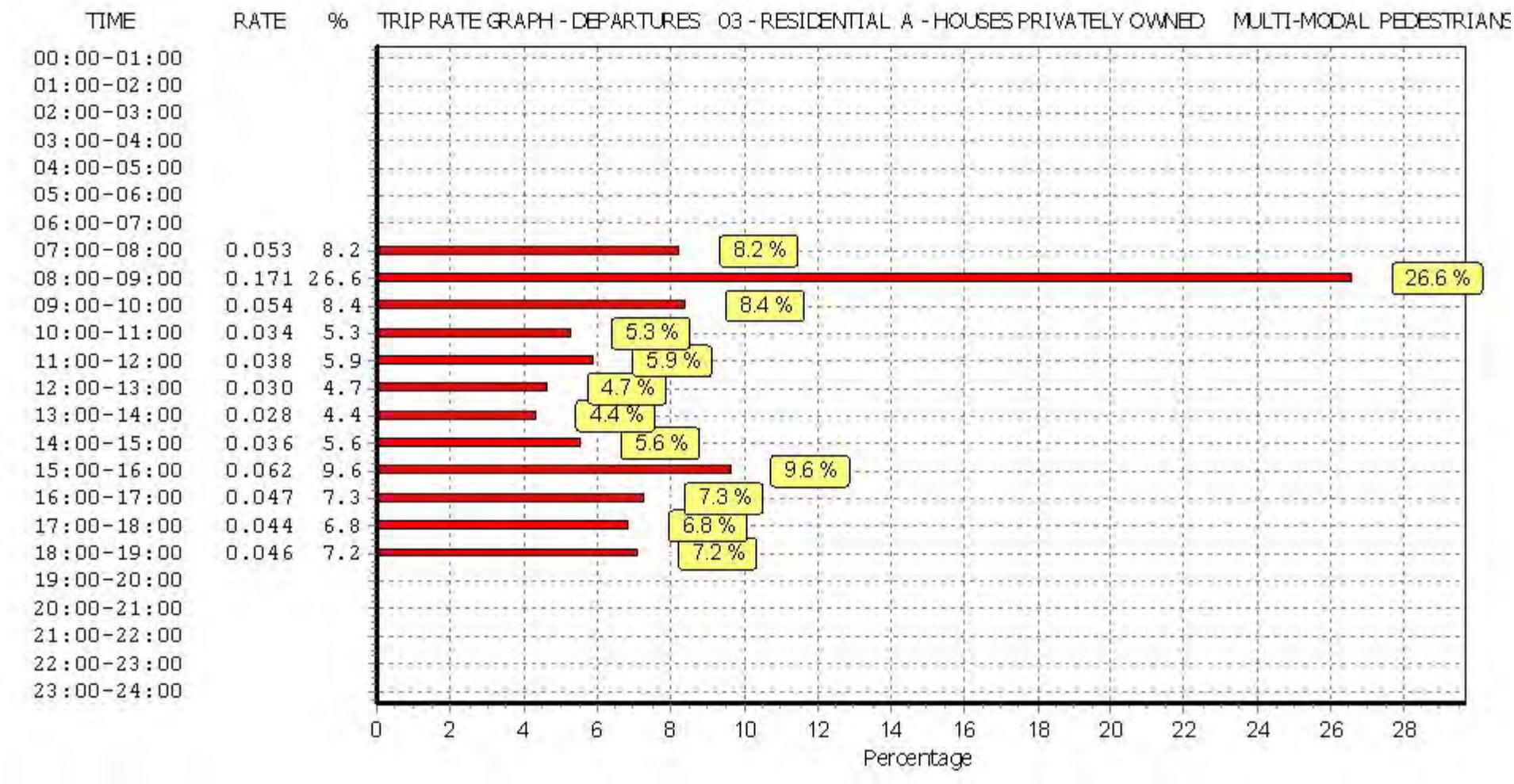
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



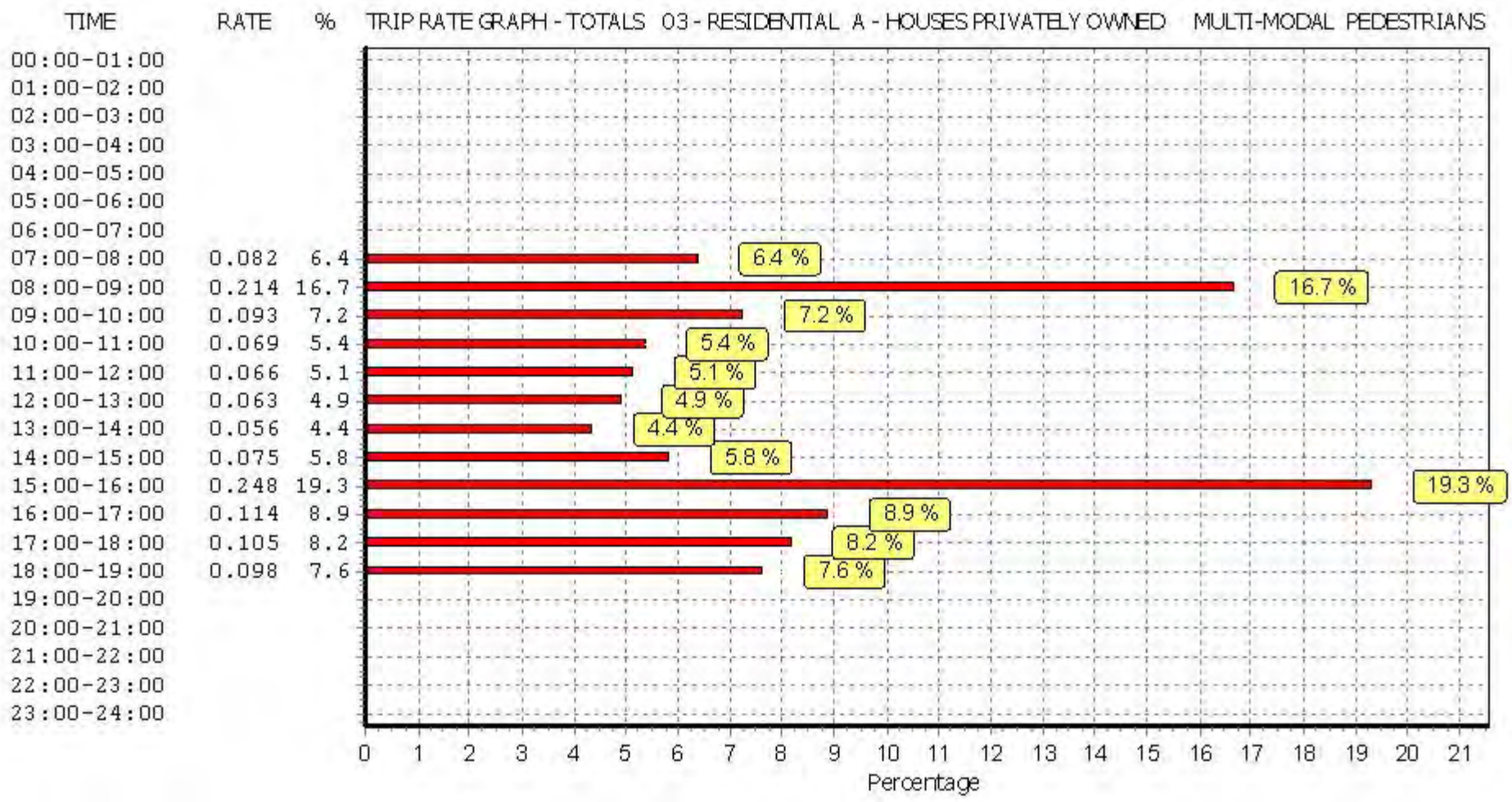
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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	13	170	0.000	13	170	0.013	13	170	0.013
08:00 - 09:00	13	170	0.003	13	170	0.018	13	170	0.021
09:00 - 10:00	13	170	0.002	13	170	0.008	13	170	0.010
10:00 - 11:00	13	170	0.005	13	170	0.007	13	170	0.012
11:00 - 12:00	13	170	0.005	13	170	0.009	13	170	0.014
12:00 - 13:00	13	170	0.008	13	170	0.008	13	170	0.016
13:00 - 14:00	13	170	0.007	13	170	0.004	13	170	0.011
14:00 - 15:00	13	170	0.005	13	170	0.002	13	170	0.007
15:00 - 16:00	13	170	0.012	13	170	0.007	13	170	0.019
16:00 - 17:00	13	170	0.013	13	170	0.002	13	170	0.015
17:00 - 18:00	13	170	0.018	13	170	0.005	13	170	0.023
18:00 - 19:00	13	170	0.009	13	170	0.002	13	170	0.011
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.087			0.085			0.172

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.

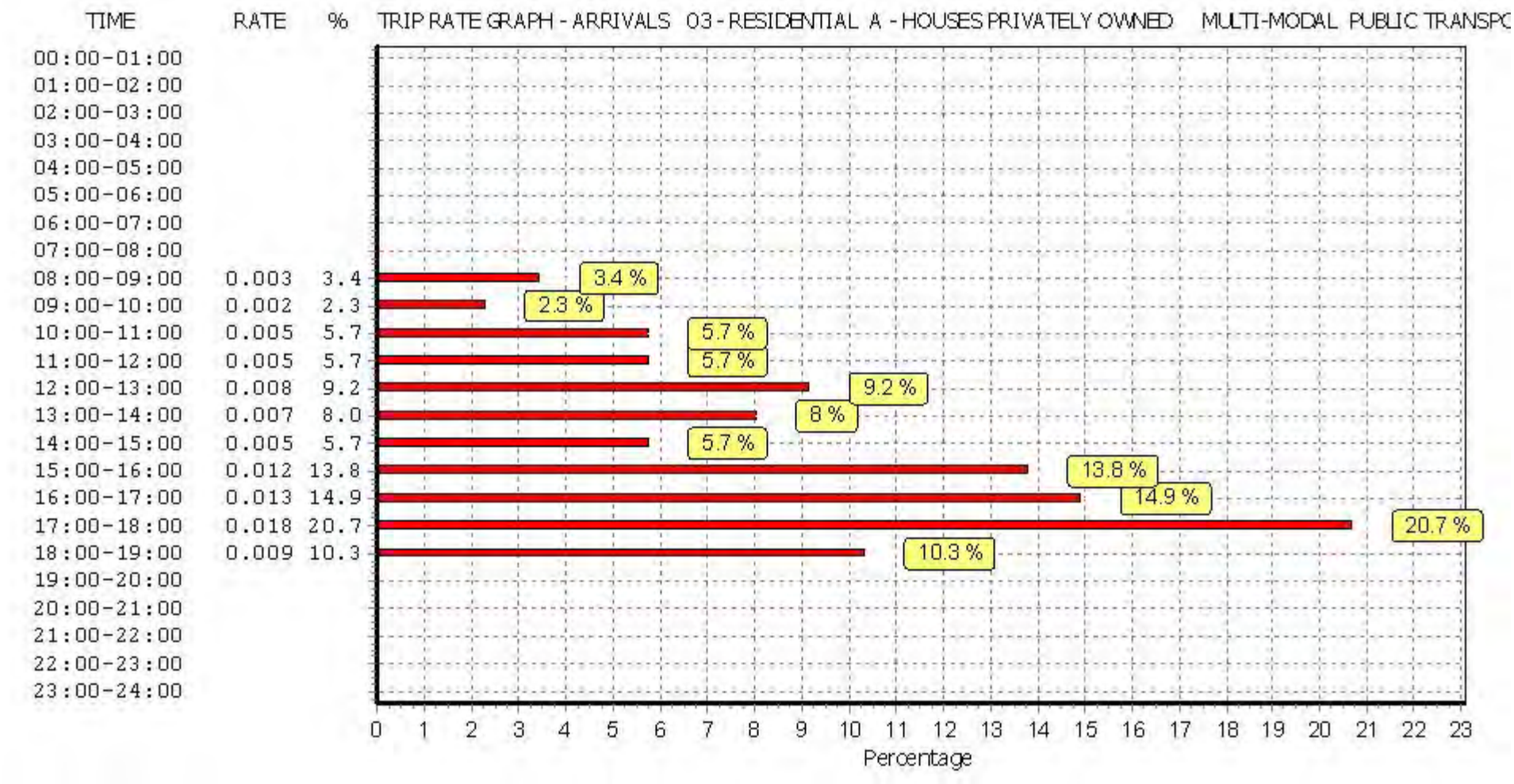
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

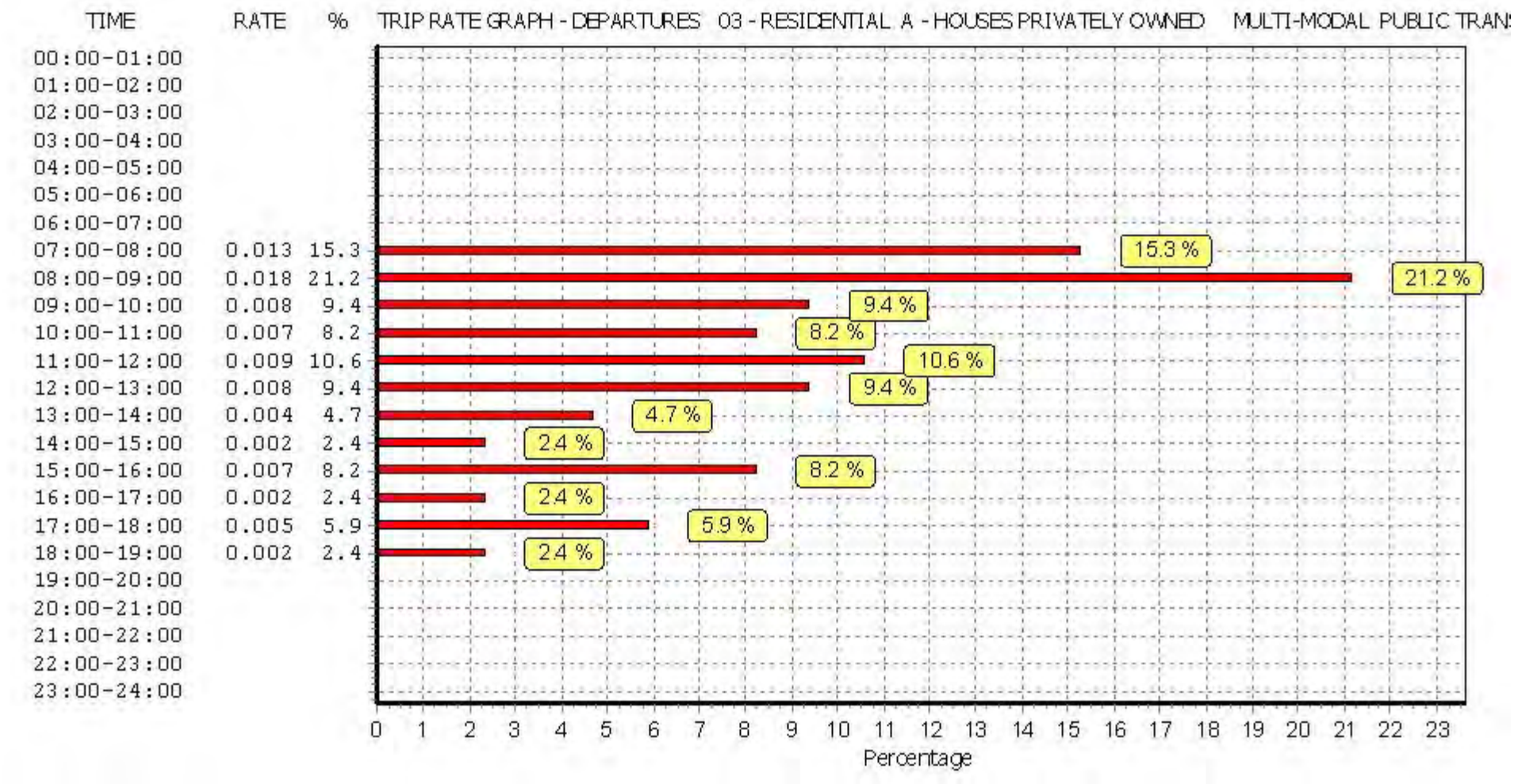
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



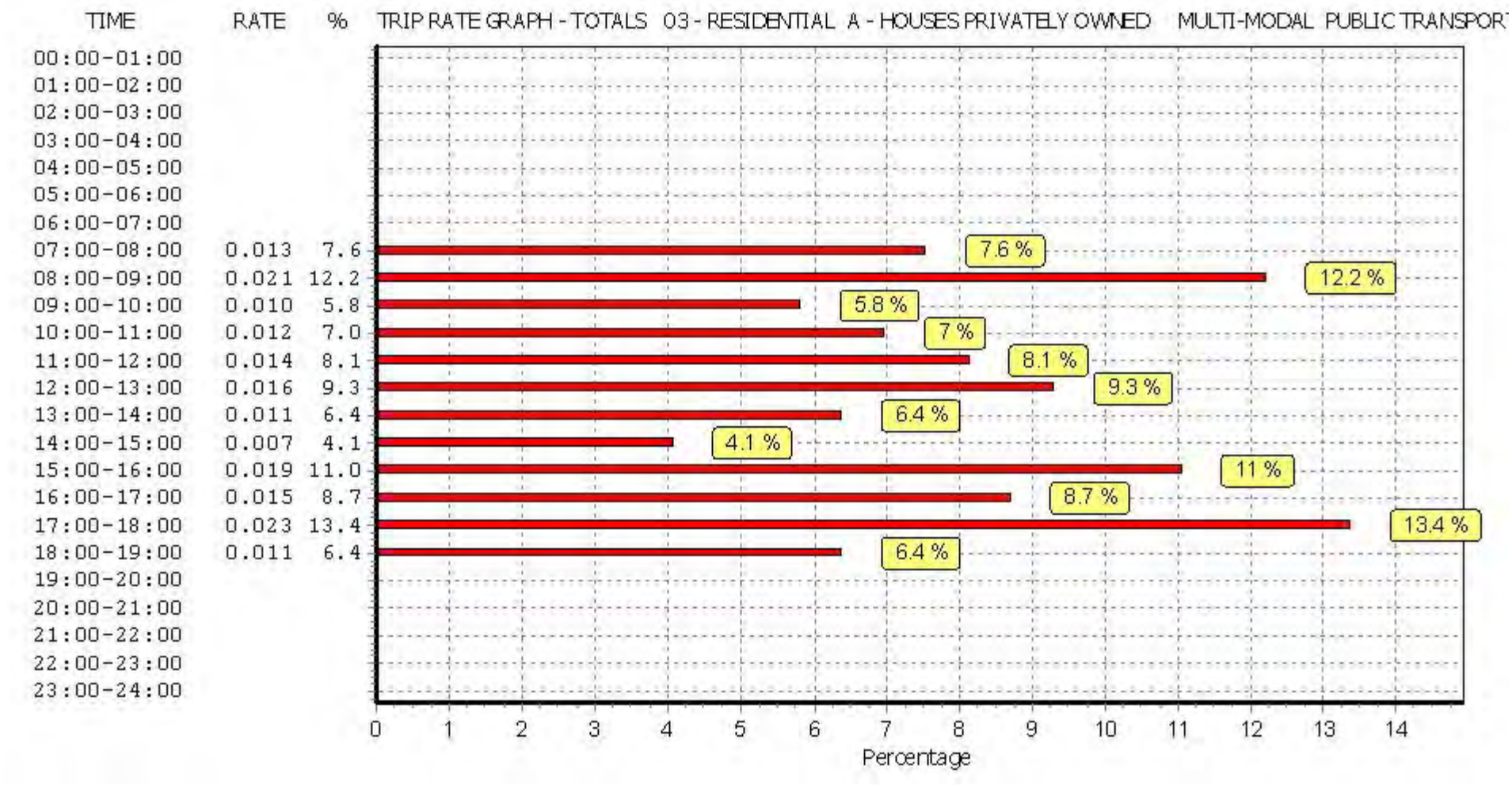
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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	13	170	0.128	13	170	0.430	13	170	0.558
08:00 - 09:00	13	170	0.263	13	170	0.866	13	170	1.129
09:00 - 10:00	13	170	0.251	13	170	0.352	13	170	0.603
10:00 - 11:00	13	170	0.234	13	170	0.297	13	170	0.531
11:00 - 12:00	13	170	0.271	13	170	0.275	13	170	0.546
12:00 - 13:00	13	170	0.296	13	170	0.285	13	170	0.581
13:00 - 14:00	13	170	0.293	13	170	0.251	13	170	0.544
14:00 - 15:00	13	170	0.286	13	170	0.270	13	170	0.556
15:00 - 16:00	13	170	0.718	13	170	0.381	13	170	1.099
16:00 - 17:00	13	170	0.554	13	170	0.352	13	170	0.906
17:00 - 18:00	13	170	0.641	13	170	0.389	13	170	1.030
18:00 - 19:00	13	170	0.442	13	170	0.385	13	170	0.827
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.377			4.533			8.910

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.

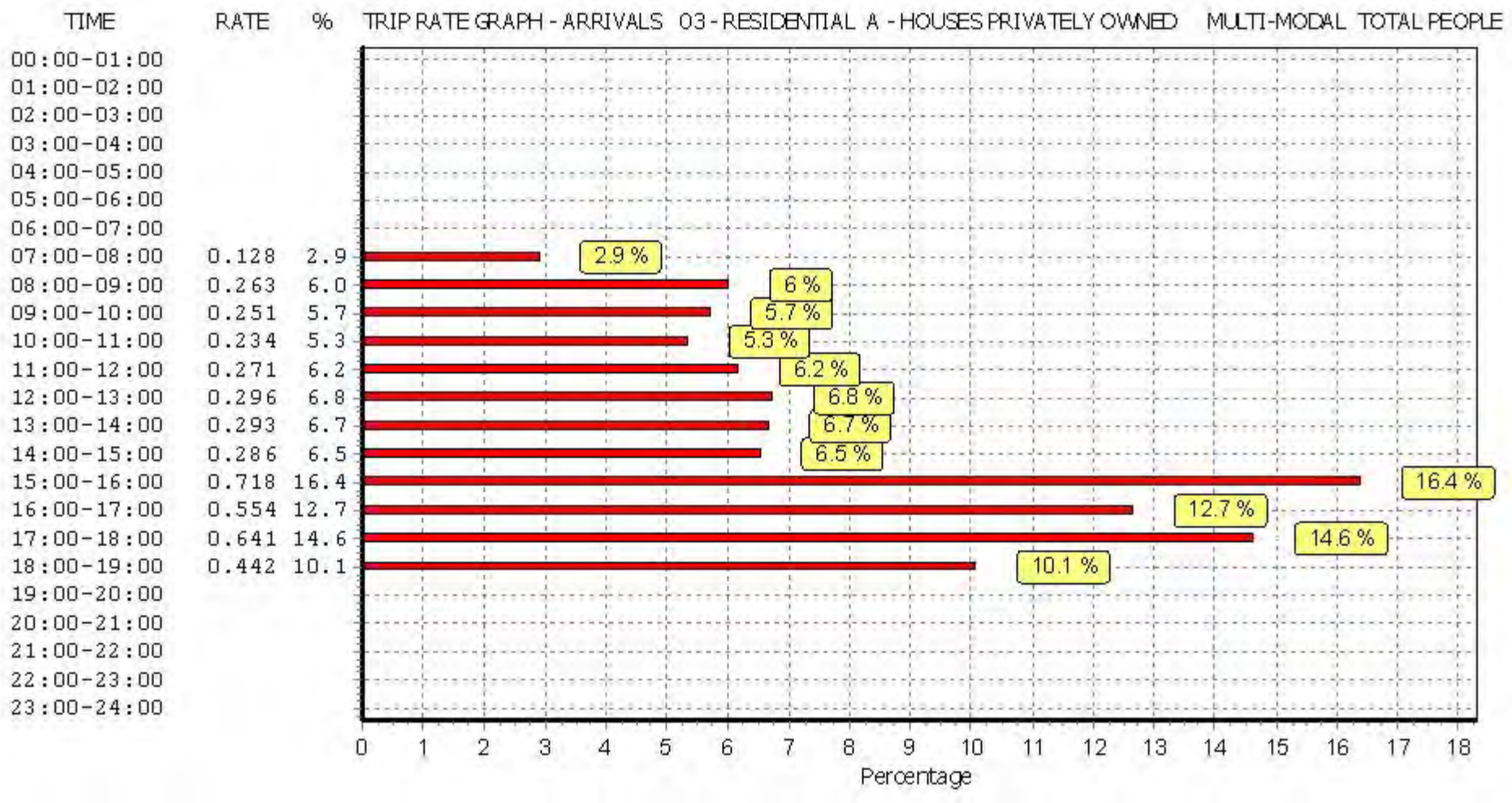
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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:	101 - 237 (units:)
Survey date date range:	01/01/05 - 22/09/12
Number of weekdays (Monday-Friday):	13
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

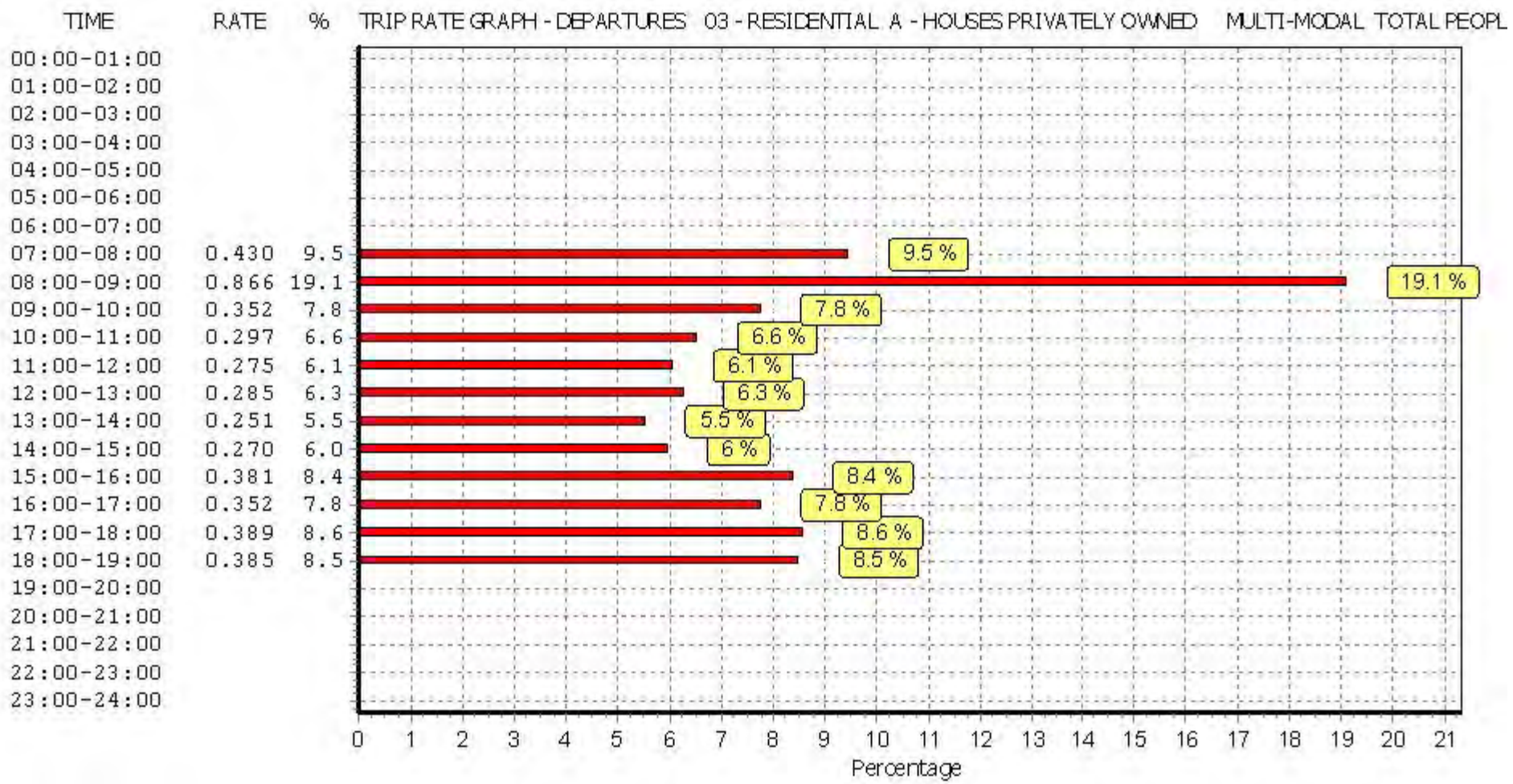
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



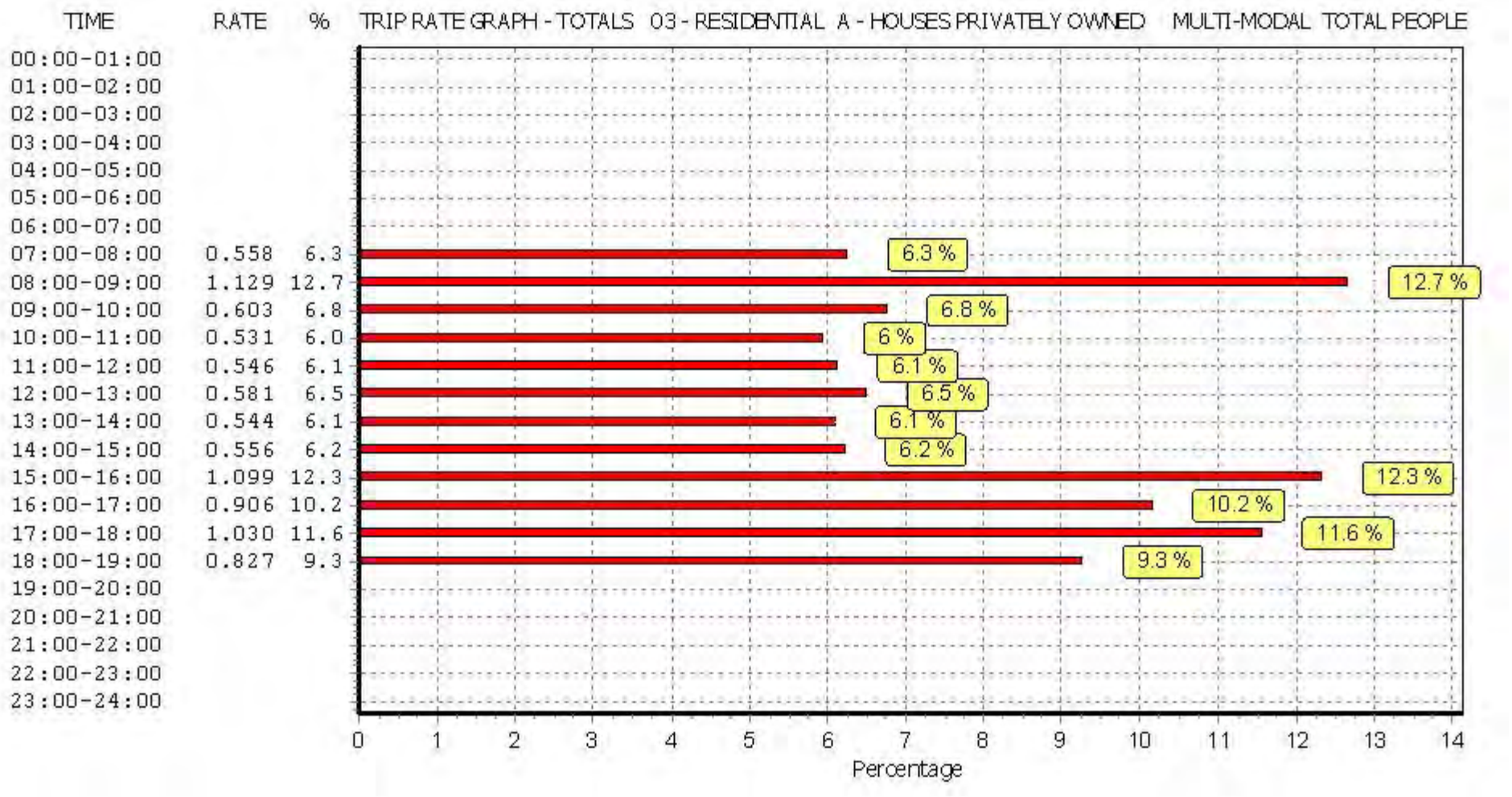
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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.

Waterman Boreham Ltd 11 Peter St Manchester Licence No: 701704



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

PICADY REPORTS

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 5.0 (JUNE 2010)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE SALES
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: software@trl.co.uk

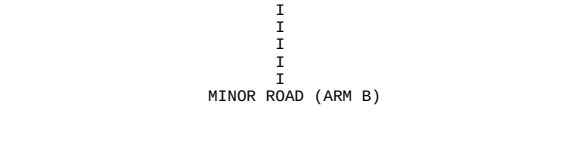
Run with file:-
"K:\Projects\CIV - 15278 Minor Projects\Cotswold\Collin Lane-Willersey Assessments 03.07.14.vpi"
(drive-on-the-left) at 09:34:47 on Thursday, 3 July 2014

RUN INFORMATION

RUN TITLE : Collin Lane, Willersey
LOCATION :
DATE : 23/06/14
CLIENT :
ENUMERATOR : mrfaf [MR-26]
JOB NUMBER :
STATUS :
DESCRIPTION :

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Arm A
ARM B IS Arm B
ARM C IS Arm C

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C
ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 6.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 99.00 M.
- BLOCKS TRAFFIC (SPACES)	YES (0)
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 19.0 M.
- VISIBILITY TO RIGHT	(VB-A) 50.0 M.
- LANE 1 WIDTH	(WB-C) 2.75 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
639.01	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
495.53	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
631.30	0.24	0.24

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2019 AM Peak

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.74	2.61	1.74
ARM B	15.00	45.00	75.00	0.28	0.41	0.28
ARM C	15.00	45.00	75.00	1.34	2.01	1.34

Demand set: 2019 AM Peak

TIME	FROM/TO	ARM A	ARM B	ARM C
08.00 - 09.30		TURNING PROPORTIONS (PERCENTAGE OF H.V.S)		
	ARM A	0.000	0.036	0.964
		0.0	5.0	134.0
		(0.0)	(0.0)	(18.0)
	ARM B	0.455	0.000	0.545
		10.0	0.0	12.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.972	0.028	0.000
		104.0	3.0	0.0
		(43.6)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR DEMAND SET 2019 AM Peak
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	0.28	8.76	0.032		0.00	0.03	0.5		0.12
C-AB	0.04	10.71	0.004		0.00	0.00	0.1		0.09
C-A	1.30								
A-B	0.06								
A-C	1.68								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	0.33	8.63	0.038		0.03	0.04	0.6		0.12
C-AB	0.05	10.75	0.005		0.00	0.01	0.1		0.09
C-A	1.55								
A-B	0.07								
A-C	2.01								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.40	8.45	0.048		0.04	0.05	0.7		0.12
C-AB	0.07	10.82	0.006		0.01	0.01	0.1		0.09
C-A	1.90								
A-B	0.09								
A-C	2.46								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.40	8.45	0.048		0.05	0.05	0.7		0.12
C-AB	0.07	10.82	0.006		0.01	0.01	0.1		0.09
C-A	1.90								
A-B	0.09								
A-C	2.46								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.33	8.63	0.038		0.05	0.04	0.6		0.12
C-AB	0.05	10.75	0.005		0.01	0.01	0.1		0.09
C-A	1.55								
A-B	0.07								
A-C	2.01								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-AC	0.28	8.76	0.032		0.04	0.03	0.5		0.12
C-AB	0.04	10.71	0.004		0.01	0.00	0.1		0.09
C-A	1.30								
A-B	0.06								
A-C	1.68								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	30.3	20.2	3.6	0.12	3.6	0.12
C-AB	4.8	3.2	0.5	0.10	0.5	0.10
C-A	142.4	95.0				
A-B	6.9	4.6				
A-C	184.4	123.0				
ALL	368.9	245.9	4.1	0.01	4.1	0.01

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
639.01	0.25	0.10

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
495.53	0.23	0.09	0.14	0.33

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
631.30	0.24	0.24

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: 2019 PM Peak

TIME PERIOD BEGINS 17.00 AND ENDS 18.30

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.81	2.72	1.81
ARM B	15.00	45.00	75.00	0.15	0.23	0.15
ARM C	15.00	45.00	75.00	2.00	3.00	2.00

Demand set: 2019 PM Peak

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
17.00 - 18.30	ARM A	0.000	0.069	0.931
		0.0	10.0	135.0
		(0.0)	(0.0)	(12.0)
	ARM B	0.500	0.000	0.500
		6.0	0.0	6.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.931	0.069	0.000
		149.0	11.0	0.0
		(10.5)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2019 PM Peak
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	0.15	8.61	0.017		0.00	0.02	0.3		0.12
C-AB	0.16	11.20	0.015		0.00	0.02	0.2		0.09
C-A	1.84								
A-B	0.13								
A-C	1.69								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	0.18	8.48	0.021		0.02	0.02	0.3		0.12
C-AB	0.20	11.34	0.018		0.02	0.02	0.3		0.09
C-A	2.19								
A-B	0.15								
A-C	2.02								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	0.22	8.29	0.027		0.02	0.03	0.4		0.12
C-AB	0.26	11.54	0.023		0.02	0.03	0.4		0.09
C-A	2.67								
A-B	0.18								
A-C	2.48								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	0.22	8.29	0.027		0.03	0.03	0.4		0.12
C-AB	0.26	11.54	0.023		0.03	0.03	0.4		0.09
C-A	2.67								
A-B	0.18								
A-C	2.48								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
B-AC	0.18	8.48	0.021		0.03	0.02	0.3		0.12
C-AB	0.20	11.34	0.018		0.03	0.02	0.3		0.09
C-A	2.19								
A-B	0.15								
A-C	2.02								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.15-18.30									
B-AC	0.15	8.61	0.017		0.02	0.02	0.3		0.12
C-AB	0.17	11.20	0.015		0.02	0.02	0.3		0.09
C-A	1.84								
A-B	0.13								
A-C	1.69								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0
18.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	16.5	11.0	2.0	0.12	2.0	0.12
C-AB	18.9	12.6	2.0	0.10	2.0	0.10
C-A	201.3	134.2				
A-B	13.8	9.2				
A-C	185.8	123.9				
ALL	436.3	290.9	4.0	0.01	4.0	0.01

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 09:38:18 on 03/07/2014]

APPENDIX B

PICADY Output

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Willersey Ext 90 Units.j9
Path: C:\Users\Owner\Desktop\Projects\WIllersey Extention\Calcs\Updated 90 Unit Calcs
Report generation date: 17/11/2017 15:25:11

»2019, AM
»2019, PM

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2019							
Stream B-AC	0.1	7.72	0.08	A	0.1	7.78	0.05	A
Stream C-AB	0.0	5.69	0.01	A	0.1	5.53	0.04	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	18/09/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	LAPTOP-7DHPGMOJ\Owner
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019	AM	Future year with development	ONE HOUR	08:00	09:30	15	✓
D2	2019	PM	Future year with development	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2019, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			99.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.75	19	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	496	0.090	0.228	0.144	0.326
1	B-C	639	0.098	0.248	-	-
1	C-B	631	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019	AM	Future year with development	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	142	100.000
B		ONE HOUR	✓	39	100.000
C		ONE HOUR	✓	110	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	8	134
	B	17	0	22
	C	104	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	18
	B	0	0	0
	C	44	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.08	7.72	0.1	A	36	54
C-AB	0.01	5.69	0.0	A	6	10
C-A					94	142
A-B					7	11
A-C					123	184

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	29	7	528	0.056	29	0.0	0.1	7.215	A
C-AB	5	1	641	0.008	5	0.0	0.0	5.657	A
C-A	78	19			78				
A-B	6	2			6				
A-C	101	25			101				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	35	9	520	0.067	35	0.1	0.1	7.422	A
C-AB	6	2	644	0.010	6	0.0	0.0	5.623	A
C-A	93	23			93				
A-B	7	2			7				
A-C	120	30			120				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	43	11	509	0.084	43	0.1	0.1	7.718	A
C-AB	8	2	647	0.012	8	0.0	0.0	5.599	A
C-A	113	28			113				
A-B	9	2			9				
A-C	148	37			148				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	43	11	509	0.084	43	0.1	0.1	7.719	A
C-AB	8	2	647	0.012	8	0.0	0.0	5.634	A
C-A	113	28			113				
A-B	9	2			9				
A-C	148	37			148				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	35	9	520	0.067	35	0.1	0.1	7.424	A
C-AB	6	2	643	0.010	6	0.0	0.0	5.691	A
C-A	93	23			93				
A-B	7	2			7				
A-C	120	30			120				

09:15 - 09:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	29	7	528	0.056	29	0.1	0.1	7.226	A
C-AB	5	1	641	0.008	5	0.0	0.0	5.690	A
C-A	78	19			78				
A-B	6	2			6				
A-C	101	25			101				

2019, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019	PM	Future year with development	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	153	100.000
B		ONE HOUR	✓	22	100.000
C		ONE HOUR	✓	169	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	18	135
	B	12	0	10
	C	149	20	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	12
	B	0	0	0
	C	11	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.05	7.78	0.1	A	20	30
C-AB	0.04	5.53	0.1	A	23	35
C-A					132	198
A-B					17	25
A-C					124	186

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	17	4	508	0.033	16	0.0	0.0	7.327	A
C-AB	18	5	671	0.027	18	0.0	0.0	5.514	A
C-A	109	27			109				
A-B	14	3			14				
A-C	102	25			102				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	20	5	499	0.040	20	0.0	0.0	7.512	A
C-AB	22	6	679	0.033	22	0.0	0.0	5.474	A
C-A	130	32			130				
A-B	16	4			16				
A-C	121	30			121				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	24	6	487	0.050	24	0.0	0.1	7.782	A
C-AB	29	7	690	0.042	29	0.0	0.1	5.430	A
C-A	157	39			157				
A-B	20	5			20				
A-C	149	37			149				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	24	6	487	0.050	24	0.1	0.1	7.782	A
C-AB	29	7	690	0.042	29	0.1	0.1	5.444	A
C-A	157	39			157				
A-B	20	5			20				
A-C	149	37			149				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	20	5	499	0.040	20	0.1	0.0	7.517	A
C-AB	22	6	679	0.033	23	0.1	0.0	5.501	A
C-A	129	32			129				
A-B	16	4			16				
A-C	121	30			121				

18:15 - 18:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-AC	17	4	508	0.033	17	0.0	0.0	7.334	A
C-AB	18	5	671	0.027	18	0.0	0.0	5.527	A
C-A	109	27			109				
A-B	14	3			14				
A-C	102	25			102				