Technical Note – Calculation of School Trip Attraction and Traffic Assignment

Introduction

This technical note provides details of the methodology used to calculate the trip attraction and traffic assignment of a proposed 258 pupil primary school located within Rhoose. This primary school forms part of a proposed mixed use development to the south of Porthkerry Road, which will, in addition to the primary school, also comprise a 350 dwelling residential development. It is proposed that the development will be accessed from a single point of access located along Porthkerry Road between the Ceri Road and Ceri Avenue junctions.

A separate assessment has been undertaken of the residential development, which will be presented in the final Transport Assessment of the scheme. However, as there is likely to be interaction between the proposed residential and school developments, this note also provides further detail on the potential for internal trips to be made between the uses.

The development site forms half of a housing allocation (Housing Site 22) within the Vale of Glamorgan's (VoG) Unitary Development Plan (UDP) 1996 – 2011. A planning application has also already been submitted by Bellway and Persimmon homes for 350 houses, on the neighbouring site to the east which forms the other half of the sites allocation.

Trip Attraction

A trip attraction calculation has been undertaken of the site based on comparative sites within the 'Education – Primary' category of the TRICS database. Table 1 below provides a summary of the calculate trip attraction rates for the assessed AM (08:00-09:00) and PM (17:00-18:00) peak hours, and for the whole day (07:00 – 19:00). A full TRICS output has also been provided as Appendix A.

Table 1: School Trip Attraction Rates (per pupil) Calculated from TRICS

Mode Split	AM Pe	eak (08:00 – 0	9:00)	PM Pe	eak (17:00 – 1	8:00)	Daily	Daily (07:00 – 19:00)	
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Total People	1.252	0.352	1.604	0.037	0.07	0.107	2.387	2.32	4.707
Vehicles	0.37	0.259	0.629	0.027	0.037	0.064	0.882	0.851	1.733
Vehicle Occupants	0.581	0.175	0.756	0.034	0.055	0.089	1.141	1.049	2.19
Pedestrians	0.641	0.174	0.815	0.003	0.014	0.017	1.157	1.191	2.348
Public Transport Users	0.023	0	0.023	0	0	0	0.07	0.061	0.131
Cyclists	0.007	0.003	0.01	0	0.001	0.001	0.019	0.019	0.038

The trip attraction rates in Table 1 have been used to calculate an initial trip attraction for the school. It is noted that, whilst the school will cater for 258 pupils, 48 of these pupils will be nursery children which will be split so that half (24 pupils) attend school during the morning period and the other half (24 pupils) attend during the evening. Thus, the trip attraction figures have been calculated on the basis of 234 full day pupils (i.e. 210 primary pupils and effectively 24 full day nursery places). Details of this analysis are provided in Table 2 below.

Table 2: School Trip Attraction (Based on 234 full day pupils) Calculated from TRICS

Mode Split	Split AM Peak (08:00 – 09:00)				PM Peak (17:00 – 18:00)			Daily (07:00 – 19:00)		
							, (=====,			
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	
Total	202	02	275		1.0	25	FF0	F 42	1101	
People	293	82	375	9	16	25	559	543	1101	
Vehicles	87	61	147	6	9	15	206	199	406	
Vehicle	136	41	177	8	13	21	267	245	512	
Occupants	130	41	1//	0	13	21	207	243	J12	
Pedestrians	150	41	191	1	3	4	271	279	549	
Public										
Transport	5	0	5	0	0	0	16	14	31	
Users										
Cyclists	2	1	2	0	0	0	4	4	9	

The results in Table 2 have been used to calculate the TRICS based daily mode split for the school as shown in Table 3 below.

Table 3: TRICS Based School Daily Mode Split

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Mode Split	Daily Total TRICS Based Trip Attraction (07:00 – 19:00)	TRICS Based Mode Split							
Total People	1101	100%							
Vehicles	406	37%							
Vehicle Occupants	512	47%							
Pedestrians	549	50%							
Public Transport Users	31	3%							
Cyclists	9	1%							

Mode Split Adjustment

Data has been supplied by VoG regarding the mode of travel of pupils attending the nearby Rhws primary school. This local data has been used to calculate the mode split of the proposed school which has been used to adjust the TRICS based trip attraction figures in Table 2. The details of this analysis are discussed below.

Modal Splits

The Rhws School pupil travel mode data is summarised in Table 4. In addition, this data has been grouped into the relevant TRICS mode split categories as outlined in Tables 1 and 2, with details of this provided in Table 5.

Table 4: Rhws School - Mode of Travel

Mode	Numbers of Pupils
Car (one pupil in car)	72
Car share (more than one pupil in car)	120
Bus	8
Walk	96
Cycle	2
Train	1
Any other way (please specify)	8
Total No in class	307

Table 5: Rhws School - Mode of Travel (Grouped into TRICS categories)

Mode	Numbers of Pupils
Total People	307
Vehicles	132
Vehicle Occupants	192
Pedestrians	104
Public Transport Users	9*
Cyclists	2

^{*}includes trips in the 'Any other way' category

For the purpose of this analysis it has been assumed that those pupils recorded as car sharing would do so with one other pupil. Therefore, the vehicle numbers shown in Table 5 have been calculated by halving the car sharers in Table 4 (120 / 2 = 60) before adding the total of the single pupil car journeys (60 + 72 = 132). This analysis therefore represents a worst case assessment of the proportion of vehicles as in some instances more than two pupils may share a vehicle.

The pupil numbers shown in Table 5 have been used to calculate the total daily mode split for the school as shown in Table 6. It is assumed that this mode split will also apply to parents and staff travelling to and from the school.

Table 6: Daily Mode Split of Proposed School

Mode	Numbers of Pupils
Total People	100%
Vehicles	43%
Vehicle Occupants	63%
Pedestrians	34%
Public Transport Users	3%
Cyclists	1%

Adjustment of TRICS Calculation

Mode split adjustment factors have been calculated by dividing the local mode splits shown in Table 6 by the TRICS based mode splits shown in Table 3. These factors are shown in Table 7 below.

Table 7: Mode Split Adjustment Factors

Mode	Mode Split Adjustment Factors
Vehicles	1.17
Vehicle Occupants	1.34
Pedestrians	0.68
Public Transport Users	1.05
Cyclists	0.81

The factors shown in Table 7 have been applied to the trip attraction figures in Table 2. The results of this analysis, which represents the forecast trip attraction of the school, are shown in Table 8 below.

Table 8: Forecast School Trip Attraction

Mode Split	AM Pe	ak (08:00 – 09	9:00)	PM Pe	ak (17:00 – 18	3:00)	Daily	Daily (07:00 – 19:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	
Total People	292	83	375	11	20	31	564	538	1101	
Vehicles	101	71	172	7	10	17	241	233	474	
Vehicle Occupants	183	55	238	11	17	28	359	330	689	
Pedestrians	102	28	130	0	2	3	184	189	373	
Public Transport Users	6	0	6	0	0	0	17	15	32	
Cyclists	1	1	2	0	0	0	4	4	7	

Linked Vehicle Trips

The school vehicle trips will be split into those linked with other uses and designated school trips. For the purpose of this analysis it has been assumed that all linked trips will be work based drop-off / pick-up trips. Thus in the AM peak it is assumed these trips will drop pupils off at school before travelling onto their work destination. Similarly the reverse is assumed to happen in the PM peak as parents drive into school to pick up their children prior to driving home.

The Department for Transport's 'National Travel Survey – 2004' states that:

"17 per cent of morning escort education trips for both men and women were followed by a trip to work or business."

On this basis it has been assumed that 17% of all school trips will be linked work trips with the remaining 83% consisting of designated (single purpose) school trips. The vehicle numbers in Table 8 have therefore been split based on these percentages with the resultant traffic flows shown in Table 9.

Table 9: Forecast School Trips Split by Linked Work trips and Designated Trips

	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Daily (07:00 – 19:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Linked Work Trips	17	12	29	1	2	3	41	40	81
Designated School Trips	84	59	143	6	8	15	200	193	393
Total	101	71	172	7	10	17	241	233	474

Removal of Development Linked Vehicle Trips

The developer (Taylor Wimpey) has confirmed that approximately 91 of the schools 234 full day pupils should come from the development site itself (i.e. from the proposed residential development). For the purpose of this analysis it has been assumed that, with the exception of linked trips, all of the trips from the development will be pedestrian.

As discussed earlier, a separate traffic assessment has been undertaken for the residential development site, which has assessed traffic movements at the site access and the external highway network. Thus, whilst there may be some diversion of traffic from the residential development to the school in the form of linked trips, the impact of these trips on the external highway network would already be taken account of in the traffic assessment of the residential development. Thus, in order to avoid the double counting of these trips, these vehicles therefore need to be subtracted from the net traffic impact of the school. Further details regarding this assessment are provided below.

Calculation of Residential Development's Linked Trips

In order to calculate the linked school trips from the residential development a factor has been calculated which has been applied to the Linked Work Trips shown in Table 9. This factor has been calculated by dividing the estimated number of full day pupils (including nursery pupils) that will reside in the development site (91) by the number of full day pupils within the whole school (91 / 234 = 0.39). The resultant forecast school linked trips from the proposed residential development are shown in Table 10.

Table 10: Forecast Linked School Trips from the Proposed Residential Development

AM Po	AM Peak (08:00 – 09:00)			eak (17:00 – 18	8:00)	Daily (07:00 – 19:00)			
Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total	
7	5	11	0	1	1	16	15	31	

The vehicle numbers in Table 10 have been removed from the Linked Work Trips in Table 9 in order to calculate the numbers of vehicles that will arrive and depart from the developments vehicle access. The results of this analysis are shown in Table 11 below.

Table 11: Forecast Additional School Trips Split by Linked Work trips and Designated Trips

	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Daily (07:00 – 19:00)		
	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
Linked Work Trips	11	7	18	1	1	2	25	24	49
Designated School Trips	84	59	143	6	8	15	200	193	393
Total	94	66	161	7	9	16	225	217	442

Trip Reassignment

It is noted that, other than that generated by the proposed housing development, there will be no additional pupil demand proposed by the development. Furthermore, for reasons already discussed the Primary School education trips from the proposed residential site have already been extracted from the trip attraction figures shown in Table 11. The remaining pupil demand should already be included in the base traffic figures which include background traffic growth and traffic from committed developments. It is also noted that without the introduction of the proposed school it is likely that all of the residents of Rhoose would continue to use Rhws School which would obviously need to expand their facility to cater for the additional numbers of pupils. On this basis, it is forecast that the school will lead to a reassignment of traffic flows, from the Rhws school access (located west of the development site along Fontgary Road) to the development access, rather than additional traffic on the network. The calculation of this reassignment is discussed below.

AM Peak

Arrivals

Details of school catchment areas are shown in diagrams included within Appendix A of the VoG Local Development Plan Background Paper titled 'Education Facilities'. The diagram showing the catchment for the English Medium Schools has been extracted and included as Appendix B of this document.

It can be seen from the diagram in Appendix B that the catchment of the Rhws primary school predominantly serves the area of Rhoose. It is considered appropriate to assume that the introduction of the proposed school will effectively divide this catchment in half with the new school taking in some of the overflow from the Rhws School and at the same time providing additional capacity required for the development site (350 dwellings), adjacent Bellway development (350 dwellings), and development site south of the railway line (50 dwellings).

Given that the majority of vehicle catchment is likely to be accessible from the east it has been assumed that 75% of the vehicles will arrive from this direction. Thus it is assumed that the remaining 25% of vehicles will arrive from the west. Thus in terms of turning movements at the developments vehicle access junction it has been assumed that 25% will turn into the junction via the Porthkerry Road (W) arm and 75% of the vehicles will turn into the junction via the Porthkerry Road (E) arm.

As discussed earlier it is likely that the introduction of the school will result in a redistribution of traffic (i.e from Rhws School to the development site) rather than additional traffic on the assessed network. Thus, whilst it has been forecast that 75% of the schools arrivals will turn into the site from the east, it has also been assumed that the same traffic volume will be removed from the straight ahead movement of the junction and subsequent movements on approach from the existing school. Moreover, whilst it is assumed that traffic approaching from the east will travel to the site via Porthkerry Road and / or the Pentir De junction, these trips should not represent additional trips on the network.

It is considered likely that the eastern boundary of the catchment for the proposed school will stop short of the Rhoose Road / Station Road / Fonman Road junction as it is assumed that all households west of this junction will be within the catchment of Rhws School. Notwithstanding this point it is likely that half of the western portion of the catchment (25% / 2 = 12.5%) will be accessible via Station Road. It is assumed that vehicles arriving from this junction would therefore turn right at the Station Road junction onto Rhoose Road, before continuing onto Porthkerry Road and turning right at the development's proposed vehicle access. It is likely that this traffic would have previously turned left at Station Road to access the existing school and therefore an equivalent reduction in traffic has been assumed for the left turn out of this junction.

It is assumed that the remaining 12.5% of the western catchment would reside in the residential streets to the northwest of the development site and to the east of Station Road. These vehicles would also access the site via Rhoose Road / Porthkerry Road and on arrival would also turn right into the development access from the west. It is likely that this traffic would have previously travelled westwards across the Station Road junction to access the existing school and therefore an equivalent reduction in traffic has been assumed for the straight ahead movement on the eastern approach to this junction.

Full details of the arrival distribution are provided in Figure 1. The total AM arrival traffic flows shown in Table 11 have been assigned based on the distribution figures shown in Figure 1, with the results of this analysis shown in Figure 2.

It is noted that, in the AM peak the distribution of the Designated and Linked Arrivals should be the same and therefore no separate distribution has been calculated for these trips.

Departures - Designated Trips

It has been assumed that designated trips would return to their origin in the AM peak. Thus the distribution of departing designated trips, as shown in Figure 3, is a reversal of the trip movements shown in Figure 1. The total AM peak hour designated school departure traffic flows shown in Table 11 have been assigned based on the distribution figures shown in Figure 3, with the results of this analysis shown in Figure 4.

Departures - Linked Work Trips

The distribution of the departing AM peak linked work trips is based on the same assumed departure distribution of the proposed residential development. This distribution is therefore based on that agreed for the neighbouring Bellway / Persimmon housing site to the east, as outlined in Figure 6.1 of the accompanying TA (produced by FMW in June 2010).

As discussed previously the introduction of the school should not represent an increase in traffic on the local network but should merely represent a reassignment of traffic from Rhws School access to the proposed school access. The reassignment of traffic therefore takes account of this.

The resultant distribution, or redistribution, is included as Figure 5 of this report. The AM peak hour linked school departure traffic flows shown in Table 11 have been assigned based on the distribution figures shown in Figure 5, with the results of this analysis shown in Figure 6.

PM Peak

Arrivals – Designated Trips

It is assumed that these trips will have the same distribution as the AM arrivals. On this basis the designated arrival trips shown in Table 11 have been applied to the distributions shown in Figure 1. The results of the analysis are shown in Figure 7.

Arrivals - Linked Work Trips

The distribution of the arriving PM peak linked work trips is based on the same assumed arrival distribution of the proposed residential development. This distribution is therefore based on that agreed for the neighbouring Bellway / Persimmon housing site to the east, as outlined in Figure 6.1 of the accompanying TA (produced by FMW in June 2010).

As discussed previously the introduction of the school should not represent an increase in traffic on the local network but should merely represent a reassignment of traffic from Rhws School access to the proposed school access. The reassignment of traffic therefore takes account of this. The resultant distribution, or redistribution, is included as Figure 8 of this report. The PM peak hour linked school arrival traffic flows shown in Table 11 have been assigned based on the distribution figures shown in Figure 8, with the results of this analysis shown in Figure 9.

Departures

It has been assumed that departure trips would return to their origin in the PM peak. Thus the total PM departure trips shown in Table 11 have been applied to the percentage redistribution figures shown in Figure 3, with the results of this analysis shown in Figure 10.

It is noted that, in the PM peak the distribution of the Designated and Linked Departures should be the same and therefore no separate distribution has been calculated for these trips.

Net School Development Traffic Impact

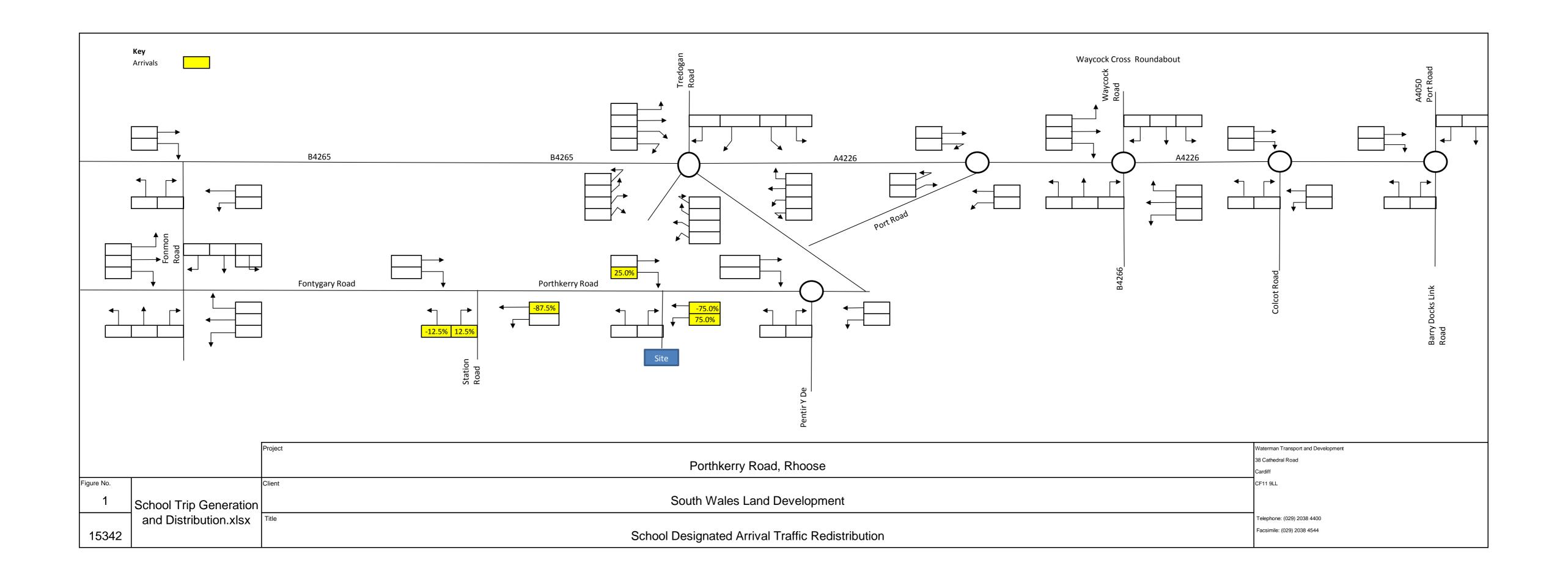
The following traffic scenarios have been combined to create the Net Development Traffic Flow diagrams shown in Figure 12 (AM Peak) and 13 (PM Peak):

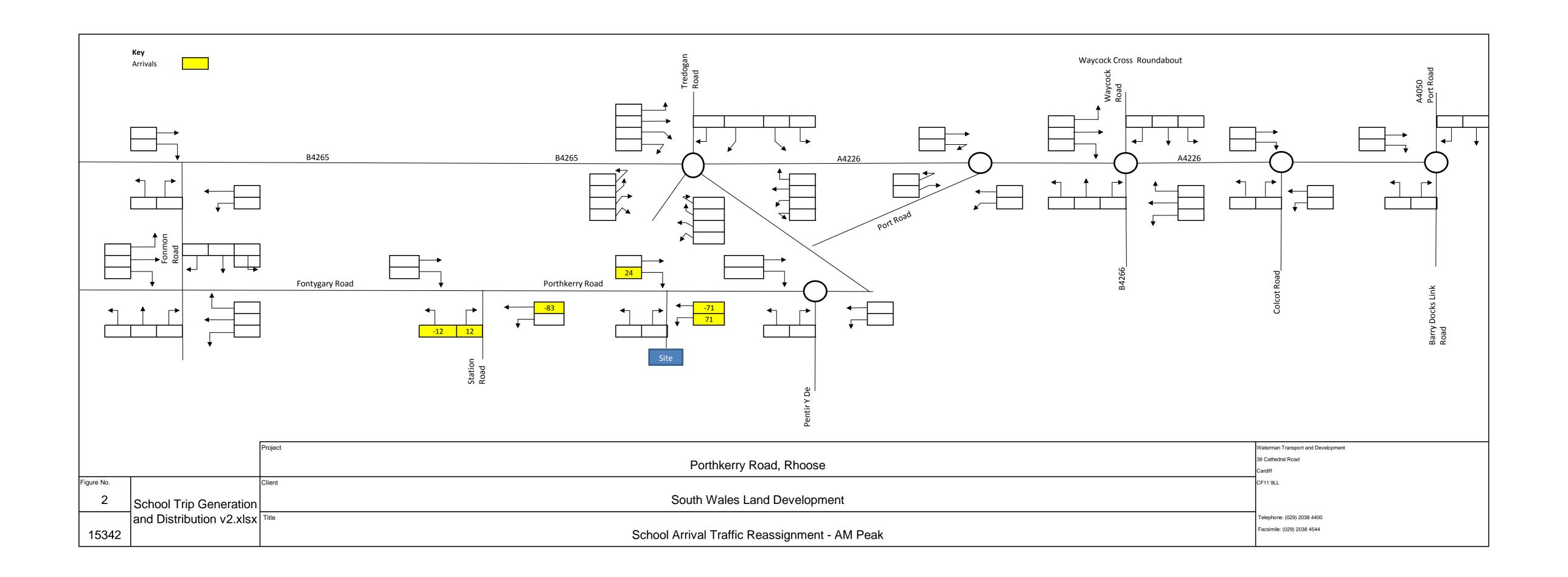
- 'Figure 11 School Net Traffic Impact AM Peak' = 'Figure 2 School Arrival Traffic Reassignment – AM Peak' + 'Figure 4 – School Designated Departure Traffic Reassignment – AM Peak' + 'Figure 6 – School Linked Departure Traffic Reassignment – AM Peak'
- 'Figure 12 School Net Traffic Impact PM Peak' = 'Figure 7 School Designated Arrival Traffic Reassignment – PM Peak' + 'Figure 9 – School Linked Arrival Traffic Reassignment – PM Peak' + 'Figure 10 – School Designated Departure Traffic Reassignment – PM Peak'

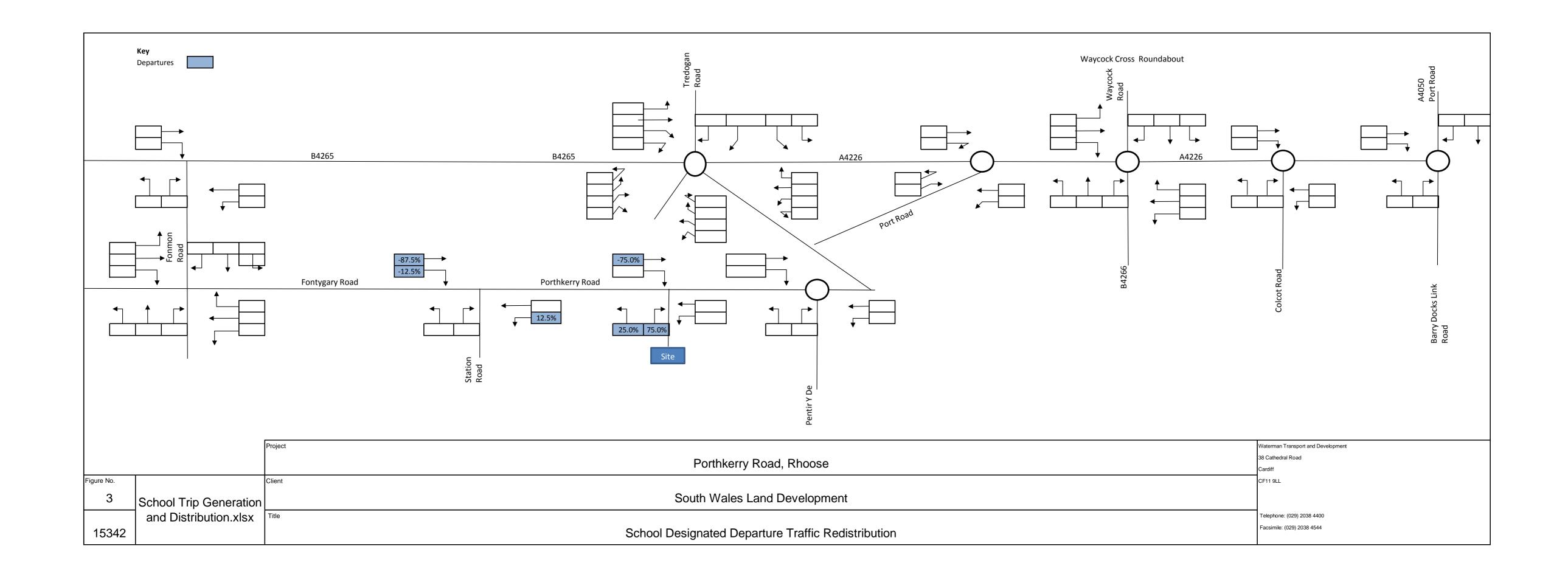
It is noted that these traffic flow diagrams represent a robust assessment of school traffic flows. The reasons for this are as follows:

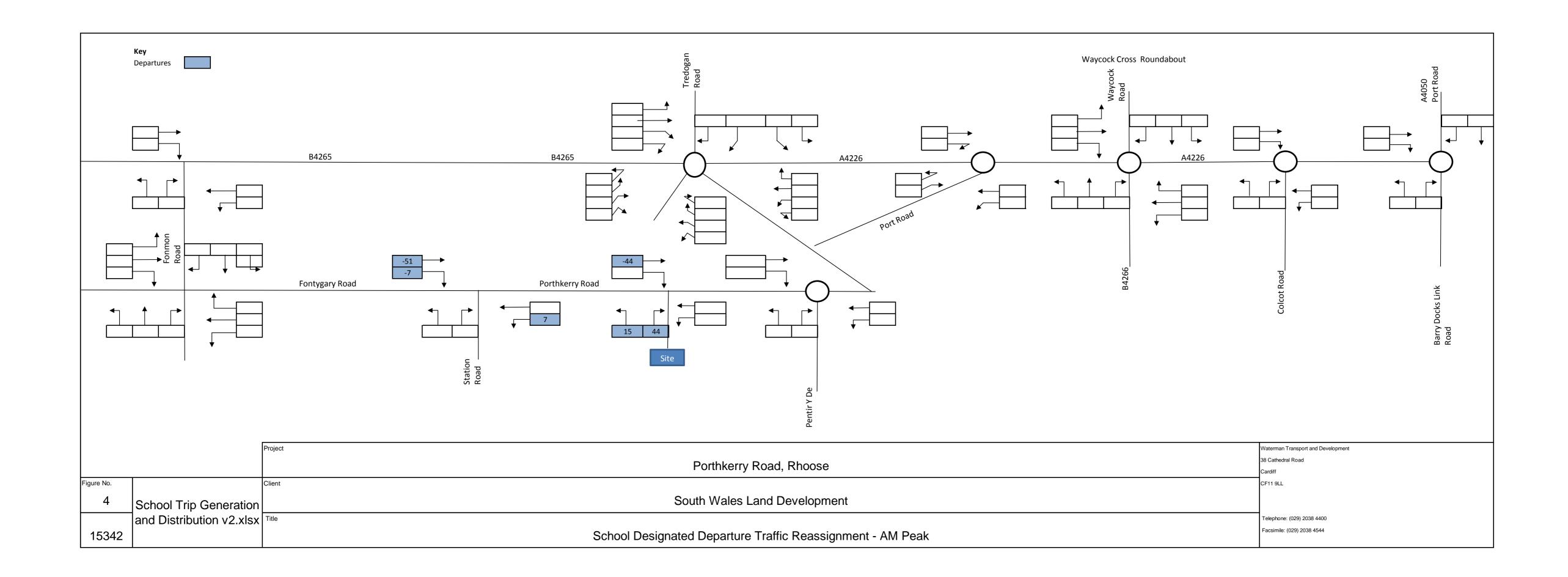
- With regards to car sharers it has been assumed that a maximum of two pupils will share a car when in reality this is likely to be higher.
- No reduction has been introduced to take into account the impact of travel plan measures.
- With the exception of some linked work trips it has been assumed that all of the traffic
 attraction of the school will be external to the site when in reality there may be some
 designated car trips within the site that will not create impact on the external traffic network.
- No reduction has been applied to take account of any potential transport links between the development and adjacent housing areas (e.g. the Persimmon / Bellway site to the east).

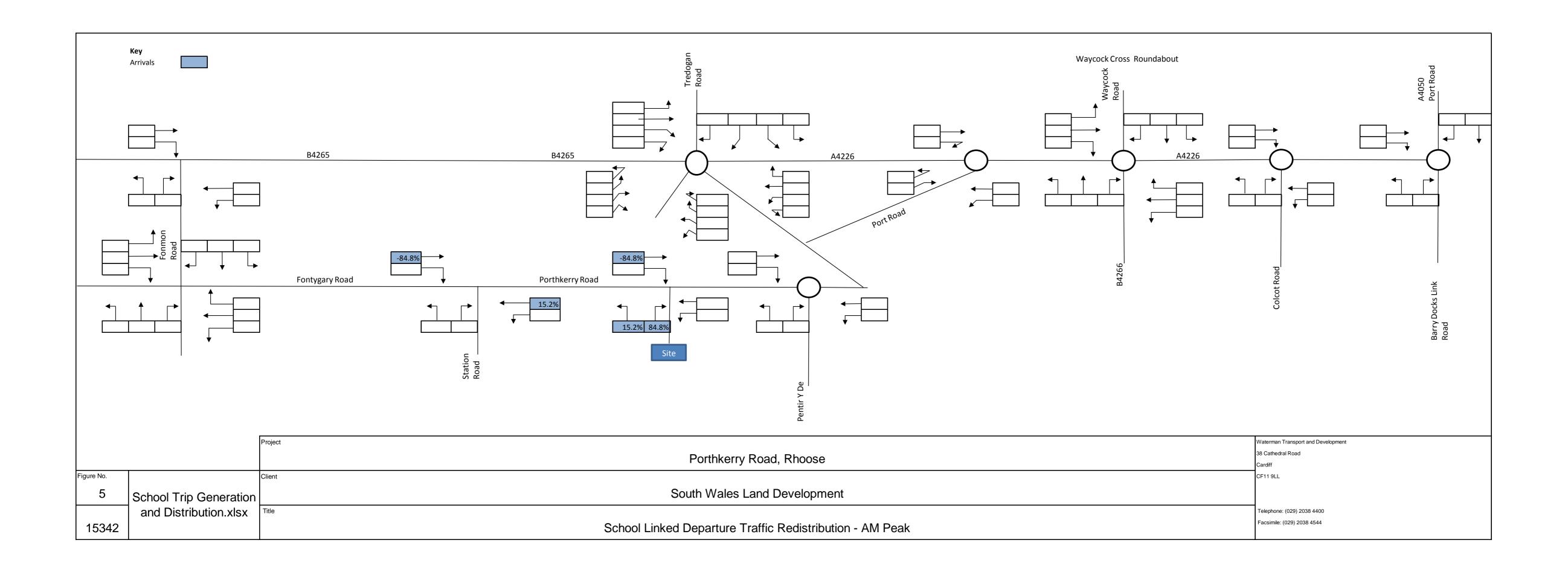
FIGURES

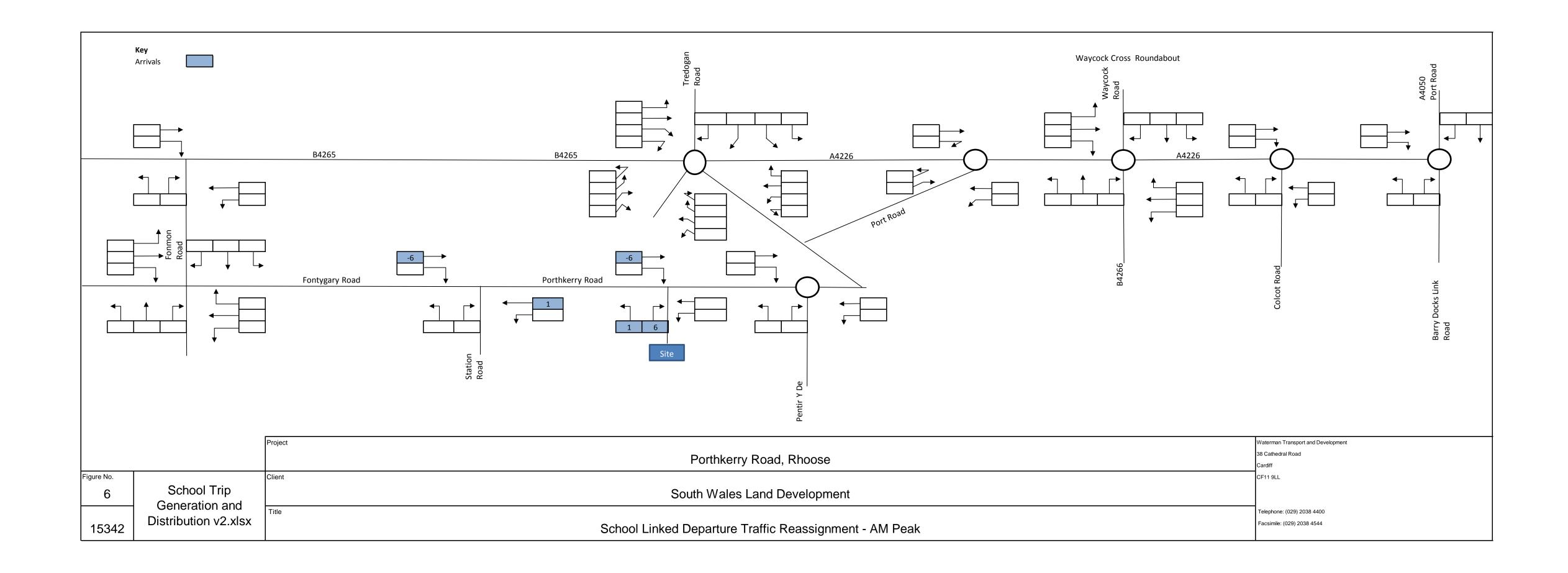


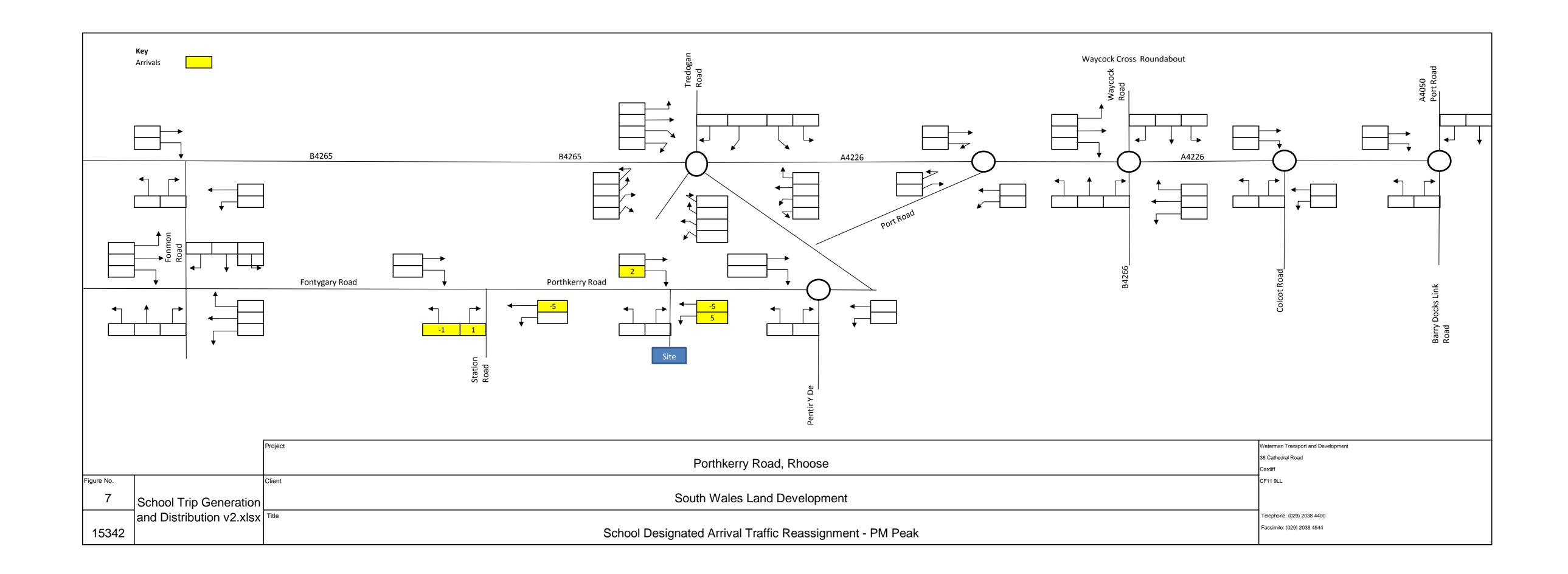


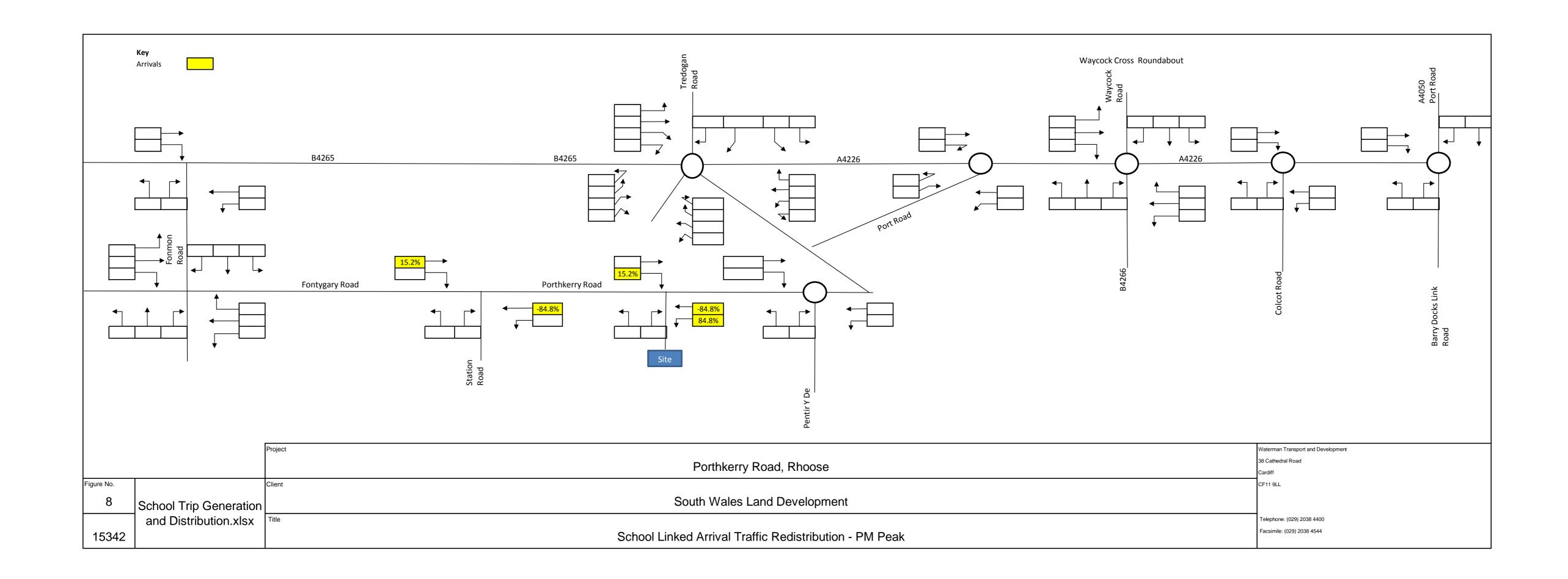


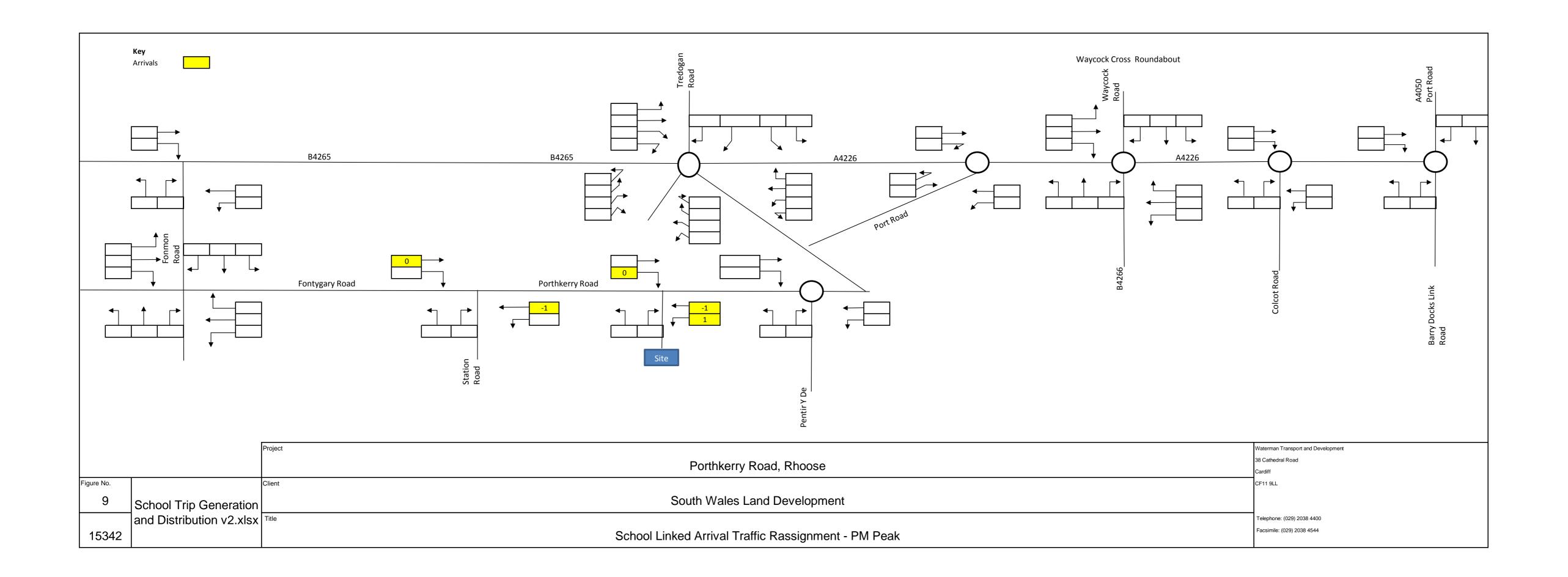


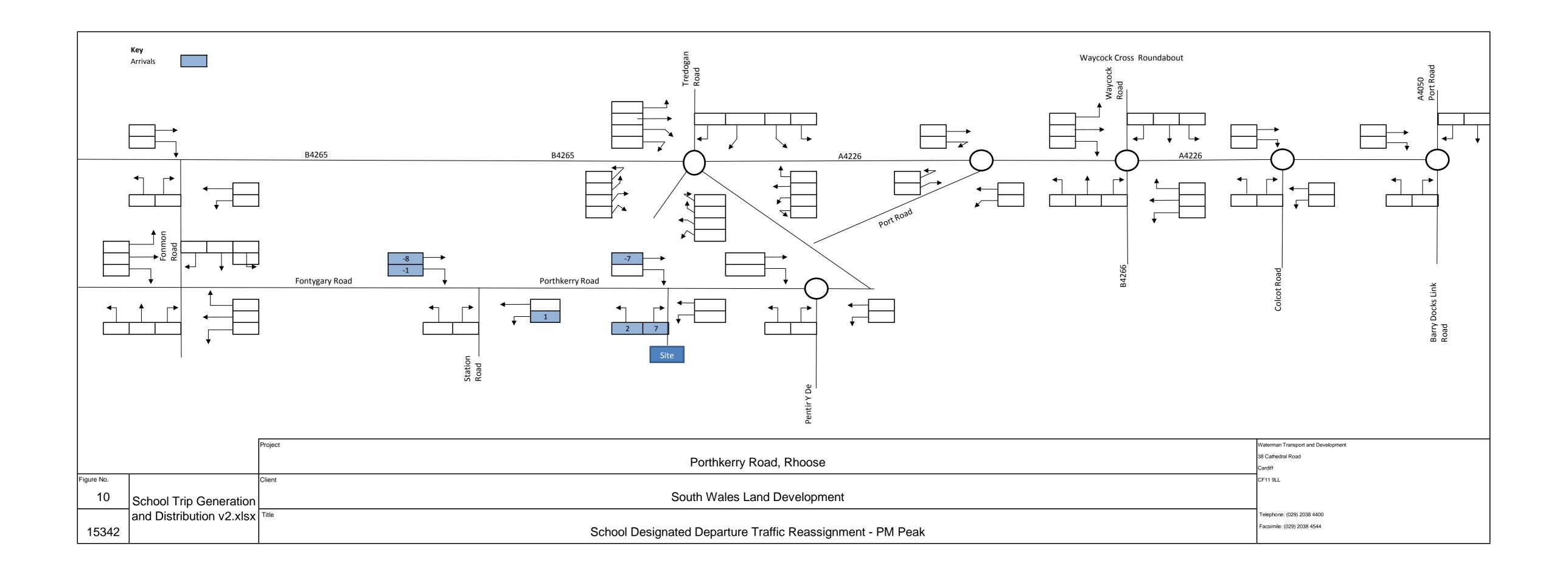


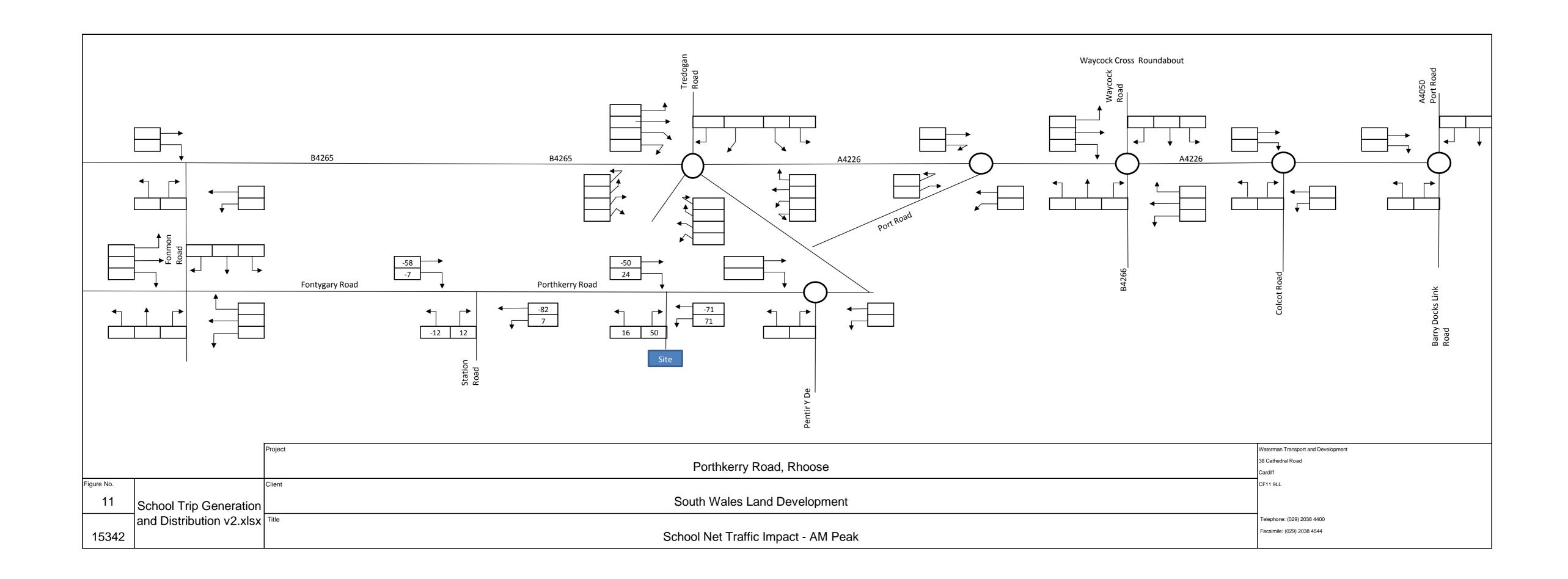


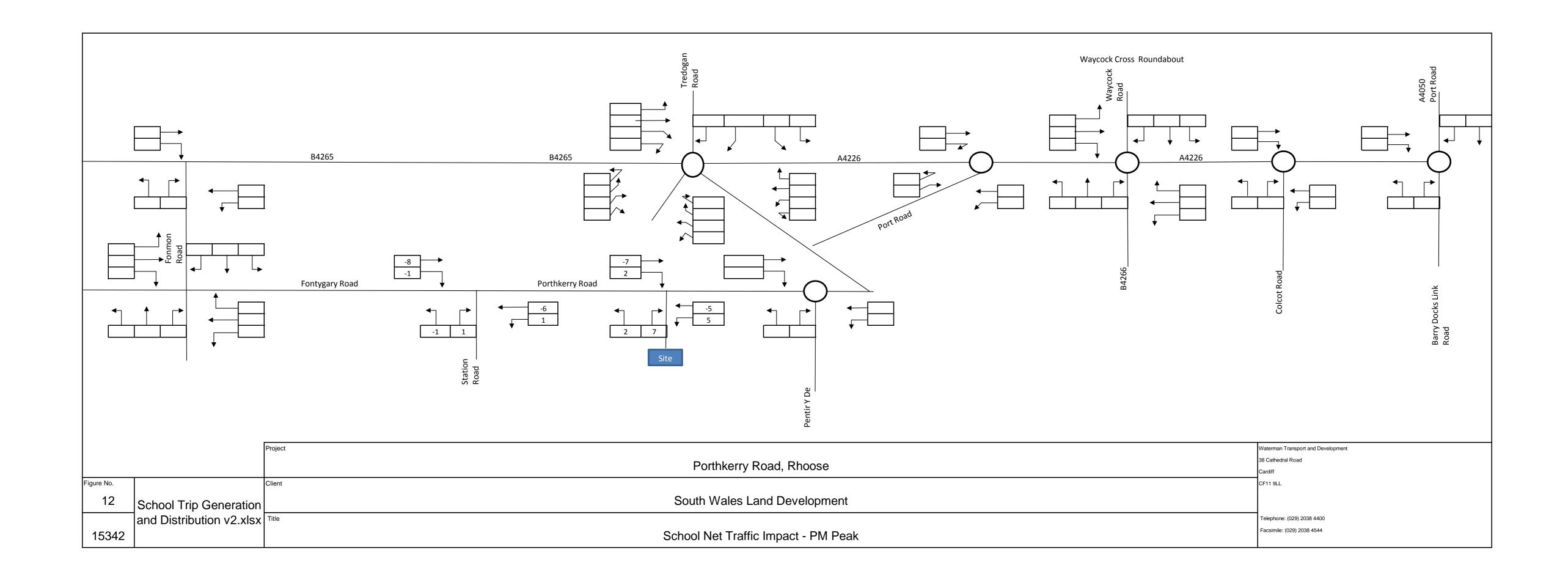












APPENDICES

A. School TRICS Output

1 days

Waterman Boreham colston Street bristol Licence No: 701705

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : A - PRIMARY
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	SC SURREY	1 days
06	WEST MIDLANDS	-
	WO WORCESTERSHIRE	1 days
80	NORTH WEST	_
	MS MERSEYSIDE	1 days
10	WALES	-
	WR WREXHAM	1 days
17	ULSTER (NORTHERN IRELAND)	-

Filtering Stage 2 selection:

DO

DOWN

Parameter: Number of pupils
Actual Range: 120 to 447 (units:)
Range Selected by User: 90 to 500 (units:)

<u>Public Transport Provision:</u>

Selection by: Include all surveys

Date Range: 01/01/05 to 13/06/13

Selected survey days:

Monday 2 days Thursday 3 days

<u>Selected survey types:</u>

Manual count 5 days
Directional ATC Count 0 days

Selected Locations:

Edge of Town Centre 1
Suburban Area (PPS6 Out of Centre) 2
Neighbourhood Centre (PPS6 Local Centre) 2

Selected Location Sub Categories:

Residential Zone 2
Village 2
No Sub Category 1

Filtering Stage 3 selection:

Use Class:

D1 5 days

Population within 1 mile:

- openation within 1	
1,001 to 5,000	1 days
5,001 to 10,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days
25,001 to 50,000	1 days

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Tuesday 14/01/14
TRICS Based Trip Generation - School

Page 2

Waterman Boreham colston Street bristol Licence No: 701705

Filtering Stage 3 selection (Cont.):

Population within 5 miles:

 5,000 or Less
 1 days

 75,001 to 100,000
 3 days

 250,001 to 500,000
 1 days

Car ownership within 5 miles:

 0.6 to 1.0
 1 days

 1.1 to 1.5
 3 days

 1.6 to 2.0
 1 days

Travel Plan:

Yes 1 days No 4 days

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Tuesday 14/01/14
TRICS Based Trip Generation - School

Page 3

Waterman Boreham colston Street bristol Licence No: 701705

LIST OF SITES relevant to selection parameters

1 DO-04-A-01 PRIMARY SCHOOL DOWN

CHURCH GROVE

KIRCUBBIN

Neighbourhood Centre (PPS6 Local Centre)

Village

Total Number of pupils: 120

Survey date: MONDAY 19/12/11 Survey Type: MANUAL

2 MS-04-A-01 RC PRIMARY SCHOOL MERSEYSIDE

DERWENT ROAD

ST HELENS

Suburban Area (PPS6 Out of Centre)

Residential Zone

Total Number of pupils: 193

Survey date: THURSDAY 05/10/06 Survey Type: MANUAL

SC-04-A-01 PRIMARY SCHOOL SURREY

SCHOOL LANE PIRBRIGHT NEAR WOKING

Neighbourhood Centre (PPS6 Local Centre)

Village

3

Total Number of pupils: 414

Survey date: THURSDAY 22/11/12 Survey Type: MANUAL

4 WO-04-A-01 PRIMARY SCHOOL WORCESTERSHIRE

ST PETERS CHURCH LANE

DROITWICH SPA

Suburban Area (PPS6 Out of Centre)

Residential Zone

Total Number of pupils: 447

Survey date: MONDAY 13/06/05 Survey Type: MANUAL

5 WR-04-A-01 PRIMARY SCHOOL WREXHAM

BODHYFRYD

WREXHAM

Edge of Town Centre No Sub Category

Total Number of pupils: 283

Survey date: THURSDAY 13/10/11 Survey Type: MANUAL

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
BN-04-A-01	London Site
CN-04-A-01	London Site
DV-04-A-03	City Too Large
HK-04-A-01	London Site
LE-04-A-01	City Too Large
MS-04-A-02	City Too Large

Licence No: 701705

Page 4

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY

MULTI-MODAL VEHICLES Calculation factor: 1 PUPILS

BOLD print indicates peak (busiest) period

		ARRIVALS		[DEPARTURES			TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	PUPILS	Rate	Days	PUPILS	Rate	Days	PUPILS	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	5	291	0.036	5	291	0.017	5	291	0.053
08:00 - 09:00	5	291	0.370	5	291	0.259	5	291	0.629
09:00 - 10:00	5	291	0.045	5	291	0.069	5	291	0.114
10:00 - 11:00	5	291	0.010	5	291	0.015	5	291	0.025
11:00 - 12:00	5	291	0.036	5	291	0.021	5	291	0.057
12:00 - 13:00	5	291	0.016	5	291	0.035	5	291	0.051
13:00 - 14:00	5	291	0.036	5	291	0.035	5	291	0.071
14:00 - 15:00	5	291	0.103	5	291	0.027	5	291	0.130
15:00 - 16:00	5	291	0.122	5	291	0.232	5	291	0.354
16:00 - 17:00	5	291	0.058	5	291	0.085	5	291	0.143
17:00 - 18:00	5	291	0.027	5	291	0.037	5	291	0.064
18:00 - 19:00	5	291	0.023	5	291	0.019	5	291	0.042
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00						·			·
23:00 - 24:00									
Total Rates:			0.882			0.851			1.733

Parameter summary

Trip rate parameter range selected: 120 - 447 (units:)
Survey date date range: 01/01/05 - 13/06/13

Number of weekdays (Monday-Friday): 5
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 6

Licence No: 701705

TRICS Based Trip Generation - School

Waterman Boreham colston Street bristol

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY

MULTI-MODAL CYCLISTS Calculation factor: 1 PUPILS

BOLD print indicates peak (busiest) period

		ARRIVALS		[DEPARTURES)		TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	PUPILS	Rate	Days	PUPILS	Rate	Days	PUPILS	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	5	291	0.003	5	291	0.000	5	291	0.003
08:00 - 09:00	5	291	0.007	5	291	0.003	5	291	0.010
09:00 - 10:00	5	291	0.001	5	291	0.002	5	291	0.003
10:00 - 11:00	5	291	0.000	5	291	0.001	5	291	0.001
11:00 - 12:00	5	291	0.000	5	291	0.000	5	291	0.000
12:00 - 13:00	5	291	0.001	5	291	0.000	5	291	0.001
13:00 - 14:00	5	291	0.000	5	291	0.000	5	291	0.000
14:00 - 15:00	5	291	0.001	5	291	0.001	5	291	0.002
15:00 - 16:00	5	291	0.005	5	291	0.003	5	291	0.008
16:00 - 17:00	5	291	0.001	5	291	0.008	5	291	0.009
17:00 - 18:00	5	291	0.000	5	291	0.001	5	291	0.001
18:00 - 19:00	5	291	0.000	5	291	0.000	5	291	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.019			0.019			0.038

Parameter summary

Trip rate parameter range selected: 120 - 447 (units:) Survey date date range: 01/01/05 - 13/06/13

Number of weekdays (Monday-Friday): Number of Saturdays: 0 Number of Sundays: 0 Surveys manually removed from selection: 6

Page 6 Licence No: 701705

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY MULTI-MODAL VEHICLE OCCUPANTS

Calculation factor: 1 PUPILS

BOLD print indicates peak (busiest) period

		ARRIVALS		[DEPARTURES	ò		TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	PUPILS	Rate	Days	PUPILS	Rate	Days	PUPILS	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	5	291	0.044	5	291	0.018	5	291	0.062
08:00 - 09:00	5	291	0.581	5	291	0.175	5	291	0.756
09:00 - 10:00	5	291	0.069	5	291	0.069	5	291	0.138
10:00 - 11:00	5	291	0.013	5	291	0.019	5	291	0.032
11:00 - 12:00	5	291	0.049	5	291	0.028	5	291	0.077
12:00 - 13:00	5	291	0.021	5	291	0.054	5	291	0.075
13:00 - 14:00	5	291	0.047	5	291	0.053	5	291	0.100
14:00 - 15:00	5	291	0.086	5	291	0.038	5	291	0.124
15:00 - 16:00	5	291	0.111	5	291	0.369	5	291	0.480
16:00 - 17:00	5	291	0.039	5	291	0.148	5	291	0.187
17:00 - 18:00	5	291	0.034	5	291	0.055	5	291	0.089
18:00 - 19:00	5	291	0.047	5	291	0.023	5	291	0.070
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.141			1.049			2.190

Parameter summary

Trip rate parameter range selected: 120 - 447 (units:)
Survey date date range: 01/01/05 - 13/06/13

Number of weekdays (Monday-Friday): 5
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 6

TRICS Based Trip Generation - School

Waterman Boreham colston Street bristol Licence No: 701705

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY

MULTI-MODAL PEDESTRIANS Calculation factor: 1 PUPILS

BOLD print indicates peak (busiest) period

		ARRIVALS		[DEPARTURES	5		TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	PUPILS	Rate	Days	PUPILS	Rate	Days	PUPILS	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	5	291	0.009	5	291	0.002	5	291	0.011
08:00 - 09:00	5	291	0.641	5	291	0.174	5	291	0.815
09:00 - 10:00	5	291	0.058	5	291	0.111	5	291	0.169
10:00 - 11:00	5	291	0.009	5	291	0.008	5	291	0.017
11:00 - 12:00	5	291	0.021	5	291	0.016	5	291	0.037
12:00 - 13:00	5	291	0.014	5	291	0.012	5	291	0.026
13:00 - 14:00	5	291	0.021	5	291	0.040	5	291	0.061
14:00 - 15:00	5	291	0.161	5	291	0.027	5	291	0.188
15:00 - 16:00	5	291	0.194	5	291	0.709	5	291	0.903
16:00 - 17:00	5	291	0.021	5	291	0.074	5	291	0.095
17:00 - 18:00	5	291	0.003	5	291	0.014	5	291	0.017
18:00 - 19:00	5	291	0.005	5	291	0.004	5	291	0.009
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00			<u> </u>						·
23:00 - 24:00	<u> </u>								
Total Rates:			1.157			1.191			2.348

Parameter summary

Trip rate parameter range selected: 120 - 447 (units:) Survey date date range: 01/01/05 - 13/06/13

Number of weekdays (Monday-Friday): Number of Saturdays: 0 Number of Sundays: 0 Surveys manually removed from selection: 6 TRICS Based Trip Generation - School

Waterman Boreham colston Street bristol Licence No: 701705

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY MULTI-MODAL PUBLIC TRANSPORT USERS

Calculation factor: 1 PUPILS

BOLD print indicates peak (busiest) period

		ARRIVALS		[DEPARTURES	ò		TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	PUPILS	Rate	Days	PUPILS	Rate	Days	PUPILS	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	5	291	0.000	5	291	0.000	5	291	0.000
08:00 - 09:00	5	291	0.023	5	291	0.000	5	291	0.023
09:00 - 10:00	5	291	0.000	5	291	0.000	5	291	0.000
10:00 - 11:00	5	291	0.000	5	291	0.000	5	291	0.000
11:00 - 12:00	5	291	0.000	5	291	0.000	5	291	0.000
12:00 - 13:00	5	291	0.020	5	291	0.001	5	291	0.021
13:00 - 14:00	5	291	0.000	5	291	0.000	5	291	0.000
14:00 - 15:00	5	291	0.023	5	291	0.030	5	291	0.053
15:00 - 16:00	5	291	0.004	5	291	0.030	5	291	0.034
16:00 - 17:00	5	291	0.000	5	291	0.000	5	291	0.000
17:00 - 18:00	5	291	0.000	5	291	0.000	5	291	0.000
18:00 - 19:00	5	291	0.000	5	291	0.000	5	291	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.070			0.061			0.131

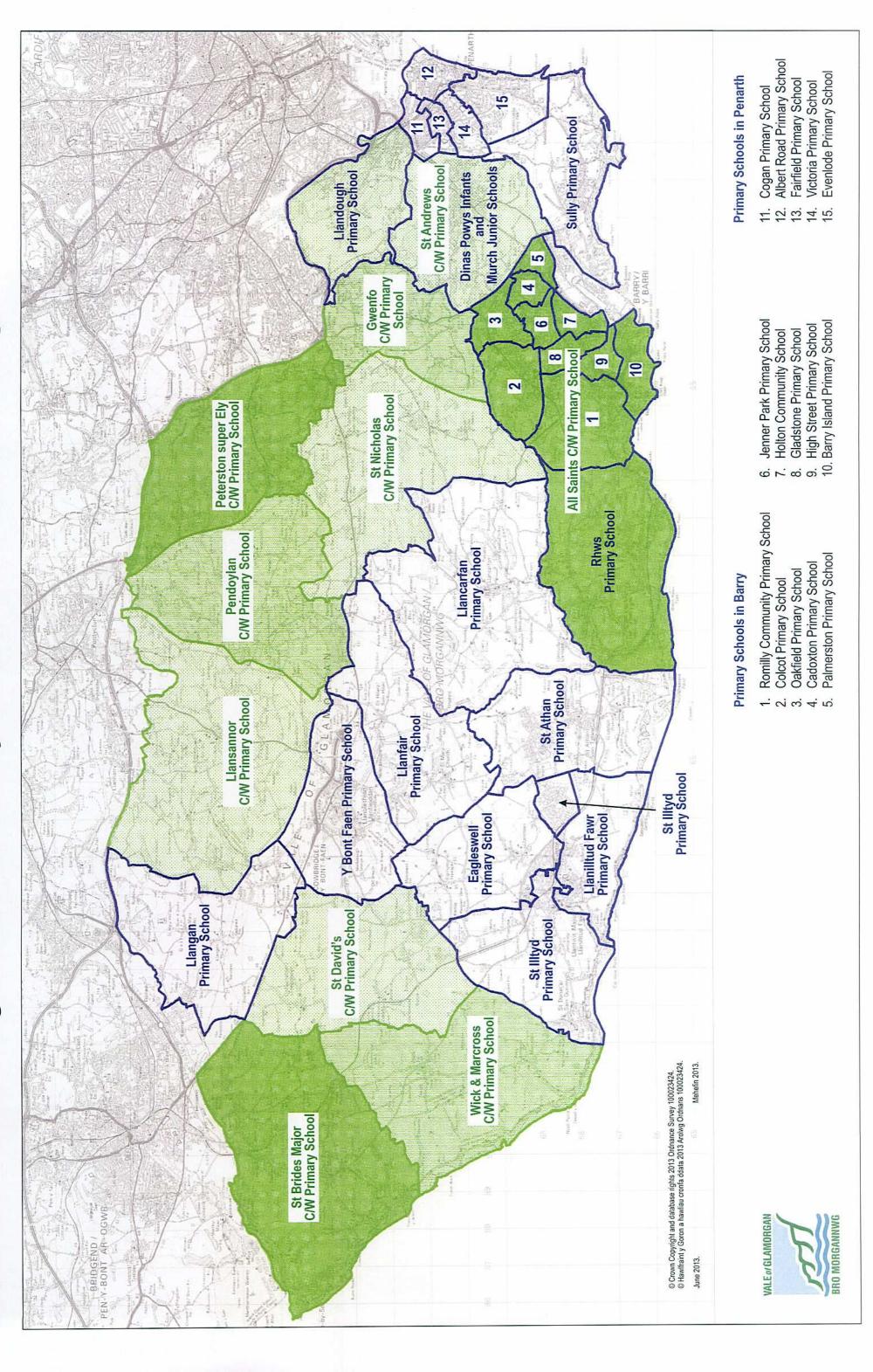
Parameter summary

Trip rate parameter range selected: 120 - 447 (units:) Survey date date range: 01/01/05 - 13/06/13

Number of weekdays (Monday-Friday): Number of Saturdays: 0 Number of Sundays: 0 Surveys manually removed from selection: 6

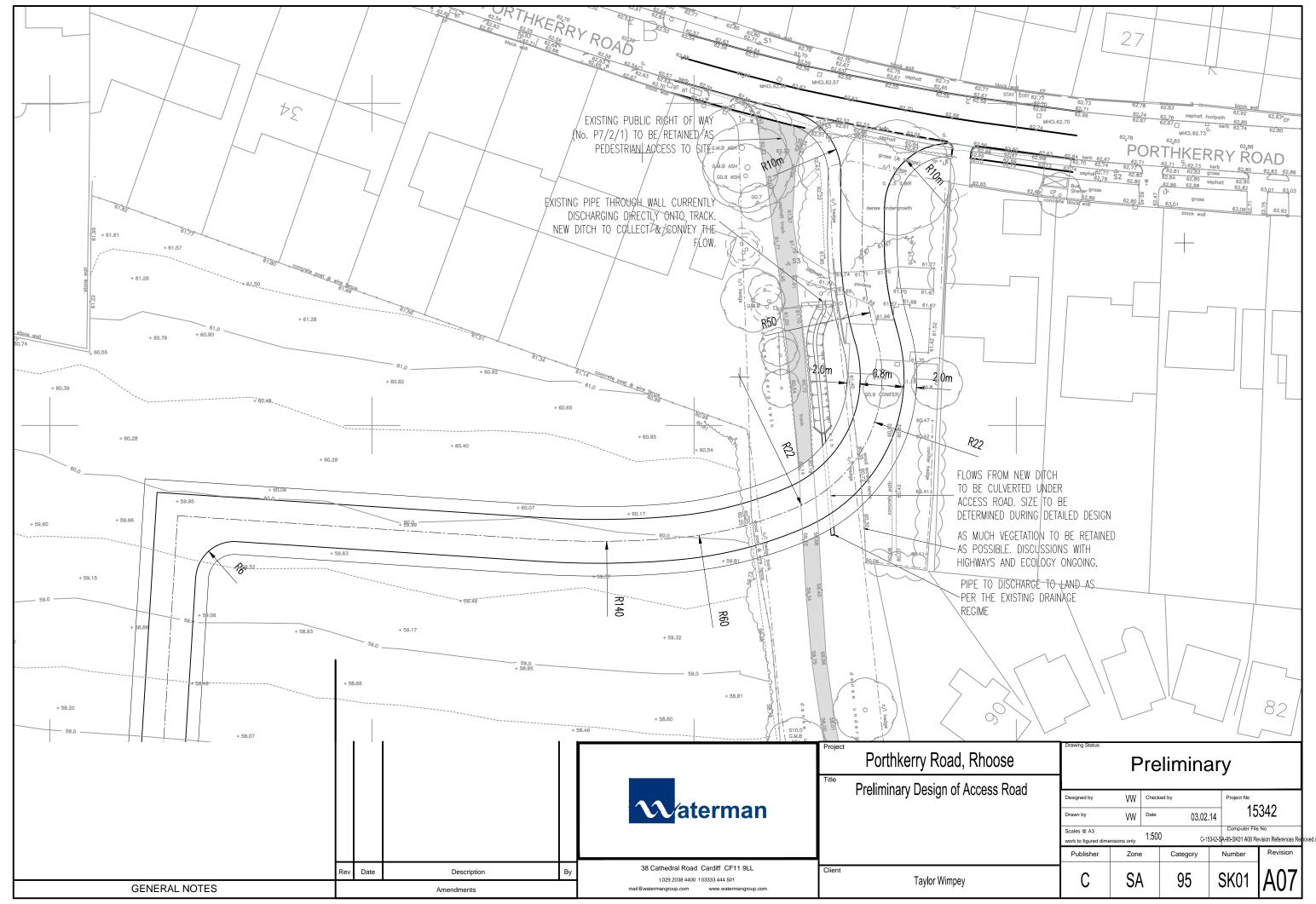
B. Catchment of Existing Welsh Medium Schools – Extracted from Vale of Glamorgan Local Development Plan

nglish Medium Primary Schools in the Vale of Glamorgan Catchment Areas for E





F. Proposed Porthkerry Road Access





G. Accident Data

SEVERITY District The Vale of Glamorgan	J1 - Wayo	cock Cross	G:1D 6 200(00 / 1005(0
District The Vare of Gramorgan	·		Grid Reference 309690 / 168560
SLIGHT Ref.No 0214576			Police Officer Attend: Yes
Date 05/02/2012 Day Sunday Road Time 17:45 Road	A4226 Location Port Road West, Ba	arry	
I ROSO SURTACE LIEV	ription D1 Has Driven into the Back of Vecident	V2 and Failed to Stop.	
SITE DETAILS Speed Limit 40 MPH Carriageway Single carriageway Junction Detail Roundabout Junction Control Give way or uncontrolled 2nd Road Number U Pedestrian Facilities None within 50 metres	SPECIAL SITE CONDITIONS None CARRIAGEWAY HAZARDS None	CONTRIBUTORY FACTORS 405 Failed to look properly (Driver/Ri 509 Distraction in vehicle (Driver/Rid 308 Following too close (Driver/Rider	er - Impairment) Vehicle 001 A
No physical crossing facility within 50	n		
VEHICLES INVOLVED 2		CASUALTIES INVOLV	/ED 2
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriageway is Junct. location of veh. at 1st impact Approaching junction Veh left carriageway? Did not leave carriageway Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Other veh.hit (ref.no) Drivers age 22 yrs Sex Male Breath test Driver not of Left Hand Drive Unknown Foreign veh. Not foreign Journey purpose Other Veh.No. 2 Vehicle type Car Manoeuvre Going ahead other	Hit and run Not hit and recontacted Driving Lic registered vehicle Make Model No tow or articulation not in restricted lane or waiting Hit and run Not hit and red Driving Lic	Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Cas No 2 Cas Class Driver of Severity SLIGHT Age 22 y Car Passenger? Not a passenger Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	yrs Sex Female Post code enger PSV Passenger? Not a passenger Cycle Helmet or Rider Veh ref No 1 yrs Sex Male Post code

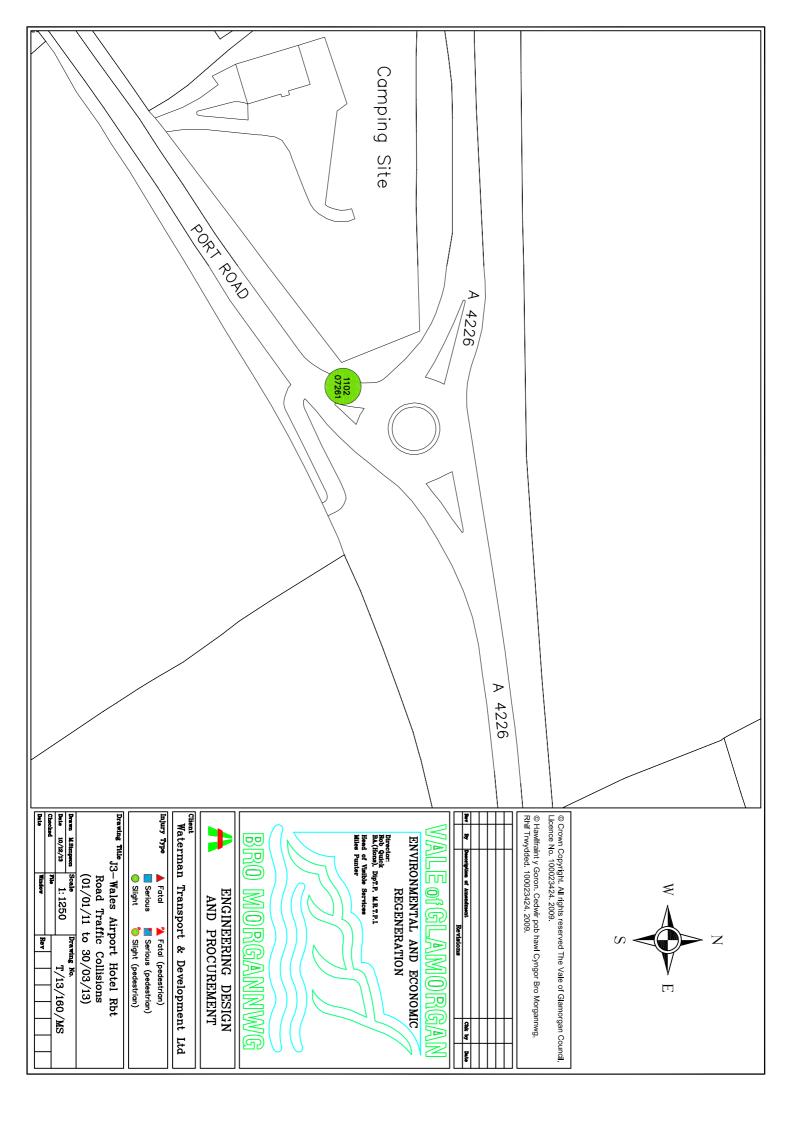
Full Details 10-December-2013 Accident Ref.No 0214576

CEVENITY D. C. C.	J1 - Wayco	ock Cross	C:1P C	200620 / 160570
SEVERITY District The Vale of Glamorgan SLIGHT Ref.No 110210317	·		Grid Reference	309630 / 168570
SLIGHT Ref.No 110210317			Police Officer Attend:	Yes
Date 14/06/2011 Day Tuesday Time 07:20	Road A4226 Location A4226 Port Road Wo	est J/W Pontypridd Road, Barry		
Weather Fine without high winds Road Surface Dry Street Lighting Daylight	Description V.2 Ped Cycle was Cycling on Rou of Accident	undabout when V.1 Has Pulled onto Rab an	d Hit Cyclist off Bike	
SITE DETAILS		CONTRIBUTORY FACTORS		PARTICIPANT PROBABILITY
Speed Limit 40 MPH	SPECIAL SITE CONDITIONS	405 Failed to look properly (Driver/Ric	ler - Error)	Vehicle 001 A
Carriageway Single carriageway		• • • •	*	
Junction Detail Roundabout	None	706 Dazzling sun (Driver/Rider - Visio	n Affected)	Vehicle 001 B
Junction Control Give way or uncontrolled				
2nd Road Number U	CARRIAGEWAY HAZARDS			
Pedestrian Facilities None within 50 metres	None			
No physical crossing facility with	thin 50 n			
Two physical crossing facility will	dilii 30 ii	1		
VEHICLES INVOLVED 2		CASUALTIES INVOLVI	ED 1	
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriagy Junct. location of veh. at 1st impact Entering roundaty Veh left carriageway? Did not leave carriageway Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Drivers age 25 yrs Sex Female Breath test Negal Left Hand Drive Unknown Foreign veh. Not Journey purpose Commuting to/from work Veh.No. 2 Vehicle type Pedal Cycle Manoeuvre Going ahead other Veh. direction from South to North To Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriag Junct. location of veh. at 1st impact Mid junction - over Veh left carriageway? Did not leave carriageway Hit object off c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Drivers age 43 yrs Sex Male Breath test Not 2 stricted lane) Other veh.hit (ref. n	geway not in restricted lane about 100) 2 Hit and run Hit and Run Driving Lic foreign registered vehicle Make Model	Cas No 1 Cas Class Driver or Severity SLIGHT Age 43 yr Car Passenger? Not a passenger Seat Belt Not applicable Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details		Post code

Full Details 10-December-2013 Accident Ref. No 110210317



Hine Weather Fine without high winds Road Surface Road Surface Road Surface Road Surface Road Surface Daylight Speed Limit Sp	SEVERITY District The Vale of Glamorgan SLIGHT Ref.No 110207261	J3 - Wales Ai	rport Hotel	Grid Reference 308040 / 167950 Police Officer Attend: Yes
Speed Limit So MPH Single carriageway (Road Environment Con Vehicle 001 A None Single carriageway (Single carriageway) (Single ca	Time 06:18 Weather Fine without high winds Road Surface Dry	Description V1 was Travelling Slowly Around	Roundabout when Horse Ran into into Pa	th Causing Collision.
Pedestrian Facilities None within 50 metres No physical crossing facility within 50 metres No physical crossing physical crossi	Speed Limit 50 MPH Carriageway Single carriageway Junction Detail Roundabout	None		
Veh. No. 1 Vehicle type Car Make Model Manoeuvre Moving off West to East Towing? No tow or articulation Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) Junet. location of veh. at 1st impact Veh direction from West to East Towing? No tow or articulation Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) Junet. location of veh. at 1st impact Veh direction for veh. at 1st impact Veh flet carriageway? Veh flet object off vays? Hit object off vays? Hit object off vays? Phist point of impact Veh registration no. Dirivers age 26 yrs Sex Female Post ode Veh described Not a passenger Vola passenger Vol	2nd Road Number U Pedestrian Facilities None within 50 metres	Any animal in carriageway (exce		
Manoeuvre Moving off Web direction from West to East Towing? No tow or articulation Skidded No skidding, jack-knifing or overturning Ueb location at impact (restricted lane) Unact Location of Veb. at Ist impact Veh left carriageway? Whit object in e'way? Hit object off e'way? Pirst point of impact Veh registration no. Drivers age 26 yrs Sex Female Post code Vox Passenger? Not a passenger Cycle Helmet Vox ped Journal of Veb. at Ist impact Veh registration no. Drivers age 26 yrs Sex Female Post Code Vox passenger? Vox a passenger Vox applicable Ped Jorection to Not applicable Ped Direction to Not applicable School Pupil Other Details Veh registration no. Drivers age 26 yrs Sex Female Post code Vox passenger? Not a passenger Cycle Helmet Vox applicable Ped Direction to Not applicable School Pupil Other Details Veh registration no. Drivers age 26 yrs Sex Female Post code Vox passenger? Vox a passenger Scan Belt Veh dovenment Not applicable Ped Direction to Not applicable School Pupil Other Details Veh registration no. Drivers age 26 yrs Sex Female Post code Vox passenger? Vox a passenger Scan Belt Veh dovenment Not applicable Ped Direction to Not applicable School Pupil Other Details	VEHICLES INVOLVED 1	· ———	CASUALTIES INVOLV	/ED 1
Full Details 10-December-2013 Accident Ref.No 110207261	Manoeuvre Moving off Veh. direction from West to East Town Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriager Junct. location of veh. at 1st impact Leaving roundabe Veh left carriageway? Did not leave carriageway Hit object in c'way? Any animal (except ridden horse) Hit object off c'way? None First point of impact Nearside Veh registration no. Other veh.hit (ref.no. Drivers age 26 yrs Sex Female Breath test Not re Left Hand Drive Unknown Foreign veh. Not fo Journey purpose Commuting to/from work	ing? No tow or articulation way not in restricted lane out O Hit and run Not hit and ru quested Driving Lic reign registered vehicle	Severity SLIGHT Age 26 y Car Passenger? Not a passenger Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	yrs Sex Female Post code PSV Passenger? Not a passenger Cycle Helmet



SEVERITY District The Vale of Glamorgan		J4 -	BAM	IC	Grid Reference	20((00 / 1(0200
SEVERITY District The Vale of Glamorgan SLIGHT Ref.No 110211091						306600 / 168280
SLIGHT					Police Officer Attend:	No - reported over the counter
Date 12/08/2011 Day Friday Time 05:25	Road I	34265 Location B4265 Junction v	vith A4	226, Vale of Glamorgan		
Weather Fine without high winds	Dogorin	tion V1 Has Collided with V2 (Cyc	list) Ca	ausing D2 to Fall off his Bike Causing In	inry	
Road Surface Dry	of Accid		iist) Ca	dusing D2 to Pan on his Bike Causing hi	jury.	
Street Lighting Dark: street lighting unknown		T		GOVERNO DA FA GEORG		D. D. D. C.
SITE DETAILS Speed Limit 50 MPH		SPECIAL SITE CONDITIONS		CONTRIBUTORY FACTORS 5 Failed to look properly (Driver/Rid	lar Error)	PARTICIPANT PROBABILITY Vehicle 001 B
Carriageway Roundabout		None	40.	5 Failed to look properly (Driver/Kid	iei - Elloi)	venicie 001 B
Junction Detail Roundabout		None				
Junction Control Give way or uncontrolled		CARRA CEWAY WAZARES				
2nd Road Number A4226		CARRIAGEWAY HAZARDS				
Pedestrian Facilities None within 50 metres		None				
No physical crossing facility wi	thin 50 n					
VEHICLES INVOLVED 2				CASUALTIES INVOLVI	ED 1	
Veh.No. 1 Vehicle type Car		Make Model		Cas No 1 Cas Class Driver or	Rider Veh re	ef No 2
Manoeuvre Moving off				Severity SLIGHT Age 23 yr	s Sex Male	Post code
	-	o tow or articulation		Car Passenger? Not a passenger	PSV Passenger? No	ot a passenger
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriage		in restricted lane		Seat Belt Not applicable	Cycle Helmet	
Junct. location of veh. at 1st impact Entering roundary		in restricted fanc		Ped Movement Not applicable Ped Location Not applicable		
Veh left carriageway? Did not leave carriageway				Ped Direction to Not applicable		
Hit object in c'way? None				School Pupil Other		
Hit object off c'way? None				Roadworker injured		
First point of impact Offside Veh registration no. Other veh.hit (ref.)	no) 2	Hit and run Not hit and	1	Other Details		
Veh registration no. Drivers age 49 yrs Sex Female Breath test Driv			ııun			
Left Hand Drive Unknown Foreign veh. Not						
Journey purpose Other						
Veh.No. 2 Vehicle type Pedal Cycle		Make Model				
Manoeuvre Going ahead other Veh. direction from East to West To	i					
Skidded No skidding, jack-knifing or overturning	~	o tow or articulation				
Veh location at impact (restricted lane) On main carriage	g geway not	in restricted lane				
Junct. location of veh. at 1st impact Mid junction - of						
Veh left carriageway? Did not leave carriageway						
Hit object in c'way? None						
Hit object off c'way? None First point of impact Front						
First point of impact Front Veh registration no. Other veh.hit (ref.)	no) 1	Hit and run Not hit and	l run			
Drivers age 23 yrs Sex Male Breath test Not	Applicabl	e Driving Lic	. 1 (1)1			
Left Hand Drive Unknown Foreign veh. Not						
Journey purpose Commuting to/from work						
Full Datails		10.3	, ,	par 2012	A · 1	nt Dof No. 110211001

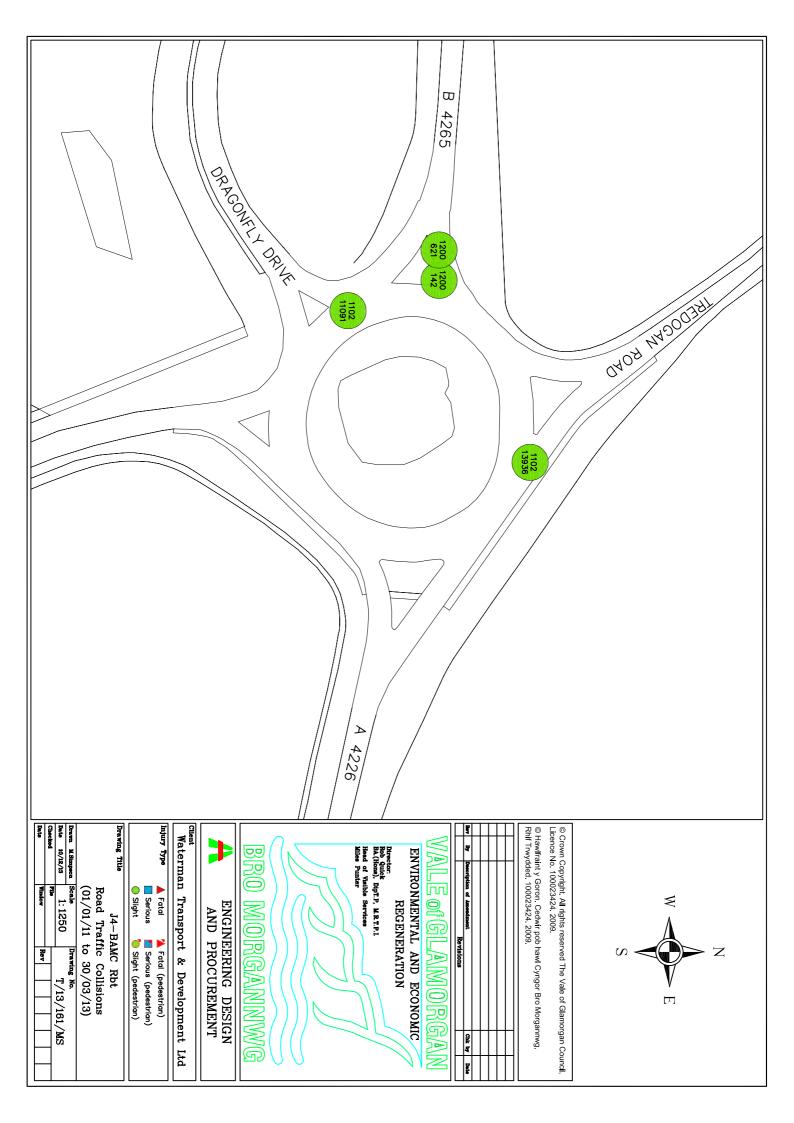
Date 29-12/2011 Duy Thursday True Tr	SEVERITY District The Vale of Glamorgan	J4 -	BAMC	Grid Reference 306650 / 168340
Time 17:37 Soad A422E Location A422E Roses	SLIGHT Ref.No 110213936			Police Officer Attend: Yes
Road Surface Next/Damp Dascription Weather was Wet, VI went Around Rab and Accelerated Causing the Vehicle to Fishfail Where Upon he Has Collided with a Lampost of Accident Causing Damage and Injury.	•	Road A4226 Location A4226, Rhoose		
Speed Limit 60 MPH SPECIAL SITE CONDITIONS Carriageway Roundabout Unuction Detail Junction Control Give way or uncontrolled 2nd Road Number Pedestrian Facilities None within 50 metres None Wehlect Estimated In Position Foreign veh. Not foreign registration no. Drivers age 41 yrs Left Hand Drive (Pf Road Environment Contrib Vehicle 001 A A Vehicle type Car Make Model Manoeuvre Going ahead left hand bend Veh. direction of veh. at 1st impact (restricted lane) On main carriageway not in restricted lane Unit object in Cway? Hit object in Cway? Hit object in Cway? Hit object in Cway? Veh registration no. Drivers age 41 yrs Sex Male Unknown Foreign veh. Not foreign registered vehicle (Pf And Environment Contrib Vehicle to the weather (Road Environment Contrib Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle to weather (Road Environment Contrib Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 410 Loss of control (Driver/Rider - Error) Vehicle 001 A 4 Vehicl	Road Surface Wet/Damp		ound Rab and Accelerated Causing the Vehic	ele to Fishtail Where Upon he Has Collided with a Lampost
Carriageway Roundabout		SPECIAL SITE CONDITIONS		
2nd Road Number	Carriageway Roundabout	None	** *	
Veh.No. 1 Vehicle type Car	2nd Road Number U Pedestrian Facilities None within 50 metres	None		
Manoeuvre Going ahead left hand bend Veh. direction from North to South Veh. direction from North to South No skidding, jack-knifing or overturning Veh location at impact (restricted lane) Junct location of veh. at 1st impact Veh left carriageway? Veh left carriageway offside Hit object in c'way? Hit object of c'way? First point of impact Veh registration no. Drivers age 41 yrs Veh Rage 41 yrs Sex Female Post code Severity SLIGHT Age 41 yrs Sex Female Post code Car Passenger? Front seat passenger PSV Passenger? Not a passenger Not applicable Ped Movement Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details Veh registration no. Drivers age 41 yrs Sex Male Breath test Negative Driving Lie Left Hand Drive Unknown Foreign veh. Not foreign registered vehicle	VEHICLES INVOLVED 1		CASUALTIES INVOLV	VED 1
	Manoeuvre Going ahead left hand bend Veh. direction from North to South Tow Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriage Junct. location of veh. at 1st impact Not at or within 2 Veh left carriageway? Left carriageway offside Hit object in c'way? None Hit object off c'way? Lamp post First point of impact Offside Veh registration no. Drivers age 41 yrs Sex Male Breath test Negati Left Hand Drive Unknown Foreign veh. Not for	ing? No tow or articulation way not in restricted lane 0m of junction Hit and run Not hit and rue Driving Lic	Severity SLIGHT Age 41 Car Passenger? Front seat passes Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	yrs Sex Female Post code enger PSV Passenger? Not a passenger

SEVERITY District The Vale of Glamorgan Ref.No 1200142	J4	- BAMC Grid Reference 306590 / 168310 Police Officer Attend: Yes
Date 12/05/2012 Day Saturday Time 19:45 Weather Fine without high winds Load Surface Dry treet Lighting Daylight	Road A4226 Location B4265, Rhoose I Description the Driver of V1 Had Become of Accident	oy Pass Ill ,V1 left Carriageway and Collided with Tree
SITE DETAILS Speed Limit 50 MPH Carriageway Roundabout Roundabout Roundabout Give way or uncontrolled	SPECIAL SITE CONDITIONS None CARRIAGEWAY HAZARDS	CONTRIBUTORY FACTORS PARTICIPANT PROBABILITY 505 Illness or disability, mental or physical (Driver/Rider - Im Vehicle 001
nd Road Number B4265 Pedestrian Facilities None within 50 metres No physical crossing facility	None	
VEHICLES INVOLVED 1		CASUALTIES INVOLVED 3
No skidding, jack-knifing or overturn Veh location at impact (restricted lane) On main carrunct. location of veh. at 1st impact Entering round Veh left carriageway? Left carriageway straight ahe None Hit object off c'way? Tree Front Veh registration no. Other veh.hit (round of the Norivers age 78 yrs Sex Male Front Norivers age 78 yrs Sex Male	iageway not in restricted lane adabout ad at junction ef.no) 0 Hit and run Not hit an	Car Passenger? Rear seat passenger PSV Passenger? Not a passenger Seat Belt Unknown Cycle Helmet Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Cas No 3 Cas Class Passenger Veh ref No 1
Full Details		Severity SLIGHT Age 71 yrs Sex Female Post code Car Passenger? Rear seat passenger PSV Passenger? Not a passenger Seat Belt Unknown Cycle Helmet Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured December-2013 Accident Ref. No 1200142

	Other Details
Full Datails 10 December 11 December 12 December 13 December 13 December 14 December 15 December 15 December 16 December 16 December 16 December 17 December 17 December 17 December 17 December 17 December 18 December 18 December 18 December 19 December 18 December 19 De	her 2012 Accident Ref No. 1200142

Full Details 10-December-2013 Accident Ref. No 1200142

St.GHT Ref. No. 1 200021 September 1200021 Septe	SEVERITY District The Vale of Glan	norgan	J4 -	BAMC	Grid Reference 306580 / 168310
Weather Raining without high winds Wet/Damp Street Lighting Dark: no street lighting Seed Limit Som MPH Som		norgan			
SITE ELIGHTING SORTH SPECIAL SITE CONDITIONS SITE DETAILS Speed Limit So MPH Sort Roundabout Junction Control Give way or uncontrolled 2nd Road Number Pedestrian Facilities No physical crossing facility within 50 n VehICLES INVOLVED 1 Veh.No. 1 Vehicle type Car Manoeuvre Going ahead other Veh direction from West to East Skidded Skidded and overturned Veh location at impact (restricted lane) Junct location of veh. at 1st impact Left carriageway? Hit object off cway? Hit object in cway? Hit object in financat Veh registration no. Drivers age 55 yrs None SPECIAL SITE CONDITIONS TO7 Rain, sleet, snow or fog (Driver/Rider - Vision Affected) 1 1 1 1 1 0000 1 11 1 1 1 0000 1 11 1 1 1	Time 00:05 Weather Raining without high wind	ds Descrip	tion Due to Weather Conditions the	•	ndabout and Vehicle Has Overturned
Veh.No. 1 Vehicle type Car	Street Lighting Bark: no street lighting SITE DETAILS Speed Limit Carriageway Junction Detail Junction Control 2nd Road Number Pedestrian Facilities Dark: no street lighting SITE DETAILS So MPH Single carriageway Roundabout Give way or uncontrol U None within 50 metre	lled	SPECIAL SITE CONDITIONS None CARRIAGEWAY HAZARDS	707 Rain, sleet, snow or fog (Driver/R	ider - Vision Affected) Vehicle 001 U000
Manoeuvre Going ahead other Veh. direction from West to East Towing? No tow or articulation Skidded Skidded and overturned Veh location at impact (restricted lane) Unct. location of veh. at 1st impact Entering roundabout Veh left carriageway? Left carriageway straight ahead at junction Hit object in c'way? Hit object off c'way? First point of impact Veh registration no. Drivers age 55 yrs Left Hand Drive Unknown Foreign veh. Not foreign registered vehicle Severity SLIGHT Age 55 yrs Sex Male Post code Car Passenger? Not a passenger PSV Passenger? Not a passenger Cycle Helmet Cycle Helmet Cycle Helmet Other Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	VEHICLES INVOLVED 1		!	CASUALTIES INVOLV	ZED 1
	Manoeuvre Going ahead other Veh. direction from West to East Skidded Skidded and overturned Veh location at impact (restricted lane) On m Junct. location of veh. at 1st impact Enter Veh left carriageway? Left carriageway strait Hit object in c'way? None Hit object off c'way? Road sign/traffic sign First point of impact Front Veh registration no. Drivers age 55 yrs Sex Male Breath Left Hand Drive Unknown Foreign	nain carriageway not ing roundabout ight ahead at junctional weh.hit (ref.no) 0 test Negative	o tow or articulation in restricted lane n Hit and run Not hit and Driving Lic	Severity SLIGHT Age 55 y Car Passenger? Not a passenger Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	yrs Sex Male Post code PSV Passenger? Not a passenger

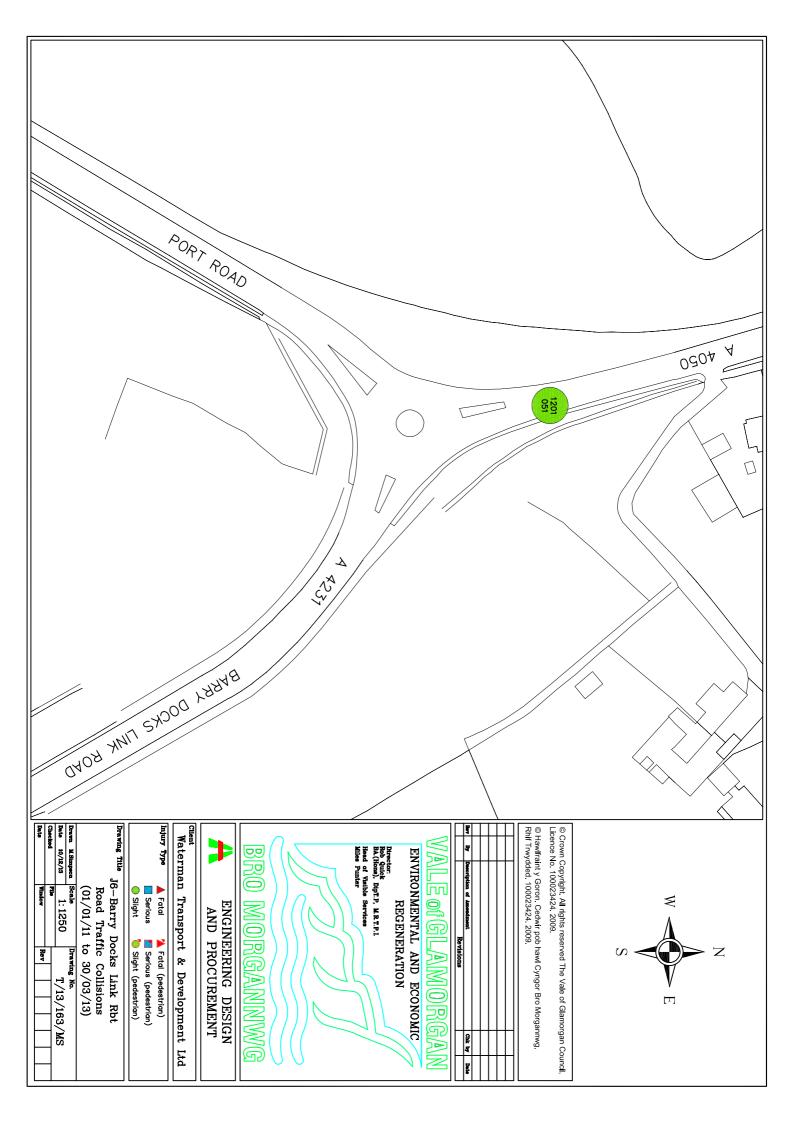


	.J5 - Sts	ntion Road	
SEVERITY District The Vale of Glamorgan	93 - 54		Grid Reference 306248 / 166443
SLIGHT Ref.No 110212732			Police Officer Attend: Yes
Date 09/11/2011 Day Wednesday			
Time 15:45	Road U Location Fontygary Road,	Rhoose, Barry, Vale of Glamorgan	
Weather Fina without high winds			
Road Surface Wet/Damp	Description V1 Has Collided with Parked an	nd Unattended V2, Causing Damage.	
Street Lighting Daylight	of Accident		
SITE DETAILS		CONTRIBUTORY FACTORS	PARTICIPANT PROBABILITY
Speed Limit 30 MPH	SPECIAL SITE CONDITIONS	405 Failed to look properly (Driver/R	
Carriageway Single carriageway	None	r r y (, , , , , , , , , , , , , , , , , , , ,
Junction Detail T or staggered junction	Tione		
Junction Control Give way or uncontrolled	G. D. D. C.		
2nd Road Number U	CARRIAGEWAY HAZARDS		
Pedestrian Facilities None within 50 metres	None		
No physical crossing facility within	n 50 n		
VEHICLES INVOLVED 2		CASUALTIES INVOLV	VED 1
Veh.No. 1 Vehicle type Car	Make Model	Cas No 1 Cas Class Driver of	or Rider Veh ref No 1
Manoeuvre Going ahead other	induct	Severity SLIGHT Age 80	
	ng? No tow or articulation		
Skidded No skidding, jack-knifing or overturning	2 - 10 10 11 11 11 11 11 11 11 11 11 11 11	Car Passenger? Not a passenger Seat Belt Unknown	r PSV Passenger? Not a passenger Cycle Helmet
Veh location at impact (restricted lane) On main carriagew	yay not in restricted lane	Ped Movement Not applicable	Cycle Heinlet
Junct. location of veh. at 1st impact Approaching junct	ion or waiting	Ped Location Not applicable	
Veh left carriageway? Did not leave carriageway		Ped Direction to Not applicable	
Hit object in c'way? None		School Pupil Other	
Hit object off c'way? None First point of impact Nearside		Roadworker injured	
First point of impact Nearside Veh registration no. Other veh.hit (ref.no)	2 Hit and run Not hit and	Other Details	
Drivers age 80 yrs Sex Female Breath test Not req	uested Driving Lic	Tun	
	eign registered vehicle		
Journey purpose Other			
Veh.No. 2 Vehicle type Car	Make Model		
Manoeuvre Parked			
	ng? No tow or articulation		
Skidded No skidding, jack-knifing or overturning			
Veh location at impact (restricted lane) On main carriagew Junct. location of veh. at 1st impact Approaching junct			
Veh left carriageway? Did not leave carriageway	ion or waiting		
Hit object in c'way? None			
Hit object off c'way? None			
First point of impact Offside			
Veh registration no. Other veh.hit (ref.no)	0 Hit and run Not hit and	run	
Drivers age 33 yrs Sex Male Breath test Not req			
	eign registered vehicle		
Journey purpose Other			
E II D. (c.)			



SEVERITY District The Vale of Glamorgan		J6 - Barry l	Oocks 1	Link Road	Grid Reference	312580 / 170960
SLIGHT Ref.No 1201051						
SEIGHT					Police Officer Attend:	Yes
Date 02/10/2012 Day Tuesday Time 17:39	Road A4050	Location A4050 - Port Ro	ad, Wei	nvoe		
Weather Raining without high winds Road Surface Wet/Damp Street Lighting Daylight	Description V1 of Accident Lo	& V2 Travelling in Same I w Speed.	Direction	n. V2 Stopped Due to Traffic Ahead, V1	Unable to Stop on Tim	e and Collided with Rear of V2 at
SITE DETAILS				CONTRIBUTORY FACTORS		PARTICIPANT PROBABILITY
Speed Limit 50 MPH	SPEC	IAL SITE CONDITIONS		8 Following too close (Driver/Rider -	- Iniudicious)	Vehicle 001
Carriageway Single carriageway	None			11	injuarerous)	U000
Junction Detail Not at or within 20 metres of junc			-	1 1		0000
Junction Control		IA CEWAW HAZARDO				
2nd Road Number		IAGEWAY HAZARDS				
Pedestrian Facilities None within 50 metres	None		1			
No physical crossing facility with	nin 50 n					
VEHICLES INVOLVED 2				CASUALTIES INVOLVI	ED 2	
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriage Junct. location of veh. at 1st impact Not at or within 2 Veh left carriageway? Did not leave carriageway Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Other veh.hit (ref.no. Drivers age 18 yrs Sex Male Breath test Not red Left Hand Drive Unknown Foreign veh. Not for Journey purpose Other Veh.No. 2 Vehicle type Car Manoeuvre Waiting to go ahead but held up	20m of junction 20m of junction	Hit and run Not hit an Driving Lic vehicle Model articulation cted lane Hit and run Not hit an Driving Lic		Cas No 2 Cas Class Driver or Severity SLIGHT Age 32 yr Car Passenger? Not a passenger Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Cas No 3 Cas Class Passenger Severity SLIGHT Age 3 yrs Car Passenger? Rear seat passeng Seat Belt Unknown Ped Movement Not applicable Ped Direction to Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	Sex Female PSV Passenger? No Cycle Helmet Veh r	Post code ot a passenger ef No 2 Post code

Full Details 10-December-2013 Accident Ref.No 1201051



SEVERITY District The Vale of Glamorgan		J7 - Co	lcot (Cross	Crid Defense	210770 / 1/0/10
SEVERITY District The Vale of Glamorgan SLIGHT Ref.No 110208190					Grid Reference	310778 / 169619
SLIGHT Ref. No. 110200190					Police Officer Attend	d: Yes
Date 10/04/2011 Day Sunday	Road	oad A405(Location Port Road East, Barry				
Time 12:55	Rodd 7	Road A403(Location Fort Road East, Daily				
Weather Fine without high winds	Descrip	tion V2 Attempted U Turn Due to H	eavy S	Slow Moving Traffic when V1 Travelling	g at Excessive Speed a	and Collided with It.
Road Surface Dry Street Lighting Daylight	of Accid		•	,		
Street Lighting Daylight SITE DETAILS		1		CONTRIBUTORY FACTORS		PARTICIPANT PROBABILITY
Speed Limit 30 MPH		SPECIAL SITE CONDITIONS		95 Failed to look properly (Driver/Rid	ler - Error)	Vehicle 001 A
Carriageway Single carriageway		Roadworks		5 Failed to look properly (Driver/Rid	*	Vehicle 002 B
Junction Detail Not at or within 20 metres of jun	nction	Roddworks	40.	3 railed to look property (Driver/Rid	iei - Elioi)	Vehicle 002 B
Junction Control		CARRIAGEWAY HAZARDS				
2nd Road Number						
Pedestrian Facilities None within 50 metres		None				
No physical crossing facility wi	ithin 50 n					
VEHICLES INVOLVED 2				CASUALTIES INVOLVE	ED 2	
Skidded No skidding, jack-kniffing or overturnin Veh location at impact (restricted lane) On main carriag Junct. location of veh. at 1st impact Not at or within Veh left carriageway? Did not leave carriageway Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Drivers age 56 yrs Sex Male Breath test Neg Left Hand Drive Unknown Foreign veh. Not Journey purpose Other Veh.No. 2 Vehicle type Car Manoeuvre Turning right	owing? Noting geway not a 20m of justice foreign response to 20m of justice foreign response to 20m of justice foreign not a 20m of justice foreign response to 20m of justice foreign response foreign response foreign response foreign response foreign response f	Hit and run Not hit and Driving Lic egistered vehicle Make Model o tow or articulation in restricted lane unction Hit and run Not hit and Driving Lic		Cas No 1 Cas Class Driver or Severity SLIGHT Age 56 yr Car Passenger? Not a passenger Seat Belt Not applicable Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Cas No 2 Cas Class Passenger Severity SLIGHT Age 57 yr Car Passenger? Rear seat passenger Seat Belt Not applicable Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details	rs Sex Male PSV Passenger? Cycle Helmet T Veh	ref No 1 Post code

10-December-2013

Accident Ref.No 110208190

Full Details

CEVENITY Division Times and		J7 - Colcot (Cross	G.11D.0
SEVERITY District The Vale of Glamorgan				Grid Reference 310770 / 169620
SLIGHT Ref.No 110211184				Police Officer Attend: Yes
Date 30/08/2011 Day Tuesday				
Time 12:00	Road A4050 Location A4050	Port Road East,	Barry	
Weather Fine without high winds				
Road Surface Dry	*	h Rear of V2 in I	Heavy Traffic which Has in Turn Collide	d with Rear of V3 Causing Damage.
Street Lighting Daylight	of Accident			
SITE DETAILS			CONTRIBUTORY FACTORS	PARTICIPANT PROBABILITY
Speed Limit 30 MPH	SPECIAL SITE CONDI	ITIONS 40		speed (Driver/Rider - Vehicle 001 A
Carriageway Single carriageway	None		in the jumper of the property	
Junction Detail Not at or within 20 metres of jun	nction			
Junction Control	CARRIAGEWAY WAZ	· · · · · · · · · · · · · · · · · · ·		
2nd Road Number	CARRIAGEWAY HAZ	ARDS		
Pedestrian Facilities None within 50 metres	None			
No physical crossing facility wit	thin 50 n			
VEHICLES INVOLVED 3		<u> </u>	CASUALTIES INVOLVE	ED 1
WIN 1 WITH G	W.1	1.1		D'1 W1 CN
Veh.No. 1 Vehicle type Car Manoeuvre Waiting to go ahead but held up	Make Mo	odel	Cas No 1 Cas Class Driver or	
than so so and a sat here up	wing? No tow or articulation		Severity SLIGHT Age 66 yr	
Skidded No skidding, jack-knifing or overturning			Car Passenger? Not a passenger	PSV Passenger? Not a passenger
Veh location at impact (restricted lane) On main carriage			Seat Belt Unknown	Cycle Helmet
Junct. location of veh. at 1st impact Not at or within			Ped Movement Not applicable Ped Location Not applicable	
Veh left carriageway? Did not leave carriageway	i gu i i		Ped Direction to Not applicable	
Hit object in c'way? None			School Pupil Other	
Hit object off c'way? None			Roadworker injured	
First point of impact Back			Other Details	
Veh registration no. Drivers age 26 yrs Sex Male Other veh.hit (ref.n Breath test Nega		Not hit and run		
	tive Driving Lic foreign registered vehicle			
Journey purpose Other	roreign registered venicle			
Veh.No. 2 Vehicle type Car	Make Mo	odel	1	
Manoeuvre Waiting to go ahead but held up				
	wing? No tow or articulation			
Skidded No skidding, jack-knifing or overturning	2			
Veh location at impact (restricted lane) On main carriage	eway not in restricted lane			
Junct. location of veh. at 1st impact Not at or within	20m of junction			
Veh left carriageway? Did not leave carriageway				
Hit object in c'way? None Hit object off c'way? None				
First point of impact Front Veh registration no. Other veh.hit (ref.n	no) 3 Hit and run N	Not hit and run		
Drivers age 66 yrs Sex Male Breath test Nega		tot iiit uiiu iuii		
	foreign registered vehicle			
Journey purpose Other				
F 11 D. (-11)			1	

Veh.No. 3 Vehicle type Car Make Model Manoeuvre Waiting to go ahead but held up Veh. direction from Northeast to Southwest Towing? No tow or articulation Skidded No skidding, jack-knifing or overturning
Veh location at impact (restricted lane) On main carriageway not in restricted lane Junct. location of veh. at 1st impact Not at or within 20m of junction Veh left carriageway? Did not leave carriageway Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Other veh.hit (ref.no) 2 Hit and run Not hit and run Drivers age 67 yrs Sex Male Breath test Negative Driving Lic Left Hand Drive Foreign veh. Not foreign registered vehicle Unknown Journey purpose Other

Full Details 10-December-2013 Accident Ref.No 110211184

SEVERITY District The Vale of Glamorgan		J7 -	Colcot	t Cross	Crid Deference	210770 / 1/0/10
SEVERITY District The Vale of Glamorgan SLIGHT Ref.No 110213911					Grid Reference	310770 / 169610
SLIGHT REFINE TIO213711					Police Officer Attend	: Yes
Date 28/12/2011 Day Wednesday Time 16:00	Road A	A405(Location A4050 Port R	oad East	t Roundabout, Wenvoe.		
Weather Fine without high winds Road Surface Wet/Damp	Descrip	tion V2 Stopped to Allow Vehic	le in Fro	ont to Make right Turn into Driveway wher	Driver V1 Has Sneez	zed and Vehicle Has Collided with
Street Lighting Daylight	of Accid	dent Rear of V2.				
SITE DETAILS	<u> </u>			CONTRIBUTORY FACTORS		PARTICIPANT PROBABILITY
Speed Limit 50 MPH		SPECIAL SITE CONDITIONS	3	308 Following too close (Driver/Rider -	- Injudicious)	Vehicle 001 B
Carriageway Roundabout		None		·	,	
Junction Detail Roundabout						
Junction Control Give way or uncontrolled		CARRIAGEWAY HAZARDS				
2nd Road Number U						
Pedestrian Facilities None within 50 metres		None				
No physical crossing facility wi	ithin 50 n					
VEHICLES INVOLVED 2			ı	CASUALTIES INVOLVE	ED 1	
Veh.No. 1 Vehicle type Car Manoeuvre Slowing or stopping Veh. direction from West to East To Skidded No skidding, jack-knifing or overturnin	-	Make Model tow or articulation		Cas No 1 Cas Class Driver or Severity SLIGHT Age 34 yr Car Passenger? Not a passenger	Sex Female PSV Passenger? N	ref No 2 Post code ot a passenger
Veh location at impact (restricted lane) On main carriage		in restricted lane		Seat Belt Unknown Ped Movement Not applicable	Cycle Helmet	
Junct. location of veh. at 1st impact Leaving rounda		in resureced fune		Ped Movement Not applicable Ped Location Not applicable		
Veh left carriageway? Did not leave carriageway				Ped Direction to Not applicable		
Hit object in c'way? None				School Pupil Other		
Hit object off c'way? None				Roadworker injured		
First point of impact Front	` •	TT: 1 N. 11:		Other Details		
Veh registration no. Drivers age 31 yrs Sex Female Breath test Neg		Hit and run Not hit Driving Lic	and run	1		
Left Hand Drive Unknown Foreign veh. Not						
Journey purpose Other	1010181110	Sistered veniere				
Veh.No. 2 Vehicle type Car		Make Model		7		
Manoeuvre Slowing or stopping						
Veh. direction from East to West To	•	o tow or articulation				
Skidded No skidding, jack-knifing or overturnin	ıg					
Veh location at impact (restricted lane) On main carriag	geway not	in restricted lane				
Junct. location of veh. at 1st impact Leaving rounda	ibout					
Veh left carriageway? Did not leave carriageway Hit object in c'way? None						
Hit object off c'way? None First point of impact Back						
Veh registration no. Other veh.hit (ref.:	no) 1	Hit and run Not hit	and run	1		
Drivers age 34 yrs Sex Female Breath test Neg	ative	Driving Lic				
Left Hand Drive Unknown Foreign veh. Not	foreign re	gistered vehicle				
Journey purpose Other						

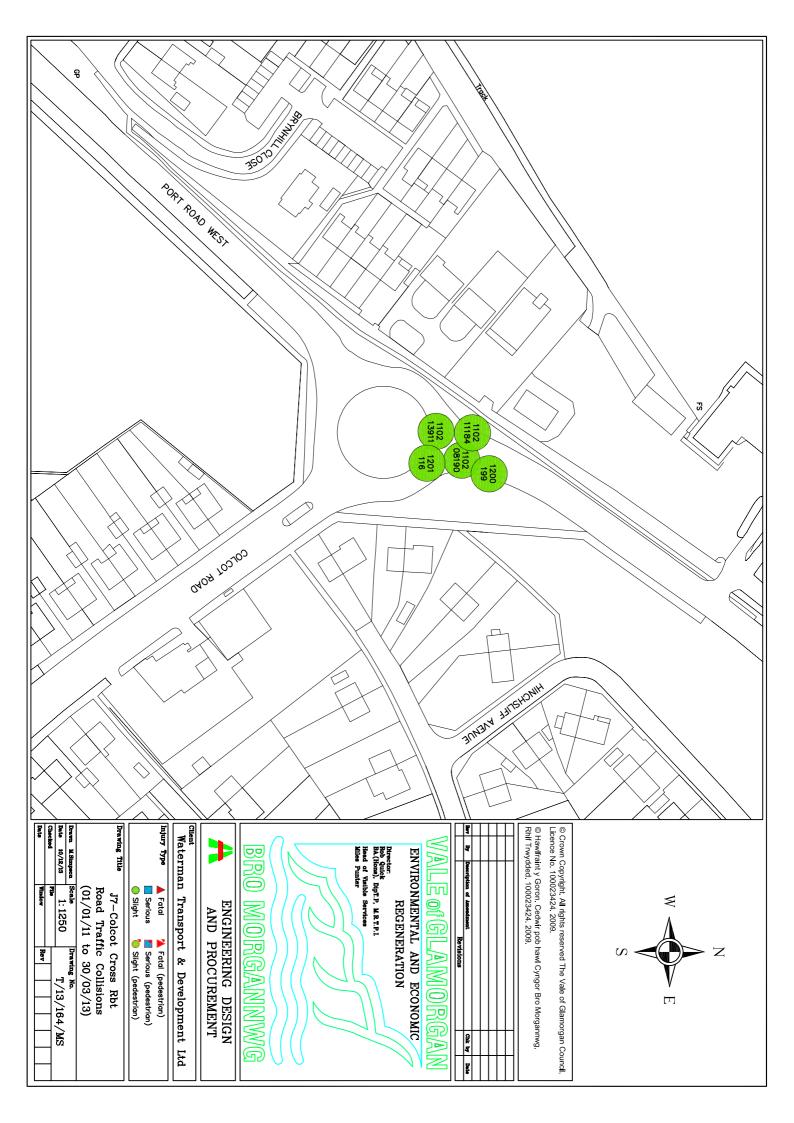
10-December-2013

Accident Ref.No 110213911

Full Details

	J7 - C	olcot Cross	T
SEVERITY District The Vale of Glamorgan			Grid Reference 310780 / 169624
SLIGHT Ref.No 1200199			Police Officer Attend: Yes
Date 03/05/2012 Day Thursday			
Time 08:55	Road A4226 Location Port Road West.	June with Calcot Road, Barry	
Weather Raining without high winds			
Road Surface Wet/Damp	Description V1 Has Collided with Rear of	V2 Whilst at Roundabout	
Street Lighting Daylight	of Accident		
SITE DETAILS	I	CONTRIBUTORY FACTORS	PARTICIPANT PROBABILITY
Speed Limit 40 MPH	SPECIAL SITE CONDITIONS	408 Sudden braking (Driver/Rider - Er	
Carriageway Single carriageway	None	3 (,
Junction Detail Roundabout	None	1 1	U000
Junction Control Give way or uncontrolled		1	
2nd Road Number A4050	CARRIAGEWAY HAZARDS		
Pedestrian Facilities None within 50 metres	None		
No physical crossing facility with	nin 50 n		
VEHICLES INVOLVED 2		CASUALTIES INVOLV	ZED 1
Veh.No. 1 Vehicle type Car	Make Model	Cas No 2 Cas Class Driver of	
Manoeuvre Slowing or stopping Veh. direction from East to West Tow	ing? No tour on outionlation	Severity SLIGHT Age 64 y	
Skidded No skidding, jack-knifing or overturning	ring? No tow or articulation	Car Passenger? Not a passenger	PSV Passenger? Not a passenger
Veh location at impact (restricted lane) On main carriage	way not in restricted lane	Seat Belt Unknown	Cycle Helmet
Junct. location of veh. at 1st impact Entering roundable	•	Ped Movement Not applicable Ped Location Not applicable	
Veh left carriageway? Did not leave carriageway		Ped Direction to Not applicable	
Hit object in c'way? None		School Pupil Other	
Hit object off c'way? None		Roadworker injured	
First point of impact Front)	Other Details	
Veh registration no. Drivers age 18 yrs Sex Male Other veh.hit (ref.no Breath test Negati		d run	
	oreign registered vehicle		
Journey purpose Other	7.4.8		
Veh.No. 2 Vehicle type Car	Make Model		
Manoeuvre Waiting to go ahead but held up			
Veh. direction from East to West Town	ring? No tow or articulation		
Skidded No skidding, jack-knifing or overturning			
Veh location at impact (restricted lane) On main carriager	way not in restricted lane		
Junct. location of veh. at 1st impact Entering roundable	out		
Veh left carriageway? Did not leave carriageway			
Hit object in c'way? None Hit object off c'way? None			
Hit object off c'way? None First point of impact Back			
Veh registration no. Other veh.hit (ref.no) 1 Hit and run Not hit and	d run	
Drivers age 64 yrs Sex Male Breath test Negati	ive Driving Lic		
	oreign registered vehicle		
Journey purpose Other			
E II Daville			A

	.I7 - C	olcot Cross	
SEVERITY District The Vale of Glamorgan	• • • • • • • • • • • • • • • • • • • •	7. C.	Grid Reference 310770 / 169600
SLIGHT Ref.No 1201116			Police Officer Attend: Yes
Date 12/10/2012 Day Friday			
Time 13:49	Road A4050 Location A4050 Port Road	at Roundabout with A4226, Barry, South Glan	norgan
Weather Fine without high winds			
Road Surface Dry	_ = =	yelist with its Wing Mirror Causing the Rider to	o Fall Off.
Street Lighting Daylight	of Accident		
SITE DETAILS		CONTRIBUTORY FACTORS	PARTICIPANT PROBABILITY
Speed Limit 40 MPH	SPECIAL SITE CONDITIONS	405 Failed to look properly (Driver/Ric	
Carriageway Roundabout	None		<i>'</i>
Junction Detail Roundabout	TVOIC	1 1	U000
Junction Control Give way or uncontrolled		1	
2nd Road Number A4226	CARRIAGEWAY HAZARDS		
Pedestrian Facilities None within 50 metres	None		
No physical crossing facility wit	hin 50 n		
VEHICLES INVOLVED 2		CASUALTIES INVOLVI	FD 1
Veh.No. 1 Vehicle type Car	Make Model	Cas No 1 Cas Class Driver or	
Manoeuvre Overtaking moving veh on its offsi		Severity SLIGHT Age 49 yr	rs Sex Male Post code
	wing? No tow or articulation	Car Passenger? Not a passenger	PSV Passenger? Not a passenger
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriage	y away not in restricted lane	Seat Belt Not applicable	Cycle Helmet
Junct. location of veh. at 1st impact Entering roundal	•	Ped Movement Not applicable	
Veh left carriageway? Did not leave carriageway	ooui	Ped Location Not applicable	
Hit object in c'way? None		Ped Direction to Not applicable School Pupil Other	
Hit object off c'way? None		School Pupil Other Roadworker injured	
First point of impact Nearside		Other Details	
Veh registration no. Other veh.hit (ref.n		in <u>Other Details</u>	
Drivers age ? yrs Sex Not knov Breath test Drive			
	Foreign registered vehicle		
Journey purpose Other	N 1 N 11		
Veh.No. 2 Vehicle type Pedal Cycle	Make Model		
Manoeuvre Going ahead other Veh. direction from West to South Tov	wing? No tow or articulation		
Skidded No skidding, jack-knifing or overturning	-		
Veh location at impact (restricted lane) On main carriage			
Junct. location of veh. at 1st impact Entering roundal	bout		
Veh left carriageway? Did not leave carriageway			
Hit object in c'way? None			
Hit object off c'way? None			
First point of impact Nearside			
Veh registration no. Other veh.hit (ref.n.		l run	
Drivers age 49 yrs Sex Male Breath test Not A Left Hand Drive Unknown Foreign veh. Not f			
	Foreign registered vehicle		
Journey purpose Other			
E II D. (. T.			

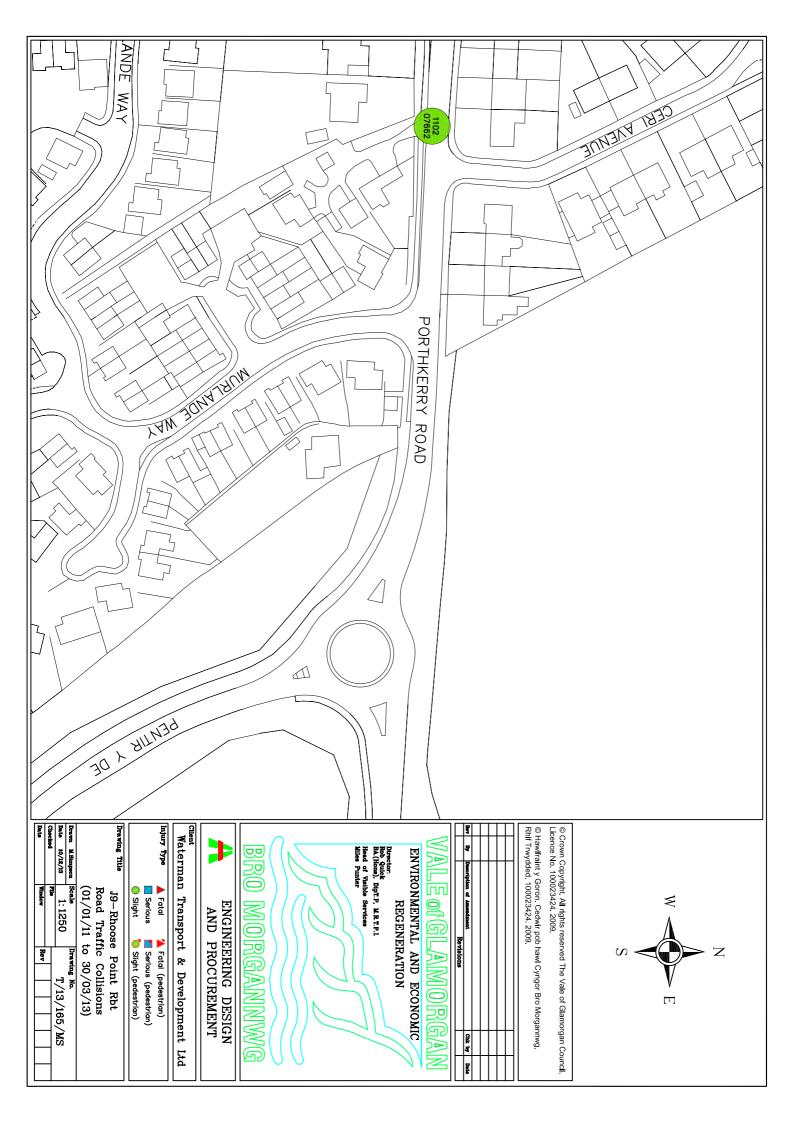


SEVERITY District The Vale of Glamorgan		J9 - R	hoose	Point	C:1D C	20/027 / 1//50/		
2 is the vale of Glamorgan					Grid Reference	306937 / 166586		
SLIGHT Ref.No 110207662					Police Officer Attend:	Yes		
Date 08/03/2011 Day Tuesday Time 08:22	Road (U Location Porthkerry Rd. J.	W Cer	i Ave, Rhoose				
Weather Fine without high winds Road Surface Dry Street Lighting Description of Accident Description of Accident Description of Accident								
Street Lighting Daylight		1	1	CONTRIBUTIONAL FACTORS		DADELCIDA VEDDODA DIVIEW		
SITE DETAILS Speed Limit 30 MPH Carriageway Single carriageway		SPECIAL SITE CONDITIONS	40	CONTRIBUTORY FACTORS 5 Failed to look properly (Driver/Rid	er - Error)	PARTICIPANT PROBABILITY Vehicle 001 B		
Junction Detail T or staggered junction Junction Control Give way or uncontrolled		None	_					
2nd Road Number U Pedestrian Facilities None within 50 metres		CARRIAGEWAY HAZARDS None						
No physical crossing facility wi	thin 50 n							
VEHICLES INVOLVED 2				CASUALTIES INVOLVE	ED 1			
Skidded No skidding, jack-knifing or overturning Veh location at impact (restricted lane) On main carriage Junct. location of veh. at 1st impact Approaching just Veh left carriageway? Did not leave carriageway. Hit object in c'way? None Hit object off c'way? None First point of impact Front Veh registration no. Other veh.hit (ref. Drivers age 37 yrs Sex Male Breath test Negal Left Hand Drive Unknown Foreign veh. Not Journey purpose Taking pupil to/from school Veh.No. 2 Vehicle type Car Manoeuvre Waiting to turn right	g geway not netion or vention or	Waiting Hit and run Not hit an Driving Lic egistered vehicle Make Model	d run	Cas No 1 Cas Class Driver or Severity SLIGHT Age 30 yr Car Passenger? Not a passenger Seat Belt Unknown Ped Movement Not applicable Ped Location Not applicable Ped Direction to Not applicable School Pupil Other Roadworker injured Other Details		Post code		
	g geway not netion or v	waiting Hit and run Not hit an Driving Lic	d run					

11-December-2013

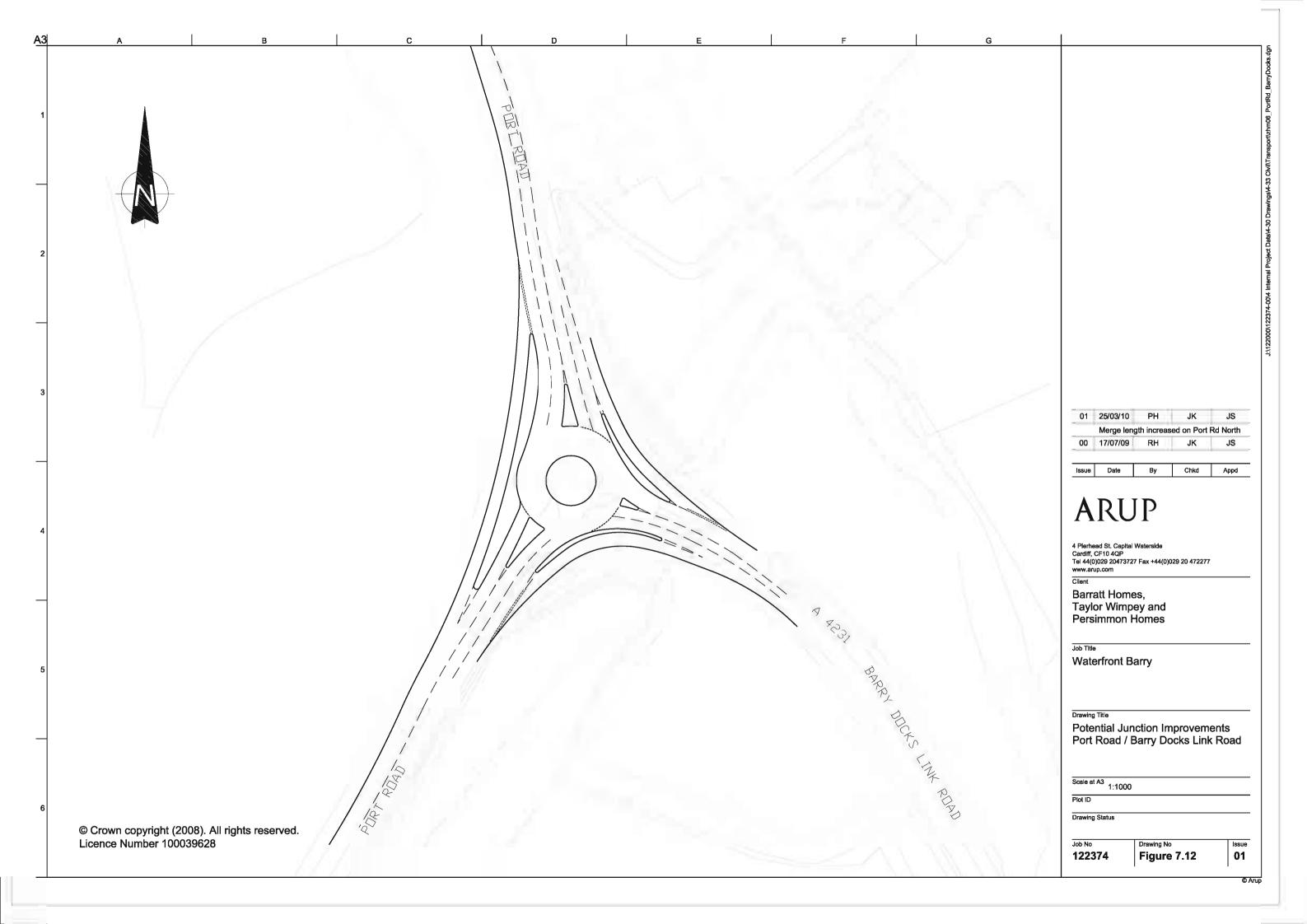
Accident Ref. No 110207662

Full Details





H. Improvements Proposed at Barry Link Road Roundabout as part of the Barry Waterfront Proposals





I. PICADY Analysis

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 1

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

PICADY 5.1 ANALYSIS PROGRAM RELEASE 5.0 (JUNE 2010)

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Run with file:-

"K:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\PICADY\Proposed Access Junction\

Assessment of Proposed Access.vpi'

(drive-on-the-left) at 16:31:43 on Wednesday, 30 April 2014

RUN INFORMATION ******

RUN TITLE : Assessment of Proposed Site Access Junction

LOCATION

DATE : 03/09/12

CLIENT

ENUMERATOR

JOB NUMBER : 15342 STATUS

DESCRIPTION

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A) I

MINOR ROAD (ARM B)

ARM A IS Porthkerry Road East

ARM B IS Access

ARM C IS Porthkerry Road West

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

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

ETC.

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 2

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GEOMETRIC DATA
```

Ι	DATA ITEM	I	MINOR	ROAD	В	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W)	7.43	м.	I
I	CENTRAL RESERVE WIDTH	I	(WCR)	0.00	Μ.	I
I		I				I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B)	2.20	Μ.	I
I	- VISIBILITY	I	(VC-B)2	37.00	Μ.	I
I	- BLOCKS TRAFFIC (SPACES)	I		YES	(0)	I
I		I				I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C)	19.0	Μ.	I
I	- VISIBILITY TO RIGHT	I	(VB-A)	40.0	Μ.	I
I	- LANE 1 WIDTH	I	(WB-C)	_		I
I	- LANE 2 WIDTH	I	(WB-A)	_		I
I	WIDTH AT 0 M FROM JUNCTION	I	10	0.00	М.	I
I	WIDTH AT 5 M FROM JUNCTION	I	4	4.00 1	М.	I
I	WIDTH AT 10 M FROM JUNCTION	I		3.40 1	М.	I
I	WIDTH AT 15 M FROM JUNCTION	I	:	3.40 1	М.	I
I	WIDTH AT 20 M FROM JUNCTION	I	:	3.40 1	М.	I
I	- LENGTH OF FLARED SECTION	I	DERIVED	: 0	PCU	I

.SLOPES AND INTERCEPT

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

	ercept For	Slope For Opposing	Slope For Opposing	I
	EAM B-C	STREAM A-C	STREAM A-B	I
I	0.00	0.00	0.00	I

* Due to the presence of a flare, data is not available

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For OpposingI STREAM C-B I
I	0.00	0.00	0.00	0.00	0.00 I

 * Due to the presence of a flare, data is not available

	Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	711.21	0.26	0.26	I

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

TRAFFIC DEMAND DATA

I	ARM	I	FLOW	SCALE(%)]
Ι	A B C	I I I		100 100 100	I

Demand set: AM Peak 2019 + LDP

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

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

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 3

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

															 _
I		I	NUMBE	ER OF M	INUTE	S FROM S	STA	ART WHEN	I	RATE	OF	F FLOW (VEF	H/MIN)	I
I	ARM	I	FLOW ST	TARTS I	TOP	OF PEAK	I	FLOW STOPS	I	BEFORE	Ι	AT TOP	I	AFTER	I
I		I	TO RI	ISE I	IS	REACHED	I	FALLING	I	PEAK	Ι	OF PEAK	I	PEAK	Ι
I		I		I			I		I		Ι		I		Ι
															 _
I	ARM	ΑI	15.	.00 I		45.00	I	75.00	I	4.07	I	6.11	I	4.07	Ι
I	ARM	вІ	15.	.00 I		45.00	I	75.00	I	4.24	Ι	6.36	I	4.24	I
I	ARM	CI	15.	.00 I		45.00	I	75.00	I	4.96	I	7.44	I	4.96	Ι

Dema	and set:	AM Peak 2	019 +	LDP		
I		I I	-	RNING PRO	PORTIONS	I
I		I	-		OF H.V.S	_
I	TIME	I FROM/	TO I 2	ARM A I	ARM B I	ARM C I
I	07.15 - 08.45	I	I	I	I	
I		I ARM	A I	0.000 I	0.387 I	0.613 I
I		I	I	0.0 I	126.0 I	200.0 I
I		I	I	(0.0)I	(0.0)I	(6.4)I
I		I	I	I	I	I
I		I ARM	ΒI	0.832 I	0.000 I	0.168 I
I		I	I	282.0 I	0.0 I	57.0 I
I		I	I	(0.0)I	(0.0)I	(0.0)I
I		I	I	I	I	I
I		I ARM	CI	0.917 I	0.083 I	0.000 I
I		I	I	364.0 I	33.0 I	0.0 I
I		I	I	(4.6)I	(0.0)I	(0.0)I
I		I	I	I	I	I

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

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET AM Peak 2019 + LDP
AND FOR TIME PERIOD 1

I TIME I I I 07.15-0 I B-C I B-A I C-AB I C-A I A-B I A-C I		CAPACITY (VEH/MIN) 10.62 7.47 13.56	DEMAND/ CAPACITY (RFC) 0.067 0.474 0.045	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS) 0.00 0.00 0.00	0.87	(VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	 I
I TIME I I I 07.30-0 I B-C I B-A I C-AB I C-A I A-B I A-C I	DEMAND (VEH/MIN) 07.45 0.85 4.23 0.78 5.17 1.89 3.00			PEDESTRIAN FLOW (PEDS/MIN)	QUEUE		(VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING	I I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I	07.45-0	8.00									I
I	B-C	1.05	9.34	0.112		0.09	0.12	1.8		0.12	I
I	B-A	5.17	6.72	0.770		1.37	2.90	37.6		0.57	I
I	C-AB	1.11	14.50	0.076		0.09	0.14	2.1		0.07	I
I	C-A	6.18									I
I	A-B	2.31									I
I	A-C	3.67									I
I											I

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 4 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I 08.00-08.15 B-C 1.05 B-A F 17 9.30 0.112 6.72 0.770 14.50 0.076 0.12 0.13 1.9 2.90 3.09 45.2 0.14 0.14 2.1 0.12 B-A 5.17 C-AB 1.11 C-A 6.18 A-B 2.31 0.63 Ι 0.07 Ι I I Ι Ι A-C Ι 3.67 Т DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I PAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE I TIME I 08.15-08.30 B-C 0.85 B-A 4.23 10.03 7.15 13.90 10.03 0.085 7.15 0.591 13.90 0.056
 0.13
 0.09
 1.4

 3.09
 1.52
 25.1

 0.14
 0.09
 1.4
 0.11 I 0.37 Ι 0.78 5.17 1.89 3.00 C-AB 0.08 I C-A Ι A-B A-C Т Ι Ι Т Т

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	Ί
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I	08.30-0	8.45									I
I	B-C	0.72	10.58	0.068		0.09	0.07	1.1		0.10	I
I	B-A	3.54	7.47	0.474		1.52	0.93	14.8		0.26	I
I	C-AB	0.61	13.56	0.045		0.09	0.07	1.0		0.08	I
I	C-A	4.37									I
I	A-B	1.58									I
I	A-C	2.51									I
I											I
1											

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

QUEUE FOR STREAM B-C

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE FOR STREAM B-A

TIME	NO. OF	
SEGMENT	VEHICLES	
ENDING	IN QUEUE	
07.30	0.9	*
07.45	1.4	*
08.00	2.9	***
08.15	3.1	***
08.30	1.5	* *
08.45	0.9	*

QUEUE FOR STREAM C-AB

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I STREAM I TOTAL DEMAND I I T T			I I	* QUEU	ΑY	*	I	INCLUSIV	LAY	~	 I I			
I		I	(VEH)	(VEH/H)	I							(MIN/VEH)	_
I	B-C	I	78.5	_	52.3	_	8.7	_	0.11	I	8.7	_	0.11	I
I	B-A	I	388.2	Ι	258.8	Ι	153.9	Ι	0.40	I	154.0	I	0.40	I
I	C-AB	I	74.7	Ι	49.8	I	8.8	Ι	0.12	I	8.8	I	0.12	I
I	C-A	I	471.7	I	314.5	I		Ι		I		I		I
I	A-B	I	173.4	I	115.6	I		Ι		I		I		I
I	A-C	I	275.3	I	183.5	I	:	I 		I		I		I
I	ALL	I	1461.8	I	974.5	I	171.4	I	0.12	I	171.5	I	0.12	I

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

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

.SLOPES AND INTERCEPT

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

-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	j I
I 0.00	0.00	0.00	I

* Due to the presence of a flare, data is not available

	Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For OpposingI STREAM C-B I
I	0.00	0.00	0.00	0.00	0.00 I

* Due to the presence of a flare, data is not available

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	711.21	0.26	0.26	I

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

TRAFFIC DEMAND DATA

I ARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

Demand set: PM Peak 2019 + LDP

TIME PERIOD BEGINS 17.00 AND ENDS 18.30

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

TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 6 TRL

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

																_
I		I	NUI	MBER OF	MIN	UTES FROM S	STA	ART WHEN	Ι	RATE	OI	F FLOW (VEF	H/MIN)		Ι
I	ARM	I	FLOW	STARTS	I T	OP OF PEAK	I	FLOW STOPS	Ι	BEFORE	I	AT TOP	I	AFTER		I
I		I	TO	RISE	I :	IS REACHED	I	FALLING	Ι	PEAK	I	OF PEAK	I	PEAK		I
I		I			I		I		I		I		I			I
																_
I	ARM	ΑI		15.00	I	45.00	Ι	75.00	Ι	8.20	I	12.30	I	8.20		Ι
I	ARM	ΒΙ		15.00	I	45.00	I	75.00	I	1.60	I	2.40	I	1.60		I
I	ARM	CI		15.00	I	45.00	Ι	75.00	Ι	3.59	Ι	5.38	Ι	3.59	:	Ι

Dem	and set:	PM Peak 2019 + LDP	
I I I		I TURNING PROPORTIONS I TURNING COUNTS I (PERCENTAGE OF H.V.S)	I
I	TIME	I FROM/TO I ARM A I ARM B I ARM C]
	17.00 - 18.30	I ARM A I 0.000 I 0.248 I 0.752 I I 0.0 I 163.0 I 493.0 I I (0.0)I (0.0)I (1.0)	[[[[[[

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

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET PM Peak 2019 + LDP AND FOR TIME PERIOD 2

I I T	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
T	17.00-1	7 15		(1010)	(ILDO/IIII)	(V 11110)	(VEIID)	TITE DEGREENT,	TIME SEGMENT,	VEHICLE (HILL)	T
Ī	B-C	0.25	10.44	0.024		0.00	0.02	0.4		0.10	T
Ī	B-A	1.36	6.81	0.199		0.00	0.24	3.5		0.18	T
Ī	C-AB	0.51	11.84	0.043		0.00	0.06	0.9		0.09	T
I	C-A	3.09	11.01	0.015		0.00	0.00	0.5		0.05	T
I	A-B	2.05									I
I	A-C	6.19									I
I											I
_											

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.15-17	.30		, -,	, , ,	, , , , ,	(/	,	,	,	I
I	B-C	0.30	9.92	0.030		0.02	0.03	0.5		0.10	I
I	B-A	1.62	6.37	0.254		0.24	0.33	4.8		0.21	I
I	C-AB	0.65	11.88	0.055		0.06	0.09	1.3		0.09	I
I	C-A	3.65									I
I	A-B	2.44									I
I	A-C	7.39									I
I											I

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.30-1	7.45									I
I	B-C	0.37	9.19	0.040		0.03	0.04	0.6		0.11	I
I	B-A	1.98	5.76	0.344		0.33	0.51	7.3		0.26	I
I	C-AB	0.90	12.01	0.075		0.09	0.13	2.0		0.09	I
I	C-A	4.36									I
I	A-B	2.99									I
I	A-C	9.05									I
Ι											I

TRL TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 7 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I VEHICLE (MIN) I I 17.45-18.00 0.37 9.18 0.040 5.76 0.344 12.01 0.075 0.040 0.04 0.04 0.6 0.11 B-C 1.98 C-AB 0.90 C-A 4.36 A-B 2.99 A-C 9 ^ -1.98 0.90 0.51 0.52 0.13 0.14 7.7 0.26 Ι 2.0 0.09 Ι I Ι Ι Ι Ι DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I PAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE I TIME I 18.00-18.15 0.30 1.62 9.91 0.030 6.37 0.254 11.88 0.055 0.04 0.03 0.52 0.35 0.14 0.09 0.5 0.10 B-C Ι 0.21 B-A 5.4 Ι 0.65 3.65 2.44 7.39 1.3 C-AB 0.09 I C-A Ι A-B A-C Т Ι Ι Т Т

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I	18.15-1	8.30									I
I	B-C	0.25	10.43	0.024		0.03	0.02	0.4		0.10	I
I	B-A	1.36	6.81	0.199		0.35	0.25	3.9		0.18	I
I	C-AB	0.51	11.84	0.043		0.09	0.06	0.9		0.09	I
I	C-A	3.09									I
I	A-B	2.05									I
Ι	A-C	6.19									I
I											I

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

QUEUE FOR STREAM B-C

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

B-A OUEUE FOR STREAM

TIME	NO. OF	
SEGMENT	VEHICLES	
ENDING	IN QUEUE	
17.15	0.2	
17.30	0.3	
17.45	0.5	*
18.00	0.5	*
18.15	0.3	
18.30	0.3	

QUEUE FOR STREAM C-AB

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1

TRL Viewer 3.2 AG K:\.. \Proposed Access Junction\Assessment of Proposed Access.vpo - Page 8 TRL

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTA	L I	DEMAND	I	* QUEU * DEL	ΑS	Y *	I	* DE	CLA	2	I
I		I	(VEH)		(VEH/H)	I			(MIN/VEH)		(MIN)		(MIN/VEH)	_
I	B-C	I	27.5	I	18.4	I	2.9	I	0.11	I	2.9	I	0.11	I
I	B-A	I	148.7	I	99.1	I	32.7	I	0.22	I	32.7	I	0.22	I
I	C-AB	I	62.0	I	41.3	I	8.6	Ι	0.14	I	8.6	I	0.14	I
I	C-A	I	333.0	I	222.0	I		Ι		I		I		I
I	A-B	I	224.4	I	149.6	Ι		Ι		I		I		I
I	A-C	Ι	678.6	I	452.4	Ι		Ι		I		I		Ι
I	ALL	I	1474.2	I	982.8	I	44.2	I	0.03	I	 44.2	I	0.03	I

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

Printed at 16:32:07 on 30/04/2014]

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES

WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD

^{*} THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS

A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

TRL TRL Viewer 3.2 AG K:\.. \Fonman Road B4265 Junction\Fonmon Road B4265.vpo - Page 1

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

PICADY 5.1 ANALYSIS PROGRAM RELEASE 5.0 (JUNE 2010)

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Run with file:-

"K:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\PICADY\Fonman Road B4265 Junction\

Fonmon Road B4265.vpi'

(drive-on-the-left) at 10:24:24 on Wednesday, 30 April 2014

RUN INFORMATION ******

RUN TITLE : Fonmon Road_B4265 LOCATION : Rhoose

DATE : 15/05/13

CLIENT

ENUMERATOR : CFKA [CF-40]

JOB NUMBER STATUS DESCRIPTION

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A) I

MINOR ROAD (ARM B)

ARM A IS B4265 (E) ARM B IS Fonmon Road

ARM C IS B4265 (W)

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

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

ETC.

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GEOMETRIC DATA

I	DATA ITEM	I	MINOF	ROAD	В	Ι
I I I I I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH CENTRAL RESERVE WIDTH MAJOR ROAD RIGHT TURN - WIDTH - VISIBILITY - BLOCKS TRAFFIC (SPACES)	I I	(WC-B) (VC-B)2	0.00 2.20 800.00	М.	I I I
I		I				I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C)	200.0	Μ.	Ι
I	- VISIBILITY TO RIGHT	I	(VB-A)	200.0	Μ.	I
I	- LANE 1 WIDTH	I	(WB-C)	2.40	Μ.	I
I	- LANE 2 WIDTH	I	(WB-A)	0.00	Μ.	I

.SLOPES AND INTERCEPT

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

	Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	704.80	0.26	0.10	I

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For OpposingI STREAM C-B I
I	610.96	0.27	0.10	0.17	0.38 I

	Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	689.79	0.25	0.25	I

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

TRAFFIC DEMAND DATA

I ARM I FLOW SCALE(%) I

I B I 100 I
I C I 100 I

Demand set: AM 2019 + LDP

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I]	[NUM	BER OF	M	NUTE	S F	ROM	STA	ART WE	HEN	I	RATE	OF	FI	WO _L	VEF	H/MIN)	I
I	ARM]	F	LOW	STARTS	I	TOP	OF	PEAK	I	FLOW	STOPS	I	BEFORE	I	AΤ	TOP	I	AFTER	I
I]	[TO	RISE	I	IS	REA	CHED	I	FALL]	ING	I	PEAK	I	OF	PEAR	I	PEAK	I
I]	Ι			Ι				I			I		I			I		I
I	ARM	A I	Ι	1	.5.00	Ι		45.	00	I	75	5.00	I	4.19	I	6	.28	I	4.19	I
I	ARM	в 1	Ι	1	5.00	Ι		45.	00	I	75	5.00	I	3.25	I	4	.88	I	3.25	I
I	ARM	C I	Ι	1	5.00	Ι		45.	00	I	75	5.00	I	6.18	I	9	.26	I	6.18	I

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Demand set:	AM 2019 + LDP							
I I I		I I I						
I TIME	I FROM/TO I ARM A I ARM B I ARM C	Ι						
I 07.15 - 08.45 I I I I I I	I ARM A I 0.000 I 0.057 I 0.943 I I 0.0 I 19.0 I 316.0 I I I (0.0)I (10.0)I (10.0)	I I I I						
I I I I	I I I I I I I I I I I I I I I I I I I	I						
TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED								

		QUEUE	AND DELAY	INFORMATI	ON FOR EACH 1	L5 MIN T	TIME SEG	MENT			
			DEMAND SET		M 2019 + LDP 1						
I I I	TIME 07.15-0	(VEH/MIN)	CAPACITY (VEH/MIN)	CAPACITY	FLOW	QUEUE	END QUEUE (VEHS)		GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)		I
I	B-AC	3.26	9.33	0.350		0.00	0.53	7.5		0.16	I
I I I	C-A C-B A-B A-C	4.81 1.39 0.24 3.97	9.39	0.148		0.00	0.17	2.5		0.12	I I I I
I	TIME	(VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY	FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING	I I
I	B-AC	3.90	9.08	0.429		0.53	0.74	10.6		0.19	I
I I I I	C-A C-B A-B A-C	5.74 1.66 0.28 4.73	9.19	0.181		0.17	0.22	3.2		0.13	I I I
I	TIME	(VEH/MIN)	CAPACITY (VEH/MIN)	CAPACITY	FLOW	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	B-AC	4.77 7.03	8.73	0.547		0.74	1.16	16.5		0.25	I
I I I I	C-A C-B A-B A-C	2.04 0.35 5.80	8.90	0.229		0.22	0.29	4.3		0.15	I I I I
I I I	TIME 08.00-0		CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	B-AC	4.77	8.73	0.547		1.16	1.18	17.7		0.25	I
I I I I	C-A C-B A-B A-C	7.03 2.04 0.35 5.80	8.90	0.229		0.29	0.29	4.4		0.15	I I I

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I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08	3.30									I
I	B-AC	3.90	9.08	0.429		1.18	0.77	12.1		0.19	I
I	C-A	5.74									I
I	C-B	1.66	9.19	0.181		0.29	0.22	3.4		0.13	I
I	A-B	0.28									I
I	A-C	4.73									I
Ι											I
i											

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	,	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I (08.30-08	8.45									I
I	B-AC	3.26	9.33	0.350		0.77	0.55	8.5		0.17	I
I	C-A	4.81									I
I	C-B	1.39	9.39	0.148		0.22	0.18	2.7		0.13	I
I	A-B	0.24									I
I	A-C	3.97									I
I											I

QUEUE FOR STREAM B-AC

TIME	NO. OF	
SEGMENT	VEHICLES	
ENDING	IN QUEUE	
07.30	0.5	*
07.45	0.7	*
08.00	1.2	*
08.15	1.2	*
08.30	0.8	*
08.45	0.5	*

QUEUE FOR STREAM C-B

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

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QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I				I	* QUEUEI * DELAY	*	I	INCLUSIV * DE	LAY	-	I		
I		I	(VEH)				(MIN)			(MIN)		(MIN/VEH)	_
_	B-AC C-A	_	357.9 527.2	_		_	72.9 I	0.20	I	72.9	I	0.20	I
I	C-B	I	152.8	I	101.9	I	20.5 I	0.13	I	20.5	I	0.13	I
I		I	26.2 435.0	_		_	I		I		I		I
I	ALL	I	1498.9	I	999.3	I	93.4 I	0.06	I	93.4	 I	0.06	I

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

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

.SLOPES AND INTERCEPT

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

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	704.80	0.26	0.10	I

	Intercept For	Slope For Opposing	Slope For Opposing	Slope For Opposing	Slope For OpposingI
	STREAM B-A	STREAM A-C	STREAM A-B	STREAM C-A	STREAM C-B I
I	610.96	0.27	0.10	0.17	0.38 I

	-	Slope For Opposing	Slope For Opposing	Ι
Ι	STREAM C-B	STREAM A-C	STREAM A-B	Ι
I	689.79	0.25	0.25	Ι

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

TRAFFIC DEMAND DATA

I ARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

Demand set: PM 2019 + LDP

TIME PERIOD BEGINS 17.00 AND ENDS 18.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

																	_
I		I	NUI	MBER OF	ΜI	NUTE	S FROM	ST	ART WHEN	I	RATE	OF	FLOW (VEF	H/MIN)	-	Ι
I	ARM	I	FLOW	STARTS	I	TOP	OF PEAK	I	FLOW STOPS	S I	BEFORE	I	AT TOP	I	AFTER		Ι
I		I	TO	RISE	I	IS	REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK		Ι
I		I			I			I		I		I		I			Ι
																	_
I	ARM	ΑI		15.00	I		45.00	I	75.00	I	4.91	Ι	7.37	I	4.91		I
I	ARM	вІ	-	15.00	I		45.00	I	75.00	I	1.76	I	2.64	I	1.76	-	Ι
I	ARM	CI	:	15.00	I		45.00	I	75.00	I	7.64	I	11.46	I	7.64	-	Ι
																	_

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PM 2019 + LDP TURNING PROPORTIONS TURNING COUNTS (PERCENTAGE OF H.V.S) I I TIME I FROM/TO I ARM A I ARM B I ARM C I -----I 17.00 - 18.30 I I ARM A I 0.000 I 0.046 I 0.954 I I I 0.00 I 18.0 I 375.0 I I I (0.0)I (10.0)I (10.0)I Ι Ι Ι I ARM B I 0.113 I 0.000 I 0.887 I I I 16.0 I 0.0 I 125.0 I I I (10.0)I (0.0)I (10.0)I Ι I ARM C I 0.633 I 0.367 I 0.000 I I I 387.0 I 224.0 I 0.0 I I I (10.0)I (10.0)I (0.0)I I Ι I I I I I TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

JAY AVERAGE DELAY I PER ARRIVING I VEHICLE (MIN) I
0.14 I
I
0.15 I
I I
.ay average delay i
PER ARRIVING I C) VEHICLE (MIN) I
I
0.16 I
0.18 I
I
I
AY AVERAGE DELAY I PER ARRIVING I VEHICLE (MIN) I
0.18 I
0.22 I
I I I
AY AVERAGE DELAY I PER ARRIVING I VEHICLE (MIN) I
0.18 I
0.22 I I I I

TRL Viewer 3.2 AG K:\.. \Fonman Road B4265 Junction\Fonmon Road B4265.vpo - Page 7 TRL

I I T	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18	3.15		(111 0)	(I LDS/ HILL)	(VIIIO)	(VDIID)	TIME DEGMENT,	TIME ODGMENT,	VEHICLE (HILL)	I
I	B-AC	2.11	8.54	0.247		0.47	0.33	5.2		0.16	I
I	C-A	5.80									I
I	C-B	3.36	8.97	0.374		0.90	0.61	9.5		0.18	I
I	A-B	0.27									I
I	A-C	5.62									I
I											I

I	TIME	DEMAND	CAPACITY	,	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I :	L8.15-18	3.30									I
I	B-AC	1.77	8.89	0.199		0.33	0.25	3.9		0.14	I
I	C-A	4.86									I
I	C-B	2.81	9.21	0.305		0.61	0.45	6.9		0.16	I
I	A-B	0.23									I
I	A-C	4.71									I
I											I

QUEUE FOR STREAM B-AC

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
17.15	0.2
17.30	0.3
17.45	0.5
18.00	0.5
18.15	0.3
18.30	0.3

QUEUE FOR STREAM C-B

TIME	NO. OF	
SEGMENT	VEHICLES	
ENDING	IN QUEUE	
17.15	0.4	
17.30	0.6	*
17.45	0.9	*
18.00	0.9	*
18.15	0.6	*
18.30	0.4	

OUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAI		DEMAND	I	* QUEUE:	Z *	I	* DE	LA?	QUEUEING * Y *	I
I		I	(VEH)		(VEH/H)	I						(MIN/VEH)	_
Ι	B-AC	I	194.1	I	129.4	I	31.1 I	0.16	I	31.1	I	0.16	I
I	C-A	Ι	532.7	I	355.1	I	I		I		I		I
I	C-B	Ι	308.3	I	205.5	Ι	57.2 I	0.19	I	57.2	I	0.19	I
I	A-B	I	24.8	I	16.5	I	I		I		I		I
Ι	A-C	Ι	516.2	Ι	344.1	Ι	I		I		Ι		Ι
I	ALL	I	1576.0	I	1050.7	I	88.2 I	0.06	I	88.3	I	0.06	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD

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

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES

WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

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

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"K:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\PICADY\Station Road Junction\

Station Road Junction.vpi"

(drive-on-the-left) at 10:54:18 on Wednesday, 30 April 2014

RUN INFORMATION *******

RUN TITLE : Station Road Junction LOCATION : Rhoose

DATE : 15/05/13

CLIENT

ENUMERATOR : CFKA [CF-40]

JOB NUMBER STATUS DESCRIPTION

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A) I

MINOR ROAD (ARM B)

ARM A IS Rhoose Road ARM B IS Station Road ARM C IS Fontygary Road

STREAM LABELLING CONVENTION

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

TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 2

GEOMETRIC DATA

I	DATA ITEM	I	MINOF	ROAD	В	I
I I I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH CENTRAL RESERVE WIDTH MAJOR ROAD RIGHT TURN - WIDTH	I	(W) (WCR)	0.00	М.	I I I
I I I	- VISIBILITY - BLOCKS TRAFFIC (SPACES)	I I	(VC-B)			I
I I I	MINOR ROAD - VISIBILITY TO LEFT - VISIBILITY TO RIGHT - LANE 1 WIDTH - LANE 2 WIDTH	I I I	(VB-C) (VB-A) (WB-C) (WB-A)	17.0 3.00	M. M.	I I I

.SLOPES AND INTERCEPT

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

	Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	634.64	0.23	0.09	I

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For OpposingI STREAM C-B I	
I 	498.87	0.22	0.09	0.14	0.31 1	-

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	626.08	0.23	0.23	I

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

TRAFFIC DEMAND DATA

I ARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

Demand set: AM 2019 + LDP

TIME PERIOD BEGINS 07.15 AND ENDS 08.45

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I I ARM I I	I	FLOW ST	ARTS I	TOP O	F PEAK	I	ART WHEN FLOW STOPS FALLING	I	BEFORE	I	AT TOP	I	AFTER	I I I
	A I B I C I		00 I	4	5.00	I I I		I	0.90	I	1.35	I	0.90	I I I

3.60 0.81

0.99

4.28

9.22 0.088

C-B

A-B

A-C

TRI TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 3

AM 2019 + LDP TURNING PROPORTIONS TURNING COUNTS (PERCENTAGE OF H.V.S) I TIME I FROM/TO I ARM A I ARM B I ARM C I Ι -----07.15 - 08.45 I I ARM A I 0.000 I 0.188 I 0.812 I I U 0.0 I 54.0 I 233.0 I I (0.0)I (0.0)I (1.0)I Ι Т I ARM B I 0.542 I 0.000 I 0.458 I I I 39.0 I 0.0 I 33.0 I I I (0.0)I (0.0)I I ARM C I 0.817 I 0.183 I 0.000 I I I 196.0 I 44.0 I 0.0 I I I (1.0)I (0.0)I (0.0)I Ι I I TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS OUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT FOR DEMAND SET AM 2019 + LDP AND FOR TIME PERIOD 1 DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I TIME I 07.15-07.30 B-AC 0.90 8.14 0.111 0.00 0.12 0.14 C-A 2.46 0.55 0.68 2.92 C-B 9.60 0.057 0.00 0.06 0.11 A-B A-C DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I TIME Т I 07.30-07.45 B-AC 1.08 C-A 2.94 7.93 0.136 0.12 0.16 2.3 0.15 2.94 C-B 9.44 0.070 0.06 0.07 1.1 0.11 A-B 0.81 A-C 3.49 START END DELAY GEOMETRIC DELAY AVERAGE DELAY I QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ DED ADDITION) DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE I TIME Ι (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I 07.45-08.00 I B-AC 1.32 7.63 0.173 0.16 0.21 3.0 0.16 C-A 3.60 0.81 0.99 4.28 0.07 0.10 C-B 9.22 0.088 0.12 A-B Ι A-C DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH.MIN/ (VEH.MIN/ PER ARRIVING I I TIME OUEUE OUEUE Ι (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I 08.00-08.15 B-AC 1.32 C-A 3.60 7.63 0.173 0.16 Ι 0.21 0.21 3.1

0.10 0.10

1.4

0.12

TRL TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 4

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I	08.15-08	8.30									I
I	B-AC	1.08	7.93	0.136		0.21	0.16	2.5		0.15	I
I	C-A	2.94									I
I	C-B	0.66	9.44	0.070		0.10	0.08	1.2		0.11	I
I	A-B	0.81									I
I	A-C	3.49									I
I											I

I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I

I 08.30-08.45 B-AC 0.90 Ι 8.14 0.111 0.16 0.13 1.9 0.14 C-A C-B A-B A-C 2.46 I Ι 0.08 0.06 0.55 9.60 0.057 0.9 0.11 Ι 0.55 0.68 2.92 I I Ι Ι Т Т

QUEUE FOR STREAM B-AC

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

QUEUE FOR STREAM C-B

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

TRL TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I T	STREAM	I				I I	* QUEUEI	<i>*</i>	I	* DE	LA	QUEUEING *	I
I		I	(VEH)									(MIN/VEH)	_
I	B-AC	I	99.1	I	66.1	I	14.6 I	0.15	I	14.6	I	0.15	I
I	C-A	I	269.8	I	179.9	I	I		I		I		I
I	C-B	I	60.6	Ι	40.4	I	6.9 I	0.11	I	6.9	I	0.11	I
I	A-B	I	74.3	Ι	49.6	I	I		I		I		I
I	A-C	I	320.7	Ι	213.8	Ι	I		I		I		I
I	ALL	I	824.5	I	549.7	I	21.5 I	0.03	I	21.5	I	0.03	I

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

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

.SLOPES AND INTERCEPT

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

	-	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	I
I	634.64	0.23	0.09	I

	Intercept For	Slope For Opposing	Slope For Opposing	Slope For Opposing	Slope For OpposingI
	STREAM B-A	STREAM A-C	STREAM A-B	STREAM C-A	STREAM C-B I
I	498.87	0.22	0.09	0.14	0.31 I

I	Intercept For	Slope For Opposing	Slope For Opposing	I
Ι	STREAM C-B	STREAM A-C	STREAM A-B	Ι
I	626.08	0.23	0.23	I

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

TRAFFIC DEMAND DATA

I ARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

Demand set: PM 2019 + LDP

TIME PERIOD BEGINS 17.00 AND ENDS 18.30

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I		I	NUI	MBER OF	MΙ	INUTE	S FROM	ST	ART WHEN	I	RATE	OF I	FLOW (VEF	H/MIN)	I
I	ARM	I	FLOW	STARTS	Ι	TOP	OF PEAK	I	FLOW STOPS	Ι	BEFORE	I A	TOP	I	AFTER	I
I		I	TO	RISE	Ι	IS	REACHED	I	FALLING	Ι	PEAK	I OI	PEAR	I	PEAK	I
I		I			Ι			I		Ι		I		I		I
I	ARM	ΑI	:	15.00	I		45.00	I	75.00	I	3.83	I	5.74	I	3.83	I
I	ARM	вІ		15.00	Ι		45.00	I	75.00	I	0.66	I	0.99	I	0.66	I
I	ARM	CI	:	15.00	Ι		45.00	I	75.00	I	3.70	I	5.55	I	3.70	I

B-AC 0.97 C-A 4.24

A-B 1.06 A-C

Ι

7.35 0.132

9.15 0.130

TRL TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 6

PM 2019 + LDP TURNING PROPORTIONS TURNING COUNTS (PERCENTAGE OF H.V.S) Ι TIME I FROM/TO I ARM A I ARM B I ARM C I Ι -----17.00 - 18.30 I I ARM A I 0.000 I 0.190 I 0.810 I I U I 0.0 I 58.0 I 248.0 I I (0.0)I (0.0)I (0.0)I Ι Т I ARM B I 0.566 I 0.000 I 0.434 I I I 30.0 I 0.0 I 23.0 I I I (0.0)I (0.0)I I ARM C I 0.780 I 0.220 I 0.000 I I I 231.0 I 65.0 I 0.0 I I I (0.0)I (0.0)I Ι I I TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS OUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT FOR DEMAND SET PM 2019 + LDP AND FOR TIME PERIOD DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I TIME I 17.00-17.15 B-AC 0.67 7.94 0.084 0.00 0.09 0.14 C-A 2.90 C-B 0.82 0.73 3.11 9.56 0.085 0.00 0.09 0.11 A-B A-C I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I Т I 17.15-17.30 B-AC 0.79 C-A 3.46 7.69 0.103 0.09 0.11 0.14 1.7 3.46 C-A C-B 9.39 0.104 0.09 0.11 0.12 1.7 A-B A-C 3.72 START END DELAY GEOMETRIC DELAY AVERAGE DELAY I QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ DED ADDITION) DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE I TIME Ι (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I 17.30-17.45 B-AC 0.97 0.11 0.15 7.35 0.132 2.2 0.16 C-A 4.24 1.19 1.06 4.55 0.11 0.15 C-B 9.15 0.130 2.2 0.13 A-B I A-C DEMAND CAPACITY DEMAND/ PEDESTRIAN START END (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH.MIN/ (VEH.MIN/ PER ARRIVING I I TIME OUEUE OUEUE Ι (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I I 17.45-18.00

0.15 0.15

0.15 0.15

2.3

2.2

0.16

0.13

TRL Viewer 3.2 AG K:\.. \Station Road Junction\Station Road Junction.vpo - Page 7 TRL

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18	3.15									I
I	B-AC	0.79	7.69	0.103		0.15	0.12	1.8		0.15	I
I	C-A	3.46									I
I	C-B	0.97	9.39	0.104		0.15	0.12	1.8		0.12	I
I	A-B	0.87									I
I	A-C	3.72									I
I											I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I	18.15-18	3.30									I
I	B-AC	0.67	7.93	0.084		0.12	0.09	1.4		0.14	I
I	C-A	2.90									I
I	C-B	0.82	9.56	0.085		0.12	0.09	1.4		0.11	I
I	A-B	0.73									I
I	A-C	3.11									I
I											I

QUEUE FOR STREAM B-AC

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
17.15	0.1
17.30	0.1
17.45	0.2
18.00	0.2
18.15	0.1
18.30	0.1

QUEUE FOR STREAM C-B

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1
18.30	0.1

OUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I I	TOTAL	DEMAND	I	* QUEUE]	*	I	* DE:	LAY	QUEUEING *	I
I		I	(VEH)								(MIN/VEH)	_
I	B-AC C-A C-B A-B A-C	I I I	73.0 3 318.0 3 89.5 3 79.8 3 341.4 3	59.6 53.2	I I I	10.7 I I 10.7 I I	0.15	I I I I	10.7	I I I I	0.15	I I I I
I	ALL	I	901.6	601.0	I	21.3 I	0.02	I	21.3		0.02	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD

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

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES

WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.



J. ARCADY Analysis

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry AM.vao - Page

_____ A R C A D Y 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\
Waycock Cross Existing Layout 2019 ex LDP ex Barry AM.vai"
(drive-on-the-left) at 09:32:32 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross Existing Layout - Forecast Year without LDP AM ex Barry Waterfront

LOCATION:

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road West (E) ARM B - Pontypridd Road

ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)		E (M)	I	L (M)	 I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I]	INTERCEPT (PCU/MIN)	T5) I
I ARM	ΑI	5.00	I	6.60	I	38.00	I	20.00	I	51.00	I	27.0	I	0.656	I	32.708	I
I ARM	ВI	5.60	I	7.20	I	4.50	I	23.00	I	51.00	I	27.0	I	0.657	I	32.598	I
I ARM	CI	4.00	I	6.50	I	10.00	I	13.50	I	60.00	I	26.0	I	0.540	I	26.951	I
I ARM	DΙ	3.60	I	5.00	I	21.60	I	11.00	I	54.00	I	28.0	I	0.524	I	23.241	I

V = approach half-width

L = effective flare length

D = inscribed circle diameter

E = entry width R = entry radius

PHI = entry angle

WARNING ARM A Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry AM.vao - Page

IARM	 I FLOW	 SCALE(%)	
I C	I	100 100 100 100	- I I T

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 ex LDP AM ex Barry

							<i>1</i> 							7	r15
I		I	NUMBER OF	MIN	NUTES FROM S	STA	ART WHEN	I	RATE	OI	F FLOW (VEI	H/MIN)	Ι	
I	ARM	I	FLOW STARTS	I 7	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I	
I	ARM	ΑI	15.00	I	45.00	I	75.00	I	9.45	I	14.17	I	9.45	I	
I	ARM	ВI	15.00	I	45.00	I	75.00	I	8.81	I	13.22	I	8.81	I	
I	ARM	CI	15.00	I	45.00	I	75.00	I	14.70	I	22.05	I	14.70	I	
I	ARM	D I	15.00	I	45.00	I	75.00	I	5.49	I	8.23	I	5.49	I	

DEMAND SET TITLE: 2019 ex LDP AM ex Barry

I I I		I I I		T (P	URNING PRO URNING COU ERCENTAGE	UNTS OF H.V.S)]]]	-
I	TIME	I			ARM A I		ARM C I	ARM D]	-
	07.15 - 08.45		ARM E		0.000 I 0.0 I (0.0)I I 0.410 I 289.0 I (0.0)I 504.0 I (4.0)I 0.298 I 131.0 I (1.0)I	0.292 I 221.0 I (10.0)I I 0.000 I (0.0)I (0.0)I 516.0 I (1.0)I 0.465 I 204.0 I	436.0 I (0.0)I	99.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
									-

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

												- ,
Ι	TIME	DEMAND	CAPACITY	DEMAND/	PEI	ESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
Ι				(RFC)	(PE	DS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												-
Ι	07.15-0	7.30										I
Ι	ARM A	9.49	24.96	0.380		_	0.0	0.6	8.9	_	0.064	I
Ι	ARM B	8.85	27.12	0.326		_	0.0	0.5	7.1	_	0.055	I
Ι	ARM C	14.76	22.58	0.653		_	0.0	1.8	25.9	_	0.124	I
Ι	ARM D	5.51	14.42	0.382		_	0.0	0.6	8.8	_	0.111	I
Ι												I

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry AM.vao - Page

I	TIME	DEMAND	CAPACITY (VEH/MIN)			EDESTRIAN FLOW	START	END OUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING
I		(V 111 / 1111 /	(V 111 / 1111 /)	(RFC)		PEDS/MIN)	~ -	~ -		TIME SEGMENT)	VEHICLE (MIN)
-	07 20	07.45									
	07.30- ARM A	11.33	23.68	0.478		_	0.6	0.9	13.3	_	0.081
	ARM B	10.56	26.08	0.405		_	0.5	0.7	9.9	_	0.064
Ι	ARM C	17.62	21.83			_	1.8	3.9	52.6	_	0.223
I	ARM D	6.58	12.73	0.517		_	0.6	1.0	15.0	_	0.161
 I	TIME	DEMAND	CAPACITY	DEMAND/	 Pl	 EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
Ι		(VEH/MIN)	(VEH/MIN)			FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I				(RFC)	(]	PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	07.45-	08.00									
	ARM A	13.87	22.30	0.622		=	0.9	1.6	23.1	_	0.117
	ARM B	12.94	24.69				0.7	1.1	15.8	-	0.085
	ARM C	21.58 8.06	20.82 10.97	1.037 0.734	 		3.9 1.0	24.8 2.6	236.3 34.3	_	0.909 0.320
I	ARM D	8.06	10.97	0./34		- 	1.0	2.0	34.3	_ 	0.320
I	TIME	DEMAND	(VEH/MIN)	DEMAND/	Pl	EDESTRIAN FLOW	START	END OUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING
I		(VEH/MIN)	(VEH/MIN)	(RFC)	(]		~	~		TIME SEGMENT)	VEHICLE (MIN)
	08.00-										
	ARM A	13.87	22.14	0.627			1.6	1.7	24.6	-	0.121
	ARM B ARM C	12.94 21.58	24.65 20.81	0.525 1.037	 		$\frac{1.1}{24.8}$	1.1 39.5	16.4 484.4	_	0.085 1.720
	ARM D	8.06	10.78	0.748			24.6	2.8	40.7		0.363
I											
I	TIME		CAPACITY (VEH/MIN)			EDESTRIAN		END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I		(AEU/MIN)	(VEH/MIN)	(RFC)		FLOW PEDS/MIN)	QUEUE (VEHS)	QUEUE (VEHS)	(VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)
-				(/		,	(,	(, ,	,		
	08.15-		22.04	0 404			1 7	1 0	1		0 007
	ARM A ARM B	11.33 10.56	22.94 26.03	0.494 0.406		_	$\frac{1.7}{1.1}$	1.0 0.7	15.3 10.6	-	0.087 0.065
	ARM C	17.62	21.82	0.808			39.5	4.8	239.0	_	0.830
	ARM D	6.58	11.59	0.568			2.8	1.4	21.8	_	0.207
I 											
 T	TIME	 DEMAND	 Cadactev	DEMVND /	 Id		 СПУDТ	EMD	DELAY		 Δ/ምρδ/ሮሞ ከመ፤ ኣህ
I	TIME		(VEH/MIN)	DEMAND/ CAPACITY		EDESTRIAN FLOW	OUEUE	END QUEUE		GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING
I		(/ /	,,,				~	~		TIME SEGMENT)	
-	00.00	00.45									
	08.30-		24 02	0 200			1 0	0.6	0.6		0 065
	ARM A	9.49	24.83 27.07	0.382		_	1.0 0.7	0.6	9.6	_	0.065
	ARM B ARM C	8.85 14.76	⊿/.U/ 22 56	0.327 0.654		_	4.8	0.5 1.9	7.5 31.4	- -	0.055 0.134
	ARM C	5.51	22.56 14.26	0.854			1.4	0.6	10.0	-	0.134
I			0	,,,,,							

QUEUE AT ARM A

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry AM.vao - Page TRL

QUEUE AT ARM B

TIME SEGMENT NO. OF VEHICLES ENDING IN QUEUE 07.30 07.45 0.5 0.7 08.00 1.1 * 08.15 1.1 08.30 0.7 08.45 0.5

QUEUE AT ARM C

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE

07.30 1.8 ** 07.45 3.9 **** 24.8 ************* 08.00 39.5 ************************ 08.15 4.8 **** 08.30 1.9 ** 08.45

QUEUE AT ARM D

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE 07.30 0.6 * 1.0 * 07.45 2.6 *** 08.00 2.8 *** 08.15 08.30 1.4 08.45 0.6

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I	ARM	I I		DEMAND	I I	* QUET * DE	UEING * LAY *	I	* INCLUSI *	VE DEL	 QUEUEING * AY *	I	Т75
I		I	(VEH)	(VEH/H)		(MIN)	(MIN/VEH)		(MIN)		(MIN/VEH)	I	
I I I	A B C	I	1040.6 1 970.4 1 1618.7 1	646.9	I	94.8 I 67.3 I 1069.6 I	0.09 0.07 0.66	I I I	0,.5	I I I	0.09 0.07 0.66	I I I	
I	D	Ι	604.3	402.8	Ι	130.5 I	0.22	Ι	130.5	I	0.22	Ι	
I	ALL	I	4233.9	2822.6	I	1362.2 I	0.32	I	1362.3	I	0.32	I	

- * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
- * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

Printed at 09:33:36 on 30/04/2014]

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_____ ARCADY 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\
Waycock Cross Existing Layout 2019 ex LDP ex Barry PM.vai"
(drive-on-the-left) at 09:37:52 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross Existing Layout -Forecast Year without LDP PM ex Barry Waterfront

LOCATION:

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road West (E) ARM B - Pontypridd Road ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)	 I	E (M)	 I	L (M)	 I	R (M)	I	D (M)	 , I	PHI (DEG)	I	SLOPE	I :	INTERCEPT (PCU/MIN)	T5) I
I ARM	ΑI	5.00	I	6.60	I	38.00	I	20.00	I	51.00	I	27.0	I	0.656	I	32.708	I
I ARM	ВI	5.60	I	7.20	I	4.50	I	23.00	I	51.00	I	27.0	I	0.657	I	32.598	I
I ARM	CI	4.00	I	6.50	I	10.00	I	13.50	I	60.00	I	26.0	I	0.540	I	26.951	I
I ARM	DI	3.60	I	5.00	I	21.60	I	11.00	I	54.00	I	28.0	I	0.524	I	23.241	I

V = approach half-width
E = entry width

L = effective flare length R = entry radius D = inscribed circle diameter

PHI = entry angle

WARNING ARM A Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry PM.vao - Page

		 T	 SCALE(%)		T13
			 SCALE(%)		
Ι	A	I	100	I	
I	В	Ι	100	Ι	
Ι	C	Ι	100	Ι	
Ι	D	Ι	100	Ι	

TIME PERIOD BEGINS(17.00)AND ENDS(18.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 ex LDP ex Barry PM

						-								:	Г15
I		I	NUMBER OF	MIN	UTES FROM S	STA	ART WHEN	I	RATE	OI	F FLOW (/EF	H/MIN)	I	
I	ARM	I	FLOW STARTS	ΙT	OP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		Ι		I		I		Ι		I	
I		I	TO RISE	I	IS REACHED	Ι	FALLING	Ι	PEAK	I	OF PEAK	Ι	PEAK	I	
I	ARM	ΑI	15.00	I	45.00	Ι	75.00	I	12.34	I	18.51	Ι	12.34	I	
I	ARM	ВI	15.00	I	45.00	Ι	75.00	I	9.24	I	13.86	Ι	9.24	I	
I	ARM	CI	15.00	I	45.00	Ι	75.00	I	10.56	I	15.84	Ι	10.56	I	
I	ARM	DI	15.00	I	45.00	I	75.00	I	5.89	I	8.83	I	5.89	I	

DEMAND SET TITLE: 2019 ex LDP ex Barry PM

I I (0.0)I (4.0)I (0.0)I (1.0) I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I	I I I		I I	TURNING PROPORTIONS TURNING COUNTS (PERCENTAGE OF H.V.S)	I I I
I ARM A I 0.000 I 0.271 I 0.611 I 0.119 I I I 0.00 I 267.0 I 603.0 I 117.0 I I I (0.0)I (4.0)I (0.0)I (1.0) I I I I I I I I I I I I I I I I ARM B I 0.240 I 0.000 I 0.604 I 0.157 I I I 177.0 I 0.0 I 446.0 I 116.0 I I I (0.0)I (0.0)I (0.0)I (0.0)I (0.0) I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I ARM C I 0.600 I 0.307 I 0.000 I 0.093 I I I 507.0 I 259.0 I 0.0 I 79.0 I I I I I I I I I I ARM D I 0.285 I 0.493 I 0.223 I 0.000	Ī	TIME	I FROM/T	I ARM A I ARM B I ARM C I ARM D	I
1 134.0 1 232.0 1 105.0 1 0.0		17.00 - 18.30	I ARM A I I I I ARM B I I I ARM C I I I I I I I I I I I I I I I I I I I	I 0.000 I 0.271 I 0.611 I 0.119 I 0.0 I 267.0 I 603.0 I 117.0 I (0.0)I (4.0)I (0.0)I (1.0) I I I I I I 0.240 I 0.000 I 0.604 I 0.157 I 177.0 I 0.0 I 446.0 I 116.0 I (0.0)I (0.0)I (0.0)I (0.0)I (0.0) I I I I I I I 0.600 I 0.307 I 0.000 I 0.093 I 507.0 I 259.0 I 0.0 I 79.0 I (3.0)I (1.0)I (0.0)I (0.0) I I I I I I I I 0.255 I 0.493 I 0.223 I 0.000	
I I I (0.0)I (1.0)I (2.0)I (0.0) I I I I I I	I I		=	I (0.0)I (1.0)I (2.0)I (0.0)	_

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	P.	EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	()	PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												-
I	17.00-1	7.15										I
I	ARM A	12.38	27.44	0.451		-	0.0	0.8	11.9	_	0.066	I
I	ARM B	9.27	25.80	0.359		-	0.0	0.6	8.2	_	0.060	I
I	ARM C	10.60	23.68	0.448		-	0.0	0.8	11.7	_	0.076	I
I	ARM D	5.91	16.79	0.352		-	0.0	0.5	7.8	_	0.091	I
Ι												I
ı												

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry PM.vao - Page

I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
Ι	17.15- ARM A ARM B	-17.30 14.79 11.07	26.47 24.46	0.559 0.453	 -	0.8	1.2	18.2 12.0	<u>-</u>	0.085 0.075	I I I
I	ARM C ARM D	12.66	23.14 15.56	0.547	 - -	0.8	1.2	17.3 11.9	- -	0.095 0.117	I
I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
– т	17.30-	-17 45									- I
I	ARM A ARM B	18.11 13.56	25.18 22.66	0.719	 - -	1.2	2.5	34.9 21.1	- -	0.138 0.109	I
	ARM C ARM D	15.51 8.64	22.42 13.90	0.692 0.622	 -	1.2	2.2 1.6	30.8 22.4	- -	0.142 0.187	I
_					 						
I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	Ι
- I	17.45-	-18.00									- I
	ARM A	18.11	25.15	0.720	 _	2.5	2.5	37.7	-	0.142	I
	ARM B ARM C	13.56 15.51	22.62 22.40	0.600 0.692	 -	1.5 2.2	1.5 2.2	22.1 33.0	-	0.111 0.145	I
	ARM D	8.64	13.87	0.623	 -	1.6	1.6	24.2	-	0.145	I
_					 						
I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
_ _	10 00	10 15									-
	18.00- ARM A	14.79	26.42	0.560	 _	2.5	1.3	20.1	_	0.087	I
Ι	ARM B	11.07	24.40	0.454	 -	1.5	0.8	13.0	_	0.076	I
	ARM C	12.66 7.06	23.12 15.51	0.548 0.455	 -	2.2 1.6	1.2 0.8	19.2	-	0.097 0.120	Ι
I	ARM D	7.06	15.51	0.455	 			13.2	- 	0.120	I I
	TIME		CAPACITY						GEOMETRIC DELAY		
I		(VEH/MIN)	(AFU/MIN)						(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)	
I	18.15-	-18.30									I
	ARM A			0.452		1.3	0.8	12.8	_	0.067	I
	ARM B ARM C	9.27 10.60	25.75 23.66	0.360 0.448	 _ _	0.8 1.2	0.6 0.8	8.7 12.6	-	0.061 0.077	I
	ARM C	5.91			- -	0.8	0.8	8.5	-	0.093	I
I					 						I

QUEUE AT ARM A

TIME SEGMENT NO. OF VEHICLES IN QUEUE

17.15 0.8
17.30 1.2
17.45 2.5

 17.15
 0.8
 *

 17.30
 1.2
 *

 17.45
 2.5
 *

 18.00
 2.5

 18.15
 1.3
 *

 18.30
 0.8
 *

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Existing Layout 2019 ex LDP ex Barry PM.vao - Page TRL

QUEUE AT ARM B

TIME SEGMENT	NO. OF	
ENDING	VEHICLES	
	IN QUEUE	
17.15	0.6	*
17.30	0.8	*
17.45	1.5	*
18.00	1.5	*
18.15	0.8	*
18.30	0.6	*

QUEUE AT ARM C

TIME	SEGMENT	NO.	. OF
END	ING	VEF	HICLE
		IN	QUEU

17.15	0.8	*
17.30	1.2	*
17.45	2.2	* *
18.00	2.2	* *
18.15	1.2	*
18.30	0.8	*

QUEUE AT ARM D

TIME	SEGMENT	NO.	. OF	
ENDI	NG	VEF	HICLES	
		IN	QUEUE	
17 1	_		0.5	*
17.1				
17.3	0		0.8	*
17.4	5		1.6	*
18.0	0		1.6	*
18.1	5		0.8	*
18.3	0		0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I I		TOTAL DEMAND I			* DE	JEING *	I	*	DEL	QUEUEING * AY *	I
I 		I	(VEH)		(VEH/H)		(MIN)	(MIN/VEH)		 (MIN)		(MIN/VEH)	I
Ι	A	I	1358.5	I	905.7	I	135.5 I	0.10	I	135.5	I	0.10	I
I	В	I	1017.2	I	678.1	I	85.0 I	0.08	I	85.0	I	0.08	I
I	C	I	1163.1	I	775.4	I	124.5 I	0.11	I	124.6	I	0.11	I
I	D	I	648.3	I	432.2	I	88.0 I	0.14	I	 88.0	I	0.14	 I
I	ALL	I	4187.1	Ι	2791.4	I	433.1 I	0.10	I	433.1	I	0.10	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

END OF JOB

Printed at 09:38:15 on 30/04/2014]

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry AM.vao - Page 1 TRL

_____ ARCADY 6 __

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\" Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry AM.vai" (drive-on-the-left) at 09:42:18 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross 700 Imp - Forecast Year with LDP AM ex Barry Waterfront

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA ******

ARM A - Port Road West (E)

ARM B - Pontypridd Road ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)	I	E (M)	 I	L (M)	I	R (M)	 I 	D (M)		PHI (DEG)	I	SLOPE	I]	INTERCEPT (PCU/MIN)	T5) I
I ARM I ARM		5.00 5.60	I	7.30 7.20	I	38.00 4.50	I	20.00 23.00	I T		I I	27.0 27.0		0.686 0.657		35.345 32.598	I
I ARM	CI	4.50	I	8.50 7.00	I	24.00 15.00	I	12.00	I	60.00	I	26.0 28.0	I	0.624	I	35.227 28.327	I
I ARM	DΙ	3.60	Т	7.00	Τ	15.00	Т	20.00	Т	54.00	Τ	28.0	Τ	0.591	Т	28.327	Т

V = approach half-width

L = effective flare length

D = inscribed circle diameter PHI = entry angle

E = entry width R = entry radius

WARNING ARM A Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry AM.vao - Page 2

						T13
14	ARM		F.LOW	SCALE(%)		
Ι	A	I		100	Ι	
I	В	I		100	I	
I	C	I		100	I	
I	D	I		100	I	

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 with LDP exc Barry AM

																TTJ
I		I	NUMBER OF	MIN	NUTES	FROM	ST	ART WHEN	I	RATE	OI	F FLOW (VE	H/MIN)	I	
I	ARM	I	FLOW STARTS	ΙI	COP C	F PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I			I		I		I		I		I	
I		I	TO RISE	I	IS R	EACHED	I	FALLING	Ι	PEAK	Ι	OF PEAR	I	PEAK	I	
I	ARM	ΑI	15.00	I	4	5.00	I	75.00	I	10.36	I	15.54	I	10.36	I	
I	ARM	вІ	15.00	I	4	5.00	I	75.00	I	9.06	I	13.59	I	9.06	I	
I	ARM	CI	15.00	I	4	5.00	I	75.00	I	20.48	I	30.71	I	20.48	I	
I	ARM	DI	15.00	I	4	5.00	I	75.00	I	5.70	I	8.55	I	5.70	I	

DEMAND SET TITLE: 2019 with LDP exc Barry AM

I I I		I I I		I I	133				
Ī	TIME	I	FROM/T	Ι	ARM A I	ARM B I	ARM C I	ARM D I	
	07.15 - 08.45		ARM B		0.0 I (0.0)I I 0.399 I 289.0 I (0.0)I I 0.495 I 810.0 I (4.0)I I 0.287 I	0.366 I 600.0 I (1.0)I I 0.447 I	509.0 I (0.0)I	99.0 I (7.0)I I 0.248 I 180.0 I (0.0)I I 0.139 I 228.0 I (0.0)I I 0.000 I	
I I		I I I		I I I		204.0 I (1.0)I I			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	P	EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
-												-	
I	07.15-0	7.30										I	
I	ARM A	10.40	26.44	0.393		_	0.0	0.6	9.4	_	0.062	I	
I	ARM B	9.10	26.37	0.345		_	0.0	0.5	7.7	_	0.058	I	
I	ARM C	20.55	30.04	0.684		_	0.0	2.1	30.0	_	0.102	I	
I	ARM D	5.72	15.40	0.371		_	0.0	0.6	8.4	_	0.102	I	
Ι												I	

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry AM.vao - Page 3

I TIME I I	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)			EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
- I 07.30-	-07.45									
I ARM A	12.42	24.95	0.498		_	0.6	1.0	14.3	_	0.080
I ARM B	10.86	25.19	0.431		-	0.5	0.8	11.0	-	0.070
I ARM C	24.54	29.18	0.841		_	2.1	4.9	65.6	-	0.200
I ARM D	6.83	12.94	0.528		_	0.6	1.1	15.6	=	0.162
I TIME	DEMAND	CAPACITY	DEMAND/	 PE	EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	(VEH/MIN)	(VEH/MIN)	CAPACITY (RFC)	(E	FLOW PEDS/MIN)	QUEUE (VEHS)	QUEUE (VEHS)	(VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)
- I 07.45-	-08.00									
I ARM A	15.21	23.49	0.648		_	1.0	1.8	25.7	_	0.119
I ARM B	13.30	23.62	0.563		-	0.8	1.3	18.4	-	0.096
I ARM C	30.06	28.01	1.073		_	4.9	42.4	375.6	_	1.021
I ARM D	8.37	10.71	0.782		-	1.1	3.2	41.7	_	0.384
I TIME	DEMAND	CAPACITY	DEMAND/	PE	EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	(VEH/MIN)	(VEH/MIN)	CAPACITY (RFC)	(E	FLOW PEDS/MIN)	QUEUE (VEHS)	QUEUE (VEHS)	(VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)
- I 08.00-	00 15									
I ARM A	15.21	23.34	0.652		_	1.8	1.8	27.4	_	0.123
I ARM B	13.30	23.57	0.565		_	1.3	1.3	19.2	_	0.098
I ARM C	30.06	27.99	1.074		_	42.4	74.6	879.0	_	2.216
I ARM D	8.37	10.52	0.795		-	3.2	3.6	51.6	=	0.449
I 										
I TIME I	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)			EDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING
I	(V EII / I I I I V)	(V ==== /	(RFC)		PEDS/MIN)				TIME SEGMENT)	VEHICLE (MIN)
- I 08.15-	-08.30									
I ARM A	12.42	23.80	0.522		_	1.8	1.1	17.2	=	0.089
I ARM B	10.86	25.13	0.432		_	1.3	0.8	11.8	_	0.070
I ARM C	24.54	29.15	0.842		-	74.6	11.3	644.3	-	1.572
I ARM D I	6.83	10.64	0.642		-	3.6	1.9	30.6	-	0.278
I TIME		CAPACITY			EDESTRIAN		END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	(VEH/MIN)	(VEH/MIN)				~	QUEUE (VEHS)	(VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)
- I 08.30-	-08.45									
I ARM A		26.20	0.397		_	1.1	0.7	10.2	=	0.064
I ARM B	9.10	26.32	0.346			0.8	0.5	8.1	_	0.058
I ARM C	20.55	30.01	0.685			11.3	2.2	40.6	=	0.121
I ARM D	5.72	15.01	0.381		_	1.9	0.6	9.9	=	0.110
I										

QUEUE AT ARM A

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry AM.vao - Page 4 TRL

QUEUE AT ARM B

TIME SEGMENT NO. OF VEHICLES ENDING IN QUEUE 07.30 07.45 0.5 0.8 * 08.00 08.15 1.3 * 1.3 * 08.30 08.45 0.8 * 0.5 *

QUEUE AT ARM C

TIME SEGMENT NO. OF

ENDING	VEHICLES IN QUEUE	
07.30	2.1	**
07.45	4.9	****
08.00	42.4	*****
08.15	74.6	*******************
08.30	11.3	******
08.45	2.2	**

QUEUE AT ARM D

TIME	SEGMENT	NO.	. OF	
END]	ING	VE	HICLES	
		IN	QUEUE	
07.	2.0		0 6	*
07.3			0.6	*
07.4			1.1	
08.0	00		3.2	* * *
08.1	L5		3.6	***
08.3	30		1.9	* *
08.4	15		0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

 I I	 ARM	I I T	TOTAL	DEMAND	I I	* QUE * DE	UEING *	I	* INCLUSI *	VE DEL	QUEUEING *	I	Т75
I		I	(VEH) (VEH/H)		I	(MIN)	(MIN/VEH)	I	(MIN)		(MIN/VEH)	Ī	
I I I I	A B C D	I	2254.6		I	104.2 I 76.3 I 2035.2 I 157.8 I	0.08	I I I I	104.2 76.3 2035.3 157.8	I I I I	0.09 0.08 0.90 0.25	I I I	
 I	ALL	I	5021.2	I 3347.5	I	2373.4 I	0.47	I	2373.5		0.47	I	

- * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
- * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

Printed at 09:43:07 on 30/04/2014]

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry PM.vao - Page 1

_____ ARCADY 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\
Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry PM.vai"
(drive-on-the-left) at 09:46:41 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross 700 Imp - Forecast Year with LDP PM ex Barry Waterfront

LOCATION:

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road West (E)

ARM B - Pontypridd Road

ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)	 I	E (M)	I	L (M)	 I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I :	 INTERCEPT (PCU/MIN)	T5) I
I ARM	ΑI	5.00	I	7.30	I	38.00	I	20.00	I	51.00	I	27.0	I	0.686	I	35.345	I
I ARM	ВI	5.60	I	7.20	I	4.50	I	23.00	I	51.00	I	27.0	I	0.657	I	32.598	I
I ARM	CI	4.50	I	8.50	I	24.00	I	12.00	I	60.00	I	26.0	I	0.624	I	35.227	I
I ARM	DΙ	3.60	I	7.00	I	15.00	I	20.00	I	54.00	I	28.0	I	0.591	I	28.327	I

V = approach half-width

L = effective flare length

D = inscribed circle diameter

E = entry width R = entry radius

PHI = entry angle

WARNING ARM A Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry PM.vao - Page 2

```
IARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I
I D I 100 I
```

TIME PERIOD BEGINS(17.00)AND ENDS(18.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 with LDP ex Barry PM

							<u>.</u>								T15
I		I	NUMBER OF	MII	NUTES FROM S	TP	ART WHEN	Ι	RATE	OI	F FLOW (/EI	H/MIN)	Ι	
I	ARM	I	FLOW STARTS	I 7	TOP OF PEAK	I	FLOW STOPS	Ι	BEFORE	Ι	AT TOP	Ι	AFTER	Ι	
I		I		I		I		I		I		I		Ι	
I		I	TO RISE	I	IS REACHED	I	FALLING	Ι	PEAK	I	OF PEAK	Ι	PEAK	Ι	
I	ARM	ΑI	15.00	I	45.00	I	75.00	I	14.94	I	22.41	I	14.94	Ι	
I	ARM	ВI	15.00	I	45.00	I	75.00	I	9.96	I	14.94	I	9.96	Ι	
I	ARM	CI	15.00	I	45.00	I	75.00	I	13.10	I	19.65	I	13.10	Ι	
I	ARM	DI	15.00	I	45.00	I	75.00	I	6.51	I	9.77	I	6.51	Ι	

DEMAND SET TITLE: 2019 with LDP ex Barry PM

I I I		I I I		ΤŢ	JRNING PRO JRNING COU ERCENTAGE)	I I I	133
Ī	TIME	I	FROM/T	I	ARM A I	ARM B I	ARM C I	ARM D I	
	17.00 - 18.30		ARM B	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	0.0 I (0.0)I I 0.222 I 177.0 I (0.0)I I 0.612 I 641.0 I	0.223 I 267.0 I (4.0)I 	811.0 I (0.0)I I 0.632 I 504.0 I (0.0)I I 0.000 I 0.0 I	117.0 I (1.0)I I 0.146 I 116.0 I (0.0)I I 0.106 I 111.0 I	
I		I I I	ARM D	I	134.0 I	0.445 I 232.0 I (1.0)I	155.0 I	0.0 I	
I 		I		I 	I	I	I	I 	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PEI	DESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
Ι				(RFC)	(PI	EDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												_
I	17.00-1	7.15										I
I	ARM A	14.99	29.13	0.515		_	0.0	1.1	15.2	_	0.070	I
I	ARM B	10.00	23.68	0.422		_	0.0	0.7	10.5	_	0.073	I
I	ARM C	13.15	31.36	0.419		_	0.0	0.7	10.5	_	0.055	I
I	ARM D	6.54	19.72	0.331		_	0.0	0.5	7.2	_	0.075	I
I												I

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry PM.vao - Page 3

Company Cartest Cart					 					
I ARM A 17.90 27.97 0.640 1.1 1.7 25.2 - 0.098 I ARM B 11.94 21.92 0.545 0.7 1.2 17.1 - 0.100 I ARM C 15.70 30.74 0.511 0.7 1.0 15.2 - 0.066 I ARM C 15.70 30.74 0.511 0.7 1.0 15.2 - 0.066 I ARM C 15.70 30.74 0.511 0.5 0.8 10.9 - 0.097 I ARM C 15.70 30.74 0.511 0.5 0.8 10.9 - 0.097 I ARM C 15.70 30.74 0.512 0.5 0.8 10.9 - 0.097 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH	I TIME			CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
ARM B 11.94 21.92 0.545 0.7 1.2 17.1 - 0.100 ARM C 15.70 30.74 0.511 0.7 1.0 15.2 0.066 ARM D 7.81 18.09 0.432 0.5 0.8 10.9 - 0.097 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END CHELAY GEOMETRIC DELAY VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END CHELAY CHELAY VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END CHELAY CHELAY VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END CHELAY	- I 17.15-	17.30								
I ARM C 15.70 30.74 0.511 0.7 1.0 15.2 - 0.066 1 ARM D 7.81 18.09 0.432 0.5 0.8 10.9 - 0.097 1 0.097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1 0.0097 1	I ARM A	17.90	27.97	0.640	 _	1.1	1.7	25.2	_	0.098
I TIME DEMAND CAPACITY DEMAND PEDESTRIAN START END DELAY GEOMETRIC DELAY PEDESTRIAN START END DELAY GEOMETRIC DELAY PEDESTRIAN START END DELAY SECONDER START					-				_	
I TIME					_				_	
VEH/MIN	I ARM D	7.01	10.09	0.432	 _ 	0.5	U.O 	10.9	- 	0.097
VEH/MIN	 T TTME			DEMAND /	 	 TTNDT			CEOMETRIC DELAY	
ARM A	I I			CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	
ARM B	- I 17.30-	17.45								
I ARM C 19.23 29.92 0.643 1.0 1.8 25.5 - 0.093 I ARM D 9.56 15.87 0.602 0.8 1.5 21.0 - 0.156 I I TIME DEMAND CAPACITY DEMAND/ (RFC) PEDESTRIAN START END QUEUE (VEH MIN/ VEH MIN/ VE			26.41	0.830	 _	1.7	4.5	60.6	-	0.206
I ARM D 9.56 15.87 0.602 0.8 1.5 21.0 - 0.156 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH/MIN) CAPACITY (RPC)	I ARM B	14.63	19.60		 -	1.2	2.8	38.5	=	0.193
I TIME DEMAND CAPACITY DEMAND/ (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) (VEH.MIN) (VEH.M	I ARM C				-				-	
TIME DEMAND CAPACITY DEMAND CAPACITY CRFC PEDSYMIN (VEHS) CRES TIME SEGMENT TIME SEGMENT VEHICLE (MIN)	I ARM D I	9.56	15.87	0.602	 -	0.8	1.5	21.0	-	0.156
TIME DEMAND CAPACITY DEMAND CAPACITY CRFC PEDSYMIN (VEHS) CRES TIME SEGMENT TIME SEGMENT VEHICLE (MIN)	 I TIME	DEMAND	CAPACITY	DEMAND/	 DESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I ARM A 21.93 26.38 0.831 4.5 4.7 69.6 - 0.222 I ARM B 14.63 19.50 0.750 2.8 2.9 43.0 - 0.204 I ARM C 19.23 29.89 0.643 1.8 1.8 26.7 - 0.094 I ARM D 9.56 15.84 0.604 1.5 1.5 22.4 - 0.159 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY (VEH,MIN) (VEH/MIN) (VEH/MIN) CAPACITY (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 8.00-18.15 I ARM A 17.90 27.93 0.641 4.7 1.8 29.2 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY (VEH,MIN) (V	I			CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	
I ARM B	- I 17.45-	18.00								
I ARM C 19.23 29.89 0.643 1.8 1.8 26.7 - 0.094 I ARM D 9.56 15.84 0.604 1.5 1.5 22.4 - 0.159 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.00-18.15 I ARM A 17.90 27.93 0.641 4.7 1.8 29.2 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH/MI	I ARM A	21.93	26.38	0.831	 _	4.5	4.7	69.6	_	0.222
I ARM D 9.56 15.84 0.604 1.5 1.5 22.4 - 0.159 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH/MIN) (VEH/MIN) (VEH/MIN) (RFC) (VEH) (VEHS) (VEHS) (VEH) (VEH.MIN/ (VEH.MIN/ VEHICLE (MIN)) I 18.00-18.15 I ARM A 17.90 27.93 0.641 4.7 1.8 29.2 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ (RFC) (VEHS) (VEHS) (VEHS) (VEHS) (VEHS) (VEH.MIN/ (VEH.MIN/ VEH.MIN/ V					_				-	
I TIME DEMAND CAPACITY DEMAND/ (RFC) FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING I (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.00-18.15 I ARM A 17.90 27.93 0.641 4.7 1.8 29.2 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I TIME DEMAND CAPACITY DEMAND/ (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I ARM B 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.075 I ARM C 13.15 31.33 0.420 1.8 0.5 7.7 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.075					-				=	
Company Capacity	I ARM D I	9.50	15.64		 - 	1.5	1.5		- 	0.139
Company Capacity	 T TTME	DEMAND		 DEMAND /	 				CEOMETRIC DELAY	
I ARM A 17.90 27.93 0.641 4.7 1.8 29.2 - 0.104 I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.15-18.30 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	I I			CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	
I ARM B 11.94 21.79 0.548 2.9 1.2 19.4 - 0.104 I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) (VEH/MIN) CAPACITY (PEDS/MIN) (VEHS) (VEH.MIN/ (VEH.MIN/ VEH.MIN/ PER ARRIVING (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.15-18.30 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	- I 18.00-	18.15								
I ARM C 15.70 30.70 0.512 1.8 1.1 16.3 - 0.067 I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (RFC)) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.15-18.30 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	I ARM A	17.90	27.93	0.641	 _	4.7	1.8	29.2	_	0.104
I ARM D 7.81 18.03 0.433 1.5 0.8 12.0 - 0.099 I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.15-18.30 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	I ARM B	11.94	21.79	0.548	 _	2.9	1.2	19.4	=	0.104
I TIME DEMAND CAPACITY DEMAND/ PEDESTRIAN START END DELAY GEOMETRIC DELAY AVERAGE DELAY (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) I 18.15-18.30 I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	I ARM C	15.70	30.70	0.512	 _	1.8	1.1	16.3	_	0.067
I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) 1 18.15-18.30 1 1 ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 1 ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 1 ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 1 ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076		7.81	18.03	0.433	 - 	1.5	0.8	12.0	- 	0.099
I (VEH/MIN) (VEH/MIN) CAPACITY FLOW QUEUE QUEUE (VEH.MIN/ (VEH.MIN/ PER ARRIVING (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT) TIME SEGMENT) VEHICLE (MIN) 1 18.15-18.30 1 ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 1 ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 1 ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 1 ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076		DEMARTS		DEMAND /	 				OEOMERDIO DEL XV	777 D 7 D 7 T 7 T
I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	I			CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I ARM A 14.99 29.09 0.515 1.8 1.1 16.6 - 0.071 I ARM B 10.00 23.61 0.424 1.2 0.7 11.4 - 0.074 I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076	- I 18.15-	18.30								
I ARM C 13.15 31.33 0.420 1.1 0.7 11.1 - 0.055 I ARM D 6.54 19.68 0.332 0.8 0.5 7.7 - 0.076			29.09	0.515	 -	1.8	1.1	16.6	=	0.071
	I ARM B			0.424	 _	1.2	0.7	11.4	_	0.074
	I ARM C	13.15	31.33		-				-	
	I ARM D I	6.54	19.68	0.332	 -	0.8	0.5	7.7	_	0.076

QUEUE AT ARM A

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp 2019 + LDP ex Barry PM.vao - Page 4 TRL

QUEUE AT ARM B

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE 17.15 17.30 17.45 18.00 0.7 1.2 * 2.8 *** 2.9 *** 18.15 18.30 1.2 * 0.7

QUEUE AT ARM C

TIME SEGMENT	NO. OF	
ENDING	VEHICLES	
	IN QUEUE	
17.15	0.7	*
17.30	1.0	*
17.45	1.8	*
18.00	1.8	*
18.15	1.1	*
18.30	0.7	*

QUEUE AT ARM D

NO. OF	
VEHICLES	
IN QUEUE	
0.5	
0.8	*
1.5	*
1.5	*
0.8	*
0.5	*
	0.5 0.8 1.5 1.5 0.8

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I	ARM	I I			I I	* DEI	JEING *	I	*	DEL.	QUEUEING * AY *	I I
I		I	(VEH)	(VEH/H)		(MIN)	(MIN/VEH)		(MIN)		(MIN/VEH)	I
I	Α			I 1096.6		216.3 I	0.13	I	216.4	_	0.13	I
I	В	I	1097.0	I 731.3	I	140.0 I	0.13	I	140.1	I	0.13	Ι
I	C	Ι	1442.5	I 961.7	Ι	105.3 I	0.07	I	105.3	I	0.07	I
I	D	Ι	717.1	I 478.1	Ι	81.2 I	0.11	Ι	81.2	I	0.11	I
I	ALL	I	4901.5	I 3267.6	I	542.9 I	0.11	I	542.9	I	0.11	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

END OF JOB

Printed at 09:47:04 on 30/04/2014]

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr

____ ARCADY 6 __

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Web: www.trlsoftware.co.uk

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS

IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\
Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barry AM.vai"
(drive-on-the-left) at 12:21:19 on Thursday, 1 May 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross 700+Additional Imp - Forecast Year with LDP AM ex Barry Waterfront

LOCATION:

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road West (E)

ARM B - Pontypridd Road

ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)	 I	E (M)	 I	L (M)	 I	R (M)	I	D (M)	 , I	PHI (DEG)	I	SLOPE	I:	INTERCEPT (PCU/MIN)	T5) I
I ARM	ΑI	5.00	I	7.30	I	37.00	I	20.00	I	51.00	I	27.0	I	0.686	I	35.302	I
I ARM	ВI	5.60	I	7.20	I	4.50	I	23.00	I	51.00	I	27.0	I	0.657	I	32.598	I
I ARM	CI	4.50	I	8.50	I	49.00	I	12.00	I	60.00	I	26.0	I	0.653	I	38.016	I
I ARM	DΙ	3.60	I	7.00	I	15.00	I	20.00	I	54.00	I	28.0	I	0.591	I	28.327	I

V = approach half-width
E = entry width

L = effective flare length

D = inscribed circle diameter

R = entry radius PHI = entry angle

WARNING ARM A Effective flare length is outside normal range.

Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr

T13
IARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I
I D I 100 I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 with LDP exc Barry AM

															T15
I		I	NUMBER OF	MI	NUTES FROM S	TI	ART WHEN	I	RATE	OI	F FLOW (/EI	H/MIN)	I	
I	ARM	I	FLOW STARTS	I '	TOP OF PEAK	Ι	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	Ι	
I		I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	Ι	FALLING	I	PEAK	I	OF PEAK	I	PEAK	Ι	
I	ARM	ΑI	15.00	I	45.00	I	75.00	I	10.36	I	15.54	I	10.36	Ι	
I	ARM	ВI	15.00	I	45.00	I	75.00	I	9.06	I	13.59	I	9.06	Ι	
I	ARM	CI	15.00	I	45.00	I	75.00	I	20.48	I	30.71	I	20.48	Ι	
I	ARM	D I	15.00	I	45.00	Ι	75.00	I	5.70	I	8.55	I	5.70	Ι	
I															

DEMAND SET TITLE: 2019 with LDP exc Barry AM

I I I		I I I		ī	CURNING PR CURNING CO PERCENTAGE	UNTS)	I I I	133
I	TIME	I	FROM/T]	ARM A I	ARM B I	ARM C I	ARM D I	
	07.15 - 08.45		ARM A		0.000 I 0.00 I (0.0)I I 0.399 I 289.0 I (0.0)I I 0.495 I 810.0 I (4.0)I I 0.287 I	0.267 I 221.0 I (10.0)I I 0.000 I (0.0)I (0.0)I (0.366 I 600.0 I (1.0)I I 0.447 I 204.0 I	509.0 I (0.0)I I 0.353 I 256.0 I (2.0)I I 0.000 I (0.0) I (0.0) I 0.265 I 121.0 I	99.0 I (7.0)I	
I 		I		I	, , ,	I	I (0.0) I	I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PE	DESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
Ι				(RFC)	(P	EDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												-
I	07.15-0	7.30										I
I	ARM A	10.40	26.40	0.394		_	0.0	0.6	9.4	-	0.062	I
I	ARM B	9.10	26.37	0.345		_	0.0	0.5	7.7	_	0.058	I
I	ARM C	20.55	32.56	0.631		_	0.0	1.7	24.2	_	0.082	I
I	ARM D	5.72	15.39	0.372		_	0.0	0.6	8.5	-	0.103	I
Ι												I

TRL TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr

I TI		CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 07. I ARM I ARM I ARM I ARM I	B 10.86 C 24.54	24.89 25.19 31.66 12.90	0.499 0.431 0.775 0.530		0.6 0.5 1.7 0.6	1.0 0.8 3.3 1.1	14.4 11.0 46.3 15.7	- - - -	0.080 0.070 0.136 0.163	I I I I
I TI I I		CAPACITY (VEH/MIN)	,	PEDESTRIAN FLOW (PEDS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 07. I ARM I ARM I ARM I ARM	B 13.30 C 30.06	23.12 23.63 30.43 9.93	0.658 0.563 0.988 0.842		1.0 0.8 3.3 1.1	1.9 1.3 18.4 4.4	26.8 18.4 193.7 53.8	- - - -	0.125 0.096 0.523 0.509	I I I I I
I TI I I		CAPACITY (VEH/MIN)		PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 08. I ARM I ARM I ARM I ARM I	B 13.30 C 30.06	22.91 23.57 30.42 9.63	0.664 0.564 0.988 0.869		1.9 1.3 18.4 4.4	1.9 1.3 24.8 5.4	28.8 19.2 327.9 75.4	- - - -	0.130 0.097 0.840 0.696	I I I I I
I TI I I		CAPACITY (VEH/MIN)		PEDESTRIAN FLOW (PEDS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 08. I ARM I ARM I ARM I ARM I	B 10.86 C 24.54	24.37 25.10 31.63 12.10	0.510 0.433 0.776 0.565		1.9 1.3 24.8 5.4	1.1 0.8 3.6 1.3	16.3 11.9 95.5 23.6	- - 	0.085 0.071 0.219 0.211	I I I I I
I TI I I	ME DEMAND (VEH/MIN)		CAPACITY		QUEUE		(VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	PER ARRIVING	I
I 08. I ARM I ARM I ARM I ARM	B 9.10 C 20.55	26.32 32.54	0.396 0.346 0.632 0.375		1.1 0.8 3.6 1.3	0.7 0.5 1.7 0.6	10.1 8.1 27.3 9.5	- - - -	0.063 0.058 0.085 0.106	I I I I I

QUEUE AT ARM A

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE

07.30 0.6 *
07.45 1.0 *
08.00 1.9 **
08.15 1.9 **
08.30 1.1 *
08.45 0.7 *

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr TRL

QUEUE AT ARM B

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE 07.30 07.45 0.5 0.8 * 08.00 08.15 1.3 * 1.3 * 08.30 08.45 0.8 * 0.5 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30 07.45 08.00 08.15 08.30	1.7 3.3 18.4 24.8 3.6	** *** ************* ****************
08.45	1.7	**

QUEUE AT ARM D

TIME	SEGMENT	NO.	. OF	
END	ING	VEF	HICLES	
		IN	QUEUE	
07.3	30		0.6	*
07.4	15		1.1	*
08.0	00		4.4	****
08.1	L5		5.4	****
08.3	30		1.3	*
08.4	15		0.6	*

OUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I T	ARM	I I		DEMAND	I	* QUEUEING * * DELAY *			*	QUEUEING * AY *	I	
I		I	(VEH)	(VEH/H)			(MIN/VEH)		(MIN)		(MIN/VEH)	I
I	А	I	1141.1	I 760.7	I	105.9 I	0.09	I	105.9	I	0.09	I
I	В	I	997.9	I 665.3	I	76.2 I	0.08	I	76.3	I	0.08	I
I	C	I	2254.6	I 1503.1	I	715.0 I	0.32	I	715.0	I	0.32	I
I	D	I	627.7	I 418.4	I	186.4 I	0.30	I	186.4	I	0.30	I
I	ALL	I	5021.2	I 3347.5	I	1083.4 I	0.22	I	1083.5	I	0.22	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

END OF JOB

Printed at 12:22:05 on 01/05/2014]

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr TRI

____ ARCADY 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Waycock Cross\ Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barry PM.vai (drive-on-the-left) at 09:56:03 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Waycock Cross 700+Additional Imp - Forecast Year with LDP PM ex Barry Waterfront

DATE: 23/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA ******

ARM A - Port Road West (E) ARM B - Pontypridd Road

ARM C - Port Road West (W)

ARM D - Waycock Road

GEOMETRIC DATA

I ARM	I	V (M)		E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	 I			INTERCEPT (PCU/MIN)	
I ARM A I ARM E I ARM C I ARM I	B I C I	5.00 5.60 4.50 3.60	I I I I	7.30 7.20 8.50 7.00	I I I I	38.00 4.50 49.00 15.00	I I I I	20.00 23.00 12.00 20.00	I I I I	51.00 51.00 60.00 54.00	I I I	27.0 27.0 26.0 28.0	I	0.686 0.657 0.653 0.591	I	35.345 32.598 38.016 28.327	I I I

V = approach half-width

L = effective flare length

D = inscribed circle diameter PHI = entry angle

E = entry width R = entry radius

WARNING ARM A Effective flare length is outside normal range. Treat capacities with increasing caution. **WARNING** ARM C Effective flare length is outside normal range.

Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr

IARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I
I D I 100 I

TIME PERIOD BEGINS(17.00)AND ENDS(18.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 with LDP ex Barry PM

															TIT
I		I	NUMBER OF	MIN	NUTES FROM	ST	ART WHEN	I	RATE	OI	F FLOW (VEF	H/MIN)	I	
I	ARM	I	FLOW STARTS	ΙI	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	Ι	
I		I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	I	FALLING	Ι	PEAK	I	OF PEAK	I	PEAK	Ι	
I	ARM	ΑI	15.00	I	45.00	I	75.00	I	14.94	I	22.41	I	14.94	I	
I	ARM	ВI	15.00	I	45.00	I	75.00	I	9.96	I	14.94	I	9.96	Ι	
I	ARM	CI	15.00	I	45.00	I	75.00	I	13.10	I	19.65	I	13.10	Ι	
I	ARM	D I	15.00	I	45.00	I	75.00	I	6.51	I	9.77	I	6.51	Ι	

DEMAND SET TITLE: 2019 with LDP ex Barry PM

									100					
I		I		Т	URNING PRO	OPORTIONS		I						
т		Т		т	URNING CO	TMTC		т						
		_												
Ι		I	I (PERCENTAGE OF H.V.S)											
I														
I	TIME	т	EDOM/T	т	ARM A I	лрм в т	лрм с т	VDW D T						
_	1 11412	Τ.	PROM/ I		AINII A I	AKN D I	AINI C I	AIGH D I						
	17 00 10 20													
I	17.00 - 18.30	Ι				I	T	I						
I		I	ARM A	. I	0.000 I	0.223 I	0.679 I	0.098 I						
I		I		Ι	0.0 I	267.0 I	811.0 I	117.0 I						
Т		т		т	(0.0)I	(4.0)I	(0 0)T	(1 0)T						
_				_	. ,		, ,							
Τ		Ι		I	1	I	I	I						
I		I	ARM B	I	0.222 I	0.000 I	0.632 I	0.146 I						
I		I		Ι	177.0 I	0.0 I	504.0 I	116.0 I						
т		т		т	(0.0)I	(0 0)T	(0 0)T	(0 0)T						
		<u>+</u>		Ī	,		. ,							
Т		Т		_		I								
I		I	ARM C	I	0.612 I	0.282 I	0.000 I	0.106 I						
I		I		I	641.0 I	296.0 I	0.0 I	111.0 I						
I		I		I	(3.0)I	(1.0)I	(0.0)I	(0.0)I						
Т		Т		Т	Ţ	Ţ	·	Ī						
T		т	ARM D	т.	0.257 I	_	-	-						
			AINI L											
Τ		Ι		Ι		232.0 I								
I		I		I	(0.0)I	(1.0)I	(2.0)I	(0.0)I						
I		I		Ι	I	I	I	I						

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

												- '
I	TIME	DEMAND	CAPACITY	DEMAND/	PEI	DESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
Ι				(RFC)	(PI	EDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												_
Ι	17.00-1	7.15										I
I	ARM A	14.99	29.13	0.515		_	0.0	1.1	15.2	_	0.070	I
I	ARM B	10.00	23.68	0.422		_	0.0	0.7	10.5	_	0.073	I
I	ARM C	13.15	33.95	0.387		_	0.0	0.6	9.2	_	0.048	I
I	ARM D	6.54	19.72	0.332		_	0.0	0.5	7.2	_	0.076	I
Ι												I

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		PEDESTRIAN FLOW (PEDS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
		-17.30	27 07	0 640		1 1	1 7	25 2		0 000	I
	ARM A ARM B	17.90 11.94	27.97 21.92	0.010	- - -	1.1 0.7	1.7 1.2	25.2 17.1	-	0.098 0.100	I I
	ARM C	15.70	33.30	0.472		0.6	0.9	13.0	=	0.057	I
I A	ARM D	7.81	18.09	0.432		0.5	0.8	10.9	-	0.097	I
I											I
	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	 I
I		(VEH/MIN)	(VEH/MIN)		FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
I 1	L7.30-	-17.45									I
	ARM A	21.93	26.41	0.830		1.7	4.5	60.6	_	0.206	Ι
	ARM B	14.63	19.60			1.2	2.8	38.5	=	0.193	I
	ARM C ARM D	19.23 9.56	32.44 15.87		- - - - - -	0.9 0.8	1.4 1.5	20.9 21.0	_	0.075 0.156	I
I	ARM D	9.50	15.67	0.003		0.0	1.5	21.0		0.150	I
			CADACTEU						GROWERD TO DELAY		
I	TIME	DEMAND	CAPACITY (VEH/MIN)		PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING	
I		(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)				TIME SEGMENT)	VEHICLE (MIN)	I
_				(=== = ,	(,,	(/	(/	, ,	,	,,	_
I 1	L7.45-	-18.00									I
	ARM A	21.93	26.38			4.5	4.7	69.6	_	0.222	Ι
	ARM B	14.63	19.50			2.8	2.9	43.0	=	0.204	I
	ARM C ARM D	19.23 9.56	32.41 15.83		- - - - - -	1.4 1.5	1.4 1.5	21.7 22.4	_	0.076 0.159	I I
I	MON D	9.30	13.03	0.004		1.5	1.5	22.1		0.139	I
I	TIME	DEMAND	CAPACITY (VEH/MIN)		PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/	GEOMETRIC DELAY (VEH.MIN/	AVERAGE DELAY PER ARRIVING	I
I		(VEII/MIN)	(VEII/MIN)	(RFC)	(PEDS/MIN)		(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
-				, ,	,	,	, ,	•	,		-
		-18.15	0.7.00	0 - 1 - 1						0.404	I
	ARM A	17.90	27.93	0.641		4.7	1.8	29.1	=	0.104	I
	ARM B ARM C	11.94 15.70	21.79 33.25	0.548 0.472		2.9 1.4	1.2 0.9	19.4 13.8	-	0.104 0.057	I
	ARM D	7.81	18.04	0.433		1.5	0.8	12.0	_	0.099	I
I											I
	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	 I
I		(VEH/MIN)	(VEH/MIN)		FLOW		QUEUE	(VEH.MIN/			I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	Ι
	8 15-	-18.30									I
	ARM A	14.99	29.09	0.515		1.8	1.1	16.6	_	0.071	I
	ARM B	10.00	23.61	0.424		1.2	0.7	11.4	=	0.074	I
	ARM C	13.15	33.92			0.9	0.6	9.7	_	0.048	I
l						0 0	^ -				
I A	ARM D	6.54	19.68	0.332		0.8	0.5	7.7	_	0.076	I

QUEUE AT ARM A

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.15	1.⊥	*
17.30	1.7	* *
17.45	4.5	****
18.00	4.7	****
18.15	1.8	* *
18.30	1.1	*

TRL Viewer 3.2 AG k:\.. \Waycock Cross\Waycock Cross Bellway 700 Imp + Additional Imp 2019 + LDP ex Barr TRL

QUEUE AT ARM B

TIME	SEGMENT	NO.	. OF	
ENDI	ING	VE	HICLES	
		IN	QUEUE	
17.1	L5		0.7	*
17.3	30		1.2	*
17.4	15		2.8	* * *
18.0	00		2.9	* * *
18.1	L5		1.2	*
18.3	30		0.7	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.6
17.30	0.9
17.45	1.4
18.00	1.4
18.15	0.9
18.30	0.6

QUEUE AT ARM D

TIME SEGMENT	NO. OF							
ENDING	VEHICLES							
	IN QUEUE							
17.15	0.5							
17.30	0.8	*						
17.45	1.5	*						
18.00	1.5	* :						
18.15	0.8	*						
18.30	0.5	*						

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I	ARM	I I	TOTAL DEMAND		I I	* DE	JEING * LAY *	I	*	DEL	QUEUEING * AY *	I
I		I	(VEH)	(VEH/H)			(MIN/VEH)		(MIN)		(MIN/VEH)	I
I	А	I	1644.8	I 1096.6	I	216.4 I	0.13	I	216.4	I	0.13	I
I	В	I	1097.0	I 731.3	I	140.1 I	0.13	I	140.1	I	0.13	I
I	C	I	1442.5	I 961.7	I	88.4 I	0.06	I	88.4	I	0.06	I
I	D	I	717.1	I 478.1	I	81.2 I	0.11	I	81.2	I	0.11	I
I	ALL	I	4901.5	I 3267.6	I	526.0 I	0.11	I	526.1	I	0.11	I

^{*} DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

END OF JOB

Printed at 09:56:36 on 30/04/2014]

^{*} INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP AM.vao - Page 1

____ ARCADY 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Wales Airport Hotel\

Wales Airport Hotel 2019 with LDP AM.vai"

(drive-on-the-left) at 10:30:47 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Wales Airport Hotel - Forecast Year with LDP AM

DATE: 15/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road

ARM B - A4226 (W) ARM C - A4226 (E)

GEOMETRIC DATA

																	– T5
I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I -
I ARM	ΑI	4.20	I	7.00	I	16.00	I	30.00	I	36.00	I	50.0	I	0.638	I	28.667	I
I ARM	вІ	3.75	I	7.00	I	40.40	I	26.00	I	36.00	I	39.0	I	0.680	I	31.352	I
I ARM	CI	3.40	I	7.00	I	38.00	I	60.00	I	36.00	I	20.0	I	0.730	I	33.215	I
																	_

V = approach half-width E = entry width

L = effective flare length R = entry radius

D = inscribed circle diameter PHI = entry angle

WARNING ARM B Effective flare length is outside normal range. Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP AM.vao - Page 2

IARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Forecast Year With LDP

I		I	NUMBER OF	MI	NUTES FROM S	STA	ART WHEN	I	RATE	OF	FLOW (VEF	H/MIN)	Ι	
I	ARM	I	FLOW STARTS	3 I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	Ι	AFTER	Ι	
I		I		I		I		I		I		Ι		Ι	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	Ι	PEAK	Ι	
I	ARM	ΑI	15.00	I	45.00	I	75.00	I	14.35	I	21.53	Ι	14.35	I	
I	ARM	вІ	15.00	I	45.00	I	75.00	I	6.54	I	9.81	Ι	6.54	I	
I	ARM	CI	15.00	I	45.00	I	75.00	I	11.24	I	16.86	Ι	11.24	I	

DEMAND SET TITLE: AM Forecast Year With LDP

						133				
I I I		I TURNING PROPORTIONS I TURNING COUNTS I (PERCENTAGE OF H.V.S)								
I	TIME	I	FROM/T	I	ARM A I ARM B I ARM C I					
	07.15 - 08.45		ARM E							
l										

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I TIME I I	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 07.15-(I ARM A I ARM B I ARM C I	07.30 14.40 6.56 11.28	25.48 21.59 32.03	0.565 0.304 0.352	<u> </u>	0.0 0.0 0.0	1.3 0.4 0.5	18.4 6.3 7.9	- - -	0.089 0.066 0.048	I I I I
I TIME I I	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I 07.30-0 I ARM A I ARM B I ARM C	17.20 7.84 13.47	24.91 19.67 32.02	0.690 0.398 0.421	 	1.3 0.4 0.5	2.2 0.7 0.7	30.9 9.6 10.6	- - -	0.128 0.084 0.054	I I I I

TRL	TRL Viewer	3.2 AG k:\	\Wales Airport	Hotel\Wales Airport	Hotel 2019	with LDP AM.vao -	Page 3
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I I -	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	ESTRIAN FLOW DS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.45-0 ARM A ARM B ARM C	08.00 21.07 9.60 16.50	24.14 17.18 32.00	0.873 0.559 0.516	 - - -	2.2 0.7 0.7	6.0 1.2 1.1	76.9 17.8 15.5	- - -	0.282 0.131 0.064	I I I I
I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		ESTRIAN FLOW DS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.00-0 ARM A ARM B ARM C	08.15 21.07 9.60 16.50	24.14 17.02 32.00	0.873 0.564 0.516	 - - -	6.0 1.2 1.1	6.4 1.3 1.1	93.0 19.0 15.9	- - -	0.317 0.135 0.065	I I I I
I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		ESTRIAN FLOW DS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-0 ARM A ARM B ARM C	08.30 17.20 7.84 13.47	24.91 19.45 32.02	0.691 0.403 0.421	 - - -	6.4 1.3 1.1	2.3 0.7 0.7	37.9 10.5 11.2	<u>-</u>	0.139 0.087 0.054	I I I I
I I I		DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)		 ESTRIAN FLOW DS/MIN)	QUEUE	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-0 ARM A ARM B ARM C	08.45 14.40 6.56 11.28	25.47 21.49 32.03	0.566 0.305 0.352	 - - -	2.3 0.7 0.7	1.3 0.4 0.5	20.6 6.8 8.3	- - -	0.092 0.067 0.048	I I I I

QUEUE AT ARM A

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE

QUEUE AT ARM B

TIME SEGMENT NO. OF VEHICLES IN QUEUE

07.30 0.4 07.45 0.7 * 08.00 1.2 * 08.15 1.3 * 08.30 0.7 * 08.45 0.4

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP AM.vao - Page 4

QUEUE AT ARM C

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I I T	ARM	I I I		DEMAN		I I	* QU * D	EU EL	JEING * JAY *	I	* INCLUSI	VE DEL	QUEUEING *	I	
I		I	(VEH)				(MIN)		(MIN/VEH)					I	
I I I	A B C	I	1580.1 719.9 1237.4	I 479	.9	I	277.7 70.0 69.4	I	0.18 0.10 0.06	I I I	,	I I I	0.18 0.10 0.06	I I I	
I	ALL		3537.4	I 2358	.3	I	417.1	I	0.12		417.2	I	0.12	I	

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

END OF JOB

Printed at 10:31:35 on 30/04/2014]

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP PM.vao - Page 1

____ ARCADY 6 ___

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\Wales Airport Hotel\

Wales Airport Hotel 2019 with LDP PM.vai"

(drive-on-the-left) at 10:34:13 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: Wales Airport Hotel - 2019 with LDP PM

DATE: 15/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - Port Road

ARM B - A4226 (W) ARM C - A4226 (E)

GEOMETRIC DATA

																	T5
I ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I ARM	ΑI	4.20	I	7.00	I	16.00	I	30.00	I	36.00	I	50.0	I	0.638	I	28.667	I
I ARM	ВI	3.75	I	7.00	I	40.40	I	26.00	I	36.00	I	39.0	I	0.680	I	31.352	I
I ARM	CI	3.40	I	7.00	I	38.00	I	60.00	I	36.00	I	20.0	I	0.730	I	33.215	I
																	_

V = approach half-width E = entry width

L = effective flare length

R = entry radius

D = inscribed circle diameter PHI = entry angle

WARNING ARM B Effective flare length is outside normal range.

Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP PM.vao - Page 2

IARM I FLOW SCALE(%) I

I A I 100 I
I B I 100 I
I C I 100 I

TIME PERIOD BEGINS(17.00)AND ENDS(18.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: PM 2019 with LDP

DEMAND SET TITLE: PM 2019 with LDP

I		I			ΤŢ	JRNING P	RO	PORTION	S	I
I		I			ΤŢ	JRNING C	OU.	NTS		I
I		I			(PI	ERCENTAG	Ε	OF H.V.	S)	I
I										
I	TIME	I	FROM/	Γ	Ι	ARM A	Ι	ARM B	I	ARM C I
	17.00 - 18.30				т		т		 т	т
Ī	17.00 10.00	Ī	ARM	Α	Ī	0.000	Ī	0.021	I	0.979 I
Ī		I			I	0.0		16.0	I	743.0 I
I		I			I	(0.0)	Ι	(0.0)	I	(2.0)I
I		I			I	. ,	Ι	. ,	I	Ĭ
I		I	ARM	В	I	0.023	Ι	0.000	I	0.977 I
I		I			I	12.0	Ι	0.0	I	503.0 I
I		I			I	(0.0)	I	(0.0)	I	(1.0)I
I		I			I		Ι		Ι	I
I		I	ARM	C	I	0.687	Ι	0.313	Ι	0.000 I
I		I			I	998.0	Ι	455.0	Ι	0.0 I
I		I			I	(1.0)	Ι	(2.0)	Ι	(0.0)I
I		I			Ι		I		Ι	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

										T70
I TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
_										-
I 17.00-	17.15									I
I ARM A	9.52	24.49	0.389		0.0	0.6	9.2	_	0.066	I
I ARM B	6.46	24.67	0.262		0.0	0.4	5.2	_	0.055	I
I ARM C	18.23	32.68	0.558		0.0	1.2	18.1	_	0.068	I
I										I
I TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-										-
I 17.15-3	17.30									I
I ARM A	11.37	23.78	0.478		0.6	0.9	13.3	_	0.080	I
I ARM B	7.72	23.41	0.330		0.4	0.5	7.2	_	0.064	I
I ARM C	21.77	32.66	0.667		1.2	2.0	28.3	_	0.091	I
Т										Т

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP PM.vao - Page 3

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	,	F	ESTRIAN FLOW DS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
т	17.30-	17.45										I
	ARM A	13.93	22.82	0.610		_	0.9	1.5	22.1	_	0.111	I
	ARM B	9.45	21.71	0.435		_	0.5	0.8	11.2	_	0.081	Ī
	ARM C	26.66	32.63	0.817		_	2.0	4.2	58.0	_	0.160	I
I												I
i												
	TIME	DEMAND	CAPACITY	DEMAND/		STRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	т
I	1111111	(VEH/MIN)				FLOW	OUEUE	OUEUE	(VEH.MIN/	(VEH.MIN/		I
I		((1211, 11211,	(RFC)			(VEHS)	~		TIME SEGMENT)	VEHICLE (MIN)	
_				(111 0)	(122	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(* 2110)	(1210)	11112 020112111,	11112 020112111 /	VEHILOEE (11111)	_
I	17.45-	18.00										Ι
I	ARM A	13.93	22.79	0.611		-	1.5	1.6	23.2	_	0.113	I
I	ARM B	9.45	21.68	0.436		-	0.8	0.8	11.5	_	0.082	I
I	ARM C	26.66	32.63	0.817		-	4.2	4.3	64.5	-	0.167	I
Ι												Ι
I	TIME	DEMAND	CAPACITY	DEMAND/	PEDE	ESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	F	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEI	OS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-												
т												-
	18.00-		00.74	0 450								- I
I	ARM A	11.37	23.74	0.479		_	1.6	0.9	14.4	-	0.081	I
I	ARM A ARM B	11.37 7.72	23.37	0.330		- -	0.8	0.5	7.6	- -	0.081 0.064	I
I I	ARM A	11.37				- - -				- - -	0.081	I I
I	ARM A ARM B	11.37 7.72	23.37	0.330		- - -	0.8	0.5	7.6	- - -	0.081 0.064	I
I I	ARM A ARM B	11.37 7.72	23.37	0.330		- - -	0.8	0.5	7.6	- - -	0.081 0.064	I I I
I I I 	ARM A ARM B ARM C	11.37 7.72 21.77	23.37 32.65	0.330 0.667	 	- - -	0.8	0.5 2.0	7.6		0.081 0.064 0.095	I I I
I I I I	ARM A ARM B	11.37 7.72 21.77	23.37 32.65 	0.330 0.667 	 PEDE	- - - - - ESTRIAN	0.8 4.3 	0.5 2.0	7.6 32.2	GEOMETRIC DELAY	0.081 0.064 0.095	I I I
I I I I I	ARM A ARM B ARM C	11.37 7.72 21.77	23.37 32.65 	0.330 0.667 DEMAND/ CAPACITY	 PEDE F	FLOW	0.8 4.3 	0.5 2.0 END QUEUE	7.6 32.2 	(VEH.MIN/	0.081 0.064 0.095 	I I I
I I I I	ARM A ARM B ARM C	11.37 7.72 21.77	23.37 32.65 	0.330 0.667 	 PEDE F	FLOW	0.8 4.3 	0.5 2.0 END QUEUE	7.6 32.2 		0.081 0.064 0.095	I I I
I I I I I I	ARM A ARM B ARM C TIME	11.37 7.72 21.77 DEMAND (VEH/MIN)	23.37 32.65 	0.330 0.667 DEMAND/ CAPACITY	 PEDE F	FLOW	0.8 4.3 	0.5 2.0 END QUEUE	7.6 32.2 	(VEH.MIN/	0.081 0.064 0.095 AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I I I I I
I I I I I I I	ARM A ARM B ARM C	11.37 7.72 21.77 DEMAND (VEH/MIN)	23.37 32.65 	0.330 0.667 DEMAND/ CAPACITY	 PEDE F	FLOW	0.8 4.3 	0.5 2.0 END QUEUE	7.6 32.2 	(VEH.MIN/	0.081 0.064 0.095 AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I I I
I I I I I I I I	ARM A ARM B ARM C TIME	11.37 7.72 21.77 	23.37 32.65 	0.330 0.667 	 PEDE F	FLOW	0.8 4.3 	0.5 2.0 END QUEUE (VEHS)	7.6 32.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/	0.081 0.064 0.095 AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I I I I I I
I I I I I I I I I I I I I I I	ARM A ARM B ARM C TIME 18.15- ARM A	11.37 7.72 21.77 DEMAND (VEH/MIN)	23.37 32.65 	0.330 0.667 	 PEDE F	FLOW	0.8 4.3 START QUEUE (VEHS)	0.5 2.0 END QUEUE (VEHS)	7.6 32.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/	0.081 0.064 0.095 AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I I I I I I
I I I I I I I I I I I I I I	ARM A ARM B ARM C TIME 18.15- ARM A ARM B	11.37 7.72 21.77 	23.37 32.65 	0.330 0.667 	 PEDE (PEI	FLOW	0.8 4.3 START QUEUE (VEHS)	0.5 2.0 END QUEUE (VEHS)	7.6 32.2 	(VEH.MIN/	0.081 0.064 0.095 AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I I I I I I I I I I I I

QUEUE AT ARM A

QUEUE AT ARM B

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.15 0.4
17.30 0.5
17.45 0.8
18.00 0.8
18.15 0.5
18.30 0.4

TRL TRL Viewer 3.2 AG k:\.. \Wales Airport Hotel\Wales Airport Hotel 2019 with LDP PM.vao - Page 4

QUEUE AT ARM C

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE

17.15 1.2 * 17.30 2.0 ** 17.45 4.2 **** 18.00 4.3 **** 18.15 2.0 ** 18.15 2.0 ** 18.30 1.3 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

 I I	ARM	I I T-		DEMAND	I I	* QUET	UEING * LAY *	I	* INCLUSI	VE DEL	 QUEUEING * AY *	I I	Т75
I		I	(VEH)	(VEH/H)			(MIN/VEH)		(MIN)		(MIN/VEH)	I	
I I I	A B C	I	708.9	I 696.5 I 472.6 I 1333.3	I	92.0 I 48.1 I 220.8 I		I I I	92.1 48.1 220.8	I I I	0.09 0.07 0.11	I I I	
I	ALL	I	3753.5	I 2502.3	I	360.9 I	0.10	I	361.0	I	0.10	I	

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

END OF JOB

Printed at 10:34:34 on 30/04/2014]

TRI TRL Viewer 3.2 AG k:\.. \BAMC Roundabout\BAMC Roundabout 2019 + LDP AM.vao - Page 1

_____ ARCADY 6 __

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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RG40 3GA,UK

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Run with file:

"k:\Projects\15342 - Porthkerry Rd, Rhoose, Taylor Wimpey\DESIGN\ARCADY\BAMC Roundabout\

BAMC Roundabout 2019 + LDP AM.vai'

(drive-on-the-left) at 10:41:14 on Wednesday, 30 April 2014

FILE PROPERTIES

RUN TITLE: BAMC Roundabout - Forecast Year with LDP AM

DATE: 15/05/13

CLIENT:

ENUMERATOR: CFKA [CF-40]

JOB NUMBER: STATUS: DESCRIPTION:

INPUT DATA

ARM A - A4226

ARM B - To Airport

ARM C - Dragonfly Drive

ARM D - B4265

ARM E - Tredogan Road

GEOMETRIC DATA

I ARM I V (M) I E (M) I L (M) I R (M) I D (M) I PHI (DEG) I SLOPE I INTERCEPT (PCU/MIN) I 30.00 I 90.00 I 20.00 I 90.00 I 14.00 I 90.00 I 40.00 I 90.00 I I ARM A I 3.25 I 9.50 I I ARM B I 3.20 I 7.30 I 15.00 I 16.00 I 43.0 I 0.456 I 36.0 I 0.440 I 29.077 36.0 26.963 Ι 7.20 I 14.50 I 7.20 I 29.00 I 8.00 I 43.00 I 14.00 I 40.00 I 68.00 I 3.60 I 7.20 I 7.20 I 26.0 I 0.453 I I 0.471 I I ARM C I 28.111 I I ARM D I 3.40 I 40.0 30.376 Ι 90.00 I I 0.521 I I ARM E I 2.00 I 15.0 33.735

V = approach half-width

L = effective flare length

D = inscribed circle diameter

L = errection R = entry radius E = entry width

PHI = entry angle

WARNING ARM E Effective flare length is outside normal range. Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

TRL TRL Viewer 3.2 AG k:\.. \BAMC Roundabout\BAMC Roundabout 2019 + LDP AM.vao - Page 2

T13

IARM I FLOW SCALE(%) I

I A I 100 I

I B I 100 I

I C I 100 I

I D I 100 I

I D I 100 I

I E I 100 I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM 2019 + LDP

																т15
I		I	NUMBER OF	M	INUTE			ART WHEN						H/MIN)		113
I	ARM	I	FLOW STARTS	I	TOP	OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	Ι	
I		I		I			I		I		I		I		I	
I		I	TO RISE	I	IS	REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	Ι	
I	ARM	ΑI	15.00	I		45.00	I	75.00	I	4.63	I	6.94	I	4.63	Ι	
I	ARM	вІ	15.00	I		45.00	I	75.00	I	1.02	I	1.54	I	1.02	Ι	
I	ARM	CI	15.00	I		45.00	I	75.00	I	0.08	I	0.11	I	0.08	Ι	
I	ARM	DI	15.00	I		45.00	I	75.00	I	6.68	I	10.01	I	6.68	Ι	
I	ARM	ΕI	15.00	I		45.00	I	75.00	I	0.25	I	0.38	I	0.25	Ι	

DEMAND SET TITLE: AM 2019 + LDP

I I I		I I I		Т		OPORTIONS UNTS OF H.V.S)			
Ι	TIME	I	- ,	I	ARM A I	ARM B I	ARM C I	ARM D I	ARM E I
I	07.15 - 08.45	I		I	I	I	I	I	I
I		I	ARM	A I	0.000 I	0.097 I	0.054 I	0.843 I	0.005 I
I		I		I	0.0 I	36.0 I	20.0 I	312.0 I	2.0 I
I		I		I	(0.0)I	(0.0)I	(0.0)I	(13.0)I	(0.0)I
I		I		I	I	I	I	I	I
I		I	ARM	ΒΙ	0.659 I	0.000 I	0.049 I	0.293 I	0.000 I
I		I		I	54.0 I	0.0 I	4.0 I	24.0 I	0.0 I
I		I		I	(5.0)I	(0.0)I	(0.0)I	(21.0)I	(0.0)I
I		I		I	I	I	I	I	I
I		I	ARM	CI	0.667 I	0.000 I	0.000 I	0.333 I	0.000 I
I		I		I	4.0 I	0.0 I	0.0 I	2.0 I	0.0 I
I		I		I	(0.0)I	(0.0)I	(0.0)I	(0.0)I	(0.0)I
I		I		I	I	I	I	I	I
I		I	ARM	DΙ	0.895 I	0.077 I	0.026 I	0.000 I	0.002 I
I		I		I	478.0 I	41.0 I	14.0 I	0.0 I	1.0 I
I		I		I	(5.0)I	(0.0)I	(0.0)I	(0.0)I	(0.0)I
I		I		I	I	I	I	I	I
I		I	ARM	ΕI	0.800 I	0.100 I	0.000 I	0.100 I	0.000 I
I		I		I	16.0 I	2.0 I	0.0 I	2.0 I	0.0 I
I		I		I	(7.0)I	(0.0)I	(0.0)I	(0.0)I	(0.0)I
I		I		I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											т70
Ι	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I
-											-
I	07.15-0	07.30									I
I	ARM A	4.64	25.90	0.179		0.0	0.2	3.2	_	0.047	I
I	ARM B	1.03	22.67	0.045		0.0	0.0	0.7	_	0.046	I
I	ARM C	0.08	25.61	0.003		0.0	0.0	0.0	_	0.039	I
I	ARM D	6.70	28.72	0.233		0.0	0.3	4.5	_	0.045	I
I	ARM E	0.25	28.14	0.009		0.0	0.0	0.1	_	0.036	I
I											I

TRL TRL Viewer 3.2 AG k:\.. \BAMC Roundabout\BAMC Roundabout 2019 + LDP AM.vao - Page 3

I I I	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)			EDESTRIAN FLOW PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.30-	-07.45										I
	ARM A	5.54	25.84	0.215		_	0.2	0.3	4.0	-	0.049	I
	ARM B	1.23	22.29	0.055		-	0.0	0.1	0.9	-	0.047	Ι
	ARM C	0.09	25.11	0.004		-	0.0	0.0	0.1	=	0.040	Ι
	ARM D	8.00	28.65	0.279		_	0.3	0.4	5.7	_	0.048	I
	ARM E	0.30	27.39	0.011		=	0.0	0.0	0.2	=	0.037	I
I 												I
 I	TIME	DEMAND	CAPACITY	DEMAND/	D1	 EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	 т
I	TIME		(VEH/MIN)		F	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/		I
I		(1211 / 11211 /	(1211, 11211,	(RFC)	(]	PEDS/MIN)				TIME SEGMENT)	VEHICLE (MIN)	
_				, ,		,	, ,	,	,	,	. ,	-
I	07.45-	-08.00										I
I	ARM A	6.79	25.76	0.264		_	0.3	0.4	5.3	_	0.053	I
	ARM B	1.50	21.76	0.069		_	0.1	0.1	1.1	-	0.049	I
	ARM C	0.11	24.44	0.005		_	0.0	0.0	0.1	-	0.041	Ι
	ARM D	9.80	28.56	0.343		_	0.4	0.5	7.7	_	0.053	I
	ARM E	0.37	26.36	0.014		=	0.0	0.0	0.2	=	0.038	I
I 												I
 I	TIME	DEMAND	CAPACITY	DEMAND/	 Pl	 EDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	 I
I			(VEH/MIN)			FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/		I
I		(,, , ,, ,	(,, , ,,	(RFC)	(]	PEDS/MIN)				TIME SEGMENT)	VEHICLE (MIN)	
_												-
I	08.00-	-08.15										I
I	ARM A	6.79	25.76	0.264		_	0.4	0.4	5.4	_	0.053	I
-												
	ARM B	1.50	21.76	0.069		_	0.1	0.1	1.1	-	0.049	I
I	ARM C	0.11	24.44	0.005		-	0.0	0.0	0.1	- -	0.041	I
I	ARM C ARM D	0.11 9.80	24.44 28.56	0.005 0.343		- - -	0.0 0.5	0.0 0.5	0.1 7.8	- - -	0.041 0.053	I I
I I	ARM C	0.11	24.44	0.005		-	0.0	0.0	0.1	- - - -	0.041	I I
I	ARM C ARM D	0.11 9.80	24.44 28.56	0.005 0.343		-	0.0 0.5	0.0 0.5	0.1 7.8	- - -	0.041 0.053	I I
I I	ARM C ARM D	0.11 9.80	24.44 28.56	0.005 0.343		-	0.0 0.5	0.0 0.5	0.1 7.8	- - - -	0.041 0.053	I I
I I I 	ARM C ARM D	0.11 9.80 0.37	24.44 28.56 26.36	0.005 0.343 0.014	 	- - 	0.0 0.5 0.0	0.0 0.5 0.0	0.1 7.8 0.2	- - - - - - - - - - - - - - - - - - -	0.041 0.053 0.038	I I I
I I	ARM C ARM D ARM E	0.11 9.80	24.44 28.56 26.36	0.005 0.343 0.014	 	-	0.0 0.5	0.0 0.5	0.1 7.8	- - - - - - GEOMETRIC DELAY (VEH.MIN/	0.041 0.053 0.038	I I I
I I I I	ARM C ARM D ARM E	0.11 9.80 0.37 DEMAND	24.44 28.56 26.36	0.005 0.343 0.014	 P1	- - - EDESTRIAN	0.0 0.5 0.0 	0.0 0.5 0.0 END QUEUE	0.1 7.8 0.2		0.041 0.053 0.038	I I I
I I I I I I	ARM C ARM D ARM E TIME	0.11 9.80 0.37 	24.44 28.56 26.36	0.005 0.343 0.014 DEMAND/ CAPACITY	 P1	- - - - - EDESTRIAN FLOW	0.0 0.5 0.0 	0.0 0.5 0.0 END QUEUE	0.1 7.8 0.2	(VEH.MIN/	0.041 0.053 0.038	I I I I I
I I I I I I	ARM C ARM D ARM E TIME	0.11 9.80 0.37 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN)	0.005 0.343 0.014 	 P1	- - - - - EDESTRIAN FLOW	0.0 0.5 0.0 START QUEUE (VEHS)	0.0 0.5 0.0 END QUEUE (VEHS)	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/	0.041 0.053 0.038 	I I I I I I
I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A	0.11 9.80 0.37 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN)	0.005 0.343 0.014 		- - - - - EDESTRIAN FLOW	0.0 0.5 0.0 	0.0 0.5 0.0 END QUEUE (VEHS)	0.1 7.8 0.2 	(VEH.MIN/	0.041 0.053 0.038 	
I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B	0.11 9.80 0.37 DEMAND (VEH/MIN)	24.44 28.56 26.36 	0.005 0.343 0.014 		- - - - - EDESTRIAN FLOW	0.0 0.5 0.0 START QUEUE (VEHS)	0.0 0.5 0.0 	0.1 7.8 0.2 	(VEH.MIN/	0.041 0.053 0.038 	I I I I I I I I I I I I I
I I I I I I I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09	24.44 28.56 26.36 CAPACITY (VEH/MIN)	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004		- - - EDESTRIAN FLOW PEDS/MIN)	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1	0.0 0.5 0.0 END QUEUE (VEHS)	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1	(VEH.MIN/	0.041 0.053 0.038 	I I I I I I I I I I I
I I I I I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D	0.11 9.80 0.37 	24.44 28.56 26.36 	0.005 0.343 0.014 		- - - EDESTRIAN FLOW PEDS/MIN) - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9	(VEH.MIN/	0.041 0.053 0.038 	
I I I I I I I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09	24.44 28.56 26.36 	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004		- - - EDESTRIAN FLOW PEDS/MIN) - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1	0.0 0.5 0.0 END QUEUE (VEHS)	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1	(VEH.MIN/	0.041 0.053 0.038 	
I I I I I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D	0.11 9.80 0.37 	24.44 28.56 26.36 	0.005 0.343 0.014 		- - - EDESTRIAN FLOW PEDS/MIN) - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/	0.041 0.053 0.038 	
I I I I I I I I I I I I I I I I I I I	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D	0.11 9.80 0.37 	24.44 28.56 26.36 	0.005 0.343 0.014 		- - - EDESTRIAN FLOW PEDS/MIN) - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30	24.44 28.56 26.36 	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011		- - - EDESTRIAN FLOW PEDS/MIN) - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011		- - - - EDESTRIAN FLOW PEDS/MIN) - - - - - - - - -	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011		EDESTRIAN	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY		EDESTRIAN	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN)	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY (RFC)		EDESTRIAN	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN)	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY (RFC)	PI (1	EDESTRIAN FLOW PEDS/MIN)	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN)	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY (RFC)	PI (11 PI (11	EDESTRIAN FLOW PEDS/MIN)	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 3.3 0.7	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM C ARM C TIME 08.30- ARM A ARM B ARM C	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN) 25.90 22.67 25.60	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY (RFC)		EDESTRIAN FLOW PEDS/MIN)	0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 3.3 0.7 0.0	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN) -08.45 4.64 1.03 0.08 6.70	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN) 25.90 22.67 25.60 28.72	0.005 0.343 0.014 			0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0 START QUEUE (VEHS)	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM C ARM C TIME 08.30- ARM A ARM B ARM C	0.11 9.80 0.37 DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN)	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN) 25.90 22.67 25.60	0.005 0.343 0.014 DEMAND/ CAPACITY (RFC) 0.215 0.055 0.004 0.279 0.011 DEMAND/ CAPACITY (RFC)			0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 3.3 0.7 0.0	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	
	ARM C ARM D ARM E TIME 08.15- ARM A ARM B ARM C ARM D ARM E TIME	DEMAND (VEH/MIN) -08.30 5.54 1.23 0.09 8.00 0.30 DEMAND (VEH/MIN) -08.45 4.64 1.03 0.08 6.70	24.44 28.56 26.36 CAPACITY (VEH/MIN) 25.84 22.28 25.11 28.65 27.38 CAPACITY (VEH/MIN) 25.90 22.67 25.60 28.72	0.005 0.343 0.014 			0.0 0.5 0.0 START QUEUE (VEHS) 0.4 0.1 0.0 0.5 0.0 START QUEUE (VEHS)	0.0 0.5 0.0 END QUEUE (VEHS) 0.3 0.1 0.0 0.4 0.0	0.1 7.8 0.2 DELAY (VEH.MIN/ TIME SEGMENT) 4.2 0.9 0.1 5.9 0.2 DELAY (VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	0.041 0.053 0.038 	

QUEUE AT ARM A

TIME SEGMENT NO. OF ENDING VEHICLES IN QUEUE 07.30 0.2 07.45 0.3 08.00 0.4 08.15 0.4 08.30 0.3 08.45 0.2