Cuffley Hill, Goff's Oak

Transport Statement R01B

December 2018

Prepared for:
Countryside Properties

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CONTENTS

FIGURES AND DRAWINGS

APPENDICES

1. INTRODUCTION

Preamble

1.1 Markides Associates (MA) have been instructed by Countryside Properties (the Applicant) to prepare this Transport Statement (TS) in support of their development proposals for a site referred to as '*land north of Cuffley Hill, Goff's Oak*.'

1.2 The site is found north of the B156 Cuffley Hill, approximately 650m west of Goff's Oak village centre and 1km east of Cuffley National Rail Station, with location indicated on the attached **Figure 1.1**.

1.3 The site comprises two derelict land parcels. To the east is a narrow linear section of land that historically formed part of the former Fairmead Nursery, currently sub-divided into an extended garden for 90 Cuffley Hill and an area of nursery buildings, grassland and scrubland. The much larger part the site to the west historically formed part of Rosemead Nursery and is currently scrubland.

1.4 The site is bound to the north by agricultural land and to the east by the rear gardens of residential properties fronting Robinson Avenue and 90 Cuffley Hill. To the west the site is bound by an access road that serves CG Edward Garden Landscape Supplies. The southern boundary includes the rear gardens of properties 90a to 102 Cuffley Hill, with properties 90a-98 accessed via a service road that forms two priority junctions with the main Cuffley Hill carriageway.

1.5 Between properties 92 and 94 Cuffley Hill, there is a 14m wide parcel of land which forms part of the application boundary and which abuts the service road, ensuring the site has a direct connection with public highway.

1.6 The site is located within the authoritative boundary of Broxbourne Borough Council (BBC), with Hertfordshire County Council (HCC) being the relevant local highway authority.

Draft Site Allocation

1.7 The site is allocated for development within BBC's Draft Local Plan (Submission Version, March 2018), under Policy GO5, described as '*well suited to new homes.*'

1.8 The GO5 policy area includes the separate land parcels as described above and also encompasses the adjacent CG Edwards site, although access to the CG Edwards site is envisaged via an established priority junction with Cuffley Hill rather than via the subject site. The Draft Local Plan envisages the subject site accessing the highway network via the existing land between properties 92 and 94 Cuffley Hill. The Draft Local Plan access strategy is provided at **Appendix A**.

1.9 The Draft Local Plan envisaged scale of development as follows:

- Subject site
  - Fairmead Nursery – circa 12 homes
  - Rosemead Nursery – circa 14 homes
- Adjacent Site
  - CG Edwards – circa 20 homes

1.10 The Applicant has made a number of representations supporting development at the site, highlighting that the delivery of additional housing units in excess of the draft allocation is feasible.

1.11 The Local Plan has been informed by a number of evidence studies, including the Goff's Oak Development Options Report April 2016, prepared by BBC. This report identified a potential development approach of expanding Goff's Oak village, as it is *'considered to be the most sustainable for further development as it already has a good range of shops and services, regular bus services, and is theoretically within walking distance of Cuffley railway station*.' The site, including the adjacent CG Edward site, is included within that development option as 'suitable in principle,' stating that it could be accessed from a single point of access between 92-94 Cuffley Hill.

1.12 BBC's most recent Strategic Land Availability Assessment (SLAA), published in 2017, details that, both separately and cumulatively, each site is suitable, available, and achievable for development, with no significant constraints on access.

Development Proposals

1.13 The development proposals are a residential development proposal comprising 58 residential units, with accommodation mix summarised below and proposed site layout attached as **Appendix B**.

- 6 x 2 bed apartments
- 11 x 2 bed houses
- 14 x 3 bed houses
- 22 x 4 bed houses
- 5 x 5 bed houses

1.14 The development proposals promote access to the site via the land between properties 92-94 Cuffley Hill, which will form a simple priority junction with the existing service road. Following recommendations made by HCC, the proposals will include the delivery of a new junction from the service road with Cuffley Hill, with the existing service road junctions removed and replaced with extended footway provision. This will essentially create two small cul-de-sacs in front of the existing properties along the service road, which will also therefore be accessed via this new junction with Cuffley Hill.

1.15 The proposed site layout does not preclude development of the adjacent CG Edwards site.

Transport Statement Requirement and Structure

1.16 HCC pre-application discussions have recommended that a TS be produced in support of the planning application.

1.17 Following this introduction, the TS is therefore structured as follows:

- **Section 2** reviews adopted and emerging transport related planning policy and guidance at National, Regional and Local levels;
- **Section 3** describes the accessibility of the site, both in terms of access to sustainable transport infrastructure and social infrastructure;
- **Section 4** describes the development proposals in detail including access arrangements, parking proposals and delivery and servicing strategy;
- **Section 5** undertakes a vehicular trip generation, distribution and traffic impact assessment, commensurate with the proposed scale of development, assessing the percentage change in traffic on Cuffley Hill as a result of the proposals; and
- **Section 6** provides a summary and conclusion.

2. PLANNING POLICY

National Planning Policy Framework (2018)

2.1 The NPPF sets out Government planning policy, provides a framework within which local planning policies should be produced and is a material consideration in planning decisions.

2.2 Sustainable development is the central aim of the NPPF, with the document stating that the purpose of the planning system is to contribute to this.

2.3 Section 9 of the NPPF relates to 'Promoting sustainable transport' and states that "*transport issues should be considered from the earliest stages of plan-making and development proposals*" so that any negative impacts can be identified, addressed and mitigated as soon as possible, as well as to identify and pursue opportunities to promote sustainable transport modes and contribute to making high quality places, (Paragraph 102).

2.4 The NPPF states that "*significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes*" (Paragraph 103). However, the document acknowledges that opportunities to utilise sustainable transport modes as a solution for transport-related concerns including congestion and pollution will vary between urban and rural locations.

2.5 In assessing specific applications for development, the NPPF states that it should be ensured that:

a) "*appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*

b) *safe and suitable access to the site can be achieved for all users; and*

c) *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree*, (Paragraph 108)."

2.6 The NPPF outlines that "*development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe,*" (Paragraph 109).

2.7 In this context, proposed development should prioritise sustainable transport modes, to promote access to all modes of transport for those with disabilities, create safe and attractive places, permit the efficient delivery of goods and servicing and to accommodate the charging of electric vehicles in safe and convenient locations, (Paragraph 110).

2.8 With regards to car parking, the NPPF does not include any standards and recommends that if local planning authorities decide to set standards that they should be based on the accessibility of the development, availability of public transport and local car ownership levels.

Regional Planning Policy

Roads in Hertfordshire

2.9 Roads in Hertfordshire (RIH) is HCC's Design Guide which needs to be considered when designing access proposals and the internal site layout.

Local Transport Plan 4 (2018)

2.10 Local Transport Plan 4 (LTP4) seeks a shift from previous car-based policies to a balanced approach that caters for all forms of transport and encourages a switch from private car to sustainable transport. LTP4 highlights that increased highway capacity is expensive, difficult to deliver, environmentally damaging and results in displaced congestion, with capacity increases likely to encourage more traffic during busy parts of the day.

2.11 *Policy 5: Development Management,* is the main LTP4 policy related to specifically influencing development proposals. It requires development to be located and designed to encourage sustainable travel; ensure access arrangements are safe and suitable for all user groups; have management strategies in place for site roads that are unadopted; require developments to mitigate their impact via suitable charging regimes if necessary such as S106 planning obligations, with developments resisted where the residual cumulative impact is severe; require developments to be supported by TPs; allow new accesses onto primary and main distributor roads where special circumstances can be demonstrated in favour of proposals; and require electric charging infrastructure and car clubs.

Local Planning Policy

Broxbourne Local Plan – Second Review 2001-2011 (2005)

2.12 Policy T3 of the adopted local plan, '*Transport and New Development*', states that transport movements associated with a proposed development will be assessed in terms of its impact on the "*local highway, public transport systems, footpaths, bridleways, cycle routes and the environment.*" Development will not be permitted where*:*

a) *There would be a significant detrimental impact on road congestion and movement, especially at peak travel times;*
b) *The safety of road users, including cyclists, powered two-wheelers and pedestrians, is compromised;*
c) *Traffic and/or parking generated by the development would severely adversely affect the surrounding environment;*
d) *Insufficient provision is made for access by service and emergency vehicles."*

2.13 Policy T5, *'Development Standards,'* requires highways proposals associated with new development to be assessed against RIH.

2.14 Policies T9, '*Pedestrian Needs*,' and T10 '*Cycling Provision*,*'* outline the Council's commitment to encourage sustainable travel, with the policies setting out how development proposals should provide for pedestrians and cycle accessibility, including the provision of cycle parking facilities, with Policy T11 setting out a minimum cycle parking standard of 1 space per unit where no garage/shed is provided.

2.15 Policy 11 also defines maximum car parking standards for residential developments as follows:

- 1-bedroom dwellings: 1.5 spaces per unit;
- 2-bedroom dwellings: 2 spaces per unit;
- 3-bedroom dwellings: 2.5 spaces per unit; and
- 4+ bedroom dwellings: 3 spaces per dwelling.

Draft Broxbourne Local Plan – Submission Version (2017)

2.16 BBC's Draft Local Plan is currently the subject of an independent examination by the Planning Inspectorate.

2.17 As described above, the site is specifically referenced under draft Policy GO5 as an allocated site for housing.

2.18 Policy TM1, '*Sustainable Transport*,' requires major developments to incorporate ways to reduce car use, prioritise pedestrian and cycle movements by providing well connected, lit and signed routes with parking, with specific cycle parking standards set out in policy TM5, which remain unchanged from the adopted Local Plan.

2.19 Complimenting the 2018 update of the NPPF, Policy TM2, '*Transport and New Development*,' sets out that "*development will not be permitted where there would be a severe impact on the transport network*," with development proposals being required to submit either a Transport Assessment or TS. Policy TM2 also identifies that major developments should be supported by a Travel Plan.

2.20 Policy TM3, '*Access and Servicing,'* requires all new development proposals required to provide "*adequate, safe and convenient servicing arrangements, access points and drop-off areas*," including the provision for movement and turning of refuse and emergency vehicles.

2.21 Policy TM4, '*Electric Vehicle Charging Points*,' requires all car parking within residential developments to include electric charging infrastructure.

2.22 Policy TM5, '*Parking Guidelines*,' outlines the maximum car parking standards for residential developments, which are unchanged from the adopted Local Plan.

Emerging Broxbourne Transport Strategy – Public Consultation Draft (2017)

2.23 The Emerging Local Plan has been informed by a number of evidence studies, including a Transport Strategy and Local Cycling and Walking Infrastructure Plan. The strategy identifies the transport interventions necessary to accommodate the anticipated growth defined within the emerging Local Plan.

2.24 In terms of the immediate local highway network, the strategy identifies proposals to create a cycle corridor between Goff's Oak and Cheshunt via Andrew's Lane and the reconfiguration of the Newgatestreet Road / Cuffley Hill / Goff's Lane mini-roundabout junction to provide a signalised junction with crossing points.

Compliance

2.25 In terms of compliance with policy, the Draft Local Plan allocation has established that the principle of residential development at the site is considered acceptable. Furthermore, pre-application discussions with HCC have established that the proposed access strategy is also acceptable. The TS will therefore demonstrate that the scale of development will not have a significant impact on the operation of the local highway network.

3. EXISTING SITUATION

Site Location and Existing Use

3.1 The site, encompassing both the former Fairmead and Rosemead nurseries, is found north of the B156 Cuffley Hill, approximately 650m west of Goff's Oak village centre and 1km east of Cuffley National Rail Station, with the site location indicated on the attached **Figure 1.1**.

3.2 The site is currently derelict and is understood to have not generated any associated vehicular movements for a number of years.

3.3 The site is bound to the north by agricultural land and to the east by the rear gardens of residential properties fronting Robinson Avenue and 90 Cuffley Hill. To the west the site is bound by an access road that serves CG Edward Garden Landscape Supplies. The southern boundary includes the rear gardens of properties 90a to 102 Cuffley Hill, with properties 90a-98 accessed via a service road that forms two priority junctions with the main Cuffley Hill carriageway.

3.4 Between properties 92 and 94 Cuffley Hill, there is a 14m wide parcel of land which forms part of the application boundary and which abuts the service road, ensuring the site has a direct connection with public highway.

Site Accessibility

3.5 The site benefits from being located in close proximity to a range of social infrastructure that acts as typical trip attractors for residential land uses, including education, health, leisure, and convenience retail facilities.

3.6 Examples of this social infrastructure, and their associated walk distance, are detailed below in **Table 3.1**.

TABLE 3.1: WALK DISTANCE TO TRIP ATTRACTORS

Attractor Land Use	Site	Assumed Travel Route	Walk Distance from Site Entrance
Primary School	Goff's Oak Primary School	Cuffley Hill, Robinson Ave, Millcrest Rd	680m
	Woodside Primary School	Cuffley Hill, Jones Road	500m
Food Retail	The Co-Operative	Cuffley Hill, Goff's Ln	550m
Retail	Boots	Cuffley Hill, Goff's Ln	555m
Health	Valley View Health Centre	Cuffley Hill, Goff's Ln	700m
Leisure	Goff's Oak Village Library	Cuffley Hill, Goff's Ln	710m
	Goff's Oak Village Hall and Community Centre	Cuffley Hill, Goff's Ln	750m
Public Transport	Cuffley National Railway Station	Cuffley Hill, Station Rd	1km
	Robinson Avenue Bus Stops	Cuffley Hill	70m

3.7 **Table 3.1** therefore confirms that a range of land uses are located within close proximity, which ensures that these trip attractors can be accessed by modes other than private car, thereby reflecting fundamental requirements of national, regional and local planning policy for creating sustainable communities. Indeed, CIHT's March 2015 guidance document, 'Planning for Walking,' states that 'walkable neighbourhoods' are those with a typical catchment of around 800m, with the majority of identified land uses being within this walk distance threshold.

Pedestrian and Cycle Accessibility

3.8 The existing service road that runs along the southern site frontage benefits from existing footway provision, approximately 1.8m wide, indicated on **Photo 3.1** below. This connects with the wider footway network on Cuffley Hill, which runs along the northern edge of the carriageway, indicated on **Photo 3.2**. This footway provides pedestrian access to Cuffley Hill to the west and Goff's Oak village centre to the east.

	
Photo 3.1 – Cuffley Hill loop road pedestrian footway	**Photo 3.2** – Cuffley Hill pedestrian footway leading east to Cuffley Railway Station

3.9 Pedestrian severance caused by the volume of traffic on Cuffley Hill is mitigated by a signalised crossing approximately 245m east of the site, providing a safe route toward Woodside Primary School, with a further signalised crossing within Goff's Oak village centre.

3.10 In terms of cycle accessibility, there are no formal cycle routes adjacent to the site. However, the Broxbourne Cycle Map identifies a north/south Advisory Cycle Route to the east, accessed from Newgatestreet Road and Jones Road. As described above, the Broxbourne Transport Strategy identifies proposals to introduce a cycle corridor from Goff's Oak to Cheshunt via St James Road and Andrews Lane.

3.11 Cycle parking facilities are provided at Cuffley Railway Station and Station Road Parade.

Public Transport Accessibility

Buses

3.12 In terms of bus provision, the site benefits from Cuffley Hill being an established bus corridor, accommodating the existing 242 bus route.

3.13 Route 242 begins at Potters Bar Station and terminates in Waltham Cross Bus Station via Cheshunt, with an approximate Monday to Friday daytime frequency of one bus every 30 minutes. The 242 provides access to many of the trip attractors referenced above, including Cuffley National Rail Station, Goff's Oak Secondary School and Brookfield retail centre, thereby mitigating some of the longer walk distances.

3.14 The site benefits further from existing bus stop infrastructure within close proximity, with an eastbound bus stop located 70m east of the site, being a simple flag bus stop indicated in **Photo 3.3**, and a westbound bus stop located immediately opposite, benefiting from a bus shelter, indicated in **Photo 3.4**. There is no footway provision adjacent to the westbound bus stop, with pedestrians having to cross the carriageway directly into the bus layby.

Photo 3.3 – Eastbound flag bus stop

Photo 3.4 – Westbound sheltered bus stop

National Rail

3.15 The site is located within an acceptable walk distance of Cuffley National Rail Station, which is approximately 1km to the west of the site, although topographical constraints are likely to impact on the ability of some residents to negotiate this walk distance. Cuffley National Rail Station provides access to frequent and direct services between Central London, Hertford North and Stevenage, with service frequencies identified in **Table 3.2** below.

TABLE 3.2: EXISTING RAIL PROVISION

Train Station	Main Stations			AM Peak Service Frequency
Cuffley National Rail Station	Northbound	Stevenage National Rail Station		1 direct service per hour
		Hertford North National Rail Station		4 per hour
	Southbound	Moorgate London Underground and National Rail Station	Enfield Chase, Alexandra Palace, Finsbury Park, Highbury and Islington, Essex Road, Old Street and Moorgate	4 per hour

3.16 In addition to Cuffley Station, bus service 242 provides access to Cheshunt town centre, with a short onward walk to Cheshunt National Rail station, which provides access to Cambridge and additional Central London services to Stratford and London Liverpool Street. Cheshunt has also been identified as a station on the emerging Crossrail 2 route.

Local Highway Network

3.17 The B156 Cuffley Hill is a secondary distributor road with a 30mph speed limit, which increases to 40mph approximately 200m west of Athenia Close. Along the site frontage Cuffley Hill has a carriageway width of approximately 6.5m, accommodating a narrow hatched margin along the centre. Cuffley Hill provides direct access to residential properties along its length.

3.18 Within the centre of Goff's Oak, Cuffley Hill forms a mini-roundabout junction with Newgatestreet Road and Goff's Lane. Continuing east the B156 eventually provides access to Cheshunt, from which access to the A10 is achieved, which then provides access to the M25 at junction 25.

3.19 Property numbers 90a-98 Cuffley Hill are currently accessed via a service road that is set back from the main carriageway, divided by a 5.5m wide landscaped margin. The service road is approximately 60m long and forms two simple priority junctions with Cuffley Hill, both of which benefit from a good standard of visibility. Along the site frontage the service road is approximately 5.5m wide.

3.20 There are currently no parking controls on the service road, although each property benefits from private drives, with some properties also benefiting from garages.

3.21 Cuffley Hill and the service road are not located within a controlled parking zone (CPZ), and there are no waiting restrictions.

3.22 In terms of existing traffic flows, manual traffic counts were undertaken at each of the service road junctions with Cuffley Hill on Tuesday 3rd October 2017, between 07.00-19.00, recording the east/west movements along Cuffley Hill. The surveys established that Cuffley Hill accommodates approximately 1,400 movements in the AM peak, 1,450 in the PM peak and 13,900 across the day. Peak hour traffic movements are observed to be tidal, with a dominant westbound flow in the AM and eastbound in the PM.

4. DEVELOPMENT PROPOSALS

Scale of Development

4.1 The development proposals are for a residential scheme comprising 58 residential units, with accommodation mix summarised below.

- 6 x 2 bed apartments
- 11 x 2 bed houses
- 14 x 3 bed houses
- 22 x 4 bed houses
- 5 x 5 bed houses

4.2 The proposed site layout is provided as **Appendix B**.

Access

4.3 The development proposals promote access to the site via the land between properties 92-94 Cuffley Hill, which will form a simple priority junction with the existing service road.

4.4 The access road between these properties is a minimum of 5.5m wide, with localised widening at the junction with the service road to allow service vehicles to access the existing residential properties.

4.5 Following recommendations made by HCC, the proposals will include the delivery of a new junction from the service road with Cuffley Hill, via the existing landscaped area, with the existing service road junctions with Cuffley Hill removed and replaced with extended footway provision. This will essentially create two small cul-de-sacs in front of the existing properties along the service road, which will also therefore be accessed via this new junction with Cuffley Hill. These highway works will be delivered via a S278 Agreement.

4.6 The proposed access arrangements are indicated on drawing **17094-00-012B**, confirming that appropriate visibility splays at the new junction can be acehived.

4.7 Vehicle swept path analysis of a large refuse vehicle negotiating the access, travelling from west to east along Cuffley Hill as currently occurs, is provided at **Drawing 17094-00-011C.** This drawing also confirms that this vehicle is able to use the site access road, before reversing back toward property number 98, ensuring the refuse vehicle is within an acceptable drag distance of this furthest property, before continuing into the site. The remaining existing properties are otherwise all within an acceptable drag distance from the service road as well as travel distance from fire tenders.

4.8 **Drawings 17094-00-009C / 010C** then indicate that the access proposals can accommodate conflicting large car movements and delivery vehicles can also follow the same strategy as refuse vehicles to access existing properties.

4.9 The proposed access accommodates 1.8m wide footway provision on each side of the access road, which connects with the existing service road footway.

4.10 It is envisaged that cyclists will share this access arrangement.

4.11 The existing access to the Fairmead Nursery part of the site will be removed, with the existing crossover from Cuffley Hill to serve property 90 only.

4.12 Within the site, the layout accommodates a 5.5m wide internal access road, with footways adjacent, which changes to a 5.5m wide shared surface where a reduced number of units are served. The proposed site layout has been designed to embrace the principles of Manual for Streets and RIH, with minimum side road and forward visibilities of 25m readily achievable, reflecting a design speed of 20mph.

4.13 Vehicular swept path analysis demonstrating the site can be readily accessed by a range of vehicle types, including a fire tender and large refuse vehicle, with forward gear entry and exit, has been undertaken by Ardent Consulting Engineers, provided at **Appendix C.** This analysis demonstrates that a refuse vehicle can get within at least 25m drag distance of each property.

4.14 It is not intended for any of the associated roads and footways serving the site to be offered for adoption, with residents paying a service charge to ensure these assets are maintained by an appointed management company.

Parking

4.15 Car parking is provided in the form of single/double garages, driveways and parking courts, with additional on-street visitor provision dispersed through the site.

4.16 The quantum of proposed parking ensures there is no risk of parking overspill onto the adjacent service road.

4.17 The provision of garages and on-plot parking ensures that electric charging infrastructure can be readily accommodated.

4.18 In terms of cycle parking, for the apartments that do not benefit from a private garden and/or garage, this will be provided within a communal cycle store area.

Sustainable Travel Strategy

4.19 The scale of development does not warrant the preparation of a Full Travel Plan, supported by ongoing monitoring and reporting. HCC have however confirmed that the scale of development requires the preparation of a Travel Plan Statement (TPS).

4.20 The planning application is therefore supported by a TPS, which sets out a range of management strategies and measures to encourage and support sustainable travel.

4.21 The TPS should be read in conjunction with this TS.

5. VEHICULAR TRIP GENERATION, DISTRIBUTION AND TRAFFIC IMPACT

Trip Generation

5.1 The industry standard TRICS database has been used to source vehicular trip rates that are representative of the proposed development.

5.2 A proxy site selection criteria of privately owned houses located in South East or South West England, within Suburban or Edge of Town Locations, with at least two parking spaces per unit have been selected. A total of 9 sites fulfilled these criteria, details of which are attached as **Appendix D**.

5.3 **Table 5.1** below presents the peak hour and daily vehicular trip rates per unit, which have been applied to the proposed number of units (58) to quantify the anticipated vehicular trip generation.

TABLE 5.1: ANTICIPATED TRIP GENERATION

	AM Peak			PM Peak			Daily		
	IN	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Trip Rate Per House	0.141	0.366	0.507	0.358	0.206	0.564	2.448	2.492	4.94
Trips (58 units)	8	21	29	21	12	33	142	145	287

5.4 **Table 5.1** therefore demonstrates that the proposed scale of development is anticipated to generate 29 vehicle movements in the AM peak, 33 in the PM peak and 287 across the day.

Trip Distribution

5.5 Vehicular trip distribution from the proposed site access has been quantified using 2011 Census data, and specifically Table WU03EW, *'location of usual residence and place of work*

by method of travel to work.' This table details the workplace destination of residents of the Middle Super Output Area (MSOA) E02004849 that drive to work.

5.6 In terms of workplace, this is considered at local authority level and MSOA level for workplaces within BBC. However, as the site is located on the western extent of BBC, all trips with a workplace within each of the BBC MSOAs are assumed to travel east along the B156, with full analysis provided at **Appendix E**.

5.7 The analysis reveals that approximately 45% of trips are expected to travel to/from east along the B1256 toward Cheshunt. Of the remaining westbound trips, 12% are assumed to travel north along Plough Lane at the priority junction with Station Road and 44% are assumed to travel south along Northaw Road.

5.8 These proportions are indicated on **Figure 5.1**, which have then been applied to the AM and PM peak anticipated trip generation flows detailed in **Table 5.1** above, with AM and PM peak development traffic flows indicated on **Figures 5.2** and **5.3** respectively.

Traffic Impact

5.9 A traffic impact assessment has been undertaken commensurate with the proposed scale of development, focusing on the percentage change in traffic on Cuffley Hill as a result of the proposals rather than a detailed capacity assessment of off-site junctions, which would be disproportionate.

5.10 **Table 5.1** below therefore details the observed traffic flows and anticipated traffic flows associated with the proposed scale of development, to quantify the percentage change in traffic.

TABLE 5.2: TRAFFIC IMPACT

Time Period	Observed (2017) Scenario	Development Proposals	Total Traffic	Percentage Change
AM Peak	1,369	29	1,399	2.2%
PM Peak	1,446	33	1,480	2.4%
Daily	13,712	287	13,999	2.1%

5.11 **Table 5.2** therefore confirms that the development proposals will not result in a material increase in traffic along Cuffley Hill, with a percentage increase below 2.5% across each period.

6. SUMMARY AND CONCLUSION

6.1 Markides Associates have been instructed by Countryside Properties to prepare this Transport Statement in support of their proposals for a residential development of 58 units on a site referred to as '*land north of Cuffley Hill, Goff's Oak*.'

6.2 The site is located within the authoritative boundary of Broxbourne Borough Council and is identified within their Draft Local Plan as an allocated development site under Policy G05, which has established that the principle of development is acceptable.

6.3 Pre-application discussions were undertaken with Hertfordshire County Council, as the relevant local highway authority, which has identified a recommended access strategy.

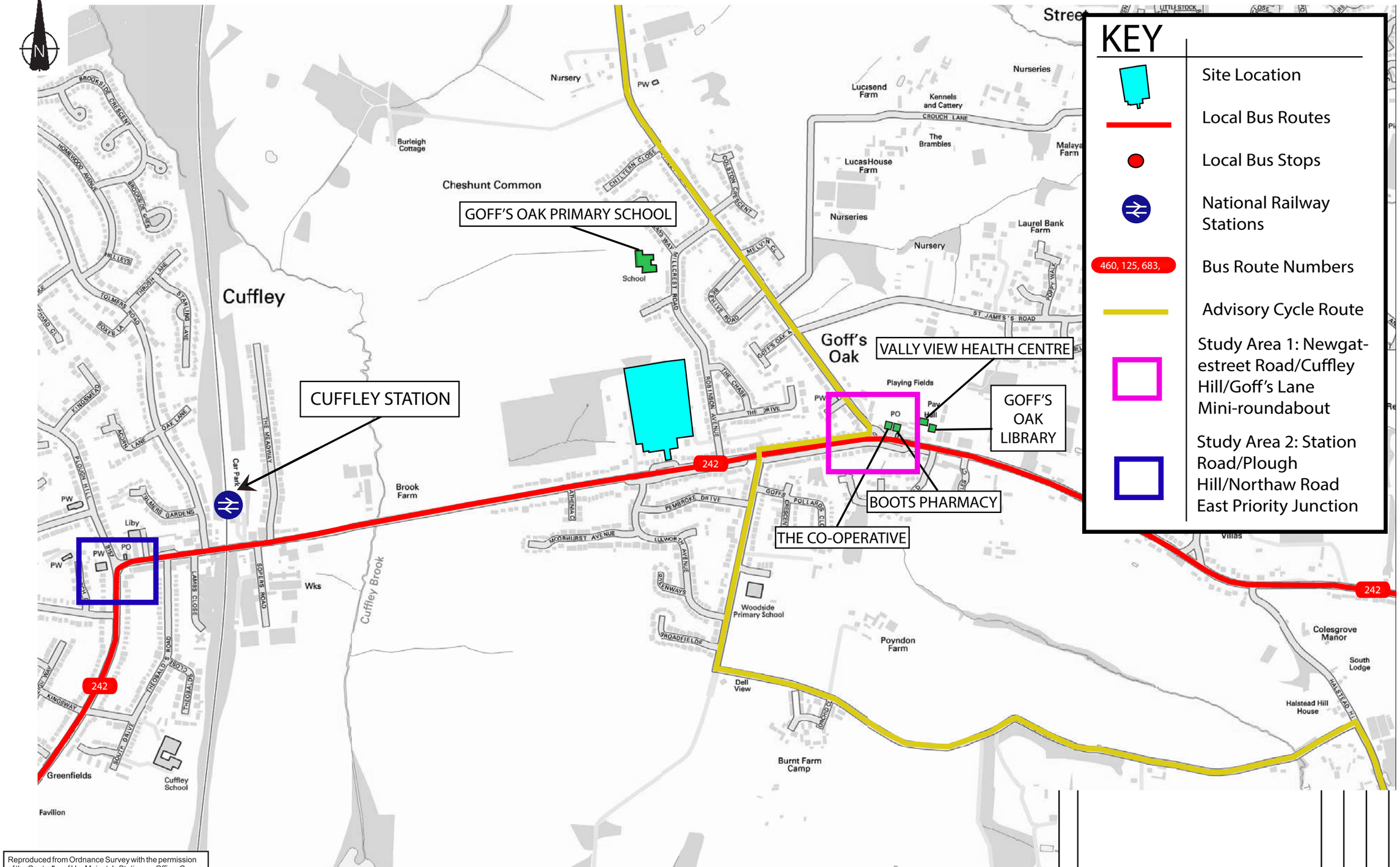
6.4 The Transport Statement has established that the site is within a sustainable location, with a range of social infrastructure accessible by modes other than private car, with both established public bus and National Rail services within an acceptable walk and/or cycling distance.

6.5 The Transport Statement has established that the proposed scale of development will not generate a significant number of vehicle movements along Cuffley Hill and is unlikely therefore to result in a material traffic impact.

6.6 The proposed site layout is accessible to all user groups, including emergency and service vehicles and incorporates car parking provision that ensures there is no risk of overspill onto the adjacent service road.

6.7 The Transport Statement has reviewed transport related planning policy at national, regional and local levels and concludes that the development proposals are in compliance. On this basis, Markides Associates are of the view that there are no transport related reasons that preclude the development proposals from being supported.

FIGURES AND DRAWINGS



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Rev	Amendments	Drn	Chk	App	Date

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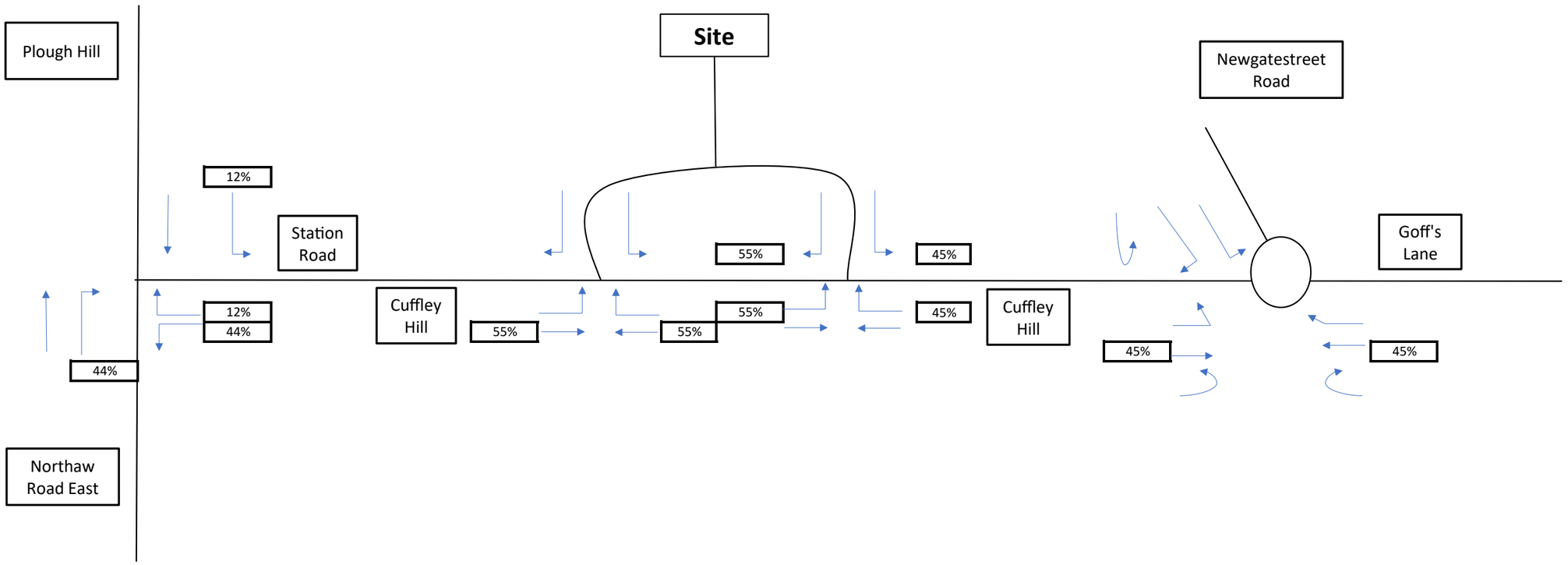
Job Title
CUFFLEY HILL, GOFF'S OAK

Drawing Title
LOCAL TRANSPORT AND AMENITIES PLAN

Client
COUNTRYSIDE PROPERTIES

Scale	Date	Designed
N.T.S	DEC-17	AMD
Drawn	Checked	Approved
AMD	AKS	AKS
Job No	Figure No	Rev
17094	FIGURE 1.1	

DRAWING-NO 16-241-002



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Job Title: Cuffley Hill, Goff's Oak

Drawing Title: Development Distribution

Client:

Scale	NTS	Date	DEC-18	Designed	AMD
Drawn	AMD	Checked	AKS	Approved	AKS
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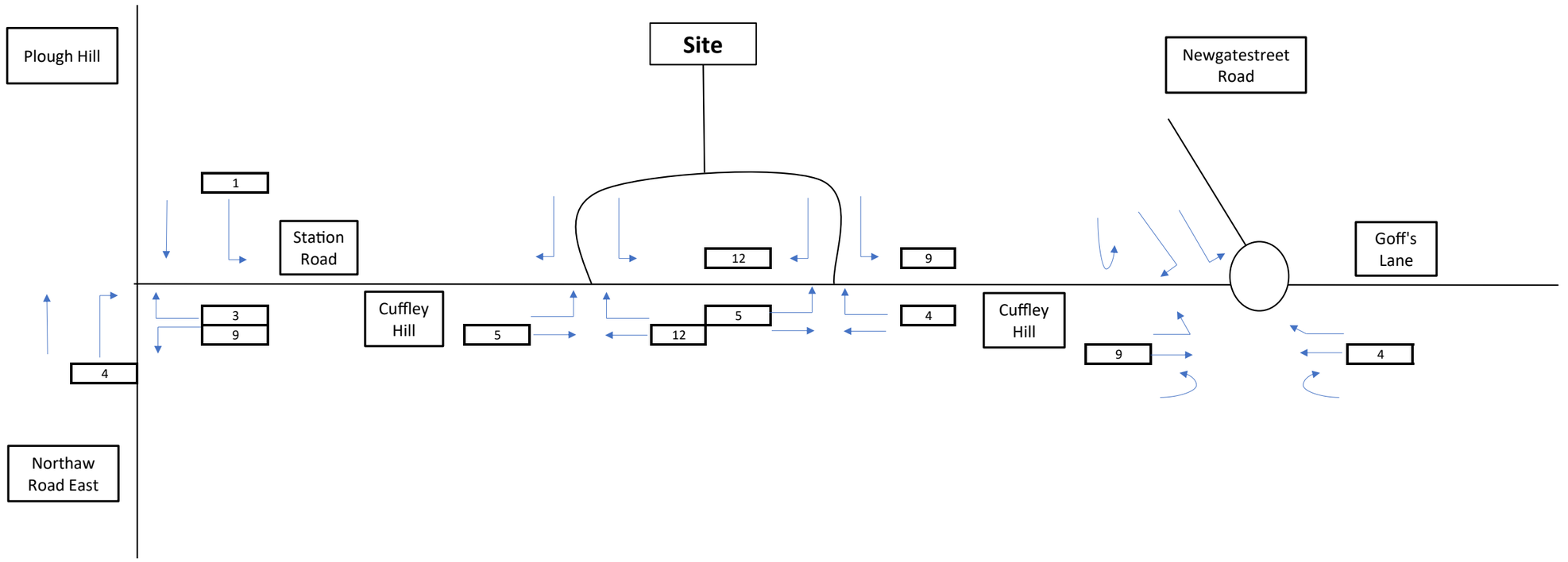

Rev	Amendments	Drn	Chk	App	Date

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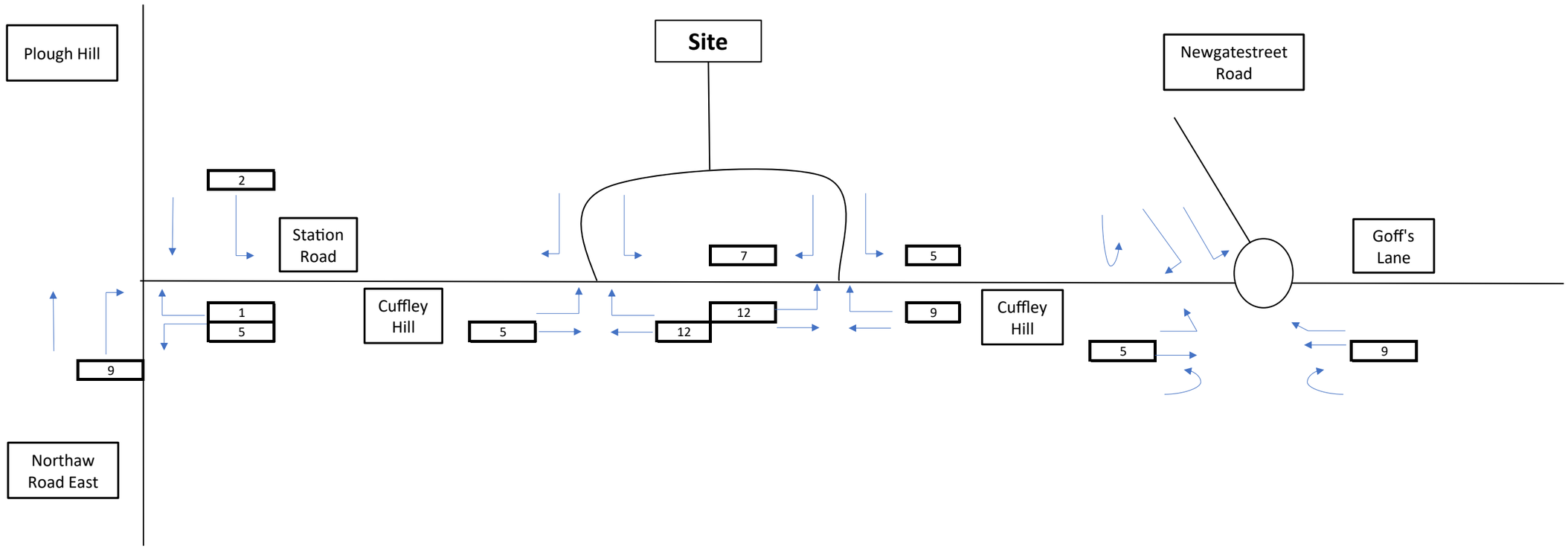
9th Floor, The Tower Building,
York Road,
London,
SE1 7NX
Telephone: 0207 442 2225
E: enquiries@markidesassociates.com
W: www.markidesassociates.com

Job Title: Cuffley Hill, Goff's Oak

Drawing Title: Development AM Peak

Client:

Scale	NTS	Date	DEC-18	Designed	AMD
Drawn	AMD	Checked	AKS	Approved	AKS
Job No	17094	Figure No	Figure 5.2	Rev	



Rev	Amendments	Drn	Chk	App	Date

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Job Title: Cuffley Hill, Goff's Oak

Drawing Title: Development PM Peak

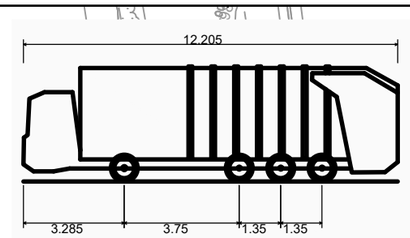
Client:

Scale	NTS	Date	DEC-18	Designed	AMD
Drawn	AMD	Checked	AKS	Approved	AKS
Job No	17094	Figure No	Figure 5.3	Rev	

KEY:

45M RADIUS FROM BACK OF FURTHEST PROPERTY

25M RADIUS FROM FRONT OF FURTHEST PROPERTY



Merc Econic	
Overall Length	12.205m
Overall Width	2.890m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	11.250m

PROPOSED FOOTWAY

PROPOSED FOOTWAY

VISIBILITY SPLAY: 2.4m X 43m

Rev	Amendments	Drn	Chk	App	Date
C	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
B	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
A	JUNCTION DESIGN AMENDED	TH	AS	AS	16.11.18

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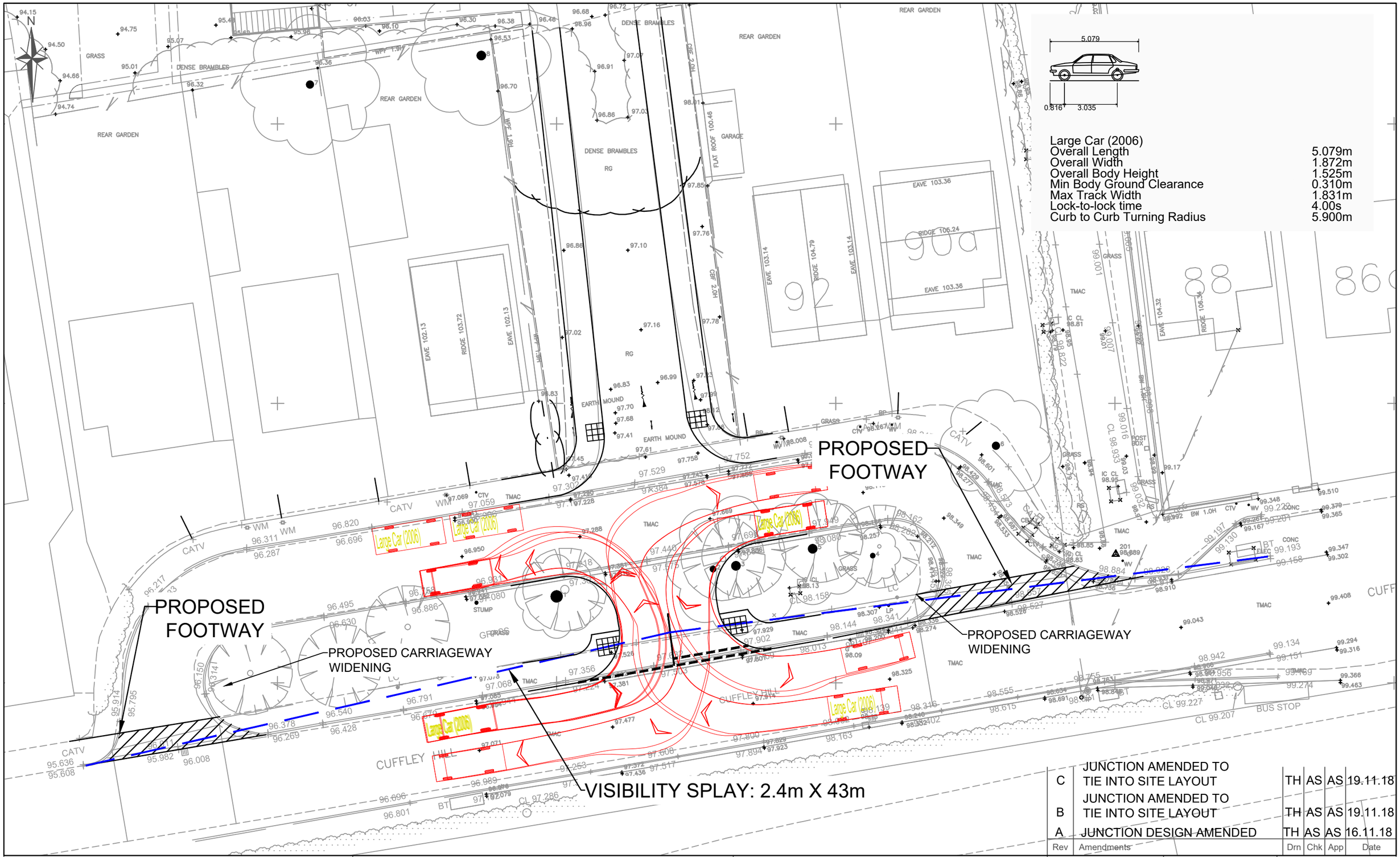
Job Title
FORMER ROSEMARY NURSERY, CUFFLEY HILL, GOFFS OAK

Drawing Title
REFUSE VEHICLE (OPTION 2) AUTOTRACK ANALYSIS

Client
COUNTRYSIDE PROPERTIES

Scale	Date	Designed
1:250 @ A3	NOV'18	TH
Drawn	Checked	Approved
TH	AS	AS
Job No	Drawing No	Rev
17094-00	17094-00-011	C



Rev	Amendments	Drn	Chk	App	Date
C	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
B	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
A	JUNCTION DESIGN AMENDED	TH	AS	AS	16.11.18

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Job Title
FORMER ROSEMARY NURSERY,
CUFFLEY HILL, GOFFS OAK

Drawing Title
TWO LARGE CARS (OPTION 2)
AUTOTRACK ANALYSIS

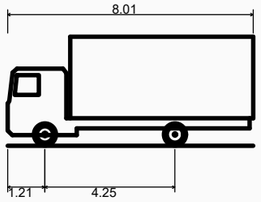
Client
COUNTRYSIDE PROPERTIES

Scale	Date	Designed
1:250 @ A3	NOV'18	TH
Drawn	Checked	Approved
TH	AS	AS
Job No	Drawing No	Rev
17094-00	17094-00-009	C

KEY:

45M RADIUS FROM BACK OF FURTHEST PROPERTY

25M RADIUS FROM FRONT OF FURTHEST PROPERTY



7.5t Box Van	
Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.400m

PROPOSED FOOTWAY

VISIBILITY SPLAY: 2.4m X 43m

PROPOSED FOOTWAY

VISIBILITY SPLAY: 2.4m X 43m

Rev	Amendments	Drn	Chk	App	Date
C	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
B	JUNCTION AMENDED TO TIE INTO SITE LAYOUT	TH	AS	AS	19.11.18
A	JUNCTION DESIGN AMENDED	TH	AS	AS	16.11.18

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W: www.markidesassociates.co.uk

Job Title: FORMER ROSEMARY NURSERY, CUFFLEY HILL, GOFFS OAK

Drawing Title: 7.5T BOX VAN (OPTION 2) AUTOTRACK ANALYSIS

Client: COUNTRYSIDE PROPERTIES

Scale	Date	Designed
1:250 @ A3	NOV'18	TH
Drawn	Checked	Approved
TH	AS	AS
Job No	Drawing No	Rev
17094-00	17094-00-010	C

APPENDIX A

LOCAL PLAN ALLOCATION

Figure 10 Goffs Oak village indicative concept diagram

APPENDIX B

PROPOSED SITE LAYOUT

A1

NOTES

 DO NOT scale from this drawing.
Contractors, Sub Contractors and Suppliers are to check all relevant dimensions and levels of the site and building before commencing any shop drawings or building work. Any discrepancies should be recorded to the Architect.
Where applicable this drawing is to be read in conjunction with the Consultants' drawings.

REV	DESCRIPTION	DATE	AUTHOR	CHK'D
A	Status changed to Planning	11.10.18	KK	RP
B	Issued for planning	23.11.18	KK	RP

ACCOMMODATION SCHEDULE

PRIVATE

House Type	No of Bedrooms	SqFt	No	Total SqFt
301	3B	907	3	2721
319	3B	1047	2	2094
307	3B	1190	3	3570
404	4B	1281	5	6405
407	4B	1397	4	5588
409	4B	1494	3	4482
416	4B	1743	4	6972
434	4B	1784	3	5352
417	4B	1808	3	5424
502	5B	1970	5	9850
TOTALS			35	52458

Private housing plot areas (sqft)	52458

AFFORDABLE *

House Type	No of Bedrooms	SqFt	No	Total SqFt
2B FLAT	2B	667	6	4002
2AH	2B	775	11	8525
3AH	3B	893	6	5358
TOTALS			23	17885

Affordable housing plot areas (sqft)	17885

SITE TOTALS	58	70343

scale 1:500
0 10m 20m 30m

COUNTRYSIDE
Places People Love

PLANNING

thrive. architects

Portishead Office
Unit 5, Middle Bridge Business Park, Bristol Road, Portishead, BS20 6PN
t: 01275 407000 f: 01794 367276 www.thrivearchitects.co.uk

PROJECT
Land at Cuffley Hill
Goffs Oak
For: Countryside Properties

DRAWING
Site Layout

SCALE	DATE	AUTHOR	CHK'D
1:500 @ A1	Jun 18	KK	TW

JOB NO.	DRAWING NO.	REV
COUN180506	SL.01	B

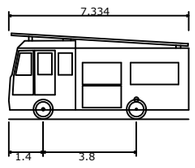
CLIENT REF.

APPENDIX C

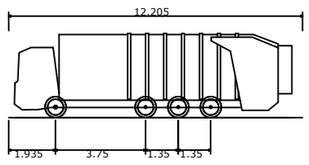
ON-SITE VEHICLE SWEPT PATH ANALYSIS

N

ROADS TO BE PRIVATE, COMMENTS ARE ON BASIS THAT FIRE TNEDER/REFUSE COLLECTION ACCESS INTO PRIVATE DEVELOPMENT IS ACCEPTABLE

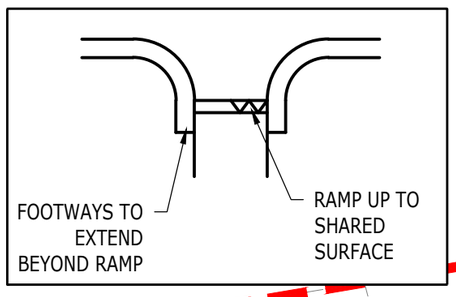


Fire Tender	
Overall Length	7.334m
Overall Width	2.286m
Overall Body Height	3.495m
Min Body Ground Clearance	0.380m
Track Width	2.286m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	8.000m



Herts Large Refuse Vehicle (Merc Econic)	
Overall Length	12.205m
Overall Width	2.890m
Overall Body Height	3.502m
Min Body Ground Clearance	0.002m
Track Width	2.500m
Lock to lock time	4.00s
Wall to Wall Turning Radius	11.250m

RAMP UP TO SHARED SURFACE DETAIL



KEY:
- 2.4m x 11m VISIBILITY SPLAY (PRIVATE DRIVES)
- 2.4m x 25m VISIBILITY SPLAY (JUNCTIONS)
- 20m LIMIT FOR FIRE TENDER REVERSE
- INDICATIVE LOCATION FOR REFUSE COLLECTION POINT. SUBJECT TO AMENDING PLOTS.

Attenuation Pond

Attenuation Pond

SHARED PRIVATE DRIVE 4.80m WIDE

REFUSE COLLECTION POINT REQUIRED

MINIMUM PARKING BAY DIMENSION 2m x 6m

REFUSE VEHICLE SWEPT PATH

PARKING BAY DIMENSION 2m x 6m

FIRE TENDER MAX. REVERSE DISTANCE 20m INTO PRIVATE DRIVE SUBJECT TO FIRE AUTHORITY APPROVAL

20.00m

SHARED PRIVATE DRIVE 6.00m WIDE

REFUSE VEHICLE SWEPT PATH

RAMP UP TO SHARED SURFACE AS SHOWN IN STANDARD DETAIL ABOVE

SHARED SURFACE 6.00m WIDE

FIRE TENDER SWEPT PATH

FIRE TENDER MAX. REVERSE DISTANCE 20m INTO PRIVATE DRIVE SUBJECT TO FIRE AUTHORITY APPROVAL

20.00m

REFUSE VEHICLE SWEPT PATH (SLIGHT BODY OVERHANG TO REMAIN CLEAR OF OBSTRUCTION)

FIRE TENDER MAX. REVERSE DISTANCE 20m INTO PRIVATE DRIVE SUBJECT TO FIRE AUTHORITY APPROVAL

SHARED PRIVATE DRIVE 4.00m WIDE

PARKING BAY DIMENSION 2m x 6m

SHARED PRIVATE DRIVE 4.10m WIDE

20.00m

REFUSE COLLECTION POINT REQUIRED

PARKING BAY DIMENSION 2m x 6m

SHARED SURFACE 6.00m WIDE

TREE/VEGETATION REMOVAL TO ACCOMMODATE VISIBILITY REQUIREMENTS

FIRE TENDER MAX. REVERSE DISTANCE 20m INTO PRIVATE DRIVE SUBJECT TO FIRE AUTHORITY APPROVAL

20.00m

4.00m

SHARED PRIVATE DRIVE 4.00m WIDE

REFUSE COLLECTION POINT REQUIRED

MINOR ACCESS. 5.50m WIDE. 2 x 2.00m FOOTWAYS

REVERSING TO BE AGREED WITH COUNCIL/PRIVATE REFUSE COMPANY

SHARED PRIVATE DRIVE 6.00m WIDE

FIRE TENDER SWEPT PATH

20.00m

RAMP UP TO SHARED SURFACE AS SHOWN IN STANDARD DETAIL ABOVE

MINOR ACCESS. 5.50m WIDE. 2 x 2.00m FOOTWAYS

REFUSE

RESIDENTS TO CARRY REFUSE NO MORE THAN 30m, REFUSE VEHICLES TO BE WITHIN 25m OF ANY STORAGE POINT/ PROPERTY AND REVERSE NO MORE THAN 20m. ANY DWELLING MORE THAN 25m AWAY FROM THE HIGHWAY WILL NEED A REFUSE COLLECTION POINT IF THE REFUSE VEHICLE CANNOT GET WITHIN THE REQUIRED DISTANCE.

FIRE

UNDER BUILDING REGULATION B5, ACCESS FOR FIRE TENDERS IS REQUIRED TO A POINT NOT FURTHER THAN 45m FROM ALL PARTS OF THE GROUND FLOOR OF ANY RESIDENTIAL BUILDING.
UNDER BUILDING REGULATION B5, THERE SHOULD BE VEHICLE ACCESS FOR A PUMP APPLIANCE TO WITHIN 45m OF ALL POINTS WITHIN THE DWELLING.

FOR PLANNING

Rev	Description	Drn	Chk	App	Date
D	SITE LAYOUT UPDATED.	AW	FY	BB	11.12.18
C	REVISED LAYOUT	AMG	FY	BB	11.10.18
B	REVISED LAYOUT	RM	FY	BB	19.09.18
A	REUSE VEHICLE AMENDED	AG	ATB	SJH	05.09.18

ARDENT CONSULTING ENGINEERS
Third Floor
The Hallmark Building
52-56 Leadenhall Street
London
EC3M 5JE
Tel: 020 7680 4088
Web: www.ardent-ce.uk
E-mail: enquiries@ardent-ce.co.uk

Client: COUNTRYSIDE PROPERTIES (UK) Ltd

Project Title: CUFFLEY HILL, GOFFS OAK

Drawing Title: SWEPT PATHS & VISIBILITY PLAN

A2 Scale	Date	Designed by
1:500	06.08.18	DV
Drawn by	Checked by	Approved by
DV	DV	BB

Drawing Number: 162101-003 Rev D

APPENDIX D

TRICS OUTPUT

APPENDIX A

TRICS Output

Calculation Reference: AUDIT-138302-160907-0959

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
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	2 days
03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	2 days
	SM	SOMERSET	1 days

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

Filtering Stage 2 selection:

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

Parameter: Number of dwellings
Actual Range: 28 to 237 (units:)
Range Selected by User: 13 to 491 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 12/11/15

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

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

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4
Edge of Town	5

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

Selected Location Sub Categories:

Residential Zone	9

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:

C1	1 days
C3	8 days

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

Population within 1 mile:

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

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

Population within 5 miles:

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

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

Car ownership within 5 miles:

0.6 to 1.0	1 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:

Yes	2 days
No	7 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 DC-03-A-08 BUNGALOWS DORSET
HURSTDENE ROAD
CASTLE LANE WEST
BOURNEMOUTH
Edge of Town
Residential Zone
Total Number of dwellings: 28
Survey date: MONDAY 24/03/14 Survey Type: MANUAL

2 DV-03-A-01 TERRACED HOUSES DEVON
BRONSHILL ROAD

TORQUAY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 37
Survey date: WEDNESDAY 30/09/15 Survey Type: MANUAL

3 DV-03-A-02 HOUSES & BUNGALOWS DEVON
MILLHEAD ROAD

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

4 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

5 HC-03-A-17 HOUSES & FLATS HAMPSHIRE
CANADA WAY

LIPHOOK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 36
Survey date: THURSDAY 12/11/15 Survey Type: MANUAL

6 SC-03-A-04 DETACHED & TERRACED SURREY
HIGH ROAD

BYFLEET
Edge of Town
Residential Zone
Total Number of dwellings: 71
Survey date: THURSDAY 23/01/14 Survey Type: MANUAL

7 SM-03-A-01 DETACHED & SEMI SOMERSET
WEMBDON ROAD
NORTHFIELD
BRIDGWATER
Edge of Town
Residential Zone
Total Number of dwellings: 33
Survey date: THURSDAY 24/09/15 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 WS-03-A-04 MIXED HOUSES WEST SUSSEX
HILLS FARM LANE
BROADBRIDGE HEATH
HORSHAM
Edge of Town
Residential Zone
Total Number of dwellings: 151
Survey date: THURSDAY 11/12/14 Survey Type: MANUAL

9 WS-03-A-05 TERRACED & FLATS WEST SUSSEX
UPPER SHOREHAM ROAD

SHOREHAM BY SEA
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 48
Survey date: WEDNESDAY 18/04/12 Survey Type: MANUAL

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

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
DV-03-A-03	parking
ES-03-A-02	parking

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	9	84	0.096	9	84	0.289	9	84	0.385
08:00 - 09:00	9	84	0.141	9	84	0.366	9	84	0.507
09:00 - 10:00	9	84	0.153	9	84	0.182	9	84	0.335
10:00 - 11:00	9	84	0.155	9	84	0.186	9	84	0.341
11:00 - 12:00	9	84	0.162	9	84	0.159	9	84	0.321
12:00 - 13:00	9	84	0.190	9	84	0.185	9	84	0.375
13:00 - 14:00	9	84	0.196	9	84	0.182	9	84	0.378
14:00 - 15:00	9	84	0.173	9	84	0.182	9	84	0.355
15:00 - 16:00	9	84	0.313	9	84	0.210	9	84	0.523
16:00 - 17:00	9	84	0.305	9	84	0.190	9	84	0.495
17:00 - 18:00	9	84	0.358	9	84	0.206	9	84	0.564
18:00 - 19:00	9	84	0.206	9	84	0.155	9	84	0.361
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.448			2.492			4.940

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

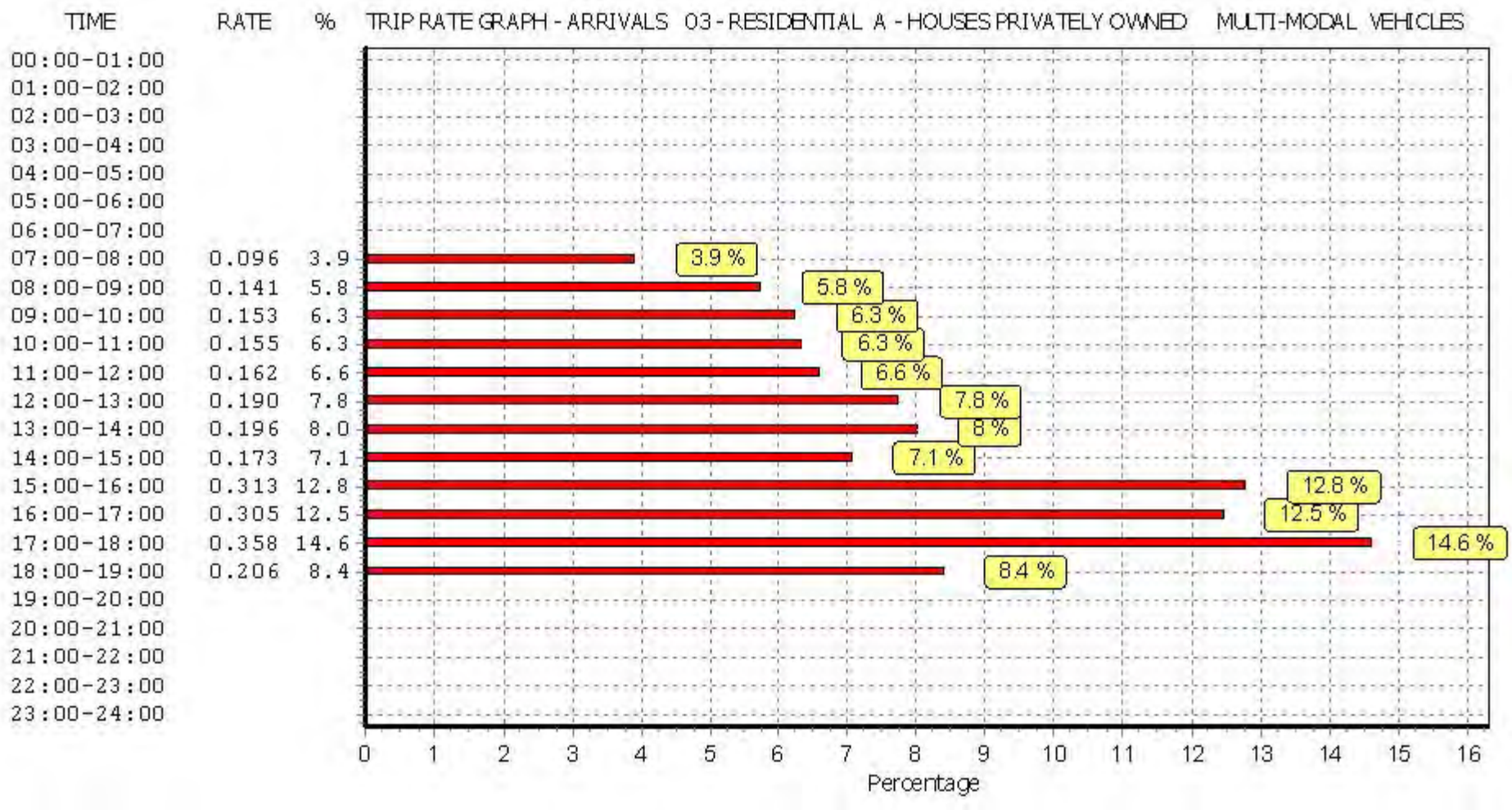
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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

Parameter summary

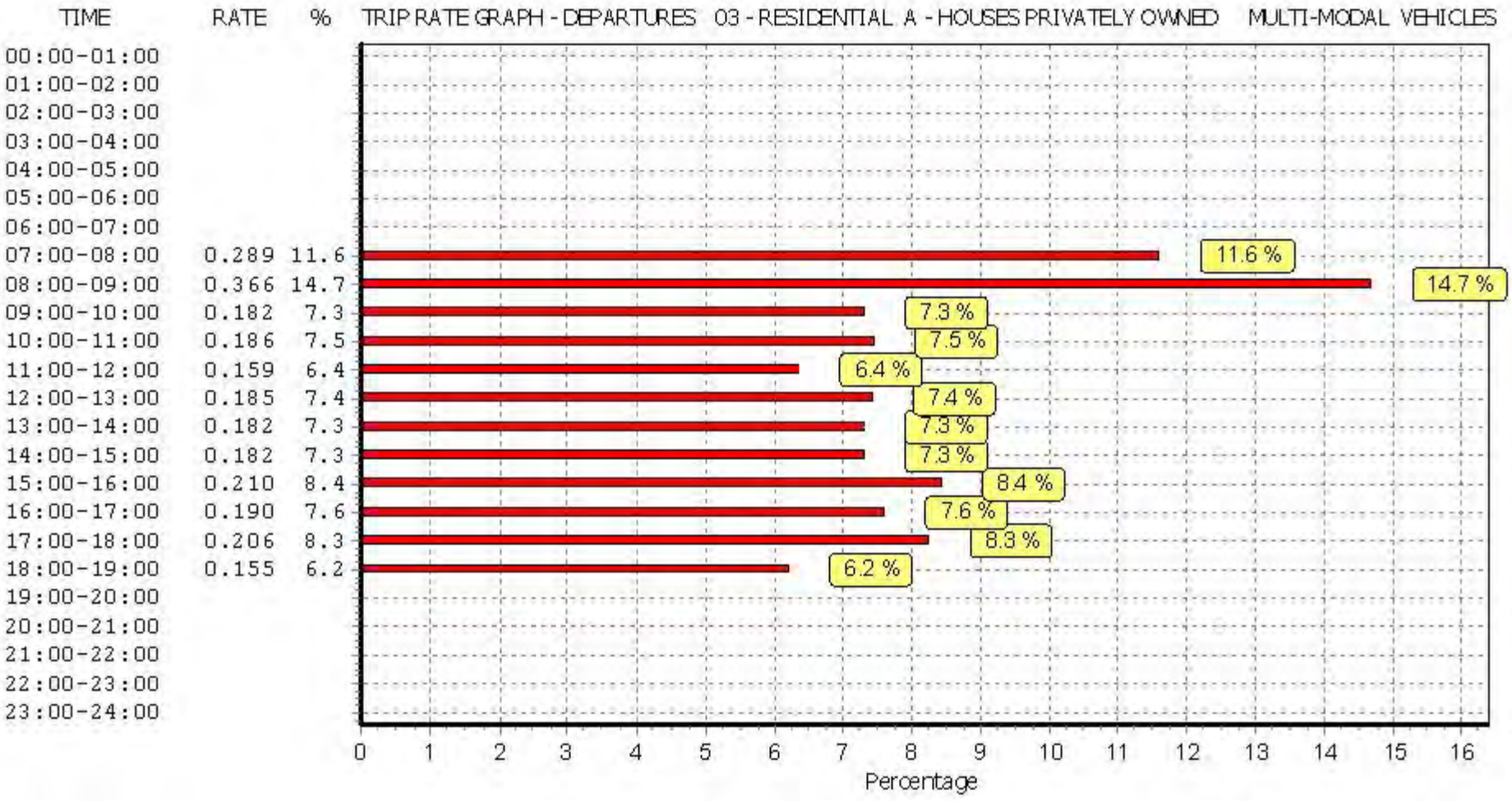
Trip rate parameter range selected:	28 - 237 (units:)
Survey date date range:	01/01/08 - 12/11/15
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	2

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

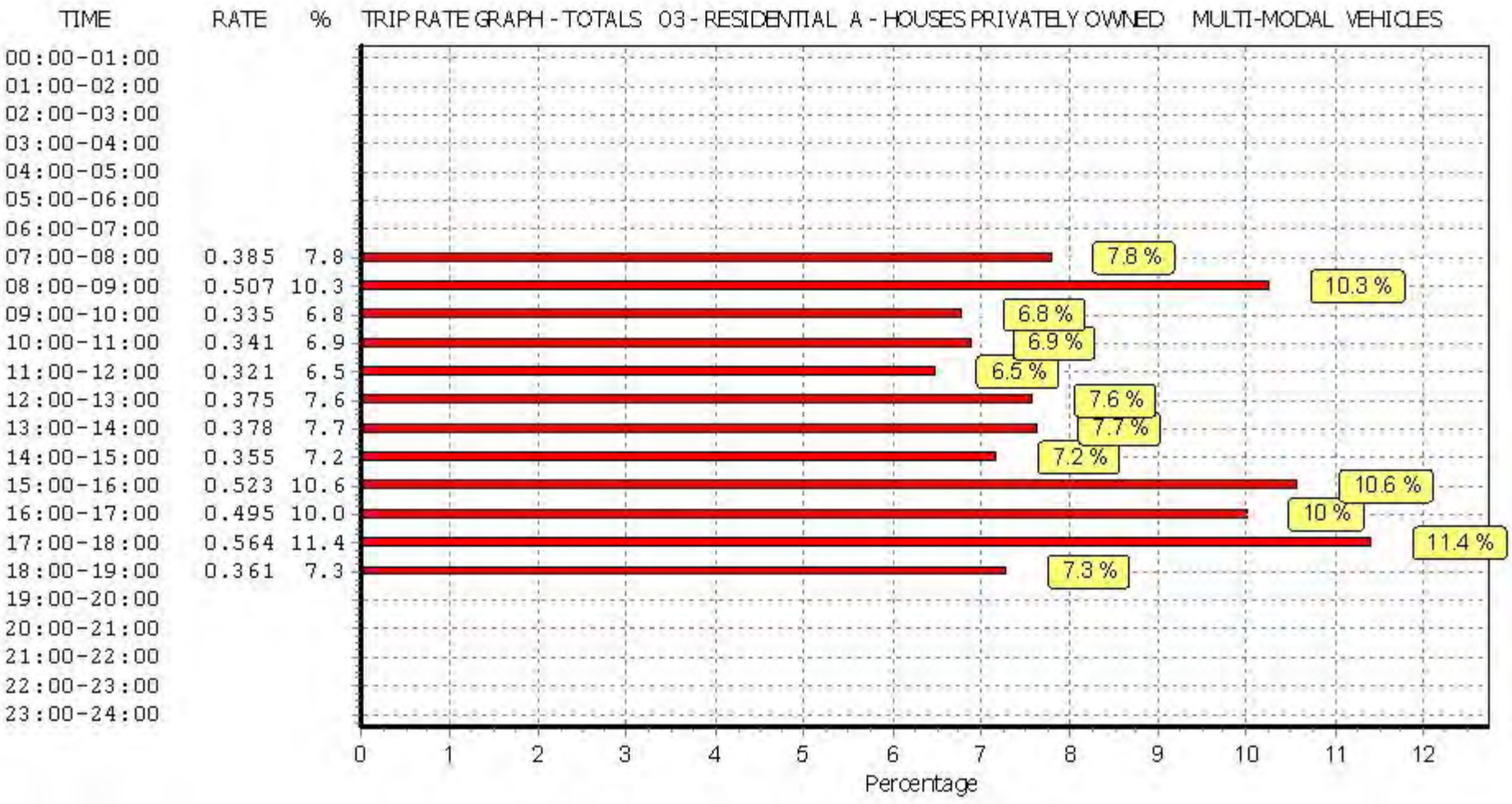
Odyssey Markides LLP 39 York Road London Licence No: 138302



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.



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

	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	9	84	0.143	9	84	0.436	9	84	0.579
08:00 - 09:00	9	84	0.236	9	84	0.757	9	84	0.993
09:00 - 10:00	9	84	0.239	9	84	0.306	9	84	0.545
10:00 - 11:00	9	84	0.238	9	84	0.297	9	84	0.535
11:00 - 12:00	9	84	0.240	9	84	0.251	9	84	0.491
12:00 - 13:00	9	84	0.281	9	84	0.251	9	84	0.532
13:00 - 14:00	9	84	0.304	9	84	0.259	9	84	0.563
14:00 - 15:00	9	84	0.254	9	84	0.275	9	84	0.529
15:00 - 16:00	9	84	0.694	9	84	0.373	9	84	1.067
16:00 - 17:00	9	84	0.535	9	84	0.321	9	84	0.856
17:00 - 18:00	9	84	0.539	9	84	0.329	9	84	0.868
18:00 - 19:00	9	84	0.354	9	84	0.288	9	84	0.642
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.057			4.143			8.200

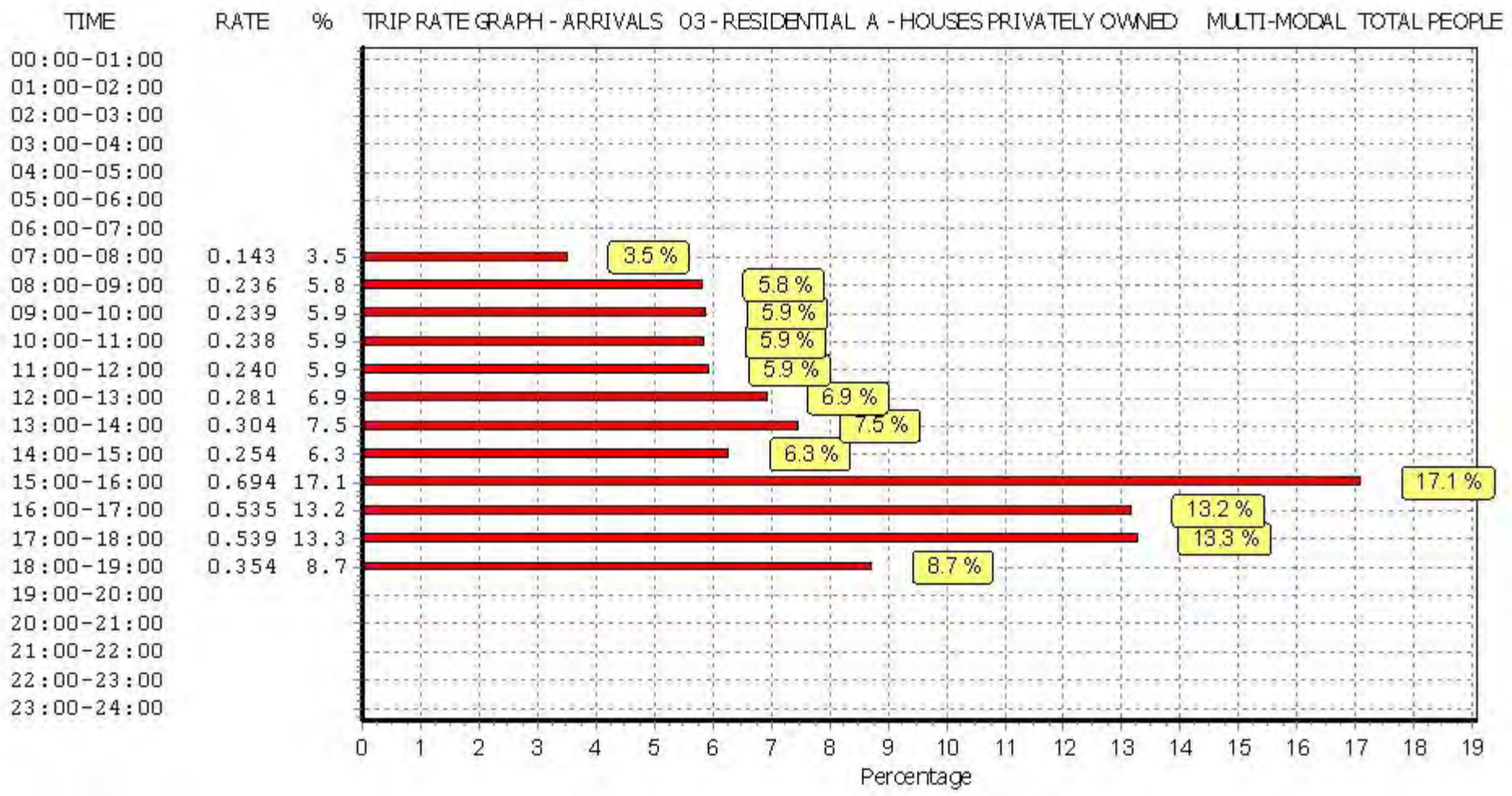
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are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

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

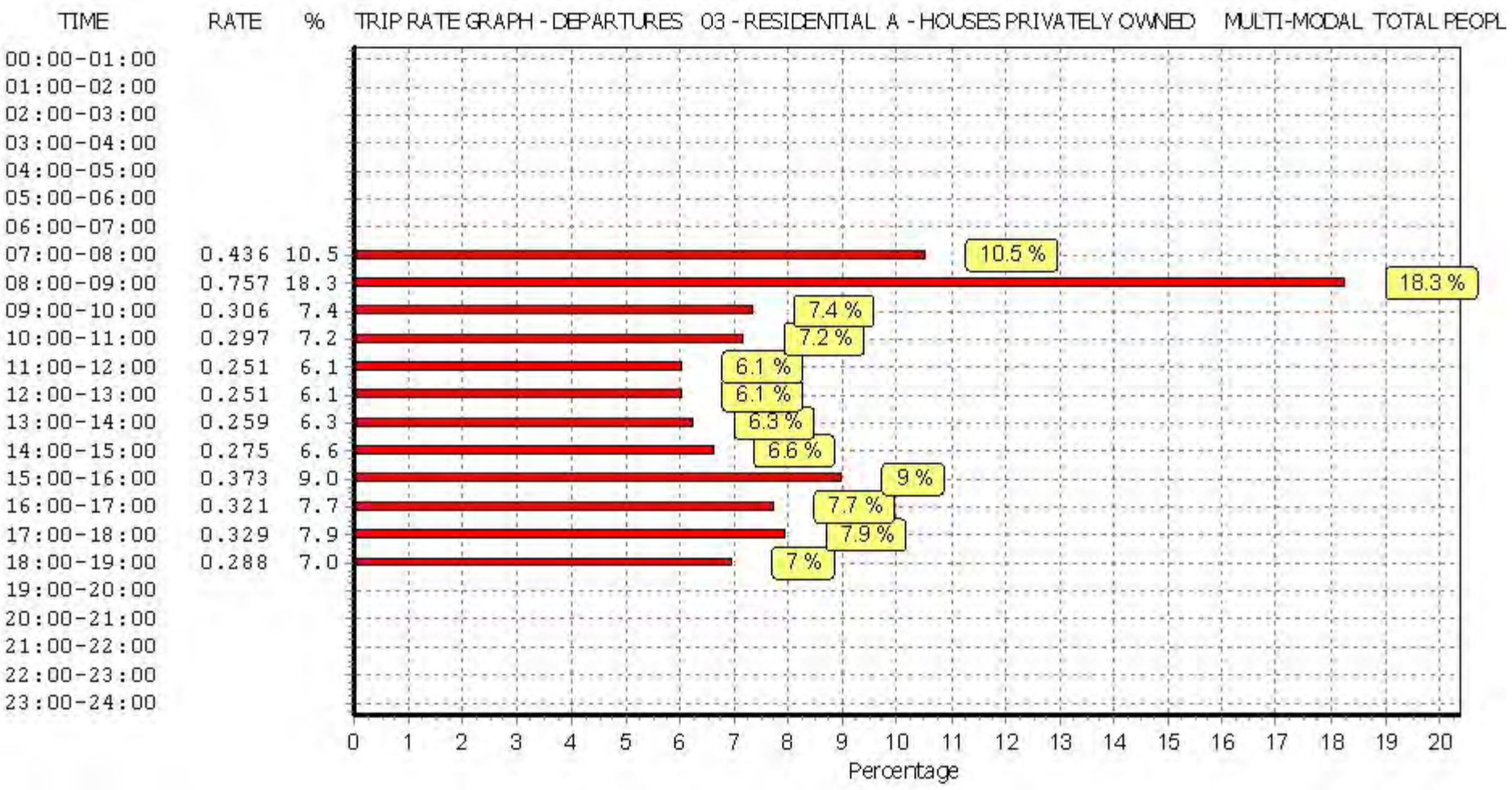
Parameter summary

Trip rate parameter range selected:	28 - 237 (units:)
Survey date date range:	01/01/08 - 12/11/15
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	2

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



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



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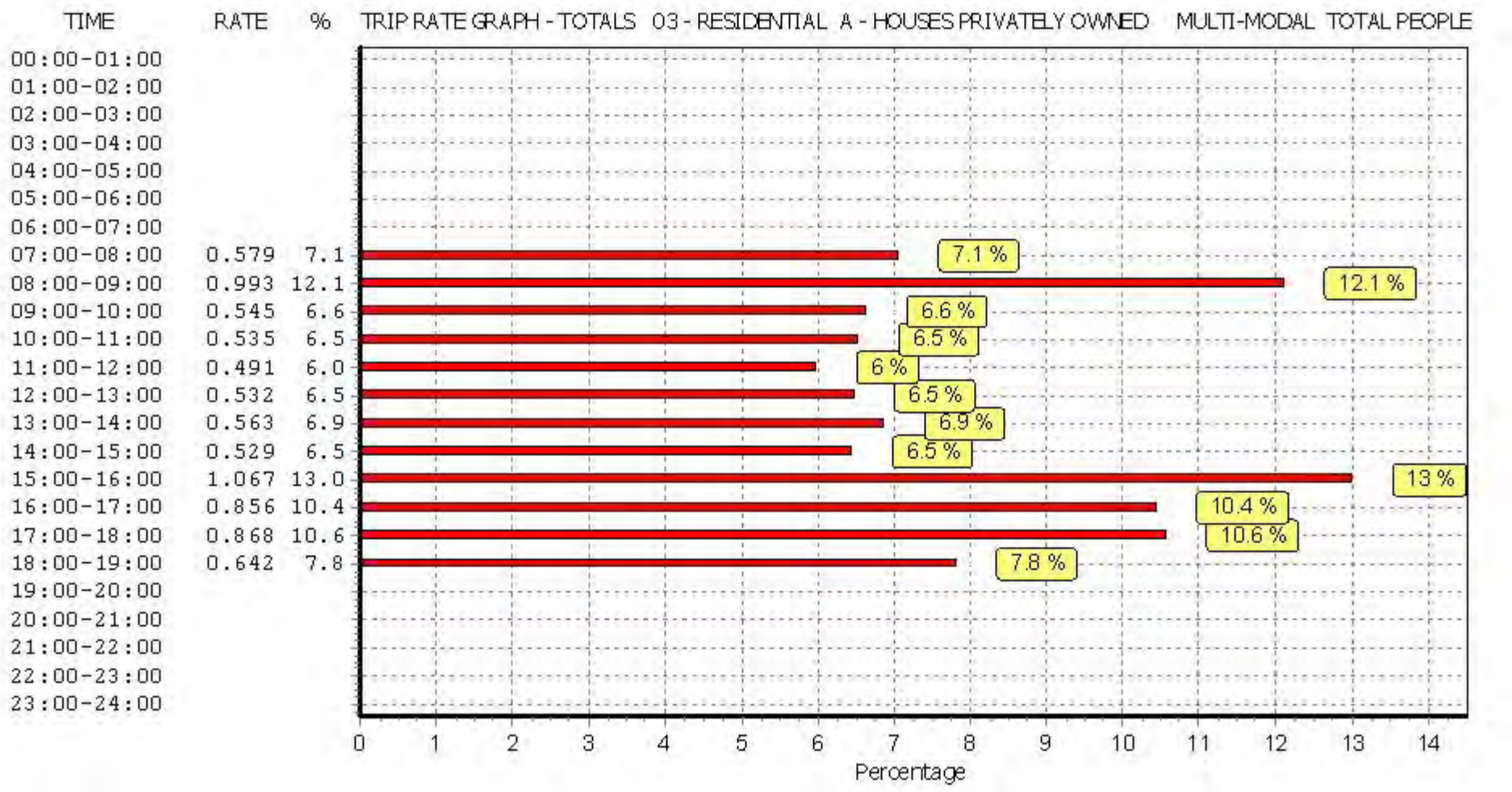

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APPENDIX E

DEVELOPMENT DISTRIBUTION ANALYSIS

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

population	All usual residents aged 16 and over in employment the week before the census
units	Persons
date	2011
usual residence	E02004849 : Broxbourne 007 (2011 super output area - middle layer)

Place of Work	All categories: Method of travel to work (2001 specification)	Driving a car or van	%	Routes 1	Routes 2	Routes 3	Weighting 1	Weighting 2	Weighting 3
E02004843 : Broxbourne 001	4	3	0.2%	100%			0.2%	0.0%	0.0%
E02004844 : Broxbourne 002	31	29	1.5%	100%			1.5%	0.0%	0.0%
E02004845 : Broxbourne 003	55	44	2.3%	100%			2.3%	0.0%	0.0%
E02004846 : Broxbourne 004	20	16	0.8%	100%			0.8%	0.0%	0.0%
E02004847 : Broxbourne 005	13	10	0.5%	100%			0.5%	0.0%	0.0%
E02004848 : Broxbourne 006	32	21	1.1%	100%			1.1%	0.0%	0.0%
E02004849 : Broxbourne 007	126	82	4.4%	100%			4.4%	0.0%	0.0%
E02004850 : Broxbourne 008	105	81	4.3%	100%			4.3%	0.0%	0.0%
E02004851 : Broxbourne 009	26	21	1.1%	100%			1.1%	0.0%	0.0%
E02004852 : Broxbourne 010	84	62	3.3%	100%			3.3%	0.0%	0.0%
E02004853 : Broxbourne 011	52	44	2.3%	100%			2.3%	0.0%	0.0%
E02004854 : Broxbourne 012	33	29	1.5%	100%			1.5%	0.0%	0.0%
E02004855 : Broxbourne 013	60	47	2.5%	100%			2.5%	0.0%	0.0%
Middlesbrough	5	4	0.2%		100%		0.0%	0.2%	0.0%
Halton	1	1	0.1%			100%	0.0%	0.0%	0.1%
Cheshire East	2	2	0.1%			100%	0.0%	0.0%	0.1%
Bolton	1	1	0.1%			100%	0.0%	0.0%	0.1%
Tameside	1	1	0.1%			100%	0.0%	0.0%	0.1%
Kingston upon Hull, City of	1	1	0.1%		100%		0.0%	0.1%	0.0%
Kirklees	1	1	0.1%		50%	50%	0.0%	0.0%	0.0%
East Lindsey	2	2	0.1%		100%		0.0%	0.1%	0.0%
Daventry	1	1	0.1%			100%	0.0%	0.0%	0.1%
Northampton	1	1	0.1%		50%	50%	0.0%	0.0%	0.0%
South Northamptonshire	1	1	0.1%		50%	50%	0.0%	0.0%	0.0%
Broxtowe	1	1	0.1%		25%	75%	0.0%	0.0%	0.0%
Newark and Sherwood	1	1	0.1%		50%	50%	0.0%	0.0%	0.0%
Luton	6	5	0.3%		25%	75%	0.0%	0.1%	0.2%
Southend-on-Sea	1	1	0.1%	100%			0.1%	0.0%	0.0%
Thurrock	6	6	0.3%	100%			0.3%	0.0%	0.0%
Bedford	2	2	0.1%		50%	50%	0.0%	0.1%	0.1%
Central Bedfordshire	1	1	0.1%		50%	50%	0.0%	0.0%	0.0%
Cambridge	2	2	0.1%	50%	50%		0.1%	0.1%	0.0%
East Cambridgeshire	1	1	0.1%	75%	25%		0.0%	0.0%	0.0%
South Cambridgeshire	3	3	0.2%	50%	50%		0.1%	0.1%	0.0%
Basildon	5	4	0.2%	100%			0.2%	0.0%	0.0%
Brentwood	5	5	0.3%	100%			0.3%	0.0%	0.0%
Castle Point	1	1	0.1%	100%			0.1%	0.0%	0.0%
Chelmsford	3	3	0.2%			100%	0.0%	0.0%	0.2%
Epping Forest	74	64	3.4%	50%		50%	1.7%	0.0%	1.7%
Harlow	36	28	1.5%			100%	0.0%	0.0%	1.5%
Uttlesford	10	7	0.4%			100%	0.0%	0.0%	0.4%
Dacorum	5	5	0.3%			100%	0.0%	0.0%	0.3%
East Hertfordshire	170	156	8.3%	100%			8.3%	0.0%	0.0%
Hertsmere	92	86	4.6%			100%	0.0%	0.0%	4.6%
North Hertfordshire	15	13	0.7%		100%		0.0%	0.7%	0.0%
St Albans	37	33	1.8%		50%	50%	0.0%	0.9%	0.9%

Routes	Route Description
1	East along B156
2	West along B156, north at Plough Lane
3	West along B156, south at Plough Lane

Stevenage	11	10	0.5%		50%	50%	0.0%	0.3%	0.3%
Three Rivers	11	10	0.5%			100%	0.0%	0.0%	0.5%
Watford	14	13	0.7%		50%	50%	0.0%	0.3%	0.3%
Welwyn Hatfield	189	164	8.7%		100%		0.0%	8.7%	0.0%
St Edmundsbury	1	1	0.1%	100%			0.1%	0.0%	0.0%
Suffolk Coastal	1	1	0.1%	100%			0.1%	0.0%	0.0%
Barking and Dagenham	7	7	0.4%	100%			0.4%	0.0%	0.0%
Barnet	100	83	4.4%			100%	0.0%	0.0%	4.4%
Bexley	1	1	0.1%	100%			0.1%	0.0%	0.0%
Brent	10	10	0.5%			100%	0.0%	0.0%	0.5%
Bromley	1	1	0.1%	100%			0.1%	0.0%	0.0%
Camden	67	15	0.8%			100%	0.0%	0.0%	0.8%
Croydon	2	1	0.1%	100%			0.1%	0.0%	0.0%
Ealing	5	5	0.3%			100%	0.0%	0.0%	0.3%
Enfield	411	362	19.2%			100%	0.0%	0.0%	19.2%
Greenwich	3	2	0.1%	100%			0.1%	0.0%	0.0%
Hackney	25	9	0.5%	50%		50%	0.2%	0.0%	0.2%
Hammersmith and Fulham	7	3	0.2%			100%	0.0%	0.0%	0.2%
Haringey	93	77	4.1%	50%		50%	2.0%	0.0%	2.0%
Harrow	3	2	0.1%			100%	0.0%	0.0%	0.1%
Havering	10	10	0.5%	100%			0.5%	0.0%	0.0%
Hillingdon	6	6	0.3%			100%	0.0%	0.0%	0.3%
Hounslow	13	10	0.5%			100%	0.0%	0.0%	0.5%
Islington	73	25	1.3%	50%		50%	0.7%	0.0%	0.7%
Kensington and Chelsea	8	2	0.1%			100%	0.0%	0.0%	0.1%
Kingston upon Thames	1	1	0.1%			100%	0.0%	0.0%	0.1%
Lambeth	9	1	0.1%	50%		50%	0.0%	0.0%	0.0%
Lewisham	3	2	0.1%	100%			0.1%	0.0%	0.0%
Newham	11	3	0.2%	100%			0.2%	0.0%	0.0%
Redbridge	15	14	0.7%	100%			0.7%	0.0%	0.0%
Southwark	29	4	0.2%	100%			0.2%	0.0%	0.0%
Tower Hamlets	47	22	1.2%	100%			1.2%	0.0%	0.0%
Waltham Forest	29	23	1.2%	50%		50%	0.6%	0.0%	0.6%
Westminster,City of London	240	14	0.7%			100%	0.0%	0.0%	0.7%
Bracknell Forest	2	2	0.1%			100%	0.0%	0.0%	0.1%
West Berkshire	1	1	0.1%			100%	0.0%	0.0%	0.1%
Milton Keynes	4	4	0.2%		50%	50%	0.0%	0.1%	0.1%
Brighton and Hove	1	1	0.1%	75%		25%	0.0%	0.0%	0.0%
Aylesbury Vale	1	1	0.1%			100%	0.0%	0.0%	0.1%
Chiltern	2	2	0.1%		25%	75%	0.0%	0.0%	0.1%
South Bucks	2	2	0.1%		25%	75%	0.0%	0.0%	0.1%
Wycombe	4	3	0.2%		25%	75%	0.0%	0.0%	0.1%
Eastleigh	1	1	0.1%			100%	0.0%	0.0%	0.1%
Havant	1	1	0.1%	50%		50%	0.0%	0.0%	0.0%
Test Valley	2	2	0.1%			100%	0.0%	0.0%	0.1%
Dartford	1	1	0.1%	100%			0.1%	0.0%	0.0%
Sevenoaks	4	4	0.2%	100%			0.2%	0.0%	0.0%
Oxford	1	1	0.1%			100%	0.0%	0.0%	0.1%
South Oxfordshire	2	2	0.1%			100%	0.0%	0.0%	0.1%
Elmbridge	1	1	0.1%			100%	0.0%	0.0%	0.1%
Guildford	1	1	0.1%			100%	0.0%	0.0%	0.1%
Runnymede	1	1	0.1%			100%	0.0%	0.0%	0.1%
Surrey Heath	2	2	0.1%			100%	0.0%	0.0%	0.1%
Waverley	1	1	0.1%			100%	0.0%	0.0%	0.1%
Bath and North East Somerset	1	1	0.1%			100%	0.0%	0.0%	0.1%
Wiltshire	1	1	0.1%			100%	0.0%	0.0%	0.1%
South Gloucestershire	1	1	0.1%			100%	0.0%	0.0%	0.1%
Swindon	1	1	0.1%			100%	0.0%	0.0%	0.1%
		1,885	100.0%				44.6%	11.9%	43.6%