Level of service plots – Scenario B – PM

Junction 1

Junction 2

Junction 4

Junction 5

Junction 6

Junction 7

Junction 8

Junction 9

Junction 10

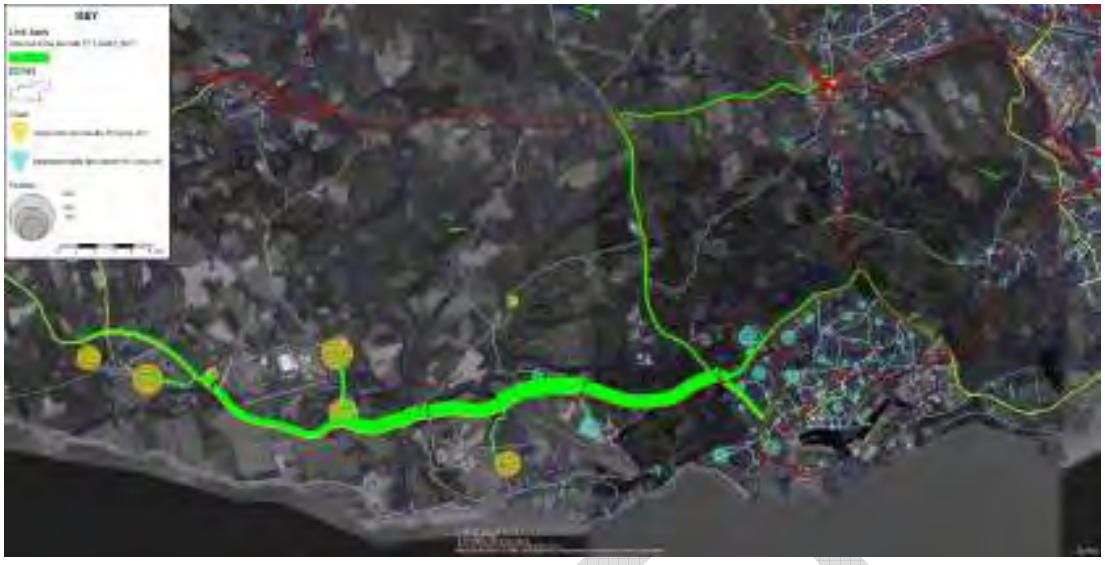
APPENDIX E – FLOW BUNDLE PLOTS (2029)

Flow Bundle Plots – Scenario A – AM

A4226 Eastbound (east of Port Road)

A4226 Westbound (east of Port Road)

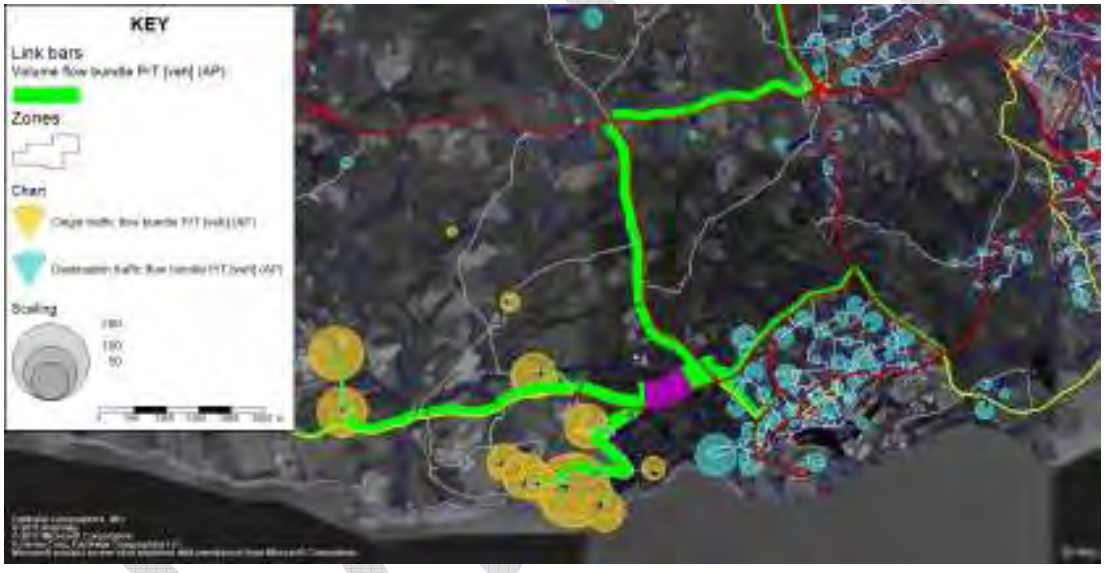
A4226 Eastbound (west of Port Road)



A4226 Westbound (west of Port Road)

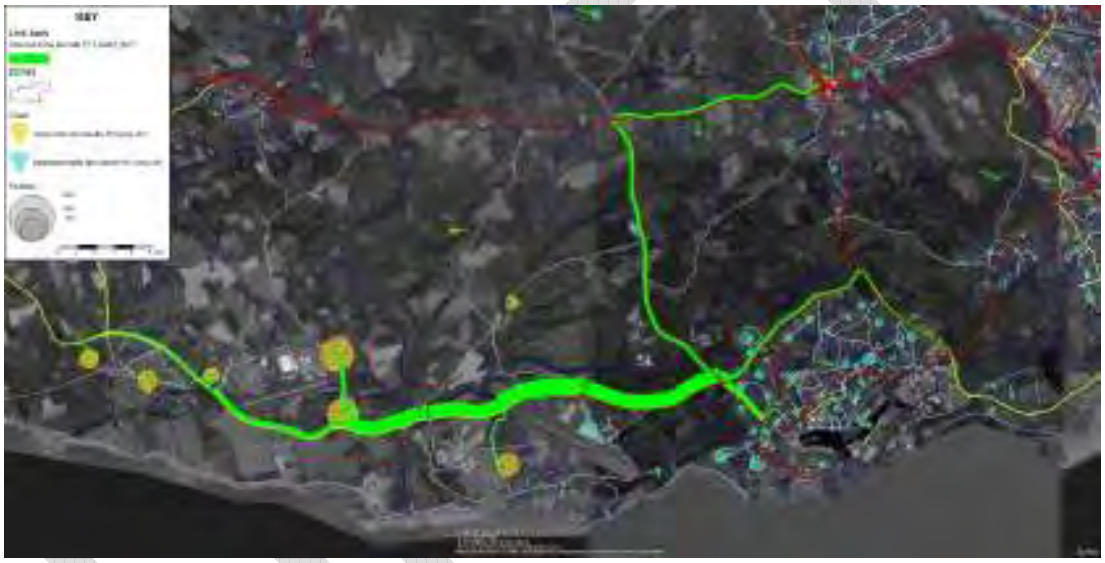
Flow Bundle Plots – Scenario A – PM

A4226 Eastbound (east of Port Road)



A4226 Westbound (east of Port Road)

A4226 Eastbound (west of Port Road)



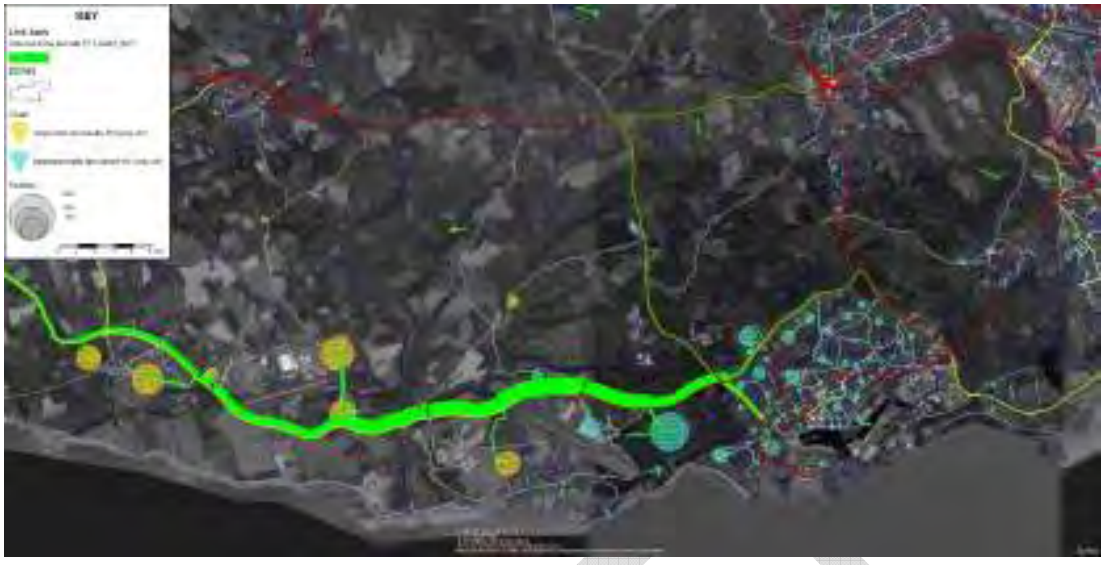
A4226 Westbound (west of Port Road)

Flow Bundle Plots – Scenario B – AM

A4226 Eastbound (east of Port Road)

A4226 Westbound (east of Port Road)

A4226 Eastbound (west of Port Road)



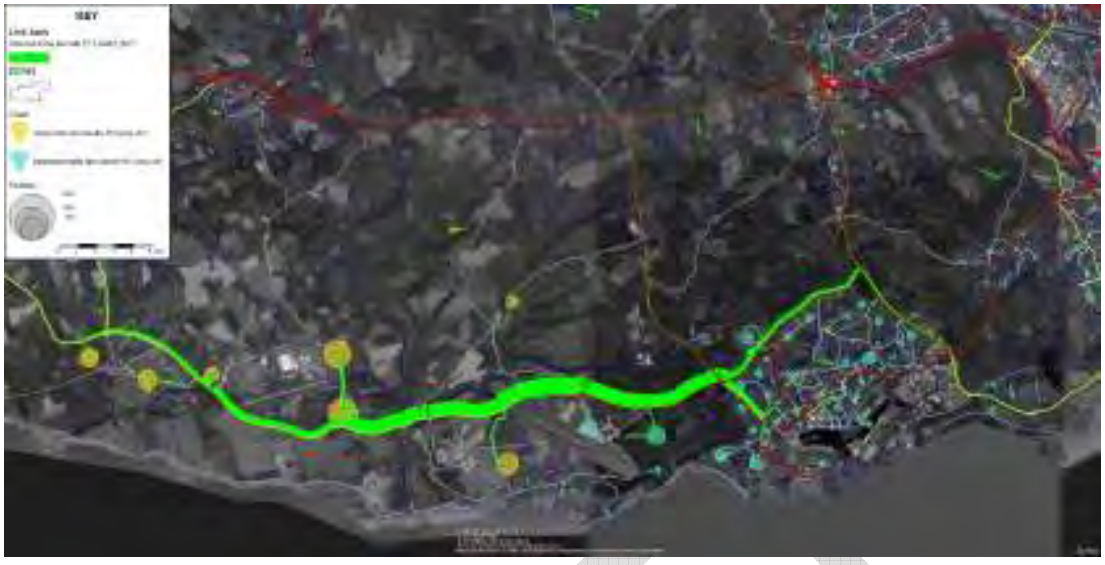
A4226 Westbound (west of Port Road)

Flow Bundle Plots – Scenario B – PM

A4226 Eastbound (east of Port Road)

A4226 Westbound (east of Port Road)

A4226 Eastbound (west of Port Road)



A4226 Westbound (west of Port Road)

APPENDIX F – TURNING MOVEMENTS (2029)

Attached as a separate package.

Appendix N – Northern Site Access Roundabout Junction 2026 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

Filename: Port Road_A4226 roundabout Proposed_New geometries SEWTM VISUM Model - JG edit.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady
Report generation date: 05/06/2019 16:10:33

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	2026 Base					
1 - Site	0.0	0.00	0.00	0.0	0.00	0.00
2 - Port Road West (A4226)	0.7	4.55	0.40	0.6	4.47	0.37
3 - A4226	0.4	2.95	0.28	0.4	2.88	0.28
4 - Port Road	0.4	1.74	0.29	0.6	1.88	0.36
	2026 Base + Dev					
1 - Site	0.2	3.65	0.18	3.0	13.84	0.75
2 - Port Road West (A4226)	0.7	4.88	0.41	0.9	7.42	0.47
3 - A4226	0.6	3.50	0.36	0.4	3.87	0.31
4 - Port Road	1.1	2.63	0.53	0.6	1.97	0.39

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

File summary

File Description

Title	Port Road / A4226 Roundabout Proposed
Location	Rhoose
Site number	
Date	25/05/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\charles.montgomerie
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2026 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2026 Base	PM	ONE HOUR	16:30	18:00	15	✓
D3	2026 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2026 Base + Dev	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2026 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout	1, 2, 3, 4	2.84	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Site	
2	Port Road West (A4226)	
3	A4226	
4	Port Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Site	3.50	9.00	7.0	30.0	60.0	15.0	
2 - Port Road West (A4226)	3.50	12.50	7.0	20.0	70.0	33.0	
3 - A4226	3.50	10.00	21.0	30.0	60.0	33.0	
4 - Port Road	7.00	12.00	22.0	35.0	60.0	30.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Site	0.565	1640
2 - Port Road West (A4226)	0.484	1577
3 - A4226	0.621	2062
4 - Port Road	0.798	3061

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2026 Base	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	0	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	485	100.000
3 - A4226		ONE HOUR	✓	425	100.000
4 - Port Road		ONE HOUR	✓	767	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	485
	3 - A4226	0	0	0	425
	4 - Port Road	0	368	399	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	0	0	0	2
	4 - Port Road	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.00	0.00	0.0	A	0	0
2 - Port Road West (A4226)	0.40	4.55	0.7	A	445	668
3 - A4226	0.28	2.95	0.4	A	390	585
4 - Port Road	0.29	1.74	0.4	A	704	1056

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	576	1298	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	365	91	300	1395	0.262	364	277	0.0	0.4	3.485	A
3 - A4226	320	80	364	1796	0.178	319	300	0.0	0.2	2.437	A
4 - Port Road	577	144	0	2914	0.198	576	683	0.0	0.2	1.539	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	689	1231	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	436	109	359	1366	0.319	436	331	0.4	0.5	3.867	A
3 - A4226	382	96	436	1751	0.218	382	359	0.2	0.3	2.629	A
4 - Port Road	690	172	0	2914	0.237	689	817	0.2	0.3	1.617	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	844	1139	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	534	133	439	1325	0.403	533	405	0.5	0.7	4.539	A
3 - A4226	468	117	533	1690	0.277	468	439	0.3	0.4	2.944	A
4 - Port Road	844	211	0	2914	0.290	844	1001	0.3	0.4	1.738	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	844	1139	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	534	133	439	1325	0.403	534	405	0.7	0.7	4.548	A
3 - A4226	468	117	534	1690	0.277	468	439	0.4	0.4	2.945	A
4 - Port Road	844	211	0	2914	0.290	844	1002	0.4	0.4	1.738	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	690	1231	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	436	109	359	1366	0.319	437	331	0.7	0.5	3.879	A
3 - A4226	382	96	437	1750	0.218	382	359	0.4	0.3	2.634	A
4 - Port Road	690	172	0	2914	0.237	690	819	0.4	0.3	1.620	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	578	1297	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	365	91	301	1395	0.262	366	277	0.5	0.4	3.497	A
3 - A4226	320	80	366	1794	0.178	320	301	0.3	0.2	2.441	A
4 - Port Road	577	144	0	2914	0.198	578	686	0.3	0.2	1.542	A

2026 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout	1, 2, 3, 4	2.72	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2026 Base	PM	ONE HOUR	16:30	18:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	0	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	425	100.000
3 - A4226		ONE HOUR	✓	439	100.000
4 - Port Road		ONE HOUR	✓	970	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	425
	3 - A4226	0	0	0	439
	4 - Port Road	0	461	509	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	0	0	0	2
	4 - Port Road	0	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.00	0.00	0.0	A	0	0
2 - Port Road West (A4226)	0.37	4.47	0.6	A	390	585
3 - A4226	0.28	2.88	0.4	A	403	604
4 - Port Road	0.36	1.88	0.6	A	890	1335

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	729	1218	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	320	80	383	1359	0.235	319	346	0.0	0.3	3.457	A
3 - A4226	331	83	319	1824	0.181	330	383	0.0	0.2	2.408	A
4 - Port Road	730	183	0	2986	0.245	729	648	0.0	0.3	1.595	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	872	1135	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	382	96	457	1323	0.289	382	414	0.3	0.4	3.823	A
3 - A4226	395	99	382	1784	0.221	394	457	0.2	0.3	2.589	A
4 - Port Road	872	218	0	2986	0.292	872	776	0.3	0.4	1.702	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	1067	1022	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	468	117	560	1273	0.368	467	507	0.4	0.6	4.466	A
3 - A4226	483	121	467	1731	0.279	483	560	0.3	0.4	2.884	A
4 - Port Road	1068	267	0	2986	0.358	1067	950	0.4	0.6	1.876	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	1068	1021	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	468	117	560	1272	0.368	468	508	0.6	0.6	4.474	A
3 - A4226	483	121	468	1731	0.279	483	560	0.4	0.4	2.885	A
4 - Port Road	1068	267	0	2986	0.358	1068	951	0.6	0.6	1.876	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	873	1135	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	382	96	458	1323	0.289	383	415	0.6	0.4	3.832	A
3 - A4226	395	99	383	1784	0.221	395	458	0.4	0.3	2.592	A
4 - Port Road	872	218	0	2986	0.292	873	778	0.6	0.4	1.703	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	0	0	731	1217	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	320	80	383	1359	0.235	320	347	0.4	0.3	3.469	A
3 - A4226	331	83	320	1823	0.181	331	383	0.3	0.2	2.415	A
4 - Port Road	730	183	0	2986	0.245	731	651	0.4	0.3	1.596	A

2026 Base + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout	1, 2, 3, 4	3.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2026 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	196	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	470	100.000
3 - A4226		ONE HOUR	✓	520	100.000
4 - Port Road		ONE HOUR	✓	1403	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	38	158
	2 - Port Road West (A4226)	0	0	0	470
	3 - A4226	129	0	0	391
	4 - Port Road	715	336	352	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	0	0	0	2
	4 - Port Road	0	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.18	3.65	0.2	A	180	270
2 - Port Road West (A4226)	0.41	4.88	0.7	A	431	647
3 - A4226	0.36	3.50	0.6	A	477	716
4 - Port Road	0.53	2.63	1.1	A	1287	1931

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	148	37	517	1340	0.110	147	634	0.0	0.1	3.014	A
2 - Port Road West (A4226)	354	88	412	1347	0.263	352	252	0.0	0.4	3.614	A
3 - A4226	391	98	471	1739	0.225	390	293	0.0	0.3	2.667	A
4 - Port Road	1056	264	97	2947	0.358	1054	764	0.0	0.6	1.899	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	176	44	618	1282	0.137	176	758	0.1	0.2	3.255	A
2 - Port Road West (A4226)	423	106	492	1308	0.323	422	302	0.4	0.5	4.061	A
3 - A4226	467	117	564	1681	0.278	467	350	0.3	0.4	2.965	A
4 - Port Road	1261	315	116	2932	0.430	1260	915	0.6	0.8	2.152	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	216	54	757	1202	0.180	216	928	0.2	0.2	3.650	A
2 - Port Road West (A4226)	517	129	603	1255	0.412	517	370	0.5	0.7	4.870	A
3 - A4226	573	143	690	1603	0.357	572	429	0.4	0.6	3.491	A
4 - Port Road	1545	386	142	2912	0.531	1543	1120	0.8	1.1	2.628	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	216	54	757	1201	0.180	216	929	0.2	0.2	3.652	A
2 - Port Road West (A4226)	517	129	603	1255	0.412	517	370	0.7	0.7	4.883	A
3 - A4226	573	143	691	1602	0.357	573	429	0.6	0.6	3.496	A
4 - Port Road	1545	386	142	2912	0.531	1545	1122	1.1	1.1	2.633	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	176	44	619	1281	0.138	176	760	0.2	0.2	3.260	A
2 - Port Road West (A4226)	423	106	493	1308	0.323	423	302	0.7	0.5	4.074	A
3 - A4226	467	117	566	1680	0.278	468	351	0.6	0.4	2.971	A
4 - Port Road	1261	315	116	2932	0.430	1263	918	1.1	0.8	2.158	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	148	37	518	1340	0.110	148	636	0.2	0.1	3.022	A
2 - Port Road West (A4226)	354	88	413	1347	0.263	354	253	0.5	0.4	3.628	A
3 - A4226	391	98	473	1737	0.225	392	294	0.4	0.3	2.677	A
4 - Port Road	1056	264	97	2947	0.358	1057	768	0.8	0.6	1.907	A

2026 Base + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout	1, 2, 3, 4	6.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2026 Base + Dev	PM	ONE HOUR	16:30	18:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	723	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	390	100.000
3 - A4226		ONE HOUR	✓	380	100.000
4 - Port Road		ONE HOUR	✓	1051	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	123	600
	2 - Port Road West (A4226)	0	0	0	390
	3 - A4226	30	0	0	350
	4 - Port Road	141	439	471	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	1	1
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	3	0	0	2
	4 - Port Road	3	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.75	13.84	3.0	B	663	995
2 - Port Road West (A4226)	0.47	7.42	0.9	A	358	537
3 - A4226	0.31	3.87	0.4	A	349	523
4 - Port Road	0.39	1.97	0.6	A	964	1447

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	544	136	684	1235	0.441	541	128	0.0	0.8	5.164	A
2 - Port Road West (A4226)	294	73	895	1116	0.263	292	330	0.0	0.4	4.364	A
3 - A4226	286	72	741	1563	0.183	285	446	0.0	0.2	2.817	A
4 - Port Road	791	198	23	2991	0.265	790	1004	0.0	0.4	1.635	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	650	162	818	1159	0.561	648	154	0.8	1.3	7.013	A
2 - Port Road West (A4226)	351	88	1071	1031	0.340	350	394	0.4	0.5	5.282	A
3 - A4226	342	85	888	1472	0.232	341	533	0.2	0.3	3.183	A
4 - Port Road	945	236	27	2988	0.316	944	1202	0.4	0.5	1.761	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	796	199	1001	1055	0.754	789	188	1.3	2.9	13.228	B
2 - Port Road West (A4226)	429	107	1308	917	0.468	428	483	0.5	0.9	7.337	A
3 - A4226	418	105	1083	1352	0.310	418	653	0.3	0.4	3.852	A
4 - Port Road	1157	289	33	2983	0.388	1156	1468	0.5	0.6	1.971	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	796	199	1002	1055	0.755	796	188	2.9	3.0	13.843	B
2 - Port Road West (A4226)	429	107	1314	914	0.470	429	483	0.9	0.9	7.425	A
3 - A4226	418	105	1090	1348	0.310	418	654	0.4	0.4	3.874	A
4 - Port Road	1157	289	33	2983	0.388	1157	1475	0.6	0.6	1.971	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	650	162	819	1159	0.561	657	154	3.0	1.3	7.261	A
2 - Port Road West (A4226)	351	88	1080	1027	0.342	352	395	0.9	0.5	5.349	A
3 - A4226	342	85	897	1466	0.233	342	535	0.4	0.3	3.205	A
4 - Port Road	945	236	27	2987	0.316	946	1212	0.6	0.5	1.765	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
1 - Site	544	136	685	1234	0.441	546	129	1.3	0.8	5.246	A
2 - Port Road West (A4226)	294	73	901	1113	0.264	294	331	0.5	0.4	4.400	A
3 - A4226	286	72	748	1559	0.184	286	448	0.3	0.2	2.832	A
4 - Port Road	791	198	23	2991	0.265	792	1011	0.5	0.4	1.636	A

Appendix O - Northern Site Access Roundabout Junction 2029 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Port Road A4226 roundabout (Site Access) Proposed New geometries 2029 ARCADY.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady\2029 Results
Report generation date: 09/07/2019 12:33:28

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	2029 Base					
1 - Site	0.0	0.00	0.00	0.0	0.00	0.00
2 - Port Road West (A4226)	0.7	4.76	0.42	0.6	4.60	0.38
3 - A4226	0.4	3.05	0.29	0.4	2.90	0.28
4 - Port Road	0.4	1.79	0.31	0.6	1.90	0.37
	2029 Base + Dev					
1 - Site	0.3	4.24	0.22	3.3	15.12	0.77
2 - Port Road West (A4226)	0.8	5.19	0.44	1.0	7.85	0.49
3 - A4226	0.6	3.78	0.38	0.5	3.97	0.32
4 - Port Road	1.3	2.88	0.56	0.7	2.01	0.40

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

File summary

File Description

Title	Port Road / A4226 Roundabout Proposed
Location	Rhoose
Site number	
Date	25/05/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\charles.montgomerie
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2029 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2029 Base	PM	ONE HOUR	16:30	18:00	15	✓
D3	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2029 Base + Dev	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2029 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout		1, 2, 3, 4	2.93	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Site	
2	Port Road West (A4226)	
3	A4226	
4	Port Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Site	3.50	9.00	7.0	30.0	60.0	15.0	
2 - Port Road West (A4226)	3.50	12.50	7.0	20.0	70.0	33.0	
3 - A4226	3.50	10.00	21.0	30.0	60.0	33.0	
4 - Port Road	7.00	12.00	22.0	35.0	60.0	30.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Site	0.565	1640
2 - Port Road West (A4226)	0.484	1577
3 - A4226	0.621	2062
4 - Port Road	0.798	3061

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2029 Base	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	0	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	501	100.000
3 - A4226		ONE HOUR	✓	439	100.000
4 - Port Road		ONE HOUR	✓	821	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	501
	3 - A4226	0	0	0	439
	4 - Port Road	0	389	432	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	0	0	0	3
	4 - Port Road	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.00	0.00	0.0	A	0	0
2 - Port Road West (A4226)	0.42	4.76	0.7	A	460	690
3 - A4226	0.29	3.05	0.4	A	403	604
4 - Port Road	0.31	1.79	0.4	A	753	1130

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	617	1274	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	377	94	325	1383	0.273	376	292	0.0	0.4	3.569	A
3 - A4226	331	83	376	1771	0.187	330	325	0.0	0.2	2.497	A
4 - Port Road	618	155	0	2914	0.212	617	705	0.0	0.3	1.567	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	738	1202	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	450	113	388	1351	0.333	450	350	0.4	0.5	3.993	A
3 - A4226	395	99	450	1725	0.229	394	388	0.2	0.3	2.705	A
4 - Port Road	738	185	0	2914	0.253	738	844	0.3	0.3	1.653	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	904	1104	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	552	138	475	1307	0.422	551	428	0.5	0.7	4.752	A
3 - A4226	483	121	551	1663	0.291	483	475	0.3	0.4	3.050	A
4 - Port Road	904	226	0	2914	0.310	904	1034	0.3	0.4	1.790	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	904	1104	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	552	138	476	1307	0.422	552	428	0.7	0.7	4.764	A
3 - A4226	483	121	552	1663	0.291	483	476	0.4	0.4	3.052	A
4 - Port Road	904	226	0	2914	0.310	904	1035	0.4	0.4	1.790	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	739	1202	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	450	113	389	1351	0.333	451	350	0.7	0.5	4.007	A
3 - A4226	395	99	451	1724	0.229	395	389	0.4	0.3	2.710	A
4 - Port Road	738	185	0	2914	0.253	739	846	0.4	0.3	1.654	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	618	1273	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	377	94	325	1383	0.273	378	293	0.5	0.4	3.586	A
3 - A4226	331	83	378	1770	0.187	331	325	0.3	0.2	2.502	A
4 - Port Road	618	155	0	2914	0.212	618	708	0.3	0.3	1.567	A

2029 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout		1, 2, 3, 4	2.76	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2029 Base	PM	ONE HOUR	16:30	18:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	0	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	435	100.000
3 - A4226		ONE HOUR	✓	437	100.000
4 - Port Road		ONE HOUR	✓	1003	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	435
	3 - A4226	0	0	0	437
	4 - Port Road	0	474	529	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	0	0
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	0	0	0	2
	4 - Port Road	0	1	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.00	0.00	0.0	A	0	0
2 - Port Road West (A4226)	0.38	4.60	0.6	A	399	599
3 - A4226	0.28	2.90	0.4	A	401	601
4 - Port Road	0.37	1.90	0.6	A	920	1381

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	754	1205	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	327	82	398	1352	0.242	326	356	0.0	0.3	3.504	A
3 - A4226	329	82	326	1819	0.181	328	398	0.0	0.2	2.413	A
4 - Port Road	755	189	0	2999	0.252	754	654	0.0	0.3	1.603	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	901	1120	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	391	98	475	1314	0.298	391	426	0.3	0.4	3.897	A
3 - A4226	393	98	391	1779	0.221	393	475	0.2	0.3	2.596	A
4 - Port Road	902	225	0	2999	0.301	901	783	0.3	0.4	1.715	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	1104	1004	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	479	120	582	1262	0.380	478	522	0.4	0.6	4.590	A
3 - A4226	481	120	478	1724	0.279	481	582	0.3	0.4	2.894	A
4 - Port Road	1104	276	0	2999	0.368	1104	959	0.4	0.6	1.898	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	1104	1003	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	479	120	582	1262	0.380	479	522	0.6	0.6	4.598	A
3 - A4226	481	120	479	1724	0.279	481	582	0.4	0.4	2.895	A
4 - Port Road	1104	276	0	2999	0.368	1104	960	0.6	0.6	1.898	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	902	1120	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	391	98	476	1314	0.298	392	426	0.6	0.4	3.907	A
3 - A4226	393	98	392	1778	0.221	393	476	0.4	0.3	2.601	A
4 - Port Road	902	225	0	2999	0.301	902	785	0.6	0.4	1.719	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	0	0	755	1204	0.000	0	0	0.0	0.0	0.000	A
2 - Port Road West (A4226)	327	82	398	1352	0.242	328	357	0.4	0.3	3.517	A
3 - A4226	329	82	328	1818	0.181	329	398	0.3	0.2	2.420	A
4 - Port Road	755	189	0	2999	0.252	755	657	0.4	0.3	1.603	A

2029 Base + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout		1, 2, 3, 4	3.59	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	213	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	486	100.000
3 - A4226		ONE HOUR	✓	538	100.000
4 - Port Road		ONE HOUR	✓	1457	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	41	172
	2 - Port Road West (A4226)	0	0	0	486
	3 - A4226	134	0	0	404
	4 - Port Road	736	355	366	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	8	9
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	4	0	0	3
	4 - Port Road	3	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.22	4.24	0.3	A	195	293
2 - Port Road West (A4226)	0.44	5.19	0.8	A	446	669
3 - A4226	0.38	3.78	0.6	A	494	741
4 - Port Road	0.56	2.88	1.3	A	1337	2005

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	160	40	542	1217	0.132	160	653	0.0	0.2	3.402	A
2 - Port Road West (A4226)	366	91	435	1329	0.275	364	267	0.0	0.4	3.726	A
3 - A4226	405	101	493	1689	0.240	404	306	0.0	0.3	2.799	A
4 - Port Road	1097	274	101	2891	0.379	1094	797	0.0	0.6	2.001	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	191	48	648	1161	0.165	191	782	0.2	0.2	3.713	A
2 - Port Road West (A4226)	437	109	520	1287	0.340	436	319	0.4	0.5	4.230	A
3 - A4226	484	121	591	1628	0.297	483	366	0.3	0.4	3.145	A
4 - Port Road	1310	327	120	2875	0.456	1309	954	0.6	0.8	2.298	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	235	59	793	1083	0.217	234	957	0.2	0.3	4.240	A
2 - Port Road West (A4226)	535	134	637	1229	0.436	534	390	0.5	0.8	5.175	A
3 - A4226	592	148	723	1545	0.383	592	448	0.4	0.6	3.770	A
4 - Port Road	1604	401	147	2853	0.562	1602	1167	0.8	1.3	2.875	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	235	59	794	1083	0.217	235	958	0.3	0.3	4.244	A
2 - Port Road West (A4226)	535	134	637	1228	0.436	535	391	0.8	0.8	5.192	A
3 - A4226	592	148	724	1544	0.384	592	448	0.6	0.6	3.779	A
4 - Port Road	1604	401	148	2853	0.562	1604	1169	1.3	1.3	2.882	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	191	48	649	1160	0.165	192	783	0.3	0.2	3.718	A
2 - Port Road West (A4226)	437	109	521	1286	0.340	438	320	0.8	0.5	4.249	A
3 - A4226	484	121	593	1627	0.297	484	366	0.6	0.4	3.155	A
4 - Port Road	1310	327	121	2875	0.456	1312	957	1.3	0.8	2.307	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	160	40	543	1217	0.132	161	656	0.2	0.2	3.408	A
2 - Port Road West (A4226)	366	91	436	1329	0.275	366	267	0.5	0.4	3.745	A
3 - A4226	405	101	496	1687	0.240	405	307	0.4	0.3	2.809	A
4 - Port Road	1097	274	101	2890	0.380	1098	801	0.8	0.6	2.010	A

2029 Base + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	junction	Standard Roundabout		1, 2, 3, 4	6.86	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2029 Base + Dev	PM	ONE HOUR	16:30	18:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Site		ONE HOUR	✓	729	100.000
2 - Port Road West (A4226)		ONE HOUR	✓	404	100.000
3 - A4226		ONE HOUR	✓	390	100.000
4 - Port Road		ONE HOUR	✓	1079	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	126	603
	2 - Port Road West (A4226)	0	0	0	404
	3 - A4226	31	0	0	359
	4 - Port Road	144	450	485	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
From	1 - Site	0	0	1	1
	2 - Port Road West (A4226)	0	0	0	2
	3 - A4226	3	0	0	2
	4 - Port Road	3	1	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Site	0.77	15.12	3.3	C	669	1003
2 - Port Road West (A4226)	0.49	7.85	1.0	A	371	556
3 - A4226	0.32	3.97	0.5	A	358	537
4 - Port Road	0.40	2.01	0.7	A	990	1485

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	549	137	703	1225	0.448	546	131	0.0	0.8	5.278	A
2 - Port Road West (A4226)	304	76	910	1109	0.274	303	338	0.0	0.4	4.459	A
3 - A4226	294	73	754	1555	0.189	293	459	0.0	0.2	2.851	A
4 - Port Road	812	203	23	2990	0.272	811	1023	0.0	0.4	1.651	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	655	164	840	1147	0.572	653	157	0.8	1.3	7.266	A
2 - Port Road West (A4226)	363	91	1089	1022	0.355	363	404	0.4	0.5	5.449	A
3 - A4226	351	88	903	1463	0.240	350	549	0.2	0.3	3.236	A
4 - Port Road	970	243	28	2987	0.325	970	1225	0.4	0.5	1.784	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	803	201	1029	1040	0.772	795	193	1.3	3.2	14.314	B
2 - Port Road West (A4226)	445	111	1329	907	0.490	443	495	0.5	0.9	7.733	A
3 - A4226	429	107	1101	1341	0.320	429	671	0.3	0.5	3.946	A
4 - Port Road	1188	297	34	2982	0.398	1187	1496	0.5	0.7	2.005	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	803	201	1029	1039	0.772	802	193	3.2	3.3	15.117	C
2 - Port Road West (A4226)	445	111	1336	904	0.492	445	495	0.9	1.0	7.846	A
3 - A4226	429	107	1108	1336	0.321	429	673	0.5	0.5	3.970	A
4 - Port Road	1188	297	34	2982	0.398	1188	1504	0.7	0.7	2.006	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	655	164	841	1146	0.572	663	157	3.3	1.4	7.568	A
2 - Port Road West (A4226)	363	91	1099	1018	0.357	365	405	1.0	0.6	5.530	A
3 - A4226	351	88	913	1456	0.241	351	551	0.5	0.3	3.260	A
4 - Port Road	970	243	28	2987	0.325	971	1237	0.7	0.5	1.785	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Site	549	137	704	1224	0.448	551	132	1.4	0.8	5.369	A
2 - Port Road West (A4226)	304	76	916	1106	0.275	305	339	0.6	0.4	4.499	A
3 - A4226	294	73	761	1551	0.189	294	461	0.3	0.2	2.867	A
4 - Port Road	812	203	23	2990	0.272	813	1031	0.5	0.4	1.655	A

Appendix P – A4226 Port Road, B4265, Tredogan Road & Dragonfly Drive Roundabout Junction 2026 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Dragonfly Drive roundabout 2026 ARCADY - JG edit.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady
Report generation date: 06/06/2019 12:07:25

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2026 Base							
1 - A4226	0.3	2.59	0.24	A	0.4	2.71	0.30	A
2 - Tredogan Road (S)	0.0	2.44	0.01	A	0.0	2.59	0.03	A
3 - Dragonfly Drive	0.0	0.00	0.00	A	0.0	0.00	0.00	A
4 - B4265	0.3	2.64	0.24	A	0.3	2.55	0.23	A
5 - Tredogan Road (N)	0.0	2.29	0.04	A	0.1	2.28	0.05	A
	2026 + Dev							
1 - A4226	0.3	2.49	0.23	A	0.5	2.88	0.34	A
2 - Tredogan Road (S)	0.0	2.70	0.02	A	0.0	2.67	0.03	A
3 - Dragonfly Drive	0.0	0.00	0.00	A	0.0	0.00	0.00	A
4 - B4265	0.4	2.79	0.30	A	0.3	2.44	0.20	A
5 - Tredogan Road (N)	0.0	2.34	0.04	A	0.0	2.23	0.04	A

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

File summary

File Description

Title	
Location	
Site number	
Date	31/05/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\Alex.Snartt
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026 Base	AM	ONE HOUR	07:45	09:15	15

2026 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4, 5	2.59	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4226	
2	Tredogan Road (S)	
3	Dragonfly Drive	
4	B4265	
5	Tredogan Road (N)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - A4226	4.00	6.50	26.0	30.0	90.0	8.5	
2 - Tredogan Road (S)	3.50	7.50	15.0	17.5	90.0	18.5	
3 - Dragonfly Drive	3.75	8.75	9.0	17.5	90.0	20.0	
4 - B4265	3.50	7.00	24.0	35.0	90.0	13.0	
5 - Tredogan Road (N)	2.50	7.50	30.0	100.0	90.0	19.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A4226	0.512	1954
2 - Tredogan Road (S)	0.473	1771
3 - Dragonfly Drive	0.466	1728
4 - B4265	0.505	1926
5 - Tredogan Road (N)	0.498	1880

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4226		✓	399	100.000
2 - Tredogan Road (S)		✓	20	100.000
3 - Dragonfly Drive		✓	0	100.000
4 - B4265		✓	389	100.000
5 - Tredogan Road (N)		✓	59	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A4226	2 - Tredogan Road (S)	3 - Dragonfly Drive	4 - B4265	5 - Tredogan Road (N)
From	1 - A4226	0	0	0	345	54
	2 - Tredogan Road (S)	0	0	0	17	3
	3 - Dragonfly Drive	0	0	0	0	0
	4 - B4265	370	19	0	0	0
	5 - Tredogan Road (N)	55	4	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A4226	2 - Tredogan Road (S)	3 - Dragonfly Drive	4 - B4265	5 - Tredogan Road (N)
From	1 - A4226	0	0	0	7	0
	2 - Tredogan Road (S)	0	0	0	4	0
	3 - Dragonfly Drive	0	0	0	0	0
	4 - B4265	6	2	0	0	0
	5 - Tredogan Road (N)	1	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - A4226	0.24	2.59	0.3	A
2 - Tredogan Road (S)	0.01	2.44	0.0	A
3 - Dragonfly Drive	0.00	0.00	0.0	A
4 - B4265	0.24	2.64	0.3	A
5 - Tredogan Road (N)	0.04	2.29	0.0	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	300	17	1834	0.164	300	0.2	2.344	A
2 - Tredogan Road (S)	15	300	1567	0.010	15	0.0	2.318	A
3 - Dragonfly Drive	0	315	1573	0.000	0	0.0	0.000	A
4 - B4265	293	43	1800	0.163	292	0.2	2.386	A
5 - Tredogan Road (N)	44	292	1710	0.026	44	0.0	2.160	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	359	21	1832	0.196	359	0.2	2.442	A
2 - Tredogan Road (S)	18	359	1539	0.012	18	0.0	2.367	A
3 - Dragonfly Drive	0	376	1542	0.000	0	0.0	0.000	A
4 - B4265	350	51	1796	0.195	350	0.2	2.488	A
5 - Tredogan Road (N)	53	350	1680	0.032	53	0.0	2.211	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	439	25	1830	0.240	439	0.3	2.587	A
2 - Tredogan Road (S)	22	439	1500	0.015	22	0.0	2.436	A
3 - Dragonfly Drive	0	461	1501	0.000	0	0.0	0.000	A
4 - B4265	428	63	1791	0.239	428	0.3	2.642	A
5 - Tredogan Road (N)	65	428	1639	0.040	65	0.0	2.286	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	439	25	1830	0.240	439	0.3	2.587	A
2 - Tredogan Road (S)	22	439	1499	0.015	22	0.0	2.436	A
3 - Dragonfly Drive	0	461	1500	0.000	0	0.0	0.000	A
4 - B4265	428	63	1790	0.239	428	0.3	2.642	A
5 - Tredogan Road (N)	65	428	1639	0.040	65	0.0	2.286	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	359	21	1832	0.196	359	0.2	2.443	A
2 - Tredogan Road (S)	18	359	1538	0.012	18	0.0	2.369	A
3 - Dragonfly Drive	0	377	1542	0.000	0	0.0	0.000	A
4 - B4265	350	51	1796	0.195	350	0.2	2.491	A
5 - Tredogan Road (N)	53	350	1680	0.032	53	0.0	2.213	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - A4226	300	17	1834	0.164	301	0.2	2.349	A
2 - Tredogan Road (S)	15	301	1567	0.010	15	0.0	2.319	A
3 - Dragonfly Drive	0	316	1572	0.000	0	0.0	0.000	A
4 - B4265	293	43	1800	0.163	293	0.2	2.388	A
5 - Tredogan Road (N)	44	293	1710	0.026	44	0.0	2.161	A

Appendix Q – A4226 Port Road, B4265, Tredogan Road & Dragonfly Drive Roundabout Junction 2029 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Dragonfly Drive roundabout 2029 ARCADY.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady\2029 Results
Report generation date: 09/07/2019 12:32:47

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2029 Base							
1 - A4226	0.4	2.69	0.26	A	0.4	2.75	0.31	A
2 - Tredogan Road (S)	0.0	2.87	0.02	A	0.0	2.62	0.04	A
3 - Dragonfly Drive	0.0	0.00	0.00	A	0.0	0.00	0.00	A
4 - B4265	0.3	2.65	0.26	A	0.3	2.55	0.23	A
5 - Tredogan Road (N)	0.0	2.33	0.04	A	0.1	2.28	0.05	A
	2029 + Dev							
1 - A4226	0.3	2.55	0.24	A	0.5	2.92	0.35	A
2 - Tredogan Road (S)	0.0	2.74	0.02	A	0.0	2.69	0.04	A
3 - Dragonfly Drive	0.0	0.00	0.00	A	0.0	0.00	0.00	A
4 - B4265	0.5	2.89	0.32	A	0.3	2.47	0.21	A
5 - Tredogan Road (N)	0.0	2.41	0.04	A	0.0	2.23	0.04	A

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

File summary

File Description

Title	
Location	
Site number	
Date	31/05/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\Alex.Snartt
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2029 + Dev	PM	ONE HOUR	16:30	18:00	15

2029 + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	2.72	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4226	
2	Tredogan Road (S)	
3	Dragonfly Drive	
4	B4265	
5	Tredogan Road (N)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - A4226	4.00	6.50	26.0	30.0	90.0	8.5	
2 - Tredogan Road (S)	3.50	7.50	15.0	17.5	90.0	18.5	
3 - Dragonfly Drive	3.75	8.75	9.0	17.5	90.0	20.0	
4 - B4265	3.50	7.00	24.0	35.0	90.0	13.0	
5 - Tredogan Road (N)	2.50	7.50	30.0	100.0	90.0	19.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A4226	0.512	1954
2 - Tredogan Road (S)	0.473	1771
3 - Dragonfly Drive	0.466	1728
4 - B4265	0.505	1926
5 - Tredogan Road (N)	0.498	1880

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4226		✓	610	100.000
2 - Tredogan Road (S)		✓	45	100.000
3 - Dragonfly Drive		✓	0	100.000
4 - B4265		✓	349	100.000
5 - Tredogan Road (N)		✓	66	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1 - A4226	2 - Tredogan Road (S)	3 - Dragonfly Drive	4 - B4265	5 - Tredogan Road (N)
From	1 - A4226	0	0	0	544	66
	2 - Tredogan Road (S)	0	0	0	40	5
	3 - Dragonfly Drive	0	0	0	0	0
	4 - B4265	327	22	0	0	0
	5 - Tredogan Road (N)	61	5	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - A4226	2 - Tredogan Road (S)	3 - Dragonfly Drive	4 - B4265	5 - Tredogan Road (N)
From	1 - A4226	0	0	0	2	0
	2 - Tredogan Road (S)	0	0	0	5	0
	3 - Dragonfly Drive	0	0	0	0	0
	4 - B4265	2	10	0	0	0
	5 - Tredogan Road (N)	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - A4226	0.35	2.92	0.5	A
2 - Tredogan Road (S)	0.04	2.69	0.0	A
3 - Dragonfly Drive	0.00	0.00	0.0	A
4 - B4265	0.21	2.47	0.3	A
5 - Tredogan Road (N)	0.04	2.23	0.0	A

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	459	20	1909	0.241	458	0.3	2.479	A
2 - Tredogan Road (S)	34	458	1484	0.023	34	0.0	2.481	A
3 - Dragonfly Drive	0	492	1494	0.000	0	0.0	0.000	A
4 - B4265	263	53	1853	0.142	262	0.2	2.261	A
5 - Tredogan Road (N)	50	262	1747	0.028	50	0.0	2.121	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	548	24	1907	0.288	548	0.4	2.649	A
2 - Tredogan Road (S)	40	548	1443	0.028	40	0.0	2.566	A
3 - Dragonfly Drive	0	588	1449	0.000	0	0.0	0.000	A
4 - B4265	314	64	1848	0.170	314	0.2	2.346	A
5 - Tredogan Road (N)	59	314	1720	0.034	59	0.0	2.167	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	672	30	1904	0.353	671	0.5	2.918	A
2 - Tredogan Road (S)	50	671	1386	0.036	50	0.0	2.693	A
3 - Dragonfly Drive	0	721	1386	0.000	0	0.0	0.000	A
4 - B4265	384	78	1841	0.209	384	0.3	2.471	A
5 - Tredogan Road (N)	73	384	1684	0.043	73	0.0	2.233	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	672	30	1904	0.353	672	0.5	2.921	A
2 - Tredogan Road (S)	50	672	1386	0.036	50	0.0	2.693	A
3 - Dragonfly Drive	0	721	1385	0.000	0	0.0	0.000	A
4 - B4265	384	78	1841	0.209	384	0.3	2.471	A
5 - Tredogan Road (N)	73	384	1684	0.043	73	0.0	2.233	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	548	24	1907	0.288	549	0.4	2.652	A
2 - Tredogan Road (S)	40	549	1442	0.028	40	0.0	2.567	A
3 - Dragonfly Drive	0	589	1448	0.000	0	0.0	0.000	A
4 - B4265	314	64	1848	0.170	314	0.2	2.347	A
5 - Tredogan Road (N)	59	314	1720	0.034	59	0.0	2.167	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4226	459	20	1909	0.241	460	0.3	2.486	A
2 - Tredogan Road (S)	34	460	1484	0.023	34	0.0	2.482	A
3 - Dragonfly Drive	0	493	1494	0.000	0	0.0	0.000	A
4 - B4265	263	53	1853	0.142	263	0.2	2.266	A
5 - Tredogan Road (N)	50	263	1746	0.028	50	0.0	2.121	A

Appendix R – Waycock Cross Roundabout Junction 2026 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Waycock Cross roundabout 2026 ARCADY_CM.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady
Report generation date: 06/06/2019 11:40:28

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	2026 Base					
1 - Port Road East	0.6	5.18	0.38	0.7	5.49	0.40
2 - Pontrypridd Road	1.7	7.07	0.63	1.7	7.43	0.64
3 - Port Road West	24.6	85.41	1.01	8.0	31.88	0.90
4 - Waycock Road (Five Mile Lane)	1.8	8.01	0.65	4.0	13.85	0.81
	2026 Base + Dev					
1 - Port Road East	2.2	11.85	0.70	0.8	5.77	0.44
2 - Pontrypridd Road	7.0	29.41	0.89	1.5	6.94	0.60
3 - Port Road West	67.0	188.65	1.11	229.0	682.02	1.34
4 - Waycock Road (Five Mile Lane)	4.8	16.61	0.84	4.2	15.11	0.81

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	
Location	
Site number	
Date	03/06/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\Alex.Snartt
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026 Base	AM	ONE HOUR	07:45	09:15	15
D2	2026 Base + Dev	AM	ONE HOUR	07:45	09:15	15
D3	2026 Base	PM	ONE HOUR	16:30	18:00	15
D4	2026 Base + Dev	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	32.05	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Port Road East	
2	Pontrypridd Road	
3	Port Road West	
4	Waycock Road (Five Mile Lane)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Port Road East	3.50	7.20	38.0	20.0	50.0	26.0	
2 - Pontrypridd Road	4.25	7.00	26.0	22.5	55.0	32.0	
3 - Port Road West	3.40	8.00	6.5	15.0	60.0	36.0	
4 - Waycock Road (Five Mile Lane)	3.75	6.00	64.0	20.0	55.0	32.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Port Road East	0.658	1942
2 - Pontrypridd Road	0.622	1907
3 - Port Road West	0.496	1403
4 - Waycock Road (Five Mile Lane)	0.589	1737

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2026 Base	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road East		✓	390	100.000
2 - Pontrypridd Road		✓	800	100.000
3 - Port Road West		✓	933	100.000
4 - Waycock Road (Five Mile Lane)		✓	746	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	47	242	101
	2 - Pontrypridd Road	70	0	270	460
	3 - Port Road West	255	306	0	372
	4 - Waycock Road (Five Mile Lane)	86	366	294	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	2	13	2
	2 - Pontrypridd Road	1	0	2	6
	3 - Port Road West	6	2	0	0
	4 - Waycock Road (Five Mile Lane)	3	8	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road East	0.38	5.18	0.6	A
2 - Pontrypridd Road	0.63	7.07	1.7	A
3 - Port Road West	1.01	85.41	24.6	F
4 - Waycock Road (Five Mile Lane)	0.65	8.01	1.8	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	294	723	1331	0.221	292	0.3	3.463	A
2 - Pontrypridd Road	602	478	1531	0.394	600	0.6	3.856	A
3 - Port Road West	702	473	1131	0.621	696	1.6	8.156	A
4 - Waycock Road (Five Mile Lane)	562	471	1390	0.404	559	0.7	4.316	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	351	865	1242	0.282	350	0.4	4.035	A
2 - Pontrypridd Road	719	572	1471	0.489	718	0.9	4.770	A
3 - Port Road West	839	566	1084	0.774	832	3.2	13.958	B
4 - Waycock Road (Five Mile Lane)	671	563	1336	0.502	669	1.0	5.384	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	429	1043	1130	0.380	429	0.6	5.124	A
2 - Pontrypridd Road	881	699	1391	0.633	878	1.7	6.972	A
3 - Port Road West	1027	693	1020	1.007	972	16.9	49.971	E
4 - Waycock Road (Five Mile Lane)	821	661	1279	0.642	818	1.8	7.763	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	429	1053	1124	0.382	429	0.6	5.184	A
2 - Pontrypridd Road	881	701	1390	0.634	881	1.7	7.066	A
3 - Port Road West	1027	695	1019	1.008	997	24.6	85.413	F
4 - Waycock Road (Five Mile Lane)	821	676	1270	0.647	821	1.8	8.008	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	351	898	1221	0.287	351	0.4	4.143	A
2 - Pontrypridd Road	719	575	1470	0.489	722	1.0	4.834	A
3 - Port Road West	839	569	1082	0.775	922	3.8	31.481	D
4 - Waycock Road (Five Mile Lane)	671	618	1304	0.514	674	1.1	5.731	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	294	731	1326	0.221	294	0.3	3.490	A
2 - Pontrypridd Road	602	481	1529	0.394	604	0.7	3.896	A
3 - Port Road West	702	476	1130	0.622	711	1.7	8.757	A
4 - Waycock Road (Five Mile Lane)	562	480	1385	0.406	563	0.7	4.390	A

2026 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	70.32	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2026 Base + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road East		✓	628	100.000
2 - Pontrypridd Road		✓	828	100.000
3 - Port Road West		✓	1055	100.000
4 - Waycock Road (Five Mile Lane)		✓	990	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	46	490	92
	2 - Pontrypridd Road	50	0	354	424
	3 - Port Road West	280	312	0	463
	4 - Waycock Road (Five Mile Lane)	68	318	604	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	7	6	2
	2 - Pontrypridd Road	2	0	4	6
	3 - Port Road West	10	2	0	0
	4 - Waycock Road (Five Mile Lane)	3	8	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road East	0.70	11.85	2.2	B
2 - Pontrypridd Road	0.89	29.41	7.0	D
3 - Port Road West	1.11	188.65	67.0	F
4 - Waycock Road (Five Mile Lane)	0.84	16.61	4.8	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	473	922	1251	0.378	470	0.6	4.601	A
2 - Pontrypridd Road	623	888	1278	0.488	620	0.9	5.436	A
3 - Port Road West	794	424	1145	0.693	786	2.2	9.783	A
4 - Waycock Road (Five Mile Lane)	745	478	1401	0.532	741	1.1	5.418	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	565	1103	1135	0.497	563	1.0	6.278	A
2 - Pontrypridd Road	744	1063	1172	0.635	741	1.7	8.310	A
3 - Port Road West	948	507	1103	0.860	936	5.3	20.131	C
4 - Waycock Road (Five Mile Lane)	890	570	1345	0.662	887	1.9	7.797	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	691	1311	1002	0.690	687	2.1	11.267	B
2 - Pontrypridd Road	912	1295	1031	0.885	894	6.2	23.722	C
3 - Port Road West	1162	612	1050	1.106	1033	37.3	87.053	F
4 - Waycock Road (Five Mile Lane)	1090	634	1307	0.834	1079	4.6	15.155	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	691	1323	994	0.695	691	2.2	11.850	B
2 - Pontrypridd Road	912	1305	1025	0.890	908	7.0	29.411	D
3 - Port Road West	1162	621	1046	1.111	1043	67.0	188.655	F
4 - Waycock Road (Five Mile Lane)	1090	640	1303	0.836	1089	4.8	16.615	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	565	1158	1100	0.513	569	1.1	6.840	A
2 - Pontrypridd Road	744	1077	1163	0.640	765	1.8	9.482	A
3 - Port Road West	948	521	1096	0.865	1080	34.2	171.157	F
4 - Waycock Road (Five Mile Lane)	890	652	1296	0.687	900	2.3	9.333	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	473	970	1220	0.388	475	0.6	4.840	A
2 - Pontrypridd Road	623	897	1273	0.490	627	1.0	5.603	A
3 - Port Road West	794	428	1143	0.695	921	2.4	26.657	D
4 - Waycock Road (Five Mile Lane)	745	555	1354	0.550	749	1.2	5.989	A

2026 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	16.33	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2026 Base	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road East		✓	393	100.000
2 - Pontrypridd Road		✓	770	100.000
3 - Port Road West		✓	877	100.000
4 - Waycock Road (Five Mile Lane)		✓	978	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	49	280	64
	2 - Pontrypridd Road	93	0	265	412
	3 - Port Road West	218	280	0	379
	4 - Waycock Road (Five Mile Lane)	152	381	445	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	2	5	2
	2 - Pontrypridd Road	1	0	2	2
	3 - Port Road West	4	1	0	1
	4 - Waycock Road (Five Mile Lane)	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road East	0.40	5.49	0.7	A
2 - Pontrypridd Road	0.64	7.43	1.7	A
3 - Port Road West	0.90	31.88	8.0	D
4 - Waycock Road (Five Mile Lane)	0.81	13.85	4.0	B

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	296	828	1337	0.221	295	0.3	3.452	A
2 - Pontrypridd Road	580	591	1505	0.385	577	0.6	3.872	A
3 - Port Road West	660	427	1167	0.566	655	1.3	6.963	A
4 - Waycock Road (Five Mile Lane)	736	442	1458	0.505	732	1.0	4.936	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	353	991	1232	0.287	353	0.4	4.091	A
2 - Pontrypridd Road	692	708	1432	0.483	691	0.9	4.850	A
3 - Port Road West	788	511	1126	0.700	785	2.3	10.435	B
4 - Waycock Road (Five Mile Lane)	879	529	1406	0.626	877	1.6	6.773	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	433	1204	1096	0.395	432	0.6	5.408	A
2 - Pontrypridd Road	848	864	1335	0.635	845	1.7	7.297	A
3 - Port Road West	966	624	1069	0.903	946	7.2	25.893	D
4 - Waycock Road (Five Mile Lane)	1077	639	1340	0.804	1068	3.8	12.845	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	433	1216	1089	0.397	433	0.7	5.486	A
2 - Pontrypridd Road	848	868	1332	0.636	848	1.7	7.428	A
3 - Port Road West	966	626	1068	0.904	962	8.0	31.883	D
4 - Waycock Road (Five Mile Lane)	1077	649	1334	0.807	1076	4.0	13.851	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	353	1009	1221	0.289	354	0.4	4.158	A
2 - Pontrypridd Road	692	714	1428	0.485	695	1.0	4.935	A
3 - Port Road West	788	514	1124	0.701	811	2.4	12.241	B
4 - Waycock Road (Five Mile Lane)	879	544	1396	0.630	888	1.7	7.206	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	296	836	1331	0.222	296	0.3	3.480	A
2 - Pontrypridd Road	580	596	1502	0.386	581	0.6	3.914	A
3 - Port Road West	660	429	1166	0.566	665	1.3	7.243	A
4 - Waycock Road (Five Mile Lane)	736	448	1454	0.506	739	1.0	5.054	A

2026 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3, 4	274.54	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2026 Base + Dev	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road East		✓	452	100.000
2 - Pontrypridd Road		✓	705	100.000
3 - Port Road West		✓	1359	100.000
4 - Waycock Road (Five Mile Lane)		✓	930	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	59	339	54
	2 - Pontrypridd Road	99	0	274	332
	3 - Port Road West	467	341	0	551
	4 - Waycock Road (Five Mile Lane)	117	355	458	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road East	0	2	4	2
	2 - Pontrypridd Road	2	0	1	2
	3 - Port Road West	3	1	0	0
	4 - Waycock Road (Five Mile Lane)	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road East	0.44	5.77	0.8	A
2 - Pontrypridd Road	0.60	6.94	1.5	A
3 - Port Road West	1.34	682.02	229.0	F
4 - Waycock Road (Five Mile Lane)	0.81	15.11	4.2	C

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	340	860	1324	0.257	339	0.3	3.649	A
2 - Pontrypridd Road	531	637	1481	0.358	529	0.6	3.774	A
3 - Port Road West	1023	364	1204	0.850	1003	5.0	16.591	C
4 - Waycock Road (Five Mile Lane)	700	671	1322	0.530	696	1.1	5.712	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	406	1013	1226	0.332	406	0.5	4.387	A
2 - Pontrypridd Road	634	763	1402	0.452	633	0.8	4.670	A
3 - Port Road West	1222	435	1168	1.046	1137	26.2	61.880	F
4 - Waycock Road (Five Mile Lane)	836	765	1265	0.661	833	1.9	8.263	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	498	1168	1126	0.442	496	0.8	5.705	A
2 - Pontrypridd Road	776	932	1297	0.598	774	1.5	6.840	A
3 - Port Road West	1496	532	1119	1.337	1118	120.6	244.736	F
4 - Waycock Road (Five Mile Lane)	1024	774	1260	0.812	1016	4.0	14.229	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	498	1175	1122	0.444	498	0.8	5.766	A
2 - Pontrypridd Road	776	937	1294	0.600	776	1.5	6.945	A
3 - Port Road West	1496	534	1119	1.338	1118	215.1	537.720	F
4 - Waycock Road (Five Mile Lane)	1024	774	1260	0.813	1023	4.2	15.107	C

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	406	1031	1215	0.335	407	0.5	4.468	A
2 - Pontrypridd Road	634	770	1398	0.453	636	0.8	4.742	A
3 - Port Road West	1222	438	1167	1.047	1166	229.0	682.018	F
4 - Waycock Road (Five Mile Lane)	836	783	1255	0.666	844	2.1	8.948	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
1 - Port Road East	340	915	1289	0.264	341	0.4	3.802	A
2 - Pontrypridd Road	531	643	1477	0.359	532	0.6	3.814	A
3 - Port Road West	1023	366	1203	0.851	1197	185.4	623.390	F
4 - Waycock Road (Five Mile Lane)	700	787	1252	0.559	703	1.3	6.592	A

Appendix S – Waycock Cross Roundabout Junction 2029 ARCADY Results Report

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Waycock Cross roundabout 2029 ARCADY.j9
Path: P:\JNY9624 - Model Farm, Nr Cardiff\Transport\Arcady\2029 Results
Report generation date: 09/07/2019 12:34:34

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	2029 Base					
1 - Port Road West (e)	0.6	5.19	0.38	0.7	5.72	0.41
2 - Pontrypridd Road	3.7	12.65	0.79	1.9	8.02	0.66
3 - Port Road West	71.4	226.24	1.14	8.3	33.43	0.91
4 - Waycock Road (Five Mile Lane)	1.8	7.95	0.65	4.4	14.99	0.82
	2029 Base + Dev					
1 - Port Road West (e)	2.4	12.56	0.71	0.8	5.94	0.46
2 - Pontrypridd Road	8.2	34.29	0.91	1.6	7.18	0.61
3 - Port Road West	74.7	209.08	1.13	240.7	715.54	1.35
4 - Waycock Road (Five Mile Lane)	5.1	17.43	0.84	4.4	15.68	0.82

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	
Location	
Site number	
Date	03/06/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EUR\Alex.Snartt
Description	

Units

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

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Base	AM	ONE HOUR	07:45	09:15	15
D2	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15
D3	2029 Base	PM	ONE HOUR	16:30	18:00	15
D4	2029 Base + Dev	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2029 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road West (e) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	74.48	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Port Road West (e)	
2	Pontrypridd Road	
3	Port Road West	
4	Waycock Road (Five Mile Lane)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Port Road West (e)	3.50	7.20	38.0	20.0	50.0	26.0	
2 - Pontrypridd Road	4.25	7.00	26.0	22.5	55.0	32.0	
3 - Port Road West	3.40	8.00	6.5	15.0	60.0	36.0	
4 - Waycock Road (Five Mile Lane)	3.75	6.00	64.0	20.0	55.0	32.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Port Road West (e)	0.658	1942
2 - Pontrypridd Road	0.622	1907
3 - Port Road West	0.496	1403
4 - Waycock Road (Five Mile Lane)	0.589	1737

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Base	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road West (e)		✓	381	100.000
2 - Pontrypridd Road		✓	993	100.000
3 - Port Road West		✓	941	100.000
4 - Waycock Road (Five Mile Lane)		✓	766	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	38	241	102
	2 - Pontrypridd Road	72	0	275	646
	3 - Port Road West	259	311	0	371
	4 - Waycock Road (Five Mile Lane)	88	374	304	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	3	15	2
	2 - Pontrypridd Road	1	0	2	6
	3 - Port Road West	7	2	0	0
	4 - Waycock Road (Five Mile Lane)	4	8	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road West (e)	0.38	5.19	0.6	A
2 - Pontrypridd Road	0.79	12.65	3.7	B
3 - Port Road West	1.14	226.24	71.4	F
4 - Waycock Road (Five Mile Lane)	0.65	7.95	1.8	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	287	739	1303	0.220	286	0.3	3.537	A
2 - Pontrypridd Road	748	485	1519	0.492	744	1.0	4.620	A
3 - Port Road West	708	614	1056	0.671	701	2.0	9.930	A
4 - Waycock Road (Five Mile Lane)	577	478	1384	0.417	574	0.7	4.430	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	343	884	1213	0.282	342	0.4	4.130	A
2 - Pontrypridd Road	893	581	1459	0.612	890	1.5	6.303	A
3 - Port Road West	846	735	994	0.851	834	4.9	21.050	C
4 - Waycock Road (Five Mile Lane)	689	570	1330	0.518	687	1.1	5.587	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	419	1041	1116	0.376	419	0.6	5.156	A
2 - Pontrypridd Road	1093	710	1377	0.794	1085	3.6	11.989	B
3 - Port Road West	1036	897	912	1.136	899	39.2	101.946	F
4 - Waycock Road (Five Mile Lane)	843	623	1299	0.649	840	1.8	7.801	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	419	1046	1113	0.377	419	0.6	5.193	A
2 - Pontrypridd Road	1093	712	1376	0.794	1093	3.7	12.649	B
3 - Port Road West	1036	902	909	1.139	907	71.4	226.240	F
4 - Waycock Road (Five Mile Lane)	843	629	1296	0.651	843	1.8	7.954	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	343	935	1183	0.290	343	0.4	4.294	A
2 - Pontrypridd Road	893	583	1457	0.613	901	1.6	6.567	A
3 - Port Road West	846	744	990	0.854	976	38.8	204.859	F
4 - Waycock Road (Five Mile Lane)	689	657	1279	0.538	691	1.2	6.152	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	287	794	1269	0.226	287	0.3	3.669	A
2 - Pontrypridd Road	748	488	1517	0.493	750	1.0	4.708	A
3 - Port Road West	708	619	1053	0.673	855	2.2	33.962	D
4 - Waycock Road (Five Mile Lane)	577	572	1328	0.434	578	0.8	4.810	A

2029 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road West (e) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	77.80	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road West (e)		✓	642	100.000
2 - Pontrypridd Road		✓	839	100.000
3 - Port Road West		✓	1062	100.000
4 - Waycock Road (Five Mile Lane)		✓	989	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	43	507	92
	2 - Pontrypridd Road	51	0	351	437
	3 - Port Road West	294	317	0	451
	4 - Waycock Road (Five Mile Lane)	69	321	599	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	8	6	2
	2 - Pontrypridd Road	2	0	4	6
	3 - Port Road West	10	2	0	0
	4 - Waycock Road (Five Mile Lane)	3	9	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road West (e)	0.71	12.56	2.4	B
2 - Pontrypridd Road	0.91	34.29	8.2	D
3 - Port Road West	1.13	209.08	74.7	F
4 - Waycock Road (Five Mile Lane)	0.84	17.43	5.1	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	483	924	1247	0.388	481	0.6	4.685	A
2 - Pontrypridd Road	632	897	1272	0.496	628	1.0	5.552	A
3 - Port Road West	800	434	1139	0.702	790	2.3	10.092	B
4 - Waycock Road (Five Mile Lane)	745	493	1387	0.537	740	1.1	5.526	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	577	1105	1131	0.510	576	1.0	6.464	A
2 - Pontrypridd Road	754	1073	1165	0.648	751	1.8	8.630	A
3 - Port Road West	955	519	1096	0.871	941	5.7	21.517	C
4 - Waycock Road (Five Mile Lane)	889	587	1330	0.668	886	2.0	8.040	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	707	1309	1000	0.707	702	2.3	11.884	B
2 - Pontrypridd Road	924	1307	1022	0.903	903	7.1	26.397	D
3 - Port Road West	1169	626	1042	1.122	1028	41.0	94.565	F
4 - Waycock Road (Five Mile Lane)	1089	646	1295	0.841	1078	4.8	15.827	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	707	1321	992	0.712	706	2.4	12.562	B
2 - Pontrypridd Road	924	1318	1016	0.909	919	8.2	34.289	D
3 - Port Road West	1169	636	1037	1.128	1035	74.7	209.076	F
4 - Waycock Road (Five Mile Lane)	1089	651	1292	0.843	1088	5.1	17.428	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	577	1157	1097	0.526	582	1.1	7.057	A
2 - Pontrypridd Road	754	1088	1156	0.653	779	1.9	10.173	B
3 - Port Road West	955	537	1087	0.878	1073	45.2	202.542	F
4 - Waycock Road (Five Mile Lane)	889	664	1283	0.693	900	2.3	9.641	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	483	986	1207	0.400	485	0.7	4.998	A
2 - Pontrypridd Road	632	906	1267	0.499	635	1.0	5.736	A
3 - Port Road West	800	439	1136	0.704	970	2.5	44.833	E
4 - Waycock Road (Five Mile Lane)	745	597	1324	0.562	749	1.3	6.300	A

2029 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road West (e) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	17.18	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2029 Base	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road West (e)		✓	400	100.000
2 - Pontrypridd Road		✓	794	100.000
3 - Port Road West		✓	871	100.000
4 - Waycock Road (Five Mile Lane)		✓	990	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	50	284	66
	2 - Pontrypridd Road	94	0	268	432
	3 - Port Road West	221	287	0	363
	4 - Waycock Road (Five Mile Lane)	154	386	450	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	2	6	2
	2 - Pontrypridd Road	1	0	2	2
	3 - Port Road West	4	1	0	1
	4 - Waycock Road (Five Mile Lane)	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road West (e)	0.41	5.72	0.7	A
2 - Pontrypridd Road	0.66	8.02	1.9	A
3 - Port Road West	0.91	33.43	8.3	D
4 - Waycock Road (Five Mile Lane)	0.82	14.99	4.4	B

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	301	840	1320	0.228	300	0.3	3.528	A
2 - Pontrypridd Road	598	599	1498	0.399	595	0.7	3.976	A
3 - Port Road West	656	444	1159	0.566	651	1.3	7.018	A
4 - Waycock Road (Five Mile Lane)	745	450	1453	0.513	741	1.0	5.031	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	360	1006	1215	0.296	359	0.4	4.206	A
2 - Pontrypridd Road	714	718	1424	0.501	712	1.0	5.048	A
3 - Port Road West	783	531	1115	0.702	779	2.3	10.584	B
4 - Waycock Road (Five Mile Lane)	890	539	1400	0.636	887	1.7	6.989	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	440	1221	1078	0.409	439	0.7	5.628	A
2 - Pontrypridd Road	874	875	1326	0.659	871	1.9	7.848	A
3 - Port Road West	959	649	1057	0.908	939	7.4	26.798	D
4 - Waycock Road (Five Mile Lane)	1090	650	1333	0.818	1080	4.1	13.732	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	440	1234	1070	0.412	440	0.7	5.719	A
2 - Pontrypridd Road	874	880	1323	0.661	874	1.9	8.018	A
3 - Port Road West	959	652	1055	0.909	955	8.3	33.432	D
4 - Waycock Road (Five Mile Lane)	1090	661	1327	0.821	1089	4.4	14.986	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	360	1026	1202	0.299	361	0.4	4.284	A
2 - Pontrypridd Road	714	725	1420	0.503	717	1.0	5.149	A
3 - Port Road West	783	535	1113	0.703	806	2.5	12.556	B
4 - Waycock Road (Five Mile Lane)	890	555	1390	0.640	900	1.8	7.501	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	301	849	1314	0.229	302	0.3	3.557	A
2 - Pontrypridd Road	598	604	1495	0.400	599	0.7	4.023	A
3 - Port Road West	656	447	1157	0.567	660	1.3	7.312	A
4 - Waycock Road (Five Mile Lane)	745	456	1449	0.514	748	1.1	5.158	A

2029 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - Port Road West (e) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Waycock Road (Five Mile Lane) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	286.10	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2029 Base + Dev	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Port Road West (e)		✓	466	100.000
2 - Pontrypridd Road		✓	717	100.000
3 - Port Road West		✓	1367	100.000
4 - Waycock Road (Five Mile Lane)		✓	940	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	61	349	56
	2 - Pontrypridd Road	99	0	278	340
	3 - Port Road West	467	346	0	554
	4 - Waycock Road (Five Mile Lane)	124	362	454	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Port Road West (e)	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
From	1 - Port Road West (e)	0	2	4	2
	2 - Pontrypridd Road	1	0	1	2
	3 - Port Road West	3	1	0	0
	4 - Waycock Road (Five Mile Lane)	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Port Road West (e)	0.46	5.94	0.8	A
2 - Pontrypridd Road	0.61	7.18	1.6	A
3 - Port Road West	1.35	715.54	240.7	F
4 - Waycock Road (Five Mile Lane)	0.82	15.68	4.4	C

Main Results for each time segment

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	351	866	1321	0.266	349	0.4	3.702	A
2 - Pontrypridd Road	540	643	1479	0.365	538	0.6	3.815	A
3 - Port Road West	1029	371	1200	0.857	1008	5.2	17.212	C
4 - Waycock Road (Five Mile Lane)	708	674	1320	0.536	703	1.1	5.793	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	419	1018	1223	0.343	418	0.5	4.472	A
2 - Pontrypridd Road	645	770	1400	0.461	643	0.8	4.754	A
3 - Port Road West	1229	444	1164	1.056	1137	28.3	65.851	F
4 - Waycock Road (Five Mile Lane)	845	765	1266	0.668	842	2.0	8.423	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	513	1173	1124	0.457	512	0.8	5.872	A
2 - Pontrypridd Road	789	940	1293	0.610	787	1.5	7.065	A
3 - Port Road West	1505	543	1115	1.350	1114	126.2	258.104	F
4 - Waycock Road (Five Mile Lane)	1035	771	1262	0.820	1026	4.2	14.696	B

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	513	1180	1119	0.459	513	0.8	5.940	A
2 - Pontrypridd Road	789	945	1290	0.612	789	1.6	7.182	A
3 - Port Road West	1505	545	1114	1.351	1114	224.1	562.684	F
4 - Waycock Road (Five Mile Lane)	1035	771	1262	0.820	1034	4.4	15.675	C

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	419	1036	1212	0.346	420	0.5	4.557	A
2 - Pontrypridd Road	645	778	1395	0.462	647	0.9	4.833	A
3 - Port Road West	1229	447	1163	1.057	1162	240.7	715.543	F
4 - Waycock Road (Five Mile Lane)	845	781	1256	0.673	854	2.1	9.137	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Port Road West (e)	351	919	1286	0.273	351	0.4	3.855	A
2 - Pontrypridd Road	540	649	1475	0.366	541	0.6	3.857	A
3 - Port Road West	1029	373	1199	0.858	1194	199.5	663.926	F
4 - Waycock Road (Five Mile Lane)	708	785	1254	0.564	711	1.3	6.669	A

Appendix 5.1
APPRAISAL OF LANDSCAPE EFFECTS METHODOLOGY

This Appraisal of Landscape Effect has been undertaken with reference to best practice, as outlined in the following published guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition Landscape Institute and the Institute of Environmental Management and Assessment GLVIA3, (2013);
- GLVIA3 Statement of Clarification 1/13;
- An Approach to Landscape Character Assessment, Natural England (2014);
- Photography and Photomontage in Landscape and Visual Impact Assessment Advice Note 01/11, Landscape Institute (2011); and
- Planning Policy Wales LANDMAP Guidance Note 1: LANDMAP and Special Landscape Areas (2016) and
- Planning Policy Wales LANDMAP Guidance Note 3: (2013).

GLVIA3 states within paragraph 1.1 that *"Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity."*GLVIA3 also states within paragraph 1.17 that when identifying landscape and visual effects there is a *"need for an approach that is in proportion to the scale of the project that is being assessed and the nature of the likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional."*

GLVIA3 recognises within paragraph 2.23 that "*professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement of some relatively objective matters much of the assessment must rely on qualitative judgements*"[3] undertaken by a landscape consultant or a Chartered Member of the Landscape Institute (CMLI).

The effects on cultural heritage and ecology are not considered within this report.

Study Area

The study area for the report was taken to be a 5km radius from the site. However, the main focus of the assessment was taken as a radius of 2km from the site as it 1 Para 1.1, Page 4, GLVIA, 3rd Edition 2 Para 1.17, Page 9, GLVIA, 3rd Edition 3 Para 2.23, Page 21, GLVIA, 3rd Edition 2 is considered that beyond this distance, even with good visibility, the proposals would not generally be perceptible in the landscape.

Effects Assessed

Landscape and visual effects are assessed through professional judgements on the sensitivity of landscape elements, landscape character, visual receptors and representative viewpoints combined with the predicted magnitude of change arising from the proposals.

The landscape and visual effects have been assessed in the following sections:

- Effects on landscape elements;
- Effects on landscape character; and

- Effects on visual amenity.

Sensitivity is defined in GLVIA3 as *"a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor."*

Various factors in relation to the susceptibility and value of landscape elements, landscape character, visual receptors or representative viewpoints are considered below and are cross referenced to determine the overall sensitivity as shown in Table 1:

Table 1: Overall sensitivity of landscape and visual receptors

SUSCEPTIBILITY	VALUE		
	HIGH	**MEDIUM**	**LOW**
	High	High	Medium
	High	Medium	Medium
	Medium	Medium	Low

Magnitude of change is defined in GLVIA3 as "*a term that combines judgements about the size and scale of the effect, the extent over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration."* Various factors contribute to the magnitude of change on landscape elements, landscape character, visual receptors and representative viewpoints.

The sensitivity of the landscape and visual receptor and the magnitude of change resulting from the Proposed Development are cross referenced in Table 1 to determine the degree of landscape and visual effects.

EFFECTS ON LANDSCAPE ELEMENTS

The effects on landscape elements are limited to the site and include the direct physical change to the fabric of the land, such as the removal of woodland, hedgerows or grassland to allow for the proposed development.

Sensitivity of Landscape Elements

Sensitivity is determined by a combination of the value that is attached to a landscape element and the susceptibility of the landscape element to changes that would arise as a result of the proposed development – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed as high, medium or low.

The criteria for assessing the value of landscape elements and landscape character is shown in Table 2:

Table 2, Criteria for assessing landscape value

HIGH	Designated areas at an International, National or Local scale (including but not limited to World Heritage Sites, National Parks, AONBs, SLAs, etc.) considered to be an important component of the country's character experienced by a high number of people. Landscape condition is good and components are generally maintained to a high standard. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has an elevated level of tranquillity. Rare or distinctive landscape elements and features are key components that contribute to the landscape character of the area.

MEDIUM	No formal designation but (typically) rural landscapes, important to the setting of towns and villages and also considered to be a distinctive component of the national or local landscape character experienced by a large proportion of its population. Landscape condition is fair and components are generally well maintained. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has a moderate level of tranquillity.] Rare or distinctive landscape elements and features are notable components that contribute to the character of the area.
LOW	No formal designations but a landscape of local relevance (including but not limited to public or semi-public open spaces, village greens of allotments) and also green infrastructure and open spaces within residential areas likely to be visited and valued by the local community. Landscape condition may be poor and components poorly maintained or damaged. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has limited levels of tranquillity. Rare or distinctive elements and features are not notable components that contribute to the landscape character of the area.

The criteria for assessing the susceptibility of landscape elements and landscape character is shown in Table 3:

Table 3, Criteria for assessing landscape susceptiblity	
HIGH	Scale of enclosure – landscapes with a low capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with no or little existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are not easily replaced or substituted (e.g. ancient woodland, mature trees, historic parkland, etc.). Nature of existing features – landscapes where detracting features, major infrastructure or industry is not present or where present has a limited influence on landscape character.
MEDIUM	Scale of enclosure – landscapes with a medium capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with some existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are easily replaced or substituted. Nature of existing features – landscapes where detracting features, major infrastructure or industry is present and has a noticeable influence on landscape character.
LOW	Scale of enclosure – landscapes with a high capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with extensive existing reference or context to the type of development being proposed. Nature of existing features – landscapes where detracting features or major infrastructure is present and has a dominating influence on the landscape.

Various factors in relation to the susceptibility and value of landscape elements are assessed and cross referenced to determine the overall sensitivity as shown in Table 1.

Magnitude of Change on Landscape Elements

Professional judgement has been used to determine the magnitude of change on individual landscape elements within the site as shown in Table 4:

Table 4, Criteria for assessing magnitude of change for landscape elements	
HIGH	Total loss of a landscape element.
MEDIUM	Partial loss or alteration to part of a landscape element.
LOW	Minor loss or alteration to part of a landscape element.
NEGLIGIBLE	No loss or very limited alteration to part of a landscape element.

EFFECTS ON LANDSCAPE CHARACTER

Landscape character is defined as the "*distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse***.**" The assessment of effects on landscape character considers how the introduction of new landscape elements physically alters the landform, landcover, landscape pattern and perceptual attributes of the site or how visibility of the Proposed Development changes the way in which the landscape character is perceived.

Sensitivity of Landscape Character

Sensitivity is determined by a combination of the value that is attached to a landscape and the susceptibility of the landscape to changes that would arise as a result of the proposed development – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed as high, medium or low.

The criteria for assessing landscape character value are shown in Table 2.

The criteria for assessing landscape character susceptibility are shown in Table 3.

The overall sensitivity of landscape character is determined through cross referencing the value and susceptibility of landscape character as shown in Table 1.

Magnitude of Change on Landscape Character

Professional judgement has been used to determine the magnitude change on landscape character as shown in Table 5:

Table 5. Criteria for magnitude of change for landscape character	
HIGH	Introduction of major elements into the landscape or some major change to the scale, landform, land cover or pattern of the landscape.
MEDIUM	Introduction of some notable elements into the landscape or some notable change to the scale, landform, landcover or pattern of the landscape.
LOW	Introduction of minor new elements into the landscape or some minor change to the scale, landform, landcover or pattern of the landscape.
NEGLIGIBLE	No notable or appreciable introduction of new elements into the landscape or change to the scale, landform, landcover or pattern of the landscape

EFFECTS ON VISUAL AMENITY

The effects on visual amenity consider the changes in views arising from the proposed development in relation to visual receptors including settlements, 18/09/2015 | A.0292 Page |7 residential properties, transport routes, recreational facilities and attractions; and on representative viewpoints or specific locations within the study area as agreed with the Local Planning Authority. Sensitivity of Visual Receptors

Sensitivity is determined by a combination of the value that is attached to a view and the susceptibility of the receptor to changes in that view that would arise as a result of the proposed development – see pages 113-114 of GLVIA3. Both value and susceptibility are assessed as high, medium or low.

The value attached to a view includes a recognition of value through landscape designations, indicators of value attached to views by visitors such as the inclusion on maps or reference within guidebooks, provision of facilities, presence of interpretation boards, etc.

The criteria for assessing visual susceptibility is shown in Table 6:

Table 6. Criteria for assessing visual susceptibility	
HIGH	Includes occupiers of residential properties and people engaged in recreational activities in the countryside such as using public rights of way.
MEDIUM	Includes people engaged in outdoor sporting activities and people travelling through the landscape on minor roads and trains.
LOW	Includes people at place of work e.g. industrial and commercial premises and people travelling through the landscape on A roads and motorways.

Magnitude of Change on Visual Amenity

Professional judgement has been used to determine the magnitude change on landscape character as shown in Table 7:

Table 7. Criteria for magnitude of change for visual receptors	
HIGH	Major change in the view that has a defining influence on the overall view with many visual receptors affected.
MEDIUM	Some change in the view that is clearly visible and forms an important but not defining element in the view.
LOW	Some change in the view that is not prominent with few visual receptors affected.
NEGLIGIBLE	No notable change in the view.

DEGREE OF EFFECT FOR LANDSCAPE AND VISUAL RECEPTORS

The degree of effects is professional judgements based upon all the factors in terms of landscape and visual sensitivity and the magnitude of change arising from the proposed development. The cross referencing of landscape and visual sensitivity and the magnitude of change determines the overall degree of effects as shown in Table 8:

Table 8. Degree of landscape and visual effects					
		Magnitude of Change			
		HIGH	**MEDIUM**	**LOW**	**NEGLIGIBLE**
Sensitivity	**HIGH**	Substantial	Major	Moderate	Minor

	MEDIUM	Major	Moderate	Minor	Negligible
	LOW	Moderate	Minor	Negligible	Negligible

NATURE OF EFFECTS

GLVIA3 includes an entry that states "*effects can be described as positive or negative (or in some cases neutral) in their consequences for views and visual amenity*." GLVIA3 does not, however, state how negative or positive effects should be assessed and therefore becomes a matter of subjective judgement rather than reasoned criteria. Due to inconsistencies with the assessment of negative or positive effects a precautionary approach is applied to this ALVE that assumes all landscape and visual effects are considered to be negative or adverse unless otherwise stated.

BUILT HERITAGE STATEMENT

Site Address

Parc Busnes Porth Cymru
Land at Model Farm
Rhoose,
Vale of Glamorgan

On behalf of

Legal & General

Date

July 2019

Author:

James Edwards BSc (Hons), DipTP, MSc, MRTPI, IHBC

Approved by:
Jonathan Smith BA (Hons) MA PGCE PGDip MCIfA IHBC

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EXECUTIVE SUMMARY

1 This Built Heritage Statement has been researched and prepared by CgMs Heritage, part of RPS, on behalf of Legal & General. It has been prepared to assess the potential impacts upon the historic built environment arising from the development of a proposed business park on land at Model Farm, Port Road, Rhoose, in the Vale of Glamorgan. This report accompanies an outline planning application for the business park.

2 Whilst the Site includes no built heritage assets, it has been demonstrated in this report that the proposed development has the potential to impact upon the significance of six designated built heritage assets and two built heritage assets considered to be worthy of non-designated heritage asset status. Any potential impacts on these heritage assets will arise through development within their settings. Specifically, the Grade II separately listed Lower and Upper Porthkerry Farmhouses south of the Site, will experience a moderate degree of harm to its significance. A former stables block associated with Upper Porthkerry Farmhouse and identified as a non-designated heritage asset will experience a minor degree of harm. Some distance south of the Site, the Grade II* listed Church Farmhouse and separately listed Outbuilding to Church Farmhouse (Grade II*), will experience a minor degree of harm respectively. The Grade II* Church of St Curig, south of the Site, will experience a negligible degree of harm from the proposed development. The Porthkerry Conservation Area will experience a moderate degree of harm. The Porthkerry Viaduct will experience a negligible degree of harm to its significance. The Former Egerton Grey House Hotel, considered worthy of non-designated heritage asset status, will experience of minor degree of harm to its significance.

3 Several mitigation measures have been set out in the report which may reduce the identified harm to the significance of the above built heritage assets. This includes a robust planting buffer along the boundary of the proposed business park and the adjacent proposed Porthkerry Country Park extension. It is unlikely however that the identified harm will be removed in entirety.

4 This Statement refers to the relevant legislative framework contained within the Planning (Listed Buildings and Conservation Areas) Act 1990 and the Historic Environment (Wales) Act 2016, as well as national and local planning policy. In

addition, relevant Cadw guidance has been consulted to inform the judgements made.

5 Relevant information, including the listing citations for the identified heritage assets have also been consulted in preparing this Built Heritage Statement. The conclusions reached in this report are the result of detailed historic research, a walkover survey of the Site and publicly accessible locations in the surrounding area, map studies and the application of professional judgement.

6 The findings of this Statement are based on the known conditions at the time of writing and all findings and conclusions are time limited to no more than three years from the date of this report. All maps, plans and photographs are for illustrative purposes only.

1.0 INTRODUCTION

1.1 This Built Heritage Statement has been researched and prepared by CgMs Heritage, part of RPS, on behalf of Legal & General to assess the potential impacts on the historic built environment arising from the proposed business park development on land at Model Farm, Port Road, Rhoose, in the Vale of Glamorgan (hereafter referred to as "the Site"). The Site is centred on NGR ST 07740 67443 (Fig.1).

1.2 Development at the Site has the potential to have an impact on the significance of several surrounding built heritage assets which may arise from development within the settings of these assets. A 1km search radius has been used to identify built heritage assets that may be affected by the indicative proposal. Within this search area there are nine Grade II listed buildings and structures and three Grade II* listed buildings. There are also two Conservation Areas within this search radius. A number of buildings are also identified as being worthy of non-designated heritage asset status in the Vale of Glamorgan Council, County Treasures List (2007). Several Scheduled Monuments also lie within the search area however these are considered within the separate Archaeological Desk Based Assessment prepared by CgMs.

1.3 This Statement refers to the relevant legislative framework contained within the Planning (Listed Buildings and Conservation Areas) Act 1990, the Historic Environment (Wales) Act 2016, as well as national and local planning policy. In addition, relevant Cadw guidance has been consulted to inform the judgements made. Relevant information, including the listing citations for the relevant heritage assets, has also been consulted in preparing this Built Heritage Statement. The conclusions reached in this report are the result of detailed historic research, a walkover survey of the Site and publicly accessible locations in the surrounding area, map studies and the application of professional judgement.

1.4 The findings of this report are based on known conditions at the time of writing. All findings and conclusions are time limited to no more than three years from the date of this report. Maps, plans and photographs are for illustrative purposes only.

2.0 LEGISLATIVE AND PLANNING POLICY FRAMEWORK

Legislation

The Historic Environment (Wales) Act 2016

2.1 The Historic Environment (Wales) Act 2016 was passed by the National Assembly for Wales on 9th February 2016 and became law after receiving Royal Assent on 21st March 2016. This Act amends the two pieces of UK legislation, the Ancient Monument and Archaeological Areas Act 1979 and the Planning (Listed Buildings and Conservation Areas) Act 1990, which currently provide the framework for the protection and management for the Welsh historic environment. These amendments predominantly relate to the transference of a number of existing powers, including the designation of scheduled monuments and listed buildings, from the Secretary of State to Welsh Ministers. The key provisions of the Act can be summarised as the following:

- amendments to the procedure for determining scheduled monument consent;
- provision for Welsh Ministers to enter into a Heritage Partnership Agreement with the owner of a scheduled monument, or any associated land, within Wales;
- provision for Welsh Ministers to compile and maintain a register of historic parks and gardens of special historic interest; and
- provision for Welsh Ministers and/or local authorities to enter into a Heritage Partnership Agreement with the owner of a listed building, or part of such a building, situated in Wales.

2.2 The Act also contains new stand-alone provisions for the compilation of a list of historic place names in Wales; for the compilation of an historic environment record for each local authority area in Wales; and for the establishment of an Advisory Panel for the Welsh Historic Environment.

Planning (Listed Buildings and Conservation Areas) Act 1990 and the Planning (Listed Buildings and Conservation Areas) (Wales) (Amendment No.2) Regulations 2017

2.3 Where any development may affect designated heritage assets, there is a legislative framework in place to ensure that due regard is given to its impact on the historic environment. Notwithstanding the amendments made in the Historic Environment (Wales) Act 2016, this extends from primary legislation under the Planning (Listed Buildings and Conservation Areas) Act 1990.

2.4 Section 66(1) states that special regard must be given by the planning authority in the exercise of planning functions to the desirability of preserving listed buildings and their setting.

2.5 The meaning and effect of these duties have been considered by the courts in recent cases, including the Court of Appeal decision in relation to Barnwell Manor Wind Energy v East Northamptonshire District Council [2014] EWCA Civ 137.

2.6 The Court agreed with the High Court's judgement that Parliament's intention in enacting Section 66(1) was that decision-makers should give 'considerable importance and weight' to the desirability of preserving (i.e. keeping from harm) the setting of listed buildings.

2.7 Additionally, Section 72 of the 1990 Act states that in exercising all planning functions, local planning authorities must pay special attention to the desirability of preserving or enhancing conservation areas, with this duty applying to any buildings or land within a conservation area.

2.8 The mechanisms for implementation of the 1990 UK Act were updated for a Welsh context in **The Planning (Listed Buildings and Conservation Areas) (Wales) Regulations 2012**. These Regulations have most recently been amended in the Planning (Listed Buildings and Conservation Areas) (Wales) (Amendment No.2) Regulations 2017. In this most recent amendment, the requirement that an application for listed building consent is accompanied by a Design and Access statement has been replaced with the requirement that an application for listed building or conservation area consent is accompanied by a heritage impact statement.

Planning Policy

Planning Policy Wales (Edition 10, December 2018)

2.9 Version 10 of Planning Policy Wales (PPW) was published in December 2018. This sets out the land use planning policies of the Welsh Government and is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in circulars and policy clarification letters.

2.10 Chapter 6 of PPW, entitled 'Distinctive and Natural Places' includes policy for planning authorities, property owners, developers and others regarding the conservation and investigation of heritage assets.

2.11 Paragraph 6.1.2 identifies heritage assets as including listed buildings, conservation areas, historic assets of special local interest, historic parks and gardens, townscapes, historic landscapes, World Heritage Sites and archaeological remains (including scheduled monuments).

2.12 Paragraph 6.1.6 sets out the Welsh Government's objectives to protect, manage and conserve the historic environment, which the document identifies as a finite and non-renewable resource and a vital and integral part of the historical and cultural identity of Wales. The Welsh Government's objectives in this field are to:

- Protect the Outstanding Universal Value of World Heritage Sites;
- Conserve archaeological remains, both for their own sake and for their role in education, leisure and the economy;
- Safeguard the character of historic buildings and manage change so that their special architectural and historic interest is preserved;
- Preserve or enhance the character or appearance of conservation areas, whilst the same time helping them remain vibrant and prosperous;
- Preserve the special interest of sites on the register of historic parks and gardens; and
- Protect areas on the register of historic landscapes in Wales.

2.13 Paragraph 6.1.7 reinforces that the planning system has an important role to play in the protection, conservation and enhancement of the significance of heritage

assets, which may include consideration of setting. This paragraph emphasises that any change that impacts on a heritage asset or its setting should be managed in a sensitive and sustainable way.

2.14 Paragraph 6.1.8 suggests that heritage issues should be considered at an early stage in the planning process, in both the formulation of planning policies and the exercise of development management functions.

2.15 Paragraph 6.1.9 goes on to state that any planning decisions must fully consider the impact on the historic environment and on the significance of individual heritage assets and their contribution to the character of place.

2.16 Paragraph 6.1.10 states that there should be a general presumption in favour of the preservation or enhancement of a listed building and its setting, which might extend beyond its curtilage. It advises that for any development proposal affecting a listed building or its setting, the primary material consideration is the statutory requirement to have special regard to the desirability of preserving the building, its setting or any features of special architectural or historic interest which it possesses.

2.17 Concerning conservation areas, Paragraph 6.1.14 states that there should be a general presumption in favour of the preservation or enhancement of the character or appearance of a conservation area or its setting. Conversely, Paragraph 6.1.15 states that there will be a strong presumption against the granting of planning permission for developments, including advertisements, which damage the character or appearance of a conservation area or its setting to an unacceptable level. This section does however note that in exceptional cases, the presumption may be overridden in favour of development considered desirable on public interest grounds.

2.18 Paragraph 6.1.16 stresses that preservation or enhancement of a conservation area can be achieved by a development which either makes a positive contribution to an area's character or appearance or leaves them unharmed. Additionally, it stresses that mitigation measures can be considered which could result in an overall neutral or positive impact of a proposed development in a conservation area.

2.19 Paragraph 6.1.29 concerns the impact of proposals on non-designated heritage assets. It states that planning authorities may develop lists of historic assets of

local interest that do not have statutory protection. Where a planning authority chooses to identify historic assets of special local interest, policies for the conservation and enhancement of those assets must be included in the development plan and will be a material consideration when determining an application.

Planning Guidance

Technical Advice Note (TAN) 24: The Historic Environment (2017)

2.20 TAN 24 is one of a suite of new documents designed to aid the application of PPW. TAN 24 was adopted in May 2017 and supersedes pre-existing Welsh Office Circular concerning the historic environment.

2.21 TAN 24 provides specific guidance on how the planning system considers each aspect of the historic environment during development plan preparation and decision making on planning and Listed Building (LBC) applications. It also sets out that it is for an applicant to provide the LPA with sufficient information to allow the assessment of their proposal in respect of historic assets, irrespective of their designation, which may take the form of a heritage impact statement.

Technical Advice Note (TAN) 12: Design (2016)

2.22 TAN 12 provides advice on the good design of new development. Alongside promoting sustainability, it sets out that the context of a development should be appraised, including the historic environment, to inform design. Section 5.6 Historic Environment highlights that design should have regard to the desirability of preserving or enhancing the character and appearance of areas of special character, such as conservation areas. It also highlights that specialists are needed to accurately assess areas of architectural or historic character.

Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Conservation Principles) (2011)

2.23 Conservation Principles provides the basis upon which Cadw discharges certain statutory duties on behalf of the Welsh Ministers. It is also for use by others (including owners, developers and other public bodies) to assess the potential impacts of development proposals on the significance of historic assets and assist

in the decision-making process where the historic environment is affected by the planning process.

2.24 The document echoes PPW in the emphasis it places upon the importance of understanding significance as a means to properly assess the effects of change to heritage assets. The guidance describes a range of heritage values which enable the significance of assets to be established systematically, with the four main component values being:

Evidential value: which derives from those elements of an historic asset that can provide evidence about past human activity, including its physical remains or historic fabric. These may be visible and relatively easy access, or may be buried below ground, under water or be hidden by later fabric. These remains provide the primary evidence for when and how an historic asset was made or built, what it was used for and how it has changed over time.

Historical value: derives from the ways an historic asset might illustrate a particular aspect of past life or be associated with a notable family, person, event or movement. These illustrative or associative values of an historic asset may be less tangible than its evidential value but will often connect past people, events and aspects of life with the present. As the functions of an historic asset are likely to have changed over time, so the full range of changing historical values might not become velar until all the evidential values have been gathered together.

Aesthetic value: which derives from the ways in which people draw sensory and intellectual stimulation from a place. Aesthetic values can be the result of the conscious design of a place, including artistic endeavour, or they can be the seemingly fortuitous outcome of the way in which a place has evolved and been used over time, or a combination of both.

Communal value: which derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have additional and specific aspects. Commemorative and symbolic values reflect the meanings of a place for those who draw part of their identity from it or have

emotional links to it. Social value is associated with places that people perceive as a source of identity, distinctiveness, social interaction and coherence. Spiritual value attached to places can emanate from the beliefs and teachings of an organised religion or reflect past or present-day perceptions of the spirit of a place.

Best Practice Guidance Overview

2.25 Cadw publishes a wide range of Best Practice Guidance documents (BPGs). This guidance relates to: the care and understanding of historic buildings, scheduled monuments and other archaeological remains; understanding the significance of, and managing, conservation areas; managing local lists, historic parks and gardens, wider historic landscapes, and World Heritage Sites; the role of the planning system in the management of the historic environment; and technical guidance for conservation.

2.26 This Best Practice Guidance is intended to complement the Historic Environment (Wales) Act 2016 and recent planning policy and advice. In particular, it is designed to provide information on good conservation practice to assist LPAs, planning and other consultants, owners, applicants, and other interested parties when implementing Welsh policy. BPGs of particular relevance are discussed below:

Heritage Impact Assessment in Wales (May 2017)

2.27 This document sets out the general principles to consider when planning changes to historic assets and applying for listed building, conservation area, and scheduled monument consent. In particular, it emphasises the purpose and value of undertaking Heritage Impact Assessments in order to help identify the most appropriate way to accommodate change within the historic environment. The guidance echoes PPW by stressing that understanding the significance of historic assets is key to making decisions regarding the historic environment.

Setting of Historic Assets in Wales (May 2017)

2.28 This guidance document focuses on the management of change within the setting of heritage assets. It explains what setting is, how it contributes to the significance of a historic asset, and why it is important, in order to aid practitioners with the

implementation of Welsh national policies and guidance relating to the historic environment.

2.29 This document defines setting as 'including the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surroundings evolve'. The guidance emphasises that setting is not a heritage asset in itself, although land within a setting may contain other historic assets. Instead, the importance of setting is noted to lie in what it contributes to the significance of a historic asset. The document also states that elements of setting may make a positive, negative or neutral contribution to the significance of an asset.

2.30 Whilst views to and from an historic asset are often the most obvious consideration in any assessment of the contribution that setting makes to the significance of an asset, other sensory elements can also affect setting, including noise, vibration, and odour. Setting may also incorporate perceptual and associational attributes pertaining to the asset's surroundings.

2.31 This document provides guidance on practical and proportionate decision making with regards to the management of proposed development and the setting of heritage assets. It is stated that the protection of the setting of a heritage asset need not prevent change, and also that the scale of an assessment needs to be proportionate to the likely impact of the proposal. Although not prescriptive in setting out how this assessment should be carried out, section four of the document outlines the general principles that both assessors and decision makers should consider when assessing the impact of a proposed change or development within the setting of historic assets. It identifies four key stages:

1. Identification of the historic assets that might be affected by a proposed change or development;

2. Defining and analysing the settings understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced;

3. Evaluation of the potential impact of a proposed change or development on that significance; and

4. If necessary, considering potions to mitigate or improve the potential impact of a proposed change or development on that significance.

2.32 The guidance states that the introduction of offsetting or compensatory proposals, such as public access or interpretation panels, will not reduce the impact of the development within the setting of the historic asset, and thus should not be accepted as mitigation. However, these may be considered when the decision-making body weighs up the benefits of the scheme.

Local Planning Policy

2.33 The Vale of Glamorgan Local Development Plan 2011-2026 (June 2017) currently sets the long-term planning and land use policies for the area. The relevant policies contained within these documents are set out below.

2.34 The following policies are contained within the Local Development Plan documents, and are relevant to this assessment:

POLICY SP10 -BUILT AND NATURAL ENVIRONMENT

Development proposals must preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan including:

1. The architectural and / or historic qualities of buildings or conservation areas, including locally listed buildings;

2. Historic landscapes, parks and gardens;

3. Special landscape areas;

4. The Glamorgan Heritage Coast;

5. Sites designated for their local, national and European nature conservation importance; and

6. Important archaeological and geological features.

POLICY MG10 - ST ATHAN - CARDIFF AIRPORT ENTERPRISE ZONE

Land is allocated adjacent to Cardiff Airport and Port Road, Rhoose (77 ha) and at the aerospace business park St Athan (305ha) for the development of 382 hectares of strategic employment land (class B1, B2 and B8) forming part of the St Athan – Cardiff Airport Enterprise Zone.

The development of the enterprise zone will be guided by a masterplan to include the following elements:

• The refurbishment of the existing 70,000 sqm hanger at St Athan (17.95 ha);

• An aerospace business park north and south of the runway at St Athan;

• A business park for aviation support services at Picketston (11.79 ha);

• A new northern access road at the St Athan Enterprise Zone (Policy MG16 refers);

• New aerospace, education, research and development, manufacturing, office and other ancillary development at the Cardiff Airport and gateway development zone (77 ha);

• A 42 hectare extension to Porthkerry Country Park (Policy MG28 refers);

• Provision of sustainable transport infrastructure; and

• The incorporation of sustainable energy centre at the Cardiff Airport and gateway development zone.

POLICY MD8 - HISTORIC ENVIRONMENT

Development proposals must protect the qualities of the built and historic environment of the Vale of Glamorgan, specifically:

1. *Within conservation areas, development proposals must preserve or enhance the character or appearance of the area;*

2. *For listed and locally listed buildings, development proposals must preserve or enhance the building, its setting and any features of significance it possesses;*

3. Within designated landscapes, historic parks and gardens, and battlefields, development proposals must respect the special historic character and quality of these areas, their settings or historic views or vistas;

4. For sites of archaeological interest, development proposals must preserve or enhance archaeological remains and where appropriate their settings.

2.35 The Vale of Glamorgan has prepared several Supplementary Planning Guidance documents of which *Conservation Areas in the Rural Vale* (2006) and *County Treasures* (2007 with addendum 2011) have been referred to in the preparation of this report. Similarly, the Vale of Glamorgan has produced a *Porthkerry Conservation Area Appraisal and Management Plan* (2009) which has also been considered.

3.0 HISTORIC BUILT ENVIRONMENT APPRAISAL

Introduction

3.1 The following section includes an appraisal of the historic development of the Site and surroundings, together with an assessment of the significance of those built heritage assets that have the potential to be impacted by the indicative proposed development, including consideration of the contribution that their settings make to their significance. Section 4 will assess how the development proposals may impact that significance.

Site Description

3.2 The Site is located to the immediate east of Cardiff Airport and is bounded by the A4226 to the north, Port Road and Porthkerry Road to the west, agricultural fields to the south. Agricultural fields and woodland lie to the east of the Site. The Site is located approximately 700 metres northeast of the settlement edge of Rhoose and 1 kilometre west of the settlement edge of Barry. The Site comprises numerous field parcels and woodland belts.

3.3 The allocated business park land which forms *c*.40 hectares of the Site (as set out in Policy MG10 of the LDP) is currently served by field accesses on the A4226 and Port Road. The existing access road serving the Holiday Inn Express provides a stub to the western section of the business park element of the allocation within the Site. Land to the south of the Site will form an extension to Porthkerry Country Park as part of the business park allocation and which is accessed from an unnamed road leading from Porthkerry Road to the west and concludes at the Former Egerton Grey House Hotel. This continues as a cycleway south-east towards Barry through Porthkerry Country Park.

3.4 The land allocated for a country park extension outside of the Site comprises, in part, a valley with wooded sides. Porthkerry Viaduct spans the valley and marks the south-eastern boundary of this country park extension. The ground from here rises to the north-west with the valley forking into two serving Whitelands Brook and Bullhouse Brook. The northern and north-western reaches of the Site form part of a plateau which supports the buildings associated with Cardiff Airport.

3.5 The elevated nature of the north and north-western reaches of the Site allows some longer distant views back down the wooded valleys over the Site towards

the Bristol Channel incorporating the Porthkerry Viaduct. Those views east over the plateau towards Barry comprise agricultural and wooded land beyond the Site, which limit longer distance views in this direction. Woodland planting within the Site also interrupts views in all directions at various points from within the Site. In views west, Cardiff Airport, notably the terminal building and the elevated runway limit views in this direction. Views north are contained by surrounding hedgerows and the broader plateau around the airport, though the topography does however progressively drop away in this direction.

3.6 Boundary enclosures around the Site comprise a mixture of managed and unmanaged hedgerow. This remains the case within the Site but also incorporates woodland edges.

Historic Development

3.7 The Bulwarks located to the south-west of the Site was one of a series of coastal Iron Age hillforts occupied between 700B.C and 100A.D. The Site of a Roman villa is also noted on the western edge of Barry. During the Roman period there was a port at Porthkerry Beach known as Porth-Ceri.

3.8 From the eleventh century the Vale of Glamorgan was occupied by English and Norman settlers who farmed the land and constructed several castles. Saxton's Map of 1579 (not shown in this report) identifies a castle having existed in the settlement of Porthkerry at this time.

3.9 The Church of St Curig within Porthkerry is first recorded in 1254. Later development is noted including Church Farmhouse (itself historically serving as a rectory to the church) in 1576 and the seventeenth century Old School House. Samuel Romilly, the renowned legal reformer, statesman and philanthropist, as well as his son Edward Romilly both left philanthropic legacies including the construction of Porthkerry House some way south of the Site and a new Victorian School in Porthkerry. They carried out repair and restoration to farmhouses and dwellings and initiated improved farming systems and fairer wages for their labourers in the area.

3.10 Thomas Budgen's Map of Llantrisant and surrounds (1811) (not shown in this report) detail the Site as largely forming several field parcels. An area of woodland is noted in the south-eastern part of the land proposed for a country park

extension. The Site is still contained by Port Road to the west. The coastline is identified south-east of the Site.

3.11 In the early nineteenth century the Site and wider country park extension fell within both the parish of Porthkerry (the country park extension and a small part of the Site) and the parish of Penmark (the bulk of the Site). The Penmark Tithe Map (1841) and the Porthkerry Tithe Map (1838) (neither map shown in this report) show that much of the Site and land forming the country park extension were primarily owned by the Romilly family, with several parcels owned by Colonel Morgan and H.G Lewis. A small parcel of glebe land is noted in the western reaches of the Site owned by the Reverend Doctor Casperd; incumbent at the parish church in Penmark. A small parcel of land on the edge of Porthkerry is also glebe land tied to a Reverend Paul Clerk. This land incorporates the present Church Farmhouse and associated land. It is assumed that this is the Porthkerry incumbent. A trackway leading from Porthkerry north (along the course of the present footpath) and then feeding south-east down the valley towards Barry is noted as are several buildings associated with a Whitelands Farm beyond the north-eastern reaches of the Site with a dwelling referred to as Whitelands also located here (both along the course of the Whitelands Brook). Neither has survived. The Romilly family created Porthkerry Park in the early to mid-nineteenth century to form the centrepiece of their Porthkerry estate. The park sat to the south-east of the Site and the settlement of Porthkerry.

3.12 The 1885 Ordnance Survey Map (Fig. 2) shows additional areas of woodland notably around the Whitelands and Bullhouse Brook valleys. The Site is primarily agricultural land. The Rectory, constructed earlier in the nineteenth century (now Egerton Grey House), is depicted. It is likely that the access road to Egerton Grey House from Porthkerry Road was constructed specifically to serve the house though joined with the earlier noted trackway from Porthkerry leading down the river valley towards the Bristol Channel.

3.13 The 1900-1901 Ordnance Survey Map (Fig. 3) shows the railway cutting and substantial viaduct now abutting up to the northern edge of the current extent of Porthkerry Country Park built over the valley in 1897. It also shows a secondary loop link running out and around the valley heads within the Site and joining back into the established line west of the viaduct. Shortly after the line opened several piers on the viaduct failed necessitating a temporary line to be created. This was a short-lived rail loop and is not shown on any subsequent mapping. The

settlement of Porthkerry sits directly in the path of the main rail link thereby necessitating a short rail tunnel and cutting under the settlement.

3.14 The 1938-47 Ordnance Survey Plan (Fig. 4) shows little change to the Site though a new more direct road connecting Port Road directly with Rhoose is noted across land now forming the runway at Cardiff Airport. The land comprising Cardiff Airport was requisitioned by the Government in the 1940s with construction work commencing in 1941 for a satellite airbase during the Second World War. The principal runway ran broadly north to south with a shorter secondary runway running the course of the present runway. A new farmstead, Model Farm, has been constructed on the northern reaches of the Site fronting onto Port Road.

3.15 By 1975 (Fig. 5), the airport had become wholly commercial and a much larger runway has been constructed. This included considerable earthworks to build up the ground for the southern end of the larger runway. This now sits some height above Porthkerry Road. The Site itself has not changed and is primarily in agricultural and woodland use.

3.16 To the present day (Fig. 6), the Site is largely unchanged from earlier mapping. A new Holiday Inn development with car parking is located to the north-west of the Site adjacent to Cardiff Airport which itself has expanded considerably in respect of additional car parking and built development. The previously noted Whitelands Farm and dwelling east of the Site are no longer present.

Assessment of Heritage Assets

3.17 A 1 km search area identified built heritage assets that may be affected by development of the Site. It was not deemed appropriate to consider a greater search area notably on account that the immediate airport development to the north and west screens much of the Site when viewing from the north alongside setting a built-up context to the surrounds on the north and west flanks of the Site. The northern reaches of the Site sit on a plateau which drops away to the south. The Site sits close to the Bristol Channel to the south which further limits the requirements to expand the search area beyond 1 km in this direction.

3.18 Within this search area, there are nine Grade II listed buildings and structures and three Grade II* Listed buildings. There are also two conservation areas. Several buildings are also identified as being worthy of non-designated heritage asset status in the Vale of Glamorgan County Treasures List (2007). Several Scheduled

Monuments also lie within the search area however these are considered within the separate Archaeological Desk Based Assessment also prepared by CgMs.

3.19 The walkover survey of the Site and proposed extension to the country park and associated research demonstrates that of those built heritage assets within the search radius the majority of these share no visual, functional or historic associations with the Site. As such, the proposed development will have no impact on their setting or significance. The Site forms such a small element of their setting, that the Site makes no material contribution to the significance of any of these heritage assets and these assets have been discounted from further discussion. Specifically, they include the Grade II Coach House at Cwm-cidy Farm (Cadw ref. 1285178), Ty-crwn, (Cadw ref. 83163), Cwm-cidy Farm (Cadw ref. 83150), Cwm-cidy Farm Cottage (Cadw ref. 13396). All are associated with Cwm-cidy Farm and form a cluster of buildings *c*.900 metres east of the Site. The Site is some distance from this cluster of heritage assets, which have a group value as a cluster, and are experienced in some isolation away from the Site with a robust buffer of agricultural land intervening. It is also considered that the significance of the Barry Garden Suburb Conservation Area, the westernmost extent of which falls within the search area at c.900 metres to the south-east, will not be impacted given the distance from the Site and the degree of intervening woodland screening.

3.20 In respect of non-designated heritage assets, the Vale of Glamorgan County Treasures List (2007 and Addendum, 2011) identifies Welford Farmhouse and Farm barns (County Treasure ref. 458 and 459 respectively and located *c*.170 metres east of the Site) as being of local interest. However, the farmhouse has been demolished and the barns converted to residential use and correspondingly, the remaining significance of the barns has been much eroded given the demolition of the farm house and subsequent residential conversion. They will not be considered further in this report. The locally listed Porthkerry House (County Treasure ref. 450), south-east of the Site and Porthkerry, is set below the Site with a thick belt of mature woodland in between. Accordingly, at *c*.900 metres south of the Site, it will be some distance from the proposed built development area and will not share any intervisibility with the Site and will not be considered further in this report.

3.21 It is considered that the following built heritage assets may be affected by development on Site. The built heritage assets to be considered in detail in this report and shown also at Appendix A are:

- *Lower Porthkerry Farmhouse* (Cadw ref. 19576) Grade II listed and located immediately south of the Site (Plate 5-6);
- *Upper Porthkerry Farmhouse* (Cadw ref. 13621) Grade II listed and located immediately c.100 metres south of the Site. (Plate 7);
- *Upper Porthkerry Farmhouse Stables* (County Treasure ref. 475), identified as being a building of local interest and located c.100 metres south of the Site (Plate 8);
- *Church Farmhouse* (Cadw ref. 83147) Grade II* listed and located c. 630 metres south of the Site (Plate 9);
- *Outbuilding north of Church Farmhouse* (Cadw ref. 83157) Grade II* located c.630 metres south of the Site (Plate 10);
- *Church of St Curig* (Cadw ref. 13619) located c.750 metres south of the Site (Plate 11). A Grade II* listed church cross in the church yard of St Curig (Cadw ref. 83149) will be considered as part of the wider church assessment;
- *Porthkerry Conservation Area* located c. 580south of the Site (Plates 12-14). Several buildings are identified within the Conservation Area as being positive buildings and of some heritage value as buildings of local interest. Some are also identified on the 2007 County Treasures List as being of local interest. These will be considered within the broader assessment of the Conservation Area;
- The Porthkerry Viaduct (Cadw ref. 83158 and 13620) Grade II listed and located c. 550 metres to the Site (plates 15-16); and
- *The Former Egerton Grey House Hotel* (Plate 17) located c.350 metres south of the Site. Confusingly a photograph of Egerton Grey House is shown in the County Treasures List as being Porthkerry House. Despite this it is not expressly identified as being a County Treasure. Despite this, it is deemed in this report that the former hotel is a non-designated heritage asset and is discussed below.

3.22 Several of the built heritage assets have a largely shared and overlapping setting, particularly with regards to the way in which they are experienced relative to the Site, given their close proximity and/or functional associations. Where relevant, these will be discussed together. These comprise the Grade II* Church Farmhouse and associated Grade II* listed Outbuilding to its immediate north which will be considered under the title *Church Farmhouse Grouping*. The Grade II listed Lower Porthkerry Farmhouse and Upper Porthkerry Farmhouse and the former stables (locally listed) all sit within close proximity and share broadly the same setting. All three will be considered under the title *Porthkerry Farmhouse Grouping*. The Grade II listed Old School House which sits within Porthkerry will be considered under the broader assessment of the Porthkerry Conservation Area.

Porthkerry Farmhouse Grouping

3.23 ***Significance:*** The western part of Lower Porthkerry Farmhouse originated in *c*. 1600 as a two-unit gable-end entry house with hall and inner room (listing citation). The listing citation suggests that the building was likely extended in the mid-nineteenth century and then extended in the late twentieth century to incorporate the in-line barn (listing citation). The two-storey building is constructed in local rubblestone and has cement render. A combed wheat-reed thatch and decorative ridge is present. The original dwelling has casement windows on the front elevation and has a blind rear elevation, which also has a later single-storey lean-to with a slate roof. The later nineteenth-century addition, also built in rubblestone though not rendered, has a slate roof and is over two-storeys. Ashlar dressings are noted. The later nineteenth-century extension has casement windows. A further three bays beyond this, built in rubblestone, connect the barn to the dwelling and was constructed in the late twentieth century. Later windows, at odds with the earlier phases, sit within stone surrounds.

3.24 Internally, it is not clear how much original fabric remains since major works were undertaken to the property in the late twentieth century. The original survey noted that the property is understood to retain chamfered beams and exposed joists, large fireplace alongside a winding stone staircase. A timber roof structure with pegged roof trusses was also noted. The listing citation notes that the building is included in the statutory list "*as a seventeenth century farmhouse which, despite alterations, has retained its character and its thatched roof*".

3.25 Upper Porthkerry Farmhouse has origins from the early seventeenth century. It is built in a similar plan to Lower Porthkerry Farmhouse as a two-unit gable entry plan (listing citation). The structure to the west of the front entrance was added in the later seventeenth century. A rear service wing was likely added in the eighteenth century. The listing citation notes that there *"have been only minor alterations since then in the Victorian and later periods but these have hidden any other historic interior features which may survive".* It is built in local rubblestone with whitewash render and a thatched wheat-reed roof with *"ridged patterning and deep eyebrows in the West Country fashion*". It has wooden casements with glazing bars, several having been replaced at a later date.

3.26 Within Upper Porthkerry Farmhouse the original two cell dwelling "*unusually retains its partition for the inner room"* (listing citation) along with moulded beams. An early twentieth century fireplace is noted. The original staircase has been removed and openings blocked with a later nineteenth century staircase elsewhere. "*None of the other rooms have visible historic features and only the feet of some of the principal rafters can be seen" (*listing citation). It is included on the list as it represents a "*seventeenth century farmhouse which, despite alterations, has retained its character and its thatched roof" (*listing citation).

3.27 The former stables are suggested by the LPA to *"probably be contemporary with Upper Porthkerry Farmhouse"* (County Treasures List). The original building was a detached 'L' shaped building fronting onto the unnamed lane between the heritage asset and Upper Porthkerry Farmhouse. It has seen additions including a larger recent thatched building on the southern gable end which appears to be the dominant part of a new dwelling with the stables the subservient wing to this residential building. In converting the stables to residential use two large projecting 'bay-style' windows on the eastern elevation are now present and a further lean-to to the front flank. The original exterior wall facing onto the unnamed lane remains and it is assumed further original external fabric remains elsewhere though likely heavily altered. The building cannot be said to resemble stables following the conversion and the enclosure of the private garden. The County Treasures List suggests it shares a group value with the adjacent Upper Porthkerry Farmhouse. As the only remnant part of the historic farmstead, it provides some historic value and very limited aesthetic value in detailing the designs and materials and indeed building types in the seventeenth century. The presence of original fabric fronting onto the unnamed road and the adjacent

farmhouse does provide a degree of visual connection, itself facing the farmhouse. However, this is very limited, and the changes seen to the use and the fabric of the former stables have markedly impacted the overall significance of this heritage asset.

3.28 Lower Porthkerry Farmhouse can be said to exhibit evidential value in its portrayal of a simple seventeenth-century farmhouse. It also bears historic (illustrative) value and aesthetic value in the design and materials used in the seventeenth century to constructed modest vernacular farmhouses in South Wales. The alterations including the later twentieth century extension lessen the overall significance of the property though it retains sufficient fabric, certainly, externally to represent an important example of a period farmhouse. Like Upper Porthkerry Farmhouse, Lower Porthkerry Farmhouse is included on the statutory list as a "*seventeenth century farmhouse which, despite alterations, has retained its character and its thatched roof*" (listing citation).

3.29 ***Setting*:** The Porthkerry Farmhouse Grouping is experienced primarily in the immediate and intermediate setting of their surrounding plots, associated former farmstead development (where remaining) and the surrounding field parcels to the east. The Site abuts up to the northern boundary of Lower Porthkerry Farmhouse. The farmstead associated with Upper Porthkerry Farmhouse was lost with the construction of the runway west of Porthkerry Road. The contribution to significance that the remnant former stables provides is reduced given the loss of the bulk of the associated farmstead, the visual separation on the opposing side of the road leading to the former Egerton Grey House Hotel and it being incorporated into a larger newer dwelling. The conversion of the former stables to a separate dwelling with marked external alterations/additions also lessens the visual ties to the farmhouse.

3.30 Any contribution that setting makes is primarily from this historic functional and visual association with Upper Porthkerry Farmhouse. The former stables do, however, share a limited group value with the adjacent farmhouse. Allied to this, the main body of the farmstead serving Upper Porthkerry Farmhouse to the west of Porthkerry Road, was lost with the construction of the runway. Consequently, Upper Porthkerry Farmhouse is now set in relative isolation from remnant ancillary farmstead features thereby presenting as a detached dwelling. The Site primarily sits within the intermediate and wider extended setting of the Grouping, with the

land forming part of the country park extension surrounding the heritage assets on all but the northernmost flank of Lower Porthkerry Farmhouse.

3.31 From the intermediate and wider extended setting, it is still possible to experience the Lower Porthkerry Farmhouse as a former farmstead even though the alterations (including conversion of barn to residential use) and cessation of an agricultural use have impacted upon the overall experience. Upper Porthkerry Farmhouse has lost much of its agricultural context with the loss of most of the farmstead. However, the wider rurality to the east, over the Site and the land to be set over as the country park extension, helps to provide some rural context. The elevated airport runway with perimeter security fencing, an upgraded road and cycle path, immediately west of the Grouping, has markedly impacted the experience from the west and in views towards the heritage assets from fields to the east. Similarly, in views north along Porthkerry Road north of the airport infrastructure, fuel storage tanks and terminal building also serve to reduce the perception of rurality.

3.32 Accordingly, the historic setting of the farmhouses and remnant former farm buildings have been much eroded both in the intermediate and wider extended setting by the airport and road alterations and its immediate surrounds with the cessation of the farm's agricultural use and residential conversion. Setting makes a small positive contribution, though much reduced and limited to the surviving rural context still experienced when viewing east over the Site, land set over for the proposed country park extension, and beyond. The Site correspondingly makes a small positive contribution in this regard.

3.33 ***Significance and Setting Summary:*** The Porthkerry Farmhouse Grouping, comprising the separately listed (at Grade II) Upper and Lower Porthkerry Farmhouses are heritage assets of high (national) significance with the bulk of their significance being derived from their architectural and historic special interest in their portrayal of seventeenth century farmhouses with much remaining original fabric. The former stables associated with Upper Porthkerry Farmhouse are of low local significance with any significance derived from the retained original fabric and the historic functional relationship with Upper Porthkerry Farmhouse. None of the heritage assets in the Grouping perform their original agricultural role so their functional association with the surviving wider rural surrounds is residential.

3.34 The wider rural surrounds, including the Site and land proposed for the country park extension, make a positive contribution to the overall significance through providing the rural context though have been much impacted by the presence of the visually dominant runway and earth banking immediately adjacent with the associated roads and airport infrastructure. These have significantly eroded the historic rural context of the heritage assets. Setting makes a secondary level of contribution to the overall significance of the Porthkerry Farmhouse Grouping.

Church Farmhouse Grouping

3.35 ***Significance:*** Church Farmhouse is noted in the listing citation as being a "*remarkable late medieval …* [early sixteenth century] *…house, which survives in a very complete state considering its age*". The listing citation surmises that it was likely a parsonage "*suggested by its limited but well finished accommodation of a type seen elsewhere in the Vale*". It is likely that the wing to the farmhouse was part of the original building. The kitchen wing was later extended in the mid-nineteenth century and "*possibly as a result of the rector moving to the new rectory nearby*" (listing citation) to the Former Egerton Grey Country Hotel, which was occupied as a rectory from 1839-40. From this point the heritage asset became a farmhouse resulting in changes to the fabric including additional windows. Additional buildings were added, and this continued through to the later twentieth century, to create the farmstead as presently found. The listing citation states that the heritage asset *"retains the whole of its medieval envelope with the only external changes being the replacement of the windows and the rebuilding of the top of the chimney stacks*".

3.36 The two-storey building is constructed of rubblestone and rendered with a Welsh Slate roof. The property has casements throughout, mostly of twentieth century origins. The property is arranged in an 'L' shape. It retains the whole of its original external envelope save for the replacement windows and rebuilding the top of the chimney stacks. Internally the main property retains many original features, though with later additions such as a Victorian fireplace and nineteenth century alterations to the staircase. It is included on the statutory list at Grade II* because it is "*an important late medieval rectory which retains a number of good architectural features"* (listing citation) providing evidential and historic value

3.37 The Outbuilding to the north of Church Farmhouse comprises a single-storey detached former kitchen building constructed at the same time as the main

dwelling. It appears to be in a very poor condition. It was converted to a bake house in the nineteenth century when the rectory became a farmhouse (listing citation). The listing citation further notes that "this is a very rare survival in such close proximity to a complete medieval rectory." A stable was added at this time. In the 1930s it was converted to a wash house.

3.38 The building has been re-roofed in corrugated sheeting and the right gable wall has been partially rebuilt to accommodate the former bake house chimney. The structure is constructed in local limestone rubble with elements of dressed stone. Internally a large stone fireplace (original) is present. The fireplace contains the brick built washing copper dating from the 1930s when the building became a wash-house.

3.39 The building is listed at Grade II* for its "*its importance as a late medieval detached kitchen and its group value with the adjacent and contemporary Church Farmhouse."* It provides important evidential and historic value in the high status of former incumbents. The asset provides important evidence in the changing requirements and uses for buildings of this size, bringing the kitchen within the main house in the nineteenth century. It shares an historic functional association with the church through its historic role as a rectory and with the nearby field parcels which were once glebe land. It has an historic functional association with the surrounding fields which it is assumed were owned or tenanted by occupiers at Church Farmhouse. Similarly, it shares some group value with the much later nineteenth century farm buildings located throughout the now redundant farmstead.

3.40 ***Setting:*** Church Farmhouse is now primarily experienced from within the near surrounds of its former farm complex and from the surrounding village centre, notably the village green, church and the several buildings which make up the settlement of Porthkerry. The associated mid-nineteenth century barns, which sit near to the farmhouse, share a group value with the heritage asset. They not only create a positive view towards the farmhouse along the lane into Porthkerry, but the help to provide a context to the later role of the former rectory.

3.41 This settlement provides the rural and agricultural context for the property. Its proximity to the separately listed Outbuilding adjacent (the former kitchen house to the Rectory) provides some clue that Church Farmhouse had perhaps been a more important building than simply a farmhouse, though this would be evident

only to the most initiated viewer given the changes in use and fabric. The principal significance of Church Farmhouse lies in its architectural and historic special interest as a medieval former rectory and, as such, whilst the surrounding rural landscape helps to define its historic setting its proximity to the Church of St Curig in Porthkerry provides the primary visual and functional historic setting as a rectory. The later surrounding former farm with nineteenth and twentieth-century farm buildings does however serve to mislead the viewer to any residual religious role. It accordingly shares a strong group value with the church and the adjacent separately listed kitchen building. Today Church Farmhouse is experienced as a farmhouse in a largely rural setting and this experience is supported by the remaining, though redundant, farm buildings. Views towards the heritage asset are impacted to the detriment by later twentieth century agricultural buildings with corrugated roofs.

3.42 The intermediate and wider setting of the farmhouse comprises a broadly rural landscape composed of fields and woodland, though with the intrusion, both visually and audibly, of Cardiff Airport and associated infrastructure towards the western reaches. The Site and the land proposed for a country park extension forms a large part of the intermediate and wider setting by virtue of its scale providing an understanding to the property as part of a farmstead.

3.43 The Grouping is experienced as being part of a small cluster of buildings forming Porthkerry, though the further away one views the Grouping, the less easy it is to appreciate the special interest of the heritage assets. Indeed, from parts of the Site where views are constrained by woodland planting within the Site and surrounding land, the settlement of Porthkerry and the Church Farmhouse Grouping is not visible given the distance and intervening planting. Those parts that do share a degree of intervisibility make a positive contribution to the overall significance of the Grouping in supporting the surviving rural and agricultural context in which the heritage assets are experienced, but less so in respect of its historic association as a rectory associated with the Church of St Curig (which lies further away from the site). As part of a farm, albeit vacant, the surrounding agricultural landscape provides a functional setting to the Grouping.

3.44 ***Significance and Setting Summary:*** The Church Farmhouse Grouping comprise built heritage assets of high (national) significance as reflected in their Grade II* listing. The significance of the two buildings is primarily derived from the architectural and historic special interest as an early sixteenth century former

rectory and associated stand-alone kitchen house retaining much original fabric. It provides important evidential and illustrative value in the design and materials used whilst also providing an important understanding of how former rectories are used when they cease to have ties to the church; in this case, the nineteenth-century farmstead which the Grouping is now largely seen as forming a part. Setting makes an important, though secondary contribution to the assets' overall significance; primarily seen from its close visual and historic functional association with the nearby Church of St Curig but also through the surrounding agricultural landscape which contextualises its later use. The Site makes some positive contribution to the assets significance by providing some historic rural and agricultural context to the understanding of the heritage asset, primarily as a later farmhouse.

Church of St Curig

3.45 ***Significance***: The church is likely to have been constructed in the second half of the thirteenth century with the tower added in the fifteenth or sixteenth century as was the porch. The church was heavily restored in 1867, alongside the addition of a vestry and re-roofing. Further works occurred in the mid-twentieth century. The church is constructed in roughly coursed limestone rubble with a slate roof. It was previously thatched in the mid nineteenth century (listing citation).

3.46 The church is simple in design with several phases to the fenestration, notably fifteenth and seventeenth-century windows often with the use of dripmoulds. Internally, the chancel screen with simple Perpendicular tracery is likely to have been rebuilt (listing citation). The listing citation suggests that the tower arch is very simple in design and with "*only the plainest of mouldings at the top".* A plain principal rafter roof dating from the 1867 restoration is noted. The church merits its high grade "*as a medieval church with good features*" (listing citation).

3.47 The church provides evidential and historic value in the design and materials used alongside the evolution and changing communal values applied to places of worship, including the drive for restoring places of worship in the nineteenth century. It has group value (and an historic functional association) with the nearby Church Farmhouse which was originally the rectory. It also has a group value with the separately listed fifteenth century churchyard cross in the burial ground. The later rectory, the former Egerton Grey House Hotel, has an historic functional association with the church. John Wesley the noted Methodist theologian preached

at the Church of St Curig on several occasions, documenting his visits, and therefore the church bears an associative value. As a consecrated church it still derives a communal value and one which has been in existence since the thirteenth century.

3.48 ***Setting:*** The church is primarily experienced from its immediate setting, the churchyard from where one can appreciate its external architectural special interest. It also is experienced to a degree from within the wider settlement of Porthkerry, notably the village green which channels views towards the church. Its relatively diminutive size allied to a robust enclosure on several flanks by woodland means that views are only easily granted from the near surrounds of Porthkerry and nearby field parcels to the west as well as from a field parcel to the east. The upper stages of the tower, namely the crenelated parapet, can be seen from Porthkerry Road, over the Site, however these views are glimpsed, almost incidental, being lost amongst the surrounding development within Porthkerry. Elsewhere, whilst long distance views are available of Porthkerry from the north along Port Road, it is very difficult to see the church and to view it as part of this small settlement. Setting, particularly the village surrounds of Porthkerry remain an important contributor to the significance alongside the near surrounding agricultural and wooded landscape, including the Site and proposed land for the country park extension, which provides a rural context to the church.

3.49 ***Significance and Setting Summary:*** The Church of St Curig is a heritage asset of high (national) significance. Its significance is principally derived from its architectural and historic special interest as a medieval church with much retained features. The alterations to the church, primarily in the nineteenth century, do impact upon the overall significance through loss of original fabric, though these changes in themselves provide an important evidential value in the changing tastes, liturgy and fashions of church buildings at this period. It also has a communal value as a continuously operating church since the thirteenth century and an associative value with John Wesley preaching here in the eighteenth century. Setting remains an important, though secondary, contributor to the overall significance and any contribution is largely derived from the village setting and the nearby surrounding woodland and field parcels which help contextualise this rural parish church. The Site makes an overall positive impact in providing some of this rural context.

Porthkerry Conservation Area

3.50 ***Significance:*** Porthkerry Conservation Area was designated in March 1973. The Area comprises a small, broadly wedge-shaped, plot which incorporates the tunnel and railway cuttings either side running diagonally through the centre of the Conservation Area. The comprises all built development in Porthkerry, elements of woodland, the village green and pastureland. The Porthkerry Conservation Area Appraisal and Management Plan (March 2009) provides a summary of the special interest of the Area which is set out below. Where text does not form part of the Appraisal this is set within brackets and non-italicised:

- *"Small village in a rural setting of open fields and woodland on a secluded promontory above the Bristol Channel;*
- *Narrow cul-de-sac approach road bounded with green banks and hedgerows;*
- *Grass-verged central village green surrounded by an outstanding ensemble of medieval and later buildings;*
- *The stone walled medieval churchyard;*
- *Associations with the 19th century Romilly family of Porthkerry House;*
- *The architectural and historic interest of the area's historic buildings and structures, five of which are listed namely: Church of St. Curig (grade II*); Cross in the churchyard of the Church of St. Curig (grade II); Church Farmhouse (grade II*); Outbuilding to the north of Church Farmhouse (grade II*); The Old School House (grade II).* [In addition to this Elmhurst is identified as being a positive building in the LPA's Porthkerry Conservation Area Appraisal and Management Plan thereby indicating that the LPA perceive this to be a non-designated heritage asset: "*It was built in c.1870 as a school by the Romilly family though has been altered in the twentieth century and has ceased as a school. It is notable as part of the works of the Romilly family in the area and holds an important position overlooking the village green"* (Conservation Area Appraisal and Management Plan)];

- *Situated above a deep cutting and railway tunnel on the Vale of Glamorgan line, opened 1897, beside the Porthkerry Viaduct;*
- *Trees provide a backdrop to the village green and hamlet;*
- *Located on a network of local footpaths and a designated Valeways Walk with access to the Glamorgan Coastal Heritage Walk and Porthkerry Park;*
- *Stone boundary walls; and*
- *Bio-diversity and wildlife."*

3.51 ***Setting:*** Porthkerry Conservation Area is relatively small, measuring *c.* 5 hectares, and comprises the Church of St Curig, the Old School House, Elmhurst (the former school) and Church Farmhouse and associated farm. The remainder of the Area is largely open space and woodland. The special interest of the Conservation Area is primarily experienced from within, given its relatively intimate character and the degree of its enclosure. Given this degree of enclosure to the north, east and south, views into the Area are limited to the western and north-western flank with views across the Site from various points. The Site forms part of the wider setting. Where views are granted from within the wider setting in the Site, Porthkerry is experienced as a small cluster of buildings, it is not immediately apparent that it is a settlement as opposed to a loose cluster of houses nor is it easy to experience the special interest of the designation.

3.52 Those views in the near surrounds of the designation within the land proposed for the country park extension, forming part of the immediate setting, do allow one to experience some of the Conservation Area's special interest though impacted slightly by later farm buildings associated with Church Farmhouse. The Conservation Area Appraisal does identify a 'Significant View' into the Conservation Area along the lane leading into the settlement, though recognises that there are many other views into the Conservation Area which still make a positive contribution to its special character. Elsewhere the views are contained by the woodland planting which encloses much of the designation and forms an important backdrop outside of the Conservation Area, though necessarily limiting views inwards.

3.53 The wooded rural and wider agricultural context of much of the surrounds provide a contribution to understanding the special interest of the Conservation Area and provides some necessary separation from surrounding development, notably the airport and nearby static caravan park. The airport and runway are visible, and indeed audible, from the Conservation Area which reduces some of this rural context. Whilst the report recognises the negative impacts that the noise from aircraft taking off and landing, the airport sits at a sufficient distance to allow the Conservation Area to remain within a largely rural and isolated context, visually. The Site forms a part of the wider setting. Setting remains an important contributor to the overall significance of the Conservation Area with the Site making a small contribution.

3.54 ***Significance and Setting Summary*:** The special interest and significance of the Porthkerry Conservation Area derives from the historic and evidential value which the designation exhibits within the building and morphology of Porthkerry. This is expressed through the legibility of the historic settlement, the low density and group value of historic buildings and the historic layout and morphology of the settlement, expressed by its compact and village green-centric characteristics and driven in part by the visual reference points of the village green in the centre and the Church of St Curig at the eastern end forming a visual landmark feature when within the designation, all framed by a thick belt of woodland planting. The Conservation Area's significance is also derived from its broader rural and isolated setting which helps to define the rural context around the settlement, though it is compromised both audibly, and to a lesser degree, visually by the airport development west of the Conservation Area. The Site makes a small contribution

3.55 The significance of the Conservation Area is also derived from the architectural and historic interest of the buildings within the designation and particularly the special interest of its listed buildings. The nature of the topography of the Conservation Area is such that the bulk of views of the designation are from within, although some views are granted into and out of the Conservation Area from the west over the Site, though it is progressively more difficult to experience the character and appearance of the designation the further one gets from the settlement. Its setting remains a notable contributor to its overall significance in supporting the wider rurality of the designation. In forming part of the setting of the Conservation Area, the Site can be said to make a positive contribution to the

overall significance of the Conservation Area by supporting this rural context which still fully encloses the Area. The airport infrastructure is visible on the horizon.

Porthkerry Viaduct

3.56 ***Significance:*** Porthkerry Viaduct was constructed in 1894-1900 serving the Vale of Glamorgan Railway. It was originally opened in 1897 but several piers slipped in early 1898 resulting in the railway having to be temporarily diverted via a rail loop north into the Site around the valleys of the Bullhouse and Whitelands Brooks. The listing citation notes that this was one of the last major masonry viaducts completed in Britain. The viaduct is constructed of coursed quarry faced grey stone with brick arch rings. The structure has '*irregular spans to sixteen semi-circular arches; tall tapering stone piers, with plinths of varying height; brick arches, maximum height circa 30 metres; stone parapet with corbelled refuges over every second pier'* (listing citation). The structure shares a loose historic functional association with the Site in having accommodated the temporary track bed to serve the loop link. In representing the end of the period of masonry viaduct construction, it provides notable historic value.

3.57 ***Setting:*** Porthkerry Viaduct is experienced largely within a narrow viewing corridor up and down the Bullhouse Brook commencing immediately south of the Site and south around Porthkerry Country Park and Porthkerry beach. It is visible from Port Road to the north of the Site and Porthkerry Road to the west. Given the size of the Site it forms part of the viaduct's setting. There are parts of the Site, notably to the north, where views of the heritage asset are limited to non-existent. The principal contribution to its significance from setting is however from the railway infrastructure in which it was built to serve. It is within this context that you understand it location and design in supporting the track bed over the valley. It was designed with function not form in mind. This said, the scale of the viaduct is perhaps a visual reflection of the status of railways as the dominant form of transportation in the second half of the nineteenth century and into the twentieth. This 'awe' has taken on a new visual appreciation as a prominent landmark spanning and framed by a wooded valley. It is suggested that this appreciation is a more recent response to functional built heritage such as rail viaducts. Accordingly, the pleasing contribution that it makes to the surrounding landscape is an important part of its setting. This comprises the country park and parts of the land proposed for the country park extension and indeed parts of the Site. Setting remains an important, yet secondary, contributor to the overall

significance and within this, the Site, in supporting the rural context in which the viaduct is aesthetically appreciated, makes a small contribution.

3.58 ***Significance and Setting Summary:*** The Porthkerry Viaduct is a built heritage asset of high (national) significance. Its significance primarily derives from its architectural and historic special interest as a late nineteenth-century masonry viaduct. It marks the closing period of major masonry rail viaduct construction; being one of the last major viaducts constructed in this way. It provides important historical value in the materials used and in its simple design. The Site has a limited historic association with the viaduct in having previously carried a temporary loop around the Whitelands and Bullhouse valleys when the bridge was temporarily closed shortly after opening. Setting remains a secondary contributor to the overall significance and within this the Site makes a small positive contribution in helping to provide some rural context to the viaduct.

Former Egerton Grey House Hotel

3.59 ***Significance:*** The Former Egerton Grey House Hotel was previously the rectory associated with the Church of St Curig having been constructed specifically for this purpose in c.1840 resulting in the creation of Church Farm and the use of the earlier rectory as a farmhouse (Church Farmhouse). The heritage asset does not form part of the LPA's County Treasures List, though confusingly its photograph has been used in the document in reference to the nearby Porthkerry House which is on the List. It is considered, despite alterations, that the building is worthy of non-designated heritage asset status. Views from the house are limited from the public realm given the degree of enclosure. Accordingly, the assessment below is based upon those limited views that are granted and available online detail.

3.60 The house was constructed by the Romilly family as a new rectory and this was historically set within small grounds forming part of the glebe lands associated with the Church of St Curig. A detached stable block was also present. The original rectory was much smaller than the building presently seen which has seen several phases of expansion. The original building appears to have been constructed in rough coursed limestone with ashlar, possibly Bath stone, dressings for architectural detailing, namely around windows including several hoodmoulds.

3.61 Constructed over two-storeys, the original dwelling comprises a broadly rectangular main block with a 'dog-leg' rear wing. Originally with two bay windows

on the south facing elevation, one has since been removed. The main entrance is via a single storey porch to the west with ashlar stone three-pointed arch windows. Timber casement windows are noted. The original building has multiple slate pitched roofs.

3.62 In the interwar period a further projecting extension was constructed to the northern flank protruding into the principal gardens to the east. Built at two-storeys with a slate roof, the extension has a Gothic flavour to its design with battlements, tracery and a prominent two-storey squared edge bay window facing south. String courses are also noted. The building is rendered with exposed stone detailing. Three large round-arched French windows faces west onto a patio area. Timber casement windows are noted. Ornate Bath stone chimney stacks are noted. A flat roofed single storey extension is also noted on the western flank which was constructed in the interwar period. In the middle of the twentieth century there has been a further flat roofed extension to the rear. The alterations to the building may have impacted upon the overall significance of the building (including the later mid-twentieth century flat roof extension).

3.63 The building exhibits evidential and aesthetic value with remnant features of a simple early-to-mid nineteenth century rectory, utilising materials and a design that are not in the local vernacular, presumably to ensure the building stood out when set against wider surrounding built development. It also provides an important visual representation of the tastes and fashions of early twentieth-century architecture with a renewed interest in Gothic architecture as shown on the later extension. It provides an historic interest through its historic functional association with the Church of St Curig and the Romilly family who are closely tied to other buildings in the near surrounds (including the Old School- now Elmhurst). It ceased to be a Rectory in the later 1960s early 1970s becoming a dwelling with a short period as a hotel. During its time as a hotel, the Prince of Wales and the Dalai Lama were understood to have stayed here presenting a small degree of associative value.

3.64 ***Setting:*** The Former Egerton Grey House Hotel is primarily experienced from within the landscaped gardens which are heavily screened at their boundary. This forms its immediate setting. Given the significant degree of enclosure, and it being set down in a valley bottom, it is difficult to view in the wider surrounds though there are some glimpsed views from the nearby field parcels, though it is not easy to understand the interest of the building. From within the Site views of the

heritage asset are more difficult to achieve. The Site forms part of its wider extended setting, comprising field parcels with some elements of woodland. The land proposed for a country park extension would form part of its intermediate setting. The surrounds help to create the sense of isolation which the heritage asset was designed to sit within. This survives to the present day. The Site makes a positive contribution to the setting of the heritage asset. Setting remains an important, though secondary, contributor to its significance.

3.65 ***Significance and Setting Summary:*** The Former Egerton Grey House hotel is a heritage asset of low local significance. Its significance is primarily derived from its architectural and historic interest including the design choices of the early nineteenth century employed in the construction of a rectory but also with later extensions. Setting remains a positive visual contribution in giving the heritage asset the rural isolation which it was historically designed to sit within, however it is a secondary contributor to the overall significance.

4.0 PROPOSALS AND ASSESSMENT OF IMPACT

Proposals

4.1 This Statement has been prepared to support an outline planning application for a business park. This Statement will assess the likely impacts arising from the proposed development of 40 hectares of the Site to create a business park. This business park forms part of an allocation as part of the St Athans - Cardiff Airport Enterprise Zone in the Vale of Glamorgan Local Development Plan (Policy MG-10). Further, within this Enterprise Zone allocation is an extension to Porthkerry Park which comprises land to the east and south of the Site. Reference should be made to accompanying plans and documents that form part of the wider planning application pack. A summary is set out below:

- Construction of business part offering Use Class B1, B2 and B8 uses; education and training facilities and small business units with ancillary development and leisure;
- Built development will be situated in the northern reaches of the Site south of Port Road and west of the upper reaches of Porthkerry Road. Except for demolition of the existing Model Farm which sits immediately south of Port Road to the northern reaches of the Site all development will be on field parcels;
- Build heights will be up to a maximum 5 storeys, though with the bulk of built development at one storey in height and only two built development areas in the north-western most corner of the Site built to four and five storeys respectively;
- Built development will be set out in several development blocks. These blocks will be created with areas of open space and landscape buffer separating them. The southern edge of the built development will also have an open space buffer;
- Additional tree planting to extend existing woodland planting along the southern boundary of the Site. As far as possible all existing hedgerows will be retained within the built development area, though several will be need to removed, notably to the northern reaches of the Site;

- Vehicular access will be taken from Port Road via the existing access for the Holiday Inn development and via the existing roundabout immediately north of the Site. Access to the local dedicated cycle network will be to the west of the built development Area on to Porthkerry Road. Similarly, a new footpath link will be provided to the east connecting to the existing footpath network; and

Assessment of Impact

Porthkerry Farmhouse Grouping

4.2 The proposed development of the business park to the north of the Grouping would alter some of the wider rural landscape with built development near to the north-western boundary of the Lower Porthkerry Farmhouse set on slightly higher ground. The Site immediately adjacent to Lower Porthkerry Farmhouse will be new woodland planting and managed open space within the development. Views are likely to be granted of parts the proposed built development area from Upper Porthkerry Farmhouse. Allied to existing woodland planting this will provide some screening of parts of the wider built development area over time. The proposed development represents a degree of further erosion of the wider rural environment alongside the existing airport development. Allied to visual changes it is likely that there will be additional light spill on top of that which is already seen at the airport.

4.3 The creation of an extension to Porthkerry Country Park to the east and south of the Site and the Grouping will retain a green landscape which will go some way to minimising the impacts upon the significance of the heritage assets recognising the erosion of the historic agricultural landscape which has already occurred with the construction of the airport, the loss of farm buildings associated with the former farmhouses and the cessation of a farming role for the former farmhouses.

4.4 There will be a change to the intermediate and wider setting. It is considered that the proposed development of the Business Park will result in a **moderate degree of harm** to the significance of the Upper and Lower Porthkerry Farmhouse and in respect of the former Upper Porthkerry Farm stables building, a **minor degree of harm** to its significance, given that a greater level of the contribution that setting provides relates to its group value and proximity adjacent to the farmhouse. This level also reflects the changes and harm to significance already seen through its conversion to residential use. This harm will arise through the further erosion of

the wider agricultural landscape from the proposed built development which will be visible on the surrounding landscape.

4.5 ***Mitigation:*** It is also suggested that, as far as possible, no column street lighting should be located along the southern boundary of the built development area and any column lighting should have cowls fitted to reduce light spill. It may be possible to reduce the degree of harm with the use of this mitigation measure though it is unlikely to reduce harm in entirety.

Church Farmhouse Grouping

4.6 The built development proposed will be some distance from this Grouping at *c.* 770 metres to the north-west. This will leave a considerable amount of retained rural open space intervening. This said, it is likely that the proposed development will be visible along the horizon and its commercial design and scale will make it visually more alien on the predominantly rural and agricultural landscape in the near surrounds. This will be further compounding the visually intrusive built development associated with the airport, including fuel tanks, further away. The tree planting along the southern boundary of the Site will help soften the urban-rural transition over time. The likely additional light spill will also draw the urban context closer to the heritage assets. This built development will alter how one perceives the wider landscape and reduce this rural, agricultural context associated with its later historical role as a farmhouse. Some views from Port Road will be lost with the new built development however, at this distance it is increasingly difficult to appreciate the special interest of the heritage assets. The retention of the land outside of the Site surrounding the Grouping as part of the country park allocation would help to retain an agricultural context to the surrounds, even if the land is not actively farmed with livestock or crop.

4.7 As a former medieval rectory, from which the bulk of its architectural and historic special interest is derived, any contribution to significance from setting is primarily derived from its close visual association and historic functional setting near to the Church of St Curig. There will be a change to the wider extended setting of the Grouping. The proposed development will likely give rise to a **minor degree of harm** to the significance of the Church Farmhouse and adjacent separately listed outbuilding which recognises the principal value of the heritage assets as a medieval rectory.

4.8 ***Mitigation:*** The careful siting of lighting away from the rural edge this mitigation could help to minimise the visual urbanisation of the surrounds. This mitigation measure may reduce the degree of harm though will not reduce it in entirety.

Church of St Curig

4.9 The church will still be experienced as a landmark building as part of a small isolated settlement with a surrounding rural context. The built development proposed will be seen from the church and parts of the burial ground. It will to a degree lessen this rural aspect. Some views from Port Road will be lost with the new built development on the Site however, at this distance it is increasingly difficult to appreciate the special interest of the heritage assets though the white-washed crenelated parapet of the church is more visual and identifies the building as being of some possible interest.

4.10 The use of the land to the south of the Site as a country park extension will help to retain much of the rural isolation of the settlement. The additional built development and the drawing of an urban environment closer to the church, including light spill, the proposed development will reduce the rural surrounds. Whilst the wider setting will change, it will not markedly alter how one experiences and appreciates its special interest as a thirteenth century church within at the head of an isolated rural settlement and much enclosed by woodland planting and intervening built development. The proposed development will result in a **negligible degree of harm** to the significance of the heritage asset.

4.11 ***Mitigation:*** It is suggested that the careful management of lighting within the proposed development will assist in reducing light spill and in reducing the perceived level of harm, though would be unlikely to completely remove any harm.

Porthkerry Conservation Area

4.12 Porthkerry Conservation Area is viewed as a rural and secluded settlement surrounded by woodland and agricultural land. This remains an important part of its character and appearance and, therefore, significance. The progressive advance of built development south-east towards the settlement from the airport perimeter will reduce this rural and secluded context to a degree; though will still retain the current level of openness. Views from the north-western reaches of the Site and Port Road of Porthkerry will be reduced, though from this distance, and beyond the settlement is largely defined as a cluster of buildings and it is very

difficult, if not impossible, to fully appreciate the special interest of the Conservation Area. The additional light spill will also further compound the visual impacts arising from the scale and quantity of the proposed built development. The proposed woodland planting along the southern boundary of the Site will help to provide some screening of the built development over time.

4.13 The retention of field parcels around the Conservation Area as part of the extension to the country park will help to retain a rural context to the near surrounds and therefore how one perceives the village in the near surrounds. The proposed development on Site will however likely give rise to a **moderate degree of harm** to the significance of the heritage asset through the loss of a wider rural context.

4.14 ***Mitigation:*** It is suggested that the careful management of lighting within the proposed development will assist in reducing light spill and in reducing the perceived level of harm to the conservation area, though would be unlikely to completely remove any harm.

Porthkerry Viaduct

4.15 The Site helps to provide some of the wider rural context in which the viaduct is visually appreciated. It is suggested that historically the viaduct was designed with function not form in mind; itself being quite limited in its architectural flourishes. It was however a visual representation of the dominance and strength of the railways at the end of the nineteenth century. Perhaps more recently it is viewed as a pleasing landmark spanning a wooded valley; the surrounding rural context, including the Site, helping to accentuate its pleasing aesthetics. The principal contribution from setting is from its associated and existing rail infrastructure. The development of the business park will **not materially impact** upon overall significance of the heritage asset. However, it will be visible from viaduct and will reduce to a small degree the rural surrounds and at a height that is more likely to be visually noticeable on the landscape in views from the viaduct and in views back towards the viaduct.

4.16 ***Mitigation:*** Whilst it is unlikely that the proposed development will materially impact the significance, there is scope to better reveal the special interest of the heritage asset in accentuating its visual landmark status. This would be achieved creating viewing corridors in the layout of roads and buildings that harnesses the viaduct as a focal point. One such point would be from around the Holiday Inn

where the viaduct is quite noticeable in views over the Site. There may be other opportunities to create a landmark feature of the viaduct through the careful layout and orientation of the built development within the Site.

Former Egerton Grey House Hotel

4.17 It is likely that views will be granted of the proposed built development, both during daylight and night time hours, from the gardens of the heritage asset, notably to the north-east and north-west, though the degree of mature tree planting around the house is such that views of the proposed business park may be limited when viewing directly from the house. Irrespective of this, views of the proposed built development from the gardens will alter how one perceives the significance of the house, one that is presently seen in largely rural isolation. This is emphasised by the elevated ground upon which the business park will be situated, above the house. Proposed tree planting along the southern boundary of the Site will help to provide some screening of the proposed development over time. Overall, the proposed development on Site will result in a **minor degree of harm** resulting from the erosion of the surrounding rural and agricultural context.

4.18 ***Mitigation:*** It is suggested that the careful management of lighting within the proposed development will assist in reducing light spill and in reducing the perceived level of harm to the heritage asset, though would be unlikely to completely remove any harm.

5.0 CONCLUSION

5.1 This Built Heritage Statement has been researched and prepared by CgMs Heritage, part of RPS on behalf of Legal & General to assess the potential impacts on the historic built environment arising from the development of a business park on land at Model Farm in Rhoose, Vale of Glamorgan. This report accompanies an outline planning application for this proposed development.

5.2 Whilst the Site comprises no built heritage assets it has been demonstrated in this report that the proposed development has the potential to impact upon the significance of six designated built heritage assets. Any potential impacts on these heritage assets will arise through development within their settings. Specifically, the Grade II listed Lower Porthkerry Farmhouse immediately south of the Site, will experience a moderate degree of harm to its significance. The Grade II listed Upper Porthkerry Farmhouse again located south of the Site will experience a moderate degree of harm to its significance arising from the proposed development on Site. A former stables block associated with Upper Porthkerry farmhouse and identified in the LPA County Treasures List as a non-designated heritage asset will also experience a minor degree of harm. The Grade II* listed Church Farmhouse and separately listed but associated Outbuilding (Grade II*), both located some distance south of the Site will experience a minor degree of harm respectively. The Grade II* Church of St Curig also some distance south of the Site will experience a negligible degree of harm from the proposed development. The Porthkerry Conservation Area will experience a minor degree of harm to its character and appearance. Porthkerry Viaduct will not be impacted by the proposed development. The non-designated Former Egerton Grey House Hotel, identified on the LPA County Treasures List as a non-designated heritage asset, will experience of minor degree of harm arising from the proposed development.

5.3 The sensitive management of lighting within the proposed development can help to reduce the identified harm to the significance of the above built heritage assets. Further, there may be scope to enhance how the viewer experiences Porthkerry Viaduct through careful layout of roads and planting to focus views towards the viaduct from within the Site.

5.4 This Built Heritage Statement provides sufficient information for the Local Planning Authority in respect of built heritage concerning a planning application for a business park on land at Model Farm, Rhoose in the Vale of Glamorgan.

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Cartographic

1811 Thomas Budgen's map of Llantrisant and Surrounds

1839 Porthkerry Tithe map

1841 Penmark Tithe map

1885 Ordnance Survey Map extract

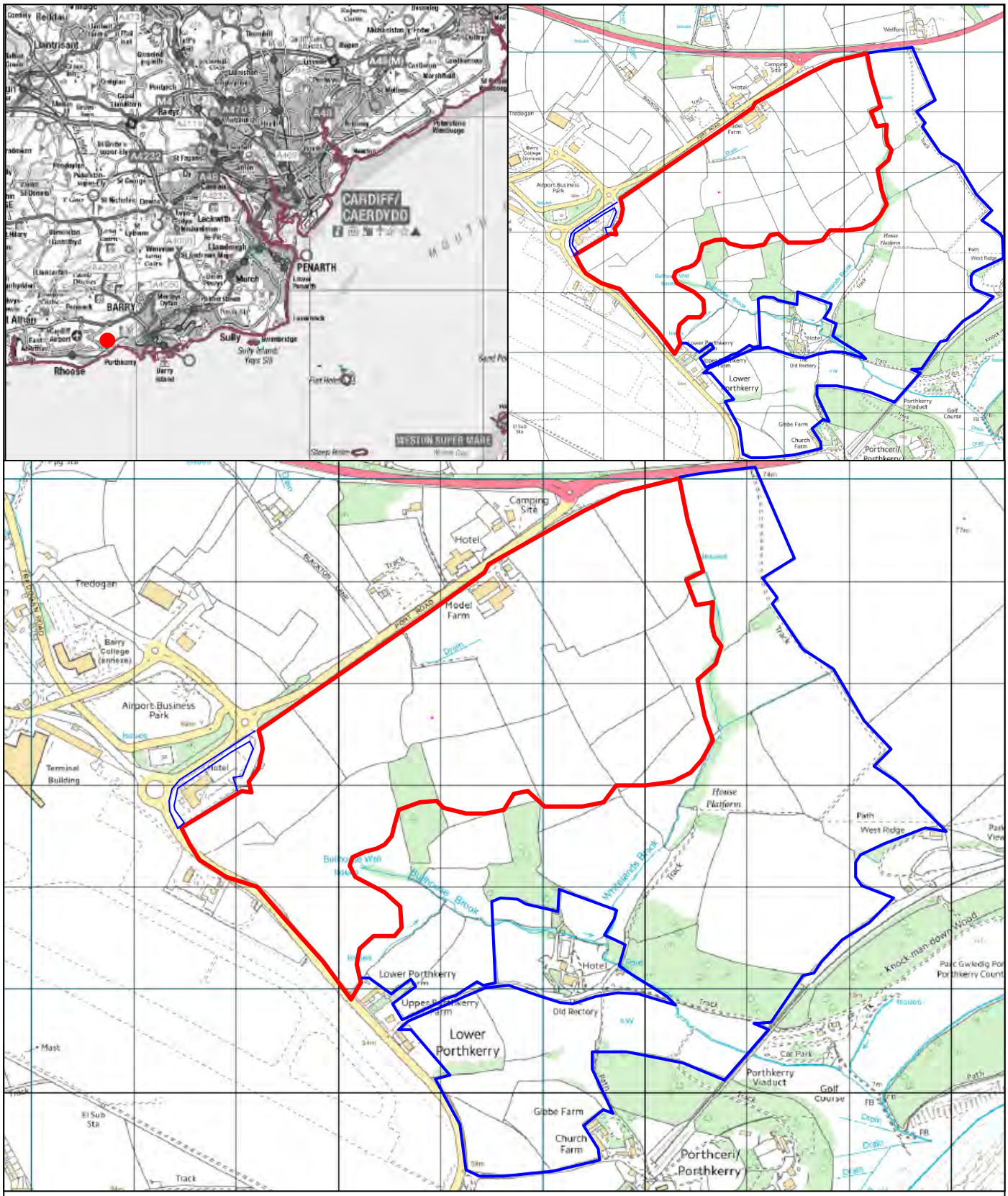
1900-1901 Ordnance Survey Map extract

1937-47 Ordnance Survey Map extract

1975 Ordnance Survey Map extract

2018 Ordnance Survey Map extract

FIGURES



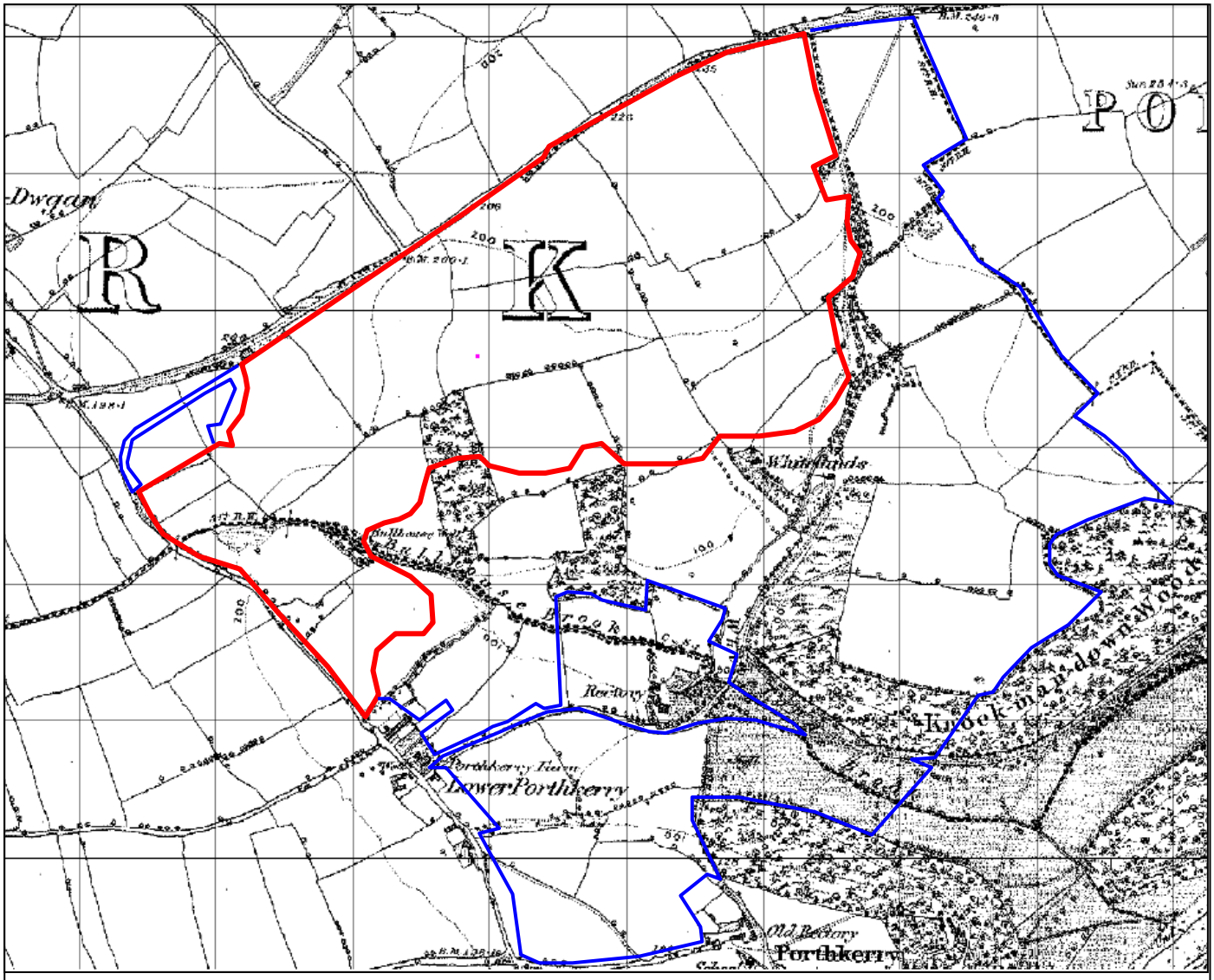
Site:
Land at Model Farm, Rhoose, Vale of Glamorgan

N

CgMs HERITAGE
PART OF RPS

Not to Scale: Illustrative Only

Figure 1:
Site Location



SITE:
Land at Model Farm, Rhoose, Vale of Glamorgan

N

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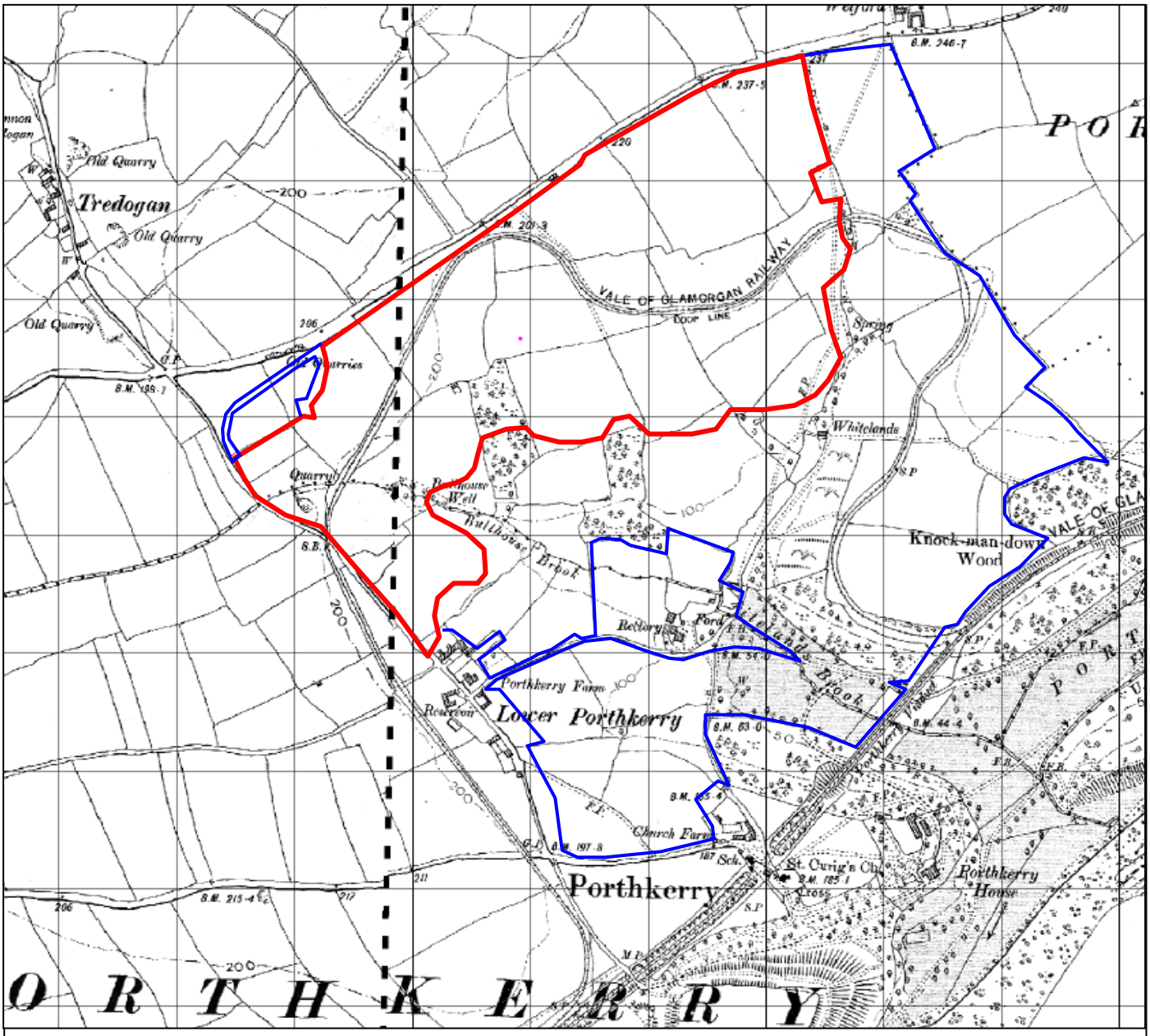
Not to Scale: Illustrative Only

Figure 2:
1885 Ordnance Survey Map



SITE:
Land at Model Farm, Rhoose, Vale of Glamorgan

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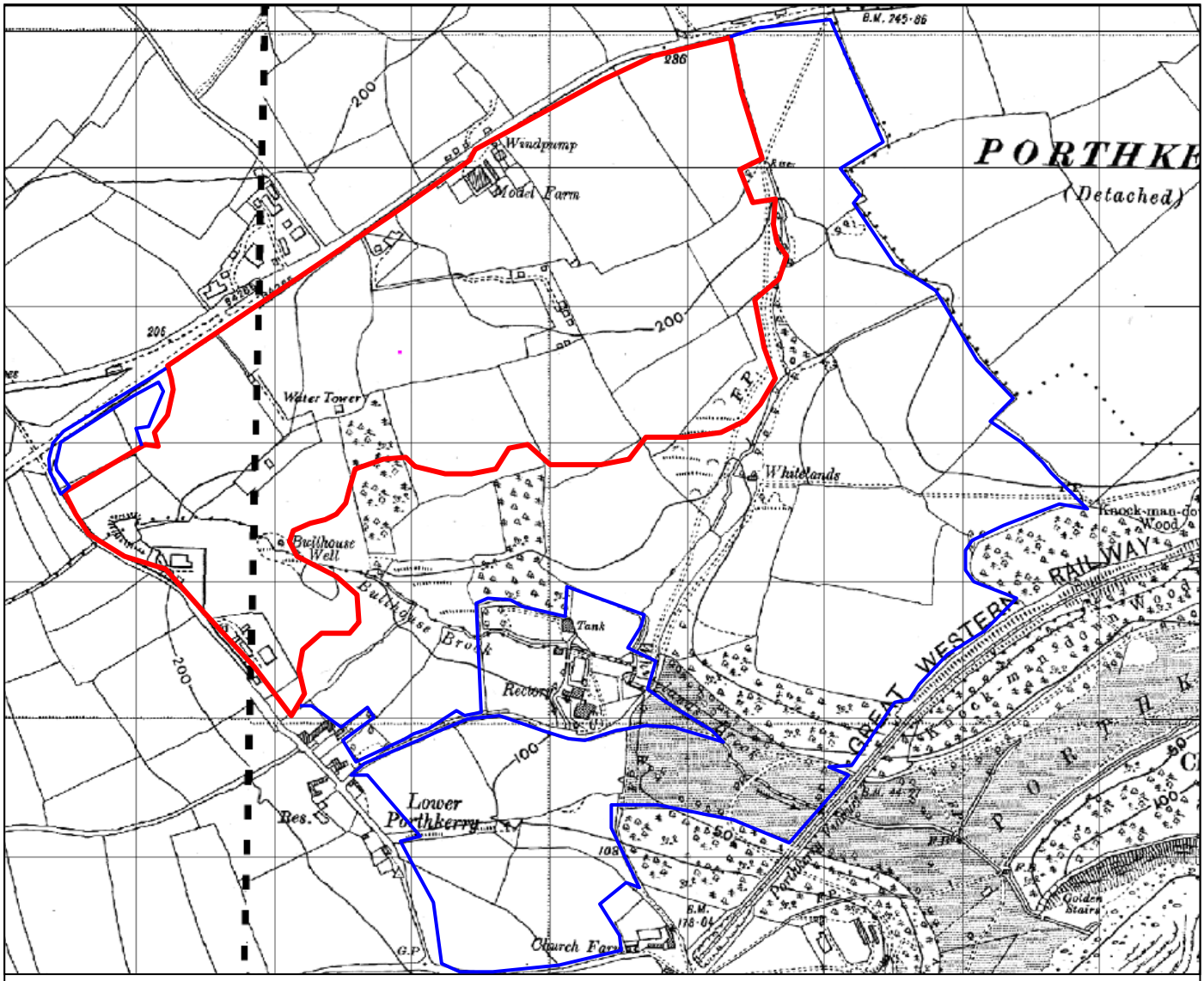
CgMs HERITAGE PART OF RPS

Not to Scale: Illustrative Only

Figure 3:
1900-1901 Ordnance Survey Map



SITE:
Land at Model Farm, Rhoose, Vale of Glamorgan

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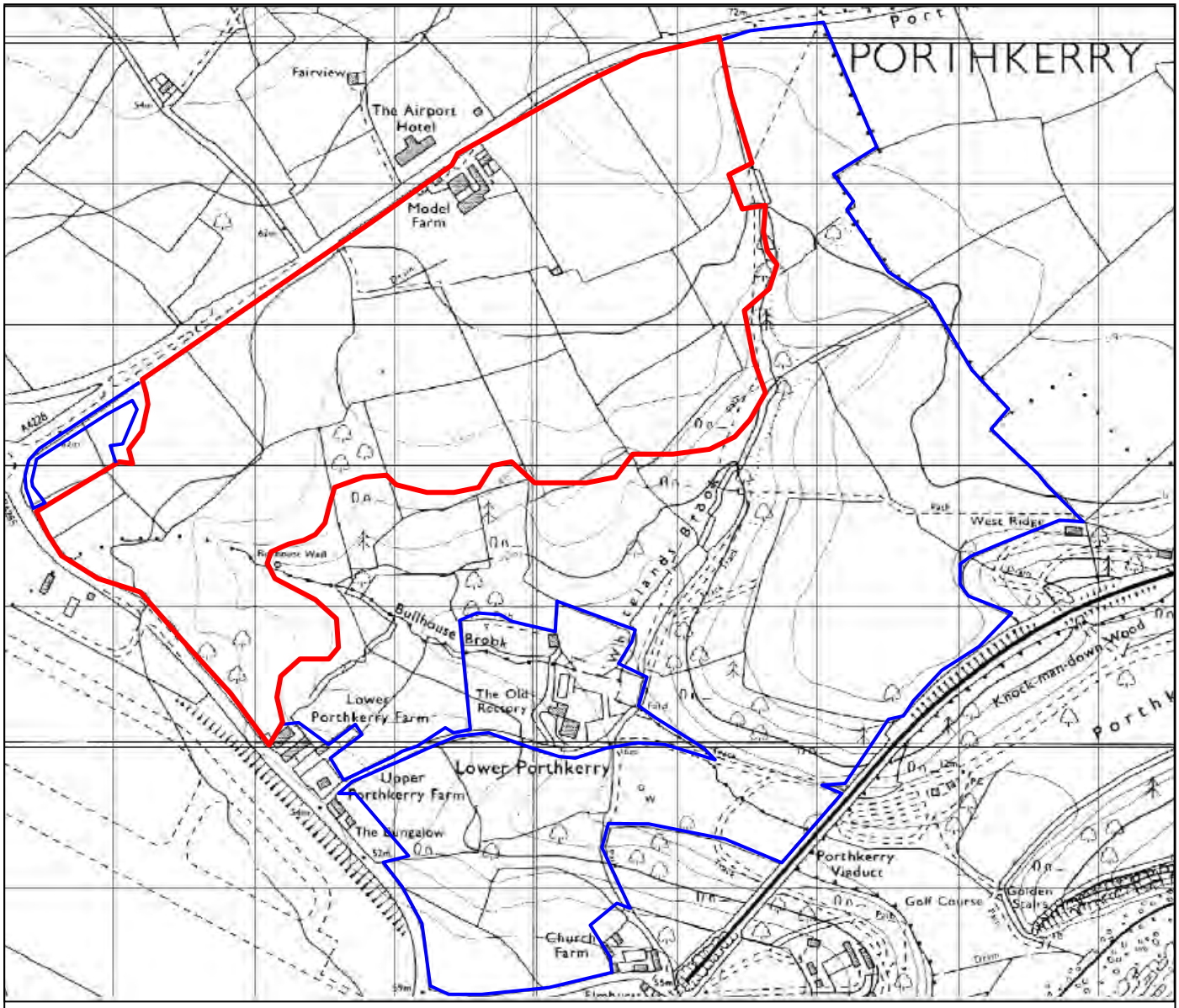
Not to Scale: Illustrative Only

Figure 4:
1938-1947 Ordnance Survey Map



SITE:
Land at Model Farm, Rhoose, Vale of Glamorgan

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CgMs HERITAGE
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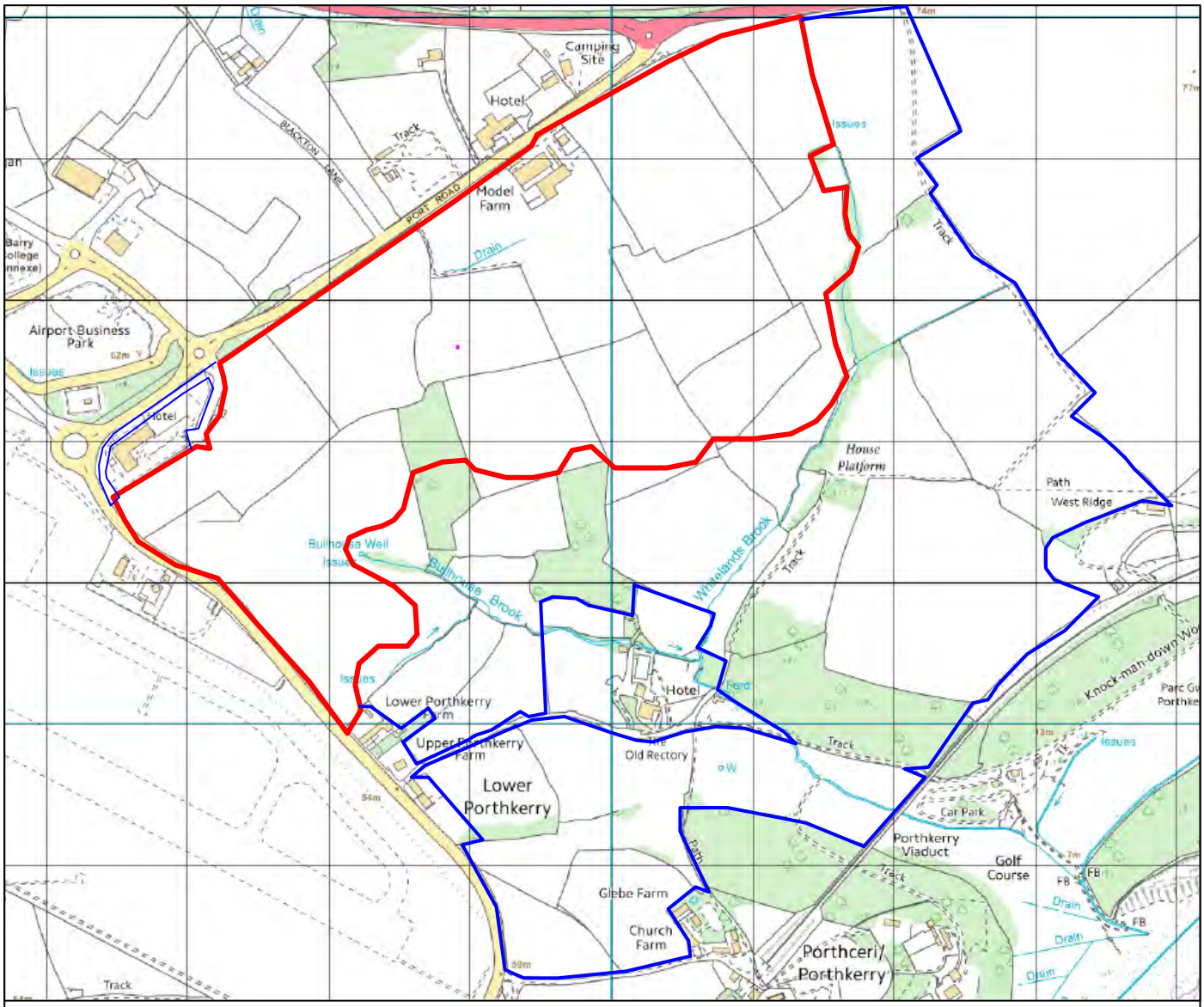
Not to Scale: Illustrative Only

Figure 5:
1975 Ordnance Survey Map



SITE:
Land at Model Farm, Rhoose, Vale of Glamorgan

N

CgMs HERITAGE
PART OF RPS

Not to Scale: Illustrative Only

Figure 6:
2018 Ordnance Survey Map

PLATES

Plate 1: View over the Site from north-western edge adjacent to Holiday Inn

Plate 2: View north-east through Site with Port Road running away to the left.

Plate 3: View south-west over Site from public footpath along eastern boundary of the Site.

Plate 4: View north-west towards the Site from road leading to Porthkerry.

Plate 5: Lower Porthkerry Farmhouse.

Plate 6: Lower Porthkerry Farmhouse viewed from the north-west along Porthkerry Road.

Plate 7: Upper Porthkerry Farmhouse.

Plate 8: Former stable associated with Upper Porthkerry Farmhouse now converted to residential with a later extension and new window openings.

Plate 9: Church Farmhouse viewed from the centre of Porthkerry.

Plate 10: Outbuilding (former Kitchen Building associated with Church Farmhouse)

Plate 11: Church of St Curig viewed from burial ground

Plate 12: Porthkerry Conservation Area viewed from south of Upper Porthkerry Farmhouse on Porthkerry Road.

Plate 13: Porthkerry Conservation Area viewed from road leading into the settlement.

Plate 14: Porthkerry Conservation Area looking towards Church Farmhouse and former school (left).

Plate 15: Porthkerry Viaduct viewed from unnamed road adjacent to Former Egerton Grey House Hotel.

Plate 16: Porthkerry Viaduct viewed over Site from Porthkerry Road

Plate 17: Former Egerton Grey House Hotel.

APPENDICES

HB1
Lower Porthkerry Farmhouse

HB2
Upper Porthkerry Farmhouse

HB3
Former Upper Porthkerry Farm Stables

13620
Porthkerry Railway Viaduct (partly in the community of Rhoose)

83158
Porthkerry Viaduct (partly in the Barry community)

HB5
Outbuilding associated with Church Farmhouse

HB4
Church Farmhouse (aka Glebe Farm)

13398
The Old School House

HB6
Church of St Curig

HB8
Former Egerton Grey House Hotel

Porthkerry CA

CgMs HERITAGE PART OF RPS

- Site Boundary
- L&G Ownership
- 1km search radius

Listed Buildings

Grade

- II*
- II
- Conservation Area
- Non-designated heritage assets

N

Scale at A3: 1:8,000

0 250 m

Appendix 1:
Designated Heritage Assets

CgMs

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