Sunnyside Developments Le Maresquet Field Transport Appraisal

Issue | 27 April 2015

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Job number 242417 242417

Ove Arup & Partners Ltd 63 St Thomas Street Bristol BS1 6JZ United Kingdom www.arup.com

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Document Verification

ARUP

Job title		Le Maresquet Field			Job number	
					242417	
Document title		Transport A	ppraisal		File reference	
Document r	ef					
Revision	Date	Filename	Traffic Impact As	sessment.docx		
Draft 1	21 Apr 2015	Description	Draft issue to LOA.			
			Prepared by	Checked by	Approved by	
		Name	Philippa Ivens	David Watkins	David Watkins	
		Signature	fluens.	Durchychardcomm	- Duddalama-	
Issue	27 Apr	Filename	Site Transport Ap	praisal.docx		
	2015	Description	Issue.			
			Prepared by	Checked by	Approved by	
		Name	Philippa Ivens	David Watkins	David Watkins	
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1 Introduction

Arup have been appointed by Sunnyside Developments to provide transport planning advice relating to potential residential development at Le Maresquet Field, St Sampsons Vale, Guernsey.

The site is a former vinery and the glass houses have been cleared providing a brownfield site zoned as a settlement area in the Urban Plan. Lovell Ozanne Architects have prepared three development options for the site to illustrate developmental options. The options comprise:

- Option 1, providing 31 residential units in a traditional clos development;
- Option 2, providing 70 residential units and a 120-space, single level basement car park. This option is designed to provide accommodation for persons aged over-65; and
- Option 3, providing 104 residential units and a 240-space, two level basement car park.

All options would be accessed from La Hure Mare Road.

Arup have prepared this note to provide initial information on the potential accessibility of the site by all modes and the potential for changes in traffic flows and resulting impacts should development proceed.

2 Existing Transport Infrastructure & Services

This section presents the findings of a review of site access and local transport infrastructure and services. Walking, cycling, public transport and highways access has been reviewed to identify network performance and any potential opportunities/barriers to development.

2.1 Access on Foot

The site is located within St Sampson and there are a wide range of facilities available within a 2km walking distance equivalent to a 20-25 minute walk. This catchment, shown in Figure 1, includes all of St Sampson which has retail, employment and education facilities.



Figure 1 2km walk catchment

Pedestrian access from the site will be onto Hure Mare Road which is a lightly trafficked road with relatively slow vehicle speeds. A footway is provided on one side of the carriageway for the full length. Pedestrians would be required to cross the carriageway to access the footway on the western side of the road but visibility is good and this is not considered a significant safety of amenity issue.

There may be the option to provide a pedestrian access directly from the northern boundary of the site via refurbishment of an existing gated access.

Footways are provided along Le Rue Du Chateau/North Side providing for journeys to The Bridge. Footways are also provided along Route Summerfield. Pedestrian crossing facilities are provided as zebra crossings on two arms of the Bridge roundabout.

Overall access to the site for pedestrians is considered good and there are opportunities for a significant number of journeys to be made on foot. Existing facilities are considered to be good by local standards and no barriers or improvements have been identified save accesses onto the site itself.

2.2 Access by Cycle

Based on a typical cycling catchment of 5km the site is well located to provide access to much of north Guernsey. As shown in Figure 2, key destinations within acceptable cycling distance include the major employment and retail areas of St. Peter Port and St. Sampson.



Figure 2 5km cycle catchment

Within the vicinity of the site, there are reasonable cycling conditions in the local area and many cyclists were observed during peak hour traffic counts.

There are sections of off-carriageway cycle lanes on the route to St Peter Port and the surrounding road network is generally flat with relatively low vehicular speeds.

Overall access to the site for cyclists is considered good and there are opportunities for a significant number of journeys to be made by bike. Existing facilities are considered to be good by local standards and no barriers or improvements have been identified save accesses onto the site itself.

2.3 Public Transport Access

A positive aspect of the site in locational terms is its proximity to public transport services. The nearest westbound bus stop to the site is located at the junction of Hure Mare Road with Route Summerfield, approximately 140m from the centre of the site. The bus stop is characterised by an outcrop of footway with painted markings indicating its location.

The nearest eastbound bus stop to the site is located on Route Summerfield, near its junction with Hougue Jehannet, approximately 250m from the centre of the site, around a three minute walk. The bus stop location is indicated by painted markings.

A further bus stop is located in Vale Avenue, approximately 380m west from the site, leading southbound toward St. Peter Port. This bus stop is also indicated by painted markings.

All public bus services on Guernsey are operated by CT Plus. CT Plus rotate summer and winter timetables, in order to respond to passenger demand. The information provided in Table 1 below summaries the current winter services provided from these stops and their service frequency.

No	Route	Frequency (Minutes)			
		Monday -	Friday	Saturday	Sunday
		Daytime	Evening		
11	Airport - St Martin's - St Peter Port - The Bridge - L'Ancresse - Bordeaux Harbour	30	30	30	60
12	St Peter Port - The Bridge - Sandy Hook - Pembroke Bay - L'Islet - The Bridge - St Peter Port	30	60	30	-
91	St Peter Port - St Martin's - Airport - L'Eree - Vazon - Grandes Rocques - L'Islet - Pembroke Bay - The Bridge - St Peter Port	120	-	120	120
92	St Peter Port – The Bridge - Bordeaux - Pembroke Bay - L'Islet - Grandes Rocques - Vazon - L'Eree - Airport - St Martin's - St Peter Port	120		120	120

Table 1 Existing Bus Services

Figure 3 shows the location of the bus stops in relation to the site, with arrows indicating the direction of the service.

Overall public transport services in the area provide two-four buses per hour and provide opportunities for sustainable travel and modal shift from car use.



Figure 3 Bus stop locations

2.4 Background Traffic

The site has an existing gated vehicular access onto Hure Mare Road which bounds the site to the west and south. Hure Mare Road is a narrow unsegregated carriageway. It provides access to Guernsey Works and a local business estate. Along the western site boundary car parking is permitted alongside existing residences and northbound vehicles are often required to give-way to oncoming traffic due to insufficient road width.

Hure Mare Road has major-minor priority junctions with Route Summerfield to the north and North Quay/La Route du Chateau to the south.

The local road network provides good connections to strategic highways including

- North Quay part of the inter harbour route for journeys into The Bridge.
- Les Bas Courtils part of the inter harbour route for journeys south to St Peter Port.
- Route du Braye a traffic priority route for journeys west and south-west.

To inform the study and observe local traffic conditions, traffic count data was collected onsite during peak hours on the 23, 24 and 25 March. The observed peak hour vehicular numbers are shown in Figure 4 and Figure 5 for junctions in the local area.

Highways in the area experience very pronounced peak hour flows and traffic volumes outside of these peak times are relatively low. Based on our experience from other traffic counts on the island the peak hours assessed were 0800-0900 in the AM and 1645-1745 in the PM. These counts were conducted at four junctions in the local area. Note that some interim junctions were not included as they were not considered significant in terms of network capacity impact assessment.

Based on peak hour observations the local highway performs well in peak hours:

- There was no capacity issues identified at the Hure Mare Road / Route Summerfield three-arm priority junction with negligible queues and delays.
- There was no capacity issues identified at the Hure Mare Road / North Quay three-arm priority junction with negligible queues and delays.
- The Bridge roundabout performs well in both peak hours. The roundabout has five arms, however one of these is a local parking exit and another is a local parking area exit. Some minor queues were observed (up to five vehicles), however the roundabout operates well as these typically cleared within a minute or two. A large number of U-turns were observed to/from the southern arms.
- The Route Summerfield / Vale Avenue / Route des Coutures junction is a five arm priority junction with Route Summerfield the major road and the minor arm providing access to a local housing estate. Some congestion was observed at this junction in peak hours, primarily resulting from right-turn traffic to/from Vale Avenue. Maximum observed queues were up to ten vehicles on Vale Avenue but these typically cleared within a minute or two.

Overall the local highway operates well in peak hours and no junctions are operating above capacity.



Figure 4 AM Peak Hour Turning Count, Vehicles, 2015



Figure 5 PM Peak Hour Turning Count, Vehicles, 2015

3 **Trip Making**

This section examines the number of trips that would be generated by the proposed development, with a focus on vehicular trips and changes to traffic demand along the local highway network.

3.1 **Development Mix**

Three development options have been prepared for the site, and are summarised below:

- Option 1: providing 31 residential units in a traditional clos development;
- Option 2: providing 70 residential units and a 110-space single level basement car park; and
- Option 3: providing 104 residential units and a 150-space, one level basement car park.

These three options are designed to provide a reasonable basis for initial assessment depending on the preferred development type and number of units.

3.2 **Trip Rates**

For the purpose of providing a robust assessment of potential trip generation associated with the proposed development, the TRICS sub-category 'Houses Privately Owned' has been adopted. Further filtering has also been undertaken to include sites which share similar locational characteristics, with unsuitable sites within removed.

Based upon the above criteria, Appendix A provides a copy of the TRICS output that includes the details of the six sites identified through the filtering process. Table 2 provides a summary of the weekday AM (0800-0900) and PM (1700-1800) peak hourly vehicular trip rates. A comparison with other residential trip rates used for transport planning work undertaken by Arup in Guernsey shows these rates are comparable and a valid basis for assessment.

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Houses Privately Owned	0.180	0.437	0.437	0.276

3.3 **Trip Generation**

Table 2 Residential Trip Rates

To determine the number of trips that would be generated by the three proposed development options, the trip rate has been multiplied by the number of units specified for each scenario. Table 3 provides a summary of the number of vehicular trips that each option would generate in the AM and PM peak.

Development	Units	AM Peak Hour		PM Peak H	our
Option		In	Out	In	Out
1	31	6	14	20	14
2	70	13	31	44	31
3	104	19	45	64	45

Table 3 Residential Trip Generation

Table 3 shows that the number of peak hour trips for development ranges from 20 in the AM peak for Option 1 (the least intensive development option) to 110 in the PM peak for Option 3 (the most intensive development option).

The PM peak hour is forecast to generate the greatest number of two-way trips and the greatest number of one-way trips (inbound).

3.4 Trip Distribution

Trip distribution has been based on the location of employment in Guernsey, as employment-based trips are the primary generator of peak hour trips. This approach has been used by Arup on previous work for residential development on the island.

Employment data was provided by Guernsey States Social Services department. This data is provided for "Inspector Survey Areas" (ISA), of which there are four for St Peter Port and 32 for the rest of the island. The data provides information on the number of employees in each of these areas. Appendix B contains a list of the areas and the employment population in each.

To determine the trip distribution from the proposed site to each ISA, the most likely route to different parts of the island has been assessed. This approach resulted in three board zones:

Blue - for trips north

Green - for trips south towards Bridge and St Peter Port via Les Banques

Red – for trips west and south-west, initially routed along Route du Braye.

These areas are shown in Figure 6.



Figure 6 Employment Trip Distribution Areas

Trips from the development site have been assigned to each route based on the proportion of jobs within each area. This is on the basis of AM departures for residents leaving the site to go to work across the island and the PM arrivals for residents returning to the site. The reverse proportions have been used for the AM arrivals and the PM departures. Figure 7 shows the resulting peak hour trip distribution to/from the development site.



Figure 7 Peak Hour Trip Distribution

The trip distribution shows that 68% of vehicles would be likely to use North Quay and Bridge heading south towards St Peter Port. Around a third of trips would use Route Summerfield and on towards Route du Braye heading west. Only 4% of trips would head towards the north of the island.

3.5 Trip Assignment

Trip assignments in the AM and PM peak hour have been derived by combining the forecast number of trips resulting from development and the distribution shown in Figure 7.

Figure 8 and Figure 9 show the AM and PM peak trip assignments respectively. All assignment has assumed development option 3 which provides a worst-case for initial assessment.



Figure 8 AM Peak Trip Assignment

Figure 8 shows that in the AM peak hour the worst-case development option would add around 44 vehicles to the southern junction with North Quay with these vehicles all coming from the south via Bridge. Both of the junctions impacted by these trips were observed to be operating within capacity.

Only 18 trips are forecast along Route Summerfield and these trips are forecast to remain on the major arm. The junction with Route Summerfield north of the site has significant spare capacity and is unlikely to be affected by additional trips. The impact at the Route Summerfield / Vale Avenue junction is likely to be minimal. Additional trips would contribute to slightly fewer gaps for vehicles on the minor arms and this could result in some additional delays and queues.



Figure 9 PM Peak Trip Assignment

Figure 9 shows that in the PM peak hour the worst-case development option would add around 50 vehicles to the southern junction with North Quay with these vehicles all coming from the south via Bridge. Both of the junctions impacted by these trips were observed to be operating within capacity.

Only 22 trips are forecast along Route Summerfield and these trips are forecast to remain on the major arm. As with the AM peak hour the junction with Route Summerfield north of the site is unlikely to be affected, while there could be some additional queuing on the minor arms of the Route Summerfield / Vale Avenue junction due to fewer gaps in traffic.

3.6 Development Impact

The impact of development in terms of changes in traffic volumes has been estimated by calculating the percentage change in traffic on turning movements and along highway links.

If taken forward, the development would take a few years to plan, construct and occupy. An assessment baseline of year 2019 has therefore been calculated by applying an assumed growth in traffic of 0.5% per annum to the observed 2015 flows. Assumed growth is inline with other assessments undertaken by Arup on the island.

Application of the growth to 2015 AM and PM peak hour turning counts produces the 2019 forecasts shown in Figure 10 and Figure 11 for the AM and PM peak hours respectively.



Figure 10 Forecast AM Peak Hour Turning Count, Vehicles, 2019



Figure 11 Forecast PM Peak Hour Turning Count, Vehicles, 2019

By combining the 2019 forecast baseline with the forecast development flows the future peak hour traffic flows with development are calculated. This is shown in Figure 12 and Figure 13 for the AM and PM peak hours respectively



Figure 12 Forecast AM Peak Hour Turning Count with Development, Vehicles, 2019



Figure 13 Forecast PM Peak Hour Turning Count with Development, Vehicles, 2019

While Figure 12 and Figure 13 show turning count movements for the AM and PM peak hours respectively, Table 4 shows the two-way highway link traffic volumes.

Table 4	Forecast Two-Way	y Traffic Volumes	on Highway	Links, 2019
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Highway Link	AM Peak Hour	PM Peak Hour
Hure Mare Road north of site	113	92
Hure Mare Road south of site	119	53
Route Summerfield east of site	237	142
Route Summerfield west of site	331	253
North Quay west of site	451	440
Bridge	1,277	1,000

The impact of development in terms of percentage changes in turning movements has been calculated and is shown in Figure 14 and Figure 15 for the AM and PM peak hours respectively.



Figure 14 Forecast Change in AM Peak Hour Turning Count, Vehicles, 2019



Figure 15 Forecast Change in PM Peak Hour Turning Count, Vehicles, 2019

The change in highway link traffic flows resulting from development has also been calculated and is shown in Table 5.

Highway Link	AM Peak Hour Baseline	PM Peak Hour Baseline	AM Peak Hour with-dev.	PM Peak Hour with-dev.
Hure Mare Road north of site	113	92	134	116
Hure Mare Road south of site	119	53	163	103
Route Summerfield east of site	237	142	239	145
Route Summerfield west of site	331	253	349	274
North Quay west of site	451	440	494	490
Bridge	1,277	1,000	1,321	1,050

Table 5 Forecast Impact on Two-Way Traffic Volumes along Highway Links, 2019

The percentage change in two-way traffic volumes on key links in the study area is calculated in Table 6. This identifies a substantial change on traffic flows along Hure Mare Road, particularly in the PM peak hour.

Highway Link	AM Peak Hour %	PM Peak Hour % Change	
	Change		
Hure Mare Road north of site	19%	26%	
Hure Mare Road south of site	37%	94%	
Route Summerfield east of site	1%	2%	
Route Summerfield west of site	5%	8%	
North Quay west of site	10%	11%	
Bridge	3%	5%	

Table 6Forecast Impact on Two-Way Traffic Volumes along Highway Links, 2019

The classification of impacts has been taken from Guidelines for the Environmental Assessment of Road Traffic (GEART) published by the former Institute of Environmental Assessment in 1993.

GEART sets out consideration and, in some cases, thresholds in respect of changes in the volume and composition of traffic to facilitate a subjective judgement of traffic impact and significance. With reference to the change in traffic on **highway links** GEART identifies changes in traffic flow of 30%, 60% and 90% to be considered slight, moderate and substantial respectively. GEART also notes that in sensitive areas changes of 10% could have significance. The following classifications have therefore been applied:

- Changes of less than 10% Negligible.
- Changes of 10-30% Potential slight significance.
- Change of 30-60% Slight significance.
- Changes of 60-90% Moderate significance.
- Changes of 90% Substantial significance.

The thresholds identified have been applied to the changes in traffic volumes calculated in Table 6 to classify the impact of development, shown in Table 7.

Note that the impact on highway capacity would require assessment of junctions using standard assessment software. This has not been undertaken as part of this initial transport assessment.

Highway Link	Impact AM Peak Hour	Impact PM Peak Hour	
Hure Mare Road north of site	Potential slight	Potential slight	
Hure Mare Road south of site	Slight	Substantial	
Route Summerfield east of site	Negligible	Negligible	
Route Summerfield west of site	Negligible	Negligible	
North Quay west of site	Potential slight	Potential slight	
Bridge	Negligible	Negligible	

Table 7Forecast Impact on Two-Way Traffic Volumes along Highway Links, 2019

Table 7 shows that the impact of development is negligible on the majority of links. Only Hure Mare Road south of the site is expected to have a substantial impact as a result of development in the PM peak hour with the impact in the AM peak hour classified as slight. There are potential slight impacts (10-30% impact) along Hure Mare Road north of the site (AM and PM peak hour) and along North Quay west of the site (AM and PM peak hour). In the case of Hure Mare Road although the percentage impacts are classified as significant the baseline traffic volumes are not, and the highway links are therefore not expected to suffer any capacity issues.

4 **Development Access and Car Parking**

Initial discussions have been held with the States' Traffic Services Unit regarding access and car parking for the site.

4.1.1 Access

The primary access is to be provided from La Hure Mare Road on the western side of the development site. Any access is to be designed in accordance with States' standards for a *Neighbourhood Road* in terms of carriageway width and visibility. Design studies have shown that a new access, south of the existing gated access, can provide the required visibility subject to modifications to the boundary wall.

A secondary access is being considered from the southern boundary. Initial studies show that an access at this location would be unable to provide required visibility for a *Neighbourhood Road*.

There may be an option for a reduced standard (*Private Drive*) to be applied if a very small number of units is accessed from the secondary entrance. The private drive visibility standard could be achieved from a relatively central access along the southern boundary of the site. Modifications to the boundary wall would be required to facilitate clear visibility.

4.1.2 Car Parking

Car parking is to be provided in compliance with States' standards as defined in the Urban Area Plan and listed in Table 8. Given the shortage of alternative car parking in the area (including on-street parking) relaxations from this standard are not desirable.

Housing	UAP Rest of Plan Standard
3-4 Habitable rooms	1 space/dwelling allocated to the dwelling plus 1 space per dwelling in the form of adjacent communal parking.
5-6 Habitable rooms	2 spaces per dwelling allocated to the dwelling.
Above 6 habitable rooms	3 spaces/dwelling allocated to the dwelling.

Table 8Parking Requirements

Application of this standard to the development options is shown in Table 9. It is assumed that all units have 5-6 habitable rooms or 3-4 habitable rooms.

Table 9	Parking Requirements
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	Residential Units	Car Parking Required	
Option 1	31	62	
Option 2	70	140	
Option 3	104	208	

Options for car parking include at-grade and basement car parking. Any basement car park would be accessed via a ramp from the western entrance to the development with the ramp and basement designed in compliance with UK and local standards.

Appendix A

TRICS Reports

TRICS	7.2.1 240315 B17.12	(C) 2015 TRICS Consortium Ltd	Tuesday 31/03/15
			Page 1
Arup	63 St Thomas Street	Bristol	Licence No: 701006

Calculation Reference: AUDIT-701006-150331-0351

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use	:	03 - RESIDENTIAL
Category	:	A - HOUSES PRIVATELY OWNED
VEHIČLES	S	

Select	ted reg	ions and areas:					
03	3 SOUTH WEST						
	CW	CORNWALL	1 days				
04	EAST	ANGLIA					
	NF	NORFOLK	1 days				
07	YORK						
	NY	NORTH YORKSHIRE	1 days				
11	SCOT	LAND	-				
	HI	HIGHLAND	1 days				
	PK	PERTH & KINROSS	1 days				
	SR	STIRLING	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:	27 to 115 (units:)
Range Selected by User:	20 to 200 (units:)

Public Transport Provision:

Selection by:

Include all surveys

Date Range: 01/01/07 to 20/05/14

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.

1 days
2 days
1 days
2 days

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

Selected survey types:	
Manual count	6 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.

<u>Selected Locations:</u> Suburban Area (PPS6 Out of Centre)

6

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.

<u>Selected Location Sub Categories:</u> Residential Zone

6

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.

Bristol

Filtering Stage 3 selection:

63 St Thomas Street

Use Class:

C3

Arup

6 days

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

Population within 1 mile:	
1,001 to 5,000	1 days
5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days

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

1 days
2 days
3 days

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

Car ownership within 5 miles:	
0.6 to 1.0	1 days
1.1 to 1.5	5 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

6 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.

Bristol

LIST OF SITES relevant to selection parameters

63 St Thomas Street

Arup

1	CW-03-A-02 SEMI D./DETATCHED BOSVEAN GARDENS		CORNWALL
2	TRURO Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: TUESDAY HI-03-A-14 CALEDONIAN ROAD DALNEIGH INVERNESS	73 18/09/07	Survey Type: MANUAL HIGHLAND
3	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: FRIDAY NF-03-A-01 SEMI DET. & BUNGAL YARMOUTH ROAD	73 13/05/11 OWS	Survey Type: MANUAL NORFOLK
4	CAISTER-ON-SEA Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: TUESDAY NY-03-A-06 BUNGALOWS & SEMI HORSEFAIR	27 16/10/12 DET.	Survey Type: MANUAL NORTH YORKSHI RE
5	BOROUGHBRIDGE Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: FRIDAY PK-03-A-01 DETAC. & BUNGALOW TULLYLUMB TERRACE GORNHILL	115 14/10/11 /S	Survey Type: MANUAL PERTH & KINROSS
6	PERTH Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: WEDNESDAY SR-03-A-01 DETACHED BENVIEW	36 11/05/11	Survey Type: MANUAL STIRLING
	STIRLING Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: Survey date: MONDAY	115 23/04/07	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.

Arup 63 St Thomas Street Bristol

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

	ARRIVALS		DEPARTURES			TOTALS			
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	DWELLS	Rate	Days	DWELLS	Rate	Days	DWELLS	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	6	73	0.068	6	73	0.282	6	73	0.350
08:00 - 09:00	6	73	0.180	6	73	0.437	6	73	0.617
09:00 - 10:00	6	73	0.191	6	73	0.232	6	73	0.423
10:00 - 11:00	6	73	0.162	6	73	0.157	6	73	0.319
11:00 - 12:00	6	73	0.159	6	73	0.173	6	73	0.332
12:00 - 13:00	6	73	0.171	6	73	0.212	6	73	0.383
13:00 - 14:00	6	73	0.235	6	73	0.214	6	73	0.449
14:00 - 15:00	6	73	0.260	6	73	0.271	6	73	0.531
15:00 - 16:00	6	73	0.262	6	73	0.203	6	73	0.465
16:00 - 17:00	6	73	0.360	6	73	0.226	6	73	0.586
17:00 - 18:00	6	73	0.437	6	73	0.276	6	73	0.713
18:00 - 19:00	6	73	0.298	6	73	0.175	6	73	0.473
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.783			2.858			5.641

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:	27 - 115 (units:)
Survey date date range:	01/01/07 - 20/05/14
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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.

Appendix B

ISA Data

Inspector Su	rvey Areas (ISA)						
Survey Area Number of Employees		Orange		Green		Blue	
A	514	Survey Area	Number of Employees	Survey Area	Number of Employees	Survey Area	Number of Employees
MS	4860	1	111	T1	1051	3	275
T1	1051	2	93	T2	3386	4	447
T2	3386	6	250	T3	1576	5 (50%)	376
T3	1576	7	319	T4	2176		
T4	2176	8	481	15 (50%)	557		
1	111	9	283	16	1773		
2	93	10	553	19 (50%)	216		
3	275	11	356	20	468		
4	447	12	526	21	614		
5	751	13	185	22	453		
6	250	14	335	24 (50%)	14		
7	319	15 (50%)	557	25	6357		
8	481	17	145	26	206		
9	283	18	151	5 (50%)	376		
10	553	19 (50%)	216				
11	356	20	468				
12	526	23	740				
13	185	24 (50%)	85				
14	335	27	772				
15	1113	28	190				
16	1773	29	305				
17	145	30	581				
18	151	31	207				
19	431	32	206				
20	468	Total	8114		19221		1098
21	614		28.54%		67.60%		3.86%
22	453						
23	740						
24	170						
25	6357						
26	206						
27	772						
28	190						
29	305						
30	581						
31	207						

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Total