

Howbury Hall Estates

Land at Water End, Renhold

Project Reference: 2008-005/TN/01

Technical Note – Access Appraisal

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1 Introduction

- 1.1 Transport Planning Associates (TPA) has been instructed by Phillips Planning Services (PPS) on behalf of Howbury Hall Estate to prepare an access appraisal examining options for vehicle and pedestrian access to support proposals for a proposed employment development of land at Water End, Renhold, Bedford, (the Promotion Land).
- 1.2 The land is to be promoted through the emerging Bedford Borough Council Local Plan for a development of up to 840,000 sq.ft of employment use in uses class B1 (C), B2 or B8.
- 1.3 Appropriate guidance on the provision of a suitable form of access to serve the development has been examined. Relevant documents applicable to development in Bedford include the design Manual for Roads and Bridges (DMRB) and the Highway Development Control Design Guide (January 1995), albeit it should be noted that this guidance is being updated. Pertinent to the consideration of an appropriate form of access, however, is Section 2.2 of the Council's design guide 'Distributor Roads Definitions' provides an indicative road hierarchy and defines Primary Distributor Roads as:

"The main urban and inter urban routes and cater for all long distance traffic movements that are essentially local to Bedfordshire".

- 1.4 Further, the Council's Design Guide defines a District Distributor Road as those that:

"distribute traffic between the residential, industrial and business districts of the major built-up areas and act as the main feeder routes to the primary distributor network".

- 1.5 The general considerations for the design of junctions onto each of these road categories will be considered in the following sections of this access appraisal.
- 1.6 The Promotion Land is illustrated in **Figure 1** below.

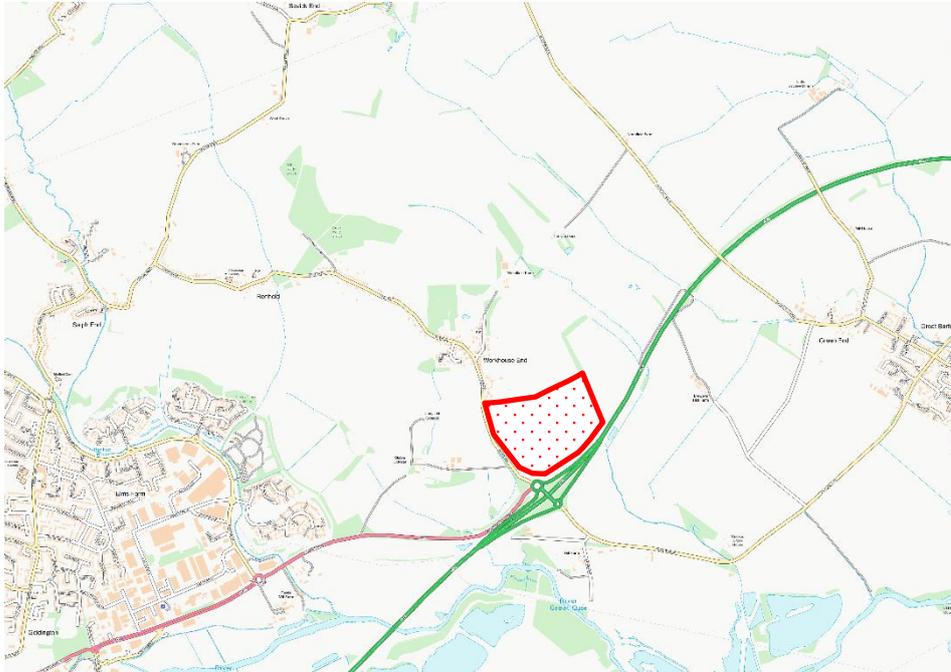


Figure 1 – Promotion Site Location

2 Existing highway infrastructure appraisal

Site description

- 2.1 The Promotion Land consists of an area agricultural land, within the ownership of Howbury Hall Estate in Renhold, to the east of Bedford. The promotion Land is located to the east of Water Lane and to the north of the roundabout junction of the A4280, Water End, the A421 on and off slips and the overbridge of the A421.

Local highway network

- 2.2 The promotion land would be accessed by the northern of the two roundabouts which provide access the A421 from the A4280 St Neots Road and Water End.
- 2.3 To the west of the northern roundabout, St Neots Road forms part of the A4280 and provides a highway connection between the eastern extents of the urban settlement of Bedford and the A421. St Neots Road is single (two lane) carriageway with running traffic lanes that have a width of c.3.25m separated by hatched road markings. In the vicinity of the roundabout St Neots Road is subject to the national maximum speed limit (60mph for a single carriageway road). St Neots Road would be classified as a District Distributor Road based upon the guidance contained in the Council's design guide.
- 2.4 To the north of this roundabout Water End is rural in character approximately 5m in width and is subject to the national speed limit of 60 mph. The road is restricted to access for cars and motorbikes between the hours of 7.00 to 9.30am and 3.30pm to 6.30pm. The road provides access to the village of Renhold, which is located approximately 450m north of the roundabout.
- 2.5 The A421 forms part of the strategic Trunk Road network, managed by Highways England on behalf of the Department for Transport. In the vicinity of the junction the A421 is dual carriageway forming the Bedford Southern by-pass to the west, before providing access to the M1 motorway and further afield to Milton Keynes. To the east the road provides access to the A1 Trunk Road and then to Cambridge, the A14 and M11 motorway.
- 2.6 To the south of the access roundabout a Link Road crosses the A421 and connects to a second roundabout, which provides access to the westbound A421 on and off-slips and the A4280 St Neots Road. To the west of the roundabout, St Neots Road provides access to the villages of Great Barford and Roxton before intersecting with the A421 and the A1 at the 'Black Cat' roundabout.
- 2.7 Full street lighting is provided on both roundabouts and on St Neots Road to the east and west.

2.8 The highways context of the site is presented in Figure 2.



Figure 2 – Highways context

Pedestrian/cycle infrastructure

- 2.9 A pedestrian footway, adjacent the running carriageway exists along the northern side of St Neots Road to the west of the promotion site and is c.1,5m in width. This footway extends around the northern side of the northern roundabout and along the eastern side of the Link Road and to the east of the southern roundabout, before continuing beside St Neots Road to the east.
- 2.10 There is little in the form of a trip attractor for pedestrian movements to the east of the site but this footway, provides for pedestrian movements towards residential areas, Elm Farm Industrial Estate and a number of retail units, including Go Outdoors, Lidl and Waitrose to the east.
- 2.11 The footway is signed as shared use for cyclists and pedestrians and would therefore provide a link to the promotions side from Bedford for cyclist. Improvements to the width of the footway could be facilitated as part of the development.

Public transport infrastructure

- 2.12 An examination of local public transport infrastructure provision reveals that a number of local bus services pass along St Neots Road, albeit that the closest available bus stops some distance from the promotion site.

3 Access Appraisal

- 3.1 Options for accessing the promotion land have been examined. St Neots Road is considered to be a District Distributor Road as defined by the Council's guidance.
- 3.2 In its guidance for access into development site from Radial Distributor Road the Council states that access junctions *"will be assessed to ensure that good design standards are adhered to with particular consideration given to layout and visibility, junction spacing and the effect of the junction on the movement of vehicles in the main road traffic flow"*.
- 3.3 In developing the appropriate form of access the requirements of the Council have been recognised. Suitable options have been examined and the guidance contained in the Design Manual for Roads and Bridges (DMRB) has been referred to. In particular, (CD 123) 'Geometric Design of At-Grade Priority and Signal-Controlled Junctions' and CD 116 'Geometric design of roundabouts' have been referred to. Pertinent to the need for good design, the DMRB provides a suitable reference source for the design of the junction to ensure that the Council requirement for 'good-design' is adhered to.
- 3.4 In this instance access to the promotion site will be via a modification to the existing roundabout of the A4280 St Neots Road, the A421 eastbound slips, Water End and the Link Road between the two roundabouts.
- 3.5 Two options for the alterations to the roundabout have been considered. The first involved providing an additional arm from the junction to provide access to the promotion land. However, this would create a roundabout with 5 two-way approaches and a 6th exit only arm, which may cause operational issues.
- 3.6 The preferred access solution would therefore divert Water End into the promotion land area and stop-up the Water End approach to the roundabout. Water End would then intersect with a new access road, which would provide access to the promotion land via the roundabout. The geometric layout of the revised access is presented in our drawing (number 2008-005/SK01) which is contained in **Appendix A**.
- 3.7 Pedestrian access to the site would be achieved by footways on either side of the access road, which would tie into the existing footway that circulates to northern side of the existing roundabout.
- 3.8 Given that the access options conform to the relevant geometric design standards of the DMRB, the designs can be described as being safe.

Site Location

3.9 The location of the site allows for excellent access to the trunk and strategic road network which will allow easy access to the proposed employment units for HGV deliveries and service vehicles, without these vehicles having to pass through built up areas.

Traffic Attraction

3.10 The traffic attracted to the promotion site would be dependent on the final mix of employment uses on the site, with warehousing use attracting significantly fewer trips than light industrial uses.

3.11 However, to give a robust assessment of the number of trips that may be attracted to the promotion site, trip rates for the proposed employment use have been determined using TRICS Land Use 02 – Employment, sub class D – Industrial Estate. The following criteria were used to obtain a sample of sites analogous to the proposed development:

- Sites in England selected;
- Greater London sites removed;
- Weekday surveys only;
- Surveys dating back to 2012; and
- Development with units ranging from 50,000 to 150,000sqm were considered.

3.12 A total of 2 sites were considered comparable to the proposed development. A full copy of the TRICS report is contained in **Appendix B**.

3.13 A summary of the vehicle trip rates for traditional AM and PM peak periods across the whole day is provided in Table 3.1.

Table 3.1 Total vehicle trip rates

	AM peak (0800 to 0900)		PM peak (1700 to 1800)		Whole day (0700 to 1900)	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle	0.479	0.118	0.082	0.551	2.695	2.616
OGV	0.017	0.017	0.019	0.023	0.230	0.226

3.14 The trip rates presented in Table 3.1 have been applied to the development schedule of 840,000sq.ft (78,035 m²) to provide a forecast of person trips that may be generated during each period. Table 3.2 presents the forecast total vehicle trips that may be associated with the proposed development.

Table 3.2 Total vehicle trips

	AM peak (0800 to 0900)		PM peak (1700 to 1800)		12 hour (0700 to 1900)	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle Trips	374	92	64	430	2103	2041
OGV Trips	13	13	15	18	179	176

3.15 It is considered that the number of vehicle trips generated by the promotion site could be accommodated on the local highway network, given the close proximity of the A421 which the majority of trips to/from the development would utilise. Further improvements to the proposed access roundabout could be made within land under the control of the applicant to accommodate the additional vehicle movements associated with the development.

4 Conclusion

- 4.1 Transport Planning Associates (TPA) has been instructed by Phillips Planning Services (PPS) to evaluate options for access to land at Water Lane, Renhold that is being promoted through the Bedford Borough Council Local Plan for a development of up to 840,000sq.m of employment land.
- 4.2 Access to the promotion site would be via a new arm off the existing roundabout of the A4280 St Neots Road, Water End and the A421 eastbound slip roads. To facilitate the new access Water End would be diverted to form a new junction with the access road. Additional improvements to the roundabout could be made to accommodate the additional traffic associated with the development.
- 4.3 The promotion site is positioned with excellent access to the trunk and strategic road network, which would allow HGV movements into and out of the promotion site, without having to pass through urban areas.
- 4.4 The proposed access has been designed with reference to and is fully compliant with the guidance contained in the Design Manual for Roads and Bridges and includes appropriate pedestrian access to the site.
- 4.5 Access to the proposed promotion land is fully compliant with all aspects of the Council's design criteria and can be considered to be a safe design.

Document Management

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Document Review

	Status	Author	Checker	Approver	Date
01	Draft				
-	Issue	IB	TH	IB	14/08/2020
A	Revision ^a				
B	Revision ^b				

a

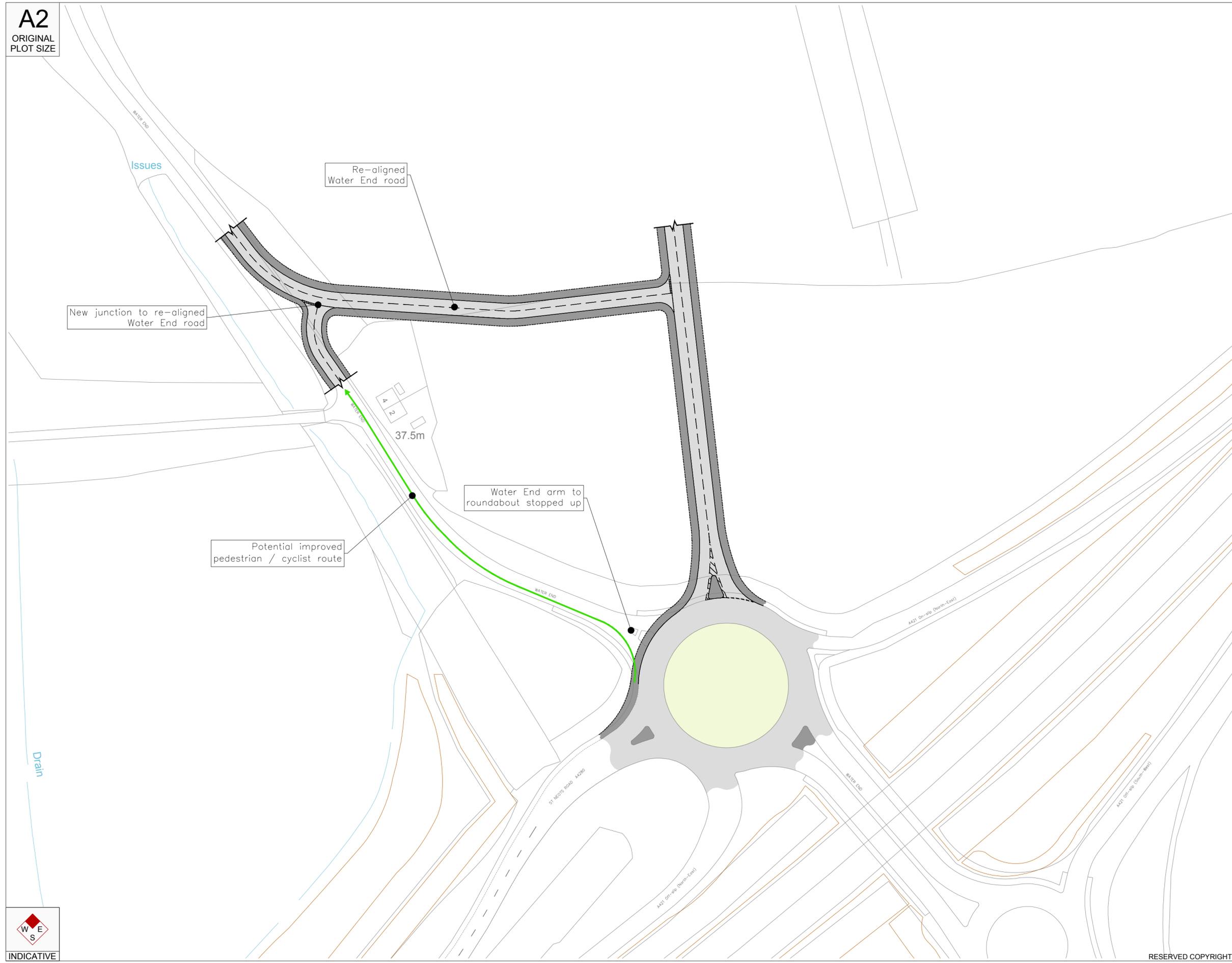
b

APPENDIX A

A2
ORIGINAL
PLOT SIZE

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- NOTES:
1. Indicative un-surveyed existing road markings.
 2. Based on OS Mapping Data.
 3. Subject to confirmation of Highway Boundary.
 4. Subject to topographical survey.



Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

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CLIENT:
Howbury Hall Farm

PROJECT:
**Land at Water End,
Howbury**

TITLE:
**Preliminary 5-Arm
Roundabout Layout**

STATUS:
FOR INFORMATION

SCALE: 1:1,000	DATE: 13.08.20	DRAWN: JA	CHECKED: IB	APPROVED: JC
JOB NO: 2008-005	DRAWING NO: SK01	REVISION: -		



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APPENDIX B

Calculation Reference: AUDIT-219603-200813-0825

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : D - INDUSTRIAL ESTATE
 VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	DC DORSET	1 days
06	WEST MIDLANDS	
	WO WORCESTERSHIRE	1 days

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

Primary Filtering selection:

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

Parameter: Gross floor area
 Actual Range: 70000 to 84575 (units: sqm)
 Range Selected by User: 50000 to 150000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/12 to 26/06/18

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

Selected survey days:

Monday	1 days
Tuesday	1 days

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

Selected survey types:

Manual count	2 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town	1
Free Standing (PPS6 Out of Town)	1

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

Selected Location Sub Categories:

Out of Town	2
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This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B1	1 days
B2	1 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®.

Secondary Filtering selection (Cont.):

Population within 1 mile:

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

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

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	1 days

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

Car ownership within 5 miles:

1.1 to 1.5	2 days
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This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	2 days
----	--------

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

PTAL Rating:

No PTAL Present	2 days
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This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	DC-02-D-20	INDUSTRIAL ESTATE	DORSET
	OLD BARN FARM ROAD NEAR BOURNEMOUTH THREE LEGGED CROSS Free Standing (PPS6 Out of Town) Out of Town Total Gross floor area: 70000 sqm <i>Survey date: MONDAY 24/03/14</i>		
2	WO-02-D-03	INDUSTRIAL ESTATE	WORCESTERSHIRE
	MILLENNIUM WAY EVESHAM Edge of Town Out of Town Total Gross floor area: 84575 sqm <i>Survey date: TUESDAY 26/06/18</i>		
			<i>Survey Type: MANUAL</i>

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 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
 VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	77288	0.372	2	77288	0.085	2	77288	0.457
08:00 - 09:00	2	77288	0.479	2	77288	0.118	2	77288	0.597
09:00 - 10:00	2	77288	0.272	2	77288	0.140	2	77288	0.412
10:00 - 11:00	2	77288	0.220	2	77288	0.121	2	77288	0.341
11:00 - 12:00	2	77288	0.223	2	77288	0.150	2	77288	0.373
12:00 - 13:00	2	77288	0.200	2	77288	0.234	2	77288	0.434
13:00 - 14:00	2	77288	0.269	2	77288	0.250	2	77288	0.519
14:00 - 15:00	2	77288	0.169	2	77288	0.246	2	77288	0.415
15:00 - 16:00	2	77288	0.151	2	77288	0.296	2	77288	0.447
16:00 - 17:00	2	77288	0.213	2	77288	0.265	2	77288	0.478
17:00 - 18:00	2	77288	0.082	2	77288	0.551	2	77288	0.633
18:00 - 19:00	2	77288	0.045	2	77288	0.160	2	77288	0.205
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.695			2.616			5.311

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.*

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Parameter summary

Trip rate parameter range selected:	70000 - 84575 (units: sqm)
Survey date date range:	01/01/12 - 26/06/18
Number of weekdays (Monday-Friday):	2
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
 OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	77288	0.016	2	77288	0.010	2	77288	0.026
08:00 - 09:00	2	77288	0.017	2	77288	0.017	2	77288	0.034
09:00 - 10:00	2	77288	0.028	2	77288	0.021	2	77288	0.049
10:00 - 11:00	2	77288	0.027	2	77288	0.018	2	77288	0.045
11:00 - 12:00	2	77288	0.021	2	77288	0.017	2	77288	0.038
12:00 - 13:00	2	77288	0.030	2	77288	0.022	2	77288	0.052
13:00 - 14:00	2	77288	0.023	2	77288	0.030	2	77288	0.053
14:00 - 15:00	2	77288	0.017	2	77288	0.021	2	77288	0.038
15:00 - 16:00	2	77288	0.018	2	77288	0.025	2	77288	0.043
16:00 - 17:00	2	77288	0.019	2	77288	0.023	2	77288	0.042
17:00 - 18:00	2	77288	0.008	2	77288	0.010	2	77288	0.018
18:00 - 19:00	2	77288	0.006	2	77288	0.012	2	77288	0.018
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.230			0.226			0.456

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.

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