

Figure 4.2: Journey time route 9

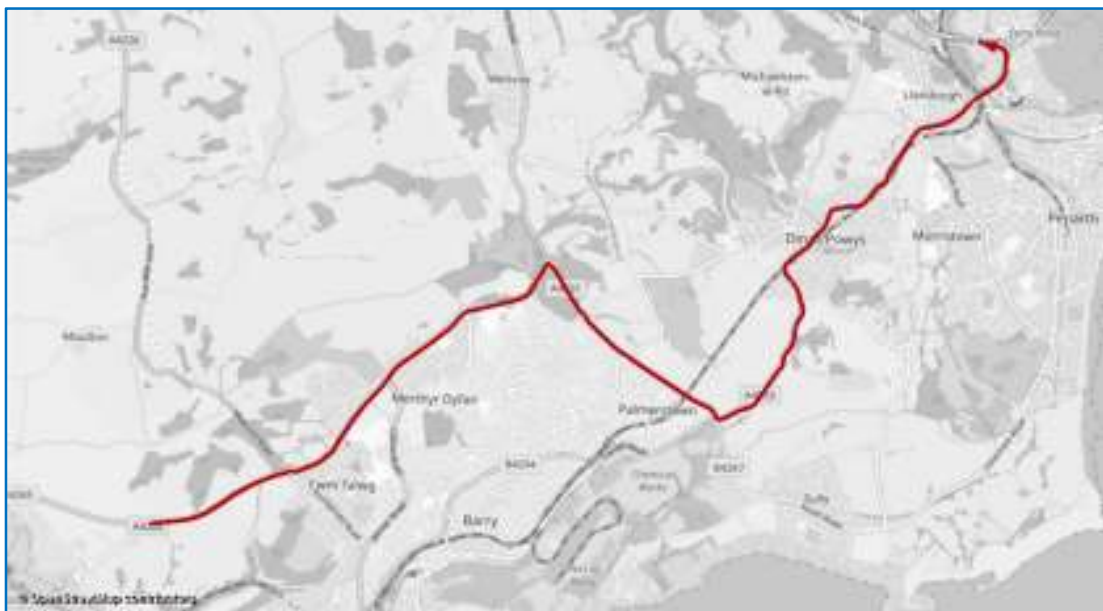


Figure 4.3: Journey time route 20

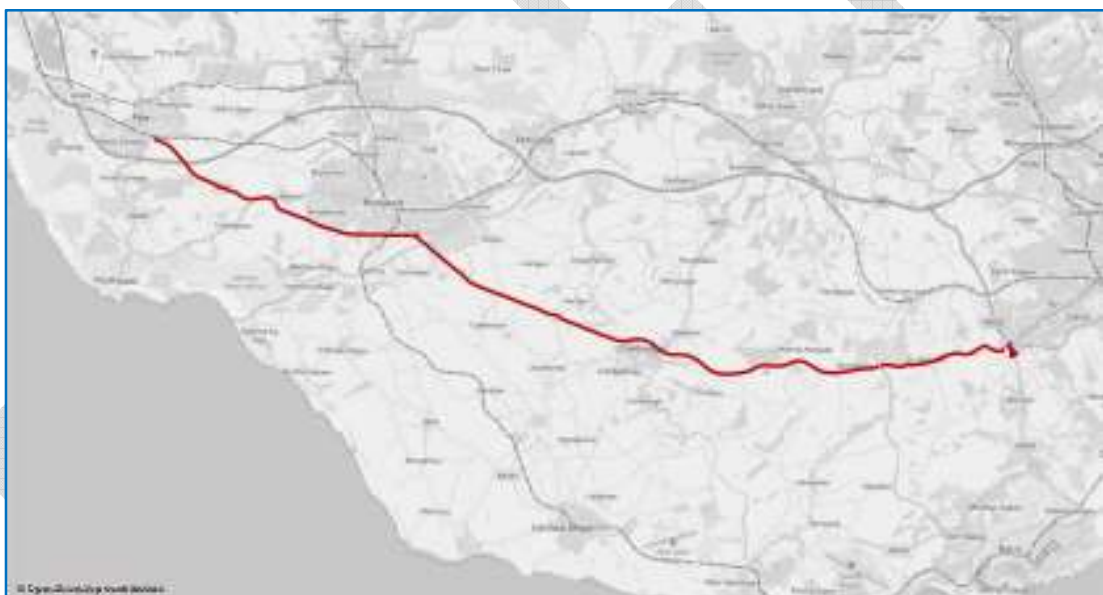


Figure 4.4: Journey time change check (09EB AM)

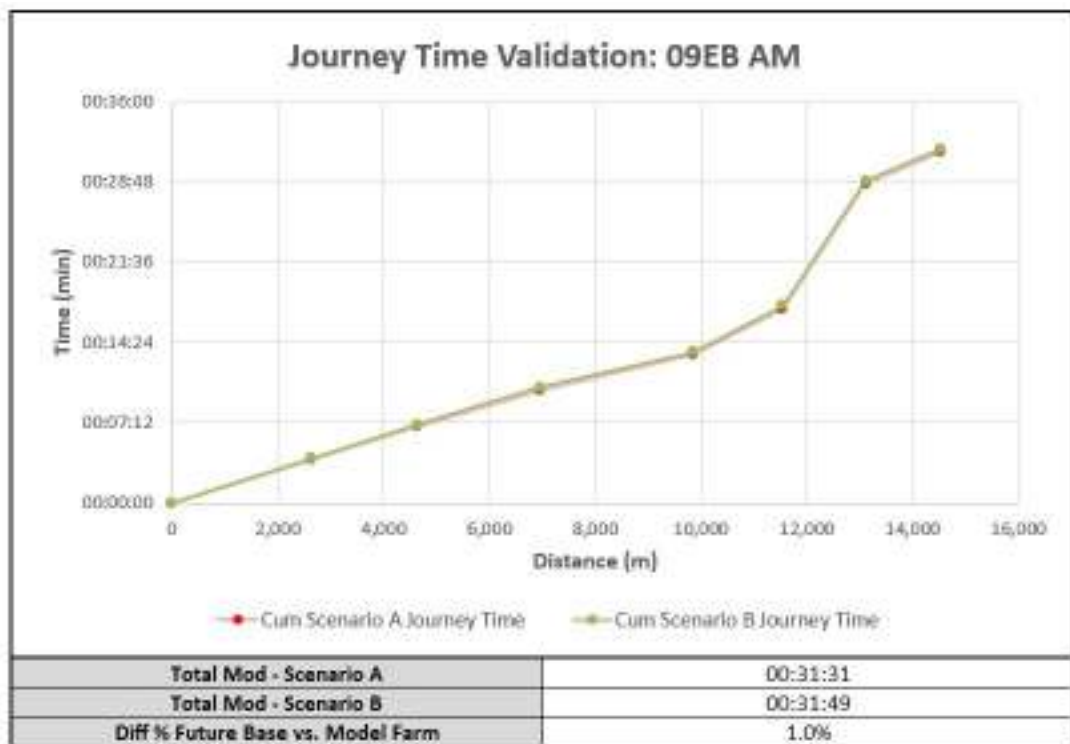


Figure 4.5: Journey time change check (09EB PM)

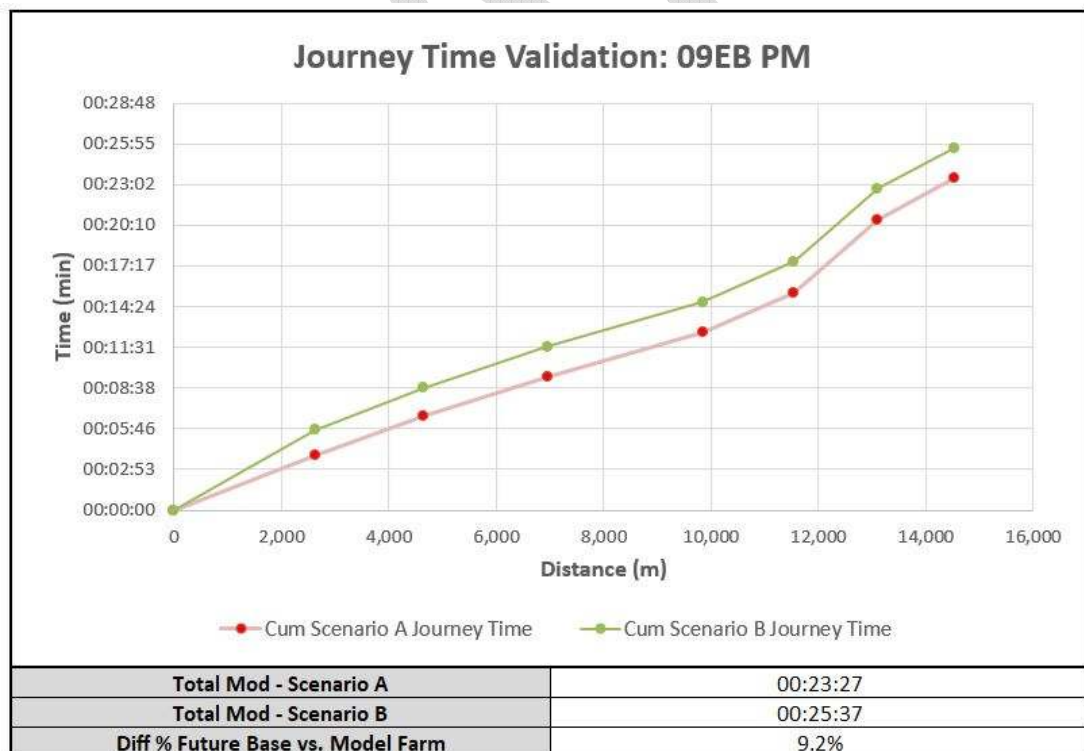


Figure 4.6: Journey time change check (09WB AM)

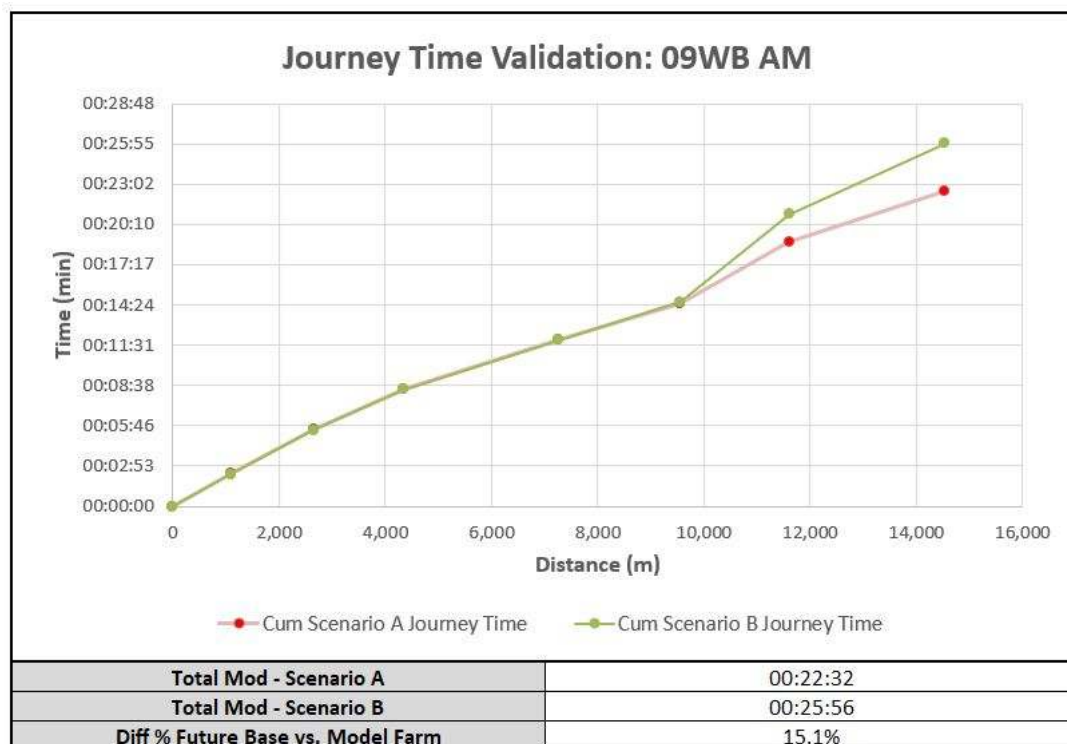


Figure 4.7: Journey time change check (09WB PM)

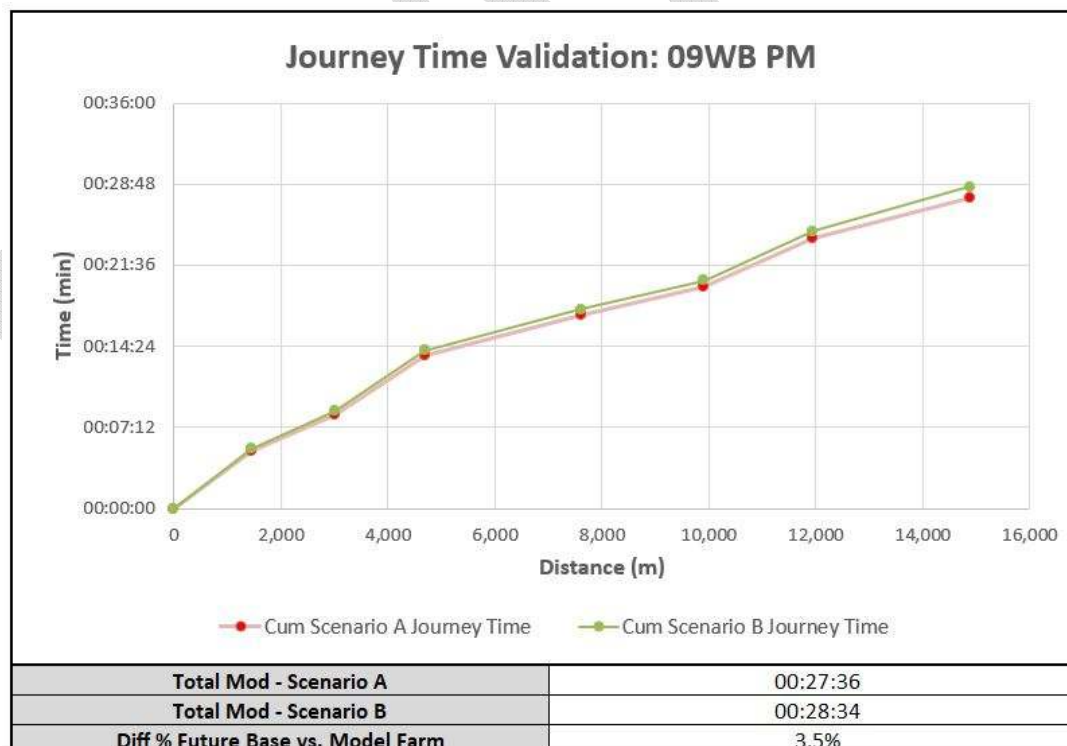


Figure 4.8: Journey time change check (20EB AM)

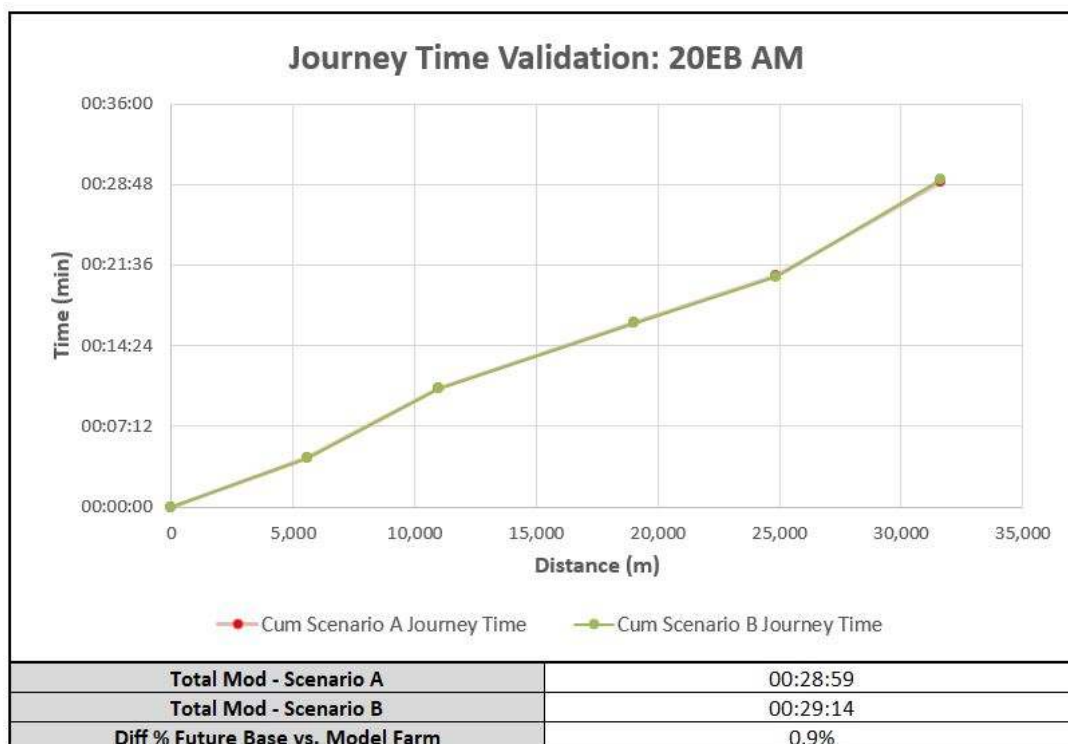


Figure 4.9: Journey time change check (20EB PM)

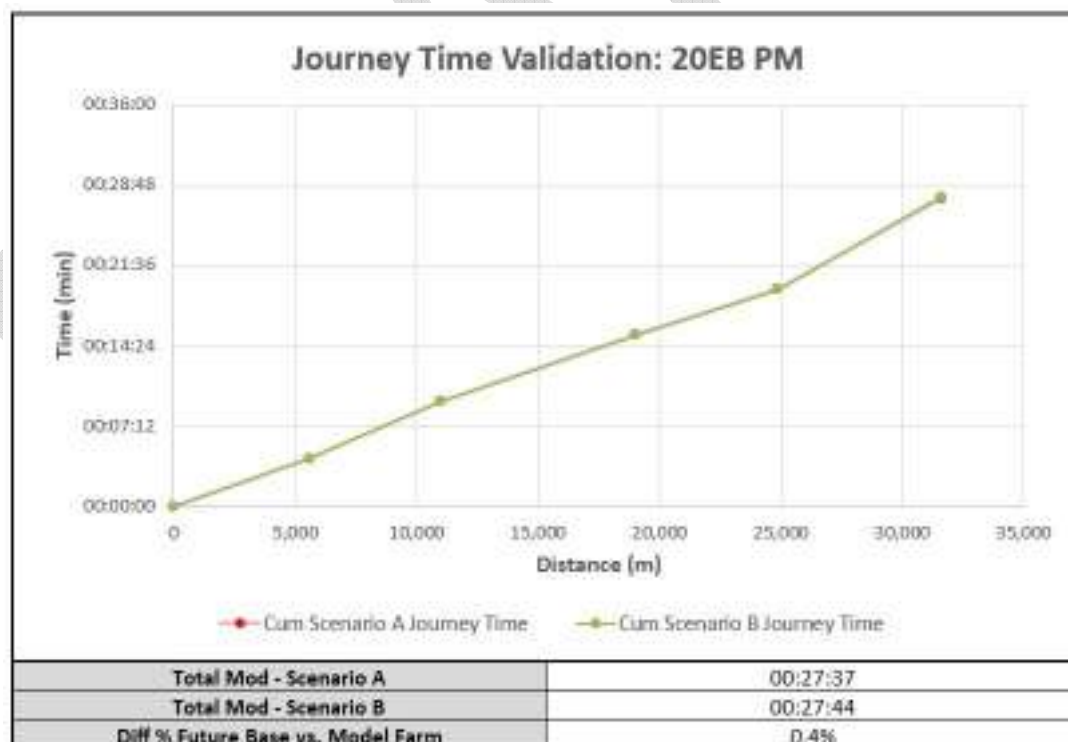


Figure 4.10: Journey time change check (20WB AM)

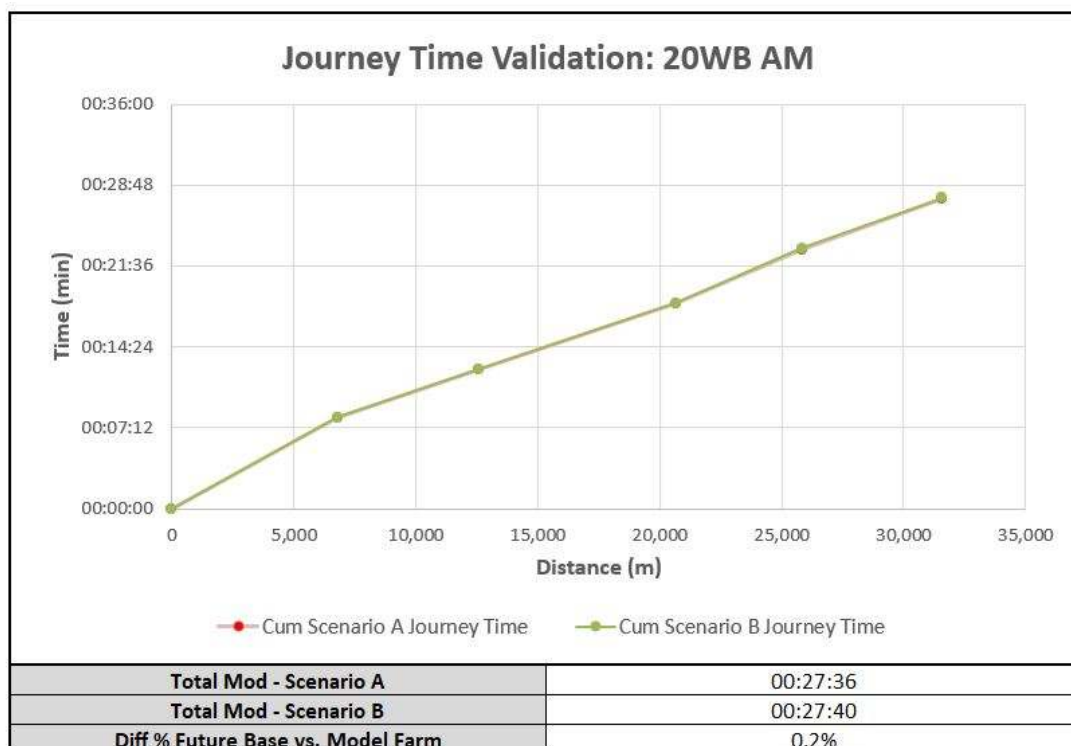
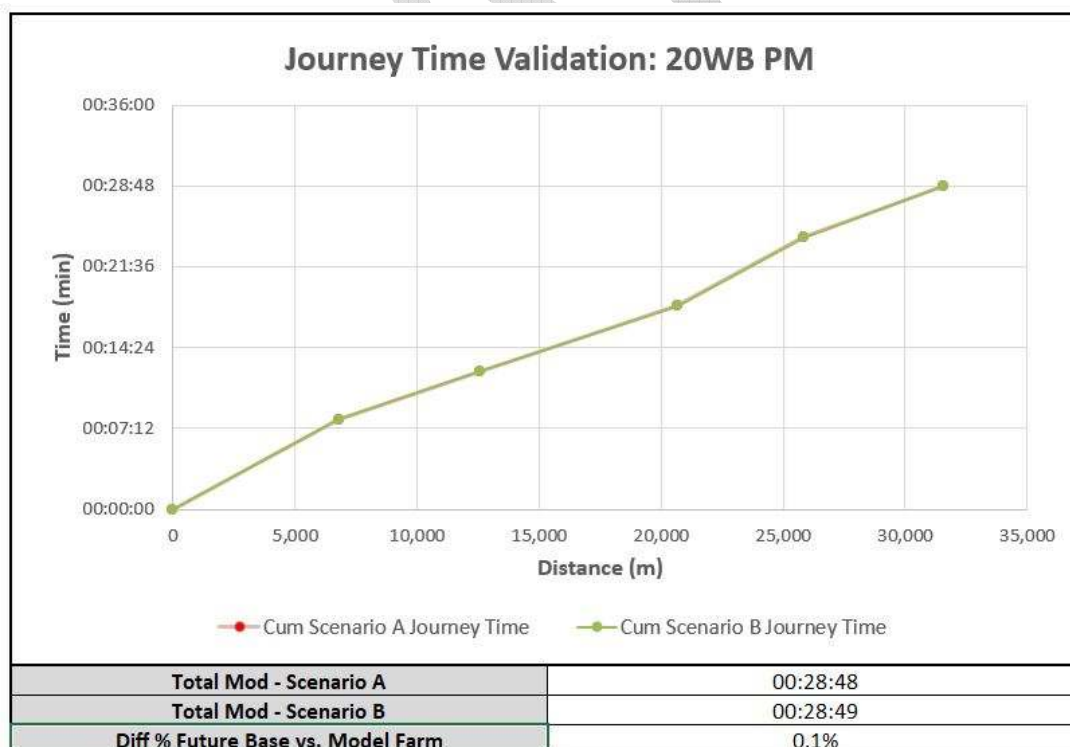


Figure 4.11: Journey time change check (20WB PM)



4.3 COMPARISON AND ANALYSIS OF TRAFFIC FLOWS

- 4.3.1 Traffic flow analysis has been carried on various levels and comparison plots have been produced in order to be able to examine the relative impact of the development against the future year base network. Data and graphical outputs are extracted for the following network objects:

- ▶ Link traffic flows;
- ▶ Turning movements; and
- ▶ Link flow bundle analysis.

4.4 LINK TRAFFIC FLOWS

4.4.1 Link traffic flows has been extracted to display and analyse post Model Farm development traffic flows and the absolute changes in traffic volumes across the local and wider highway network respectively as in Figure 4.12 to Figure 4.15. The only significant traffic flow change is on the A4226 between the development site and A4050 but according to the level of service and journey time route analysis the impact of the increased traffic flow in the local highway network is within the satisfactory level and queues are not likely to form at the key junctions of the area.

Figure 4.12: Total PrT and HGV traffic volumes (AM)



Figure 4.14: Total PrT and HGV traffic flow difference (AM)



APPENDIX A – LEVEL OF SERVICE PLOTS (2026)

Level of service plots – Scenario A – AM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



Junction 9



Junction 10



Level of service plots – Scenario A – PM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



Junction 9



Junction 10



Level of service plots – Scenario B – AM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



Junction 9



Junction 10



Level of service plots – Scenario B – PM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



Junction 9

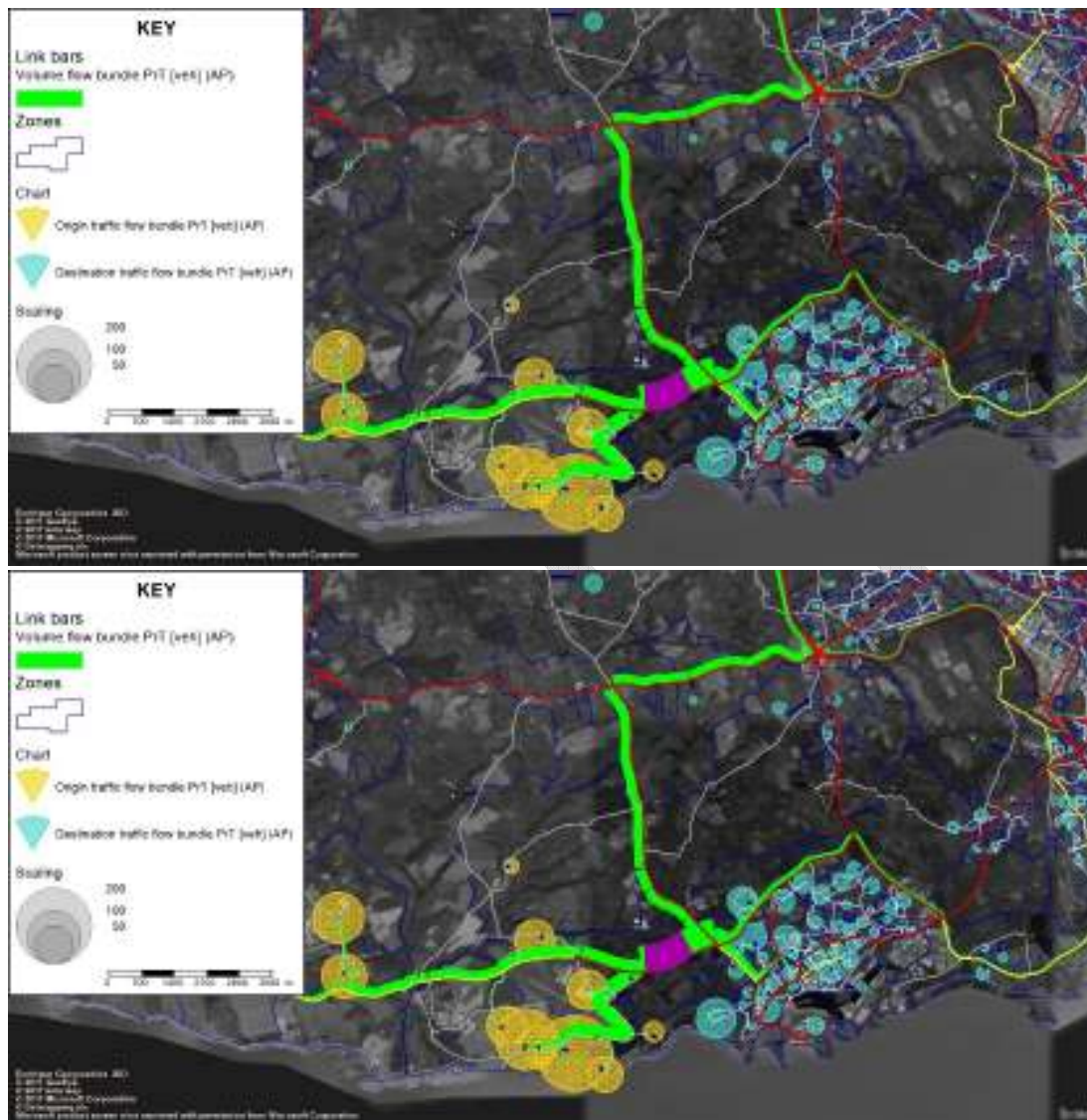


Junction 10

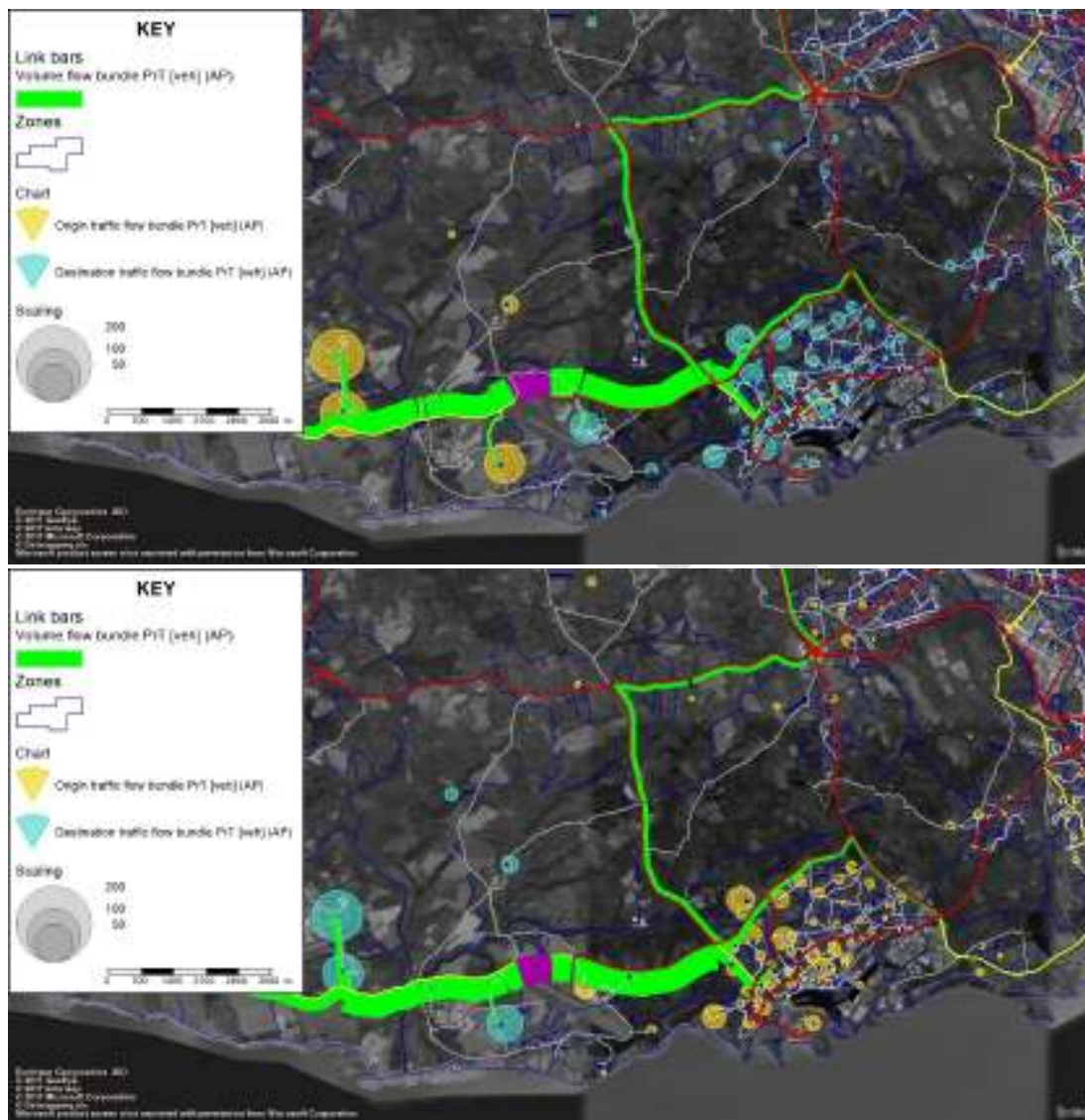


APPENDIX B – FLOW BUNDLE PLOTS (2026)

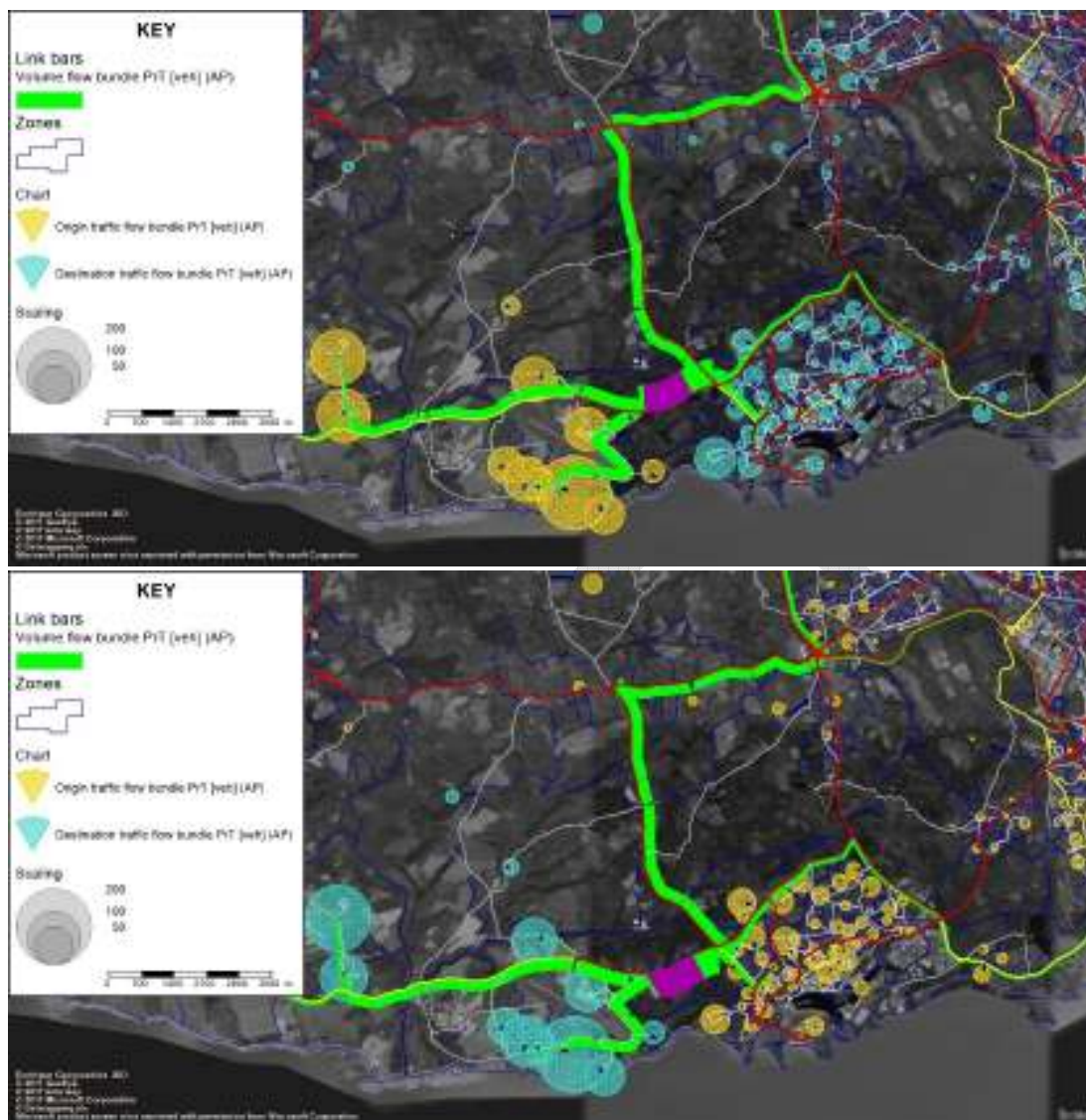
Flow Bundle Plots – Scenario A - AM



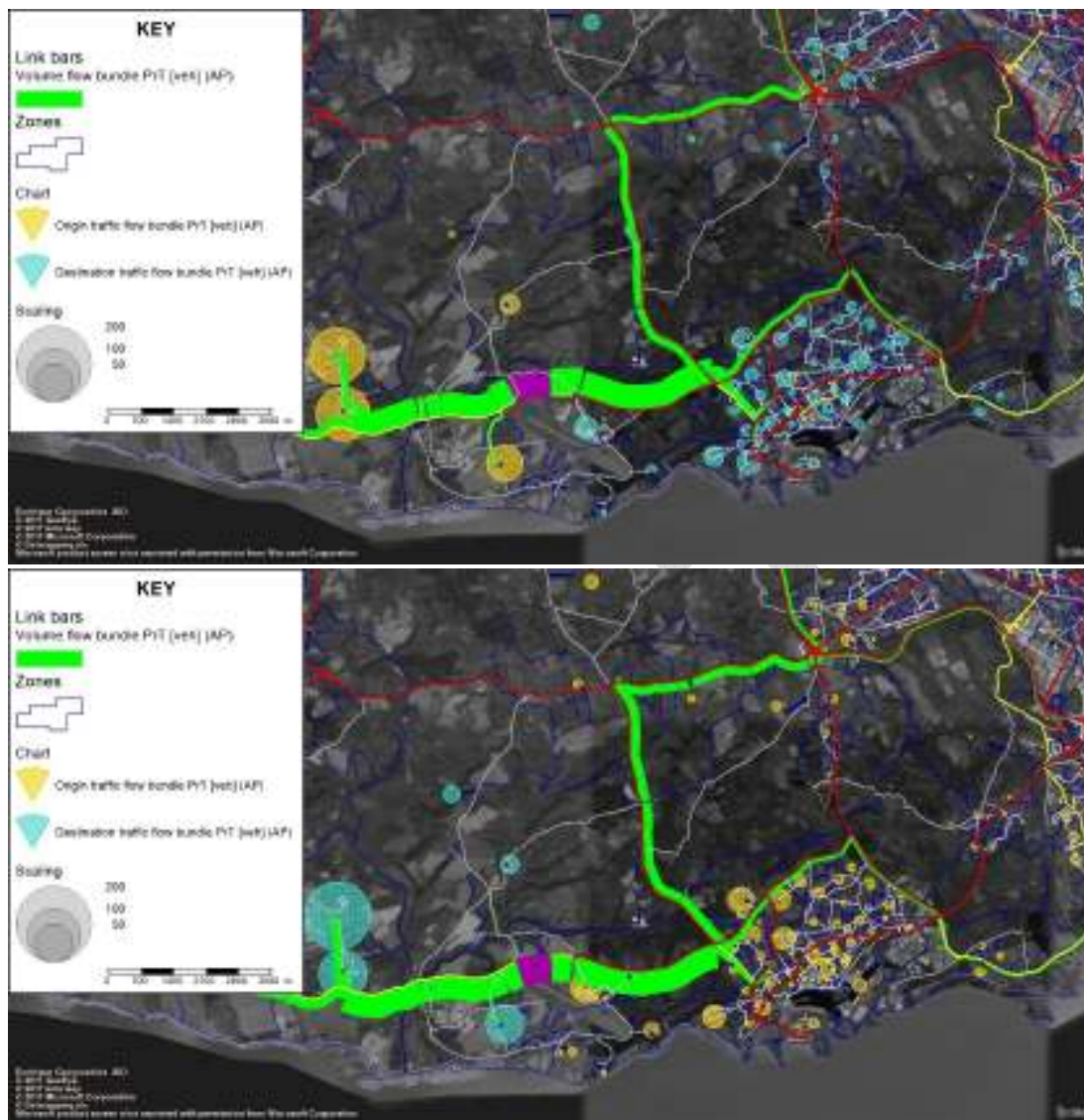
Strategic Transport Modelling Assessment - Model Farm, Cardiff



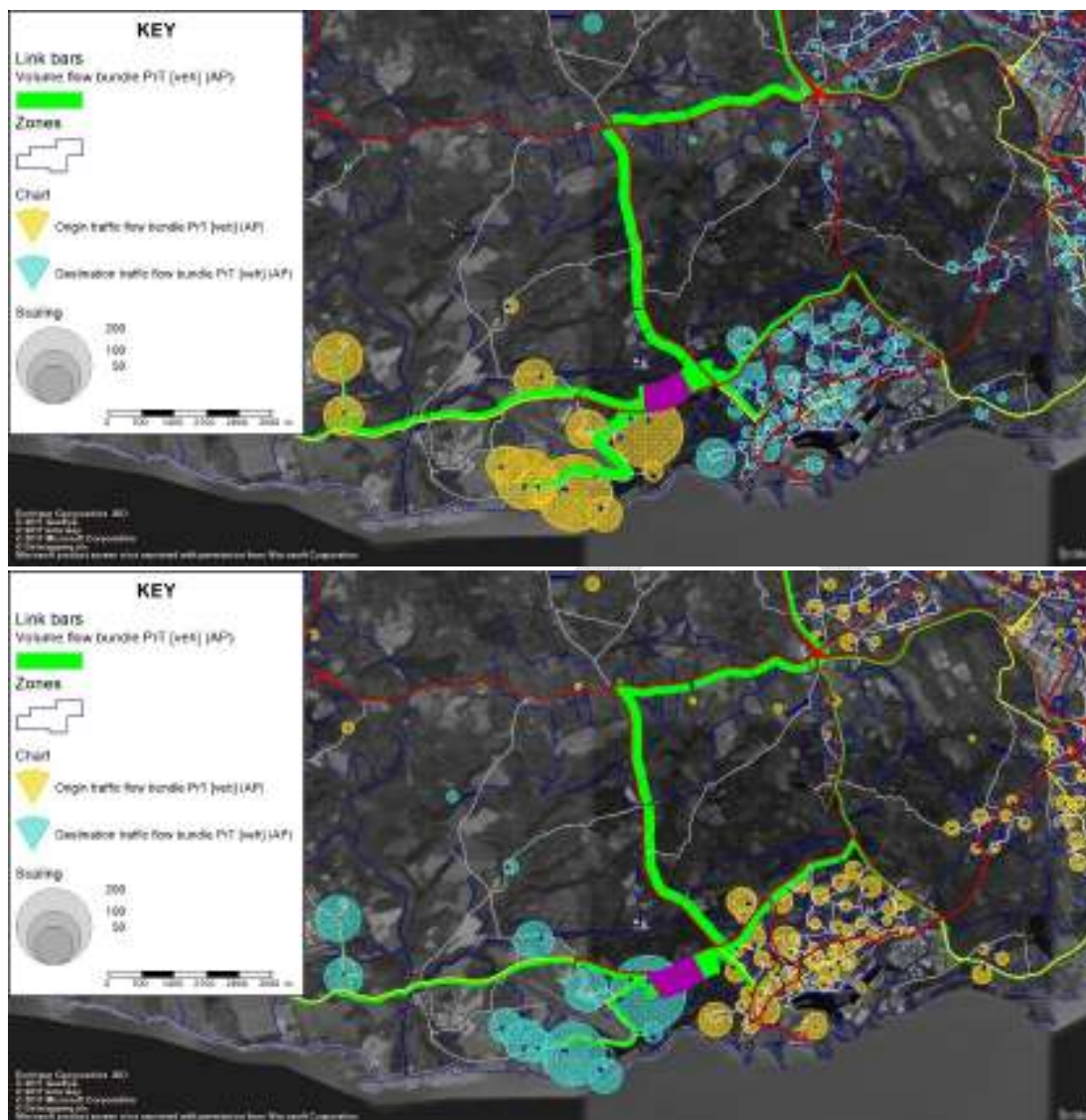
Flow Bundle Plots – Scenario A - PM



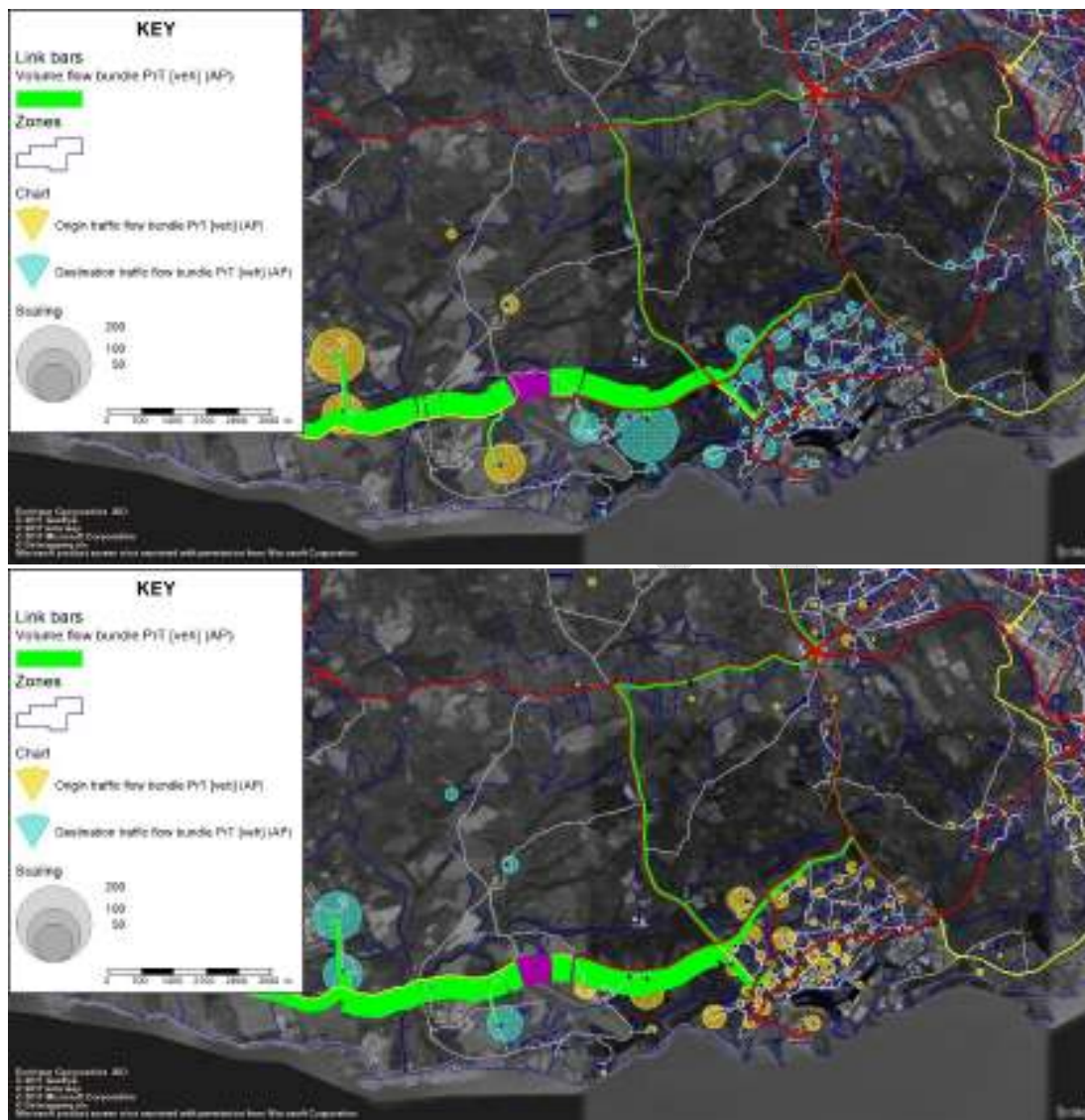
Strategic Transport Modelling Assessment - Model Farm, Cardiff



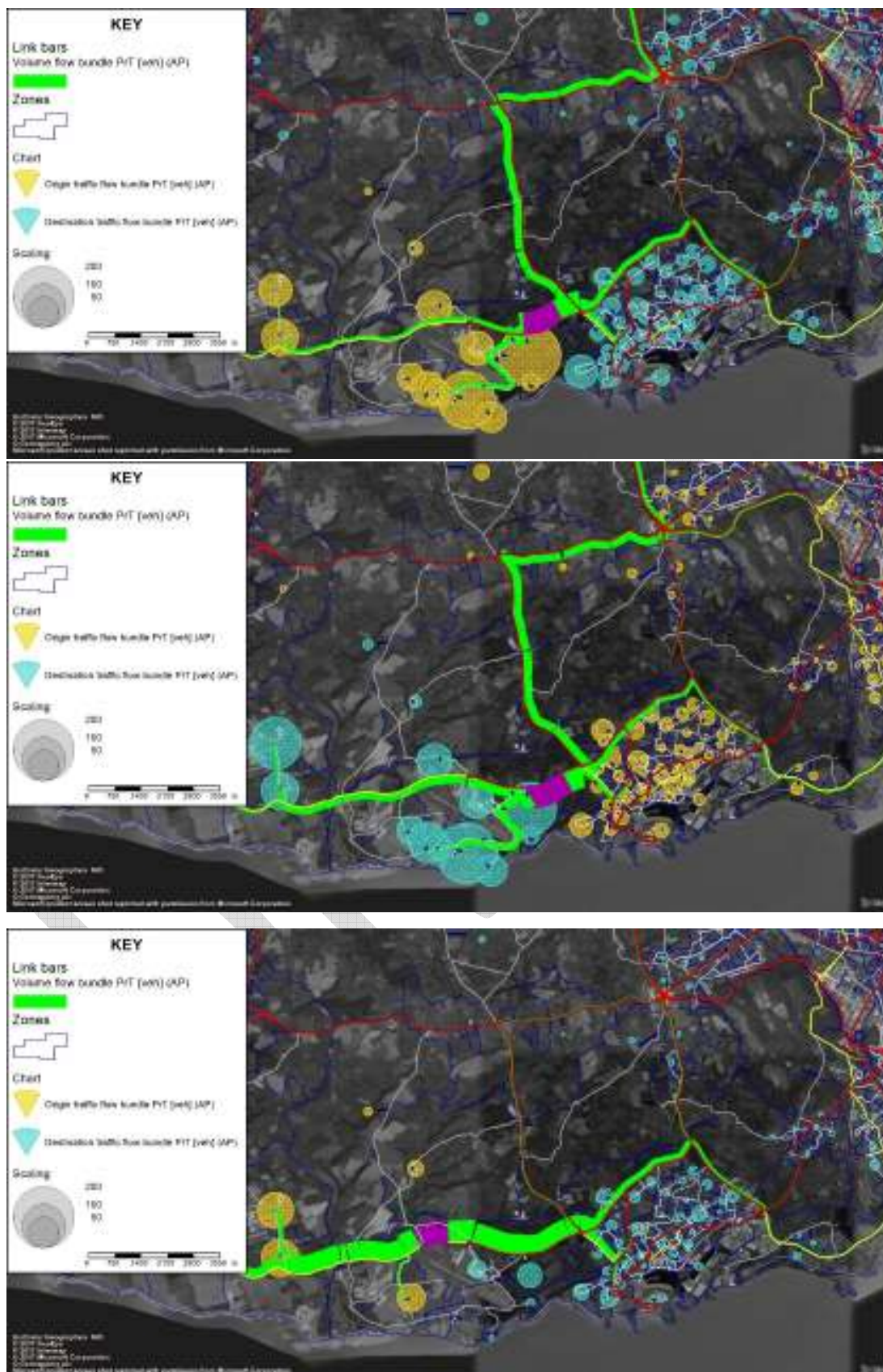
Flow Bundle Plots – Scenario B - AM

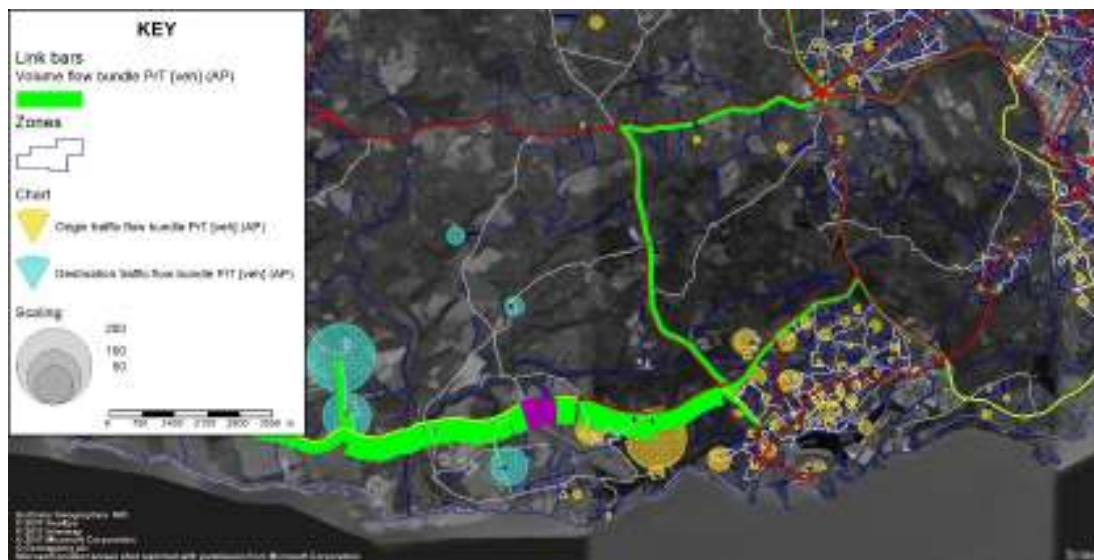


Strategic Transport Modelling Assessment - Model Farm, Cardiff



Flow Bundle Plots – Scenario B - PM





APPENDIX C – TURNING MOVEMENTS (2026)

Attached as a separate package.

DRAFT

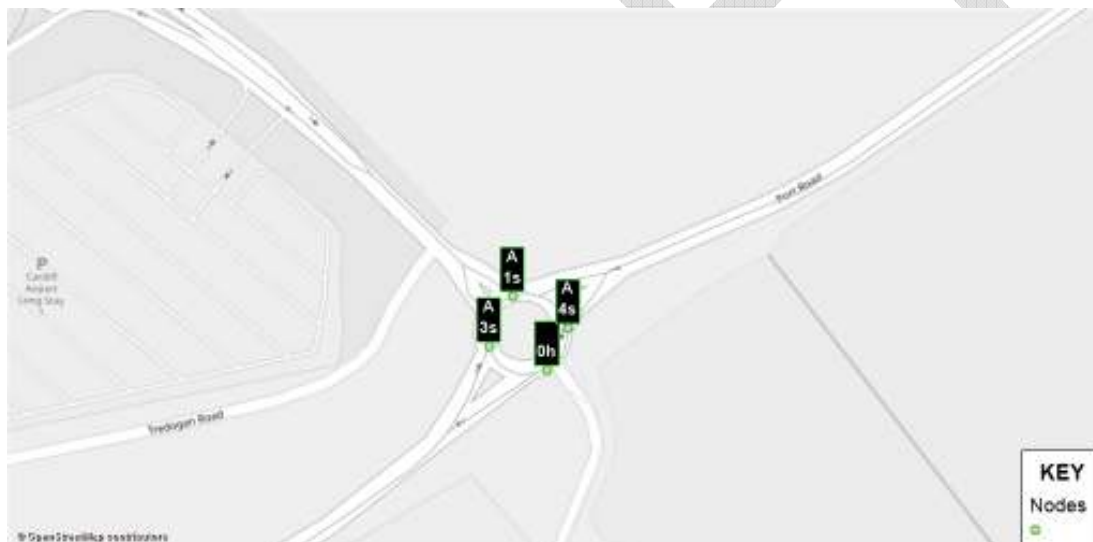
APPENDIX D – LEVEL OF SERVICE PLOTS (2029)

Level of service plots – Scenario A – AM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



Junction 9



Junction 10

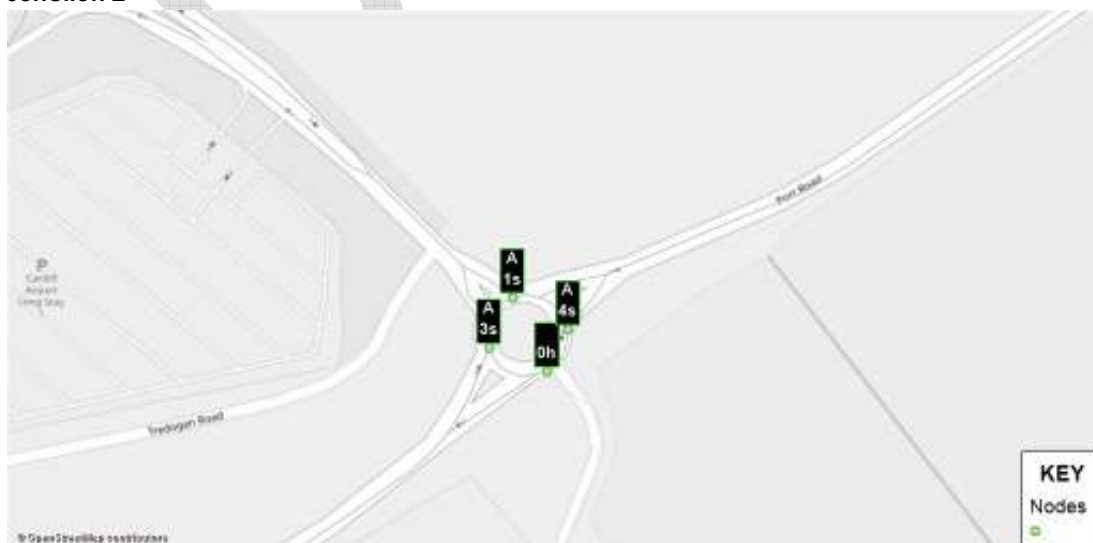


Level of service plots – Scenario A – PM

Junction 1



Junction 2



Junction 4



Junction 5



Junction 6



Junction 7



Junction 8



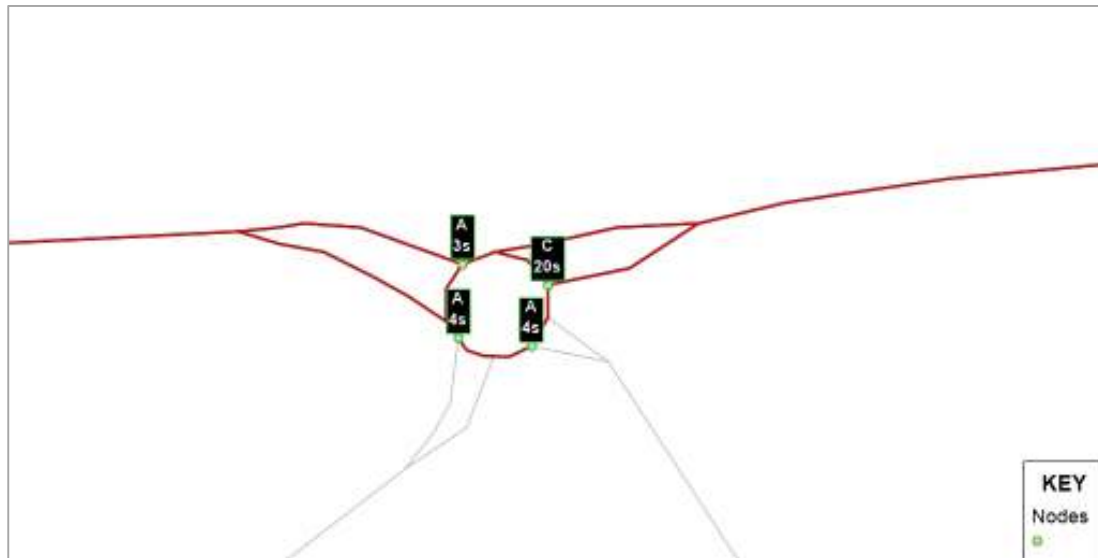
Junction 9



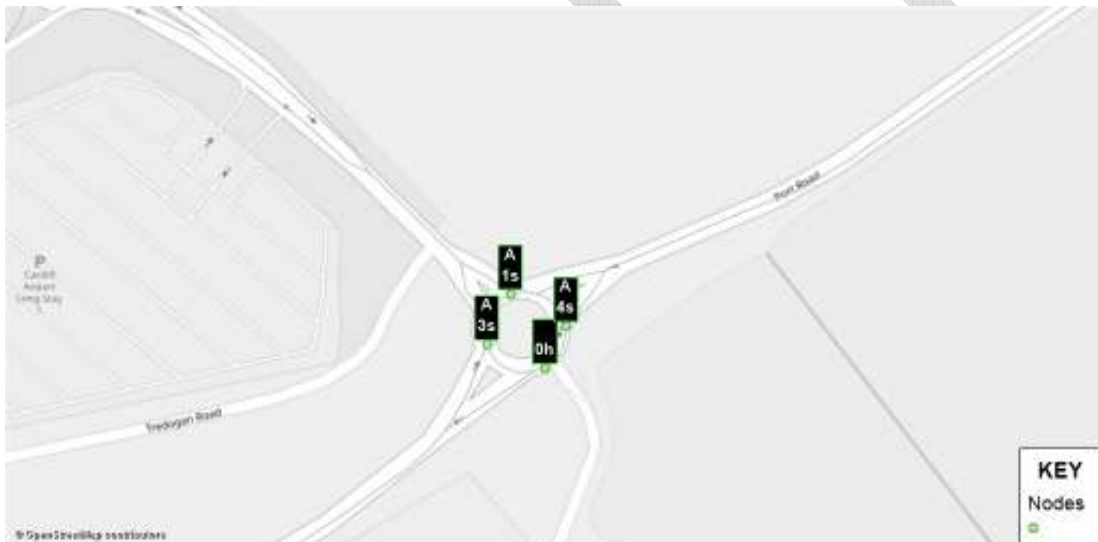
Junction 10

Level of service plots – Scenario B – AM

Junction 1



Junction 2



Junction 4



Junction 5



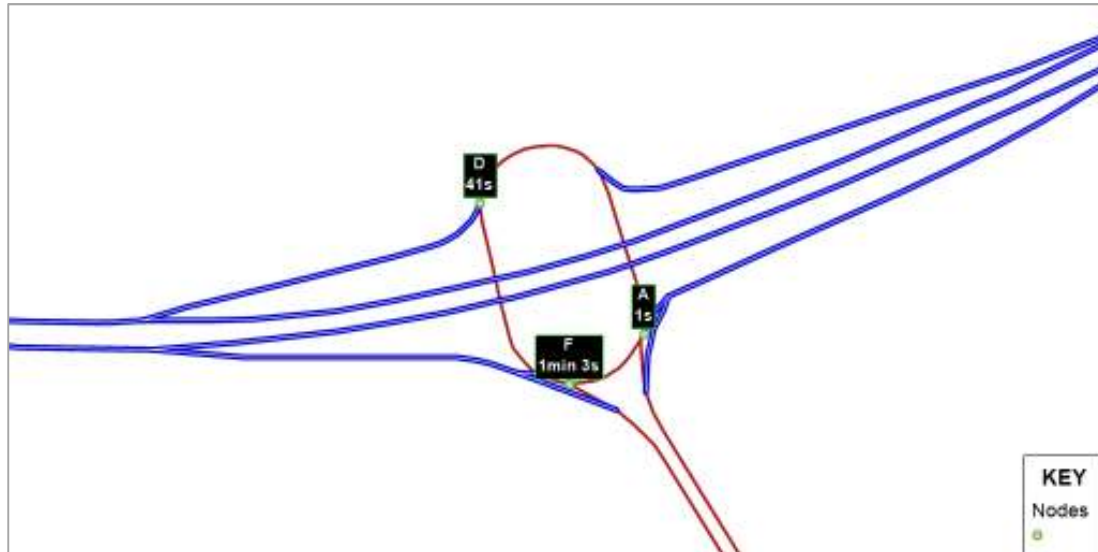
Junction 6



Junction 7



Junction 8



Junction 9



Junction 10

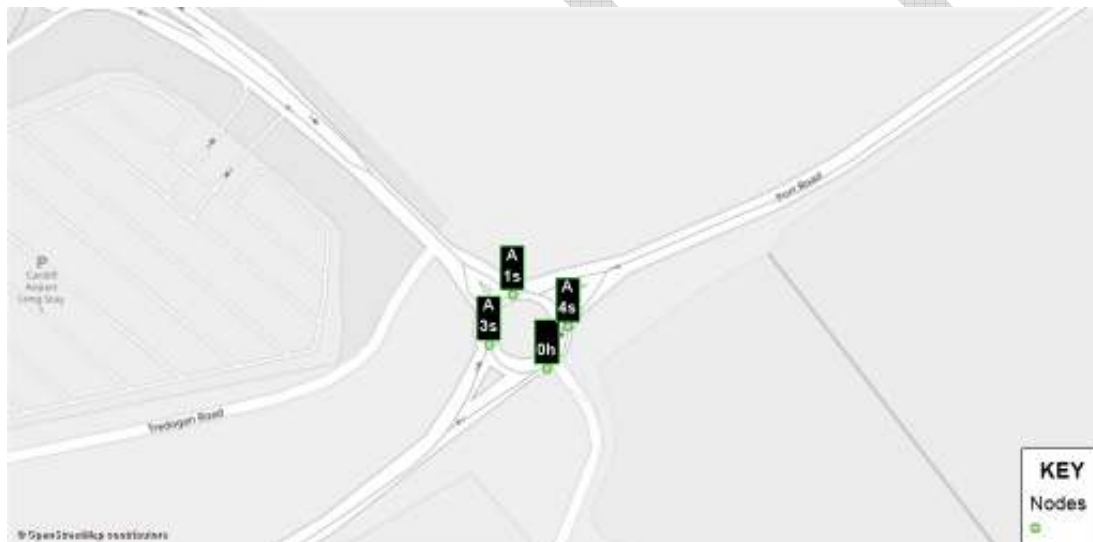


Level of service plots – Scenario B – PM

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)

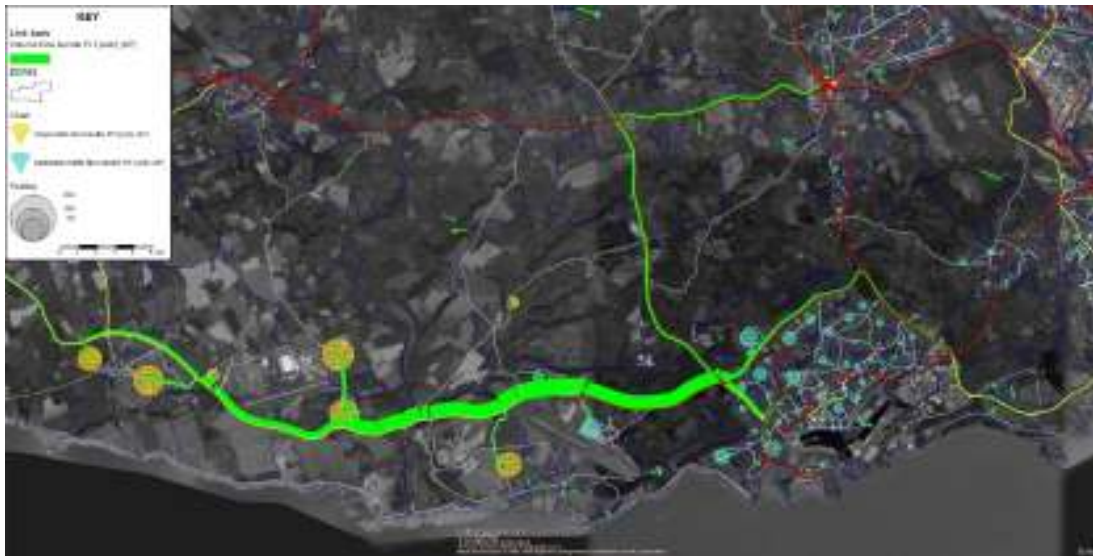


A4226 Westbound (east of Port Road)

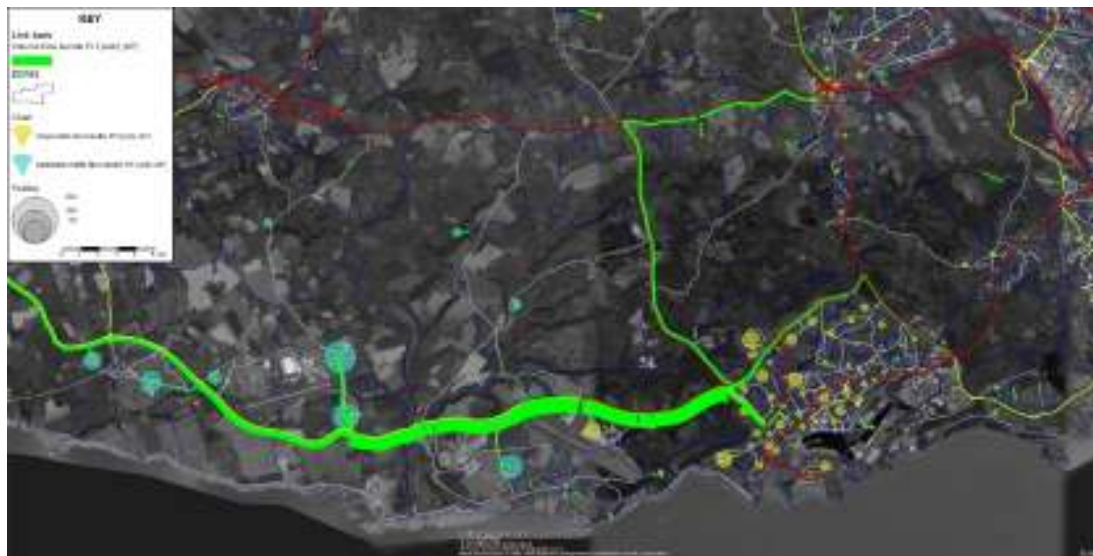


Strategic Transport Modelling Assessment - Model Farm, Cardiff

A4226 Eastbound (west of Port Road)



A4226 Westbound (west of Port Road)



Flow Bundle Plots – Scenario A – PM

A4226 Eastbound (east of Port Road)

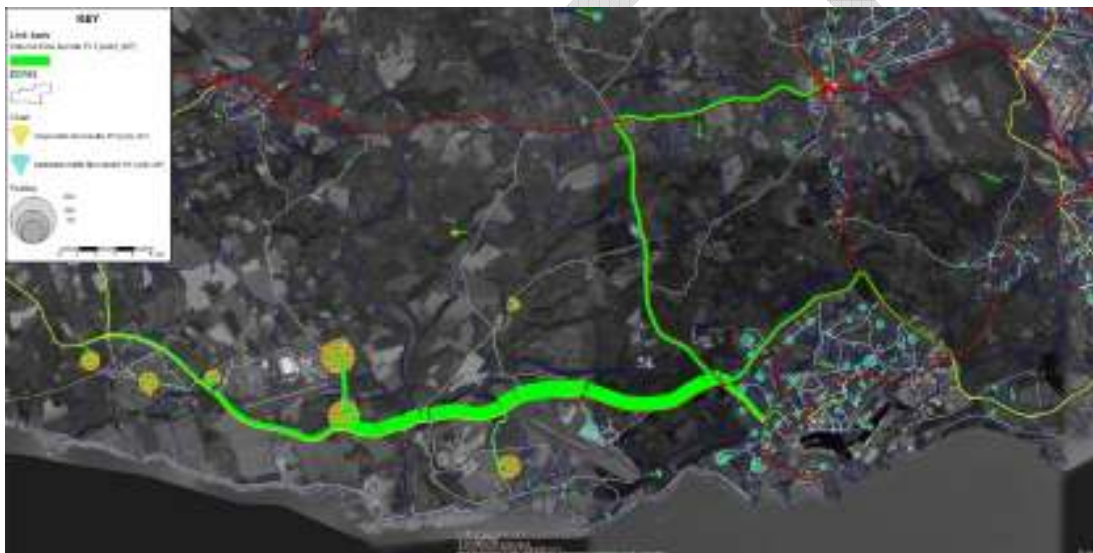


A4226 Westbound (east of Port Road)

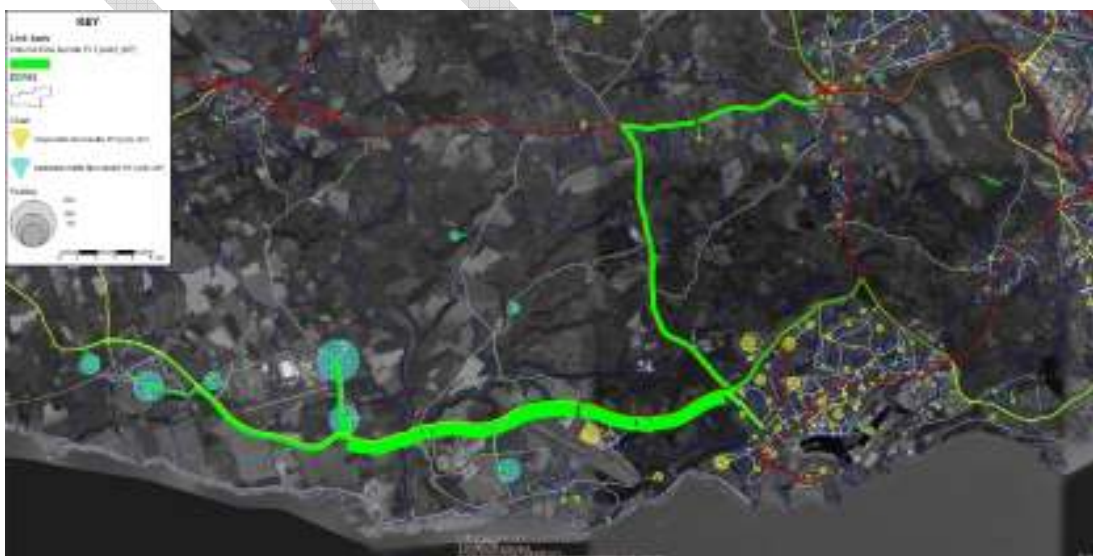
Strategic Transport Modelling Assessment - Model Farm, Cardiff



A4226 Eastbound (west of Port Road)

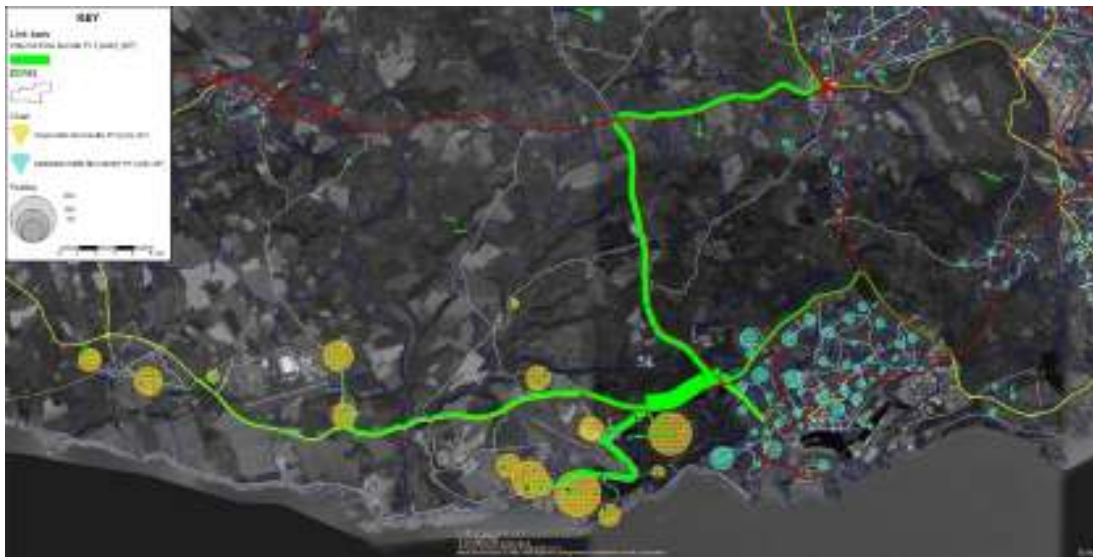


A4226 Westbound (west of Port Road)

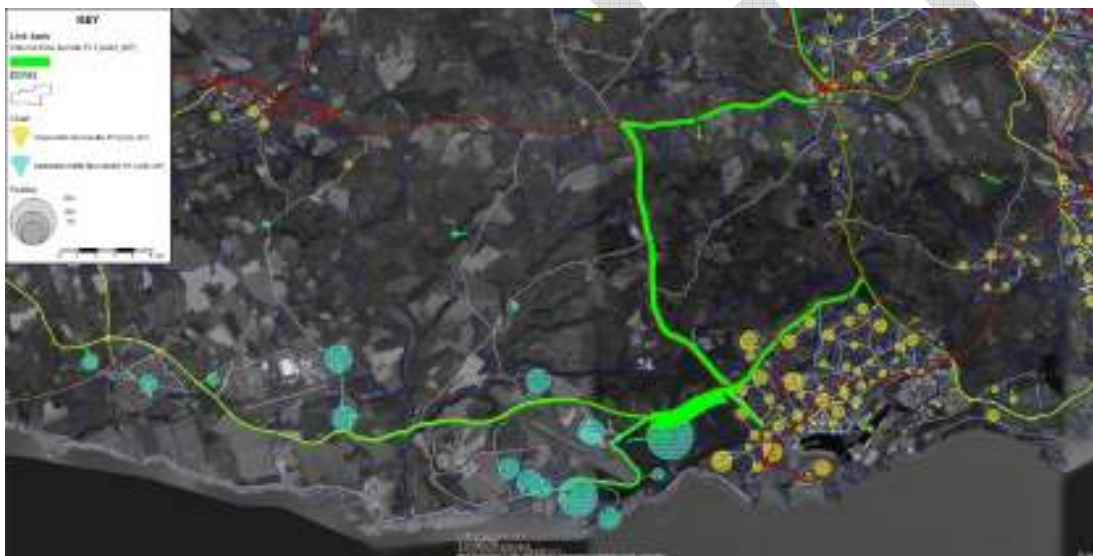


Flow Bundle Plots – Scenario B – AM

A4226 Eastbound (east of Port Road)

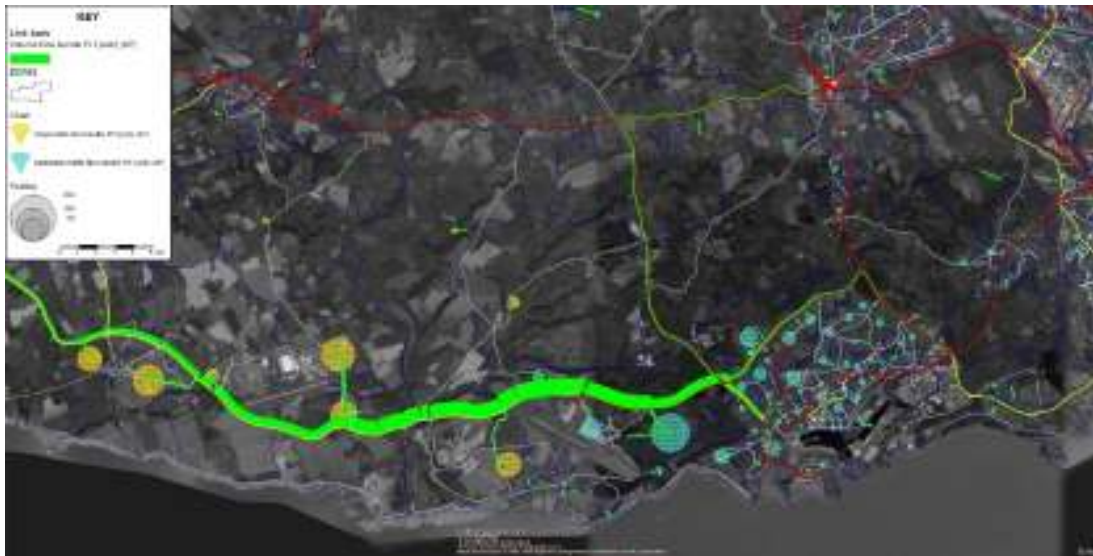


A4226 Westbound (east of Port Road)

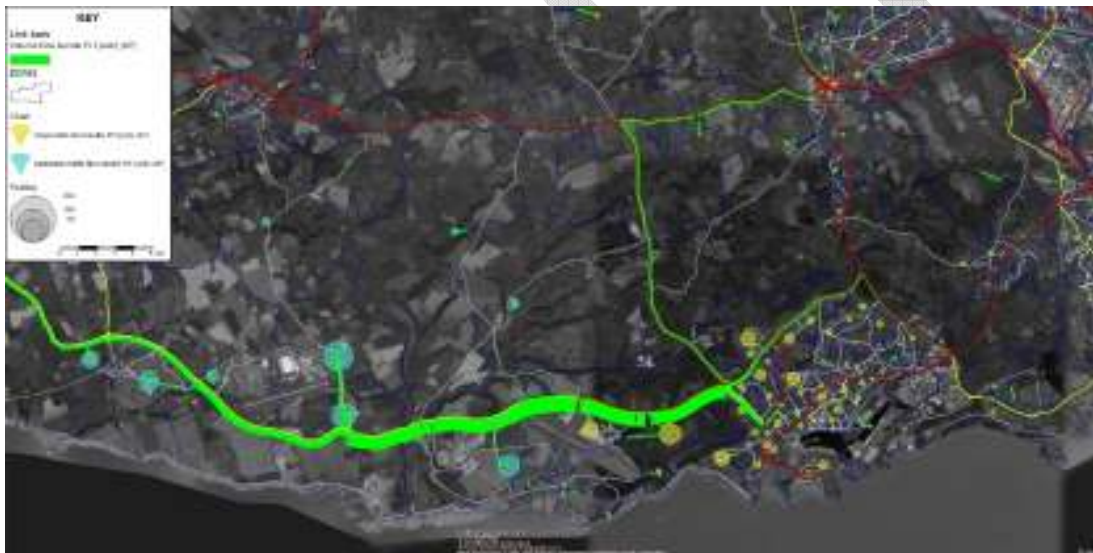


Strategic Transport Modelling Assessment - Model Farm, Cardiff

A4226 Eastbound (west of Port Road)

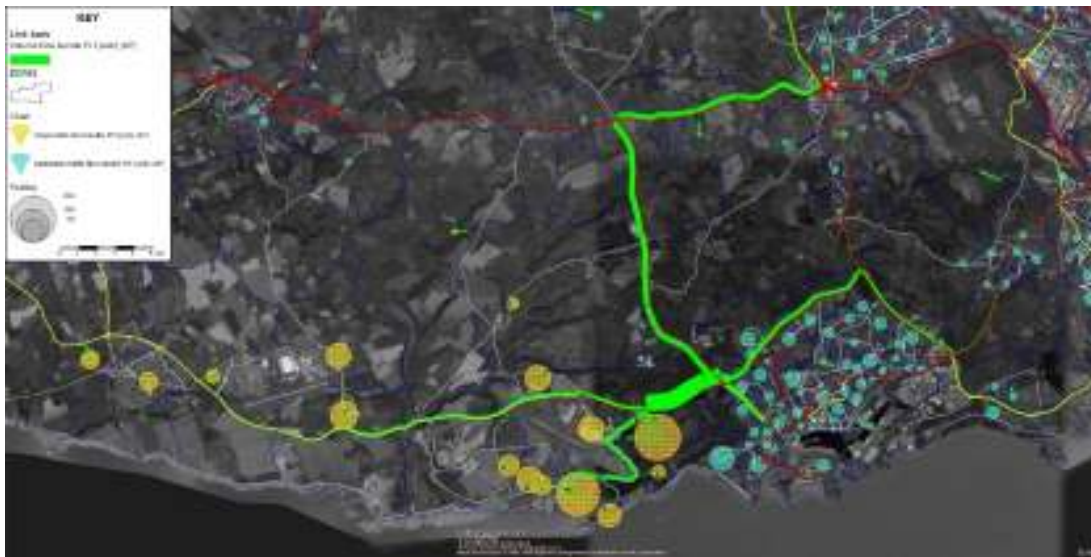


A4226 Westbound (west of Port Road)



Flow Bundle Plots – Scenario B – PM

A4226 Eastbound (east of Port Road)

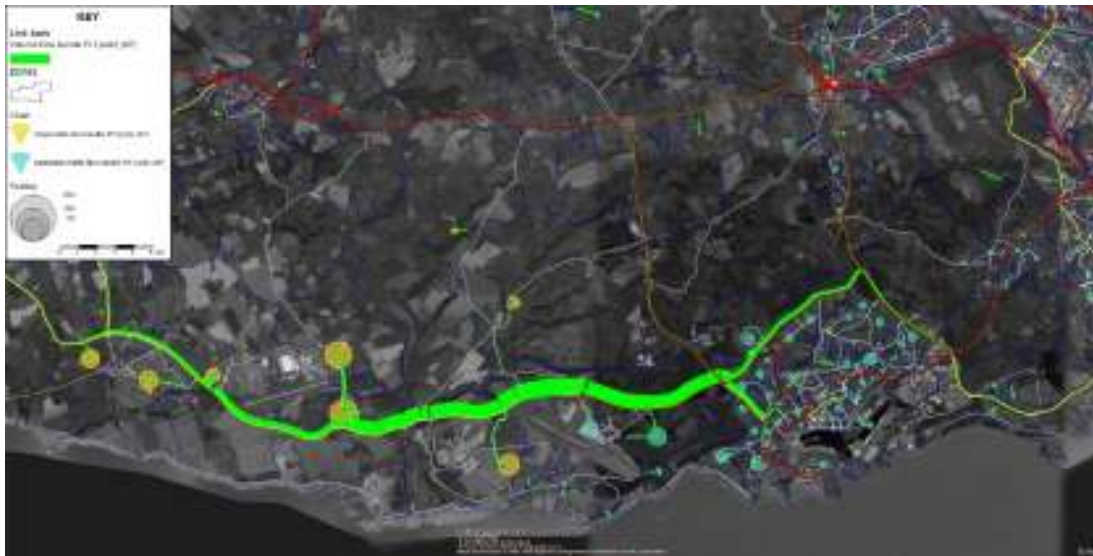


A4226 Westbound (east of Port Road)

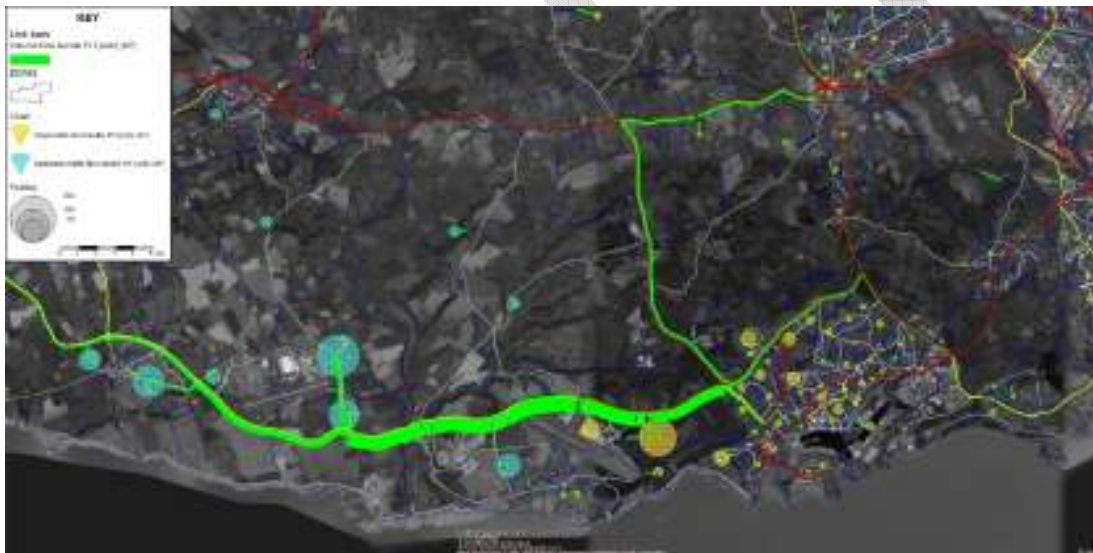


Strategic Transport Modelling Assessment - Model Farm, Cardiff

A4226 Eastbound (west of Port Road)



A4226 Westbound (west of Port Road)



APPENDIX F – TURNING MOVEMENTS (2029)

Attached as a separate package.

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

Junctions 9						
ARCADY 9 - Roundabout Module						
Version: 9.0.2.5947						
© Copyright TRL Limited, 2017						
For sales and distribution information, program advice and maintenance, contact TRL:						
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk						
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution						

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

»2026 Base, AM

»2026 Base, PM

»2026 Base + Dev, AM

»2026 Base + Dev, PM

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)	I' - 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						
Version: 9.5.0.6896						
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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

»2029 Base, AM

»2029 Base, PM

»2029 Base + Dev, AM

»2029 Base + Dev, PM

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	Rhooose
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)	I' - 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)

Am	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				
From		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
	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				
From		1 - Site	2 - Port Road West (A4226)	3 - A4226	4 - Port Road
	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			
Version: 9.0.2.5947 © Copyright TRL Limited, 2017			
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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

«2026 Base, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

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)	I' - 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			
Version: 9.5.0.6896 © Copyright TRL Limited, 2018			
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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

«2029 + Dev, PM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

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)	I' - 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						
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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

- »2026 Base, AM
- »2026 Base + Dev, AM
- »2026 Base, PM
- »2026 Base + Dev, PM

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

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

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

From	To				
		1 - Port Road East	2 - Pontrypridd Road	3 - Port Road West	4 - Waycock Road (Five Mile Lane)
	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						
Version: 9.5.0.6896 © Copyright TRL Limited, 2018						
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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

- »2029 Base, AM
- »2029 Base + Dev, AM
- »2029 Base, PM
- »2029 Base + Dev, PM

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