



MetroWest+

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council

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Transport Assessment (Part 12 of 18) – Appendix H, Avonmouth/Sevenside

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

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Author: CH2M

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Transport Assessment Appendix H Avonmouth/Sevenside Impacts (including level crossings)

Prepared for
West of England Councils

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1 The Square
Temple Quay
Bristol
BS1 6DG



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Document History

Portishead Branch Line DCO Scheme (MetroWest Phase 1) Transport Assessment Avonmouth/Sevenside Impacts (including level crossings)

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01	April 2016	Draft	ÁK/JE	HS	HS
02	June 2018	Final	ÁK/JE	GW	HS

Introduction

1.1 Background

This Appendix brings together analysis of issues in the Avonmouth/Sevenside area, and specifically sets out the assessment of potential impacts that the MetroWest Phase 1 scheme could have on existing level crossings on Severn Beach line in the area; level crossings are located where the Severn Beach Line crosses:

- King Road (port entrance);
- Gloucester Road (Avonmouth Station); and
- West Town Road (near the Portway).

Impacts on the level crossings are limited to the effect of increasing train services. The road routes served by the level crossings are used by rail users accessing the stations.

1.2 Analysis years

Note that the analysis presented in this Appendix uses both 2021 and 2019 as ‘opening year’, as well as 2031 and 2029 as horizon years. Assessments of MetroWest Phase 1’s impact on the level crossings in the Avonmouth/Sevenside area was initially carried out earlier in the scheme’s development process, when the opening year was intended to 2019.

Subsequent changes to MetroWest Phase 1’s scope and opening year (changing to 2021) has no material impact in terms of road or rail traffic at level crossings in the Avonmouth Sevenside area. Also, analysis of future traffic flows can only take into account potential changes derived from TEMPRO future year growth indices, and localised factors such as port throughput and modal usage for inland distribution (which could vary significantly over time) have not been taken into account.

As such, and given that background traffic is only anticipated to be a few PCUs higher in 2021 compared to 2019 (and similarly in 2031 compared to 2029), the full LinSig analysis has not been repeated at this stage, and references in this Appendix remain to 2019 and 2029, as well as 2021 and 2031. The thrust of the conclusions remains the same.

Existing Conditions

2.1 Land uses

Avonmouth is a mixed industrial and residential area of Bristol. It contains the Port of Bristol and the large commercial and industrial area to the immediate north east. The area also has a residential area that merges into nearby Shirehampton.

There are three level crossings in the area. King Road crossing is the principal access point to the Port of Bristol. Gloucester Road serves a small residential area and also is the crossing point between platforms at Avonmouth Railway Station. Finally, West Town Road provides a secondary access route to the Port of Bristol and a small industrial estate.

In addition to the above, the other elements of the scheme will involve signal and track layout changes in Avonmouth. Existing Network Rail access points to the operational railway line will be utilised for these works.

2.2 Principle links and junctions

Given Avonmouth's land use, it is well connected to the strategic highway network. The M5 runs through the heart of the area – dominated by the Avonmouth Bridge and there are two principal junctions – junction 18 which connects with the A4 Portway into Bristol and junction 18a with the M49. The M5, M49 and a certain stretch of the A4 Portway are maintained by Highways England. Figure 2.1 shows the principal roads.

In order to identify the main traffic movements in the area, a series of automatic traffic counts (ATC) were carried out. Figure 2.2 shows the locations of ATCs. Figure 2.3 shows the resulting assessment of base year traffic flows.

2.3 Existing level crossings

There are three existing level crossings on Severn Beach line in the Avonmouth/Sevenside area, that will be impacted by the introduction of the scheme. These include:

- King Road – is the principal access route from the M5 to the Port of Bristol and is heavily used by HGVs. The level crossing is located at the entrance to the Port and although passenger rail services are currently modest throughout the day, these will increase under the scheme proposals. Kings Road itself currently has separate entry and exit one-way arms leading to the PortKing Road evel crossing within the City of Bristol and on the current.
- Gloucester Road (Avonmouth Station) – this level crossing is located to the immediate north of Avonmouth railway station. The level crossing provides access to a small residential area and a few small businesses. A former entrance to the Port of Bristol is permanently closed and there are no vehicle movements related to this. To the North East of the station is a small parade of shops and businesses which form part of the neighbourhood centre for Avonmouthlevel crossing within the City of Bristol and on the current Severn Beach line; and
- West Town Road – this level crossing is located directly underneath the M5 Avonmouth Bridge, near to the entrance to the main car park for the Portway Park & Ride site. The level crossing currently provides access to an industrial area and a secondary entrance to the Port of Bristol. Footways are provided on one side of the West Town Road throughout.

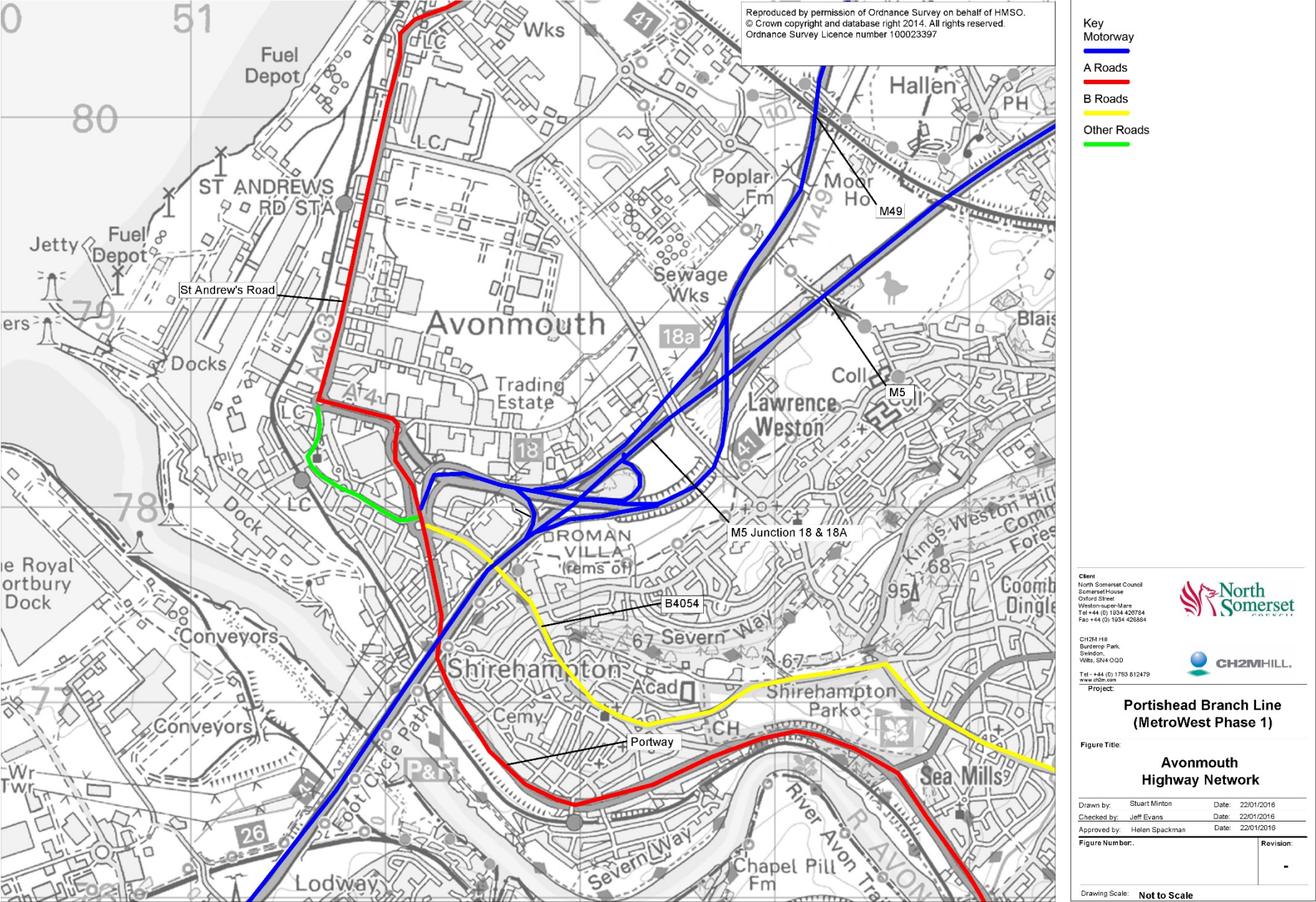


Figure 2-1: Principal and main roads in Avonmouth

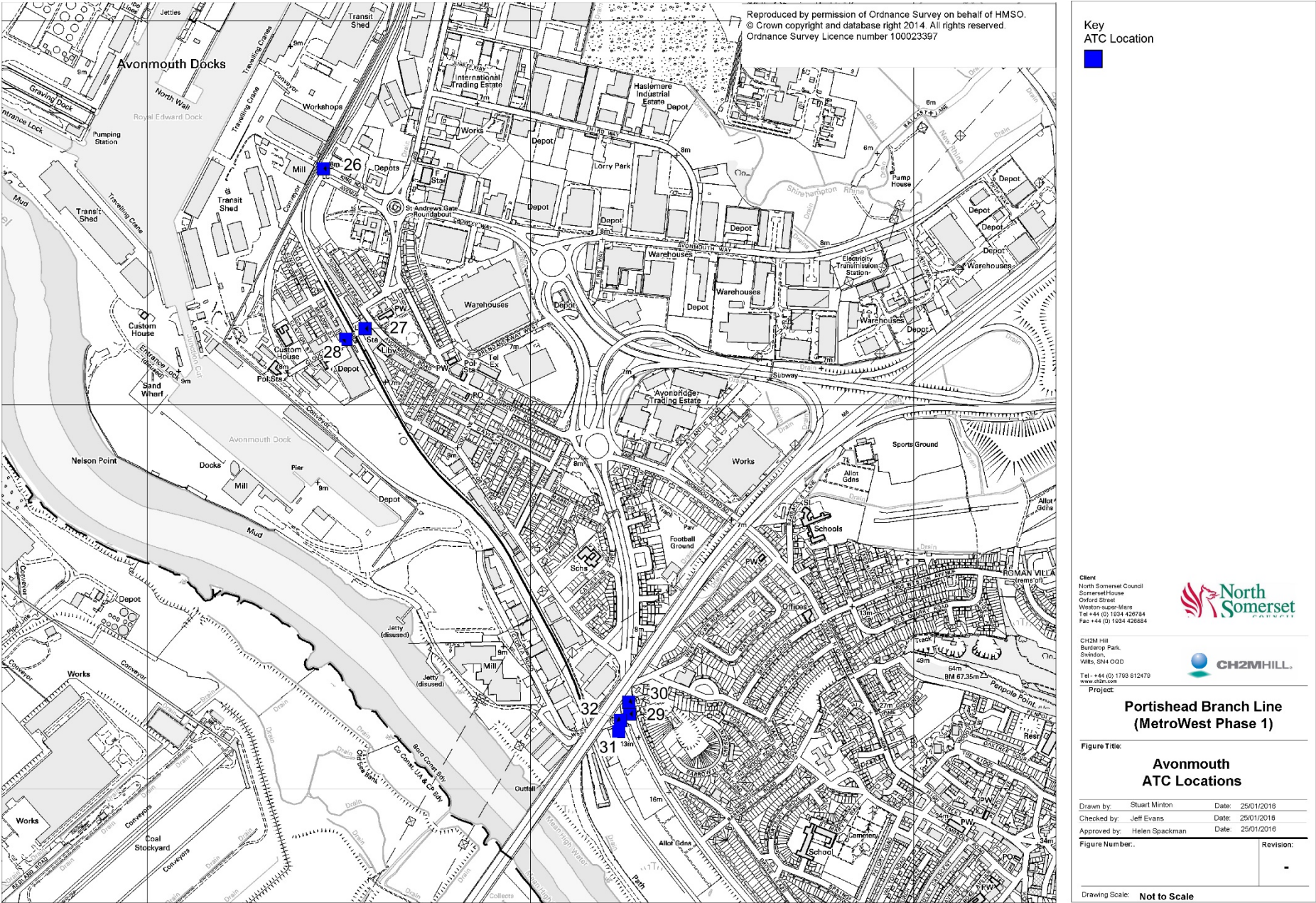


Figure 2-2: ATC locations in Avonmouth

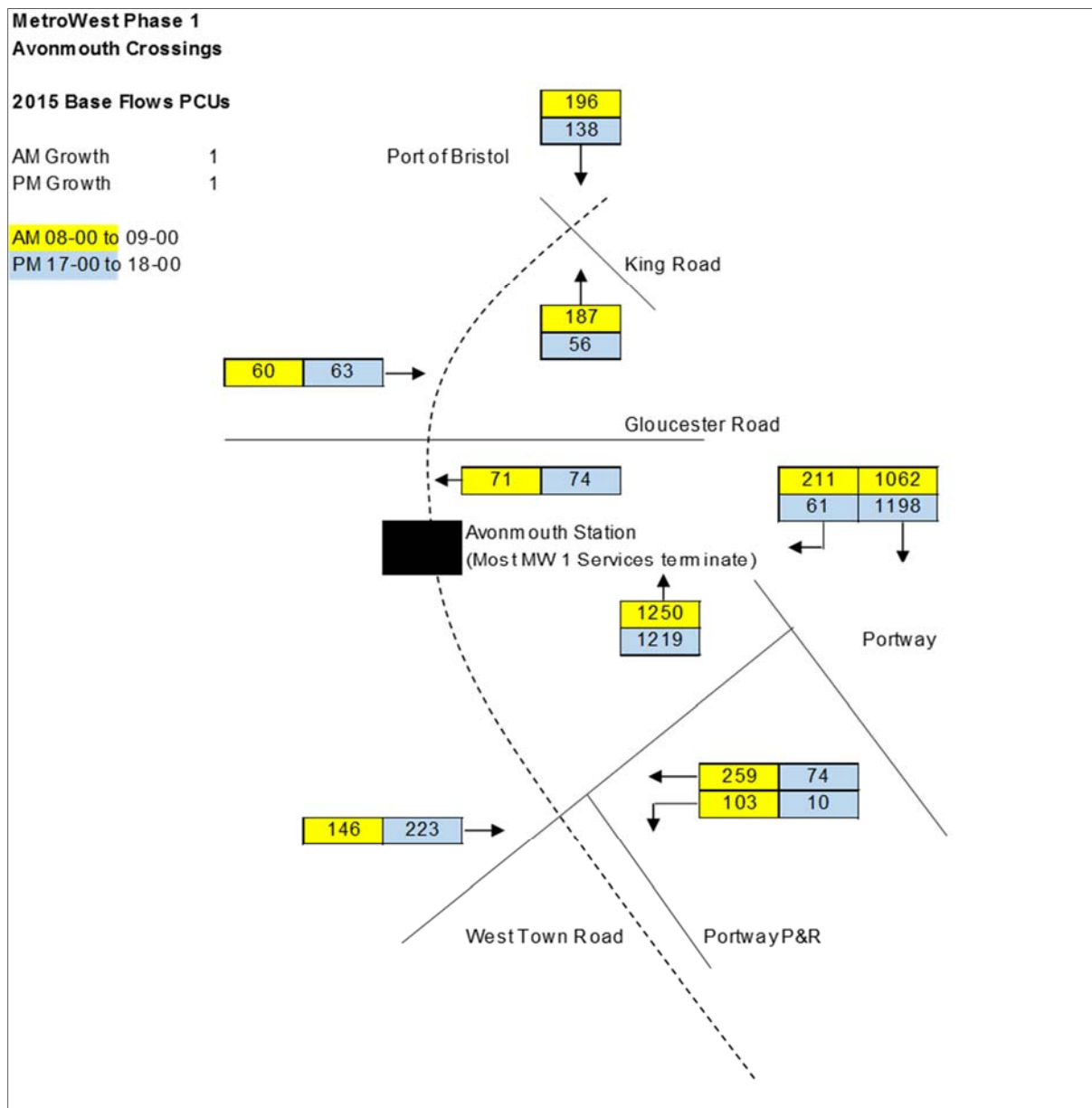


Figure 2-3: 2015 Baseline flows in Avonmouth

2.4 Existing collision data

2.4.1 Docks area

In the Docks area of Avonmouth, a total of 7 collisions with 8 casualties took place over the 5-year period. Table 2.1 is a summary of the collisions that took place while Table 2.2 provides a breakdown of the contributory factors.

All but two of the collisions that took place around Avonmouth Docks Area received a classification of being 'slight'. The remaining two collisions were classed as 'serious'. The first of the serious collisions occurred when a motorcyclist changed lanes at the St Andrew's Road Roundabout, and a vehicle travelling behind struck it. The second serious collision occurred when a vehicle skidded and hit the rear of a motorcycle at the signals on King Road. The most common contributory factor to the collisions in this area was 'rear shunt/side swipe'.

Table 2.1: Summary of collision data for Avonmouth

Link	Accidents				Casualties			
	Fatal	Serious	Slight	Total	Fatal	Serious	Slight	Total
A4 Crowley Way	0	2	1	3	0	2	1	3
St Andrew's Road	0	0	2	2	0	0	3	3
Gloucester Road	0	0	1	1	0	0	1	1
Avonmouth Road	0	1	0	1	0	0	1	1
Total	0	3	4	7	0	0	6	8

Table 2.2: Contributory factors around Avonmouth

Link	Contributory factors for all collisions including those involving vulnerable users							
	Involving ped or cyclist	Loss of control	Fail to look properly/ misjudge	Moving too fast	Reckless driving	Weather	Rear shunt/ side swipe	Total
A4 Crowley Way	0	1	0	0	0	0	2	3
St Andrew's Road	0	1	0	0	1	0	0	2
Gloucester Road	1	0	0	0	0	0	0	1
Avonmouth Road	1	0	0	0	0	0	0	1
Total	2	2	0	0	1	0	2	7

2.4.2 Portway

In the Portway area of Avonmouth, a total of 8 collisions with 9 casualties took place over the five year period. Table 2.3 is a summary of the collisions that took place while Table 1.4 provides a breakdown of the contributory factors.

All the collisions that took place around Avonmouth (Portway) area received a classification of being 'slight'. These collisions occurred on the A4 Portway and between Junction 18 and J19 of the M5. Of these 8 collisions, there was not one outstanding contributory factor although three of the collisions involved pedestrians while two were due to a rear shunt.

Table 2.3: Summary of collision data for Avonmouth

Link	Accidents				Casualties			
	Fatal	Serious	Slight	Total	Fatal	Serious	Slight	Total
A4 Portway	0	0	6	6	0	0	7	7
M5 Jn 18 -19	0	0	2	2	0	0	2	2
Total	0	0	8	8	0	0	9	9

Table 2.4: Contributory factors around Avonmouth

Link	Contributory factors for all collisions including those involving vulnerable users							Total
	Involving ped or cyclist	Loss of control	Fail to look properly/ misjudge	Moving too fast	Reckless driving	Weather	Rear shunt/ side swipe	
A4 Portway	3	0	0	0	1	0	2	6
M5 Jn 18 - J19	0	0	1	0	1	0	0	2
Total	3	0	1	0	2	0	2	8

2.5 Bus services

In Avonmouth, current service 41 from Henbury to the centre of Bristol operates in the vicinity of both the King Road and Gloucester Road level crossings in Avonmouth.

2.6 Existing freight movements

The port at Avonmouth Dock has been served by rail since 1877. Although there are two rail links to the Avonmouth area, freight trains to/from the port only use the Hallen Line with the Severn Beach Line being restricted to passenger services south of St. Andrews Road.

The number of freight trains per day is variable, with as many as 30 per day in the working timetable, though not many will run on any given day, with 5-10 trains per day (2-way) more typically running. Commodities that are conveyed by train from Avonmouth Docks include coal, aggregates and building materials.

The Bristol Resource Recovery Park is currently being developed in the Avonmouth Severnside area. This will incinerate waste to generate power, much of which will be brought in by train using the Hallen Line. The proposed deep-water container terminal at Avonmouth has the potential to use rail for some container flows, but potential issues of gauge availability also apply.

2.7 NMU provision

The proposed scheme does not envisage any change to existing pedestrian and cycling infrastructure at the three level crossings in Avonmouth. At all three level crossings, there are no immediate crossing alternative points for pedestrians and cyclists to use when the barriers are down.

Impacts of the Scheme

3.1 Strategic operational impacts – rail freight

The scheme and the intensification of the line by rail passenger services will have no adverse impacts to rail freight operations on the Avonmouth Line.

3.2 Local operational impacts – level crossings

The existing level crossing is controlled by barrier and warning signal to indicate stopping is required at the particular level crossing location. The proposed assumption for the level closure scenario was prepared in technical memorandum issued on 27 Oct 2015. LinSig software is capable of modelling junction and road network assessment, and it is being used as an assessment tool to investigate the impact on traffic during level crossing closure.

3.2.1 King Road

King Road level crossing is a standalone level crossing, there is no signal control junction in the vicinity. The level crossing has been modelled using LinSig software. Figure 3.1 shows the total PCUs generated by this scheme for 2015 assessment periods. Figure 3.2 shows the PCUs generated for both the 2019 and 2029 assessment periods with the scheme. Figure 3.3 shows the PCUs generated for both the 2021 and 2031 assessment periods with the scheme.

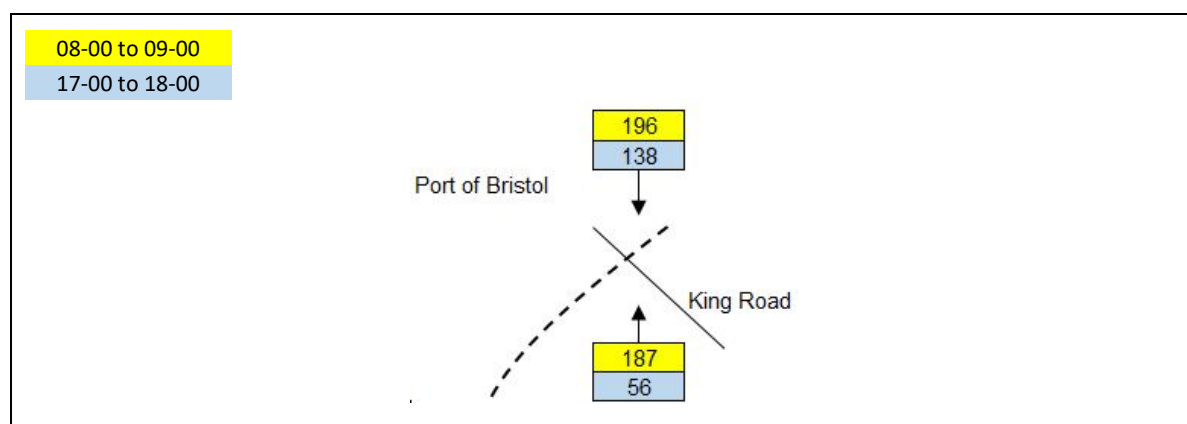


Figure 3-1: Surveyed traffic at King Road

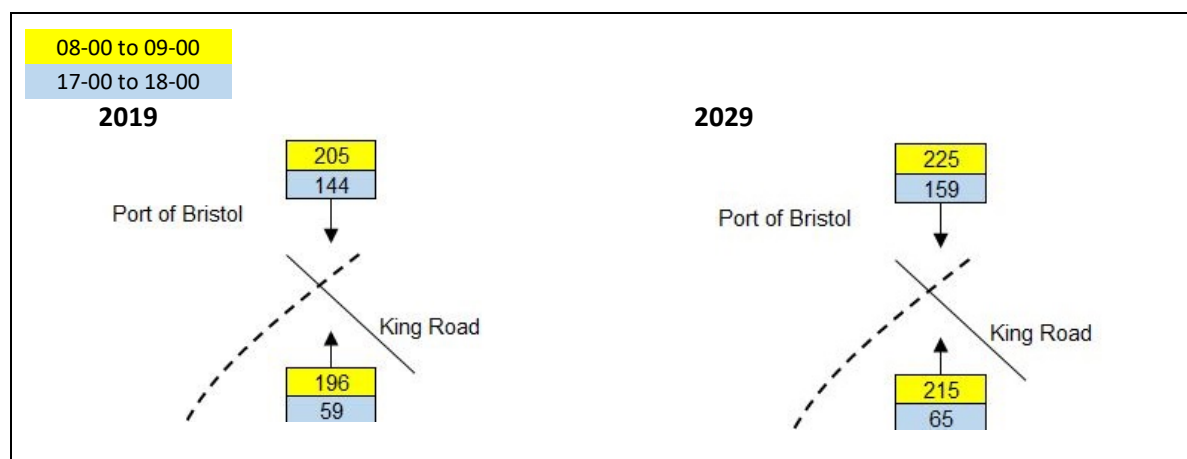


Figure 3-2: Future 2019 & 2029 traffic at King Road, with scheme

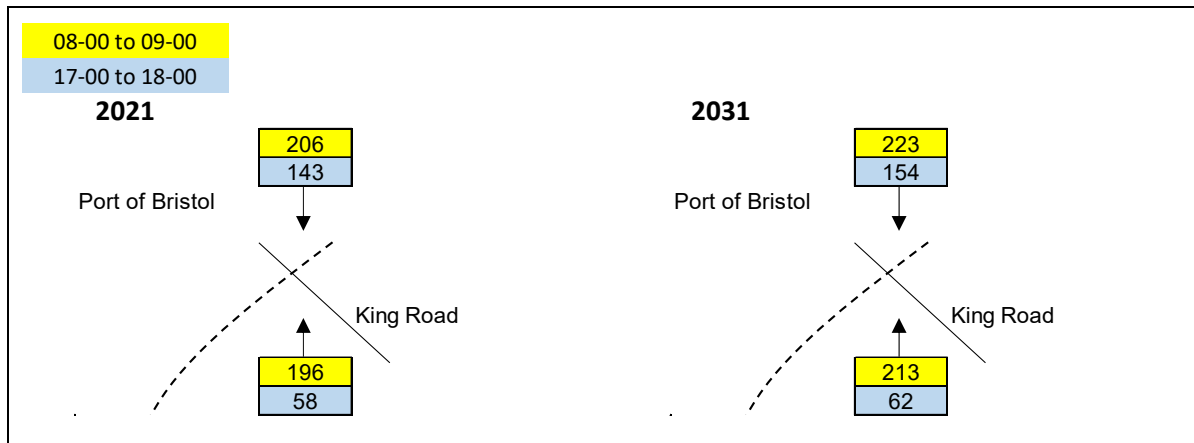


Figure 3-3: Future 2021 & 2031 traffic at King Road, with scheme

It can be seen that the 2019 and 2021 figures, as well as 2029 and 2031 figures, are extremely similar. As such, the subsequent LinSig analysis has not been re-done using 2021 and 2031 figures.

Tables 3.1, 3.2 and 3.3 provide an overview of the capacity of the junction for the 2015 baseline, 2019 opening years and 2029 horizon year periods. The LinSig results indicate that all scenarios tested do not have any significant impact on the level crossing.

Table 3.1: Junction Performance at King Road for 2015

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
King Road (E)	10.1	7.9	8.7	3.0	7.4	2.4
King Road (W)	11.5	8.1	9.1	8.1	7.8	6.2
PRC/Total Delay		685.3/0.85			1015.3/0.42	

Table 3.2: Junction Performance at King Road for 2019

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
King Road (E)	10.8	11.5	12.7	3.3	10.4	3.5
King Road (W)	12.2	11.8	13.5	8.6	11	8.9
PRC/Total Delay		636.2/1.30			949.7/0.61	

Table 3.3: Junction Performance at King Road for 2029

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
King Road (E)	11.9	11.5	13.9	3.6	10.2	3.8
King Road (W)	13.4	11.8	14.8	9.5	10.9	9.8
PRC/Total Delay		571.0/1.43			851.6/0.67	

3.2.2 Gloucester Road (Avonmouth Station)

Gloucester Road (Avonmouth Station) level crossing is a standalone level crossing, there is no signal control junction in the vicinity. The level crossing has been modelled using LinSig software. Figure 3.4 shows the PCUs generated by this scheme for 2015 assessment periods. Figure 3.5 shows the PCUs generated for both the 2019 and 2029 assessment periods with the scheme. Figure 3.6 shows the PCUs generated for both the 2021 and 2031 assessment periods with the scheme.

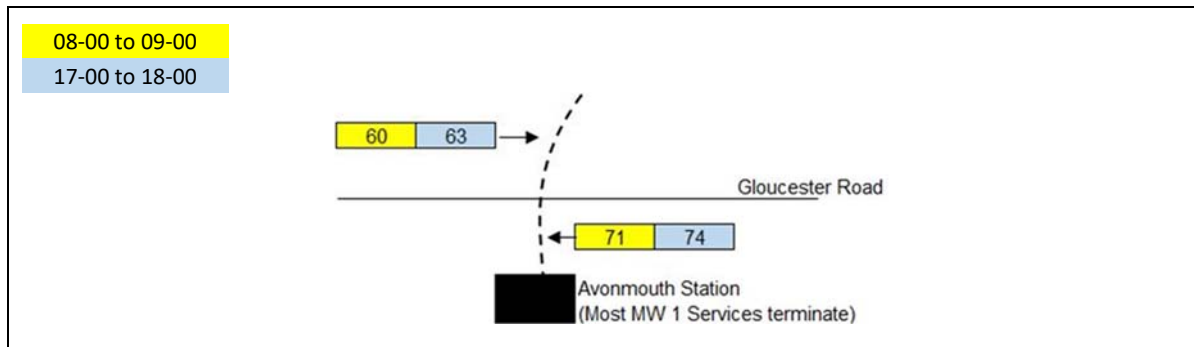


Figure 3-4: Surveyed traffic at Gloucester Road (Avonmouth Station)

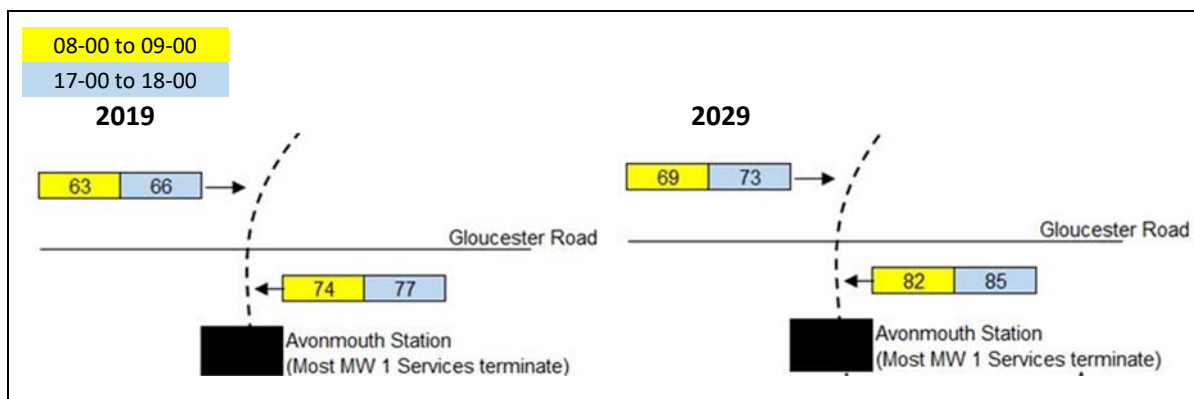


Figure 3-5: Future 2019 & 2029 traffic at Gloucester Road (Avonmouth Station), with scheme

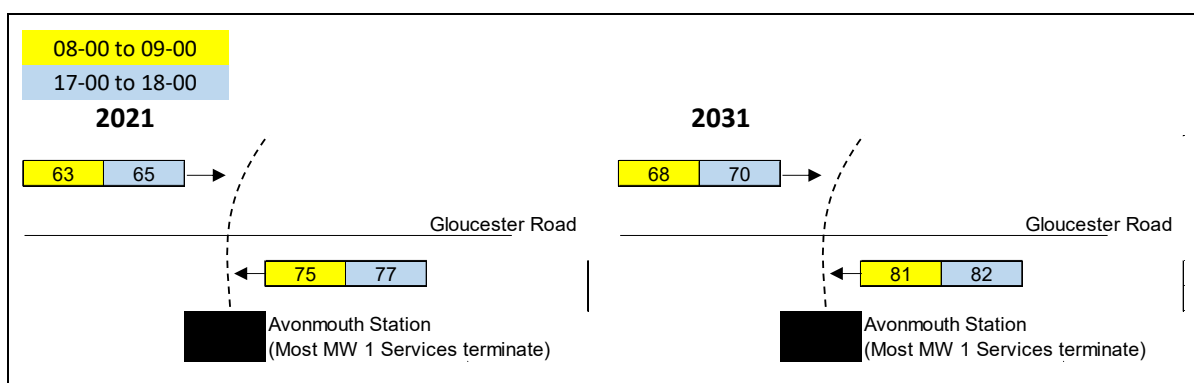


Figure 3-6: Future 2021 & 2031 traffic at Gloucester Road (Avonmouth Station), with scheme

It can be seen that the 2019 and 2021 figures, as well as 2029 and 2031 figures, are extremely similar. As such, the subsequent LinSig analysis has not been re-done using 2021 and 2031 figures.

Tables 3.4, 3.5 and 3.6 provide an overview of the capacity of the junction for the 2015 baseline, 2019 opening years and 2029 horizon year periods. The LinSig results indicate that all scenarios tested do not have any significant impact on the level crossing.

Table 3.4: Junction Performance at Gloucester Road (Avonmouth Station) for 2015

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Gloucester Rd (E)	3.8	5.3	2.5	3.9	5.4	2.7
Gloucester Rd (W)	3.5	5.3	2.1	3.6	5.5	2.3
PRC/Total Delay		2281.1/0.19			2182.5/0.21	

Table 3.5: Junction Performance at Gloucester Road (Avonmouth Station) for 2019

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Gloucester Rd (E)	3.9	5.4	2.7	4.1	5.5	2.8
Gloucester Rd (W)	3.6	5.5	2.3	3.8	5.5	2.4
PRC/Total Delay		2182.5/0.21			2092.3/0.22	

Table 3.6: Junction Performance at St Andrew Road / King Road for 2029

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Gloucester Rd (E)	4.4	5.3	2.9	4.5	5.4	3.1
Gloucester Rd (W)	4.0	5.4	2.5	4.2	5.5	2.7
PRC/Total Delay		1961.1/0.23			1887.7/0.24	

3.2.3 West Town Road

West Town Road level crossing is located approximately 100m to the west of an existing signal control junction 'Portway/West Town Road'. The geometry inputs for the traffic model were measured from OS survey map. The level crossing has been modelled using LinSig software. The following. Figure 3.7 shows the PCUs generated by this scheme for 2015 assessment periods. Figure 3.8 shows the PCUs generated for both the 2019 and 2029 assessment periods with the scheme. Figure 3.9 shows the PCUs generated for both the 2021 and 2031 assessment periods with the scheme.

It can be seen that the 2019 and 2021 figures, as well as 2029 and 2031 figures, are extremely similar. As such, the subsequent LinSig analysis has not been re-done using 2021 and 2031 figures.

Tables 3.7, 3.8 and 3.9 provide an overview of the capacity of the junction for the 2015 baseline, 2019 opening years and 2029 horizon year periods. The LinSig results indicate that all scenarios tested do not have any significant impact on the level crossing.

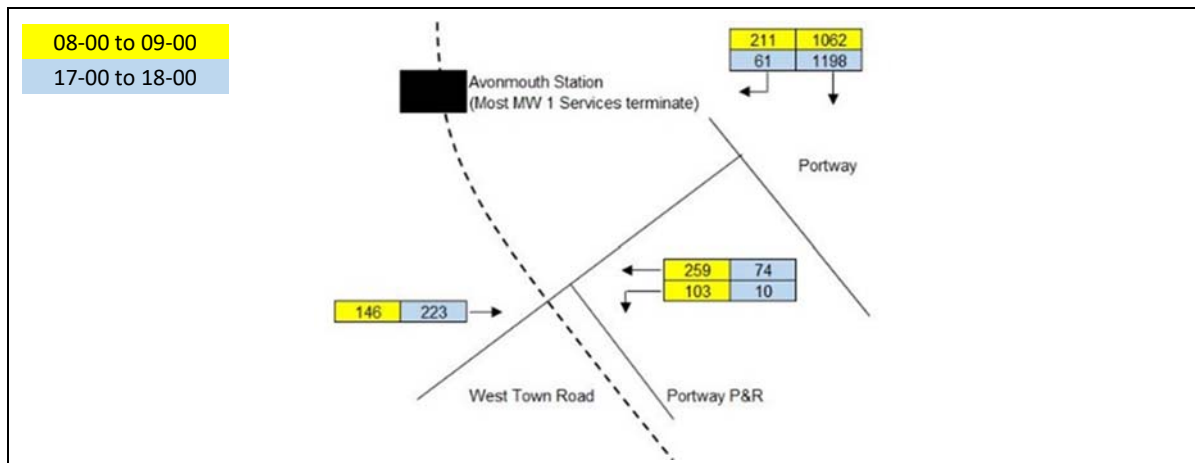


Figure 3-7: Surveyed traffic at West Town Road

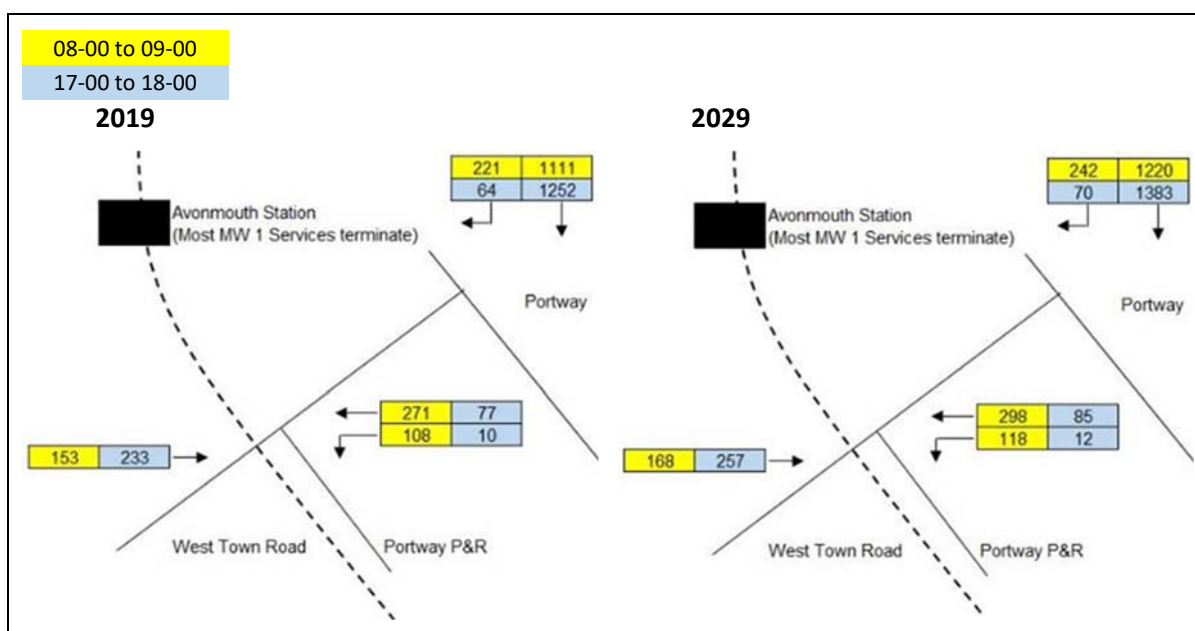


Figure 3-8: Future 2019 & 2029 traffic at West Town Road, with scheme

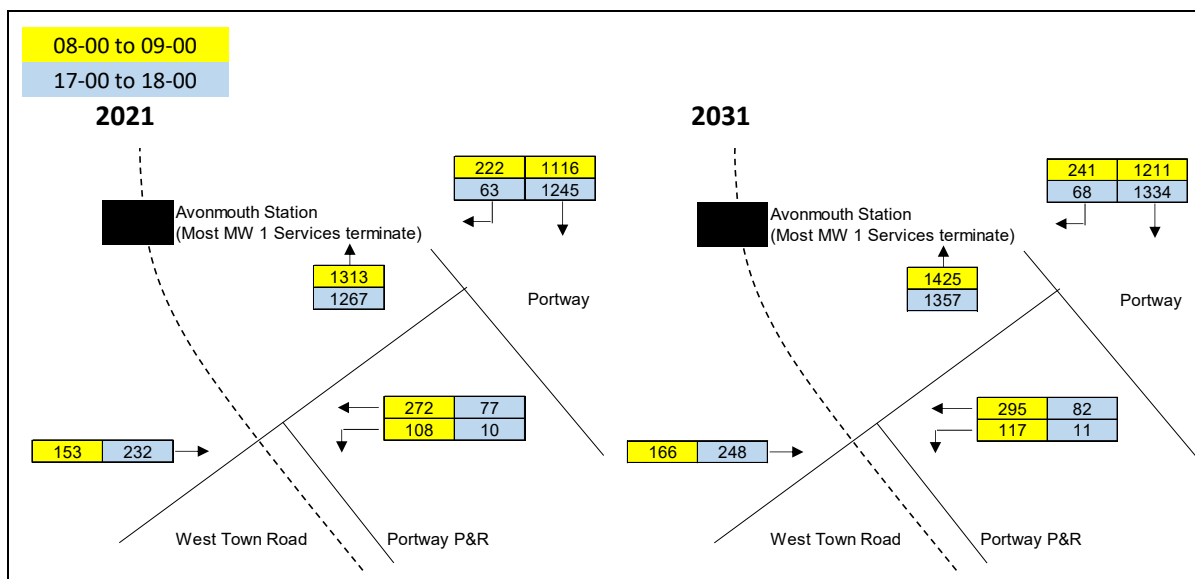


Figure 3-9: Future 2019 & 2029 traffic at West Town Road, with scheme

Table 3.7: Junction Performance at West Town Road for 2015

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Weston Road (E)	6.2	15.6	5.2	0.6	12.4	0.4
Weston Road (W)	9.5	16.1	7.6	14.2	14.1	10.1
PRC/Total Delay		850.1/1.10			533.7/0.91	

Table 3.8: Junction Performance at West Town Road for 2019

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Weston Road (E)	6.5	20.6	8.7	0.6	19.7	0.8
Weston Road (W)	9.9	21.3	12.7	15.1	22.5	20.3
PRC/Total Delay		810.6/1.52			497.5/1.51	

Table 3.9: Junction Performance at St Andrew Road / King Road for 2029

Road	AM			PM		
	Deg.Sat %	Delay/PCU	Queue (PCU)	Deg.Sat %	Delay/PCU	Queue (PCU)
Weston Road (E)	7.1	21.9	9.6	0.7	19.8	0.9
Weston Road (W)	10.9	22.8	14.2	16.6	23	22.8
PRC/Total Delay		810.6/1.52			497.5/1.51	

3.3 Level crossings mitigation

The analysis indicates the increased service levels arising from the scheme coupled with general traffic growth is unlikely to have a detrimental impact on the operation and capacity of the highway. This is with the caveats were outlined in the assessment of being based on current barrier down times and the application of TEMPRO growth factors to traffic levels. The Bristol area re-signalling is likely to lead to changes to barriers down time particularly at West Town Road.

3.4 Conclusions

The analysis indicates the increased service levels arising from the MetroWest Phase 1 scheme coupled with general traffic growth is unlikely to have a detrimental impact on the operation and capacity of the highway in Avonmouth. This is with the caveats which were outlined in the assessment being based on current barrier down times and the application of TEMPRO growth factors to traffic levels. The Bristol area re-signalling is likely to lead to changes to barriers down time particularly at West Town Road

SECTION 4

LinSig Results

King Road

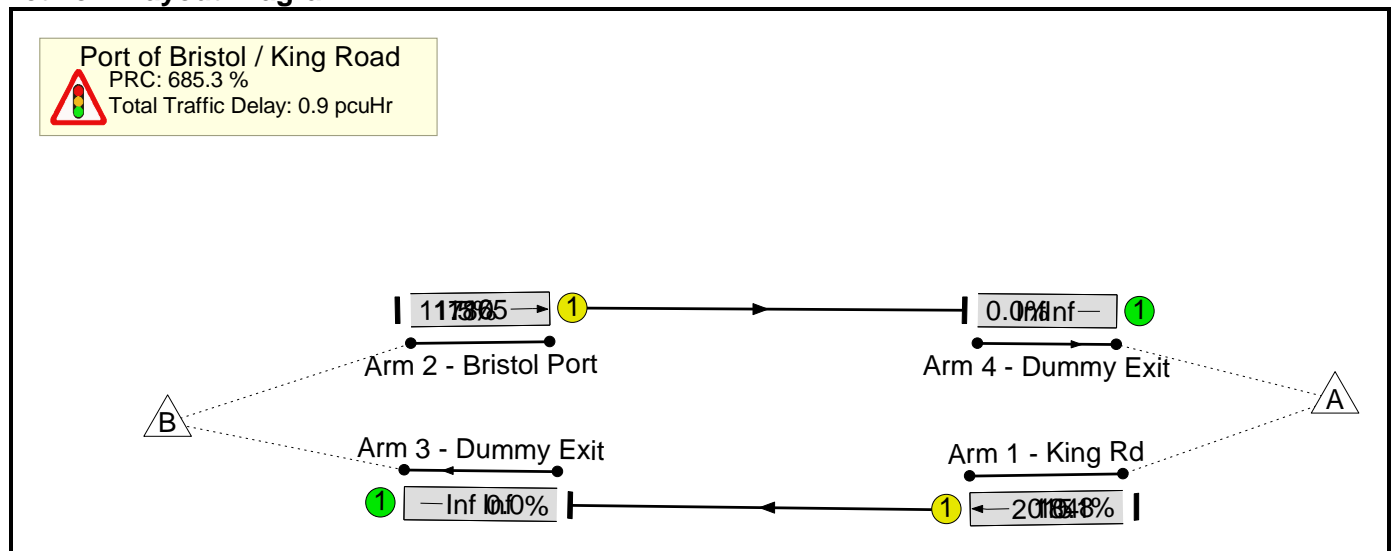
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	King Road - Port of Bristol 3600.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: '2015 Base AM' (FG1: '2015 AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



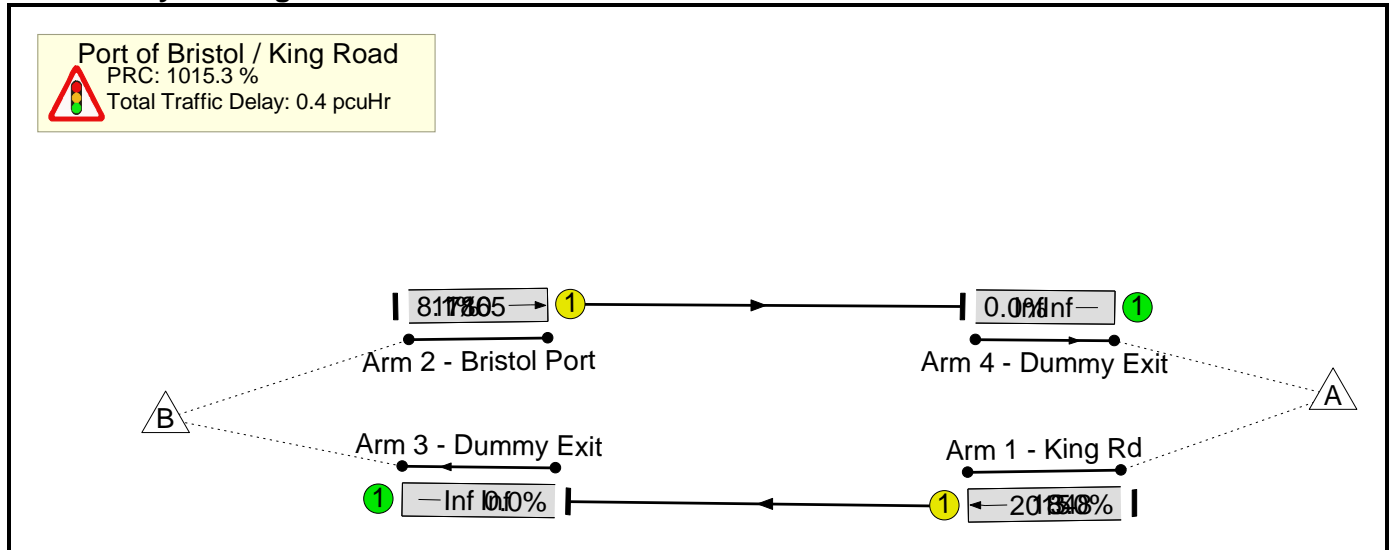
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	11.5%	0	0	0	0.9	-	-
Port of Bristol / King Road	-	-	-		-	-	-	-	-	-	11.5%	0	0	0	0.9	-	-
1/1	King Rd Ahead	U	A		2	3299	-	187	2015	1848	10.1%	-	-	-	0.4	7.9	8.7
2/1	Bristol Port Ahead	U	B		2	3299	-	196	1865	1710	11.5%	-	-	-	0.4	8.1	9.2
C1				PRC for Signalled Lanes (%):		685.3	685.3		Total Delay for Signalled Lanes (pcuHr):			0.85	Cycle Time (s): 3600				
				PRC Over All Lanes (%):		685.3	Total Delay Over All Lanes(pcuHr):					0.85					

Basic Results Summary

Scenario 2: '2015 Base PM' (FG2: '2015 PM', Plan 1: 'Network Control Plan 1')

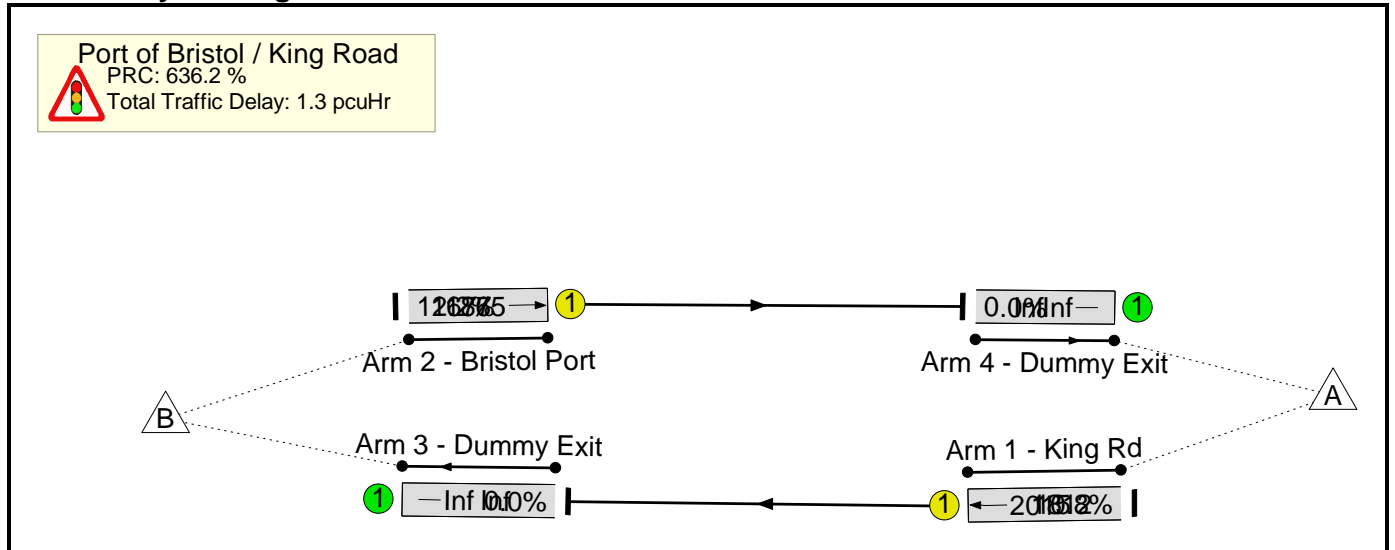
Network Layout Diagram



Network Results

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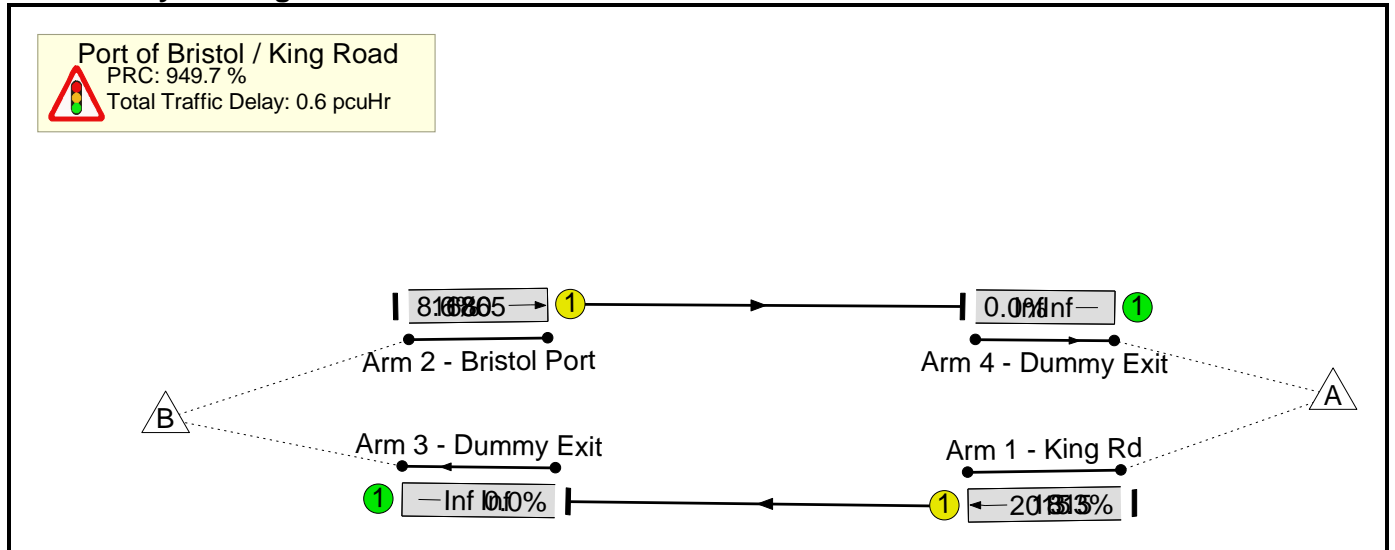
Network Layout Diagram



Network Results

[illegible]

Network Layout Diagram



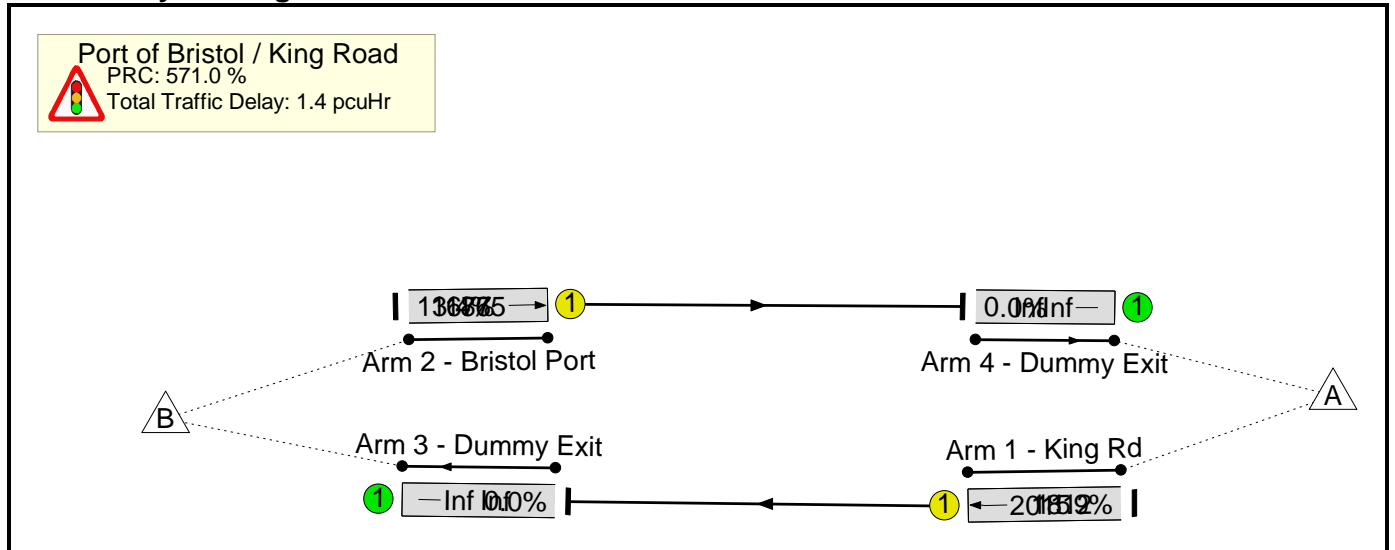
Network Results

[illegible]

Basic Results Summary

Scenario 5: '2029 Assessment AM' (FG5: '2029 Assessment AM', Plan 1: 'Network Control Plan 1')

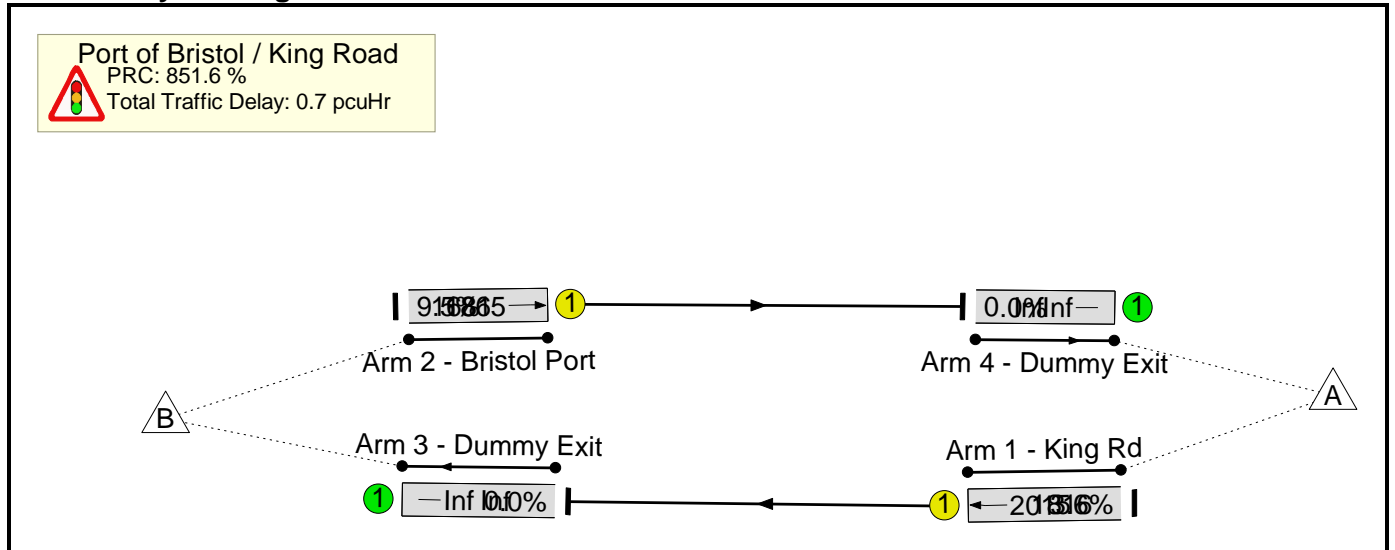
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	13.4%	0	0	0	1.4	-	-
Port of Bristol / King Road	-	-	-		-	-	-	-	-	-	13.4%	0	0	0	1.4	-	-
1/1	King Rd Ahead	U	A		2	3236	-	215	2015	1812	11.9%	-	-	-	0.7	11.5	13.9
2/1	Bristol Port Ahead	U	B		2	3236	-	225	1865	1677	13.4%	-	-	-	0.7	11.8	14.8
C1 PRC for Signalled Lanes (%): 571.0 Total Delay for Signalled Lanes (pcuHr): 1.43 Cycle Time (s): 3600 PRC Over All Lanes (%): 571.0 Total Delay Over All Lanes(pcuHr): 1.43																	

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	9.5%	0	0	0	0.7	-	-
Port of Bristol / King Road	-	-	-		-	-	-	-	-	-	9.5%	0	0	0	0.7	-	-
1/1	King Rd Ahead	U	A		2	3243	-	65	2015	1816	3.6%	-	-	-	0.2	10.2	3.8
2/1	Bristol Port Ahead	U	B		2	3243	-	159	1865	1681	9.5%	-	-	-	0.5	10.9	9.8
C1 PRC for Signalled Lanes (%): 851.6 Total Delay for Signalled Lanes (pcuHr): 0.67 Cycle Time (s): 3600 PRC Over All Lanes (%): 851.6 Total Delay Over All Lanes(pcuHr): 0.67																	

Gloucester Road (Avonmouth Station)

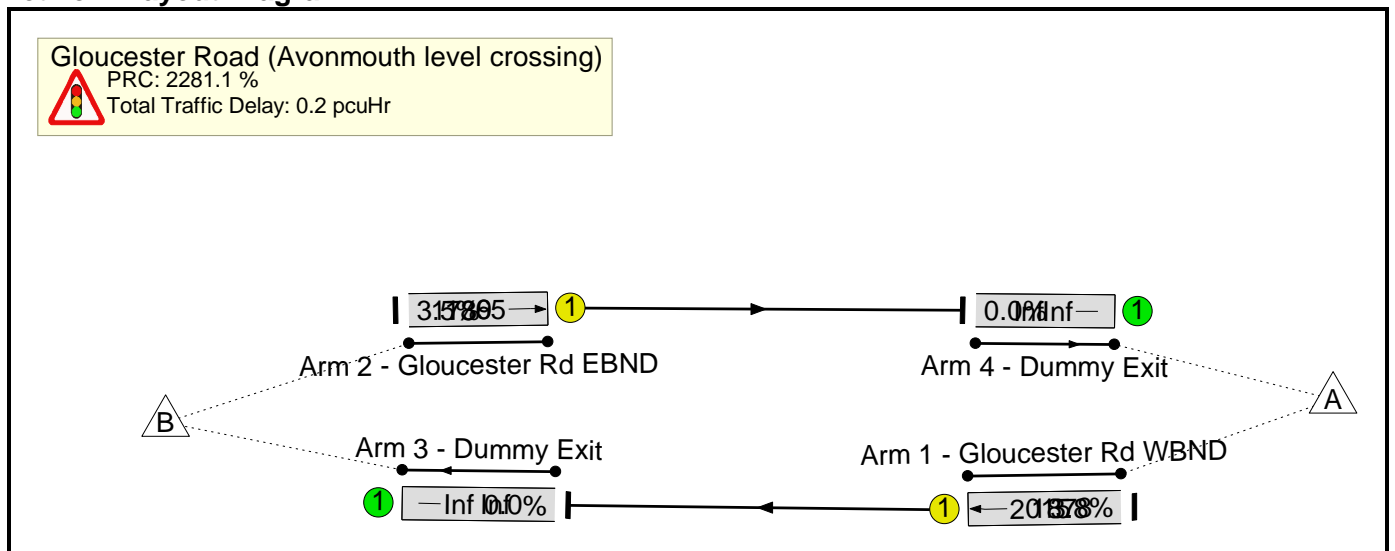
Basic Results Summary
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Avonmouth Level Crossing 3600.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: '2015 Base AM' (FG1: '2015 AM', Plan 1: 'Network Control Plan 1')

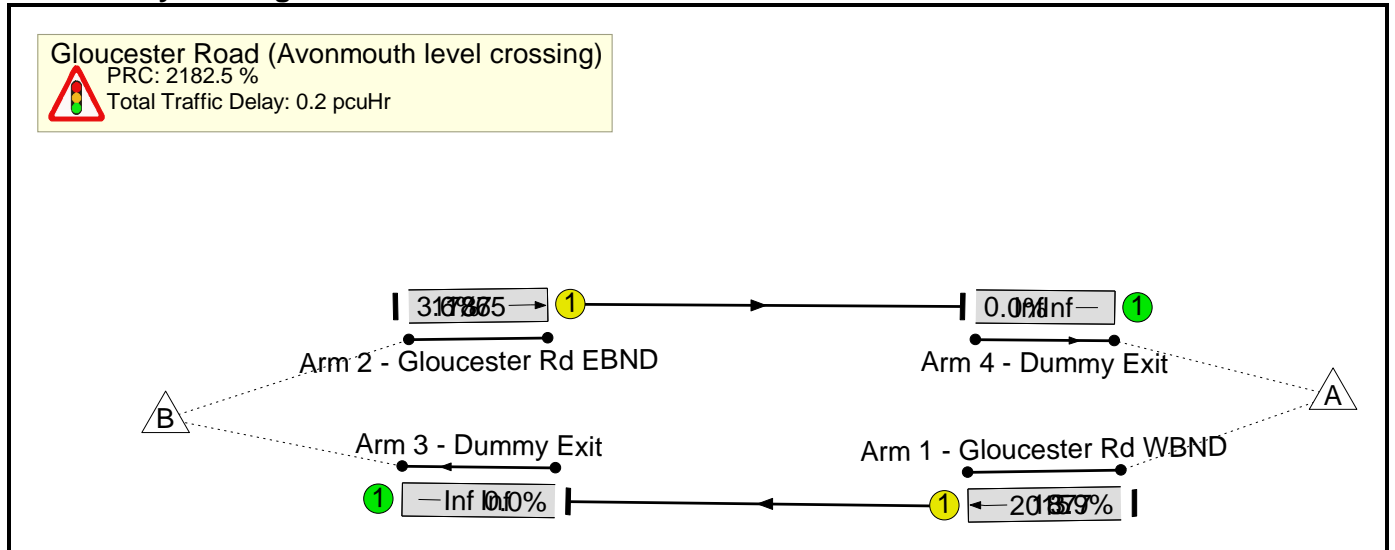
Network Layout Diagram



Network Results

[illegible]

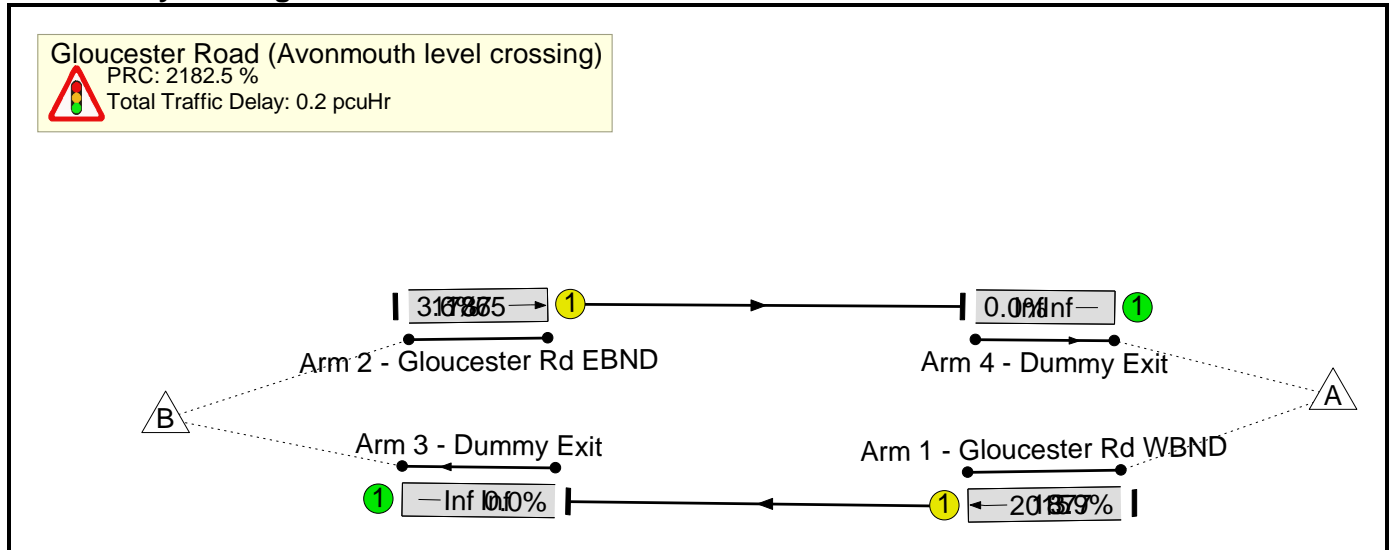
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	3.9%	0	0	0	0.2	-	-
Gloucester Road (Avonmouth level crossing)	-	-	-		-	-	-	-	-	-	3.9%	0	0	0	0.2	-	-
1/1	Gloucester Rd WBND Ahead	U	A		2	3351	-	74	2015	1877	3.9%	-	-	-	0.1	5.4	2.7
2/1	Gloucester Rd EBND Ahead	U	B		2	3351	-	63	1865	1737	3.6%	-	-	-	0.1	5.5	2.3
		C1	PRC for Signalled Lanes (%):		2182.5		Total Delay for Signalled Lanes (pcuHr):		0.21		Cycle Time (s):		3600				
			PRC Over All Lanes (%):		2182.5		Total Delay Over All Lanes(pcuHr):		0.21								

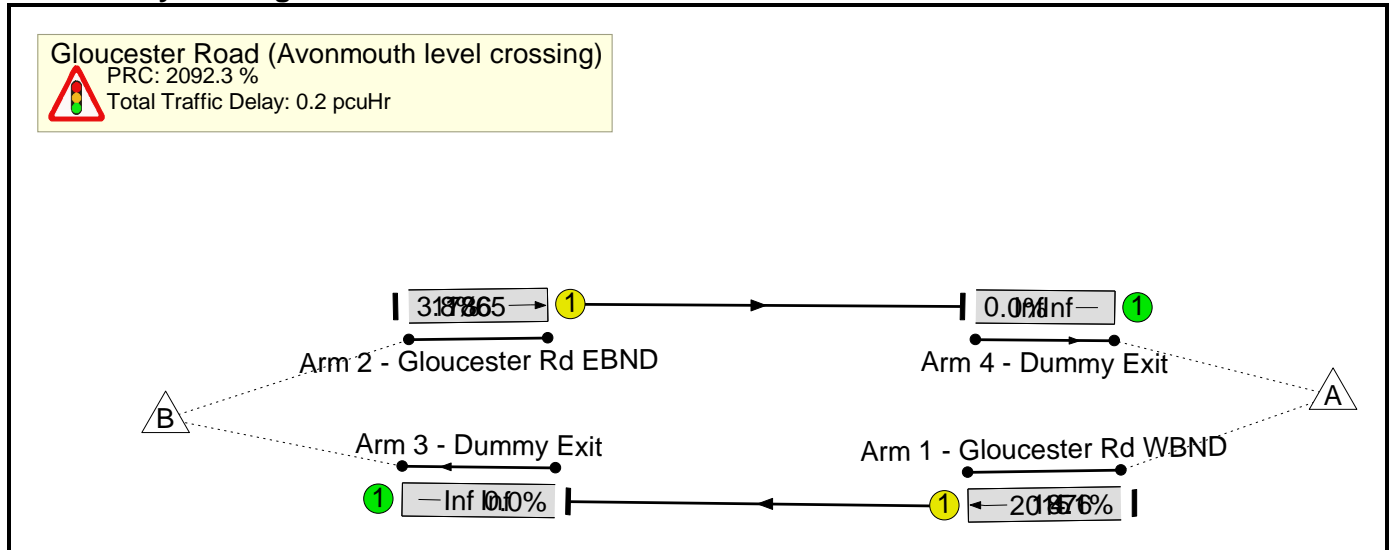
Network Layout Diagram



Network Results

C1	PRC for Signalled Lanes (%):	2182.5	Total Delay for Signalled Lanes (pcuHr):	0.21	Cycle Time (s): 3600
	PRC Over All Lanes (%):	2182.5	Total Delay Over All Lanes(pcuHr):	0.21	

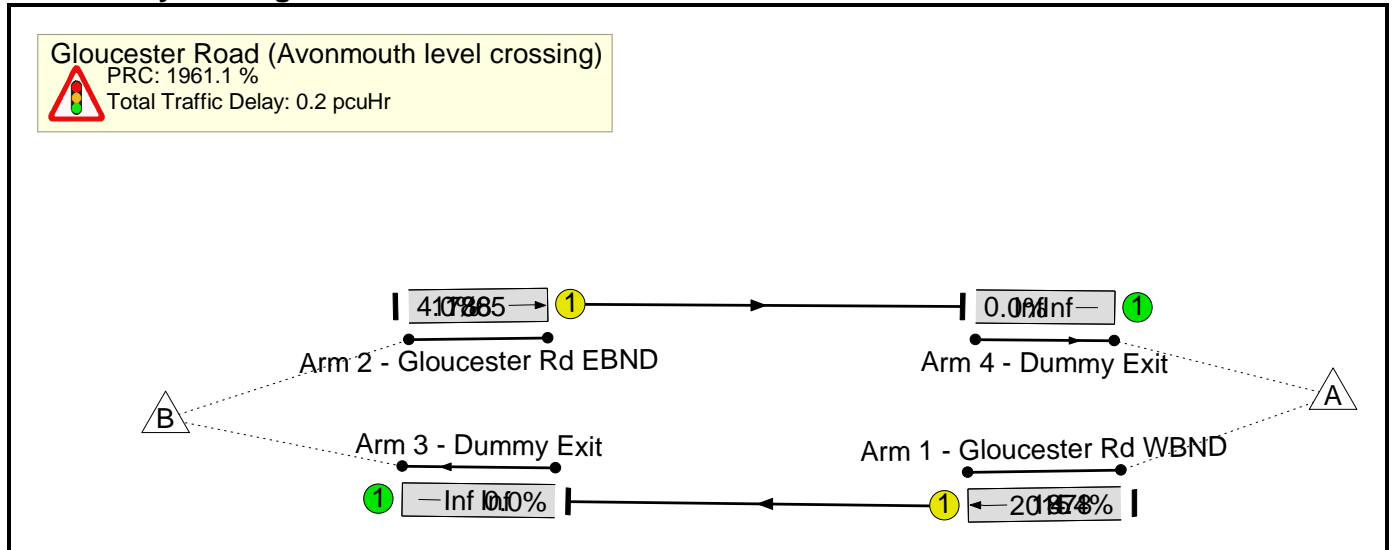
Network Layout Diagram



Network Results

[illegible]

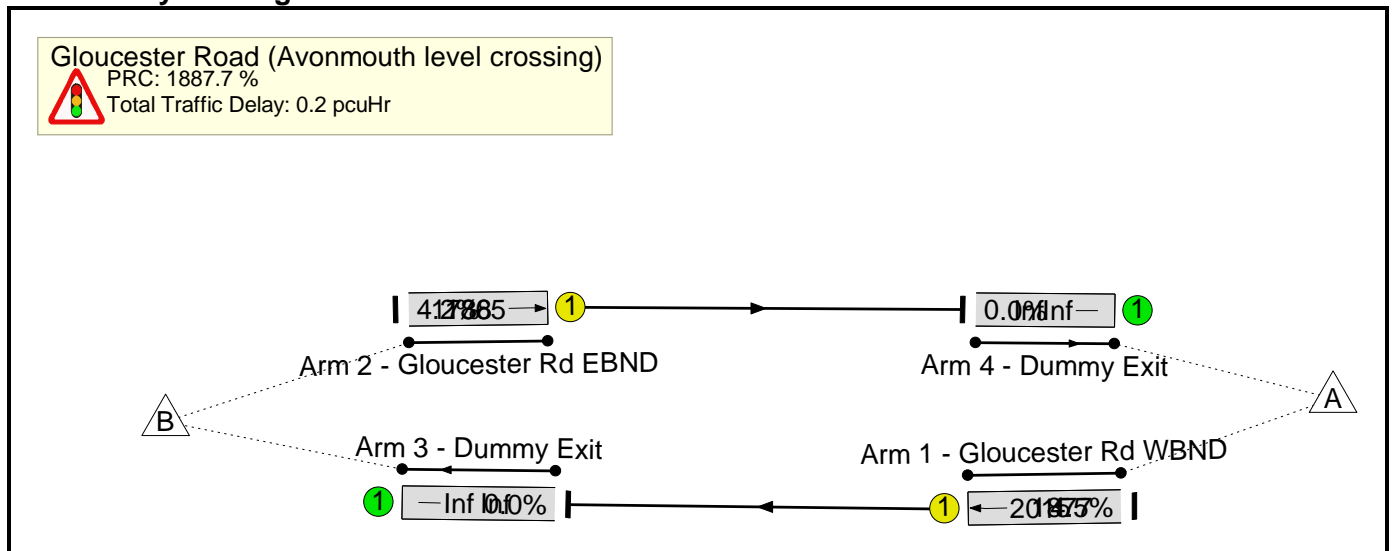
Network Layout Diagram



Network Results

[illegible]

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	4.5%	0	0	0	0.2	-	-
Gloucester Road (Avonmouth level crossing)	-	-	-		-	-	-	-	-	-	4.5%	0	0	0	0.2	-	-
1/1	Gloucester Rd WBND Ahead	U	A		2	3352	-	85	2015	1877	4.5%	-	-	-	0.1	5.4	3.1
2/1	Gloucester Rd EBND Ahead	U	B		2	3352	-	73	1865	1738	4.2%	-	-	-	0.1	5.5	2.7
C1 PRC for Signalled Lanes (%): 1887.7 Total Delay for Signalled Lanes (pcuHr): 0.24 Cycle Time (s): 3600 PRC Over All Lanes (%): 1887.7 Total Delay Over All Lanes(pcuHr): 0.24																	

West Town Road

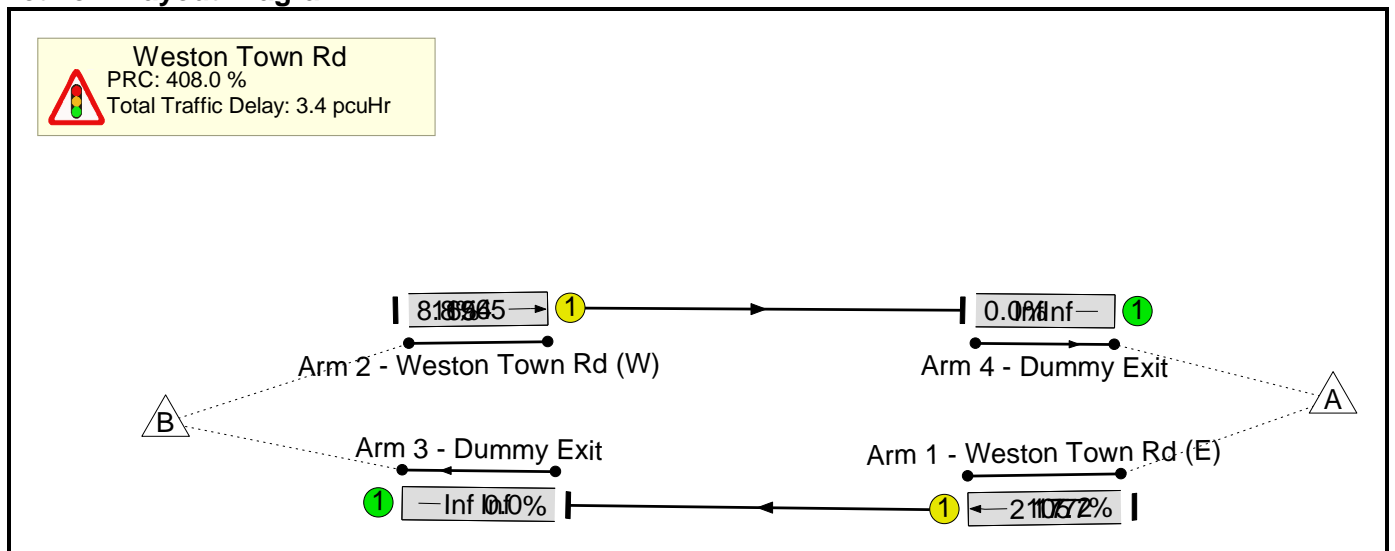
Basic Results Summary
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Portway_West Town Rd 3600.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: '2015 Base AM' (FG1: '2015 AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



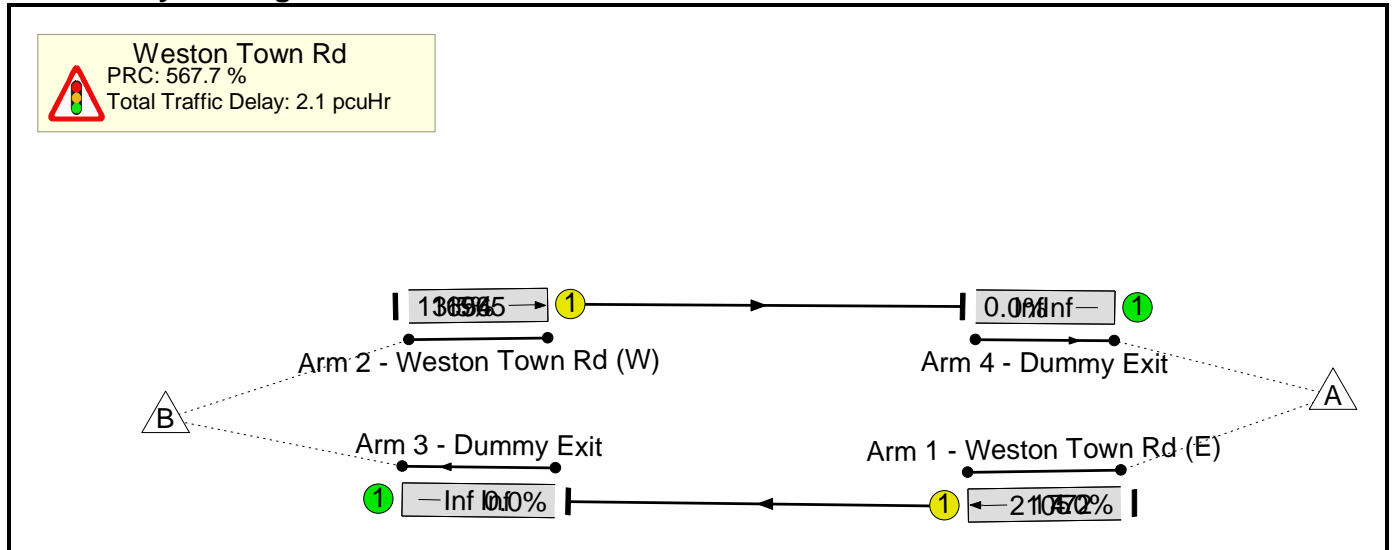
Network Results

Network Results

Basic Results Summary

Scenario 2: '2015 Base PM' (FG2: '2015 PM', Plan 1: 'Network Control Plan 1')

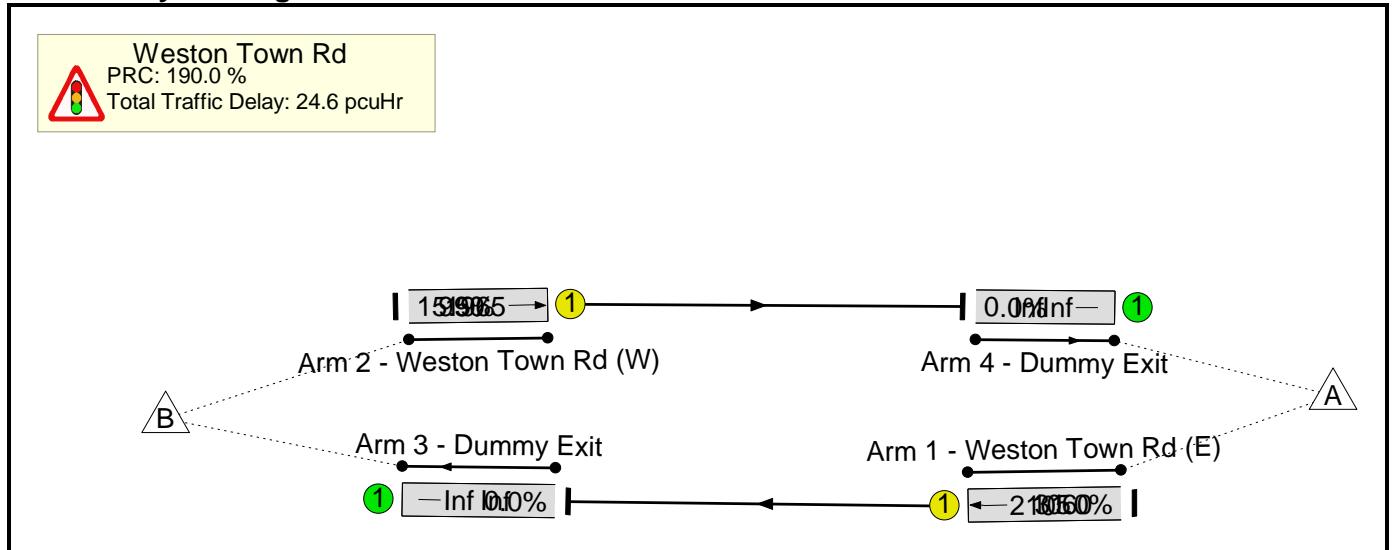
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	13.5%	0	0	0	2.1	-	-
Weston Town Rd	-	-	-		-	-	-	-	-	-	13.5%	0	0	0	2.1	-	-
1/1	Weston Town Rd (E) Ahead	U	A		2	3029	-	71	2105	1772	4.0%	-	-	-	0.5	24.3	5.8
2/1	Weston Town Rd (W) Ahead	U	B		2	3029	-	223	1965	1654	13.5%	-	-	-	1.6	26.6	20.0
			C1	PRC for Signalled Lanes (%):			567.7	Total Delay for Signalled Lanes (pcuHr):			2.13	Cycle Time (s): 3600					
				PRC Over All Lanes (%):			567.7	Total Delay Over All Lanes(pcuHr):			2.13						

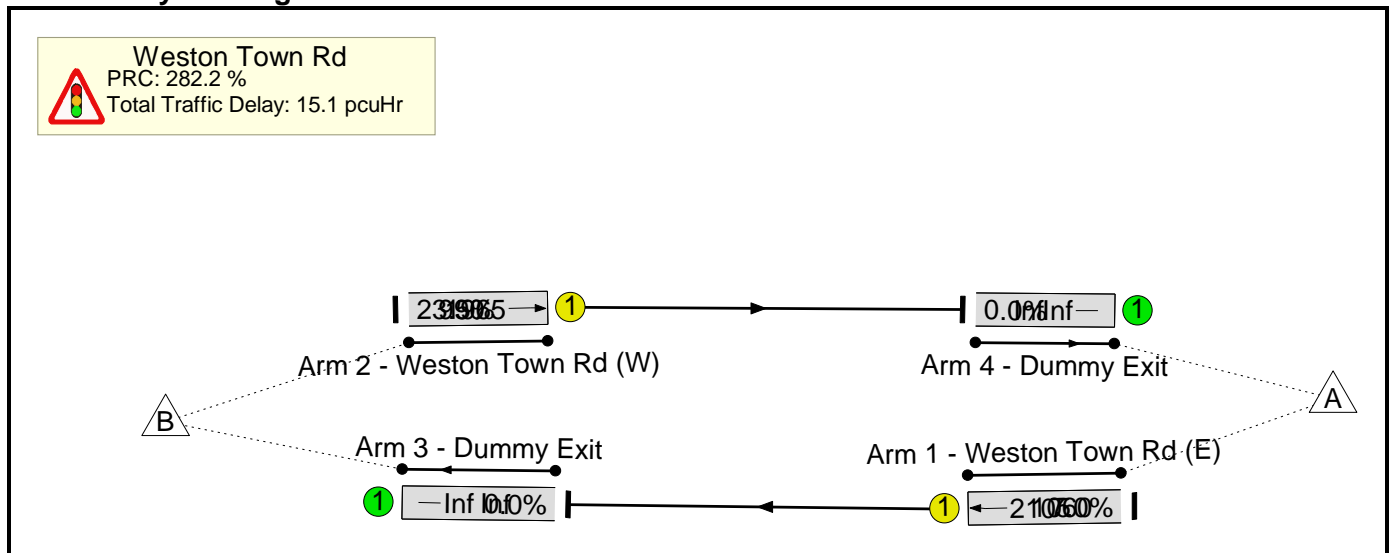
Network Layout Diagram



Network Results

C1	PRC for Signalled Lanes (%):	190.0	Total Delay for Signalled Lanes (pcuHr):	24.56	Cycle Time (s): 3600
	PRC Over All Lanes (%):	190.0	Total Delay Over All Lanes(pcuHr):	24.56	

Network Layout Diagram



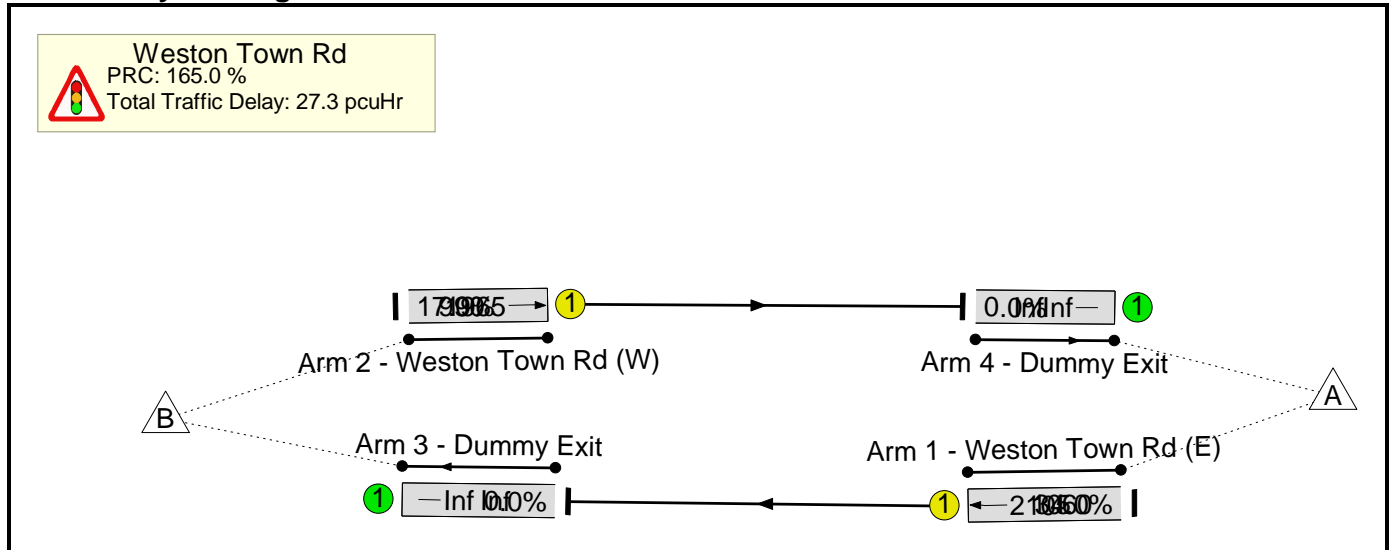
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	23.5%	0	0	0	15.1	-	-
Weston Town Rd	-	-	-		-	-	-	-	-	-	23.5%	0	0	0	15.1	-	-
1/1	Weston Town Rd (E) Ahead	U	A		3	1810	-	74	2105	1060	7.0%	-	-	-	3.4	164.6	17.1
2/1	Weston Town Rd (W) Ahead	U	B		3	1810	-	233	1965	990	23.5%	-	-	-	11.7	180.5	58.8
			C1	PRC for Signalled Lanes (%):			282.2	Total Delay for Signalled Lanes (pcuHr):			15.07	Cycle Time (s): 3600					
				PRC Over All Lanes (%):			282.2	Total Delay Over All Lanes(pcuHr):			15.07						

Basic Results Summary

Scenario 5: '2029 Assessment AM' (FG5: '2029 Assessment AM', Plan 2: 'Proposed closure 1800s')

Network Layout Diagram



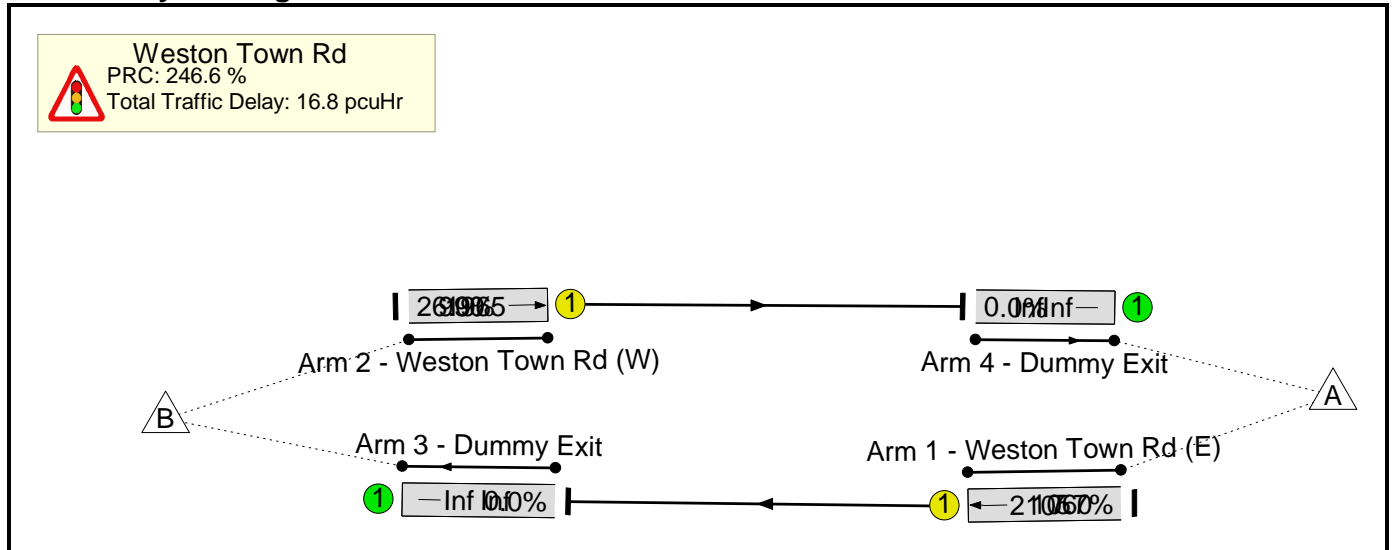
Network Results

Network Results

Basic Results Summary

Scenario 6: '2029 Assessment PM' (FG6: '2029 Assessment PM', Plan 2: 'Proposed closure 1800s')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	26.0%	0	0	0	16.8	-	-
Weston Town Rd	-	-	-		-	-	-	-	-	-	26.0%	0	0	0	16.8	-	-
1/1	Weston Town Rd (E) Ahead	U	A		3	1810	-	82	2105	1060	7.7%	-	-	-	3.8	165.2	19.0
2/1	Weston Town Rd (W) Ahead	U	B		3	1810	-	257	1965	990	26.0%	-	-	-	13.1	183.1	65.8
C1 PRC for Signalled Lanes (%): 246.6 PRC Over All Lanes (%): 246.6 Total Delay for Signalled Lanes (pcuHr): 16.83 Total Delay Over All Lanes(pcuHr): 16.83 Cycle Time (s): 3600																	