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TRANSPORT ASSESSMENT

Redrow (South Wales)

Land West of Windmill Lane (Bryn Melin)
Cowbridge

December 2022

Vale of Glamorgan Council

Transport Assessment

Contents

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1 Introduction

Background

1.1 Vectos has been appointed by Redrow PLC to provide traffic and transportation advice in support of a new development of 105 residential homes and associated works on Land to the West of Windmill Lane (Bryn Melin), Cowbridge. This site forms part of land allocated for residential development (MG2 19) within the Vale of Glamorgan's (VoG) Local Development Plan (LDP) 2011-2026. The site allocation within the LDP is for 130 homes which comprises two parcels, east and west of St Athan Road and this Transport Assessment (TA) will consider the whole allocation.

1.2 A Scoping Note was prepared and agreed with officers at VoG Council, a copy is contained at **Appendix A**.

1.3 This TA sets out the transport matters relating to the development, including the provision for pedestrians, cyclists and public transport users. This report also considers the effects of the development on the local highway network and provides a safe and operational access.

Report Structure

1.4 The structure of this TA is as follows:

- Section 2 – Examines the existing level of accessibility for the site and the local area by sustainable modes of travel;
- Section 3 – Reviews the existing National and Local Policy in the context of the site;
- Section 4 – Provides an overview of the development proposals;
- Section 5 – Provides a summary of existing travel behaviour;
- Section 6 – Analyses the forecast trip generation and trip purpose associated with the development proposals;
- Section 7 – Assesses the effect of the forecast trip generation on the local highway network; and
- Section 8 – Summarises and concludes.

Transport Assessment Audit

1.5 Asbri Transport were commissioned by Vale of Glamorgan (VoG) Council to undertake a review of the Transport Assessment submitted as part of the planning application for the proposed 105 residential dwellings on land to the west of Windmill Lane, Cowbridge [VoG ref: 2022/00958/FUL].

1.6 The comments have been addressed throughout this report and the relevant sections have been updated.

2 Accessibility

2.1 This section reviews the existing conditions at the site and its local surroundings including accessibility to sustainable modes of transport.

Site Location

2.2 The site is location approximately one kilometre south of the centre of Cowbridge, a market town located within the Vale of Glamorgan. It currently comprises open, agricultural land.

2.3 The site is bound by St Athan Road to the east, open fields to the south, residential development and Windmill Lane to the west, and residential development to the north.

2.4 The site in its local context is shown on **Figure 2.1**.

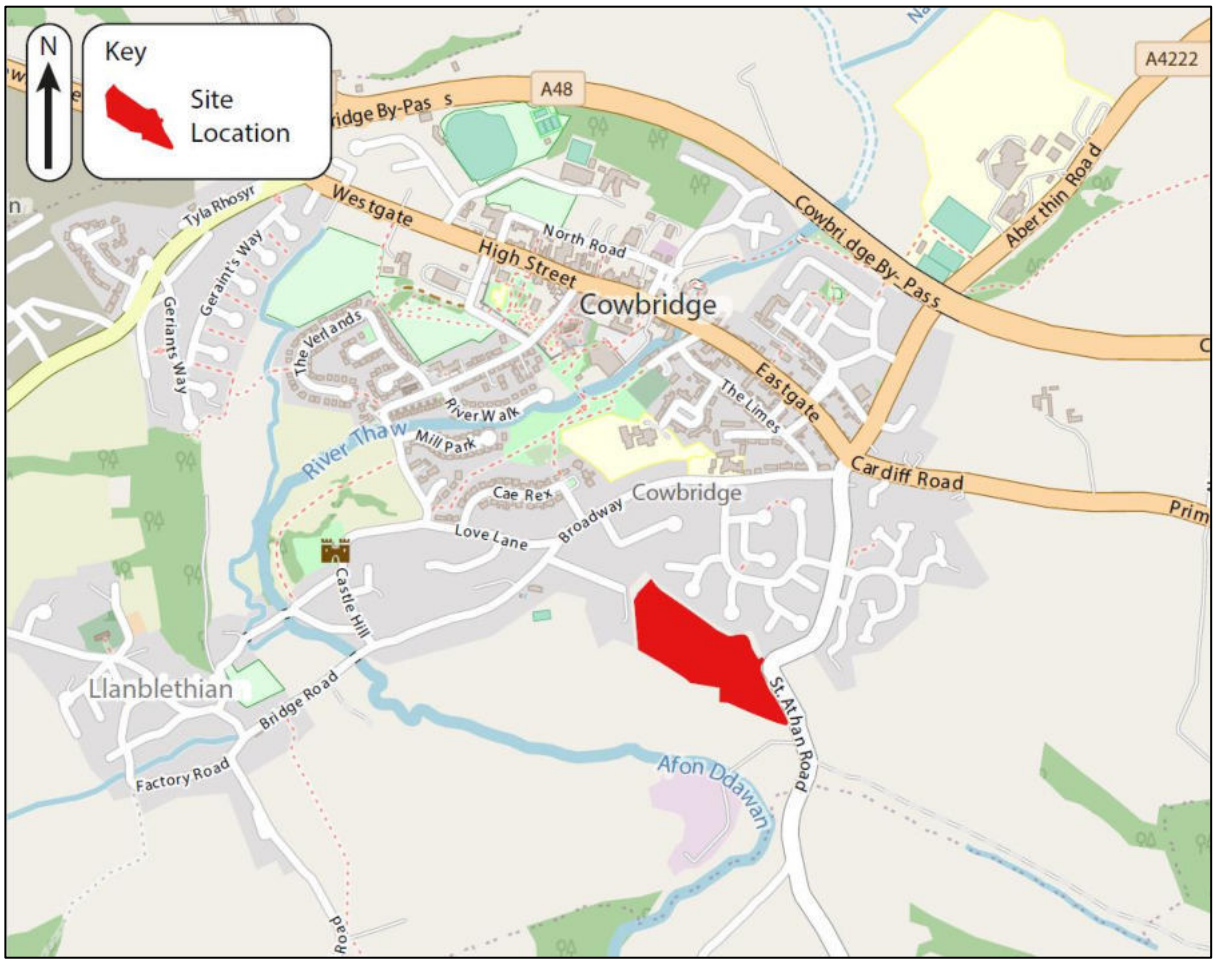


Figure 2.1 – Site Location

Local facilities

2.5 One of the primary factors to be considered when determining the suitability of a new development is its proximity, accessibility, and connectivity in relation to key local facilities by non-car modes.

2.6 The propensity for people to walk or cycle depends on individual preferences and circumstances. These circumstances might include, for instance, the purpose of the journey, the attractiveness of, and activity along, the route, the weather, and the cost of alternatives.

2.7 The thrust of local and national land use and transport policy is to promote and encourage the choice of walking and cycling above all else where travel needs to occur. Therefore, it is both reasonable to assume that walking is a viable and growing means of travel, and that new development, such as this one, should be designed to promote and encourage it.

2.8 As stated in Table 4.1 of the Welsh active travel act suggest journeys for up to 3km walking journeys, many users likely to travel this distance for utility journeys and for 5km journeys, that some users likely to travel this distance for utility.

2.9 A 5km walking Isochrone is provided in **Figure 2.2**.

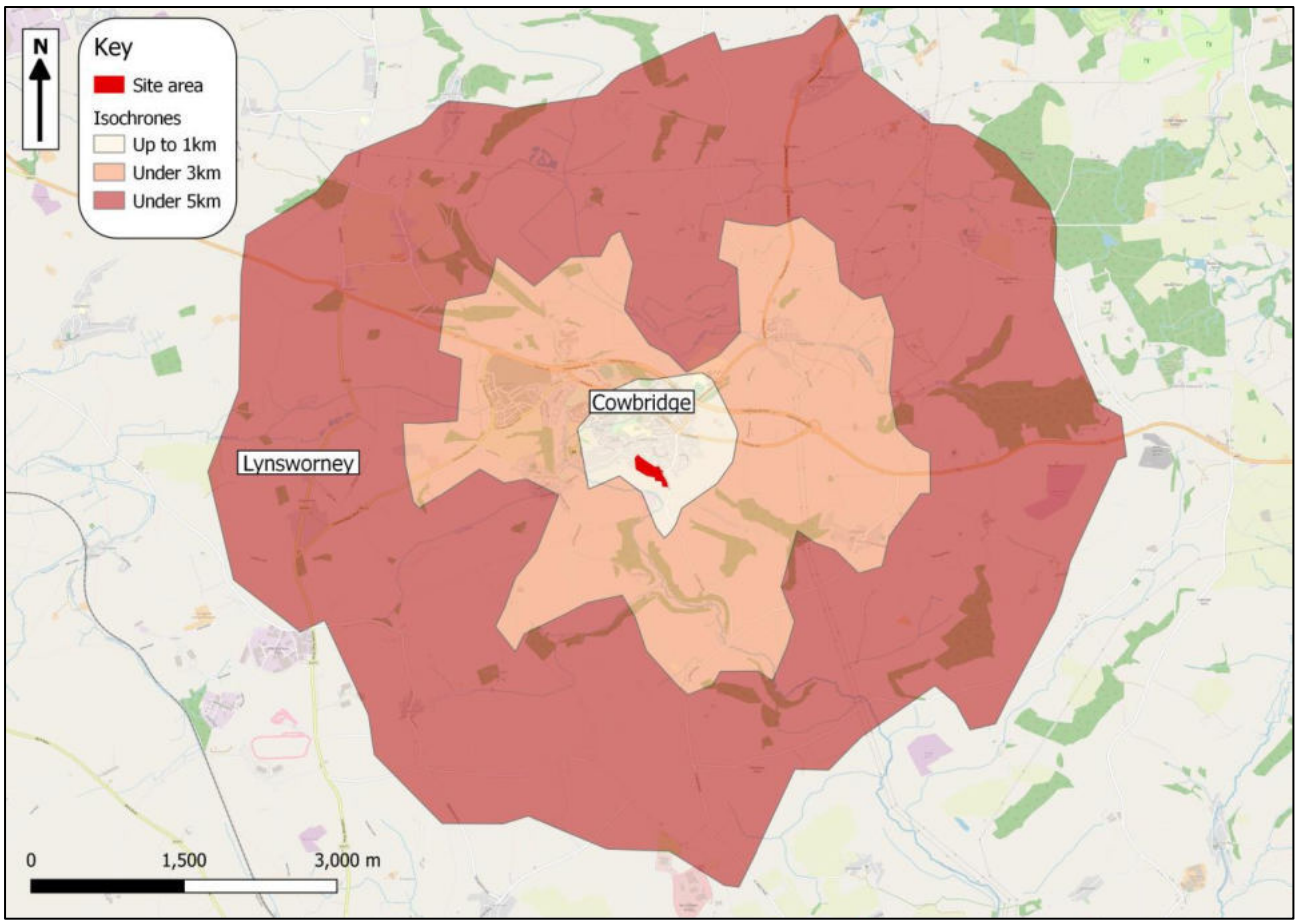


Figure 2.2 – 5km Walking Isochrone

2.10 All of the facilities present in Cowbridge will be accessible within a 3km walking distance

2.11

2.12 A number of local facilities are located in the surrounding area of the site, some of which are highlighted in **Table 2.1**. This table includes walking distances from the centre of the site using the proposed sustainable connection via Llanquian Close, using surfaced and lit walking routes. Walking and cycling times are taken using Google Maps' indicative travel times.

Table 2.1 – Local Facilities

Local Facility	Distance from the centre of the site (metres)	Cycling Time (mins)	Walking Time (mins)
Public Transport			
X2 Bus	650	3	8
132 Bus	1,025	4	12
Schools / Education			
Ysgol Iolo Morganwg	350	1	4
Y Bont Faen Primary School	500	2	6
Bijou Nursery & Creche	780	3	9
Cowbridge Comprehensive School	1,150	5	14
Old Boys Grammar School	1,150	5	14
Leisure / Sports			
St Quentin's Castle	750	3	9
Cowbridge Town Hall	1,025	4	12
Cowbridge Squash Club	1,575	7	19
Cowbridge Leisure Centre	1,575	7	19

Pub / Restaurants / Food			
Edmondes Arms	575	2	7
Shampan Indian	875	4	10
The Horse & Groom	925	4	11
Cowbridge Fish Bar	975	4	12
Town Hall Square	1,025	4	12
Caffe Nero	1,025	4	12
Rocket and Rye	1,025	4	12
Duke of Wellington	1,075	4	13
Harry's Cowbridge	1,275	5	15
Local Shops			
Waitrose	1,075	4	13
Tesco Express	1,075	4	13
Medical Centres / Health			
Y Bont Faen Dental Surgery	825	3	10
Specsavers	975	4	12
Cowbridge Dental Care	1,025	4	12
Sylvia Williams Chemist	1,075	4	13
Cowbridge Health Centre	1,675	7	20
Cowbridge & Vale Medical Practice	1,775	7	21

2.13 **Table 2.1** demonstrates that the site is connected to various amenities by foot (15-30 minutes) or by bicycle (under 15 minutes) to a wide range of local amenities in including local schools, food stores, health facilities and local high streets.

2.14 The location of local facilities available within Cowbridge are shown in ***Figure 2.3***

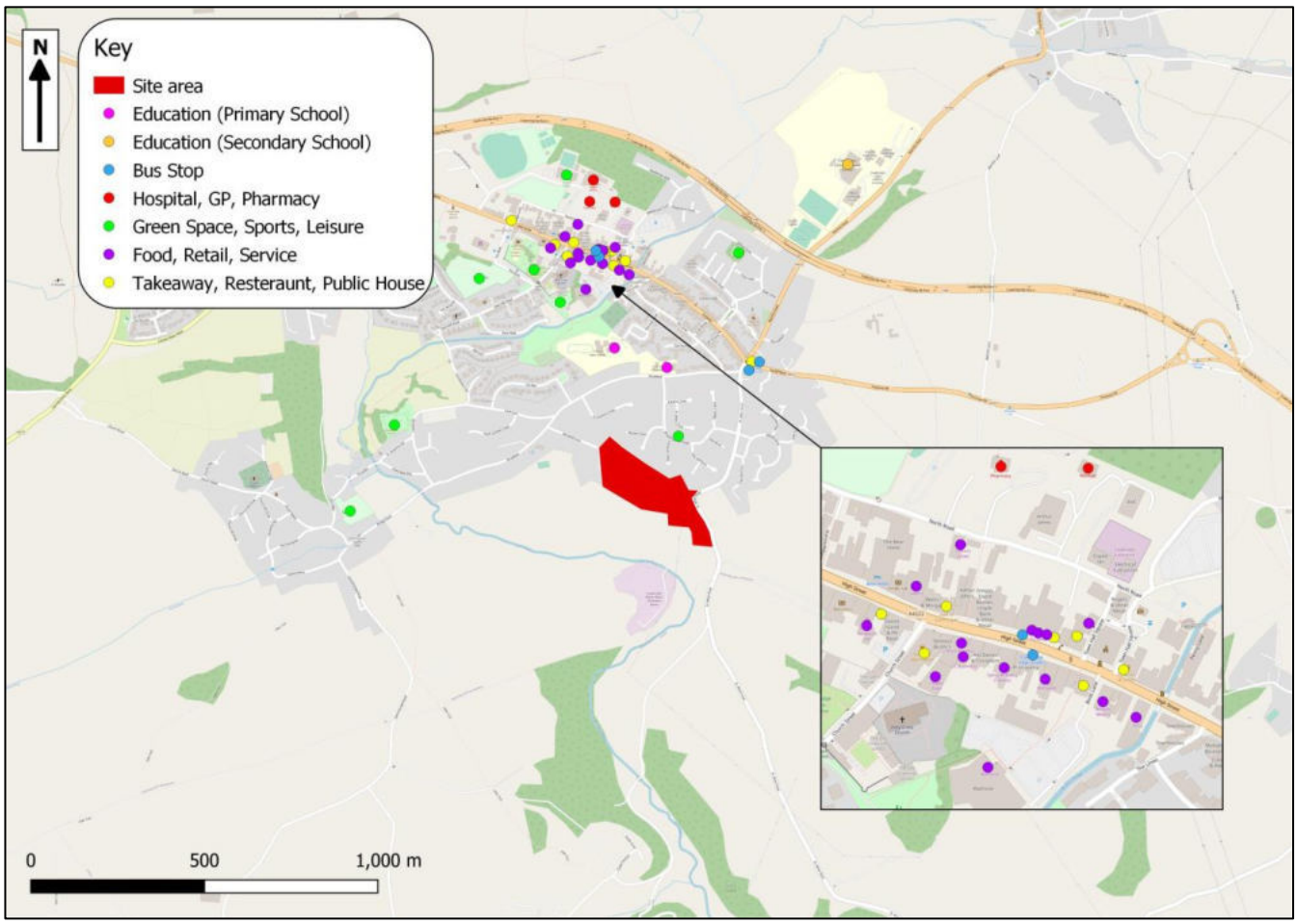


Figure 2.3 – Local Facilities

Walking

2.15 A public right of way (PRoW) crosses the site in an east to west alignment. It is currently access*ed* via St Athan Road to the southwest of the site and Windmill Lane to the east of the site. This is an unsurfaced route and has the potential to be used as a connection for pedestrians to the surrounding residential developments.

2.16 There are several PRoWs surrounding the site, as illustrated in **Figure 2.4**. Many provide connections to around the town, as well as providing attractive leisure use for residents to the wider area.

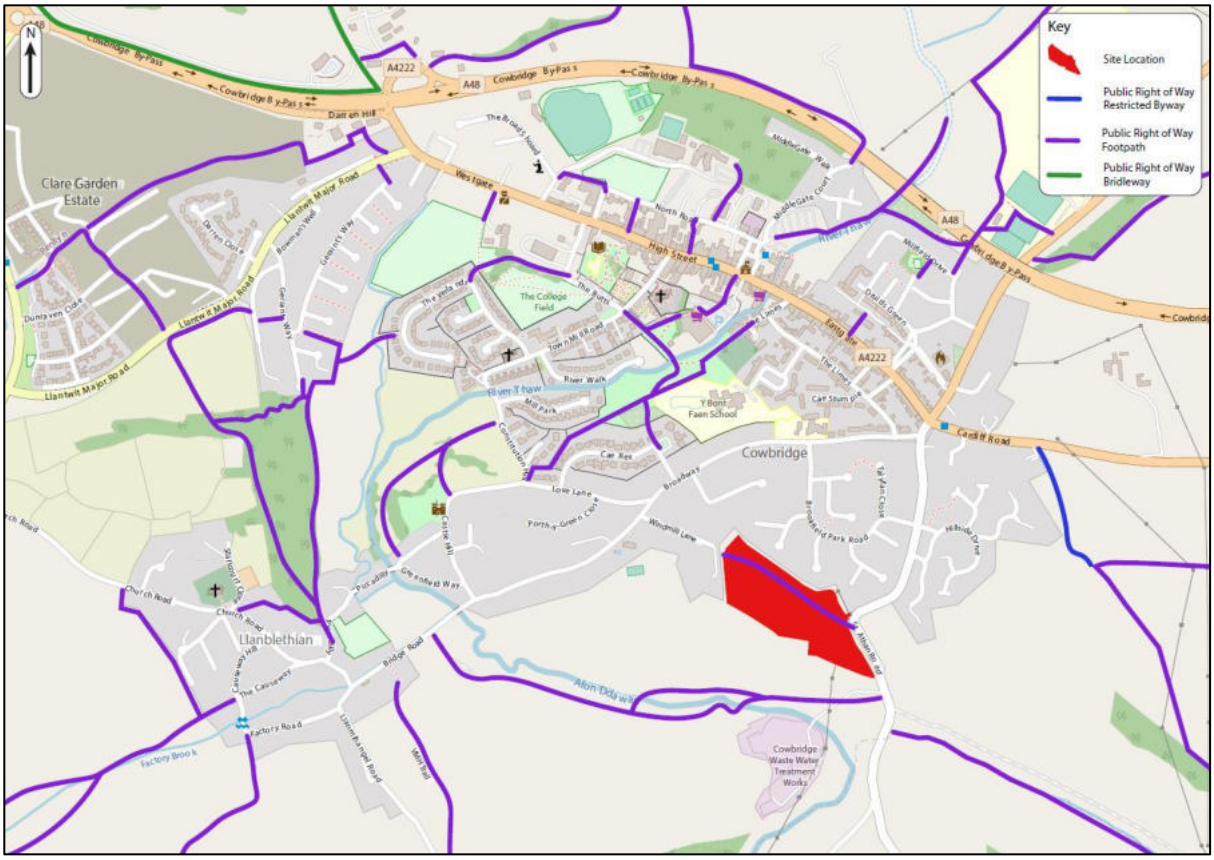


Figure 2.4 – Public Rights of Way

2.17 There are no footways provided on St Athan Road, within the vicinity of the site. Windmill Lane to the northwest of the site provides an existing pedestrian route. As part of the development proposals, there is the opportunity to improve the pedestrian access to the site, this is discussed further in **Section 4.**

2.18 It is reasonable to expect that typical able-bodied people are capable of walking at least 30 minutes for day-to-day activities. The thrust of sustainability policy is that there will be an increasing propensity for people to use non single car occupancy modes, of which walking is one. People will choose their mode based on their journey purpose, and it is reasonable to conclude that a proportion of journeys undertaken to and from the site will be on foot.

2.19 The thrust of land use and transport policy is to promote and encourage the choice of walking and cycling above all else where travel needs to occur. Therefore, it is both reasonable to assume that walking is a viable and growing means of travel, and that new development, such as this one, should be designed to promote and encourage it.

2.20 In practice, the distance that any individual is likely to choose to walk, depends on that individual and their circumstances, but it is fair to assume that over time, given current policies to encourage community, health and well-being, the propensity for individuals to walk, and to walk further, will increase.

Cycling

2.21 **Figure 2.5** shows the 'Less than 1km, 'up to 3km', 'up to 5km', 'up to 8km', 'up to 12km' and cycling isochrones from the site, in line with **Table 4.1** of the Active Travel Act.

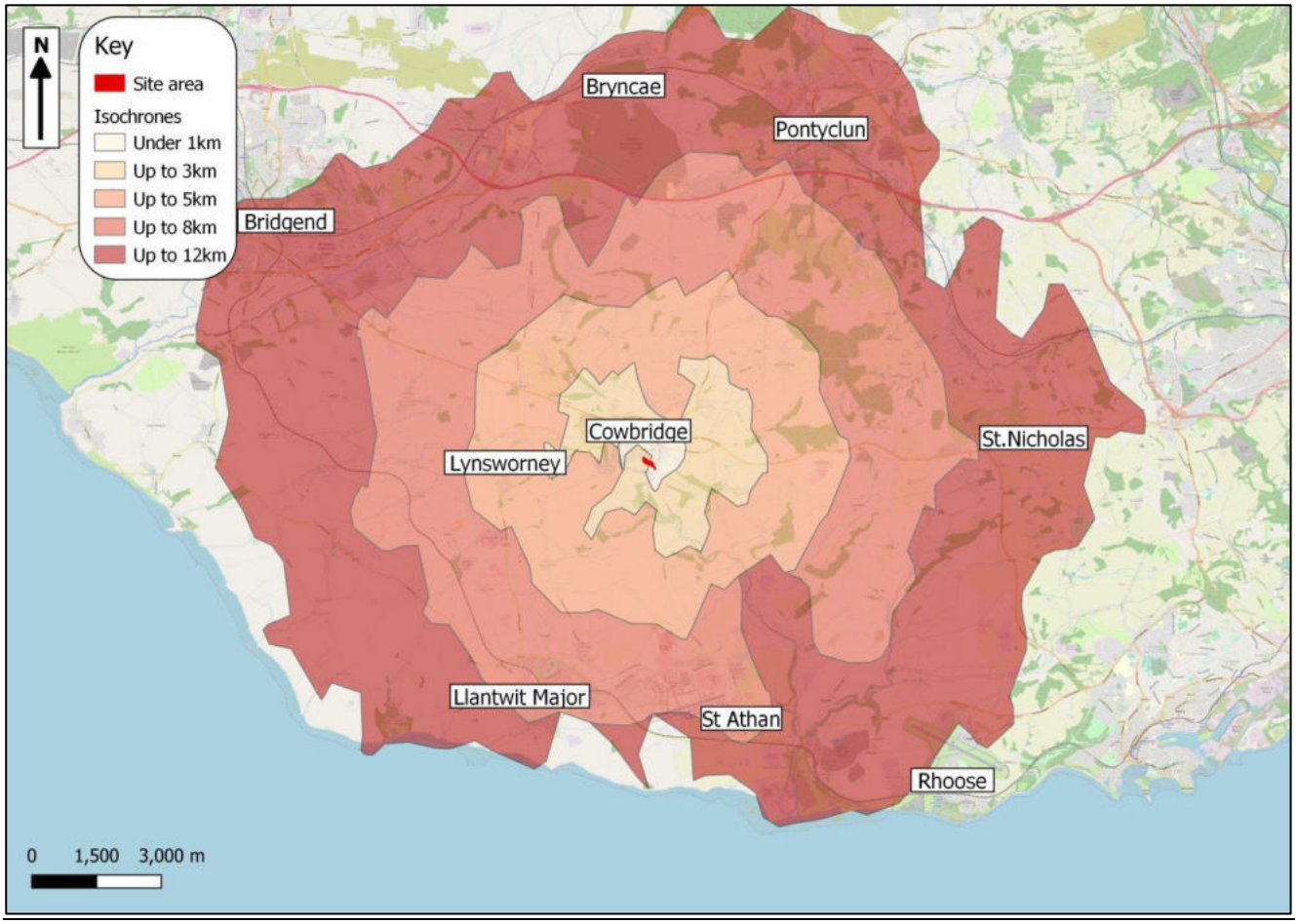


Figure 2.5 – Cycling Isochrones

2.22 **Figure 2.5** shows that the site is within Cycling distance of nearby villages like Lynsworney. In addition, Bridgend is also within a 12km cycling distance and can be considered accessible to the site.

2.23 There are other roads conducive to cycling in the vicinity of the site, in that they are in a good state of repair, lightly trafficked, and have good forward visibility for the most part. However, the proclivity for people to cycle does also depends on distance to local services and facilities as well as the quality of the routes.

2.24 Existing Cycle facilities in Cross keys are based around the Active Travel Network Maps (ATNMs).

2.25 These routes are shown on **Figure 2.6.**

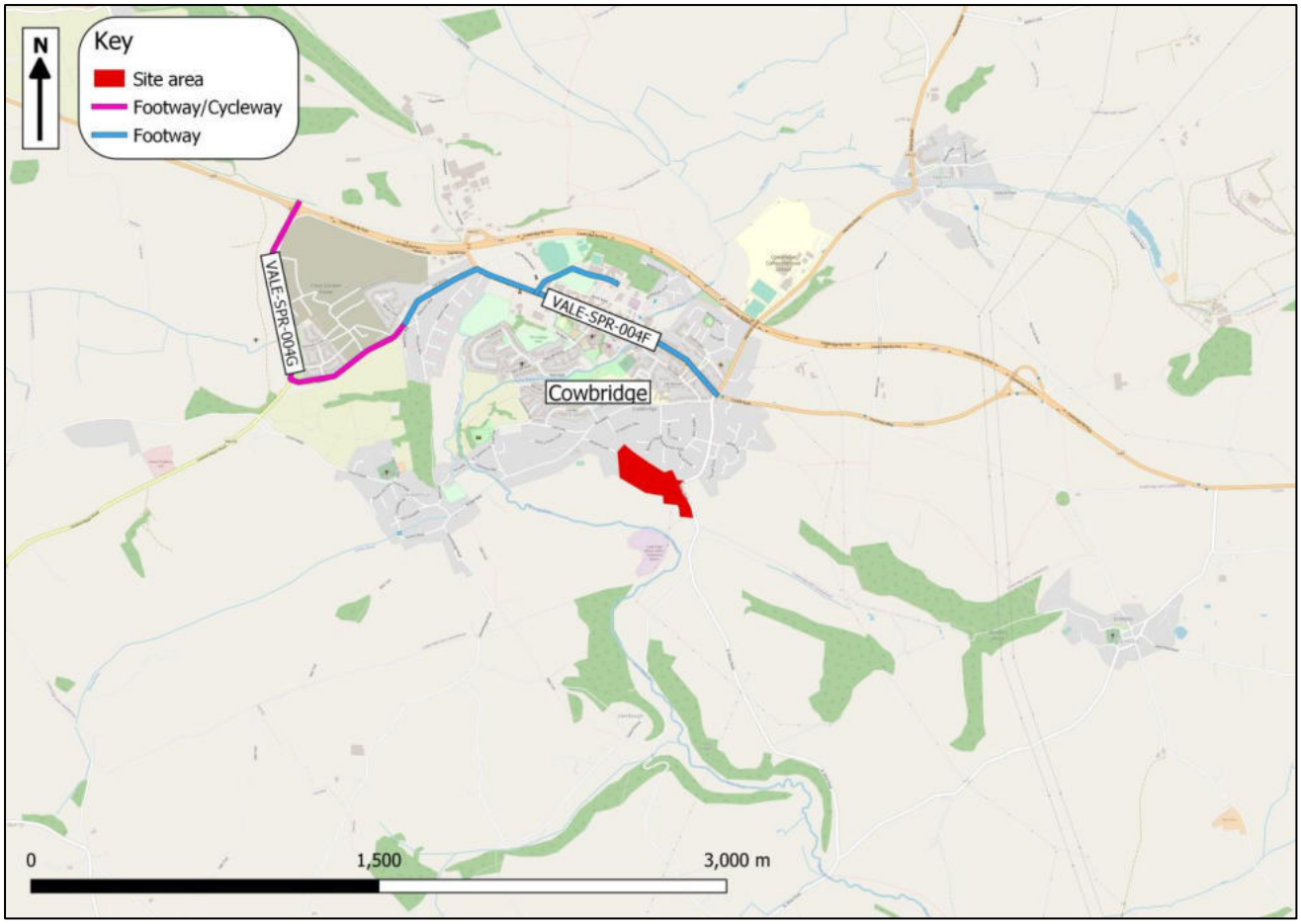


Figure 2.6 – Cowbridge ATNM map

Integrated Network

2.26 The Active Travel Act in Wales makes it a legal requirement for local authorities in Wales to plan and map suitable routes for active travel within certain, key settlements, as specified by the Welsh Government. The Vale of Glamorgan Integrated Network Maps were approved in 2022 and set out the aspirations for improving the active travel routes across the County over the next 15 years. They include routes that were currently used but may not have met the standard of Active Travel routes, or they were routes that did not exist but were identified within other strategic plans or identified through the consultation process.

2.27 **Figure 2.7** summarises the proposed active travel routes identified as a part of the integrated active travel networks within the vicinity of the site.

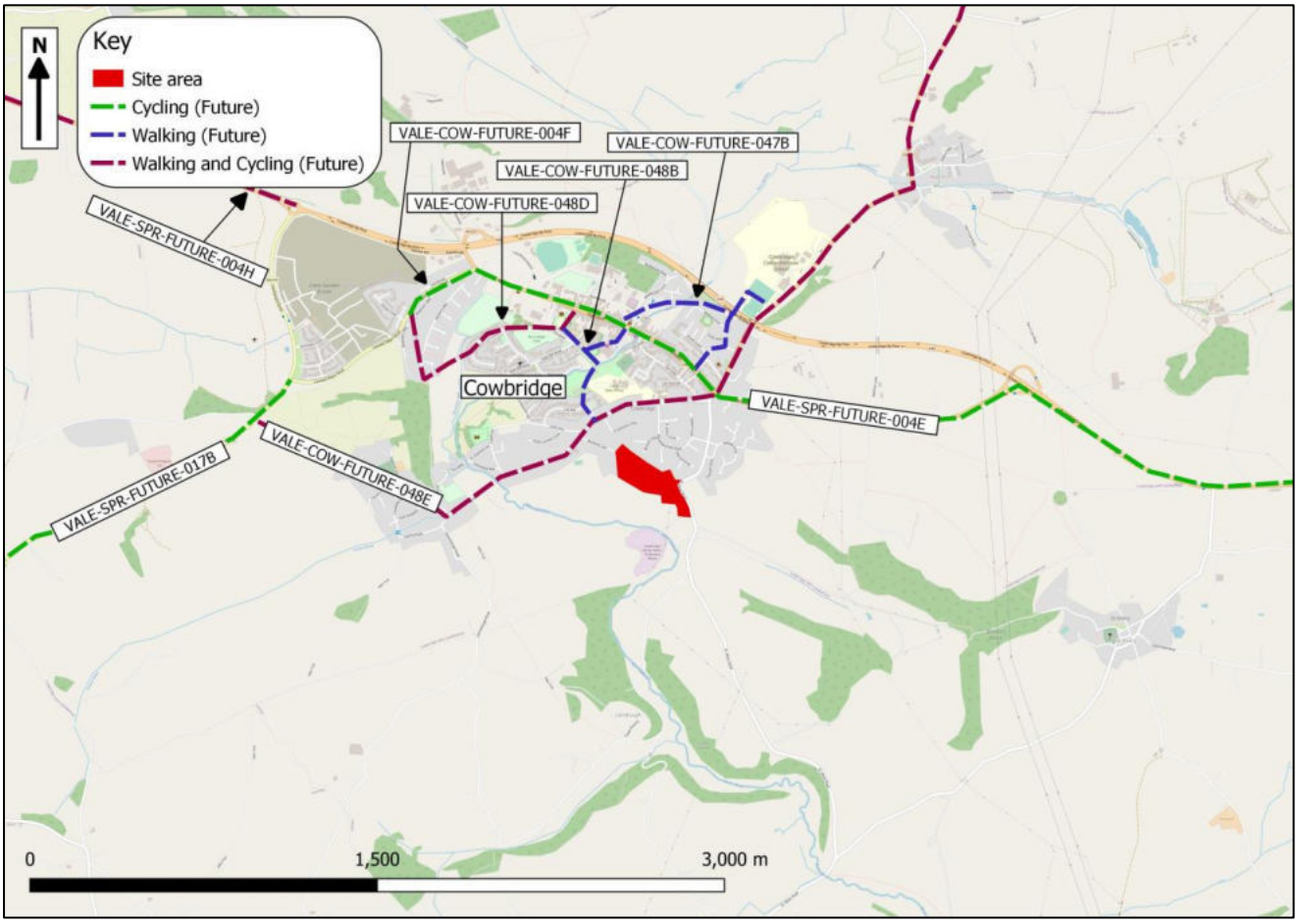


Figure 2.7 – ATNM Future Plan

2.28 As shown on **Figure 2.6**, improvement for the cross keys area included:

- Routes 004F, 047B, 048B, and 048D All improve internal active travel routes for travel across Cowbridge.
- Route 004E creates a cycle link towards Cardiff;
- Route 016B creates a cycle link towards Llanwit Major;
- Route 004H creates a cycle route towards Wick; and
- Route 048E creates a cycle link toward Ely.

2.29 All these planned future routes improve the external connection Cowbridge has with nearby and further afield settlements within the Vale of Glamorgan.

Bus

2.30 The nearest bus stop to the site is located on Primrose Hill, approximately 550 metres to the north east of the site. Bus service number X2 serves the site and provides links to Cardiff in the east, and Porthcawl to the west. A summary of this service is set out in **Table 2.1** as follows. There are additional bus stops 1km to the north along High Street. This service runs Monday to Sunday.

2.31 **Figure 2.8** shows the buses operating in the local vicinity.

Figure 2.8 – Local Bus Routes

2.32 Service number 321 also serves the site and the nearest bus stop is approximately 800 metres to the north on Alberthin Road. This route provides connections to Llantrisant in the north, and Llantwit Major to the south. A regular service is provided with buses running Monday through to Saturday. A summary of this service is provided in **Table 2.2**.

Table 2.2 – Bus Services

Number	Route	First Bus (M-F)	Last Bus (M-F)	Frequency (mins)			Operator
				M-F	S	S	
From: 'Geoffrey Ash Court'							
X2	Porthcawl - Cardiff	06:38	22:18	30	30	60	First South & West Wales
	Cardiff - Porthcawl	08:00	23:35				
From: 'Comprehensive' (Monday - Saturday)							
321	Talbot Green – Llantwit Major	06:42	17:42	60	120	-	New Adventure Travel
	Talbot Green – Llantwit Major	08:08	19:40				

Rail

2.33 The closest station to the site is in Pontyclun which is located around 8.3km to the north of the site. Within this distance cyclists would be able to make this journey as per table 4.1 of the Active travel act.

2.34 In addition, a 30-minute journey on the 321-bus service (Including walking time) would be able to reach the station.

2.35 The stations distance from the site makes it an unlikely option for transport however it accessible to some means of transport so it is an option that some may utilise.

2.36 The services available from Pontyclun are provided in **Table 2.3.**

Table 2.3 – Train services from Pontyclun

Destination	*Average Journey Time (mins)*	*Average Frequency (mins)*
Cardiff Central	*13*	*60*
Bridgend	*13*	*60*
Newport	*30*	*60*

Community Transport

2.37 Greenlinks Community Transport offer demand responsive services dependant on vehicle availability and passenger demand, the volunteer driven vehicles can transport residents from their home to their destination.

2.38 Greenlinks has four accessible minibuses, two 9-seaters, two 12-seaters and two accessible cars.

2.39 A membership fee of £5 is payable and this allows users to request services for a small fee. The rate is dependent on zones, of which there are three; East Vale, West Vale and External. It is also possible to hire a minibus for a day or half day.

Local Highway Network

St Athan Road

2.40 St Athan Road is a two-way single carriageway road to the east of the site. It connects St Athan approximately 5.5km to the south, to the A4222 / Cardiff Road / St Athan Road / Eastgate signalised junction, to the northeast of the site.

2.41 Within the vicinity of the site, St Athan Road is subject to the National Speed limit (60mph) and has a steep downward gradient from north to south past the site. The existing speed gateway feature (30mph signage) is located approximately 45 metres to the south of Hillside Drive, on the eastern side of St Athan Road.

2.42 The horizontal geometry of St Athan Road in the immediate vicinity of the site is also challenging with an almost 90-degree bend in the road on the frontage of the site access.

2.43 To the south of its junction with Hillside Drive, St Athan Road has a 7.5 tonne weight restriction, due to a weak bridge.

2.44 To ascertain the existing vehicle speeds and traffic volumes on St Athan Road, two, week-long ATC surveys were commissioned between Feb 27th and 4th March 2020 recording traffic conditions for a neutral week and prior to any COVID-19 lockdown measures. The ATC's were positioned to the north and south of the existing bend on St Athan Road in the vicinity of the site and the locations were selected to determine the likely speeds and flows in the vicinity the proposed site access.

2.45 A full copy of the ATC data is provided in **Appendix B.**

2.46 Two week-long ATC's were commissioned and positioned to the north and south of the existing bend on St Athan Road in the vicinity of the proposed site access, as shown in **Figure 2.9**.

Figure 2.9 – Location of ATCs on St Athan Road

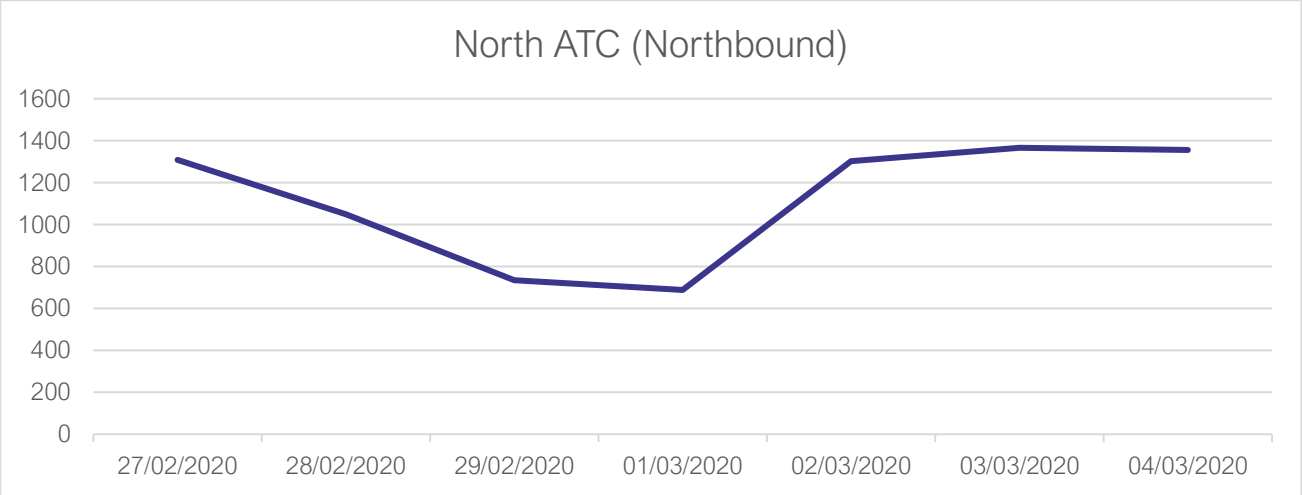
2.47 **Table 2.4 and 2.5** show the recorded traffic flows on St Athan Road.

Table 2.4 Existing Traffic Flows on St Athan Road (North Site)

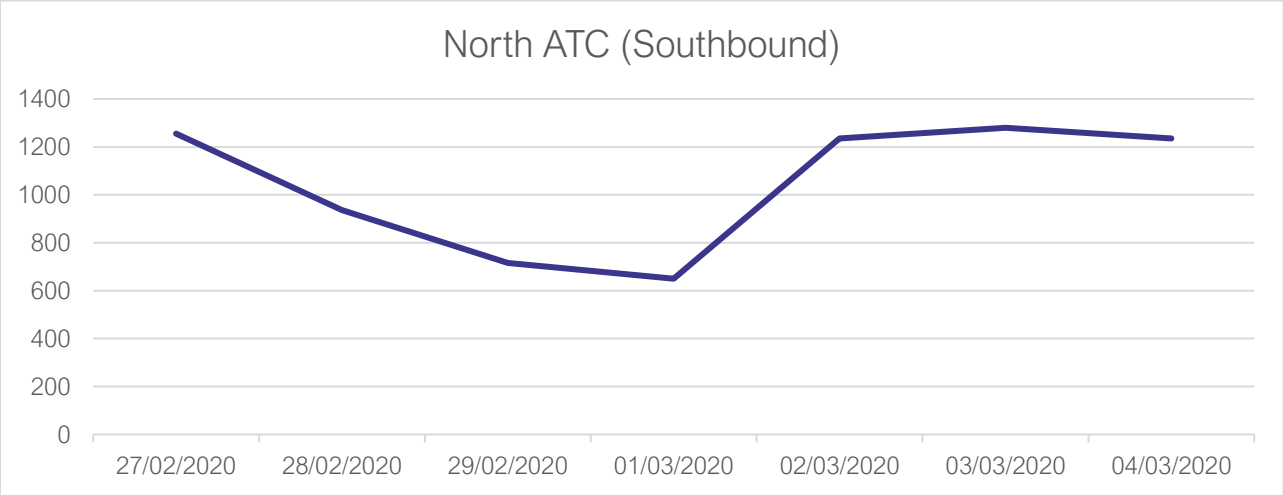
Time Period	N-bound traffic flow (vehicles)	S-bound traffic flow (vehicles)	Two-way vehicle flow
AM Peak Hour (0800-0900)	170	91	261
PM Peak Hour (1700-1800)	117	96	213
Average 24-hour (weekday)	1,276	1,188	2,464

2.48 At the northern site, two-way traffic flows were recorded as 2,464 vehicles per day, with peak hour flows recorded as 261 two-way vehicles in the AM peak period and 213 in the PM peak period.

2.49 Average daily flow profiles for northbound and southbound travel on the Northern Site ATC are shown on **Graph 2.1 and 2.2.**



Graph 2.1 Northbound Daily Flow Profile (North site)



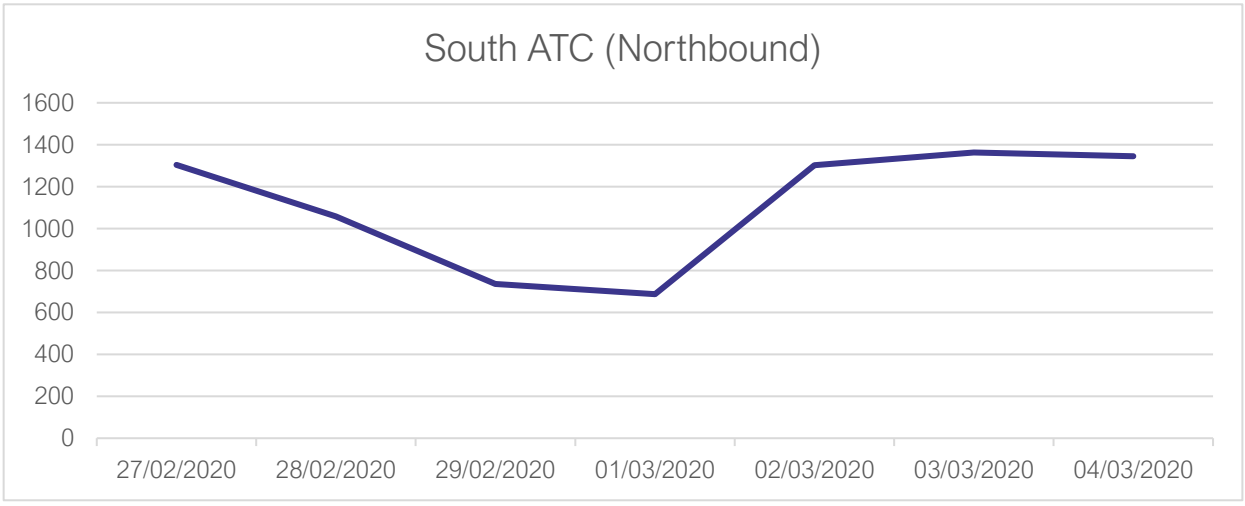
Graph 2.2 Southbound Daily Flow Profile (North site)

Table 2.5 Existing Traffic Flows on St Athan Road (South Site)

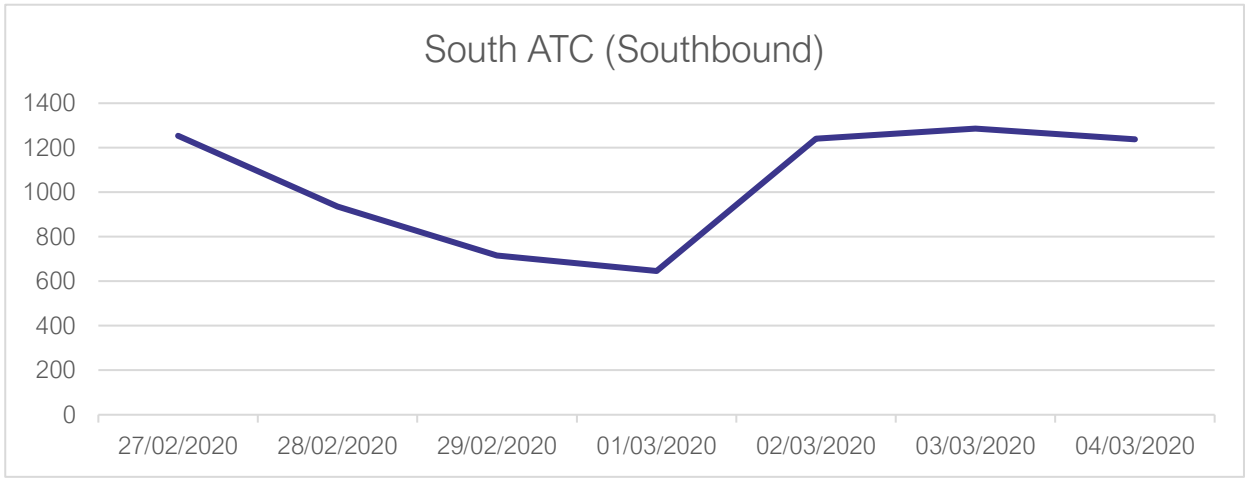
Time Period	N-bound traffic flow (vehicles)	S-bound traffic flow (vehicles)	Two-way vehicle flow
AM Peak Hour (0800-0900)	169	93	262
PM Peak Hour (1700-1800)	117	95	212
Average 24-hour (weekday)	1,275	1,194	2,469

2.50 Like the flows record at the northern ATC site, at the southern site, the two-way traffic flows were recorded as 2,469 vehicles per day, with peak hour flows recorded as 262 two-way vehicles in the AM peak period and 212 in the PM peak period.

2.51 Average daily flow profiles for northbound and southbound travel on the Southern Site ATC are shown on **Graph 2.3 and 2.4.**



Graph 2.3 Northbound Daily Flow Profile (South site)



Graph 2.4 Southbound Daily Flow Profile (South site)

2.52 Speeds were also recorded by the ATCs, under free flow conditions, with no exceptional weather conditions reported.

2.53 A summary of the speeds recorded by both ATC's are shown in **Table 2.3** and **2.4**.

Table 2.3 Existing Traffic Speeds on St Athan Road (North Site)

Time Period	Average (mph)		85th%ile	
	N-bound	S-bound	N-bound	S-bound
AM Peak Hour (0800-0900)	27.9	29.5	30.7	33.6
PM Peak Hour (1700-1800)	28.0	29.3	31.7	33.5
24-hour weekday	27.8	29.1	31.3	33.6

Table 2.4 Existing Traffic Speeds on St Athan Road (South Site)

Time Period	Average (mph)		85th%ile	
	N-bound	S-bound	N-bound	S-bound
AM Peak Hour (0800-0900)	30.6	29.1	34.0	32.8
PM Peak Hour (1700-1800)	31.2	29.6	35.2	33.6
24-hour weekday	30.9	29.3	34.9	33.4

2.54 A maximum average speed of traffic on St Athan Road is 31.2mph. in both directions.

2.55 The northbound average *peak hour* speed is between 27.9mph and 30.9mph, and the 85th %tile is between 31.4mph and 34.9mph.

2.56 The southbound average *peak hour* speed is between 29.1mph and 29.2mph and the 85th%tile is between 33.6mph and 33.4mph.

2.57 The recorded traffic flows demonstrate that the observed flow of traffic on St Athan Road is low and that vehicle speeds are well within the prescribed speed limit and are clearly controlled by the existing horizontal and vertical geometry.

A4222

2.58 The A4222 travels in an east to west alignment through the centre of Cowbridge and connects to the A48 Cowbridge Bypass to the east and west of the village.

2.59 To the east of the village, the A4222 is known as Primrose Hill and is subject to national speed limit (60mph) and there is a 10% downward gradient towards the centre of the village. A footway is provided on the southern side of the carriageway and is not illuminated. A gateway to the village, with a speed reduction to 30mph is provided within the vicinity of Geoffrey Ashe Court, this section of the road is known as Cardiff Road.

2.60 The A4222 Eastgate / High Street travels through the centre of Cowbridge village and connects to the A48 to the west. This section of the road is subject to a 30mph speed limit and is illuminated throughout.

Highway Safety Record

2.61 To determine if any recent collisions have occurred on the adjacent local highway network, collision data has been obtained from Welsh Government (WG). As requested from officers at VoGC, the data covers the latest available five-year period between 030/6/2017 and 31/6/2022.

2.62 Recorded collisions are ranked in order of severity, with these being:

- Slight collisions – possible medical attention, as required but no hospital stay is necessary;
- Serious collisions – medical attention involving a hospital stay was required; and
- Fatal collisions – casualty who sustained injuries which caused death within 30 days of the collision.

2.63 An analysis of the data has been undertaken and it shows that there were four recorded collisions within the latest three-year period, resulting in four slight injuries. The number of collisions is summarised in **Table 2.5**

Table 2.5 Collisions within the last five-year period 2017/11/30-2022/11/2022

	Severity			
Year	Slight	Serious	Fatal	Total
2017	0	0	0	0
2018	2	0	0	2
2019	2	0	0	2
2020	0	0	0	0
2021	0	0	0	0
2022	0	0	0	4

2.64 There were no recorded collisions for the length of St Athan Road, any of its junctions or within the vicinity of the proposed site access.

2.65 The location of each collision is shown on **Figure 2.10**

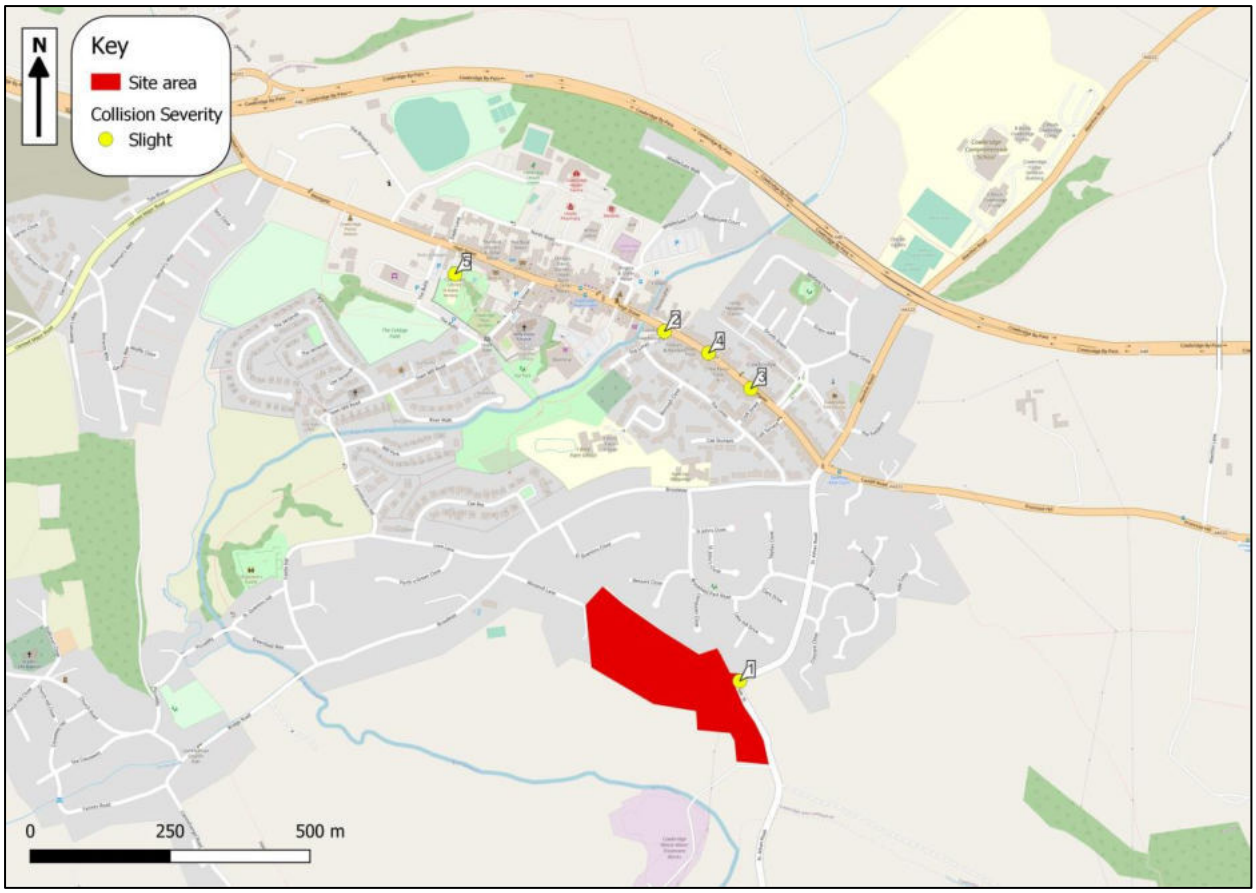


Figure 2.10 Collision Location and Severity

2.66 A summary of the five collisions is provided below:

- The first collison recorded within the area is outside of the last 5-year time frame however it will be considered as it occurred near the eastern boundary of the site on Friday 25 August 2017 at 17:04 in regular light conditions and fine weather. The incident occurred between a motorcycle and a van when they were going ahead with their respective left and right and turn on the bend on St Athan Road on the eastern border of the site. This caused the motorcycle to leave carriage on left nearside resulting in a slight injury.
    - The fact that this collison occurred outside of the time five-year time period and that St Athan Road will be realigned as a part of the development suggests that this collison is not a part of a pattern that would indicate towards a highways safety concern and that realignment will address the concern if it is present.
- The first recorded collision occurred on Saturday 27 January 2018 at 12:18 in light but wet conditions and resulted in the slight injury of a pedestrian. The incident occurred when a vehicle making a right-hand turn from Eastgate to The Limes failed to see a pedestrian crossing the road and has struck the pedestrian at a low speed, resulting in the pedestrian sustaining a slight injury.

- The next collision occurred Friday 01 June 2018 at 17:22 in fine and dry conditions. It occurred when a child cyclist has fallen from their bicycle into the path of an oncoming car. The car was travelling at a low speed and struck the cyclist, causing them to sustain a slight injury.

- The third collision occurred on Tuesday 29 January 2019 at 14:25 in fine and dry conditions. The incident occurred when an elderly driver collided with the rear of an unattended vehicle. This resulted in the car driver sustaining a slight injury.The fourth collision within the study area occurred on Saturday 31 August 2019 at 10:19 in light but wet conditions. The incident occurred when a bus has made a right-hand manoeuvrer and the rear of the bus has clipped the rear of a motorcyclist that was stationary in traffic. This caused the rider to fall from his machine and sustain a slight injury.

2.67 Overall, there isn't a noticeable cluster of incidents within 100m or 3 years of each other. Combined with the overall low number of collisions, this indicates there is not an existing design based highways safety concern.

Summary

2.68 The analysis of the collision data does not identify any abnormal trends or patterns in the collisions recorded, nor does it identify any specific highway safety issues in the vicinity of the site. Furthermore, no collisions occurred within the vicinity of the proposed site access.

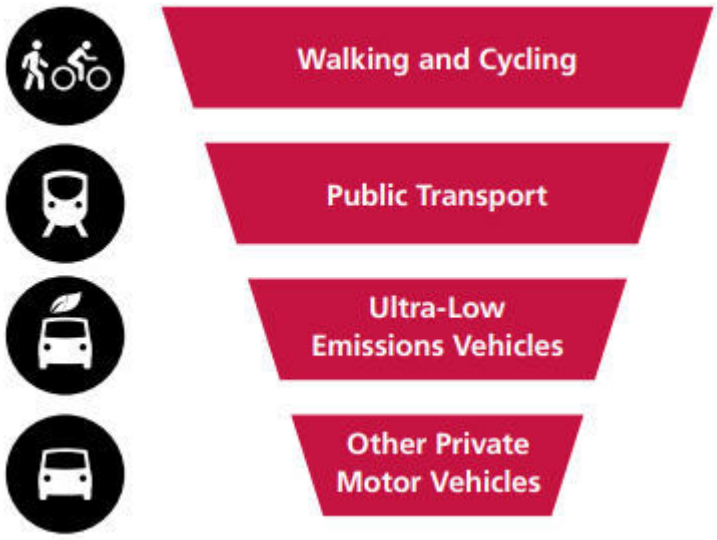
2.69 The collisions appear to be typical of those in urban locations and at junctions. As such, it can be concluded that, within the study area, there is no inherent issue with respect to road safety.

3 Policy and Guidance

Overview

3.1 This section of the report outlines relevant policies for development and transport in Wales, which are cognisant of one another and follow a common theme; moving towards carbon reduction in the promotion of communities, virtual and active mobility, followed by public transport with private vehicle trips at the bottom of the hierarchy. This hierarchy is demonstrated in **Figure 3.1**.

Figure 3.1 - Transport Hierarchy (Active Travel Act Guidance 2021)



3.2 The site will be fully in line with the principles outlined in the Active Travel Wales Guidance (2021), which places placemaking and sustainable communities at the forefront of new development. Connections to employment, health, education and leisure opportunities are key, but also achievable through the promotion of active travel and public transport above less sustainable modes.

3.3 The policy context for the proposed development is set out in national, regional and local planning policy and guidance. The key policy documents and relevant policies are outlined below.

National

Planning Policy Wales (Edition 11 – February 2021)

3.4 Planning Policy Wales, edition 11, (PPW11) sets out the land use planning policies of the Welsh Government. The primary objective of PPW11 is to;

"ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales…"

3.5 Section 4 of PPW11 concerns Active and Social places. It asserts that Active and Social Places are those which provide well-connected cohesive communities and further states that a 'Resilient Wales' is supported by protecting existing communities and natural environments whilst well-connected infrastructure and facilities closer to where people live.

3.6 Within Section 4 it stresses that:

- A Healthier Wales can be achieved through the reduction in emissions and air pollution by minimising the need to travel and maximising provision of sustainable forms of transport;
- A more equal Wales can be achieved by recognising the strengths of existing communities and securing socially inclusive development, so they become desirable places in which to live and work for all members of society;
- To foster Cohesive Communities development will need to be well connected; and
- Globally Responsible Wales is promoted by locating and designing developments which reduce trip lengths for everyday journeys and supports sustainable modes of travel.

3.7 Section 4 acknowledges the importance of:

- Improving sustainable access to services;
- Reducing reliance on travel by private car; and
- Ensuring our transportation infrastructure is adaptable.

3.8 Policies within the Active and Social Places theme will:

- Enable sustainable access to housing, employment, shopping, education, health, community, leisure and sports facilities and green infrastructure;
- Develop sustainable transportation infrastructure;
- Require developments to encourage modal shift and be easily accessible by walking, cycling and public transport; and
- Realise the potential of new sustainable transportation infrastructure to create new or renewed hubs of activity.

3.9 Moving within and between places is a key theme within PPW11. With regards to sustainable transport, it advises facilitating developments which:

- Are sited where they can be easily accessed by sustainable modes of travel and without the need for a car;
- Are designed to integrate with existing land uses and neighbourhoods; and
- Make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.

3.10 Regarding active travel PPW11 states that planning authorities must set out in their development plan an integrated planning and transport strategy. This should set out how the planning authority:

- Integrate and co-ordinate sustainable transport and land use planning;
- Facilitate and promote accessibility for all;
- Reduce the need to travel;
- Reduce dependency on private vehicles;
- Prioritise and support walking, cycling and use of public transport;
- Support the uptake of Ultra Low Emission Vehicles;
- Reduce transport related airborne pollution; and
- Facilitate the provision of transport infrastructure and necessary sustainable transport improvements and development.

3.11 It is Welsh government policy to require the use of a sustainable transport hierarchy in relation to new development, which is; walking, cycling, ultra-low emission vehicles and public transport.

3.12 Paragraph 4.19 relates specifically to the sustainable transport and states;

> *"The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act".*

Technical Advice Note: 18

3.13 The Technical Advice Note (TAN 18) elaborates on the relationship between land use planning and transport infrastructure by outlining a range of key accessibility principles that should inform future patterns of development.

3.14 In the case of new residential development, sites that are accessible to jobs, shops, and services by modes other than car and are afforded sufficient capacity on public transport services are favoured.

3.15 TAN 18 advises that development plans should afford priority to the following:

i) Inclusion of policies and standards on densities, and parking to achieve higher residential densities in places with good public transport accessibility and capacity; and

ii) Requirement for layouts and densities, which maximise the opportunity for residents to walk and cycle to local facilities, and public transport stops.

Llwybr Newydd – The Wales Transport Strategy 2021

3.16 The new Transport Strategy for Wales sets out the 'new path' that will shape the transport system over the next 20 years. It is a "*new way of thinking that places people and climate change at the front and centre of our transport system"*. This document crucially defines the climate emergency as one of the biggest defining issues of our time, and the need to achieve net zero by 2050.

3.17 This seeks to improve the social, economic, environmental and cultural well-being of Wales. It contains seven well-being goals which local authorities as well as other public bodies must seek to achieve in order to improve well-being both now and in the future several of which support this strategy's promotion of sustainable travel.

3.18 The strategy sets out three urgent priorities which are illustrated in **Figure 3.2.**

Figure 3.2 – Wales Transport Strategy Priorities

3.19 Priority 1 seeks to reduce the need for people to use their cars on a daily basis by:

- Supporting remote working in line with Welsh Government target of 30% remote working;
- Locate new public services close to where people live and to existing public transport routes;
- Design new developments to be walk and cycle friendly from the outset;
- Maximise the use of land close to transport hubs;
- Improve access to fast and reliable broadband; and
- Set aside land for multi-modal hubs to transfer freight to smaller vans or e-cargo bikes for last mile deliveries.
-

3.20 Priority 2 aims to achieve a shift away from private car use to more sustainable transport modes, enabling more people to walk, cycle, and use public transport, as well as low-emissions vehicles. This will be promoted via the Transport Implementation Strategy contained within **Section 6**.

3.21 Infrastructure will be future-proofed to adapt to climate change and facilitate more sustainable transport choices. Where new transport infrastructure is needed, the Sustainable Transport Hierarchy will guide decisions. Infrastructure will be adapted to support modal shift, and new infrastructure will give priority to interventions that support walking and cycling, public transport and ultra-low emissions vehicles over other private motor vehicles.

3.22 Priority 3 seeks to encourage people to change their travel behaviour to use low carbon, sustainable transport. This will be done through (but not limited to):

- Developing a range of behaviour-change projects;
- Move from individual vehicle ownership to shared solutions;
- Reduce the cost of sustainable travel; and
- Support digital innovation.

3.23 The development proposals for the site will continue to meet these priorities, with the overall aim being to encourage an accessible, sustainable and efficient transport system.

Future Wales – The National Plan 2040

3.24 'Future Wales – the National Plan 2040' (Future Wales) is the national development framework, setting the direction for development in Wales to 2040.

3.25 Future Wales strongly considers the Well-Being of Future Generations (Wales) Act 2015, which gives a legally-binding common purpose – the seven well-being goals – for national government, local government, local health boards and other specified public bodies. It details the ways in which these bodies must work, and work together, to improve the well-being of Wales.

3.26 Future Wales recognises that Placemaking is at the heart of the planning system in Wales, and that this policy establishes a strategic placemaking approach and principles to support planning authorities to shape urban growth and regeneration.

3.27 Policy Two of Future Wales is titled Shaping Urban Growth and Regeneration – Strategic Placemaking. It states that Urban growth and regeneration should be based on the following strategic placemaking principles:

- creating a rich mix of uses;
- providing a variety of housing types and tenures;
- building places at a walkable scale, with homes, local facilities and public transport within walking distance of each other;
- increasing population density, with development built at urban densities that can support public transport and local facilities;
- establishing a permeable network of streets, with a hierarchy that informs the nature of development;
- promoting a plot-based approach to development, which provides opportunities for the development of small plots, including for custom and self-builders; and
- integrating green infrastructure, informed by the planning authority's Green Infrastructure Assessment.

3.28 Within its Strategic Placemaking Principles, Future Wales considers mix of uses, variety of housing, walkable scale, density, street network, plot-based development and green infrastructure.

3.29 Of vital importance to new developments such as the proposed site is the concept of the 'walkable scale'. This strategic placemaking principle states that to enable active and healthy lives, people should be able to easily walk to local facilities and public transport.

Active Travel Wales Act 2013

3.30 The Active Travel (Wales) Act 2013 places a requirement on local authorities to continuously improve facilities and routes for pedestrians and cyclists and to prepare maps identifying current and potential routes for their use.

3.31 Whilst the Act does not place any responsibility on new development, it does demonstrate the necessary direction of transport policy, and the proposed developments' promotion of walking and cycling as key modes of travel accords with this.

3.32 The Welsh Government seeks to enable more people to walk, cycle and generally travel by more active methods, so that:

i) More people can experience the health benefits of active travel;

ii) We reduce our greenhouse gas emissions;

iii) We help address poverty and disadvantage; and

iv) We help our economy grow by unlocking sustainable economic growth.

Wellbeing of Future Generations (Wales) Act 2015

3.33 This act seeks to improve the social, economic, environmental and cultural well-being of Wales. It contains seven well-being goals which local authorities as well as other public bodies must seek to achieve in order to improve well-being both now and in the future, several of which support this development's aim for the promotion of sustainable travel.

3.34 Of the seven well-being goals, the most relevant ones to this development are:

- A prosperous Wales - encouraging an innovative, prosperous and low carbon society;
- A healthier Wales – a society in which choices and behaviours that benefit future health are understood;
- A Wales of cohesive communities – promoting attractive, viable, safe and well-connected communities; and
- A globally responsible Wales – considering improvement which make positive contributions towards global well-being.

The Future Generations Report 2020

3.35 This is a once in five years report, which sets out the Commissioner's assessment of the process made in implementing the Act within the reporting period. It reflects on the progress being made.

3.36 In terms of the vision for transport, the report states;

"Places, which embed active travel infrastructure, fully integrated with a high-speed reliable, zero carbon, affordable and completely accessible public and community transport system. Transport that is co-designed with communities and citizens' needs in mind, and which improves the social, environmental, economic and cultural well-being of Wales".

Vale of Glamorgan Local Development Plan (2011-2026)

3.37 The Vale of Glamorgan (VoG) Local Development Plan provides a framework for sustainable development within the VoG up until 2026. It will guide the growth within the Vale over the 15 year plan period and identifies the infrastructure requirements of the communities therein, in terms of employment, facilities and services to support that growth. The Plan demonstrates a firm commitment to the on-going regeneration and development of the VoG.

3.38 Cowbridge is identified as a 'Service Centre Settlement' within the VoG Local Development Plan and is one of the main focal points of development within the South East Zone. The Strategy aims to concentrate the majority of growth in the key, service centre and primary settlements in order to maximise the opportunities for sustainable regeneration, to favour new local service provision and to encourage the use of sustainable travel modes. The allocations in these settlements reflect their respective roles and characteristics as well as their relevant physical or environmental constraints.

3.39 The Strategy aims to concentrate the majority of growth in the key, service centres and primary settlements in order to maximise the opportunities for sustainable regeneration, to favour new local service provision and to encourage the use of sustainable travel modes.

3.40 To ensure the successful delivery of the LDP Strategy, specific area objectives have been identified for each of the service centre settlements. The relevant objectives identified for Cowbridge are as follows:

- Provide for a range and choice of housing to meet the needs of existing residents and the residents of surrounding rural communities.
- Improve the town's existing bus interchange and favour proposals that provide enhanced walking and cycling facilities to and within Cowbridge to alleviate traffic congestion, particularly through traffic along the High Street.
- Promote development proposals which provide opportunities for additional or improved infrastructure, including short stay parking facilities within the town centre.

3.41 This site forms part of land allocated for residential development (MG2 19) within the Vale of Glamorgan's (VoG) Local Development Plan (LDP) 2011-2026. The whole allocation comprises two parcels of land adjacent to the St Athan Road.

Travel Plan SPG (July 2018)

3.42 The Travel Planning SPG has been prepared to provide guidance to applicants on the production and implementation of travel plans associated with new development proposals.

Parking Standards SPG (January 2019)

3.43 The Parking Standards SPG has been prepared to expand upon the policies contained within the LDP. It sets out the Council's parking standards for new development that are both consistent and transparent.

Vale of Glamorgan Local Transport Plan (2015-2030)

3.44 The Local Transport Plan (LTP) seeks to identify the sustainable transport measures required to ensure the Vale of Glamorgan Council adheres to current requirements and good practices to allow for a sustainable transport environment for the period 2015 to 2020 as well as looking forward to 2030.

3.45 The LTP seeks ways to secure better conditions for pedestrians, cyclists and public transport users and to encourage a change in travel choices away from the single occupancy car. The LTP also seeks to tackle traffic congestion by securing improvements to the strategic highway corridors for commuters who may need to travel by car as well as providing better infrastructure for freight. It also addresses the key road safety priorities for the Vale.

3.46 There are a number of specific short, medium and long-term goals / schemes identified as well as setting out several active travel, park and ride, highway improvement and bus infrastructure schemes to meet its overall goal.

Summary

3.47 The site is shown to comply with the relevant national and local policies. It is a well-located site with a variety of opportunities to integrate itself with the existing surrounding residential areas in terms of active travel and sustainable transport.

4 Development Proposals

Overview

4.1 The site is shown to comply with the relevant national and local policies. It is a well-located site with a variety of opportunities to integrate itself with the existing surrounding residential areas in terms of active travel and sustainable transport.

Layout

4.2 The site has been developed in line with the guidance and principles of Manual for Streets and Manual for Streets 2. The site follows a clear hierarchical approach in respect of site users, as set out within Planning Policy Wales (PPW, Edition 11), with pedestrians and cyclists at the top of this hierarchy, and the emphasis on creating a sustainable development which links to the surrounding neighbourhoods and existing facilities with safe, direct and convenient pedestrian and cycle connections.

4.3 The site has been designed to connect and interact with existing transport networks to the north of the site, connecting to Cowbridge. The internal roads of the site will be conducive to cycling, providing permeability and connection for active travel.

4.4 There are four key stages to creating a socially inclusive community that encourages community interaction (within and neighbouring the scheme) in such a way to promote non-motorised modes of travel, prioritising walking and cycling, followed by the use of public transport. The four key stages are;

- Design;
- Choice;
- Behaviour; and
- Network Management.

4.5 **Design** is in terms of creating communities, where public interaction, outdoor and indoor, is the norm. Where friends and day to day activities are nearby and easy to get to, and where it is not an automatic reaction when leaving home to get into a car. The site is placed to take advantage of the proximity of plethora of day to day facilities, as set out in **Section 2**.

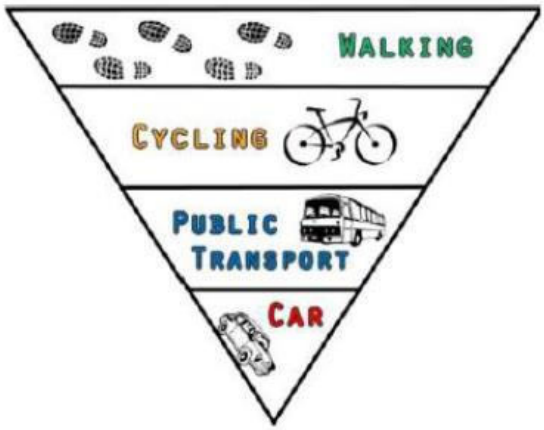
4.6 The site is designed at a pedestrian scale, with walking and cycling an easy and attractive option and vehicle intimidation will be kept to a minimum.

4.7 **Choice** is in terms of providing infrastructure and facilities to minimise reliance on any single-option. This widens social inclusion, and for instance, makes contributing to commuter car congestion on average more of a choice and less of a necessity.

4.8 Through increased choices, a definite change in behaviour can be affected. The proposals will introduce and maintain any sustainable transport options and seek to encourage a net behavioural change.

4.9 **Behaviour** is in terms of educating people in the options and consequences. It brings together awareness, health, environment, and personal convenience.

4.10 Finally, one of the 'By-design' aims is to create an environment where fewer people automatically choose to use their cars when leaving their homes, therefore decreasing the impact on the highway network. These proposals strive not only to influence the traffic impact of the proposed development, but also the surrounding community of Cowbridge.



4.11 **Network Management** is in terms of managing the road network in accord with a user hierarchy. Car travel is the lowest capacity network in terms of space occupied per person. It also occupies the lowest priority in the user hierarchy. This means, for instance, prioritising the reliability and speed of bus and cycle movements over that of cars during the commuter peaks.

4.12 The illustrative masterplan is shown in **Figure 4.1** and **Appendix C.**

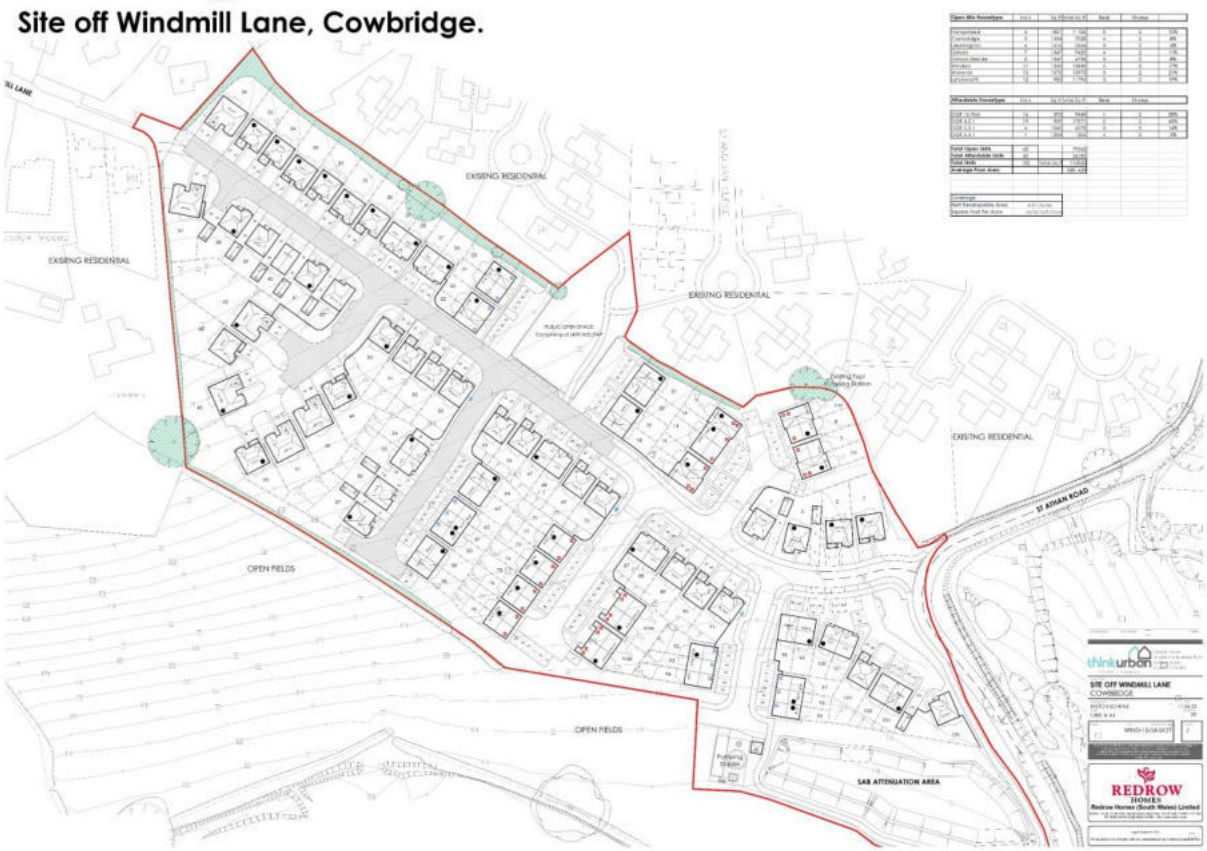


Figure 4.1 – Illustrative Masterplan

4.13 A review of the site layout has been undertaken and this demonstrates that both a fire appliance and a refuse vehicle can access and egress the site in a forward gear. The swept path analysis and waste collection zones are shown at **Appendix D.**

4.14 An accommodation schedule for the proposed development is contained within **Table 4.1**.

Table 4.1 – Accommodation Schedule

Number of Bedrooms / Type	Total
1 Bed Flat	16
2 Bed Houses	19
3 Bed Houses	40
4 Bed Houses	24
5 Bed Houses	6
Total number of units	105

Access Arrangements

Pedestrian / Cyclist

4.15 The aim is to create an environment in which pedestrians and cyclists feel as though they are afforded highest priority. The proposals will aim to create direct, convenient, and attractive active travel links from the site to the existing network and will seek to maximise and enhance the permeability of the site to pedestrians and cyclists to encourage these modes for shorter trips.

4.16 Designing the site to a pedestrian scale allows for the maximum opportunity to provide social inclusion. Pedestrian and cycle routes are designed to ensure full permeability through the site.

4.17 The road network within the site has been designed to encourage low speeds and prioritise active travel. The intention will be to create a 10-15mph environment within the site in order to encourage pedestrian and cycle activity and to prioritise social inclusion before the private car / motorist.

4.18 The majority of the site will be a shared space arrangement and will be 6.8 metre wide in block construction. There will be tapping edges to assist blind and partially sighted users. This will further instil the priority to pedestrians and cyclists over vehicles. The layout has been agreed in principle with officers at VoGC during pre-application discussions with the designer.

4.19 As demonstrated within the site layout, a new pedestrian and cycle access is proposed along the northern boundary of the site, connecting to the existing residential development via Bessant Close and Llanquian Close and to the west of the site via the existing Public Right of Way (PRoW) alignment via Windmill Lane. These new links will provide easily accessible active travel links to the existing community and existing amenities. The existing PRoW will be retained along its current alignment.

Vehicular

4.20 The proposed means of vehicular access to the site is via a priority junction with St Athan Road as shown on **Figure 4.2**. The relevant drawings and associated swept paths are contained at **Appendix E.**

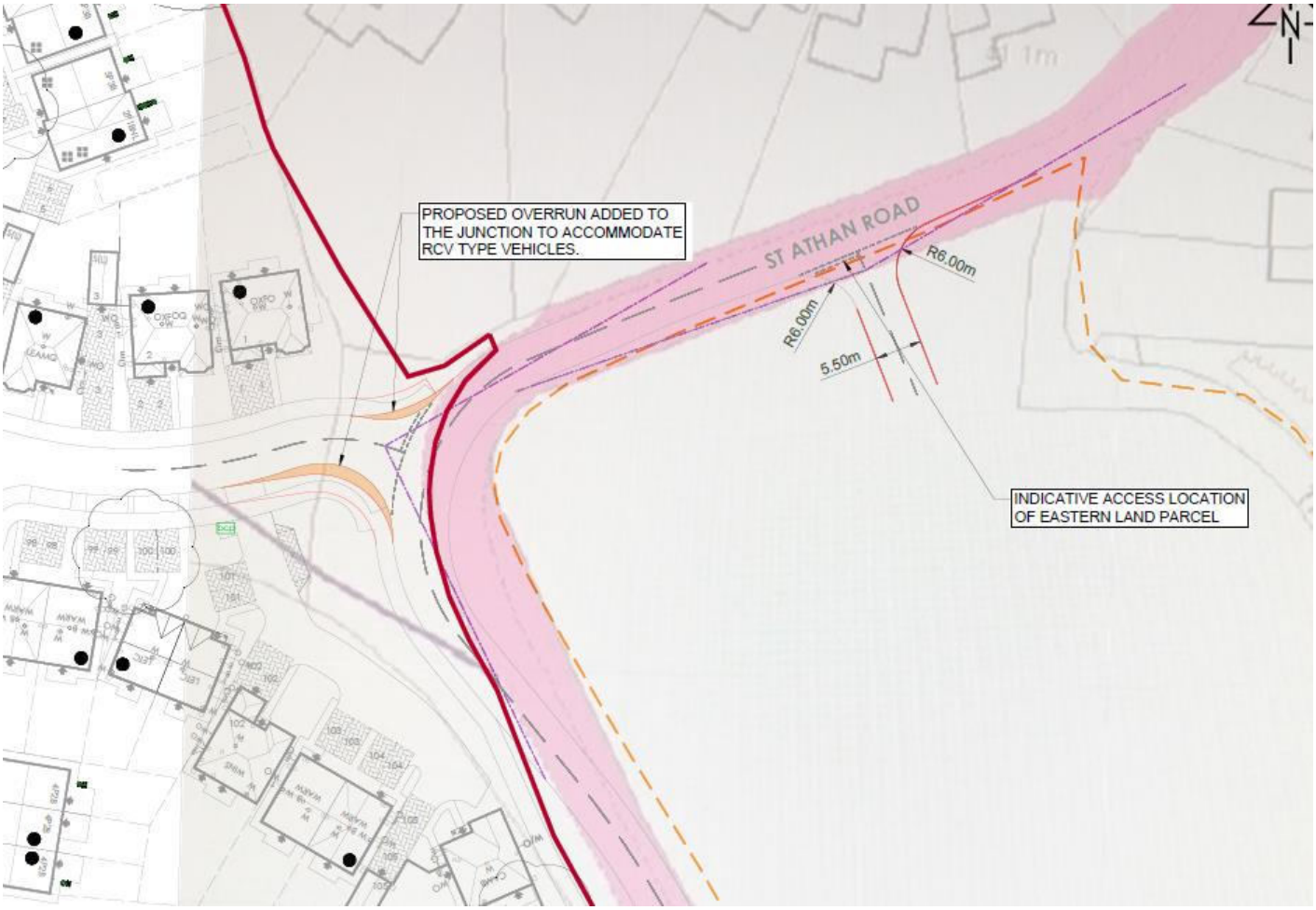


Figure 4.2 – Indicative site access arrangement via St Athan Road

4.21 The proposals include realigning St Athan Road to the west of its existing alignment to improve the forward visibility splays and the horizontal alignment of St Athan Road, thus reducing the curvature of the existing road and improving road safety at this location.

4.22 This would be accompanied by a new Traffic Regulation Order (TRO) implementing a 30mph speed limit prior to the junction on either side of St Athan Road together with the necessary signage and traffic management.

4.23 It is considered that this new access arrangement is the most appropriate for a development of this scale whilst additionally providing a betterment to the existing arrangement and along this section of St Athan Road. The proposed access arrangement is policy compliant and has been confirmed by a Stage 1 Road Safety Audit (RSA) that it is a safe means of access to the site; it is also in keeping with the semi-rural nature of the location.

4.24 In addition, the proposed access arrangement for the land to the west of St Athan Road does not prejudice access to the land on the eastern side of St Athan Road which also forms part of the overall residential allocation of 130 units, within the Local Plan. An indicative access arrangement into the eastern parcel is also shown on **Figure 4.2**, although would need to be developed further by the promotors of this land.

Car Parking

4.25 The Vale of Glamorgan Parking Standards SPG (January 2019) has adopted maximum car parking standards with appropriate consideration to the local context of each site. The standards are summarised in **Table 4.2.**

4.26 The proposed development will conform to VoG's 'maximum' car parking standards, providing the required spaces for each dwelling, together with the requisite number of on-street visitor parking spaces. Garages will represent a proportion of these spaces, designed to accommodate parking in a discreet manner and minimise visual intrusion.

4.27 This standard is shown in **Table 4.2.**

Table 4.2 – Maximum Parking Standards for Residential Development

Type	Residents	Visitors*
Houses	1 space per bedroom (maximum 3 spaces)	1 space per 5 units
Apartments	1 space per bedroom (maximum 3 spaces)	1 space per 5 units

4.28 The development proposals will provide 241 off streetcar parking spaces, which is **2.3** spaces per house, on average.

4.29 Typical car ownership levels based on accommodation type, in this case houses, within The Vale of Glamorgan 002 Middle Layer Super Output Area (MSOA) have been assessed using the 2011 Census Data [Table LC4415EW]. The results are summarised in **Table 4.2**.

Table 4.3 – Forecast Car Ownership Levels based on Census Data (2011)

Car Ownership	*Number of People*	*Percentage*	*Number of units*	*Required Spaces*
Total People	*2,715*	*100%*	*105*	
No Car	*271*	*10%*	*10*	*0*
One Car	*956*	*35%*	*37*	*37*
Two or more Cars	*1,488*	*55%*	*58*	*115*

4.30 As shown in **Table 4.3**, nearly a 10% of people do not own a car, with 37% percent owning one car. Therefore, it is acknowledged that there could be up to 152 vehicles associated with the proposals of 105 dwellings, equating to a ratio of **1.4** spaces per dwelling, on average.

4.31 The parking provided will not reach the maximums provided by the VoG and with the average number of parking spaces provided at **1.4** per household, **2.3** spaces per household on site is deemed suitable for the area and addressing the risk of overspill parking.

4.32 Garages will represent a proportion of these spaces, designed to accommodate parking in a discreet manner and minimise visual intrusion, and will meet the minimum internal dimensions of 6.0m x 3.0m for a single garage.

Cycle Parking

4.33 Cycle parking will be available for all plots within sheds or garages, within the curtilage of properties, as part of the development.

5 Existing Travel Behaviour

Overview

5.1 This chapter provides details of the anticipated travel behaviour of the future users of the proposed development with reference to existing travel patterns and trends.

Mode Shares

5.2 A review of the current travel behaviour within the local area has been undertaken using the 2011 Census 'QS703EW – Method of Travel to Work' dataset. Although it is noted that this reflects travel behaviour now some 10 years ago and travel habits have changed significantly since then (particularly more recently as our travel habits have evolved due to the COVID-19 pandemic), this data is considered a suitable proxy to understand local travel behaviour by mode.

5.3 The proposed development site lies within the Middle Super Output Area (MSOA), 'W02000238: The Vale of Glamorgan 002' and therefore the existing mode split for this area has been obtained. This is summarised in **Table 5.1**.

Table 5.1 – Existing Mode Share – MSOA W02000238

Travel Mode	Persons	Percentage (%)	Adjusted
Work mainly at or from home	316	7%	-
Underground, metro, light rail or tram	10	0%	0%
Train	24	1%	1%
Bus, minibus or coach	39	1%	2%
Taxi	8	0%	0%
Motorcycle, scooter or moped	9	0%	0%
Driving a car or van	2,030	46%	81%
Passenger in a car or van	89	2%	4%
Bicycle	23	1%	1%
On foot	240	5%	10%
Other	20	0%	1%
Not in Employment	1,651	37%	-
Total	**4,459**	**100%**	**100%**

5.4 The figures shown in **Table 5.1** have been adjusted to remove those residents who are either not in employment or work mainly at, or from home. This provides a more realistic modal split of those who a commute to work, away from home.

Car Ownership

5.5 The 2011 census '*QS416EW – Car or Van Availability'* has been analysed for the MSOA 'W02000238: The Vale of Glamorgan 002' to determine the likely level of car ownership of residents of the proposed development. The results are summarised by **Table 5.2.**

Table 5.2 – Car or Van Availability – MSOA W02000238

Number of Vehicles	2011 Output Area W02000238	
	Count	Percentage
No car or van	271	10%
1 car or van	956	35%
2 cars of vans	1,112	41%
3 cars or vans	283	10%
4 or more cars or vans	93	3%
Total Households	2,715	100%

5.6 The level of car or van ownership within the MSOA W02000238 is higher than the national average, with the percentage of households without access to a car at just 10% in comparison to the 26% average for England and Wales. Over half (54%) of households have access to two or more cars or vans which is also higher than the England and Wales national average or 32%.

6 Trip Forecast

6.1 To determine the anticipated level of multi-modal trips generated by the whole allocation of 130 homes (MG2 19), the national standards for trip generation analysis TRICS has been used.

6.2 TRICS is a database of trip generation from a wide variety of land uses (housing, retail, employment, etc.) across the UK. Traffic surveys are carried out to measure how many people travel to a site, by mode and what time of day. The purpose of the database is to provide an estimate of likely trip generation to/from a land use, by comparing it with trip generation from existing comparative sites of the same land use.

6.3 A trip generation exercise has been undertaken using the trip rates extracted from the TRICS database. The 'Residential' category and 'Houses Privately Owned' subcategory has been assessed as this is considered most representative of the proposals.

6.4 To obtain the most accurate representation of the site, the following site parameters have been used:

- Sites in England and Wales (excluding Greater London);
- Sites with no Travel Plan;
- Weekday surveys;
- Sites in 'Edge of town' or 'Suburban' locations; and
- Sites with up to 300 dwellings.

6.5 In the context of local and national transport policy, the focus should not be on traffic impact rather than accommodating people movement and providing safe and efficient active travel routes to key local amenities. As such, an initial indication of the multi-modal trip demand as a result of the delivery of 130 dwellings, in this location is provided in **Table 6.1.**

6.6 The full TRICS report is contained at **Appendix F.**

Table 6.1 –Multi-modal Trip Rates and Number of Trips (130 dwellings)

Mode	AM Peak Hour (08:00 – 09:00)		PM Peak Hour (17:00 – 18:00)	
	Arrivals	Departures	Arrivals	Departures
Total People*	0.227	0.727	0.498	0.264
	30	95	65	34
Total Vehicles**	0.140	0.348	0.282	0.156
	18	45	37	20
*the 'total people' category includes pedestrians, cycles, public transport users and vehicle occupants				
**the 'total vehicles' category includes all occupants of cars, taxis, motorcycles, light goods vehicles and OGV's. Excludes taxi drivers' and similar				

6.7 **Table 6.1** shows that the development proposals could be associated with up to 63 two-way vehicular trips in the AM peak period and up to 57 two-way vehicular trips in the PM peak period.

Journey Purpose

6.8 The National Travel Survey, which consists of a face-to-face interviews and a seven day self-completed written travel diary, allows us to understand trips by journey purpose, and the mode split of trips for each purpose.

6.9 A summary of trips by journey purpose in the AM, Inter and PM peak periods is provided in **Table 6.2**.

Table 6.2 – National Travel Survey – Trips by Journey Purpose

Start Time	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other
0800 - 0859	20%	3%	29%	23%	4%	14%	3%	4%
1700 - 1759	32%	3%	3%	2%	12%	20%	20%	8%

6.10 **Table 6.2** demonstrates that trips can be classified into three general journey purposes, commuting, education, and leisure/recreation, with the proportion of trips for each purpose as summarised in **Table 6.3.**

Table 6.3 - Trips by Journey Purpose – Commuting, Education, Leisure / Recreation

Start Time	Commuting	Education	Leisure / Recreation
0800 - 0859	23%	51%	26%
1700 - 1759	36%	5%	59%

6.11 Distributing the total number of trips summarised in **Table 6.1** by the journey purpose summarised in **Table 6.2**, results in a breakdown of trips by journey purposes as summarised in **Table 6.4**.

Table 6.4 - Total Trips by Journey Purpose

Time Period	Commuting		Education		Leisure / Recreation	
	Arrivals	Departure	Arrivals	Departure	Arrivals	Departure
0800 - 0859	5	17	15	48	9	29
1700 - 1759	21	11	3	1	41	22

Commuting Trips

6.12 Given the ongoing Covid-19 pandemic and the shift of office-base work to the majority of the population working from home, it is expected that the work-from-home numbers will remain higher than pre-pandemic levels. There has been no reduction to account for working from home and it is therefore considered that this a robust assessment.

6.13 The commuter trips are therefore shown in **Table 6.5**.

Table 6.5 – Commuting Trips (130 dwellings)

Time Period	External Trips	
	Arrivals	Departure
0800 - 0859	5	17
1700 - 1759	21	11

6.14 Using the data available from the NTS, a judgement has been made that in the AM peak period 23% of trips are for the purpose of commuting, increasing to 36% of trips in the PM peak period.

6.15 In order to estimate an appropriate mode split for the external employment trips, the 'Method of Travel to Work' Census data for 2011 for the Mid Layer Super Output Areas (MSOA) Vale of Glamorgan 002, within which the site lies, has been analysed. The recorded mode split from the Census data is summarised in **Table 6.6**.

6.16 It is noted that census data only records main mode, and does not give any indication of occasional modes, for instance it does not record whether a person works one day a week from home. As such, this is likely to overestimate car borne proportion and underestimate active travel and working from home.

Table 6.6 – Vale of Glamorgan 002 – Census Data 2011 – Method of Travel to Work

Method of Travel to Work	Percentage
Train	1%
Bus, Minibus or Coach	2%
Taxi	0%
Motorcycle, Scooter or Moped	0%
Driving a Car or Van	81%
Passenger in a Car or Van	4%
Cycling	1%
Walking	10%
Other Method of Travel to Work	1%
Total	100%

6.17 Applying the mode split in **Table 6.6** to the employment trips results in a trip demand as summarised in **Table 6.7**.

Table 6.7 – Residential Employment Trips – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, minibus or coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	4	14	17	9
Passenger in a car or van	0	1	1	0
Bicycle	0	0	0	0
On foot	1	2	2	1
Other method of travel to work	0	0	0	0
Total	5	17	21	11

Note There may be some discrepancies due to rounding

Education

6.18 The NTS data demonstrates that in the AM peak 51% of journeys are undertaken for the purpose of education, reducing to 5% in the PM peak. Of these journeys, approximately 50% relate to primary education, and 50% to secondary education.

6.19 The nearest primary schools to the site are Ysgol Iolo Morganwg and Y Bont Faen Primary School (650m and 850m from the site, respectively).

6.20 The NTS (National Travel Survey) mode split for 5–10-year-olds for all distances will be applied as provided in **Table 6.8**.

Table 6.8 – NTS Primary Education Mode Split (All Distances)

Mode	Mode Split
Walk	46%
Bicycle	1%
Car / van	47%
Bus	5%
Other Transport	1%
All modes	100%

6.21 Applying the mode split in **Table 6.8** to the primary education trips (50% of those in **Table 6.4**) results in a multi-modal trip demand for the purpose of primary school education, as summarised in **Table 6.9**.

Table 6.9 – Educational Multi-Modal Trip Demand – Primary – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, minibus or coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	0	1	0	0
Passenger in a car or van	0	0	0	0
Bicycle	0	1	0	0
On foot	7	22	1	1
Other method of travel to work	0	0	0	0
Total	8	24	1	1

Note Discrepancies due to rounding

6.22 In terms of secondary education, the nearest secondary schools to the site are Cowbridge Comprehensive School approximately one kilometre from the site.

6.23 The NTS (National Travel Survey) mode split for 11–16-year-olds for all distances will be applied as provided in **Table 6.10**.

Table 6.10 – NTS Secondary Education Mode Split (All Distances)

Mode	Mode Split
Walk	39%
Bicycle	3%
Car / van	26%
Bus	29%
Other Transport	4%
All modes	100%

6.24 Applying the mode split in **Table 6.10** to the secondary education trips (50% of those in **Table 6.4**) results in a multi-modal trip demand for the purpose of primary school education, as summarised in **Table 6.11**.

Table 6.11 – Educational Multi-Modal Trip Demand – Secondary – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, minibus or coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	1	4	0	0
Passenger in a car or van	0	0	0	0
Bicycle	0	1	0	0
On foot	6	19	1	1
Other method of travel to work	0	0	0	0
Total	8	24	1	1

Note Discrepancies due to rounding

6.25 The total Education trips are shown in **Table 6.12**.

Table 6.12 – Educational Multi-Modal Trip Demand – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, minibus or coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	2	5	0	0
Passenger in a car or van	0	0	0	0
Bicycle	0	1	0	0
On foot	13	42	2	1
Other method of travel to work	0	0	0	0
Total	15	48	3	1

Note Discrepancies due to rounding

Leisure / Recreation

6.26 The NTS data demonstrates that in the AM peak, 26% of journeys are undertaken for the purpose of leisure / recreation (shopping, personal business, visiting friends, holiday / day trips etc), increasing to 59% in the PM peak.

6.27 The proposals do not include community, retail or leisure facilities and therefore all trips will be external. The same mode split which was used to distribute the 'employment' trips has also been used to distribute the leisure / recreation trips, as summarised in **Table 6.6**.

6.28 A breakdown of the leisure / recreation trips is provided in **Table 6.13.**

Table 6.13 – Mode Split of Leisure / Recreation Trips – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	1	0
Bus, minibus or coach	0	0	1	0
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	7	24	33	18
Passenger in a car or van	0	1	1	1
Bicycle	0	0	0	0
On foot	1	3	4	2
Other method of travel to work	0	0	0	0
Total	9	29	41	22

Note Discrepancies due to rounding

Total Development Demand

6.29 The total residential demand, combining all journey purposes (employment, education, leisure / recreation) is summarised in **Table 6.14**.

Table 6.14 – Total Residential Demand – 130 Dwellings

	AM (0800-0900)		PM (1700-1800)	
	Arrivals	Departures	Arrivals	Departures
Train	0	1	1	0
Bus, minibus or coach	0	1	1	1
Taxi	0	0	0	0
Motorcycle, scooter or moped	0	0	0	0
Driving a car or van	13	43	51	27
Passenger in a car or van	1	2	2	1
Bicycle	0	2	1	0
On foot	14	46	8	4
Other method of travel to work	0	1	1	0
Total	30	95	65	34

Note Discrepancies due to rounding

7 Highway Network Assessment

7.1 This section valuates the impact of the proposed vehicular trip generation at the site access junction on St Athan Road, as well as the Aberthin Road / Cardiff Road / St Athan Road / Eastgate signalised junction, to the north of the site and the Gileston Rod / B4265 junction, to the south. These junctions were agreed with officers at VoG Council as part of the scoping exercise.

7.2 The junction capacity assessments have considered the whole allocation of 130 units.

Trip Distribution

7.3 For commuting and leisure trips the 2011 Census 'Location of Usual Residence and Place of Work' data has been analysed for the MSOA 'W02000238: The Vale of Glamorgan 002' in which the settlement of Cowbridge lies, to determine the likely route split of the commuter trips to and from the proposed development. The results are summarised by **Table 7.1**.

Table 7.1 – Location of Place of Work (2,116 residents) – MSOA W02000238

Place of Work	2011 Output Area W02000238			
	Route			
	1	2	3	4
All Destinations	12.1%	33.0%	23.2%	31.7%

7.4 The routes are as follows:

1. St Athan Road (South
2. St Athan Road (North), Cardiff Road (E)
3. St Athan Road (North), Eastgate (W)
4. St Athan Road (North), Aberthin Road (N).

7.5 The distribution for primary and secondary education trips is based on the local school facilities and is summarised in **Table 7.2**.

Table 7.2 – Primary and Secondary Education Distribution

Primary Schools	
Y Bont Faen Primary School	50%
Ysgol Lolo Morganwg	50%
Secondary School	
Cowbridge Comprehensive School	100%

7.6 Distribution of development traffic is shown in **Appendix G.**

Traffic Growth

7.7 In the context of traffic growth and for a robust assessment, TEMPro growth has been applied to the observed base flows to growth them to 2022, 2024 (opening year)and 2032 (+10 years from opening). The factors are presented without any adjustment and given the changing traffic patterns and future trends accelerated by the Covid-19 pandemic they are considered to be robust.

7.8 The proposed TEMPro growth factors are shown in **Table 7.3**.

Table 7.3 – TEMPro Growth Factors

		Level	Area	Local Growth Figure
2022 > 2024	AM	W020000238	The Vale of Glamorgan 002	1.0161
	PM	W020000238	The Vale of Glamorgan 002	1.0165
2022 > 2034	AM	W020000238	The Vale of Glamorgan 002	1.0873
	PM	W020000238	The Vale of Glamorgan 002	1.0894

7.9 TEMPro includes all strategic development growth in the local area, and therefore associated traffic growth predictions. As such, this has been used as the basis on which impacts assessments associated with committed developments have been based to avoid double counting.

7.10 In addition to this, there has been no evidence of traffic growth in the area as identified in **Table 7.4** which shows a DfT counter on Cardiff Road.

Table 7.4 – DfT Counter – Cardiff Road – AADT

Year	Source	Total Vehicles
2016	Manual Count	6,044
2017	Manual Count	5,943
2018	Estimate	5,947
2019	Estimate	5,959
2020	Estimate	4,450
2021	Estimate	4,897

7.11 There were no signs of growth on Cardiff Road which is also indicated in just the manual counts. Therefore, the application of TEMPro growth is considered robust.

Committed Development

7.12 A list of committed developments to be included within the traffic assessment was received from officers at VoG. It comprised the following:

a) Gileston Road, Gileston – 18 units;
b) Flemingston Road, St Athan – 80 units;
c) Barratts development St Athan Road / Cowbridge Road – 300 units; and
d) Darren Farm, Cowbridge Phase 1 & 2 – 470 units.

7.13 Sites a and b have been fully built out and have therefore not been included in the assessment. Construction has begun at sites c and d, although it is not clear the status, so these two sites have been included within the assessments for robustness.

Percentage Impact Assessment

7.14 Using the 2022 base surveys *undertaken February 16th*, a percentage impact assessment has been undertaken. These surveys were MCCs located on the St Athan Road / Cardiff Road crossroads and the B4265 / Gileston Road Crossroads. These MCCs measured a period of 3 hours around the AM Peak (07:00-10:00) and (16:00-19:00).

7.15 **Figure 7.1** shows the location of each survey.

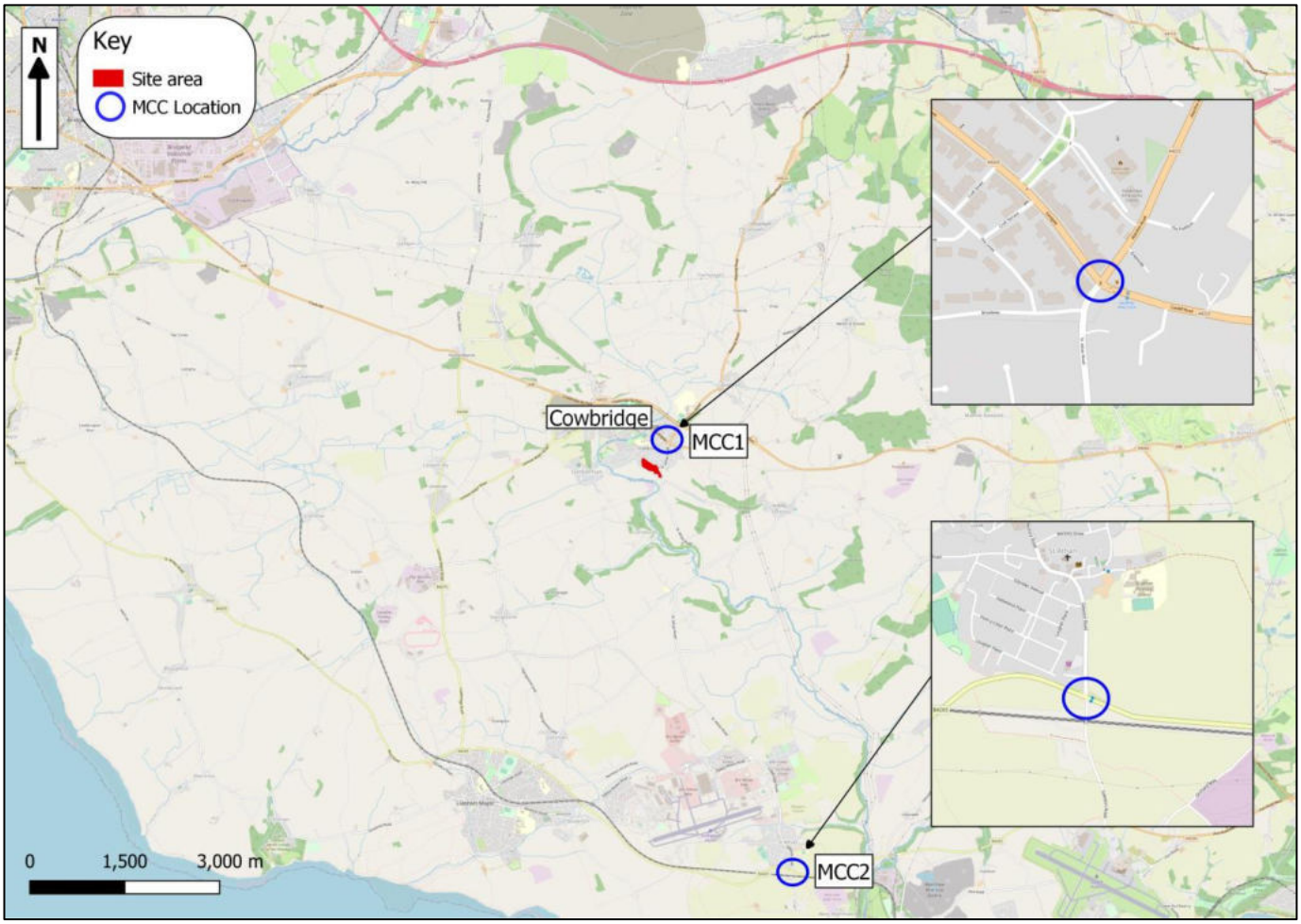


Figure 7.1 – MCC locations

7.16 Flow diagrams of the survey data are included in **Appendix G**, with the full survey data included in **Appendix H**.

7.17 The observed AM and PM peaks hours are identified as 08:00-09:00 and 16:00-17:00 respectively.

7.18 The percentage impact for each junction and entry of each arm for the surveys compared with the forecast development flows for the allocation are shown in **Table 7.5**.

Table 7.5 – Percentage Impact

Junction	*AM Peak* (08:00-09:00)			*PM Peak* (16:00-17:00)		
	Dev Trips	Base Flows	% Impact	Dev Trips	Base Flows	% Impact
(MCC1) St Athan / Cardiff Road Signals	49	1,164	4.2%	70	982	7.1%
Arm - Aberthin Road	5	353	1.4%	16	305	5.4%
Arm - Cardiff Road	4	257	1.5%	17	198	8.3%
Arm - St Athan Road	37	271	13.7%	25	183	13.8%
Arm - Eastgate	3	283	1.0%	12	296	3.9%

(MCC2) B4265 / Gileston Road Crossroads	2	1,018	0.2%	3	1,204	0.3%
Arm - Gilestone Road (N)	2	234	0.7%	1	213	0.6%
Arm - B4265 (E)	1	385	0.1%	2	507	0.4%
Arm - Gilestone Road (S)	0	21	0.0%	0	16	0.0%
Arm - B4265 (W)	0	378	0.0%	0	468	0.0%

Note discrepancies due to rounding

7.19 **Table 7.4** shows the development is forecast to have a maximum impact of 13.8% on any of the observed arms; St Athan Road / Cardiff Road signals during the PM peak.

7.20 As agreed with officers, further assessment would be undertaken on any junction that the development is considered to have a material impact of 5% on any arm. As a result, the St Athan Road / Cardiff Road signals has been assessed in further detail using junction modelling software.

Highway Network Assessment

7.21 The relevant junctions have been further reviewed using the appropriate modelling software, for the following scenarios:

- 2022 Observed Year;
- 2022 Observed Year and Full Development (130 dwellings);
- 2024 Future Year (Observed Traffic + Traffic Growth + Committed Development);
- 2024 Future Year and Full Development (130 dwellings);
- 2034 Future Year (Observed Traffic + Traffic Growth + Committed Development); and
- 2034 Future Year and Full Development (130 dwellings).

7.22 The 2034 scenario is considered extremely robust with the application of both TEMPro growth and committed developments. In reality, this level of growth will not materialise as indicated by the DfT counter.

Site Access Junction

7.23 The results of the site access priority junction are presented in **Table 7.6**, and the full PICADY output is contained in **Appendix I**. The site access junction is a proposed new junction and therefore has been assessed for the development scenarios only.

Table 7.6 – Site Access Modelling Results

	AM			PM		
	Q (PCU)	**Delay (s)**	**RFC**	**Q (PCU)**	**Delay (s)**	**RFC**
	2022 + Committed Development + Full Development (130 Dwellings)					
Stream B-AC	0.1	6.81	0.08	0.1	6.25	0.05

Stream C-AB	0.0	5.76	0.03	0.2	5.99	0.10
	2024 + Committed Development + Full Development (130 Dwellings)					
Stream B-AC	0.1	6.82	0.08	0.1	6.27	0.05
Stream C-AB	0.0	5.75	0.03	0.2	5.99	0.10
	2034 + Committed Development + Full Development (130 Dwellings)					
Stream B-AC	0.1	5.91	0.08	0.1	6.31	0.05
Stream C-AB	0.0	5.72	0.03	0.2	5.95	0.11

A – St Athan Road (S)
B – Site Access
C – St Athan Road (N)

7.24 **Table 7.6** shows that the site access junction will operate well within its theoretical capacity, with minimal queuing on St Athan Road, and a maximum RFC of 0.1.

Aberthin Road / Cardiff Road / St Athan Road / Eastgate Signals

7.25 The results of the Aberthin Road / Cardiff Road / St Athan Road / Eastgate signalised junction are presented in **Table 7.7**, and the full LinSig output is contained in **Appendix J.**

7.26 Signal timing data was requested from VoG and has been used to inform the LinSig model. The signal information was created in 2008, however no physical changes have been made to the junction since and the signal information is deemed acceptable. For the observed scenario to be operating within capacity, the pedestrian crossing phase is every 2nd cycle.

Table 7.7 – Aberthin Road / Cardiff Road / St Athan Road / Eastgate Signals Modelling Results

	AM				PM			
Arm	**DoS (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**PRC (%)**	**DoS (%)**	**MMQ (PCU)**	**Delay (s/PCU)**	**PRC (%)**
	2022 Observed							
Cardiff Road (E)	82.4	9	67	8.8	47.5	6	35	32.6
St Athan Road (S)	82.4	10	64		67.0	6	56	
Eastgate (W)	76.8	9	52		67.9	9	43	
Aberthin Road (N)	82.7	11	53		67.3	8	41	
	2022 + Committed Development							
Cardiff Road (E)	87.9	11	82	2.3	50.5	6	36	27.3
St Athan Road (S)	86.1	11	68		70.3	7	57	
Eastgate (W)	79.1	10	54		70.2	9	44	
Aberthin Road (N)	87.0	13	61		70.7	9	43	
	2022 + Committed Development + Full Development (130 units)							

Cardiff Road (E)	91.2	12	93	-1.6	51.0	6	36	19.6
St Athan Road (S)	91.4	14	81		74.0	7	58	
Eastgate (W)	81.7	11	58		74.9	10	48	
Aberthin Road (N)	89.8	14	68		75.3	10	46	
	2024							
Cardiff Road (E)	85.4	10	66	5.1	47.9	6	35	30.1
St Athan Road (S)	83.6	11	68		68.1	6	57	
Eastgate (W)	76.1	9	50		69.2	9	43	
Aberthin Road (N)	85.6	13	58		68.1	9	41	
	2024 + Committed Development							
Cardiff Road (E)	89.4	12	77	0.7	50.4	6	36	25.7
St Athan Road (S)	87.2	12	72		71.4	7	58	
Eastgate (W)	80.1	10	55		71.6	9	45	
Aberthin Road (N)	88.1	14	64		71.6	9	44	
	2024 + Committed Development + Full Development (130 units)							
Cardiff Road (E)	92.5	13	97	-3.3	53.6	6	37	18.2
St Athan Road (S)	92.5	14	84		75.1	9	67	
Eastgate (W)	80.9	10	56		75.9	10	48	
Aberthin Road (N)	93.0	15	79		76.2	10	47	
	2034							
Cardiff Road (E)	92.0	14	95	-2.6	53.7	6	37	21.1
St Athan Road (S)	92.4	13	90		73.2	7	61	
Eastgate (W)	79.5	11	53		74.3	10	46	
Aberthin Road	91.7	15	72		72.9	10	44	
	2034 + Committed Development							
Cardiff Road (E)	96.4	16	119	-7.1	57.7	7	39	17.4
St Athan Road (S)	95.6	15	103		76.3	7	62	
Eastgate (W)	81.8	12	56		76.6	11	48	
Aberthin Road (N)	96.4	18	98		76.5	10	47	
	2034 + Committed Development + Full Development (130 units)							
Cardiff Road (E)	99.3	18	145	-13.1	60.8	7	40	9.8
St Athan Road (S)	100.5	22	149		79.7	9	64	
Eastgate (W)	82.5	13	58		82.0	12	55	
Aberthin Road (N)	101.8	25	157		81.2	12	52	

7.27 **Table 7.7** shows that during the PM peak, St Athan Road / Cardiff Road signalised junction will operate within its theoretical capacity, with an acceptable level of queuing, and a maximum DoS of 82.0%.

7.28 As shown in **Table 7.7**, in AM peak the St Athan Road / Cardiff Road signal junction is shown to operate with 8.8% PRC in 2022 with no development in the AM peak scenario and -7.1% in the 2034 future scenario with committed developments. It also shows that there would be a maximum degree of saturation (DoS) of 82.7 % on the Aberthin Road arm during the 2022 observed scenario and 96.4% on Cardiff Road and Aberthin Road during the 2034 future scenario with committed development. **Table 7.7** also shows that during the 2034 with the development, it would operate at capacity with a maximum DoS of 101.8% on the St Athan Road arm, with up to 157 seconds of delay on the Cardiff Road East arm of the junction. It has therefore been established that this junction will operate close to capacity in 2034 with and without the proposed site being approved. It should also be noted that the junction has been assessed for the whole allocation of 130 units, however the proposed development is for up to 90 units.

7.29 In addition to this, the queue data [Appendix G] indicates that there is more capacity available than the model is forecasting on the observed 2022 scenario. This could be due to a number of factors such as the definition of a queue being subjective, crossing facilities are infrequently used, and/or actual saturation flows are higher than RR67 predicts.

7.30 Without further evidence to help validate, the model is considered robust as it either represents more likely queueing or under-estimates capacity compared to observed queue data. Despite this, the results demonstrate that the impact of the development is only considered to have an impact in the 2034 scenario with delays of 157 seconds. However in the 2022 and 2024 scenarios, the impact of the development is considered acceptable with maximum delays of 97 seconds and it is considered that it is the application of TEMPro which bring the junctions to capacity and in reality this level of growth will not materialise.

7.31 This assessment also only considers a single hour in the day that the junction operates at capacity, and therefore no mitigation has been deemed necessary. It is also considered that due to COVID and the changes in work practises that it has brought, working from home and more flexible working patterns available, future residents can actively avoid this junction during the AM peak. Indeed, Welsh Government have announced their desire to give workers in Wales more flexibility, and the aim is that 30% of the Welsh workforce will work at home or near their home.

Summary

7.32 The impact of the proposed development on the local highway is demonstrated to be minimal, with mostly imperceptible increases to delay and queuing on existing junctions.

7.33 The proposed site access junction will not result in any perceptible queuing as a result of the proposed development and will therefore have a minimal impact on the existing operation of St Athan Road.

7.34 The conclusion is that the effect of the development, in terms of highway capacity, is not significant.

8 Summary and Conclusion

Summary

8.1 The site is location approximately one kilometre south of the centre of Cowbridge, a market town located within the Vale of Glamorgan.

8.2 The site is located in close proximity to nearby local facilities and services, with access achievable by active modes of travel as well as by public transport. The development proposals include connections to the existing pedestrian and cycle networks in the vicinity of the site to provide continuous pedestrian routes between the site and local facilities.

8.3 This TA has been prepared in accordance with relevant advice and guidance. It demonstrates that the site is in accordance with national and local transport policies. The TA has been scoped with the highway officers at the Vale of Glamorgan Council (VoGC).

8.4 The relevant national and local planning policy and guidance has been referenced in the preparation of this TA. The National Planning Policy Framework (NPPF) sets out a presumption in favour of sustainable development.

8.5 The development promotes travel choice from the outset where possible by providing links to existing residential areas and the established pedestrian routes. The accompanying Travel Plan will aid in encouraging sustainable travel for short journeys and shared or public travel for longer journeys. First and foremost, the development is designed to reduce the need to travel in the first instance which takes advantage of rapidly accelerating attitudes to home working and local living.

8.6 Vehicular access to the site will be from St Athan Road via a new priority junction. The junction has been demonstrated to cater for the capacity of the development, with significant spare capacity and minimal queuing on St Athan Road.

8.7 The form of the access which was extensively discussed through pre-application meetings with the VoG is considered the most appropriate for a development of this scale and whilst additionally providing a betterment to the exiting arrangement along this section of St Athan Road, the proposed access arrangement is policy compliant and in keeping with the semi-rural nature of this location. In addition, the proposed access arrangement for this parcel (land to the west of St Athan Road) does not prejudice access to the land on the eastern side of St Athan Road, which also forms part of the overall residential allocation of 130 units, within the Local Plan.

8.8 With the changing nature of travel, which has been accelerated by the Covid-19 events, accounting also for generational mindsets and the changing priorities reflected in policy, the potential to create sustainable travel habits for all residents from the outset is excellent. Therefore, delivery of this site ought to see far fewer vehicular trips than forecasted. It is clear that an ongoing shift in the travel methods of the UK is underway and ongoing. The dominance of the car is gradually being eroded by the pressing need to shift travel patterns towards more sustainable means of travel.

Conclusion

8.9 The site is considered to be well located for a residential development of this scale, with opportunities to connect to the existing active travel network and the local public transport options.

8.10 The development of this site offers an opportunity to create a sustainable community from the outset, through creative design and sustainable travel offer.

8.11 In conclusion, this is a well-located and sustainable site which, in transport terms, is policy compliant and hence should be acceptable from a transport and highways perspective.

Appendix A

Scoping Note

vectos.

17/12/2020

Land adjacent to St Athan Road, Cowbridge
Technical note – vehicular access

195148-TN01-V2

Introduction

1. Vectos is retained by Redrow Homes Plc to advise on transport and highways matters relating to a residential site of up to 100 units as allocated (MG2(19)) within the Vale of Glamorgan's (VoG) LDP.

2. The purpose of this Technical Note (TN) is to set out the proposed vehicular access arrangement for the site and establish the principle of this access to facilitate further detailed masterplanning on the site ahead of any planning application. As such, the views of the VoG highways team are sought in this regard.

3. The location of the site relative to Cowbridge and St Athan Road is shown in **Figure 1**.

Figure 1 – Site location (MG2 (19), St Athan Road, Cowbridge.

Background

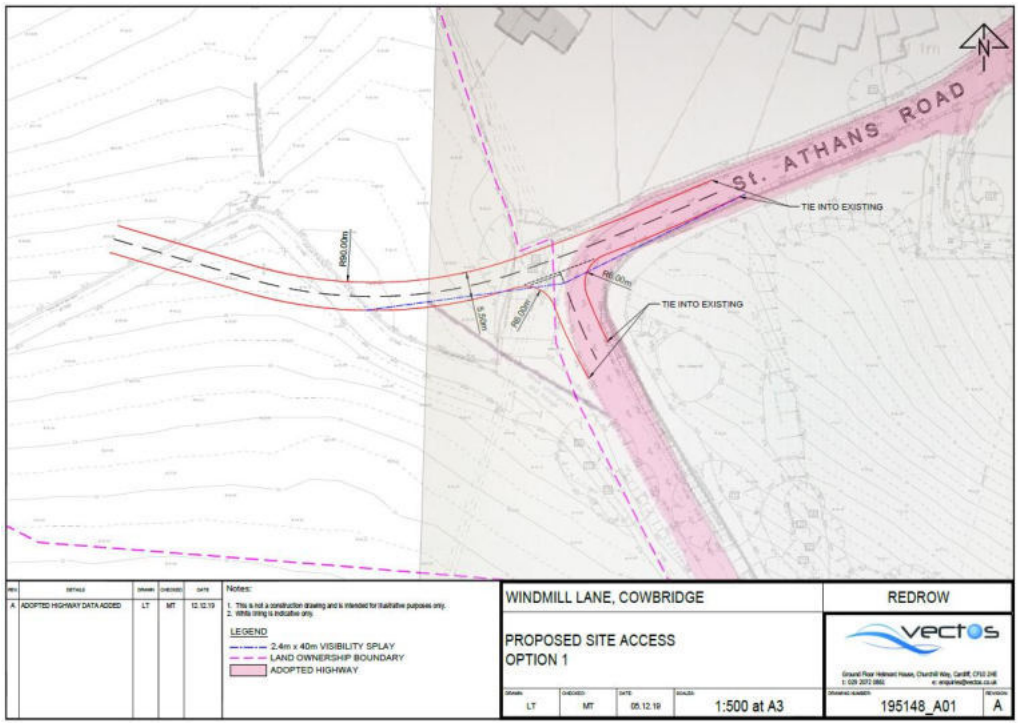
4. The original access proposed for the site and as shown in **Figure 2**, was to change the priority of St Athan Road into the site in order to respond to the engineering constraints and landownership boundaries including the adopted highway boundary.

Vectos
Helmont House
Churchill Way
Cardiff
CF102HE

020 7580 7373

vectos.co.uk

Figure 2 – Original access proposal with a change of priority on St Athan Road



5. During the initial pre application discussions, VoG highway officers raised concerns about this proposed access arrangement, namely this being a confusing road layout for motorists and suggesting that a roundabout would be a more appropriate access to the site.

6. Following this feedback we have sought to address these initial concerns raised by the VoG highway officers.

7. Initially, a roundabout option was considered and whilst this form of access may provide a degree of traffic calming on St Athan Road, it is extremely inefficient in terms of land take/density and problematic with existing / proposed levels. The consequential impact would be significant on the viability of the development. In addition, and when evaluated against the effect on a semi-rural setting, landscape sensitivities and placemaking, a roundabout is not considered to be the most appropriate form of access for this proposed development.

Existing Conditions

8. St Athan Road in the vicinity of the site is subject to the National Speed limit (60mph) and has a steep downward gradient from north to south past the site. The existing speed gateway feature (30mph signage) is located to the south of Hillside Drive on the eastern side of St Athan Road. St Athan road provides a vehicular link from the south of Cowbridge to St Athan some 5.5km to the south

9. The horizontal geometry of St Athan Road in the immediate vicinity of the site is also challenging with an almost 90 degree bend in the road on the frontage of the site access.

10. In order to ascertain the existing vehicle speeds and traffic volumes on St Athan Road, an ATC survey was commissioned between Feb 27th and 4th March 2020 recording traffic conditions for a neutral week

and prior to any COVID-19 lockdown measures. Two ATC's were commissioned and positioned to the north and south of the existing bend on St Athan Rd in the vicinity of the site as shown in **Figure 3**.

Figure 3 – Location of ATC on St Athan Road

11. The results of this traffic survey show that:

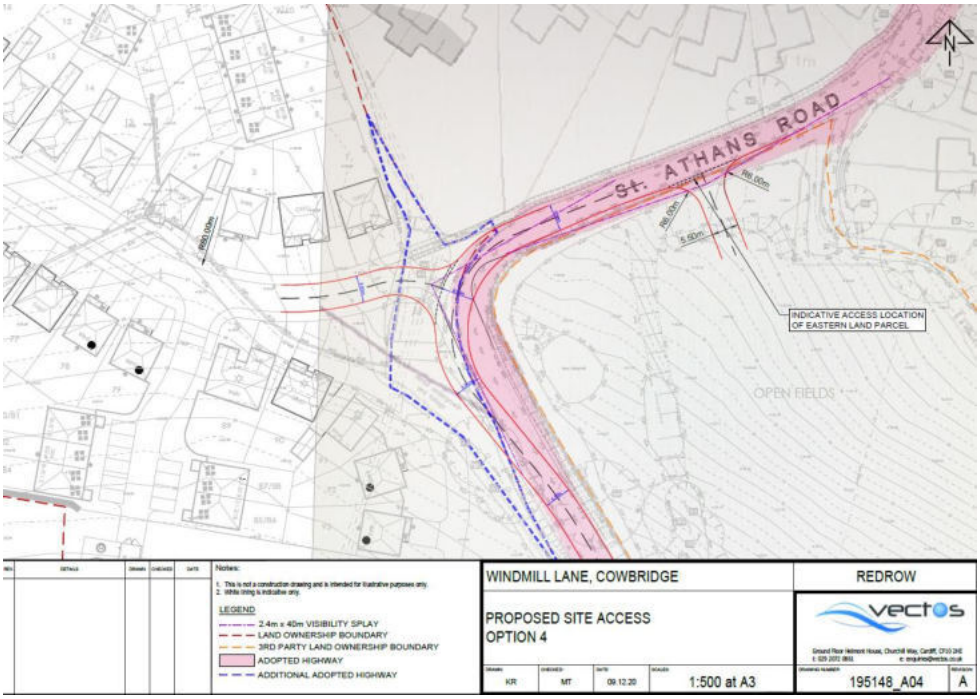
- The observed AADT (two way) is 2159 vehicles with 1114 vehicles travelling northbound and 1045 vehicles travelling southbound.
- The observed vehicle speeds are well within the prescribed speed limit (60mph) ranging from:
- Northbound average - 27.9mph -30.9mph, 85th 'ile - 31.4mph -34.9mph
- Southbound average - 29.1mph-29.2mph, 85th 'ile - 33.6mph -33.4mph.

12. The ADDT demonstrates that the observed flow of traffic on St Athan Road is low and that vehicle speeds are well within the prescribed speed limit and are clearly controlled by the existing horizontal and vertical geometry.

Proposed Vehicular Access

13. The proposed vehicular access to the site from St Athan Road is shown in **Figure 4** together with a revised overlay of the adopted highway boundary. This proposed access would be subject to detailed design and Road Safety Audit and is provided in preliminary 2D layout at this stage.

Figure 4 – Proposed Vehicular Access from St Athan Road



14. The proposed means of vehicular access to the site is via a standard priority junction with St Athan Road. The relevant drawings and associated track plots are also shown in greater detail in **Appendix A**.

15. The proposal is to realign St Athan Road to the west of its existing alignment to improve the forward visibility splays and the horizontal alignment of St Athan Road, thus reducing the curvature of the existing road and hence improving highway safety.

16. This would be accompanied by a TRO implementing a 30mph speed limit prior to the junction on either side of St Athan Road together with the necessary signage and traffic management which has yet to be developed. The design would also be subject to a full capacity analysis and an independent Road Safety Audit.

17. The vehicle speed measurements recorded by the traffic surveys demonstrate that a 30mph speed limit will be appropriate at this location and commensurate with existing vehicle speeds, albeit those recorded within the context of the existing National Speed Limit. In addition, the vertical and horizontal geometry of St Athan Road is naturally supressing vehicle speeds and the presence of a new access to the site together with built form, greater activity and traffic management will ensure that vehicle speeds are kept within 30mph.

18. It is considered that this form of access is the most appropriate for a development of this scale whilst additionally providing a betterment to the existing arrangement along this section of St Athan Road. The proposed access arrangement is policy compliant and, subject to the Road Safety Audit referenced above, a safe means of access into the site. It is also in keeping with the semi-rural nature of this location.

19. In addition, the proposed access arrangement for the land to the west of St Athan Road does not prejudice access to the land on the eastern side of St Athan Road which also forms part of the overall residential allocation (130 units) within the Local Plan. An indicative access arrangement into the eastern

land parcel is also shown in **Figure 4** although this would need to be developed by the promotors of this land.

Conclusion

20. This Technical Note has set out the rationale for the proposed means of access to a residential site of up to100 units allocated within the VoG's Local Plan and following initial pre application discussions with the VoG.

21. The basis of the proposed access arrangement responds to the initial feedback received and the challenges of existing horizontal and vertical geometry, land ownership and the information gathered in respect of existing vehicle speeds / volumes on St Athan Road. It is a standard priority junction arrangement.

22. Whilst it is acknowledged that this preliminary 2D access arrangement would be subject to full 3D design, highway capacity analysis and an independent Road Safety Audit, the views of the highway department within VoG are sought at this stage prior to developing a potential planning application.

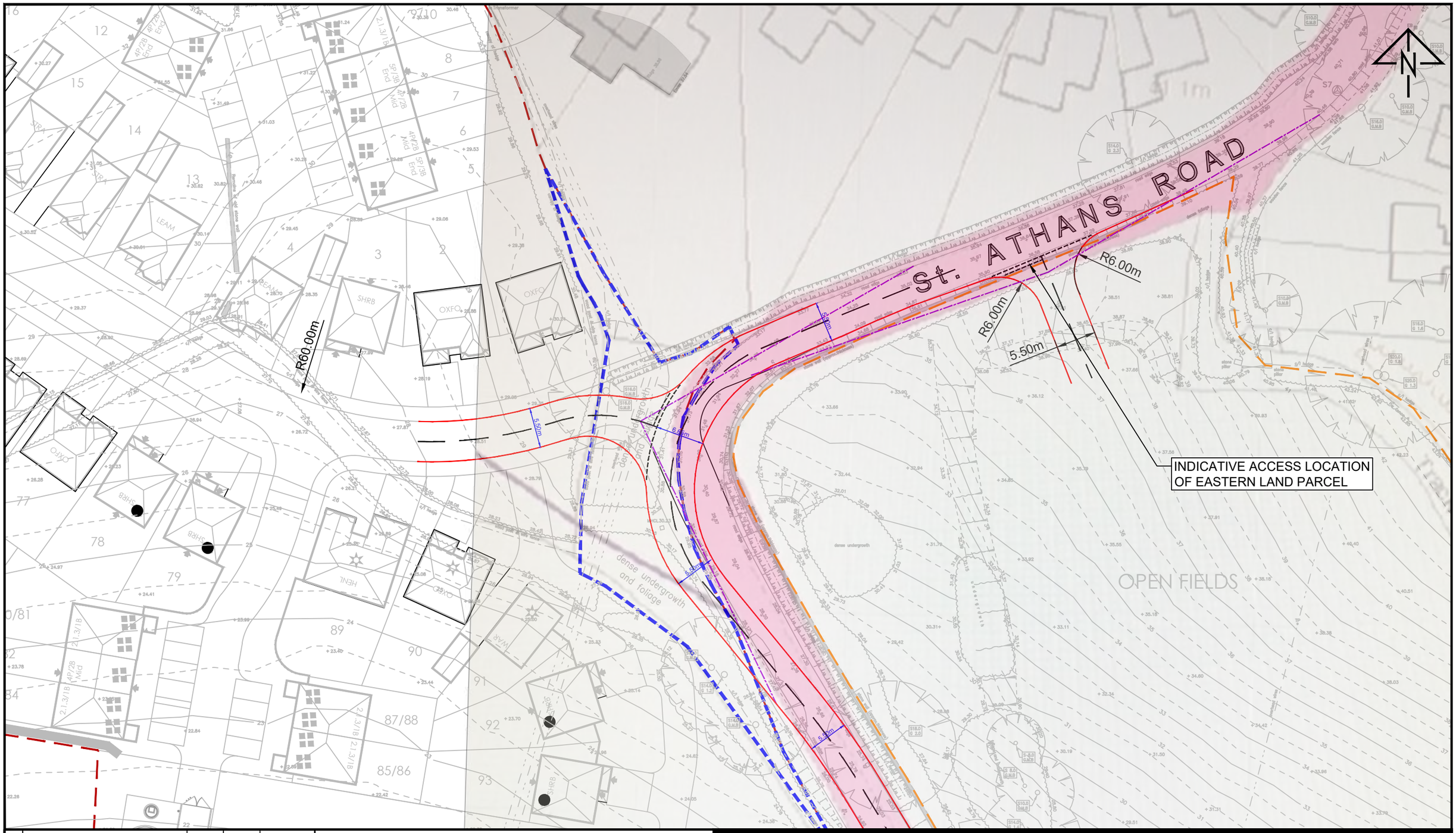
23. It would also be useful to gauge opinion from the VoG in terms of the indicative layout for the site in relation to the type of junction and proximity of residential dwellings to the access proposed from St Athan Road.

Appendix A – Proposed Access

Vectos
Helmont House
Churchill Way
Cardiff
CF102HE

020 7580 7373

vectos.co.uk



REV.	DETAILS	DRAWN	CHECKED	DATE

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

LEGEND

- 2.4m x 40m VISIBILITY SPLAY
- LAND OWNERSHIP BOUNDARY
- 3RD PARTY LAND OWNERSHIP BOUNDARY
- ADOPTED HIGHWAY
- ADDITIONAL ADOPTED HIGHWAY

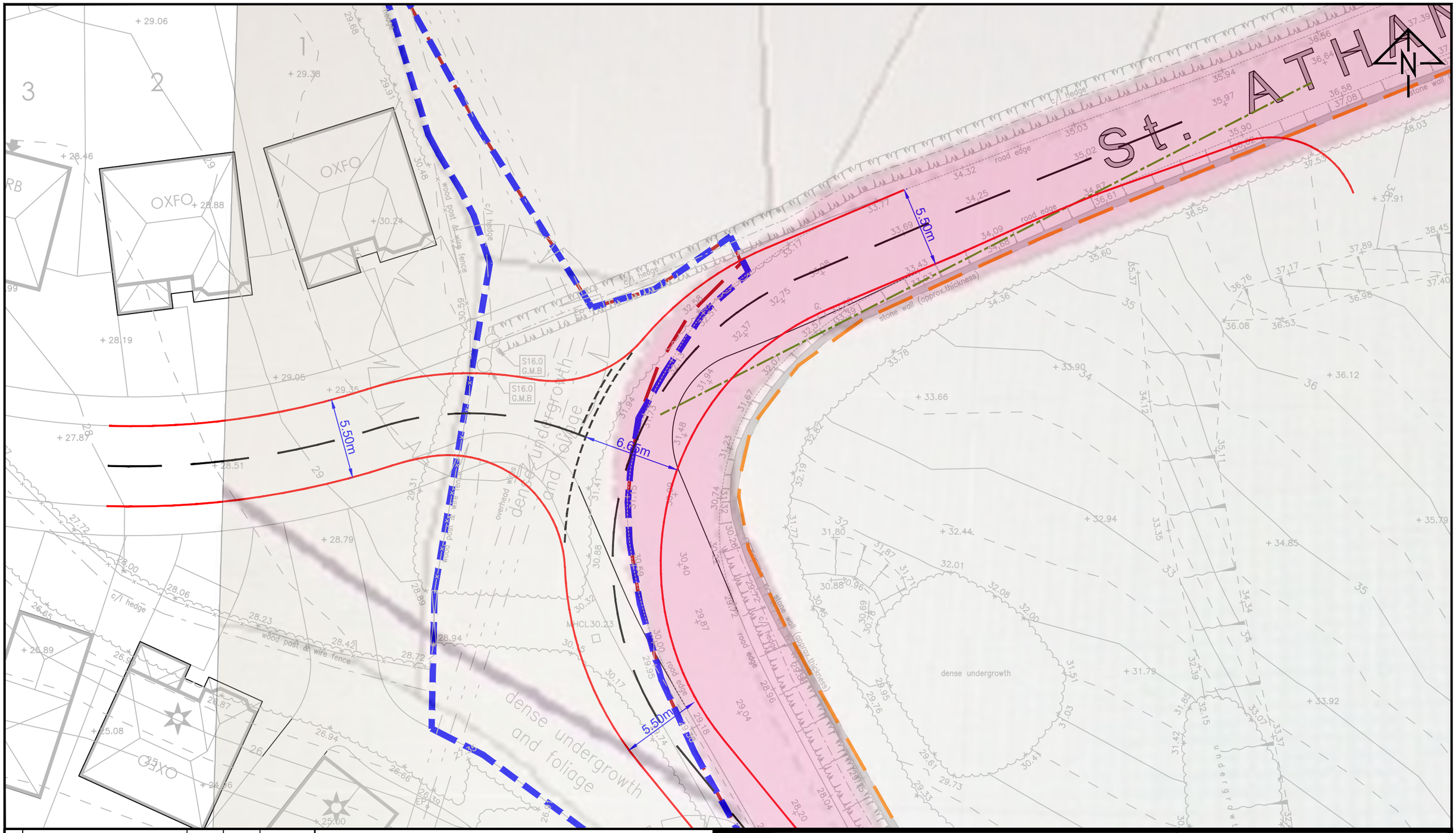
WINDMILL LANE, COWBRIDGE

PROPOSED SITE ACCESS OPTION 4

REDROW

vectos
Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
KR	MT	09.12.20	1:500 at A3	195148_A04	A



REV.	DETAILS	DRAWN	CHECKED	DATE

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

LEGEND

50m FORWARD VISIBILITY (30mph WITH A 12% GRADIENT PER MFS)

ADOPTED HIGHWAY

WINDMILL LANE, COWBRIDGE

PROPOSED SITE ACCESS FORWARD VISIBILITY

REDROW

vectos
Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

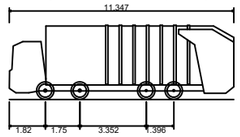
DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
KR	MT	09.12.20	1:250 at A3	195148_SK01	A

REV.	DETAILS	DRAWN	CHECKED	DATE

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Large Refuse Vehicle (4 axle)



Overall Length	11.347m
Overall Width	2.500m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	11.330m

WINDMILL LANE, COWBRIDGE

11.3m REFUSE VEHICLE SWEPT PATH ANALYSIS ST ATHANS ROAD JUNCTION

REDROW

DRAWN:	CHECKED:	DATE:	SCALES:
KR	MT	09.12.20	1:500 at A3

vectos

Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

DRAWING NUMBER:	REVISION:
195148_AT_A02	A

vectos.

Appendix B

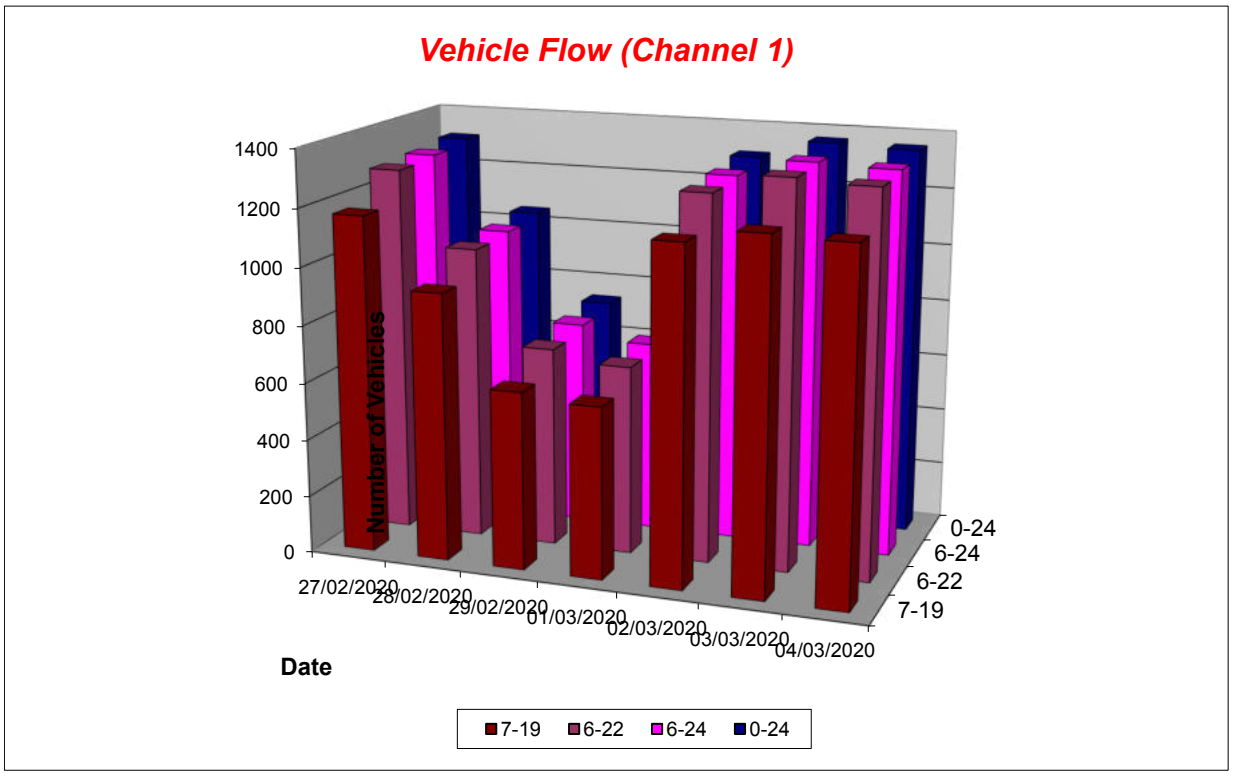
ATC Data

Cowbridge ATC, St. Athan Road (Northern Site)

Channel 1 - Northbound **Vehicle Flow** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday	5 Day Ave	7 Day Ave
1	3	2	0	7	1	3	5	3	3
2	2	1	2	3	2	1	2	2	2
3	0	0	1	2	1	1	2	1	1
4	0	1	0	0	1	0	0	0	0
5	2	2	6	1	1	4	2	2	3
6	11	10	8	6	14	14	11	12	11
7	31	40	30	11	39	41	42	39	33
8	104	89	35	18	95	95	80	93	74
9	158	167	36	14	173	174	179	170	129
10	98	79	52	54	94	101	117	98	85
11	57	86	70	73	57	74	74	70	70
12	69	70	66	63	63	78	67	69	68
13	85	63	61	66	79	65	79	74	71
14	72	86	61	62	71	61	70	72	69
15	75	67	54	67	77	64	69	70	68
16	110	90	58	57	97	108	115	104	91
17	160	60	54	43	157	153	147	135	111
18	121	38	34	51	137	169	120	117	96
19	63	36	38	29	62	66	82	62	54
20	37	30	19	30	40	37	49	39	35
21	20	12	13	14	18	30	19	20	18
22	20	10	15	7	11	21	15	15	14
23	7	9	14	9	7	4	5	6	8
24	3	1	7	1	5	2	5	3	3

7-19	1172	931	619	597	1162	1208	1199	1134	984
6-22	1280	1023	696	659	1270	1337	1324	1247	1084
6-24	1290	1033	717	669	1282	1343	1334	1256	1095
0-24	1308	1049	734	688	1302	1366	1356	1276	1115



Cowbridge ATC, St. Athan Road (Northern Site)

Channel 1 - Northbound **Average Speed** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	29.8	25.9	-	26.0	19.2	35.5	27.0
2	28.9	30.7	27.6	29.3	25.8	29.2	32.2
3	-	-	34.8	29.1	34.6	27.5	23.3
4	-	33.1	-	-	36.2	-	-
5	30.2	28.4	29.6	28.6	28.6	29.5	31.8
6	29.5	30.8	24.6	31.6	29.8	29.8	30.7
7	29.7	29.0	27.7	28.2	29.1	28.3	28.6
8	28.3	29.0	27.5	28.0	29.0	28.6	28.7
9	28.1	28.0	28.6	28.0	27.7	27.9	27.8
10	27.6	27.4	28.8	28.7	27.7	27.1	26.7
11	27.4	27.2	28.2	27.8	26.8	26.9	27.4
12	27.0	26.8	27.8	28.2	27.4	27.0	27.1
13	28.2	27.7	28.5	26.9	27.6	27.6	26.9
14	26.9	29.0	27.7	27.7	27.7	27.6	28.0
15	26.3	26.6	28.3	27.9	26.9	27.7	27.2
16	26.9	27.2	27.3	27.1	28.6	27.9	28.3
17	28.0	27.8	28.2	28.7	28.1	27.8	28.5
18	27.8	28.3	28.7	27.9	27.9	28.1	28.1
19	28.1	27.0	27.6	28.1	28.3	28.6	26.9
20	28.6	26.6	28.1	28.1	28.2	28.6	27.9
21	25.8	30.1	31.6	27.7	28.0	28.0	29.6
22	27.4	28.3	30.6	30.5	28.8	29.6	27.7
23	29.6	25.1	30.9	30.6	27.0	32.5	26.7
24	27.4	32.4	32.1	28.6	22.3	25.1	31.1
10-12	27.2	27.1	28.0	28.0	27.1	27.0	27.3
14-16	26.7	27.0	27.8	27.5	27.8	27.9	27.9
0-24	27.7	27.8	28.2	28.0	27.9	27.9	27.8

Average	27.9

Channel 1 - Northbound **85th Percentile**

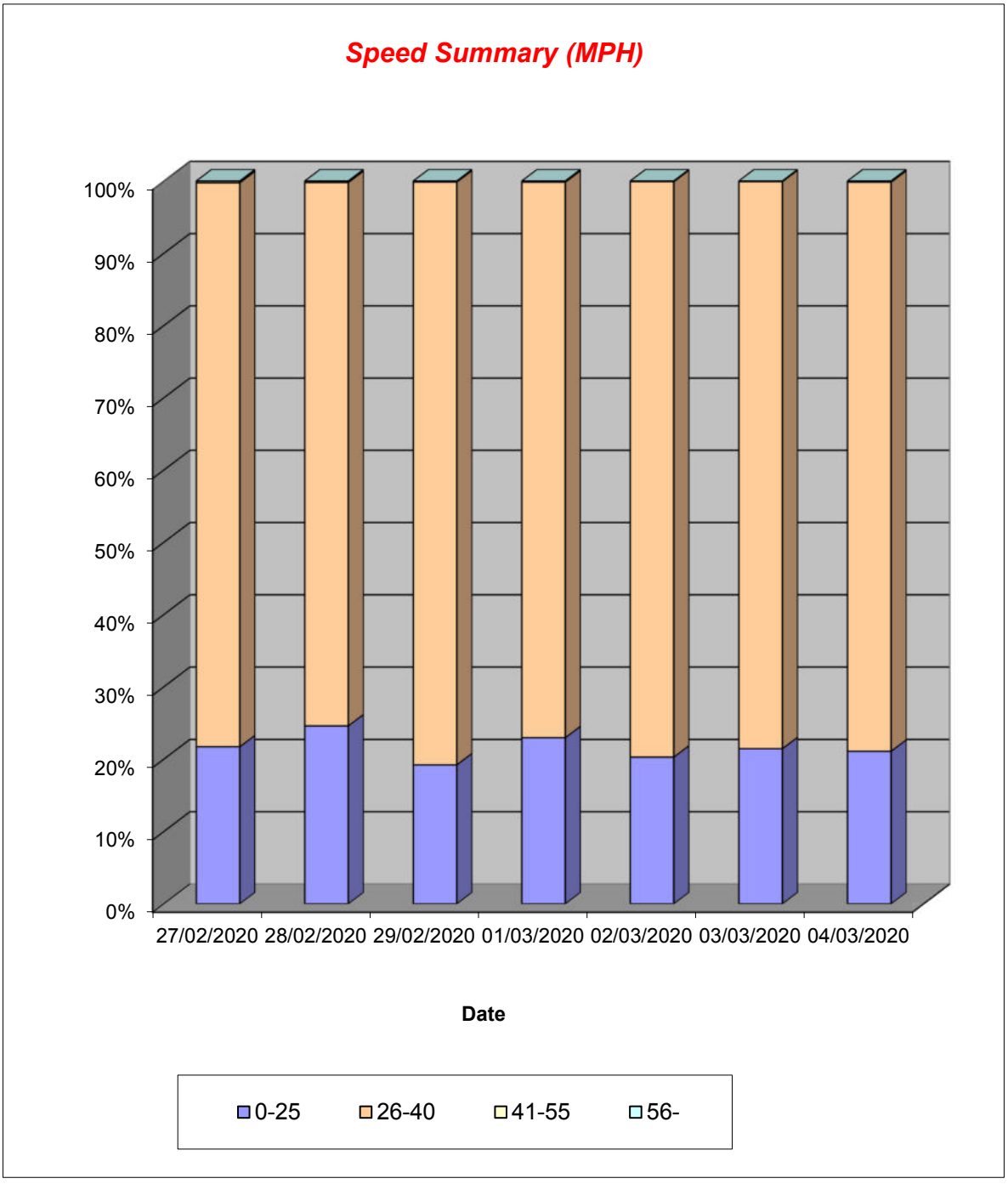
Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	30.4	30.5	-	30.9	-	41.2	30.5
2	30.0	-	29.3	32.5	26.8	-	33.0
3	-	-	-	29.2	-	-	24.3
4	-	-	-	-	-	-	-
5	32.3	30.3	31.0	-	-	33.1	32.1
6	33.3	35.1	26.4	34.9	32.3	33.5	34.0
7	33.0	32.5	29.7	32.1	32.7	30.7	31.8
8	32.2	33.1	32.2	31.5	32.6	31.9	31.8
9	31.4	30.7	30.7	32.8	30.7	30.4	30.3
10	30.9	30.3	31.8	33.0	30.8	29.9	29.9
11	30.7	30.2	32.7	30.3	30.1	30.7	30.9
12	30.5	30.7	31.7	31.6	30.3	32.3	31.1
13	31.7	30.7	32.3	30.0	30.6	32.5	30.6
14	30.8	32.7	32.3	31.4	32.1	32.1	33.3
15	29.6	31.1	30.7	30.3	30.7	31.6	30.9
16	30.5	30.6	30.3	30.6	31.9	31.5	31.6
17	31.3	30.5	31.6	31.6	31.3	31.1	31.6
18	31.3	33.1	31.9	31.0	31.2	31.1	31.9
19	33.1	29.7	30.9	31.0	31.7	32.1	29.8
20	32.6	31.5	31.5	32.5	32.7	31.3	31.0
21	31.6	32.9	38.0	33.3	31.2	30.3	32.2
22	31.2	34.0	32.1	35.3	32.4	33.7	31.0
23	33.5	31.2	37.0	35.7	30.9	34.5	29.2
24	30.1	-	34.3	-	27.0	27.1	36.1
10-12	30.6	30.7	32.4	30.9	30.2	31.4	31.0
14-16	30.0	30.8	30.6	30.5	31.6	31.5	31.4
0-24	31.4	31.3	31.9	31.5	31.3	31.5	31.2

85th %ile	31.4

Cowbridge ATC, St. Athan Road (Northern Site)

Channel 1 - Northbound | **Speed Summary** | **Week 1**

Speed (MPH)	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
0-25	284	258	141	158	264	293	286
26-40	1021	789	592	529	1037	1072	1068
41-55	3	2	1	1	1	1	2
56-	0	0	0	0	0	0	0
TOTAL	**1308**	**1049**	**734**	**688**	**1302**	**1366**	**1356**

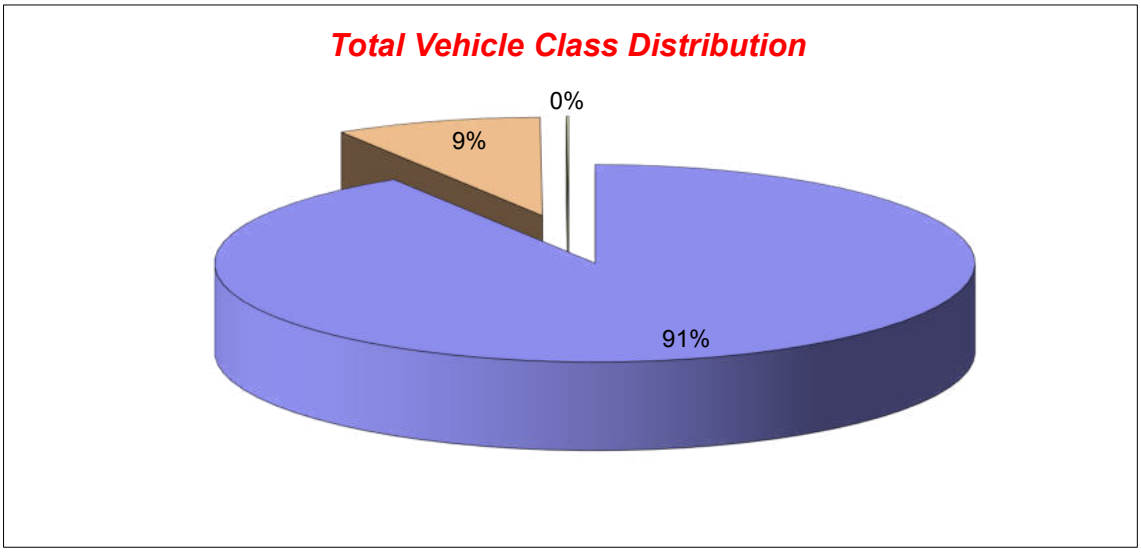


Cowbridge ATC, St. Athan Road (Northern Site)

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
27/02/2020				
7-19	1062	110	0	1172
6-22	1163	117	0	1280
6-24	1172	118	0	1290
0-24	1188	120	0	1308
28/02/2020				
7-19	829	100	2	931
6-22	914	107	2	1023
6-24	923	108	2	1033
0-24	938	109	2	1049
29/02/2020				
7-19	570	49	0	619
6-22	643	53	0	696
6-24	664	53	0	717
0-24	680	54	0	734
01/03/2020				
7-19	573	21	3	597
6-22	633	23	3	659
6-24	643	23	3	669
0-24	661	24	3	688
02/03/2020				
7-19	1051	110	1	1162
6-22	1150	119	1	1270
6-24	1161	120	1	1282
0-24	1176	125	1	1302
03/03/2020				
7-19	1090	116	2	1208
6-22	1208	127	2	1337
6-24	1214	127	2	1343
0-24	1234	130	2	1366
04/03/2020				
7-19	1085	114	0	1199
6-22	1203	121	0	1324
6-24	1213	121	0	1334
0-24	1233	123	0	1356

Average				
7-19	894	89	1	984
6-22	988	95	1	1084
6-24	999	96	1	1095
0-24	1016	98	1	1115

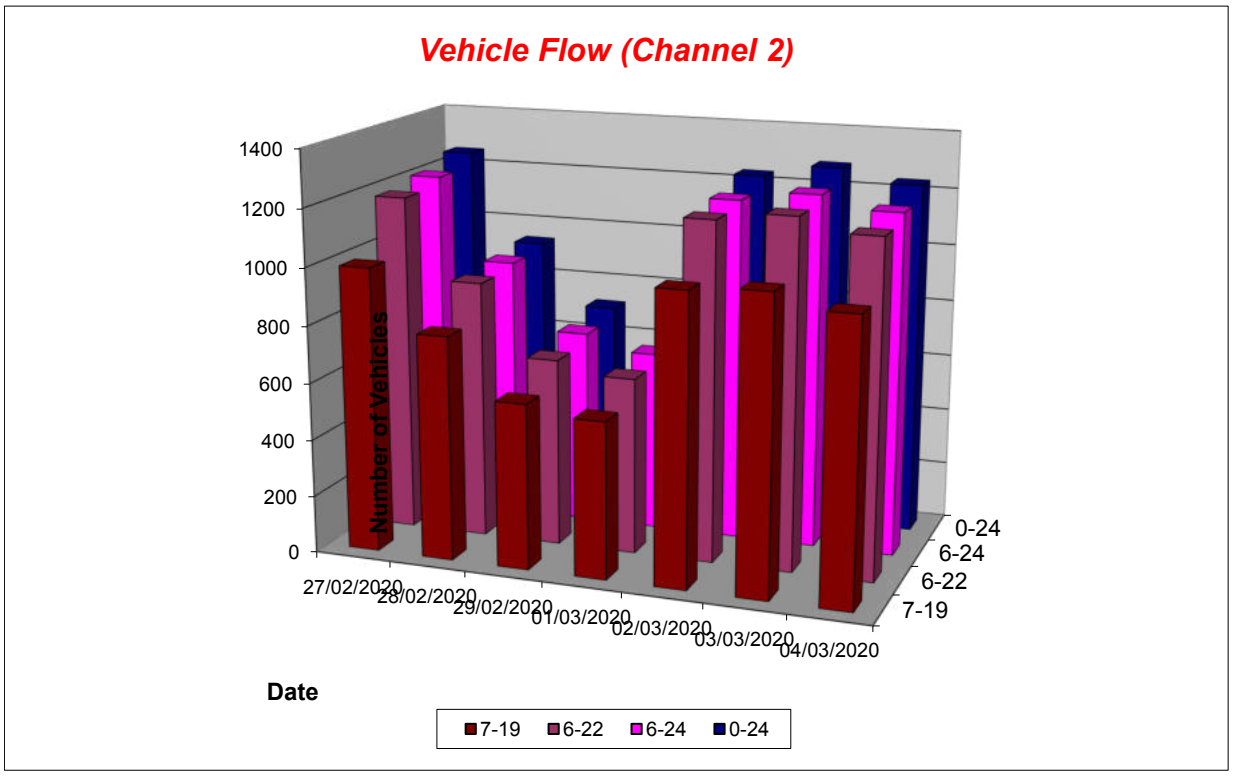


Cowbridge ATC, St. Athan Road (Northern Site)

Channel 2 - Southbound **Vehicle Flow** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday	5 Day Ave	7 Day Ave
1	5	1	1	9	1	4	5	3	4
2	1	0	1	2	1	0	0	0	1
3	1	1	0	2	0	0	2	1	1
4	0	0	4	0	0	3	1	1	1
5	3	1	12	2	4	4	3	3	4
6	34	13	13	2	31	35	33	29	23
7	60	59	21	9	68	72	70	66	51
8	120	110	30	14	100	113	110	111	85
9	97	88	18	13	80	96	94	91	69
10	62	53	37	20	76	51	61	61	51
11	55	55	47	46	66	57	45	56	53
12	68	61	48	50	69	60	56	63	59
13	60	73	73	76	62	88	70	71	72
14	72	52	62	54	79	75	73	70	67
15	71	56	49	48	71	73	59	66	61
16	120	78	61	81	142	127	108	115	102
17	101	62	50	66	89	80	85	83	76
18	84	59	66	41	88	121	129	96	84
19	86	37	38	39	86	84	87	76	65
20	49	36	27	24	37	45	62	46	40
21	47	13	14	23	39	25	29	31	27
22	32	13	17	14	30	45	28	30	26
23	13	10	18	11	10	17	17	13	14
24	14	5	9	4	6	5	9	8	7

7-19	996	784	579	548	1008	1025	977	958	845
6-22	1184	905	658	618	1182	1212	1166	1130	989
6-24	1211	920	685	633	1198	1234	1192	1151	1010
0-24	1255	936	716	650	1235	1280	1236	1188	1044



Cowbridge ATC, St. Athan Road (Northern Site)

Channel 2 - Southbound **Average Speed** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	33.7	36.7	30.0	29.8	28.2	33.1	30.4
2	25.9	-	31.2	25.4	25.0	-	-
3	33.4	30.8	-	25.0	-	-	33.0
4	-	-	27.3	-	-	25.8	33.3
5	30.3	29.2	28.9	32.1	29.8	31.8	26.8
6	29.8	31.5	28.4	33.1	30.8	30.6	30.9
7	30.5	30.3	28.9	31.7	30.4	30.0	30.4
8	30.8	29.2	31.4	32.8	31.2	30.6	30.6
9	30.2	29.0	29.5	28.9	29.4	29.8	29.2
10	29.0	26.8	29.5	29.0	28.7	29.0	29.3
11	29.5	28.2	27.3	28.5	28.7	29.0	29.1
12	30.5	28.3	28.6	29.1	28.3	28.7	28.6
13	28.6	28.0	28.9	28.0	27.8	28.8	27.9
14	29.2	29.3	28.3	28.9	28.9	27.6	29.0
15	29.1	29.7	28.6	29.6	28.1	28.8	28.5
16	28.9	28.5	28.5	28.8	28.8	27.7	29.2
17	29.2	29.7	29.3	29.2	29.5	29.5	28.8
18	29.3	27.7	29.0	29.0	30.3	29.5	29.7
19	27.5	28.2	29.0	28.6	28.0	29.0	28.2
20	30.0	28.1	27.9	29.7	29.3	30.1	27.6
21	29.3	26.7	29.1	29.0	28.6	28.7	29.0
22	29.6	29.4	28.9	28.1	30.5	29.8	26.6
23	31.3	28.9	28.4	30.6	25.7	30.6	28.3
24	29.9	26.4	28.8	28.9	27.0	27.3	27.6

10-12	30.1	28.3	28.0	28.8	28.5	28.8	28.8
14-16	29.0	29.0	28.6	29.1	28.6	28.1	28.9
0-24	29.5	28.7	28.8	29.0	29.2	29.2	29.1

Average	29.1

Channel 2 - Southbound **85th Percentile**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	35.3	-	-	33.8	-	37.7	34.3
2	-	-	-	26.7	-	-	-
3	-	-	-	25.1	-	-	33.1
4	-	-	31.3	-	-	28.1	-
5	35.9	-	33.6	34.2	31.8	33.4	28.3
6	34.1	37.3	34.4	35.6	34.6	35.1	35.9
7	34.6	34.0	31.9	34.3	35.5	33.5	33.6
8	35.6	32.6	35.3	37.4	34.9	34.2	34.0
9	34.7	32.7	32.8	32.3	33.4	34.4	32.7
10	33.0	30.2	33.9	33.0	33.7	33.0	33.8
11	34.2	32.1	31.3	32.4	34.8	33.3	34.4
12	34.7	32.1	32.2	34.1	32.3	34.2	31.7
13	32.3	32.0	33.5	33.2	30.6	33.6	31.7
14	34.0	31.8	33.2	33.3	33.0	31.9	32.3
15	33.2	34.3	31.4	34.1	31.3	34.1	32.9
16	33.6	32.1	32.4	33.6	32.4	31.6	32.4
17	34.1	33.9	34.6	33.4	33.4	33.2	33.7
18	32.7	31.7	33.7	33.5	34.4	33.9	34.7
19	31.4	34.1	32.6	30.6	32.6	33.9	31.1
20	34.7	30.5	32.1	33.8	34.5	34.1	30.1
21	34.6	30.9	34.0	33.2	32.1	32.8	33.6
22	33.9	36.4	32.3	30.5	35.2	35.4	29.7
23	36.2	34.6	33.8	37.4	32.1	34.9	30.0
24	32.7	30.2	32.3	34.3	35.4	33.6	30.0

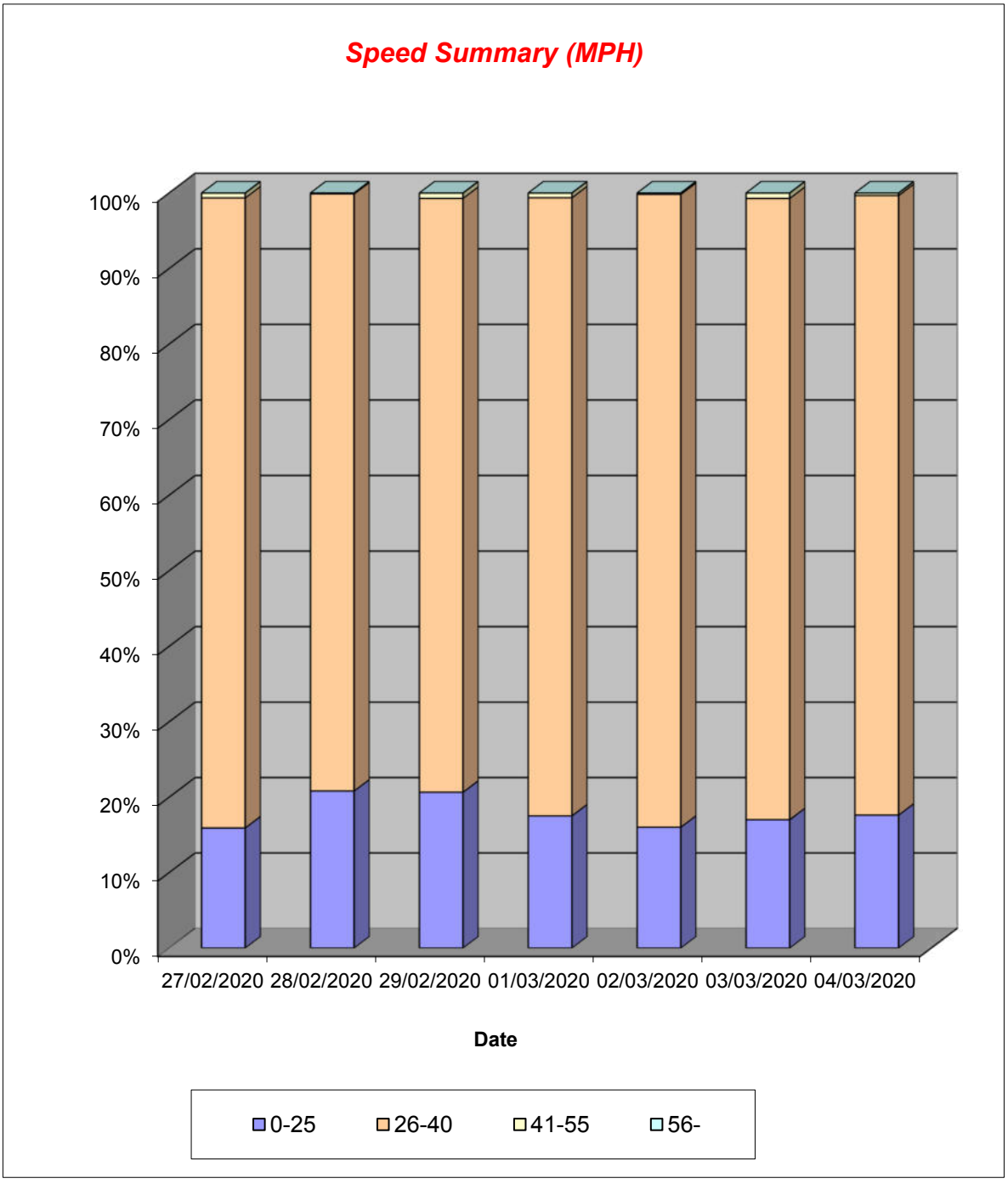
10-12	34.4	32.1	32.2	33.6	33.3	33.5	32.7
14-16	33.5	34.0	31.7	34.0	32.0	32.6	32.7
0-24	34.2	33.0	33.2	33.8	33.5	33.7	33.4

85th %ile	33.6

Cowbridge ATC, St. Athan Road (Northern Site)

Channel 2 - Southbound **Speed Summary** **Week 1**

Speed (MPH)	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
0-25	200	195	148	114	198	218	218
26-40	1047	740	563	532	1035	1053	1014
41-55	8	1	5	4	2	9	4
56-	0	0	0	0	0	0	0
TOTAL	**1255**	**936**	**716**	**650**	**1235**	**1280**	**1236**

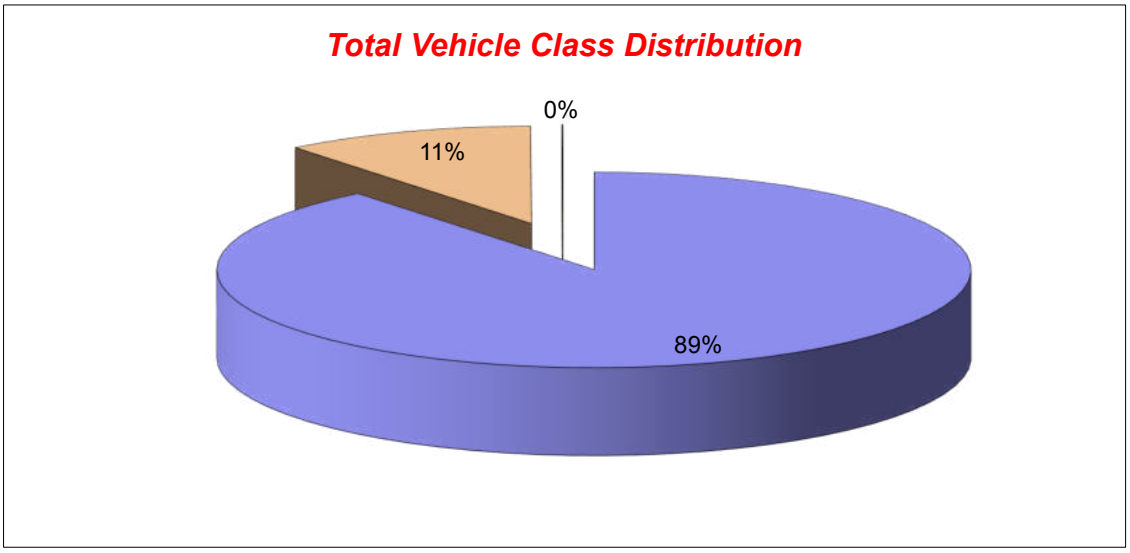


Cowbridge ATC, St. Athan Road (Northern Site)

Channel 2 - Southbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
27/02/2020				
7-19	866	130	0	**996**
6-22	1044	140	0	**1184**
6-24	1070	141	0	**1211**
0-24	1112	143	0	**1255**
28/02/2020				
7-19	681	101	2	**784**
6-22	785	118	2	**905**
6-24	800	118	2	**920**
0-24	816	118	2	**936**
29/02/2020				
7-19	515	64	0	**579**
6-22	588	70	0	**658**
6-24	615	70	0	**685**
0-24	644	72	0	**716**
01/03/2020				
7-19	517	31	0	**548**
6-22	581	37	0	**618**
6-24	595	38	0	**633**
0-24	611	39	0	**650**
02/03/2020				
7-19	885	123	0	**1008**
6-22	1042	140	0	**1182**
6-24	1058	140	0	**1198**
0-24	1092	143	0	**1235**
03/03/2020				
7-19	906	118	1	**1025**
6-22	1073	138	1	**1212**
6-24	1095	138	1	**1234**
0-24	1139	140	1	**1280**
04/03/2020				
7-19	863	114	0	**977**
6-22	1038	128	0	**1166**
6-24	1064	128	0	**1192**
0-24	1106	130	0	**1236**

Average				
7-19	748	97	0	**845**
6-22	879	110	0	**989**
6-24	900	110	0	**1010**
0-24	931	112	0	**1044**

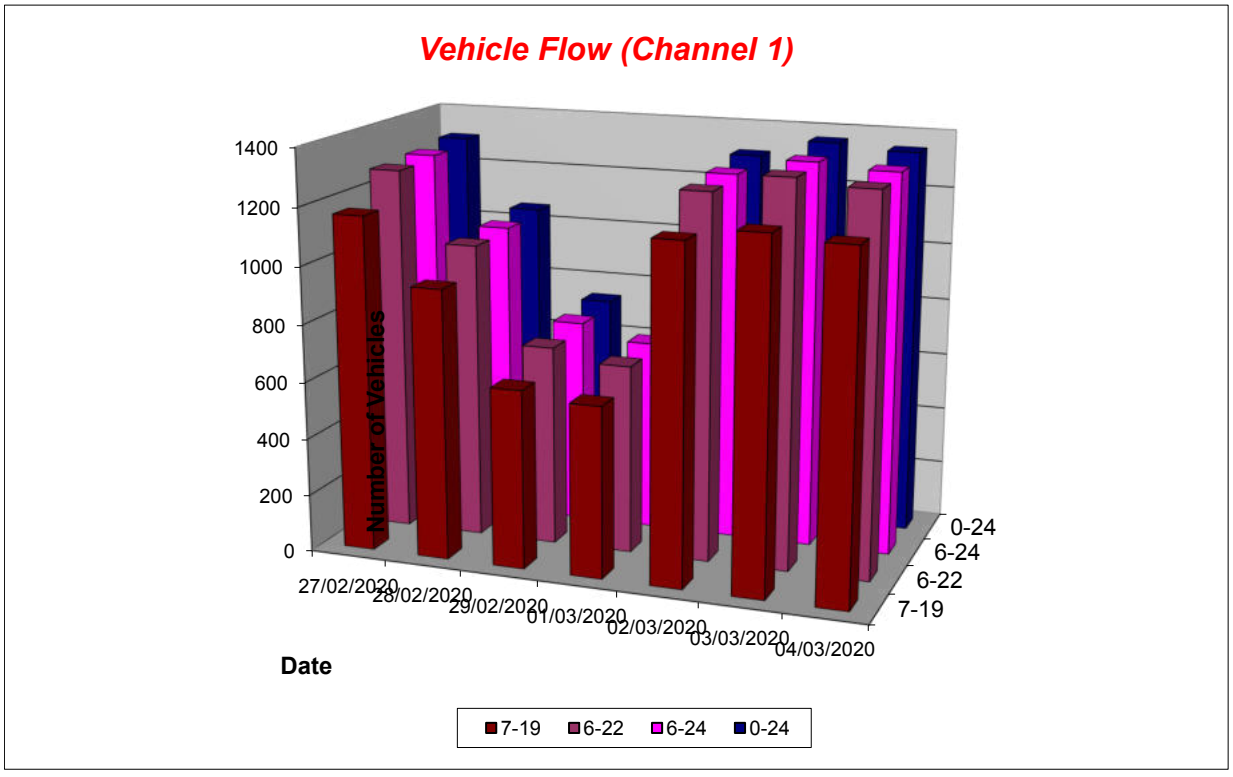


Cowbridge ATC, St. Athan Road (Southern Site)

Channel 1 - Northbound **Vehicle Flow** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday	5 Day Ave	7 Day Ave
1	3	2	0	7	1	3	5	3	3
2	2	1	2	3	2	1	2	2	2
3	0	0	1	2	1	1	2	1	1
4	0	1	0	0	1	0	0	0	0
5	2	2	6	1	1	4	2	2	3
6	12	10	8	6	14	14	11	12	11
7	31	40	29	11	38	40	42	38	33
8	101	88	35	18	96	100	82	93	74
9	164	165	37	14	170	167	179	169	128
10	94	83	53	55	97	105	111	98	85
11	59	86	68	73	57	72	72	69	70
12	70	76	65	63	63	80	68	71	69
13	82	60	61	65	80	67	74	73	70
14	73	88	61	61	69	56	70	71	68
15	74	68	56	66	79	67	67	71	68
16	111	92	59	56	98	106	115	104	91
17	154	62	53	44	160	150	147	135	110
18	121	38	34	53	133	171	122	117	96
19	65	35	40	28	62	66	82	62	54
20	37	29	19	30	40	37	48	38	34
21	18	12	13	14	18	30	19	19	18
22	21	10	15	7	11	20	15	15	14
23	7	9	14	9	7	4	5	6	8
24	3	1	7	1	5	2	5	3	3

7-19	1168	941	622	596	1164	1207	1189	1134	984
6-22	1275	1032	698	658	1271	1334	1313	1245	1083
6-24	1285	1042	719	668	1283	1340	1323	1255	1094
0-24	1304	1058	736	687	1303	1363	1345	1275	1114



Cowbridge ATC, St. Athan Road (Southern Site)

Channel 1 - Northbound **Average Speed** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	34.8	30.8	-	28.8	22.2	39.3	28.5
2	31.9	36.8	33.6	34.5	31.1	35.2	38.7
3	-	-	36.7	32.7	32.1	33.4	28.3
4	-	31.1	-	-	43.6	-	-
5	37.5	35.6	30.8	27.8	32.8	30.6	36.4
6	32.7	34.2	27.3	36.2	33.5	32.5	35.0
7	32.1	30.7	30.8	33.4	31.8	32.4	30.8
8	31.2	31.8	31.1	31.4	31.9	31.1	31.7
9	31.3	30.9	31.9	31.6	30.6	29.5	30.7
10	31.7	29.1	31.7	31.9	31.2	30.1	29.5
11	29.6	29.7	31.1	31.0	30.8	31.0	30.4
12	30.3	29.6	31.1	29.8	30.5	30.6	31.0
13	31.6	29.9	31.2	29.8	30.5	30.3	30.5
14	30.3	30.7	30.9	31.1	31.3	31.1	30.4
15	29.2	31.0	30.0	31.1	31.8	31.6	31.4
16	28.1	30.6	31.1	29.1	31.1	31.8	31.5
17	30.9	31.6	31.0	32.9	31.3	30.9	31.7
18	31.2	32.5	30.8	29.9	30.4	30.3	31.5
19	32.0	29.5	31.7	31.3	30.8	33.2	30.6
20	30.2	29.9	30.7	31.1	30.1	31.1	30.4
21	29.5	30.7	33.7	30.8	32.0	31.2	32.9
22	30.8	30.1	33.3	31.5	30.4	33.7	30.7
23	33.3	26.9	33.7	30.2	27.7	34.8	30.3
24	42.2	32.8	32.6	37.0	28.6	39.4	33.2

10-12	30.0	29.7	31.1	30.5	30.6	30.7	30.7
14-16	28.5	30.8	30.6	30.2	31.4	31.7	31.4
0-24	30.7	30.6	31.2	30.9	31.0	30.9	31.0

Average	30.9

Channel 1 - Northbound **85th Percentile**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	37.7	32.0	-	32.9	-	46.7	32.6
2	33.3	-	34.5	40.7	32.6	-	41.6
3	-	-	-	33.5	-	-	29.4
4	-	-	-	-	-	-	-
5	39.0	36.7	33.0	-	-	36.1	36.7
6	35.3	40.6	30.2	41.6	37.7	35.0	37.3
7	37.6	35.4	33.4	40.0	36.7	35.0	34.6
8	34.7	36.9	34.7	35.2	36.0	34.7	35.0
9	34.0	34.3	35.9	34.7	34.3	33.2	34.1
10	35.2	32.2	36.5	35.7	35.0	33.7	33.3
11	35.0	34.6	36.0	36.0	34.4	35.6	34.8
12	33.6	34.1	35.2	33.8	34.4	36.0	35.3
13	36.2	34.4	34.6	33.8	33.8	35.3	33.8
14	35.8	34.9	34.8	35.1	35.0	36.9	35.1
15	33.9	35.0	34.0	34.8	34.9	35.5	36.4
16	33.3	34.4	35.7	33.9	34.3	34.5	35.1
17	34.4	35.2	34.0	36.6	35.4	35.2	35.2
18	35.2	36.8	34.5	32.8	34.6	33.6	35.6
19	36.9	31.9	36.2	34.3	34.7	36.7	34.2
20	34.4	36.0	34.2	35.3	34.9	36.3	33.3
21	36.5	35.1	40.7	38.6	35.9	33.2	38.7
22	37.5	33.2	43.5	36.9	33.4	40.9	31.9
23	40.8	30.2	40.7	32.2	33.2	38.3	32.5
24	46.6	-	35.0	-	32.9	42.9	38.7

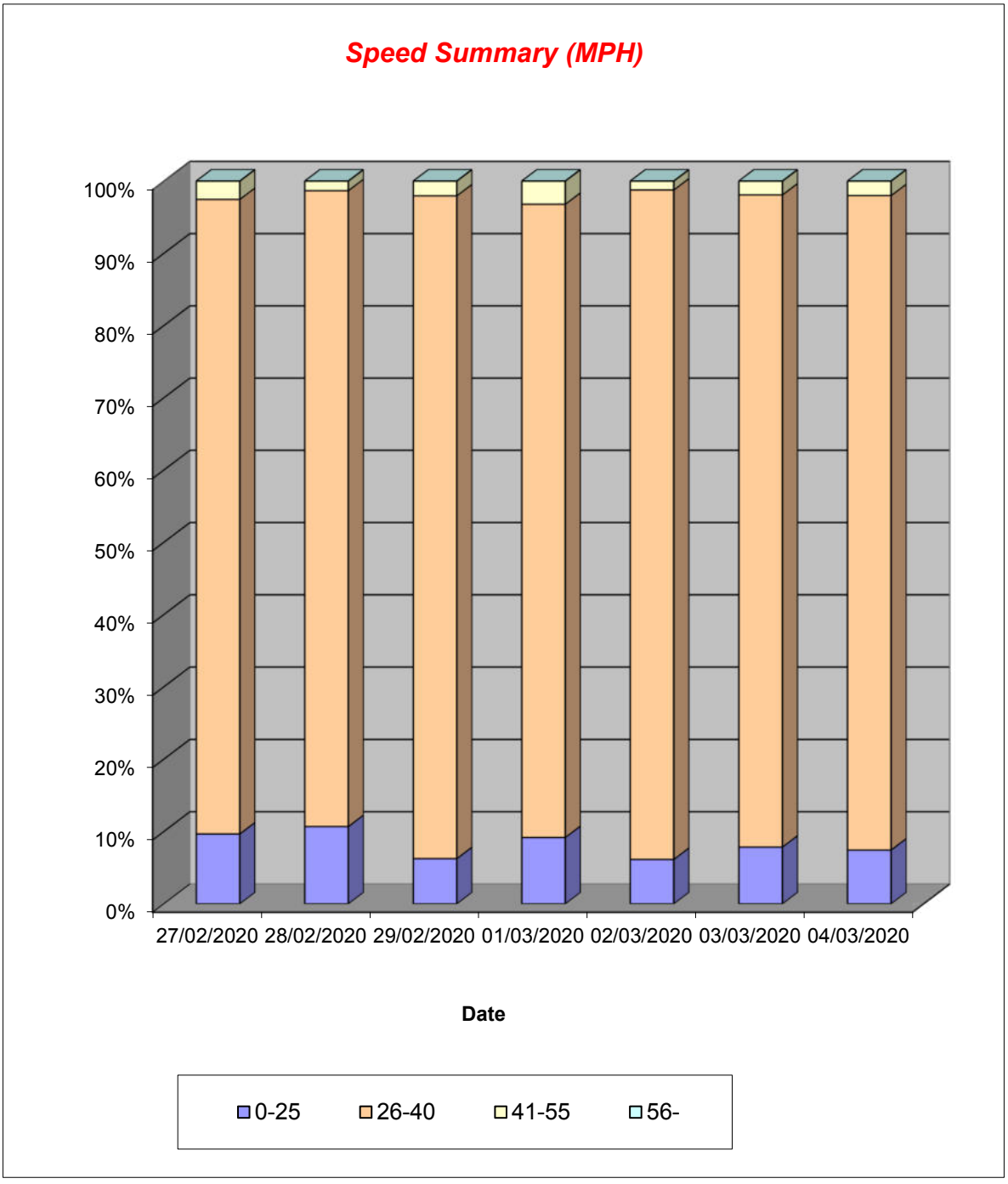
10-12	34.2	34.5	35.5	35.5	34.4	35.7	35.0
14-16	33.6	34.6	35.3	33.9	34.7	35.3	35.7
0-24	34.9	34.7	35.5	35.3	34.9	34.9	34.9

85th %ile	34.9

Cowbridge ATC, St. Athan Road (Southern Site)

Channel 1 - Northbound | **Speed Summary** | **Week 1**

Speed (MPH)	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
0-25	126	113	46	63	80	107	100
26-40	1145	931	675	602	1207	1230	1218
41-55	33	14	15	22	16	26	27
56-	0	0	0	0	0	0	0
TOTAL	**1304**	**1058**	**736**	**687**	**1303**	**1363**	**1345**

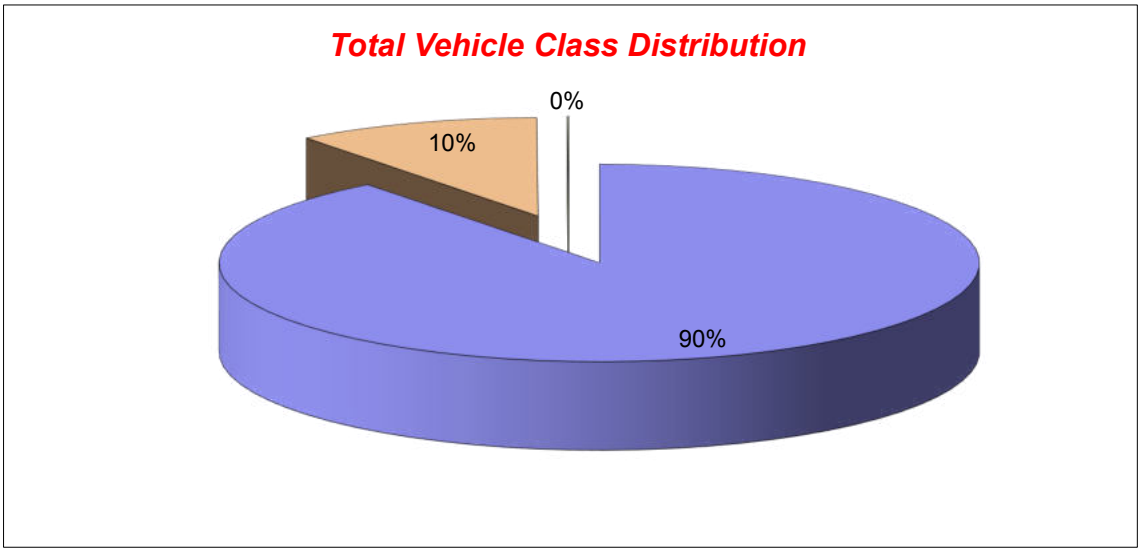


Cowbridge ATC, St. Athan Road (Southern Site)

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
27/02/2020				
7-19	1037	131	0	1168
6-22	1136	139	0	1275
6-24	1145	140	0	1285
0-24	1162	142	0	1304
28/02/2020				
7-19	829	110	2	941
6-22	911	119	2	1032
6-24	920	120	2	1042
0-24	933	123	2	1058
29/02/2020				
7-19	566	56	0	622
6-22	636	62	0	698
6-24	657	62	0	719
0-24	673	63	0	736
01/03/2020				
7-19	562	32	2	596
6-22	622	34	2	658
6-24	632	34	2	668
0-24	649	36	2	687
02/03/2020				
7-19	1033	131	0	1164
6-22	1130	141	0	1271
6-24	1142	141	0	1283
0-24	1157	146	0	1303
03/03/2020				
7-19	1068	138	1	1207
6-22	1184	149	1	1334
6-24	1190	149	1	1340
0-24	1208	154	1	1363
04/03/2020				
7-19	1057	132	0	1189
6-22	1172	141	0	1313
6-24	1182	141	0	1323
0-24	1200	145	0	1345

Average				
7-19	879	104	1	984
6-22	970	112	1	1083
6-24	981	112	1	1094
0-24	997	116	1	1114

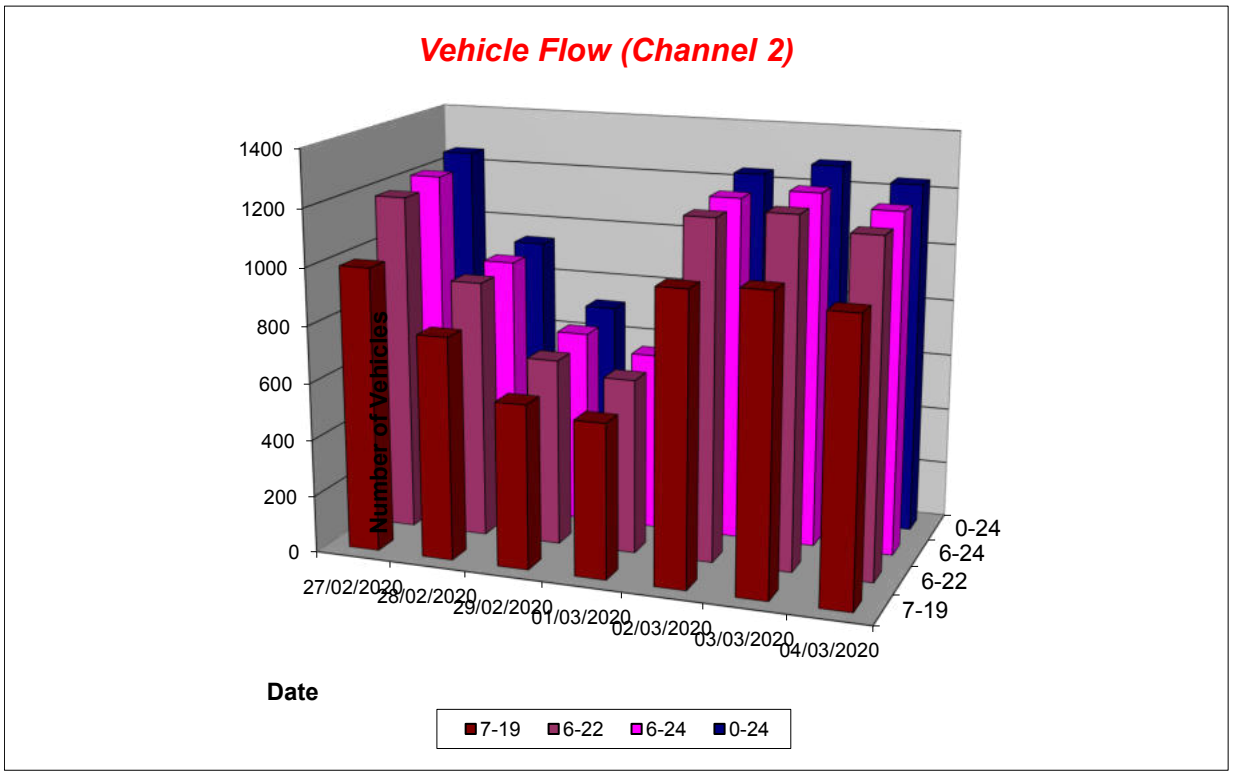


Cowbridge ATC, St. Athan Road (Southern Site)

Channel 2 - Southbound **Vehicle Flow** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday	5 Day Ave	7 Day Ave
1	5	1	1	9	0	4	5	3	4
2	1	0	1	2	2	0	0	1	1
3	1	1	0	2	0	0	2	1	1
4	0	0	4	0	0	3	1	1	1
5	3	1	12	2	4	4	3	3	4
6	32	12	13	2	30	35	31	28	22
7	62	61	22	9	70	73	69	67	52
8	122	110	30	14	102	111	112	111	86
9	92	93	18	13	83	101	94	93	71
10	64	51	37	20	74	50	62	60	51
11	53	53	48	46	64	56	47	55	52
12	67	62	47	50	69	62	54	63	59
13	60	75	74	76	64	87	74	72	73
14	71	50	62	53	80	76	72	70	66
15	72	54	47	47	70	70	61	65	60
16	123	74	59	82	139	131	107	115	102
17	105	63	51	64	89	82	86	85	77
18	82	60	68	40	93	119	123	95	84
19	85	37	36	37	85	84	88	76	65
20	49	37	27	26	38	45	63	46	41
21	47	13	14	23	39	24	29	30	27
22	31	13	17	14	30	47	28	30	26
23	13	10	17	11	10	17	18	14	14
24	14	5	10	4	6	5	9	8	8

7-19	996	782	577	542	1012	1029	980	960	845
6-22	1185	906	657	614	1189	1218	1169	1133	991
6-24	1212	921	684	629	1205	1240	1196	1155	1012
0-24	1254	936	715	646	1241	1286	1238	1191	1045



Cowbridge ATC, St. Athan Road (Southern Site)

Channel 2 - Southbound **Average Speed** **Week 1**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	28.4	32.5	30.2	30.4	-	30.1	32.0
2	30.9	-	33.7	27.6	26.0	-	-
3	29.2	29.0	-	26.1	-	-	29.6
4	-	-	27.2	-	-	26.8	27.7
5	27.5	29.0	27.9	34.6	30.7	32.8	29.7
6	29.6	30.5	28.6	33.9	29.7	31.0	31.0
7	30.5	30.2	28.1	31.5	30.2	30.4	31.2
8	29.3	28.9	28.9	28.3	30.1	29.6	30.5
9	29.0	28.7	28.1	28.8	29.5	29.4	28.8
10	28.3	26.2	27.8	28.8	28.7	28.7	29.0
11	28.6	28.5	26.9	27.9	28.9	28.7	28.9
12	29.6	27.9	27.2	28.2	29.2	29.0	29.0
13	28.9	27.7	28.7	28.6	28.9	28.9	28.8
14	29.7	28.5	28.0	29.6	29.0	29.1	28.7
15	29.6	28.9	28.3	29.0	29.4	29.3	28.9
16	28.3	28.5	28.1	27.9	29.7	29.8	29.1
17	29.2	29.3	28.3	30.1	29.7	30.5	29.4
18	29.9	28.0	28.2	28.9	30.1	30.2	29.8
19	29.2	28.1	29.5	28.0	30.4	29.3	29.3
20	30.0	27.1	27.3	29.5	30.9	30.7	29.3
21	30.1	27.5	30.3	28.7	29.8	30.1	29.2
22	30.2	31.0	29.6	27.5	30.5	31.8	28.3
23	31.2	28.1	27.7	28.0	29.4	31.7	29.1
24	32.2	28.3	29.4	27.2	28.1	28.6	30.5

10-12	29.2	28.2	27.1	28.0	29.0	28.9	28.9
14-16	28.8	28.7	28.2	28.3	29.6	29.6	29.0
0-24	29.3	28.5	28.2	28.8	29.6	29.7	29.4

Average	29.2

Channel 2 - Southbound **85th Percentile**

Hr Ending	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
1	32.7	-	-	32.5	-	32.8	37.3
2	-	-	-	30.1	27.6	-	-
3	-	-	-	26.7	-	-	31.9
4	-	-	30.5	-	-	28.5	-
5	31.0	-	31.1	38.1	32.6	35.3	32.8
6	34.2	33.7	32.9	34.4	34.0	34.6	34.6
7	34.8	33.8	34.4	33.9	34.0	33.6	34.6
8	34.4	31.4	33.1	31.8	34.1	32.8	33.9
9	32.6	32.0	33.6	31.8	33.3	33.8	32.5
10	32.4	29.8	30.2	33.2	32.2	33.1	33.0
11	33.2	31.1	30.7	31.4	32.9	32.2	33.7
12	33.9	32.4	30.0	30.8	33.5	32.9	32.4
13	32.5	31.4	32.8	32.6	31.7	31.8	33.8
14	34.0	33.1	30.7	33.4	33.1	33.0	33.5
15	33.2	32.0	31.1	34.3	32.4	33.8	32.2
16	32.1	30.9	31.0	31.6	33.7	33.4	32.3
17	33.3	34.1	34.0	33.6	34.3	34.1	33.4
18	34.0	31.3	31.3	32.6	34.7	34.5	33.6
19	33.4	32.3	33.8	31.6	34.3	32.8	33.4
20	32.8	30.8	31.1	34.4	34.4	35.1	34.4
21	33.1	30.9	32.2	33.2	34.7	33.2	32.0
22	33.6	35.5	36.0	30.5	33.6	34.7	32.3
23	36.6	33.2	31.6	30.4	35.0	34.9	31.1
24	34.1	31.1	32.3	31.6	31.2	31.7	32.8

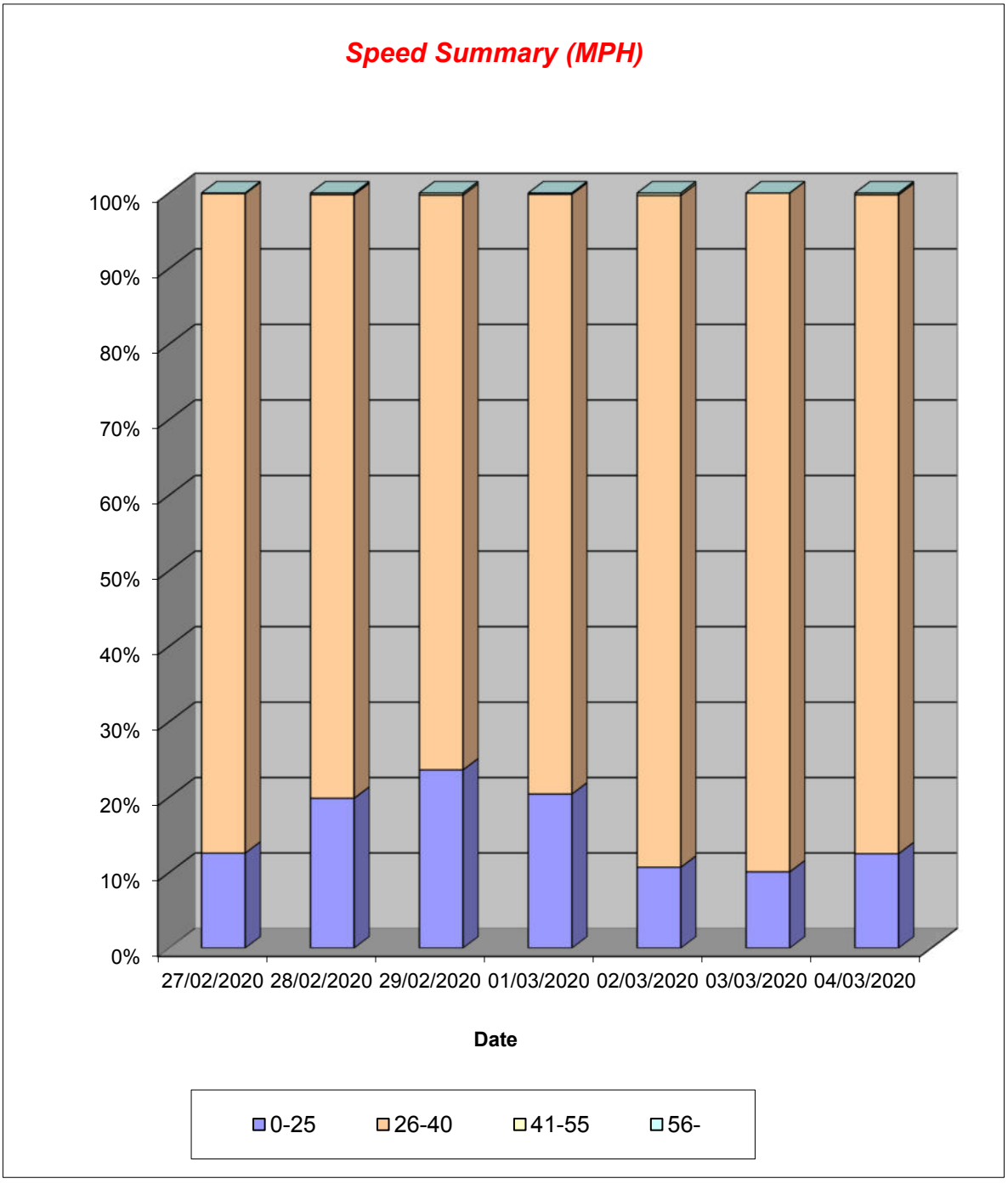
10-12	33.6	32.1	30.6	31.1	33.3	32.9	32.8
14-16	32.4	31.9	31.2	32.1	33.6	33.5	32.3
0-24	33.6	32.2	32.2	32.8	33.9	33.8	33.6

85th %ile	33.4

Cowbridge ATC, St. Athan Road (Southern Site)

Channel 2 - Southbound **Speed Summary** **Week 1**

Speed (MPH)	27/02/2020 Thursday	28/02/2020 Friday	29/02/2020 Saturday	01/03/2020 Sunday	02/03/2020 Monday	03/03/2020 Tuesday	04/03/2020 Wednesday
0-25	158	186	169	132	133	130	155
26-40	1095	748	544	513	1104	1156	1080
41-55	1	2	2	1	4	0	3
56-	0	0	0	0	0	0	0
TOTAL	**1254**	**936**	**715**	**646**	**1241**	**1286**	**1238**

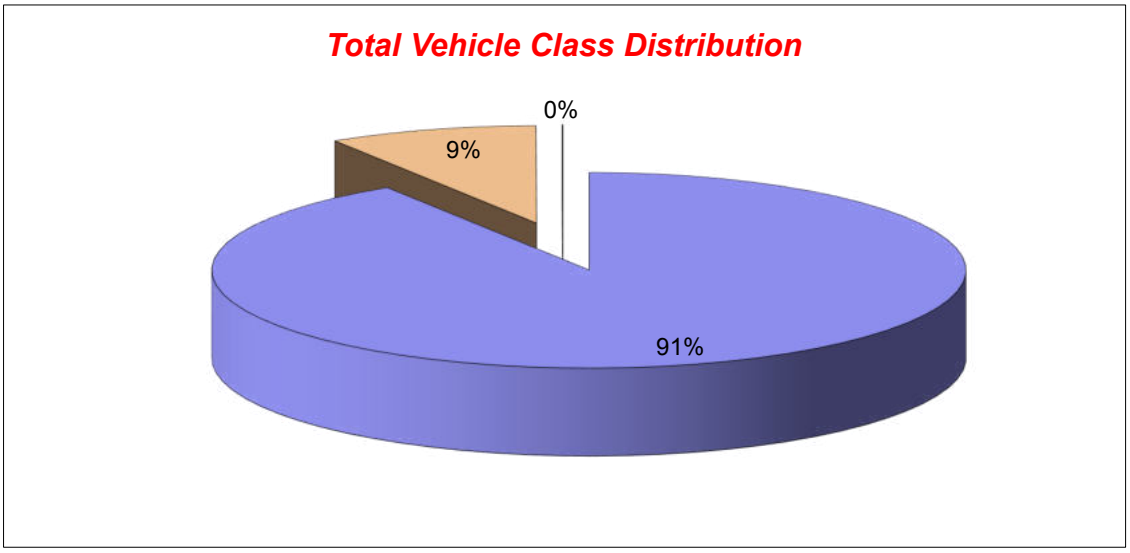


Cowbridge ATC, St. Athan Road (Southern Site)

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
27/02/2020				
7-19	894	100	2	996
6-22	1075	108	2	1185
6-24	1101	109	2	1212
0-24	1142	110	2	1254
28/02/2020				
7-19	695	87	0	782
6-22	803	103	0	906
6-24	818	103	0	921
0-24	833	103	0	936
29/02/2020				
7-19	522	55	0	577
6-22	596	61	0	657
6-24	623	61	0	684
0-24	652	63	0	715
01/03/2020				
7-19	520	22	0	542
6-22	586	28	0	614
6-24	601	28	0	629
0-24	617	29	0	646
02/03/2020				
7-19	907	105	0	1012
6-22	1070	119	0	1189
6-24	1086	119	0	1205
0-24	1119	122	0	1241
03/03/2020				
7-19	927	102	0	1029
6-22	1100	118	0	1218
6-24	1122	118	0	1240
0-24	1166	120	0	1286
04/03/2020				
7-19	882	98	0	980
6-22	1061	108	0	1169
6-24	1088	108	0	1196
0-24	1129	109	0	1238

Average				
7-19	764	81	0	845
6-22	899	92	0	991
6-24	920	92	0	1012
0-24	951	94	0	1045



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Appendix C

Site Layout

Site off Windmill Lane, Cowbridge.

Open Mix Housetype.	No's	Sq.ft	Total Sq.ft	Beds	Storeys	
Hampstead	6	1851	11106	5	2	10%
Cambridge	5	1404	7020	4	2	8%
Leamington	4	1416	5664	3	2	6%
Oxford	7	1347	9429	4	2	11%
Oxford Lifestyle	5	1347	6735	3	2	8%
Windsor	11	1240	13640	4	2	17%
Warwick	13	1075	13975	3	2	21%
Letchworth	12	983	11796	3	2	19%

Affordable Housetype	No's	Sq.ft	Total Sq.ft	Beds	Storeys	
DQR 1b Flat	16	590	9440	1	2	38%
DQR 4.2.1	19	909	17271	2	2	45%
DQR 5.3.1	6	1045	6270	3	2	14%
DQR 6.4.1	1	1204	1204	4	2	2%

Total Open Units	63		79365
Total Affordable Units	42		34185
Total Units	105	Total Sq.ft	113550
Average Floor Area			1081.429

Coverage	
Nett Developable Area	6.81 Acres
Square Foot Per Acre	16674 Sq.ft/Acre

EXISITNG RESIDENTIAL

EXISITNG RESIDENTIAL

EXISITNG RESIDENTIAL

EXISITNG RESIDENTIAL

PUBLIC OPEN SPACE
Comprising of (400 m2)LEAP

Existing Foul
Pumping Station

Pumping
Station

SAB ATTENUATION AREA

OPEN FIELDS

OPEN FIELDS

LLANQUIAN CLOSE

ST ATHAN ROAD

Llyswen

Revision | Date | Amendment | Initials

thinkurban
Architecture & Civil Engineering

Quest House
St Mellons Business Park
Fortran Road
Cardiff CF3 0EY

project title
SITE OFF WINDMILL LANE
COWBRIDGE

drawing title
SKETCH SCHEME

date
17.05.22

scale
1:500 @ A1

drawn by
PT

status

drawing number
WIND-15-04-SK27

revision
/

REDROW HOMES
Redrow Homes (South Wales) Limited
Redrow House, Copse Walk, Cardiff Gate Business Park, Cardiff Gate, Cardiff, CF23 8RH
Tel: 02920 549103 Fax: 02920 541540 Web: www.redrow.co.uk

Legal Disclaimer TBC

This layout has been designed after due consideration of our Context & Constraints Plan

vectos.

Appendix D

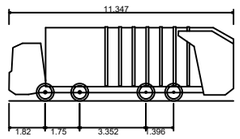
Internal Layout Swept Path Analysis

REV.	DETAILS	DRAWN	CHECKED	DATE
A	Updated Masterplan	KR	SB	10.08.22

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Large Refuse Vehicle (4 axle)



Overall Length	11.347m
Overall Width	2.500m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	11.330m

LAND WEST OF WINDMILL LANE, COWBRIDGE

REDROW

11.3m REFUSE VEHICLE SWEPT PATH ANALYSIS SERVICING

DRAWN:	CHECKED:	DATE:	SCALES:
KR	MT	25.05.22	1:1000 at A3

vectos. | PART OF SLR
Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE
t: 02920 720 860 e: vectos@vectos.co.uk

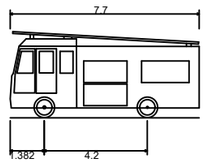
DRAWING NUMBER:	REVISION:
195148_AT_C01	A

REV.	DETAILS	DRAWN	CHECKED	DATE
A	Updated Masterplan	KR	SB	10.08.22

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Dennis Sabre Fire Tender (LWB)



Overall Length	7.700m
Overall Width	2.430m
Overall Body Height	3.512m
Min Body Ground Clearance	0.397m
Track Width	2.380m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	7.400m

LAND WEST OF WINDMILL LANE, COWBRIDGE

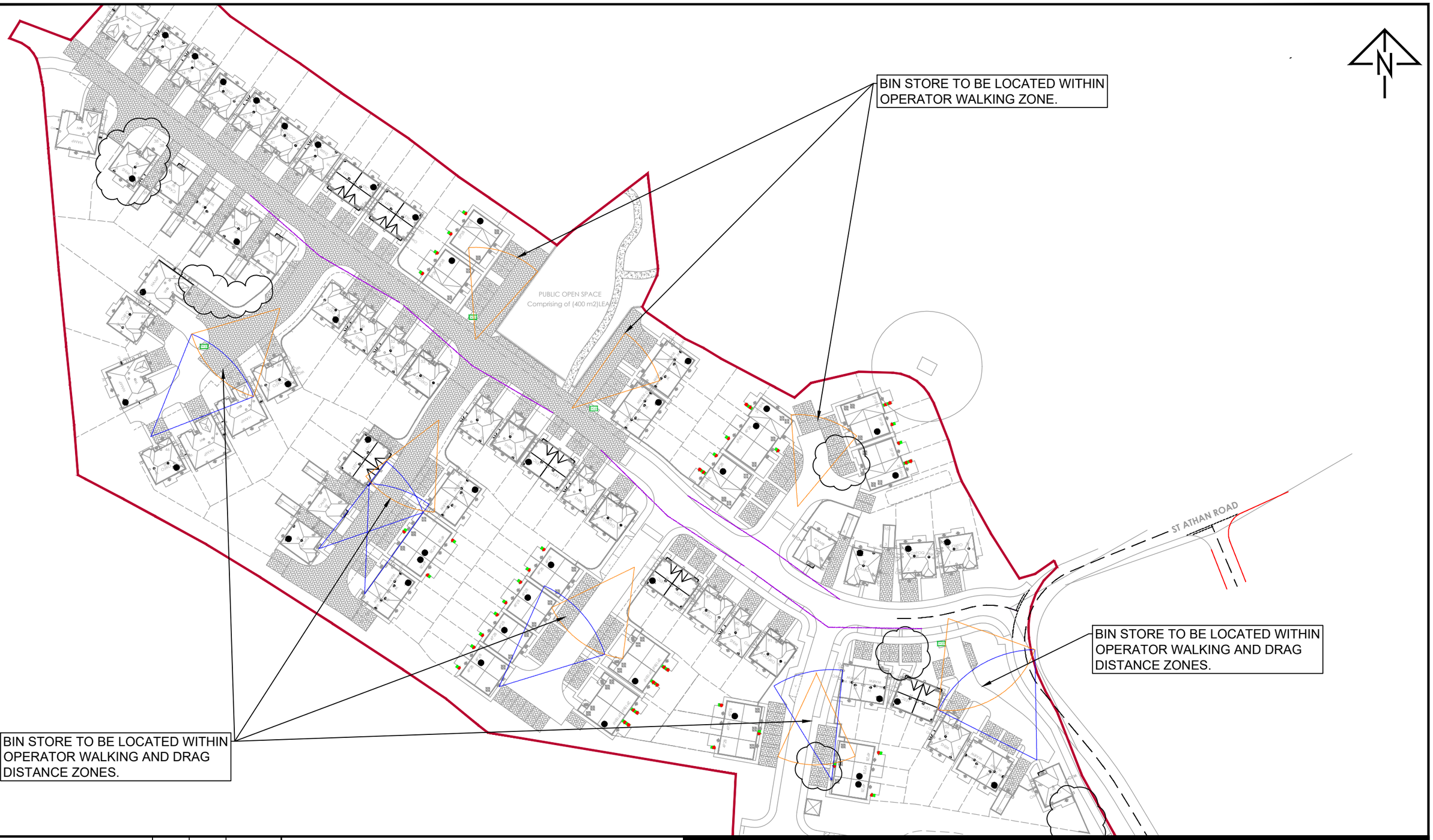
REDROW

FIRE TENDER SWEPT PATH ANALYSIS SERVICING

DRAWN:	CHECKED:	DATE:	SCALES:
KR	MT	25.05.22	1:1000 at A3

vectos. | PART OF SLR
Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE
t: 02920 720 860 e: vectos@vectos.co.uk

DRAWING NUMBER:	REVISION:
195148_AT_C02	A



REV.	DETAILS	DRAWN	CHECKED	DATE
A	Updated Masterplan	KR	SB	10.08.22

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

LEGEND

- 2.4m x 25m VISIBILITY SPLAY
- 25m OPERATOR WALKING DISTANCE
- 30m DRAG DISTANCE

LAND WEST OF WINDMILL LANE, COWBRIDGE

REDROW

PROPOSED SITE PLAN
WASTE COLLECTION ZONES AND
VISIBILITY ASSESSMENTS

DRAWN:	CHECKED:	DATE:	SCALES:
KR	MT	25.05.22	1:1000 at A3

vectos. | PART OF SLR

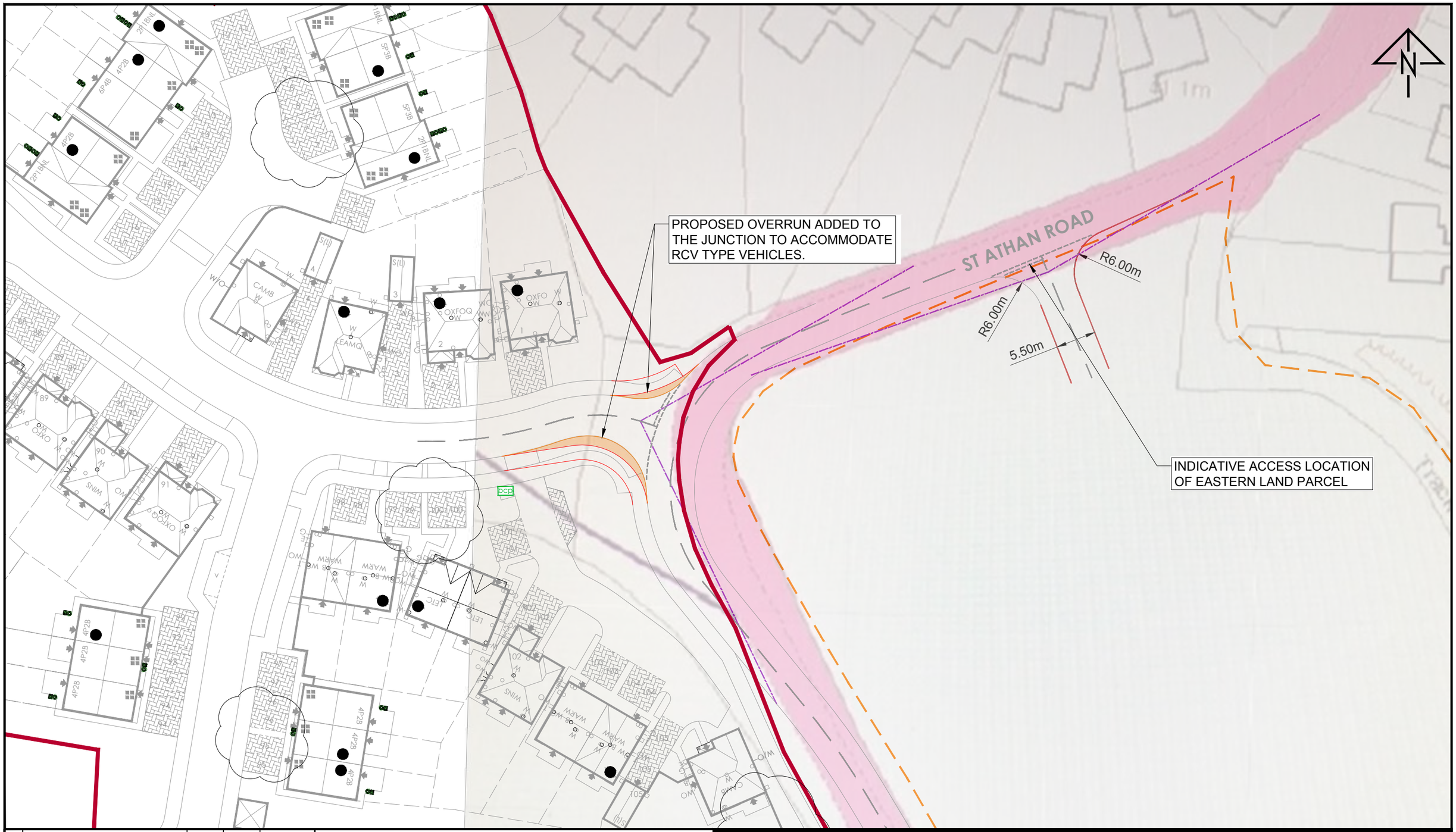
Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE
t: 02920 720 860 e: vectos@vectos.co.uk

DRAWING NUMBER:	REVISION:
195148_PD01	A

vectos.

Appendix E

Access Arrangements



REV.	DETAILS	DRAWN	CHECKED	DATE
A	MASTERPLAN ADDED	KR	MT	15.12.20
B	MASTERPLAN UPDATED	KR	MT	25.05.22
C	MASTERPLAN UPDATED	KR	SB	10.08.22
D	JUNCTION OVERRUN ADDED	KR	SB	06.12.22

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

LEGEND

- 2.4m x 40m VISIBILITY SPLAY
- LAND OWNERSHIP BOUNDARY
- 3RD PARTY LAND OWNERSHIP BOUNDARY
- ADOPTED HIGHWAY
- ADDITIONAL ADOPTED HIGHWAY

LAND WEST OF WINDMILL LANE, COWBRIDGE

REDROW

PROPOSED SITE ACCESS OPTION 4

vectos. | PART OF SLR
Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE
t: 02920 720 860 e: vectos@vectos.co.uk

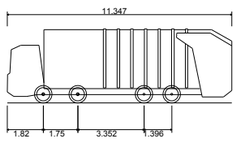
DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
KR	MT	09.12.20	1:500 at A3	195148_A04	D

REV.	DETAILS	DRAWN	CHECKED	DATE
A	MASTERPLAN ADDED	KR	MT	15.12.20
B	MASTERPLAN UPDATED	KR	MT	25.05.22
C	MASTERPLAN UPDATED	KR	SB	10.08.22
D	JUNCTION OVERRUN ADDED	KR	SB	06.12.22

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Large Refuse Vehicle (4 axle)



Overall Length	11.347m
Overall Width	2.500m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	11.330m

LAND WEST OF WINDMILL LANE, COWBRIDGE

REDROW

11.3m REFUSE VEHICLE SWEPT PATH ANALYSIS ST ATHANS ROAD JUNCTION

vectos. | PART OF SLR

Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE
t: 02920 720 860 e: vectos@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
KR	MT	09.12.20	1:500 at A3	195148_AT_A02	D

vectos.

Appendix F

TRICS reports

. . . Licence No: 152302

Calculation Reference: AUDIT-152302-220302-0322

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	2 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	1 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	4 days
04	**EAST ANGLIA**		
	NF	NORFOLK	2 days
	SF	SUFFOLK	1 days
06	**WEST MIDLANDS**		
	SH	SHROPSHIRE	1 days
09	**NORTH**		
	DH	DURHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 54 to 197 (units:)
Range Selected by User: 50 to 200 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 21/09/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	2 days
Wednesday	4 days
Thursday	4 days
Friday	3 days

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

Selected survey types:

Manual count	14 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	14

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	14

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	14 days

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

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
5,001 to 10,000	4 days
10,001 to 15,000	3 days
15,001 to 20,000	3 days
20,001 to 25,000	3 days

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

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	2 days
75,001 to 100,000	3 days
100,001 to 125,000	1 days
125,001 to 250,000	6 days

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

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	10 days
1.6 to 2.0	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	6 days
No	8 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	14 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 **DH-03-A-03** **SEMI-DETACHED & TERRACED** **DURHAM**
PILGRIMS WAY
DURHAM

Edge of Town
Residential Zone
Total No of Dwellings: 57
Survey date: FRIDAY *19/10/18* *Survey Type: MANUAL*

2 **ES-03-A-04** **MIXED HOUSES & FLATS** **EAST SUSSEX**
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

3 **ES-03-A-05** **MIXED HOUSES & FLATS** **EAST SUSSEX**
RATTLE ROAD
NEAR EASTBOURNE
STONE CROSS
Edge of Town
Residential Zone
Total No of Dwellings: 99
Survey date: WEDNESDAY *05/06/19* *Survey Type: MANUAL*

4 **HF-03-A-03** **MIXED HOUSES** **HERTFORDSHIRE**
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

5 **KC-03-A-04** **SEMI-DETACHED & TERRACED** **KENT**
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total No of Dwellings: 110
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

6 **NF-03-A-04** **MIXED HOUSES** **NORFOLK**
NORTH WALSHAM ROAD
NORTH WALSHAM

Edge of Town
Residential Zone
Total No of Dwellings: 70
Survey date: WEDNESDAY *18/09/19* *Survey Type: MANUAL*

7 **NF-03-A-25** **MIXED HOUSES & FLATS** **NORFOLK**
WOODFARM LANE
GORLESTON-ON-SEA

Edge of Town
Residential Zone
Total No of Dwellings: 55
Survey date: TUESDAY *21/09/21* *Survey Type: MANUAL*

8 **SC-03-A-04** **DETACHED & TERRACED** **SURREY**
HIGH ROAD
BYFLEET

Edge of Town
Residential Zone
Total No of Dwellings: 71
Survey date: THURSDAY *23/01/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	**SF-03-A-10**	**TERRACED & SEMI-DETACHED**	**SUFFOLK**
	LOVETOFTS DRIVE		
	IPSWICH		
	WHITEHOUSE		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	149	
	Survey date: TUESDAY	*22/06/21*	*Survey Type: MANUAL*
10	**SH-03-A-05**	**SEMI-DETACHED/ TERRACED**	**SHROPSHIRE**
	SANDCROFT		
	TELFORD		
	SUTTON HILL		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	54	
	Survey date: THURSDAY	*24/10/13*	*Survey Type: MANUAL*
11	**WS-03-A-04**	**MIXED HOUSES**	**WEST SUSSEX**
	HILLS FARM LANE		
	HORSHAM		
	BROADBRIDGE HEATH		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	151	
	Survey date: THURSDAY	*11/12/14*	*Survey Type: MANUAL*
12	**WS-03-A-08**	**MIXED HOUSES**	**WEST SUSSEX**
	ROUNDSTONE LANE		
	ANGMERING		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	180	
	Survey date: THURSDAY	*19/04/18*	*Survey Type: MANUAL*
13	**WS-03-A-10**	**MIXED HOUSES**	**WEST SUSSEX**
	TODDINGTON LANE		
	LITTLEHAMPTON		
	WICK		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	79	
	Survey date: WEDNESDAY	*07/11/18*	*Survey Type: MANUAL*
14	**WS-03-A-13**	**MIXED HOUSES & FLATS**	**WEST SUSSEX**
	LITTLEHAMPTON ROAD		
	WORTHING		
	WEST DURRINGTON		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	197	
	Survey date: WEDNESDAY	*23/06/21*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.78

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	112	0.074	14	112	0.296	14	112	0.370
08:00 - 09:00	14	112	0.140	**14**	**112**	**0.348**	**14**	**112**	**0.488**
09:00 - 10:00	14	112	0.146	14	112	0.167	14	112	0.313
10:00 - 11:00	14	112	0.141	14	112	0.178	14	112	0.319
11:00 - 12:00	14	112	0.153	14	112	0.168	14	112	0.321
12:00 - 13:00	14	112	0.159	14	112	0.156	14	112	0.315
13:00 - 14:00	14	112	0.184	14	112	0.159	14	112	0.343
14:00 - 15:00	14	112	0.178	14	112	0.208	14	112	0.386
15:00 - 16:00	14	112	0.269	14	112	0.181	14	112	0.450
16:00 - 17:00	14	112	0.273	14	112	0.160	14	112	0.433
17:00 - 18:00	**14**	**112**	**0.282**	14	112	0.156	14	112	0.438
18:00 - 19:00	14	112	0.275	14	112	0.159	14	112	0.434
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.274			2.336			4.610

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	54 - 197 (units:)
Survey date date range:	01/01/13 - 21/09/21
Number of weekdays (Monday-Friday):	14
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.78

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	112	0.110	14	112	0.503	14	112	0.613
08:00 - 09:00	14	112	0.227	**14**	**112**	**0.727**	**14**	**112**	**0.954**
09:00 - 10:00	14	112	0.241	14	112	0.295	14	112	0.536
10:00 - 11:00	14	112	0.232	14	112	0.311	14	112	0.543
11:00 - 12:00	14	112	0.261	14	112	0.287	14	112	0.548
12:00 - 13:00	14	112	0.252	14	112	0.276	14	112	0.528
13:00 - 14:00	14	112	0.317	14	112	0.255	14	112	0.572
14:00 - 15:00	14	112	0.306	14	112	0.335	14	112	0.641
15:00 - 16:00	**14**	**112**	**0.565**	14	112	0.331	14	112	0.896
16:00 - 17:00	14	112	0.526	14	112	0.298	14	112	0.824
17:00 - 18:00	14	112	0.498	14	112	0.264	14	112	0.762
18:00 - 19:00	14	112	0.489	14	112	0.284	14	112	0.773
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.024			4.166			8.190

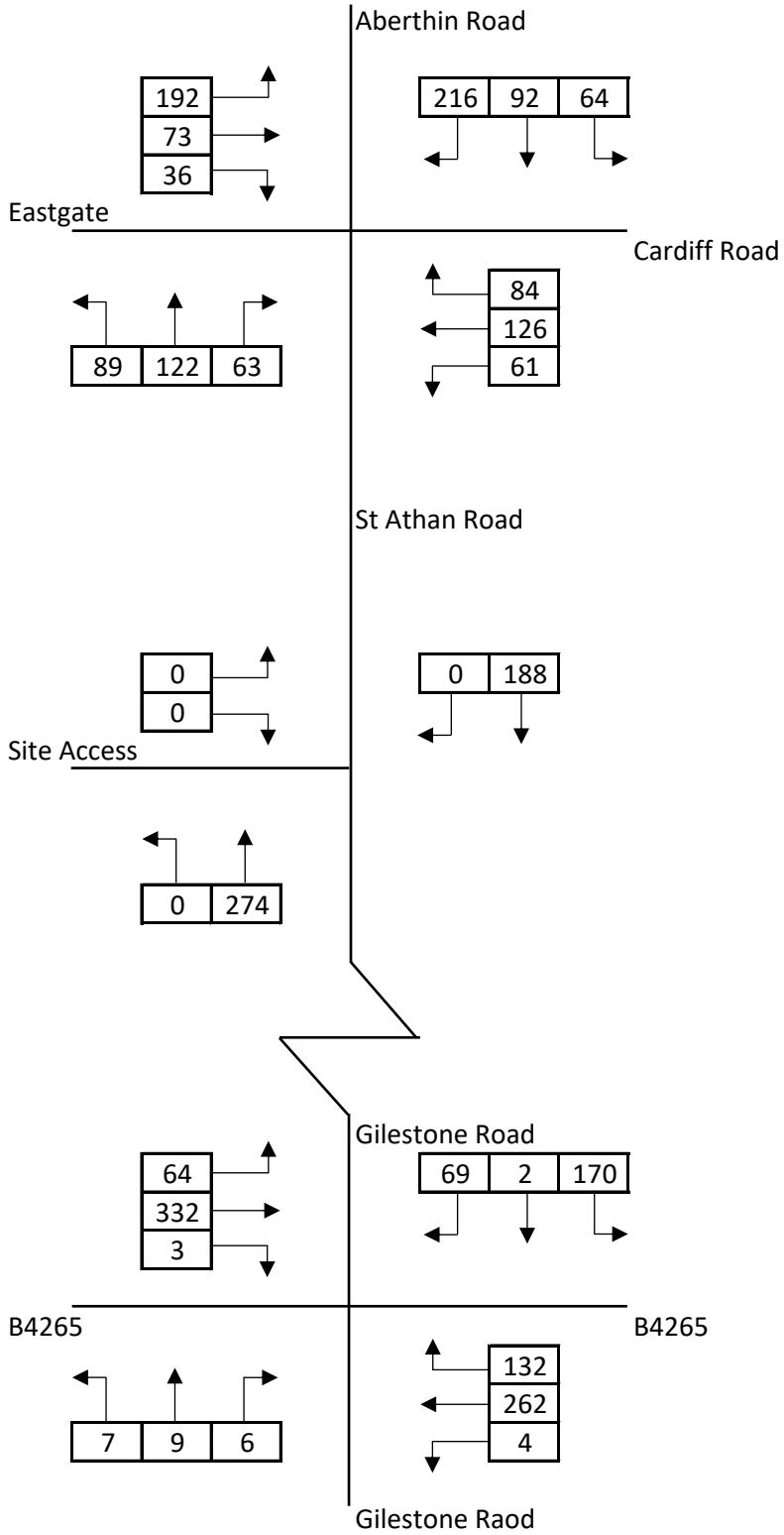
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP FACT. Trip rates are then rounded to 3 decimal places.*

Appendix G

Flow Diagrams

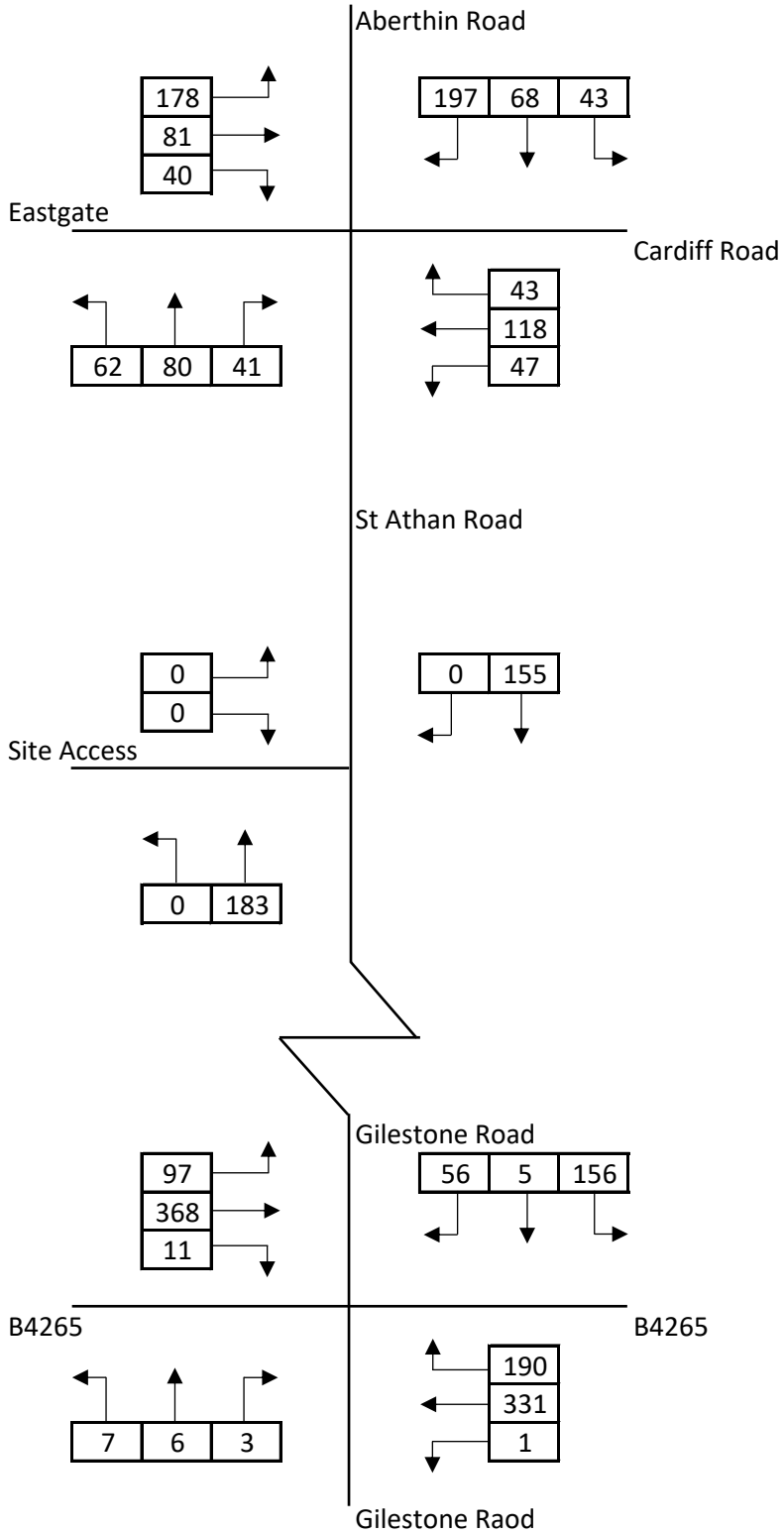
2022 Observed (08:00-09:00) - PCU



	A	B	C	D
A		64	92	216
B	84		61	126
C	122	63		89
D	192	73	36	

	A	B	C
A		0	274
B	0		0
C	188	0	

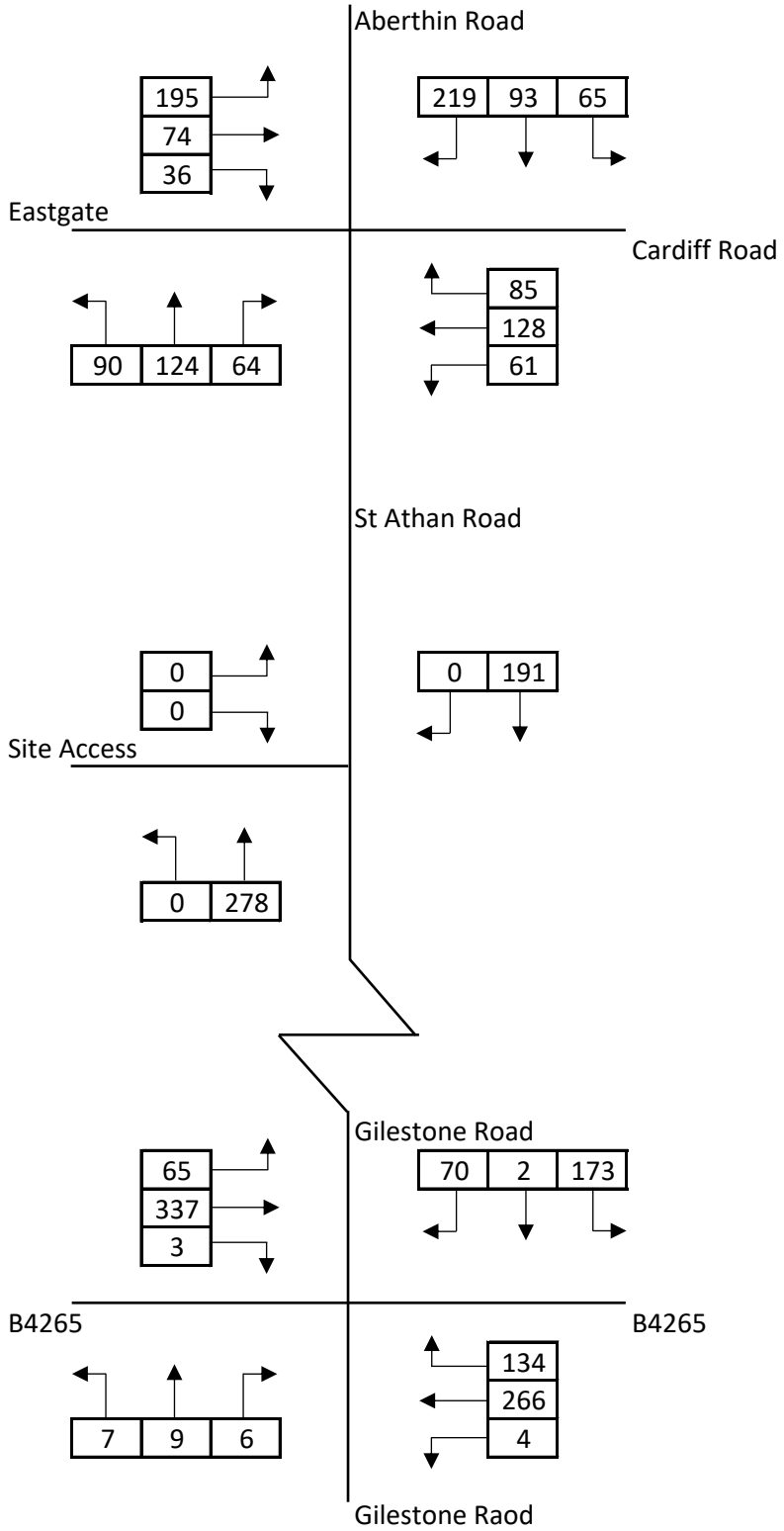
2022 Observed (16:00-17:00) - PCU



	A	B	C	D
A		43	68	197
B	43		47	118
C	80	41		62
D	178	81	40	

	A	B	C
A		0	183
B	0		0
C	155	0	

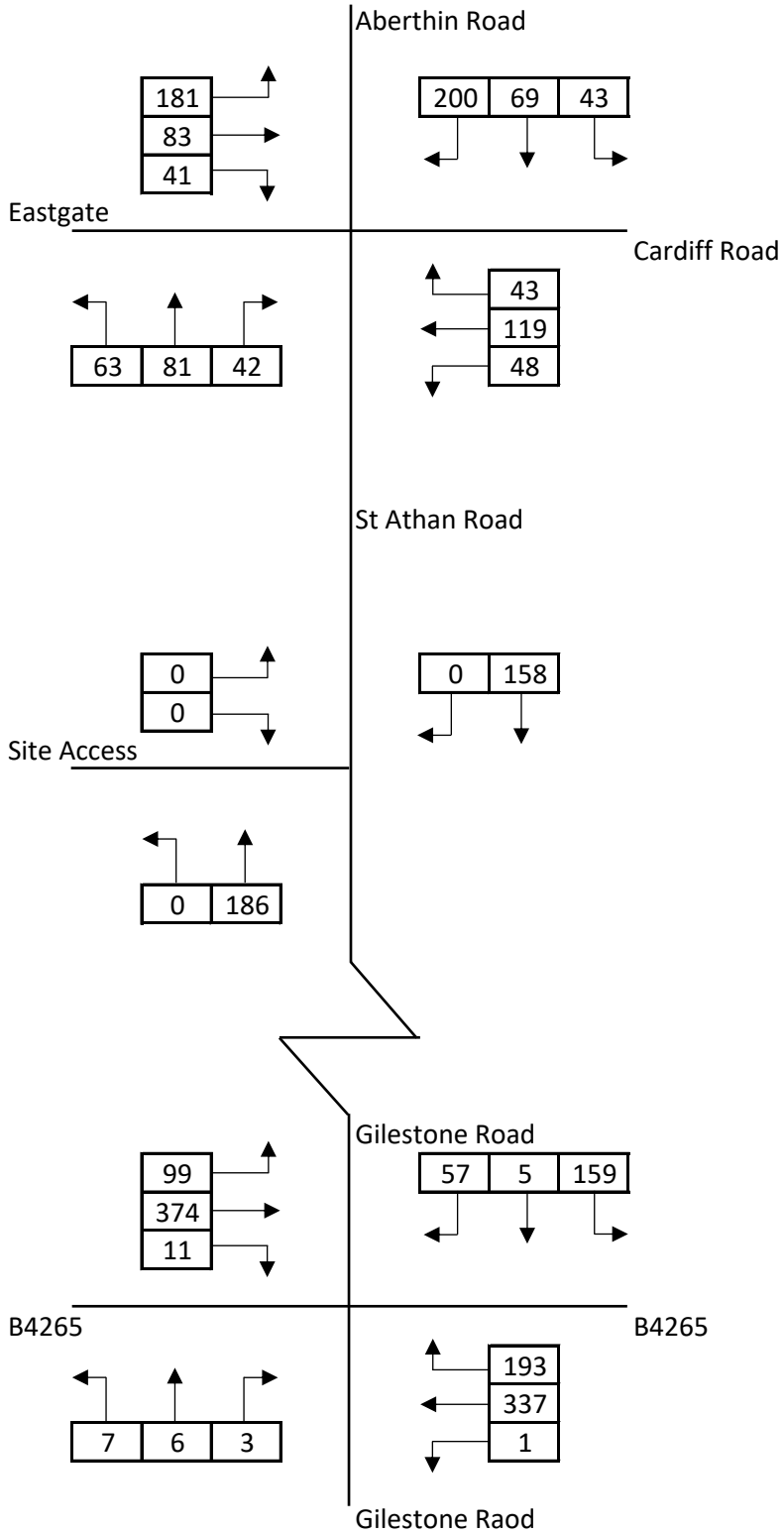
2024 Future AM - PCU



	A	B	C	D
A		65	93	219
B	85		61	128
C	124	64		90
D	195	74	36	

	A	B	C
A		0	278
B	0		0
C	191	0	

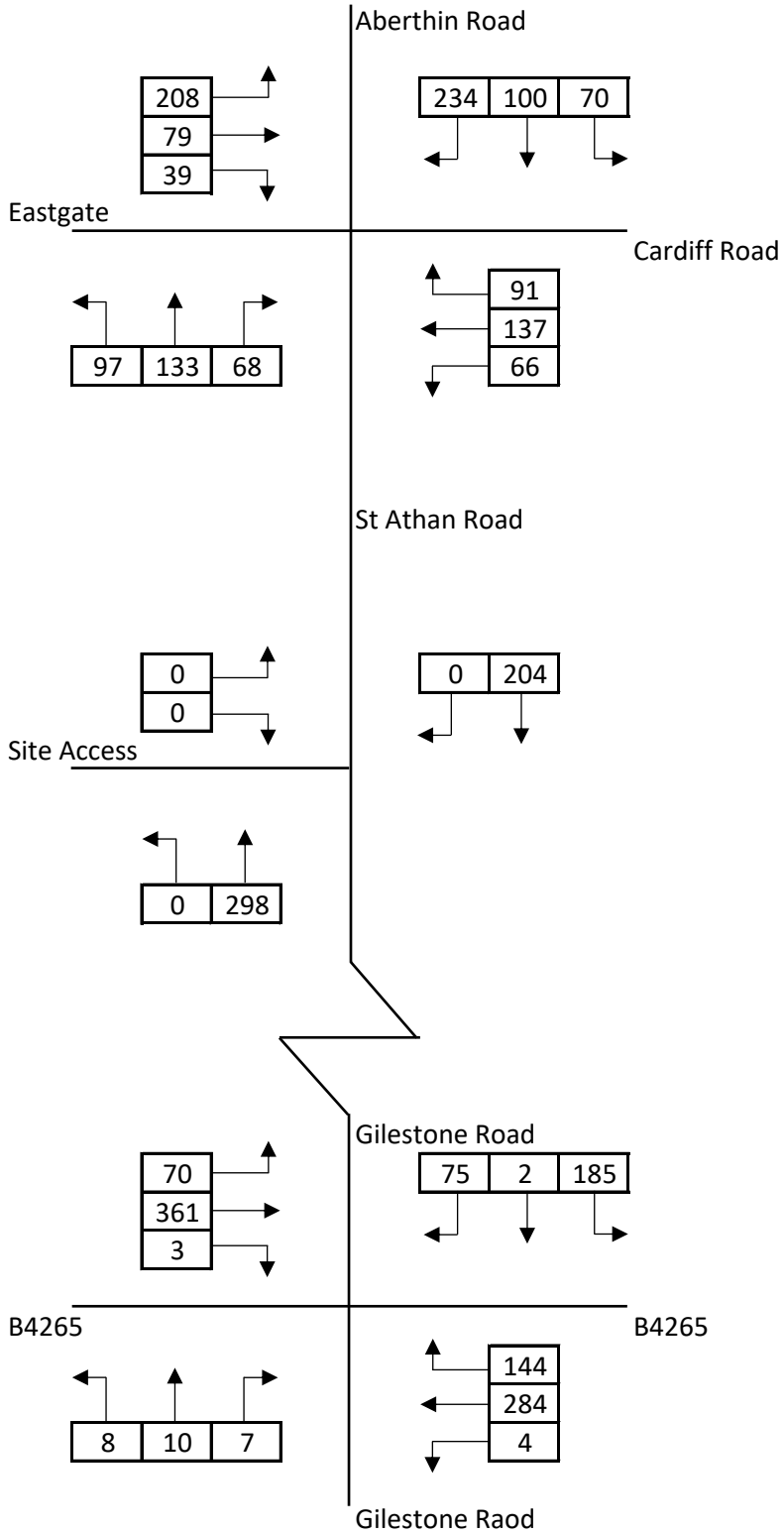
2024 Future PM - PCU



	A	B	C	D
A		43	69	200
B	43		48	119
C	81	42		63
D	181	83	41	

	A	B	C
A		0	186
B	0		0
C	158	0	

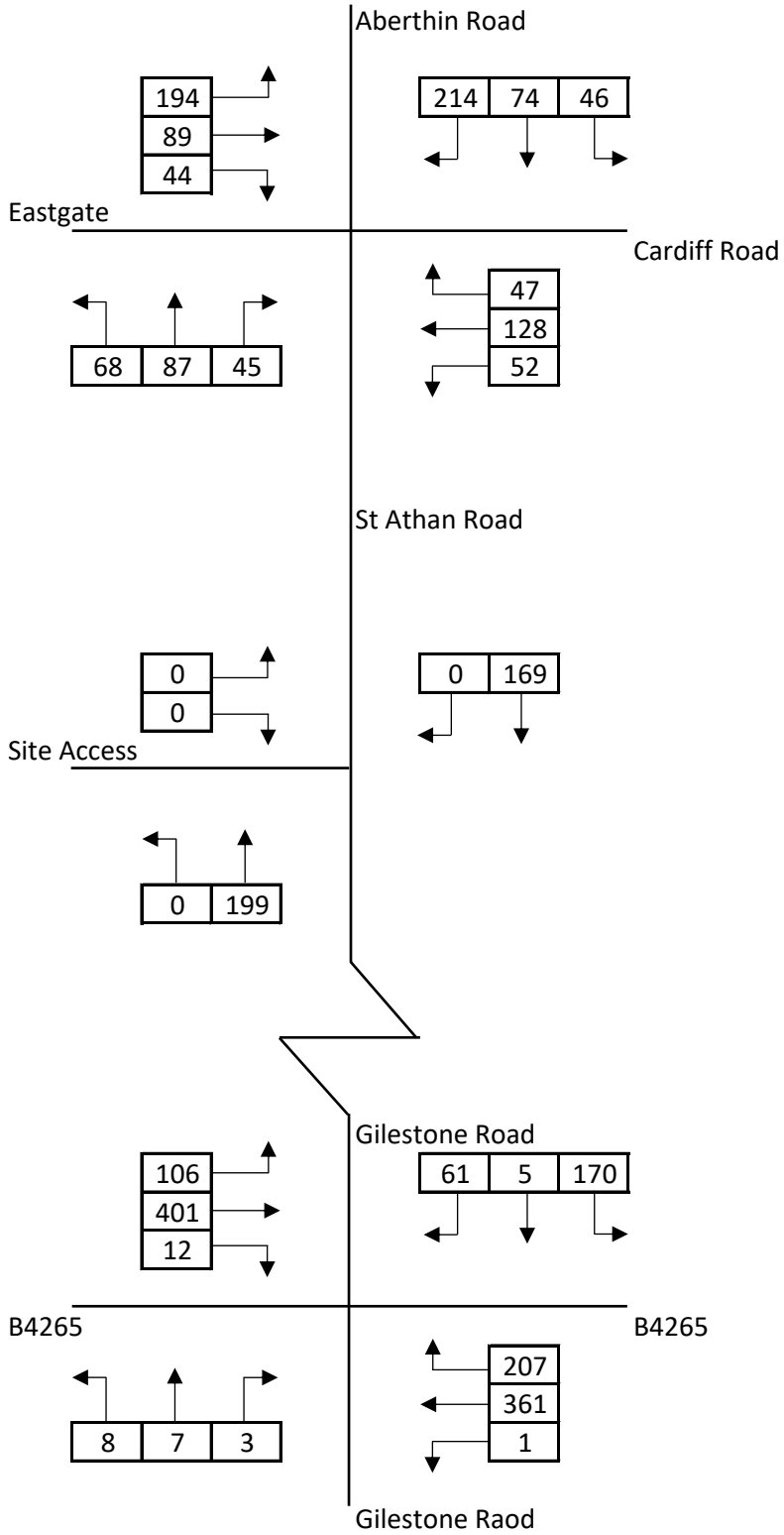
2034 Future AM - PCU



	A	B	C	D
A		70	100	234
B	91		66	137
C	133	68		97
D	208	79	39	

	A	B	C
A		0	298
B	0		0
C	204	0	

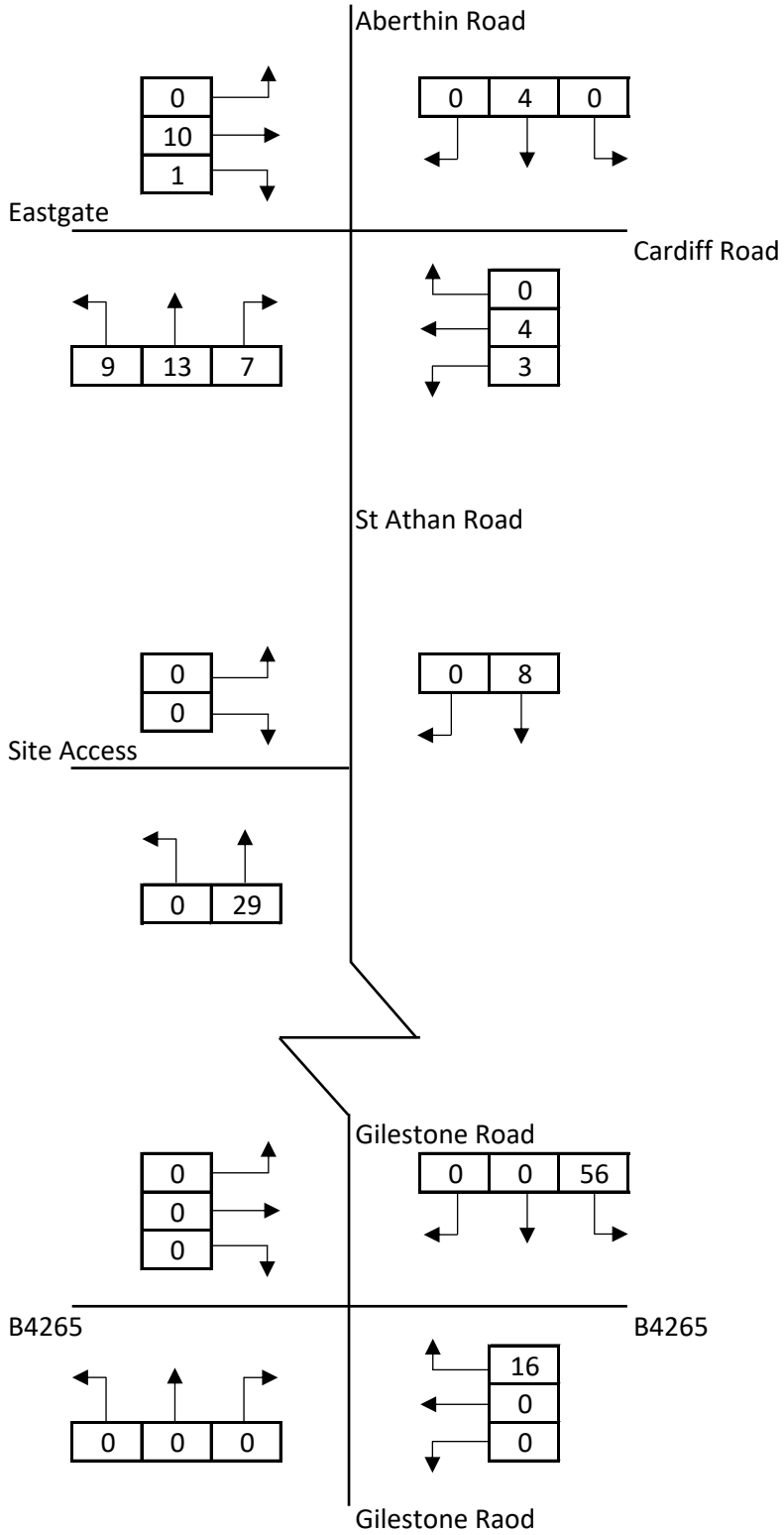
2034 Future PM - PCU



	A	B	C	D
A		46	74	214
B	47		52	128
C	87	45		68
D	194	89	44	

	A	B	C
A		0	199
B	0		0
C	169	0	

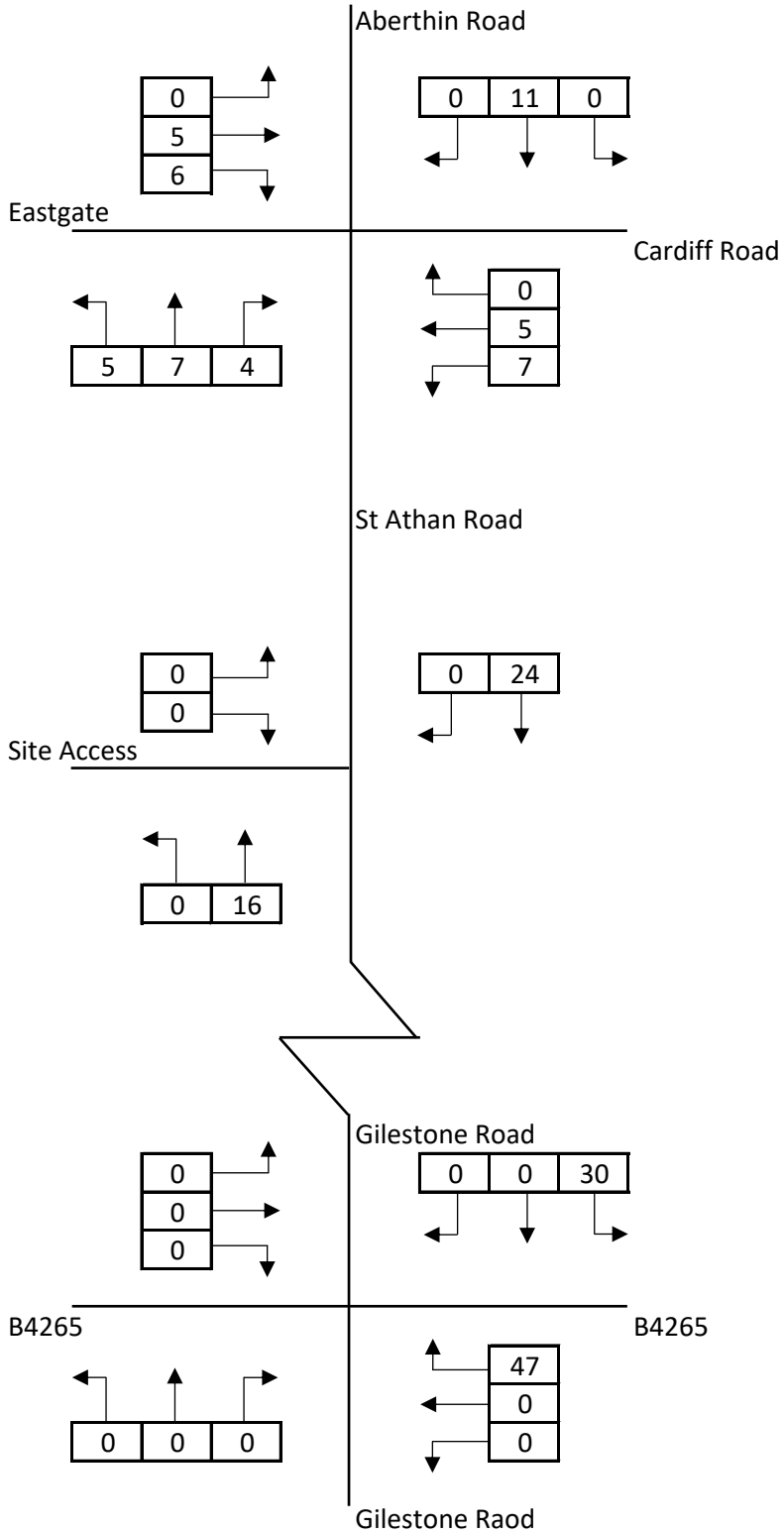
Total Committed AM



	A	B	C	D
A		0	4	0
B	0		3	4
C	13	7		9
D	0	10	1	

	A	B	C
A		0	29
B	0		0
C	8	0	

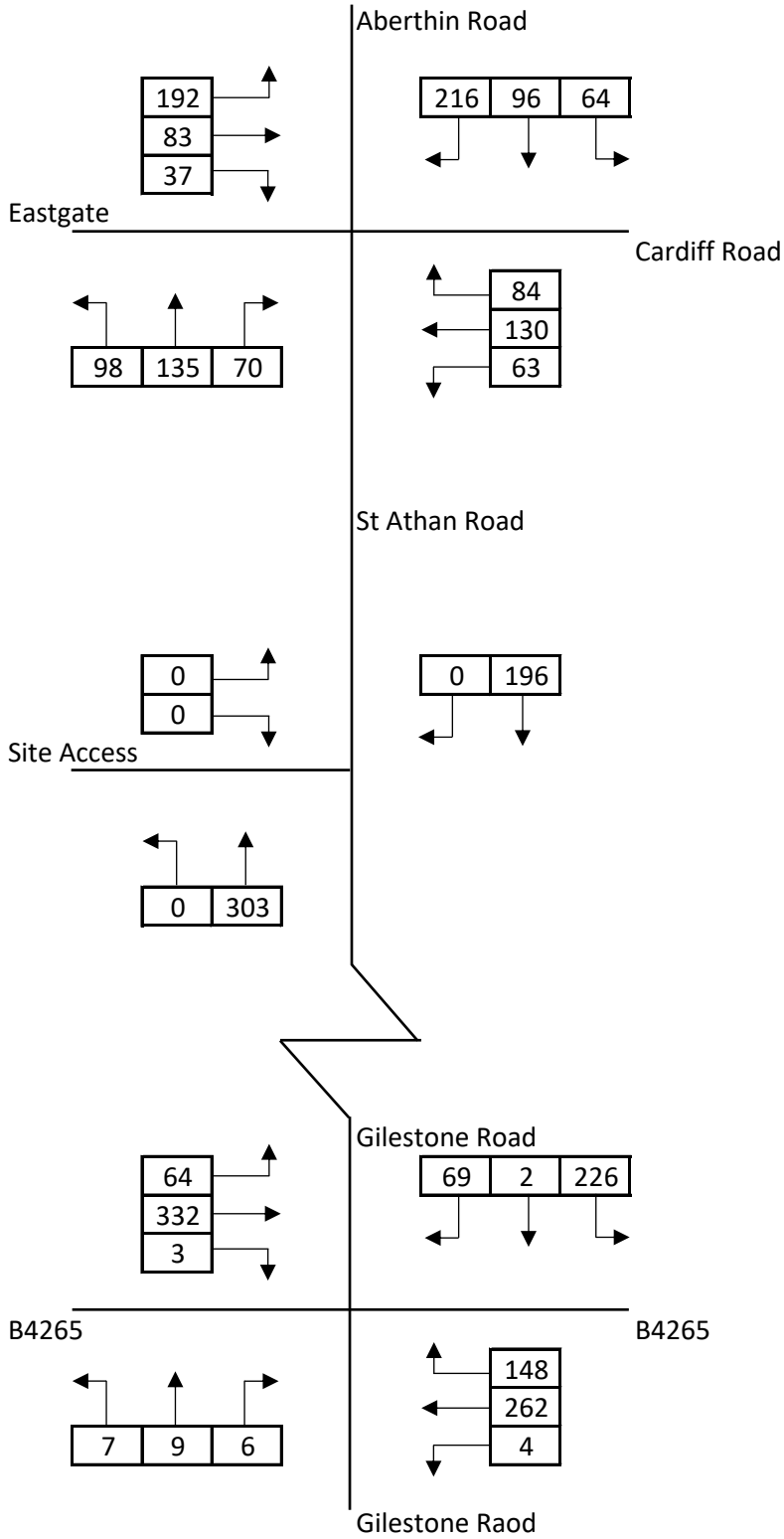
Total Committed PM



	A	B	C	D
A		0	11	0
B	0		7	5
C	7	4		5
D	0	5	6	

	A	B	C
A		0	16
B	0		0
C	24	0	

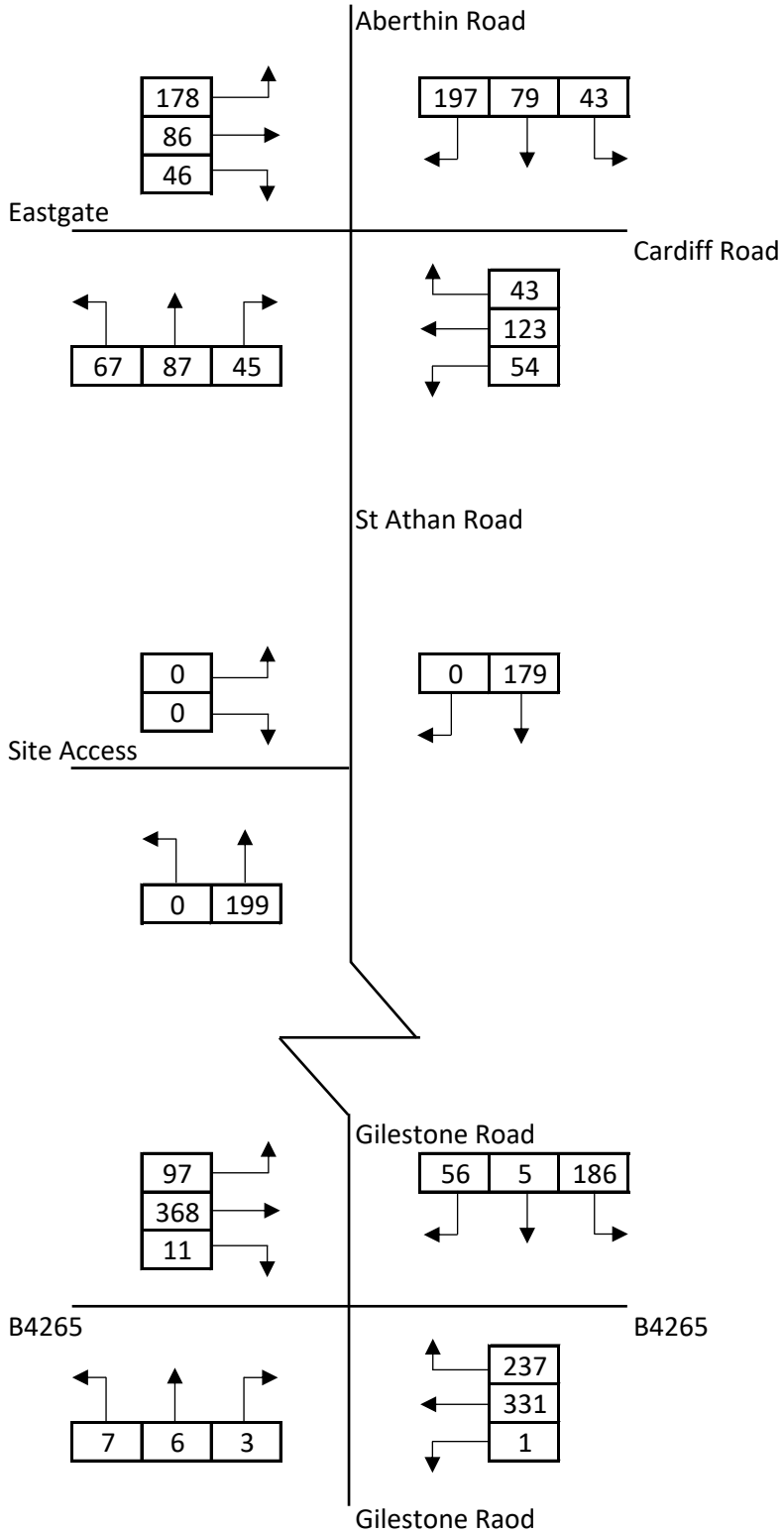
2022 + Committed AM - PCU



	A	B	C	D
A		64	96	216
B	84		63	130
C	135	70		98
D	192	83	37	

	A	B	C
A		0	303
B	0		0
C	196	0	

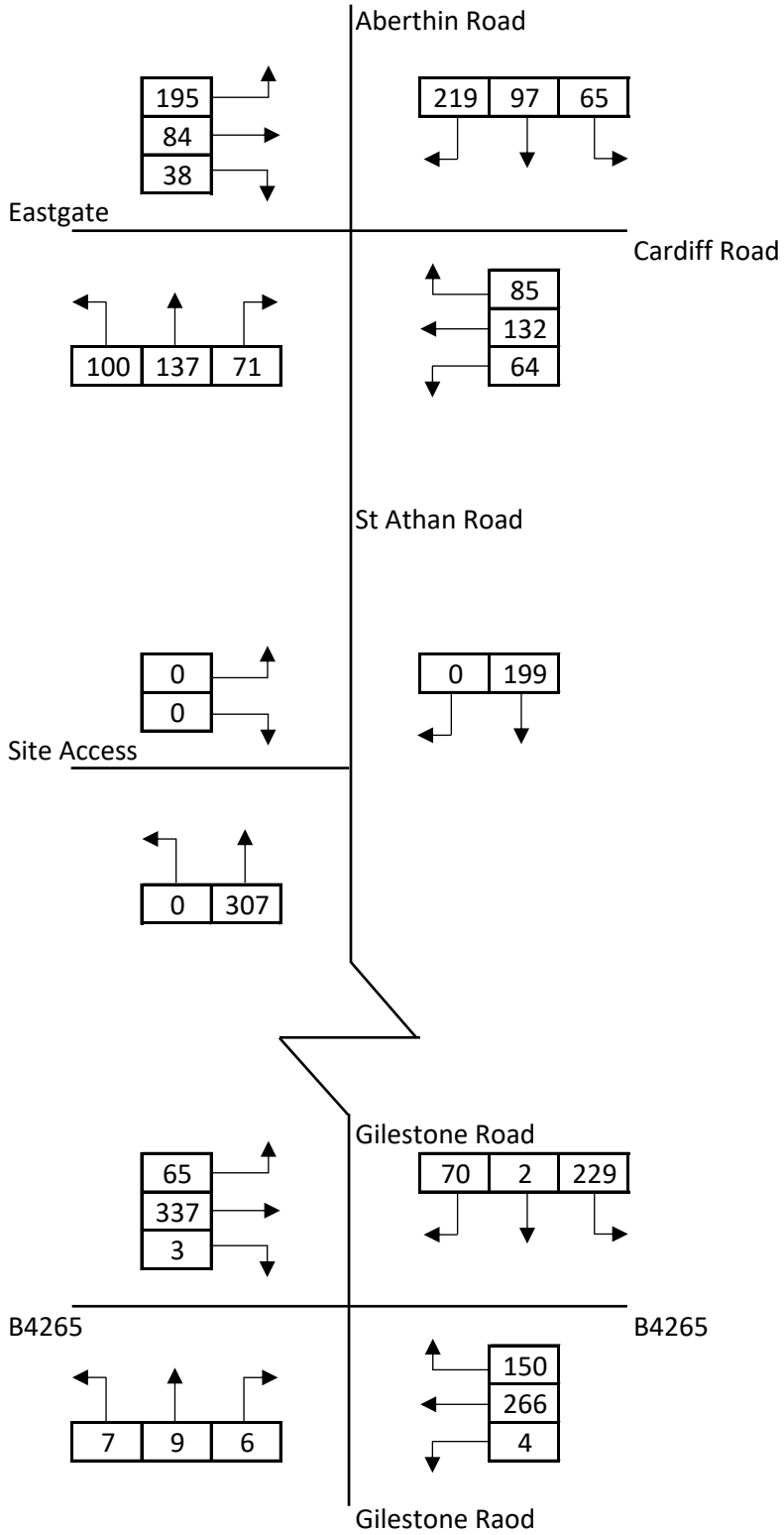
2022 + Committed PM - PCU



	A	B	C	D
A		43	79	197
B	43		54	123
C	87	45		67
D	178	86	46	

	A	B	C
A		0	199
B	0		0
C	179	0	

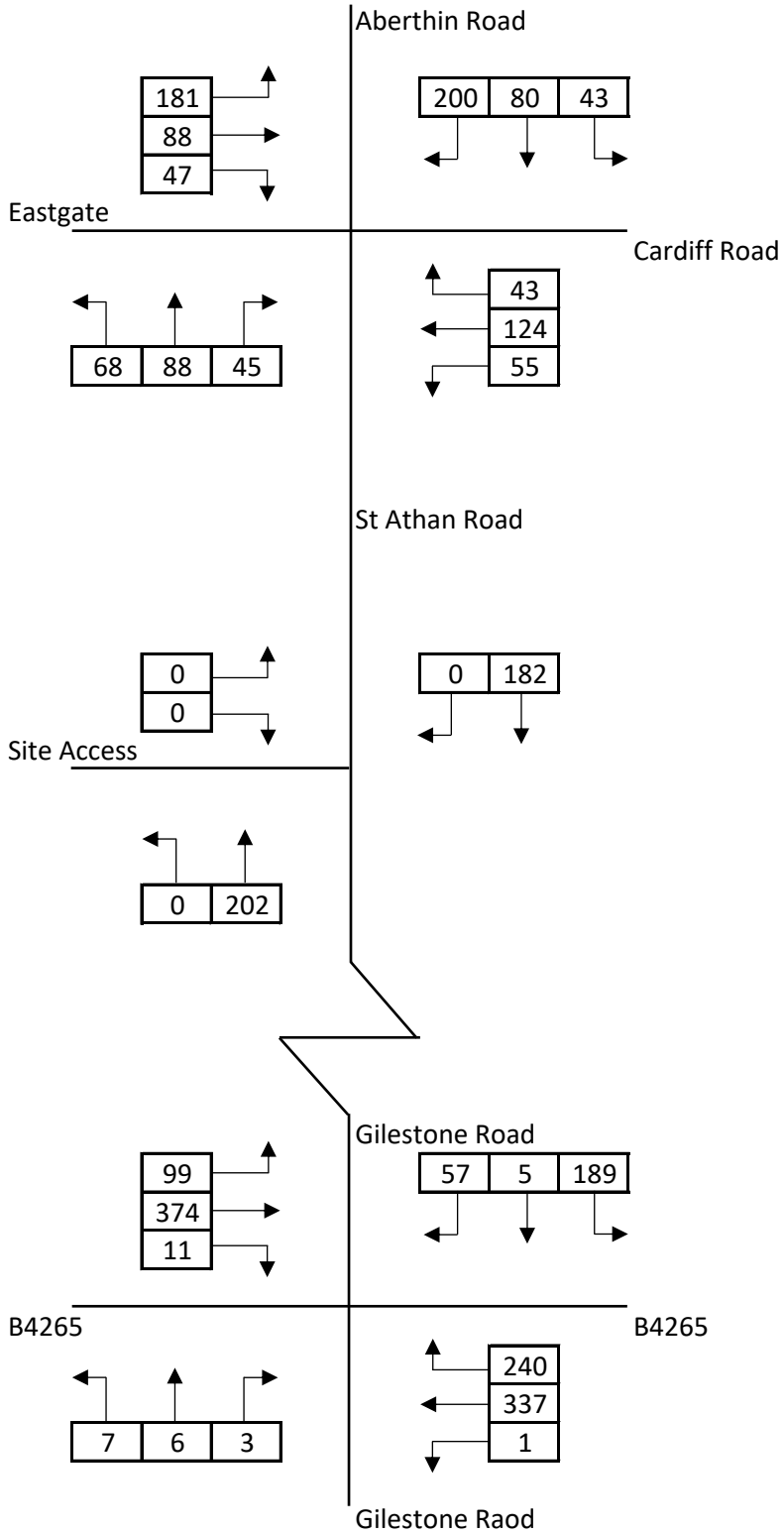
2024 + Committed AM - PCU



	A	B	C	D
A		65	97	219
B	85		64	132
C	137	71		100
D	195	84	38	

	A	B	C
A		0	307
B	0		0
C	199	0	

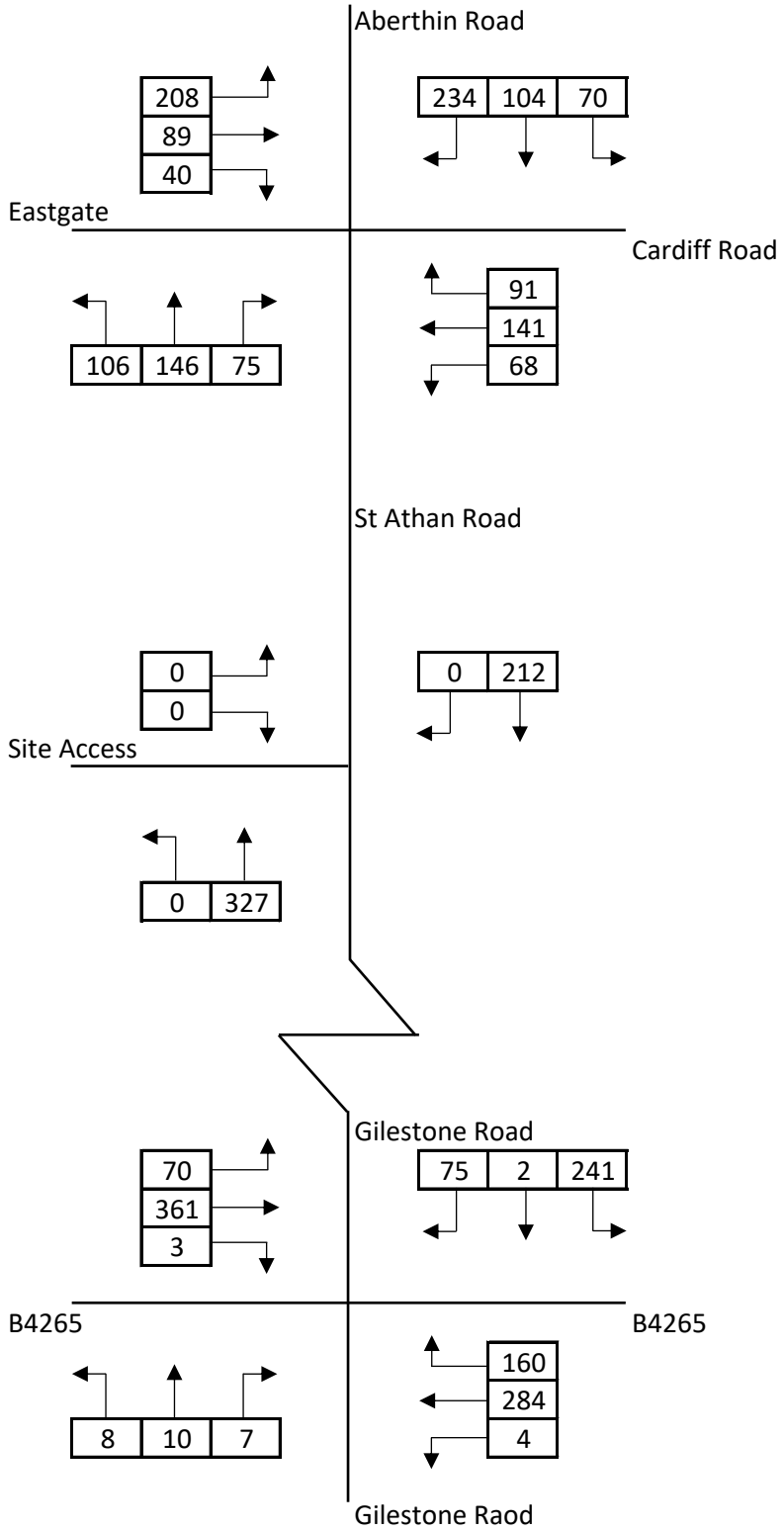
2024 + Committed PM - PCU



	A	B	C	D
A		43	80	200
B	43		55	124
C	88	45		68
D	181	88	47	

	A	B	C
A		0	202
B	0		0
C	182	0	

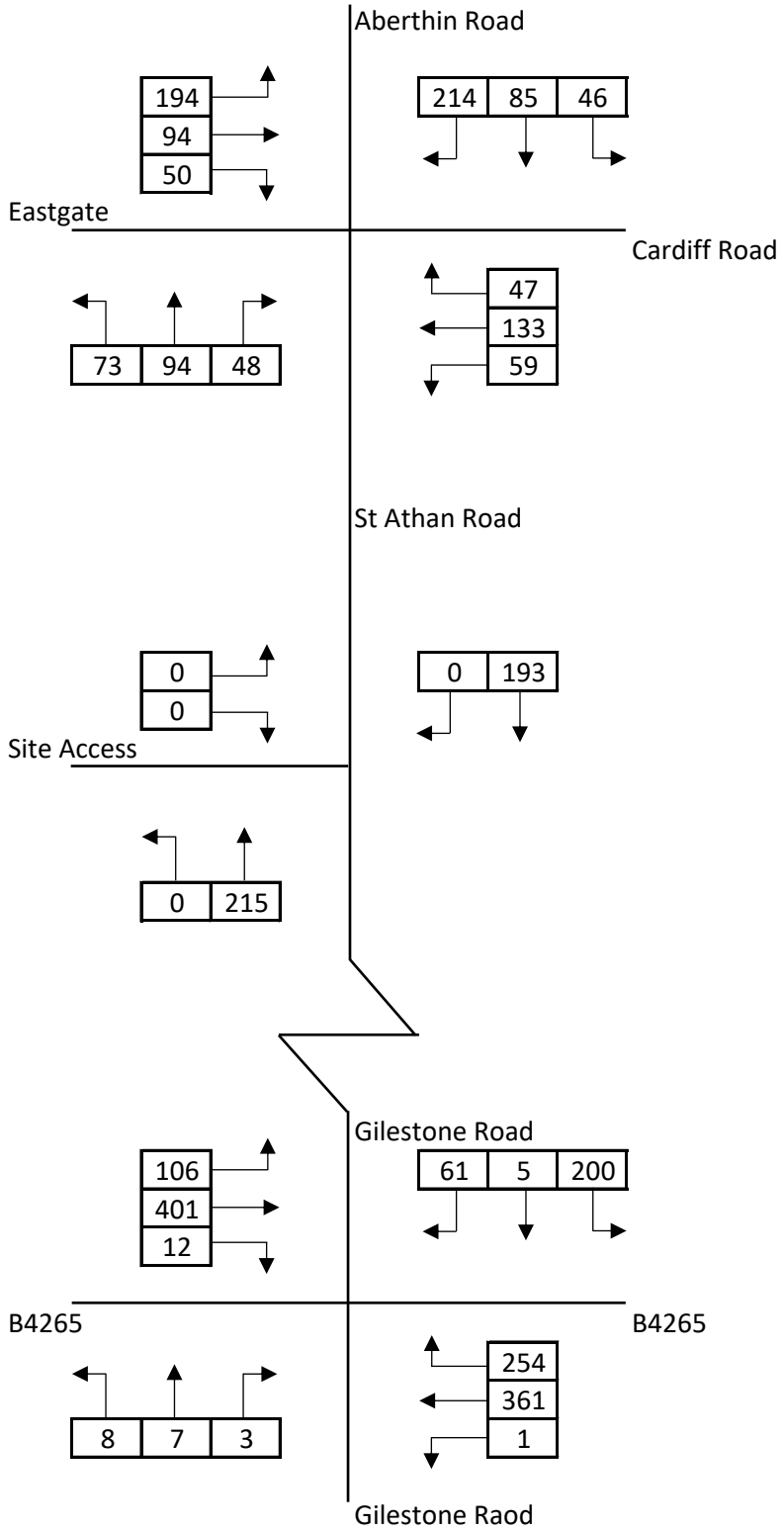
2034 + Committed AM - PCU



	A	B	C	D
A		70	104	234
B	91		68	141
C	146	75		106
D	208	89	40	

	A	B	C
A		0	327
B	0		0
C	212	0	

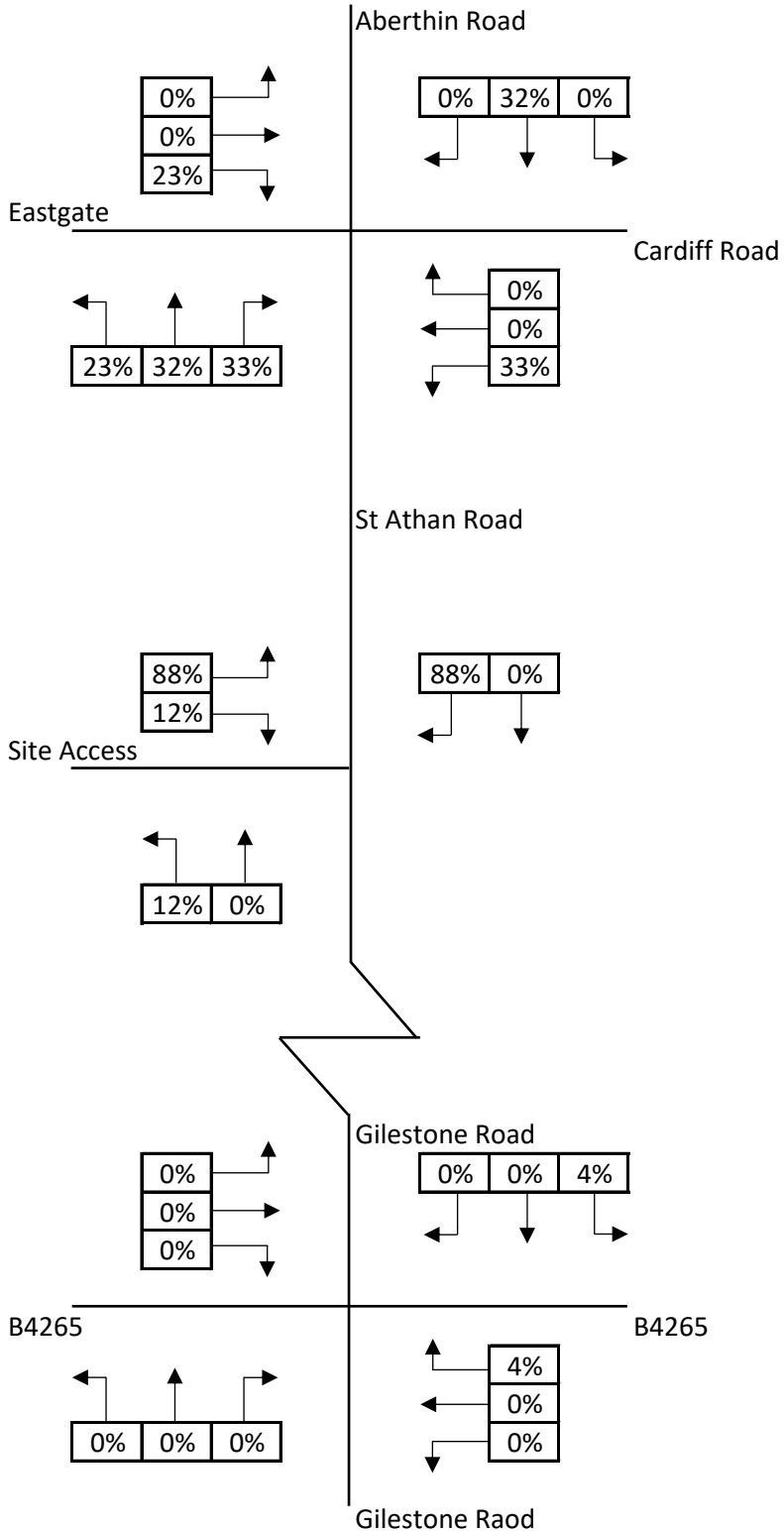
2034 + Committed PM - PCU



	A	B	C	D
A		46	85	214
B	47		59	133
C	94	48		73
D	194	94	50	

	A	B	C
A		0	215
B	0		0
C	193	0	

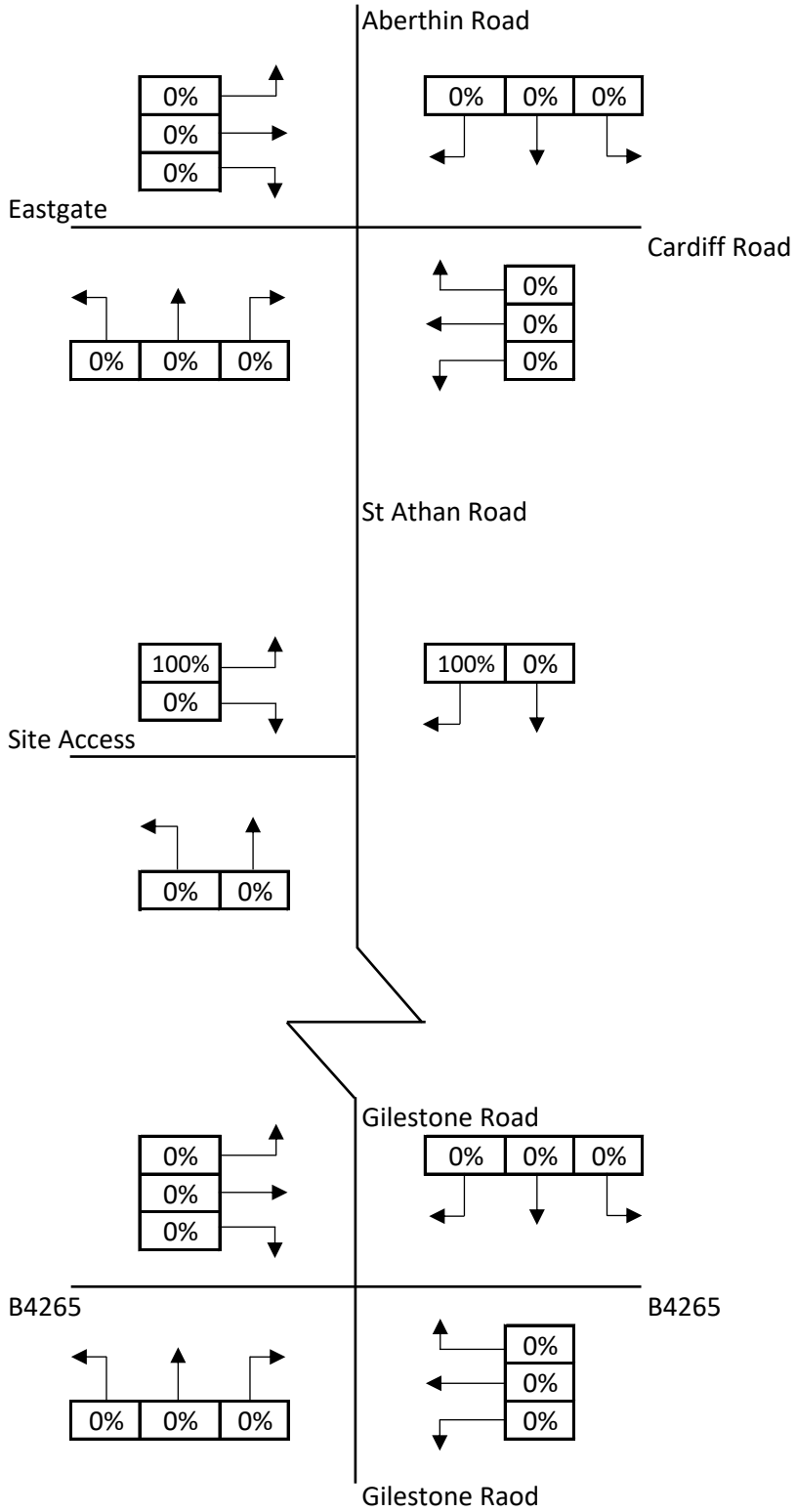
Commuting/Leisure Distribution



	A	B	C	D
A		0%	32%	0%
B	0%		33%	0%
C	32%	33%		23%
D	0%	0%	23%	

	A	B	C
A		12%	0%
B	12%		88%
C	0%	88%	

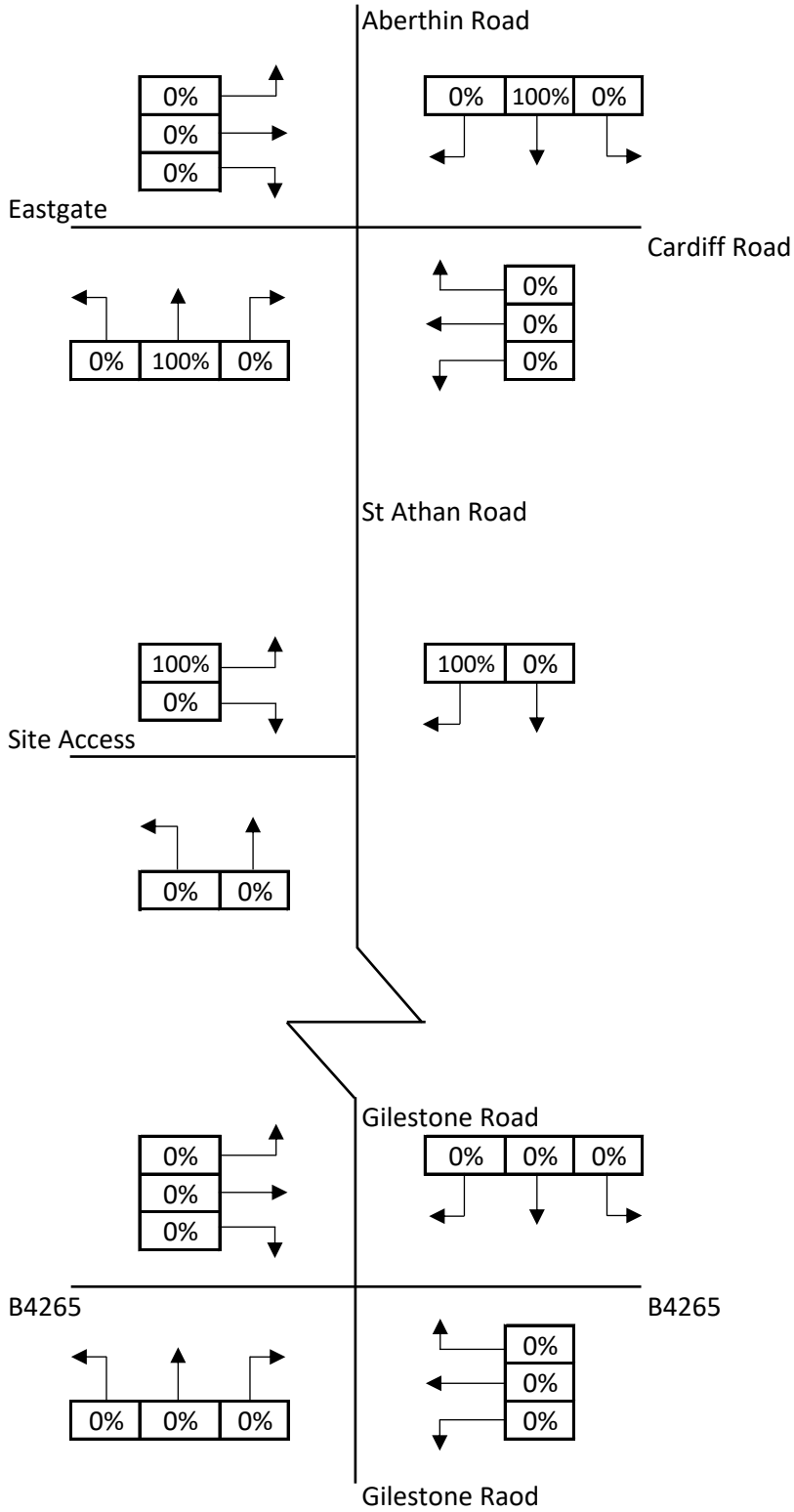
Primary Education Distribution



	A	B	C	D
A		0%	0%	0%
B	0%		0%	0%
C	0%	0%		0%
D	0%	0%	0%	

	A	B	C
A		0%	0%
B	0%		####
C	0%	####	

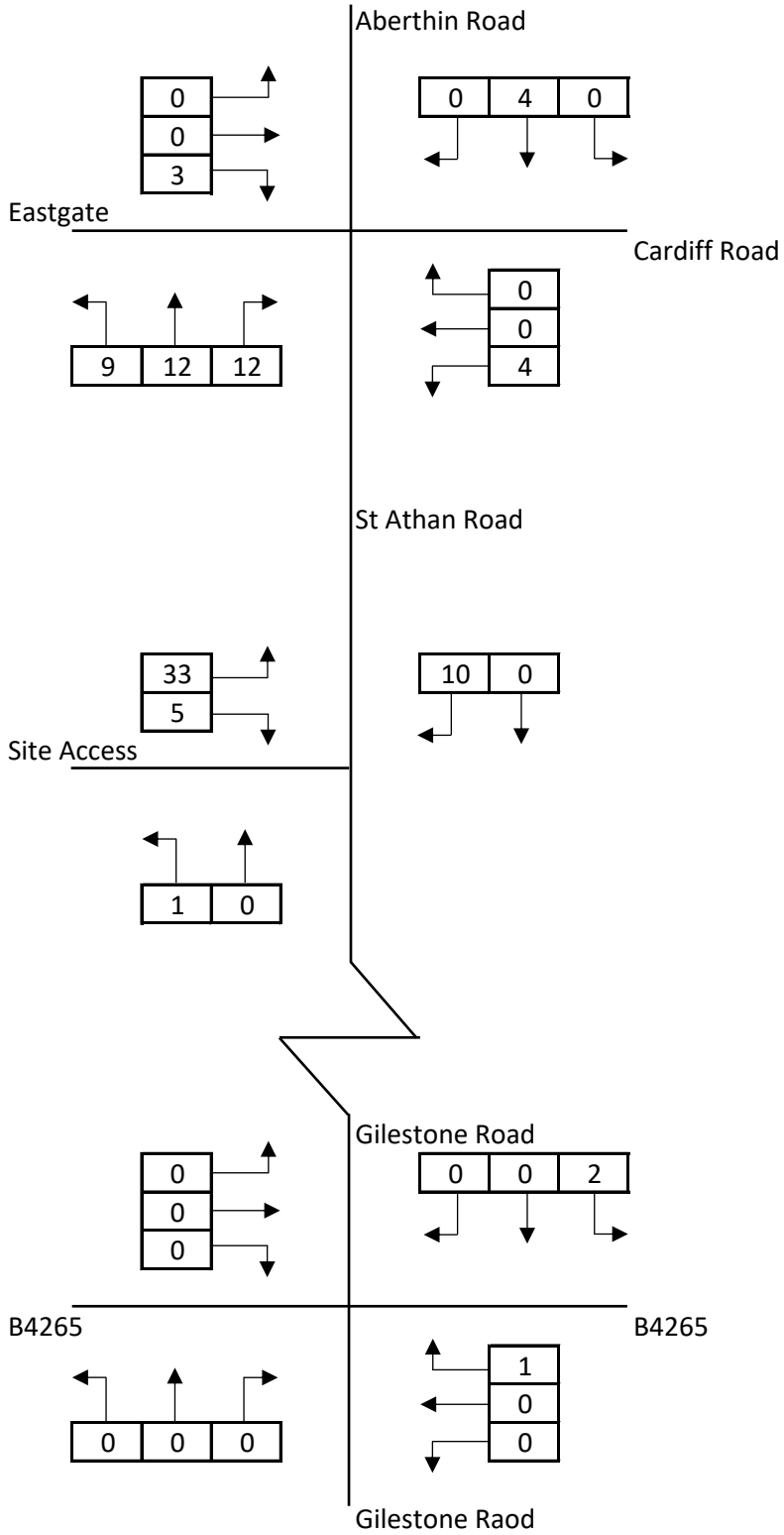
Secondary Education Distribution



	A	B	C	D
A		0%	####	0%
B	0%		0%	0%
C	####	0%		0%
D	0%	0%	0%	

	A	B	C
A		0%	0%
B	0%		####
C	0%	####	

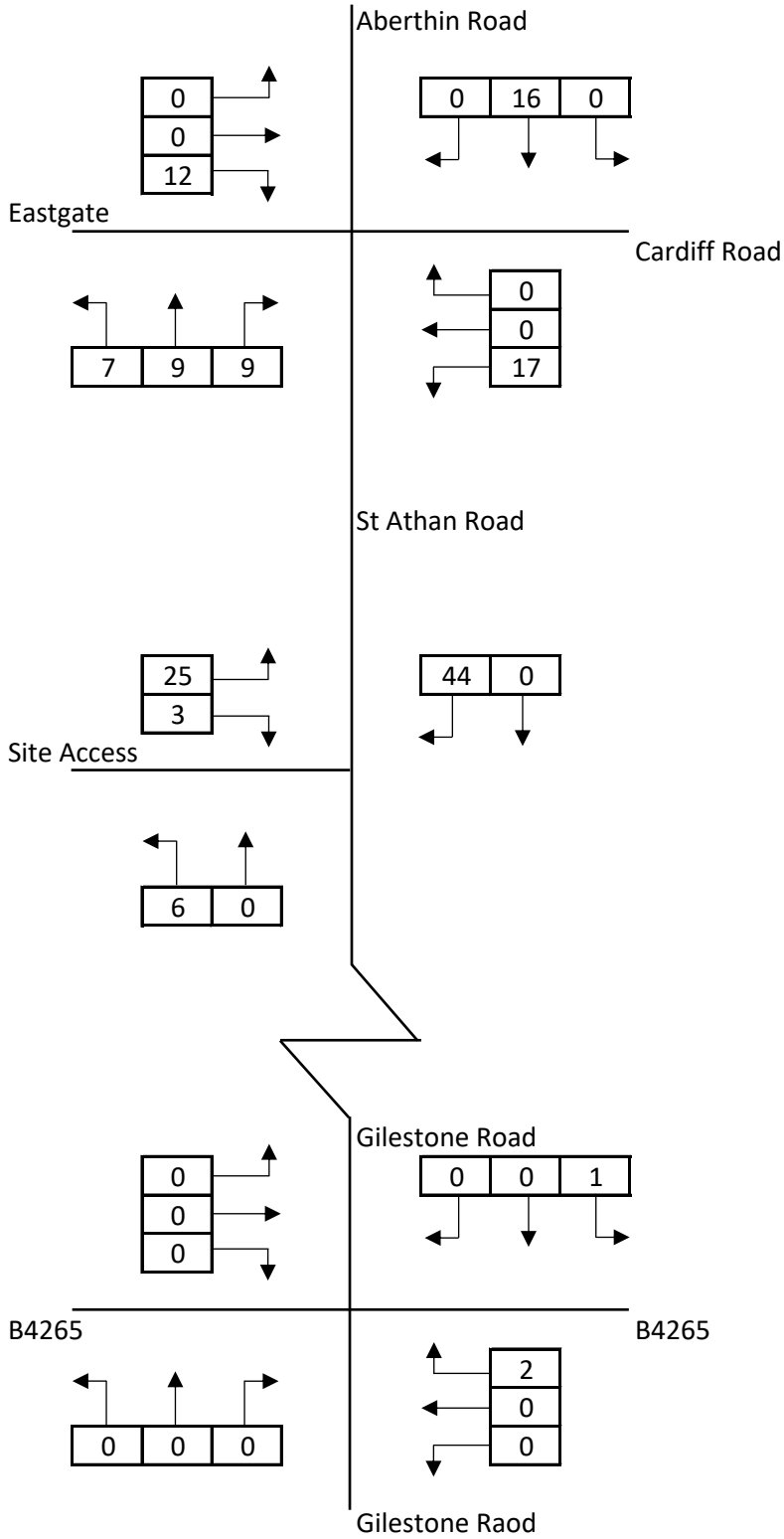
Commuting/Leisure AM



	A	B	C	D
A		0	4	0
B	0		4	0
C	12	12		9
D	0	0	3	

	A	B	C
A		1	0
B	5		33
C	0	10	

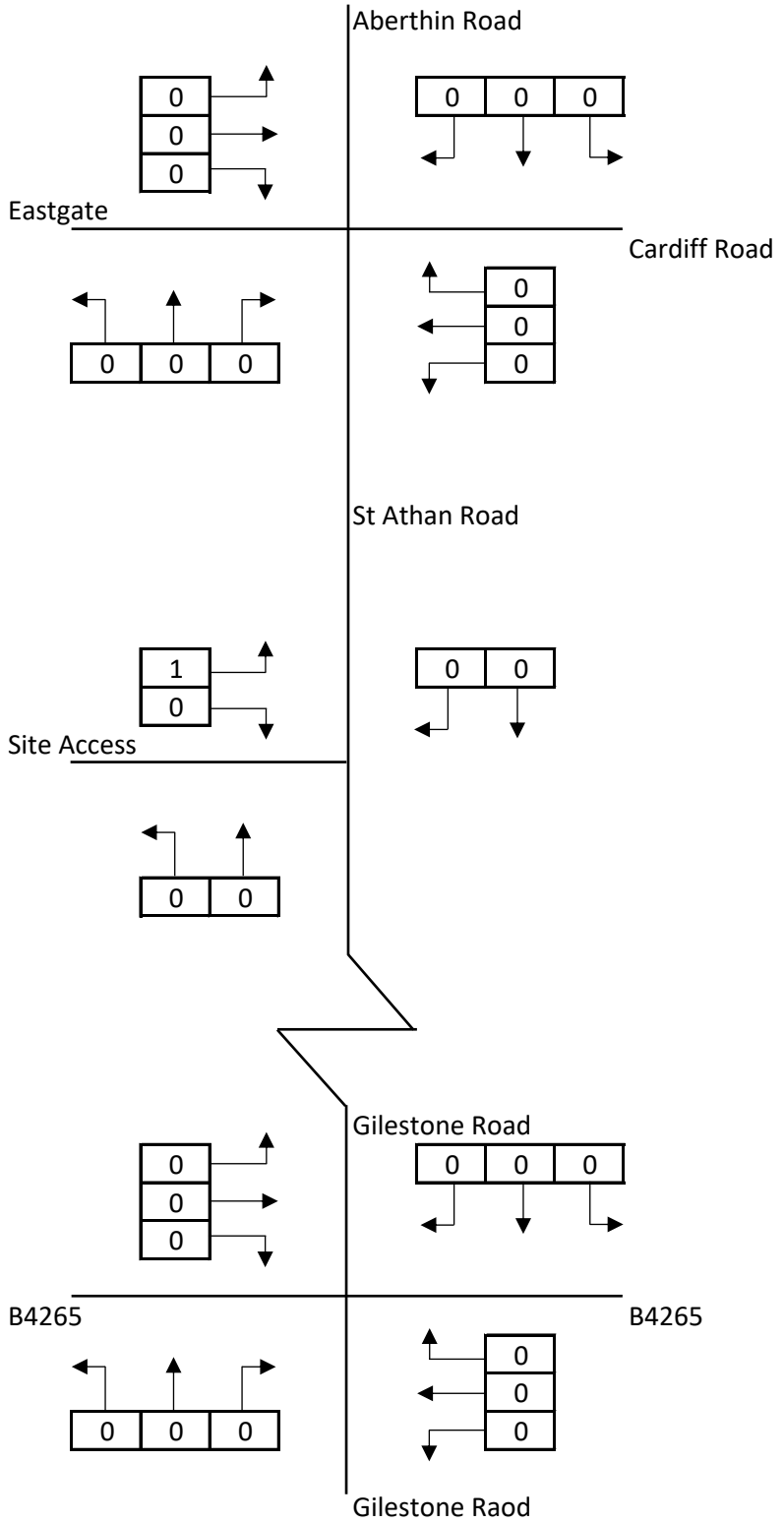
Commuting/Leisure PM



	A	B	C	D
A		0	16	0
B	0		17	0
C	9	9		7
D	0	0	12	

	A	B	C
A		6	0
B	3		25
C	0	44	

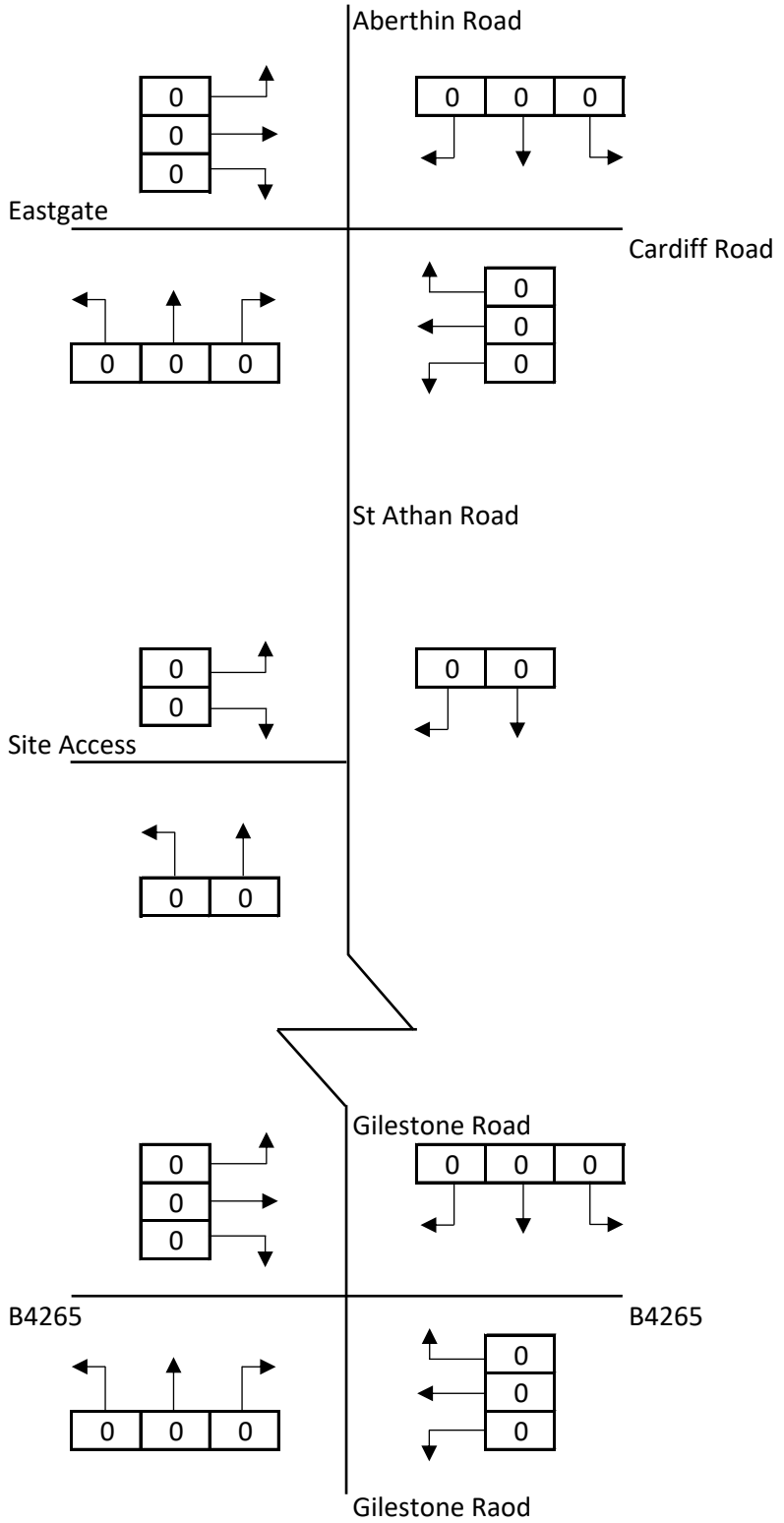
Primary Education AM



	A	B	C	D
A		0	0	0
B	0		0	0
C	0	0		0
D	0	0	0	

	A	B	C
A		0	0
B	0		1
C	0	0	

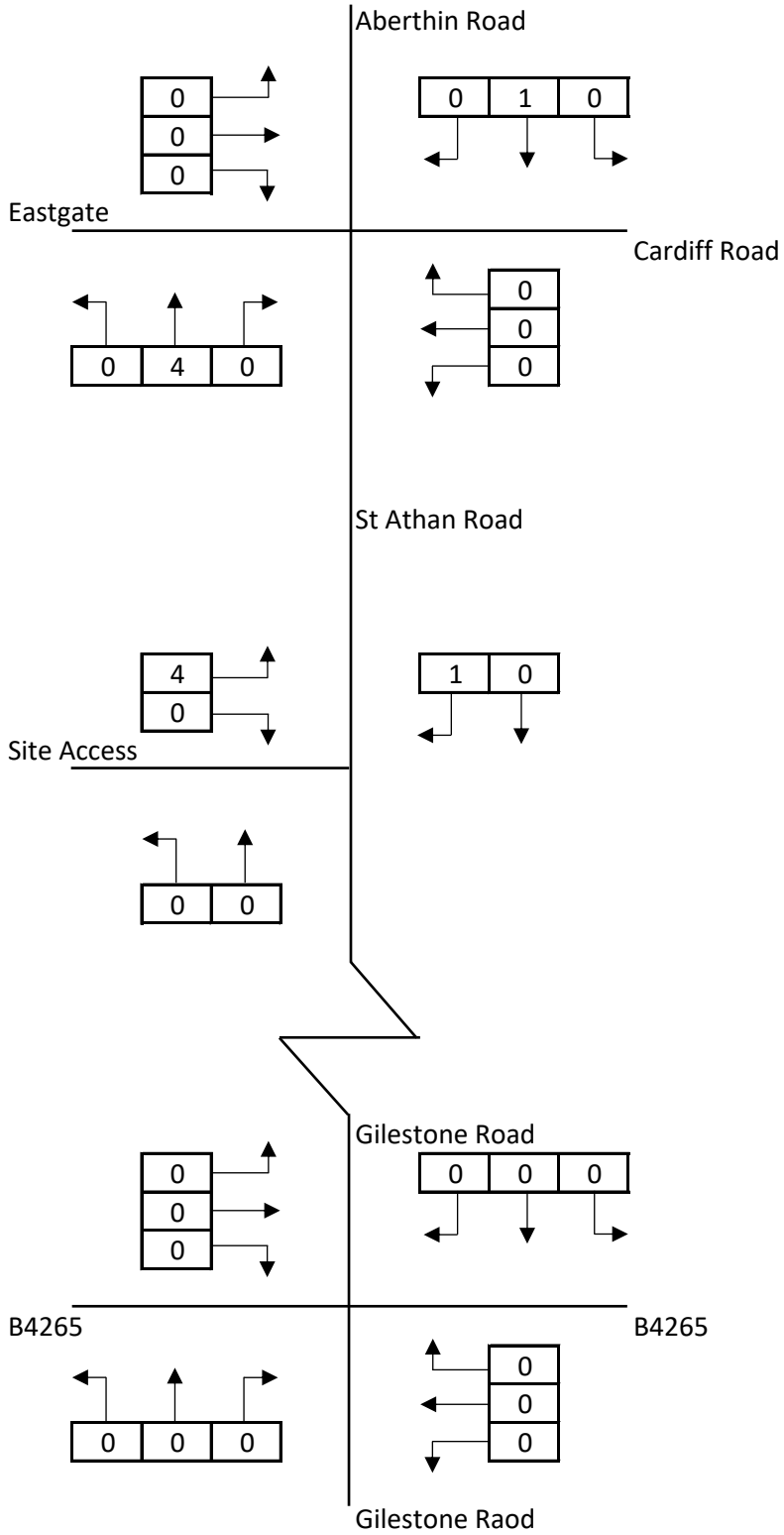
Primary Education PM



	A	B	C	D
A		0	0	0
B	0		0	0
C	0	0		0
D	0	0	0	

	A	B	C
A		0	0
B	0		0
C	0	0	

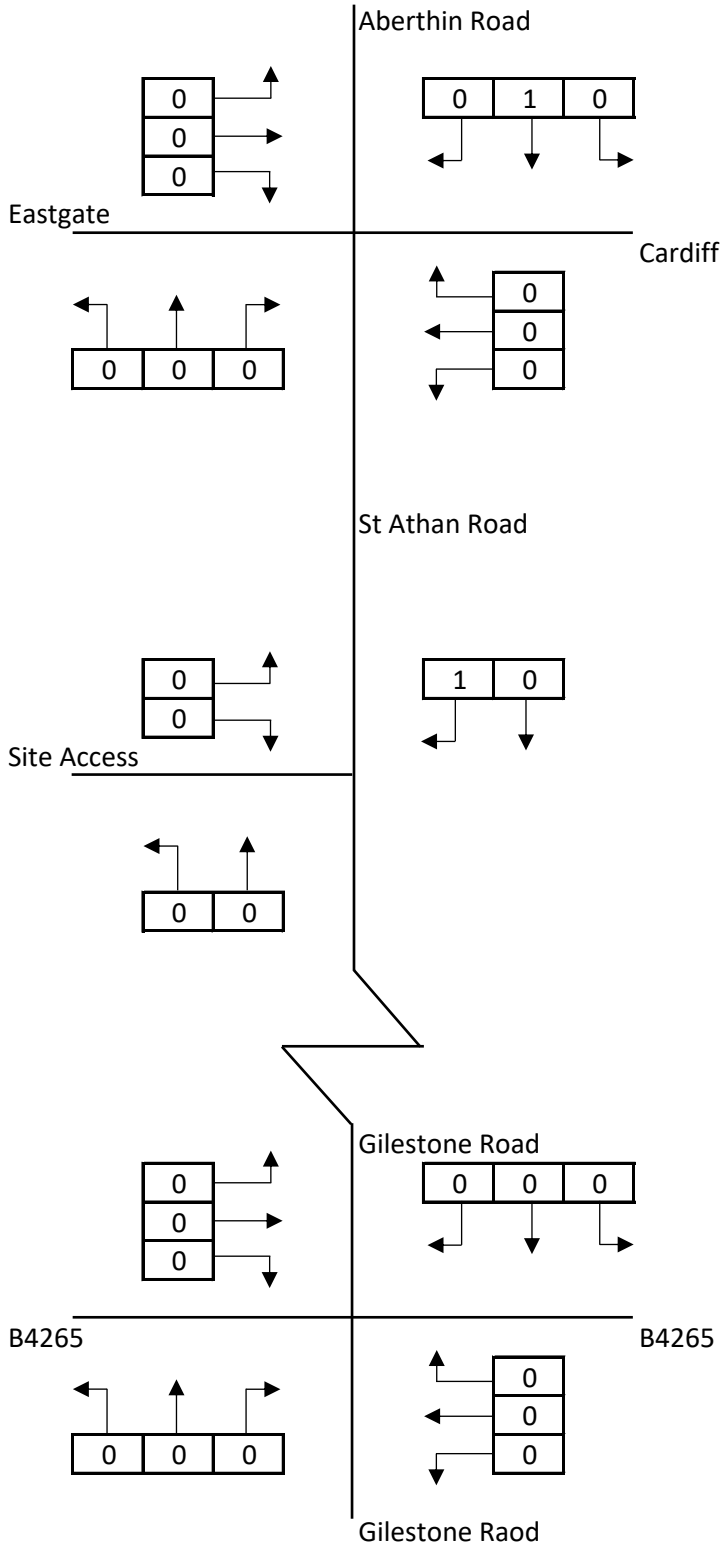
Secondary Education AM



	A	B	C	D
A		0	1	0
B	0		0	0
C	4	0		0
D	0	0	0	

	A	B	C
A		0	0
B	0		4
C	0	1	

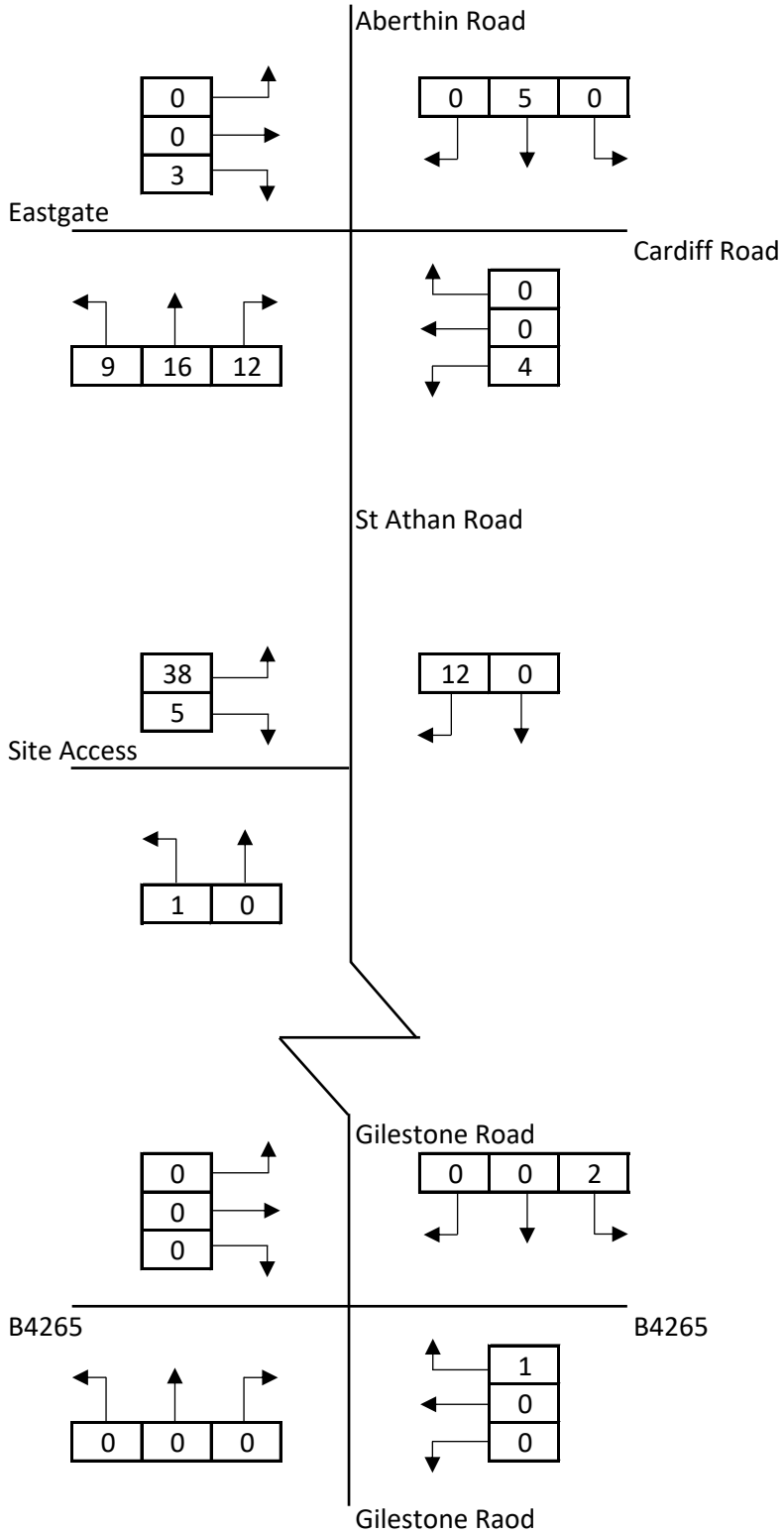
Secondary Education PM



	A	B	C	D
A		0	1	0
B	0		0	0
C	0	0		0
D	0	0	0	

	A	B	C
A		0	0
B	0		0
C	0	1	

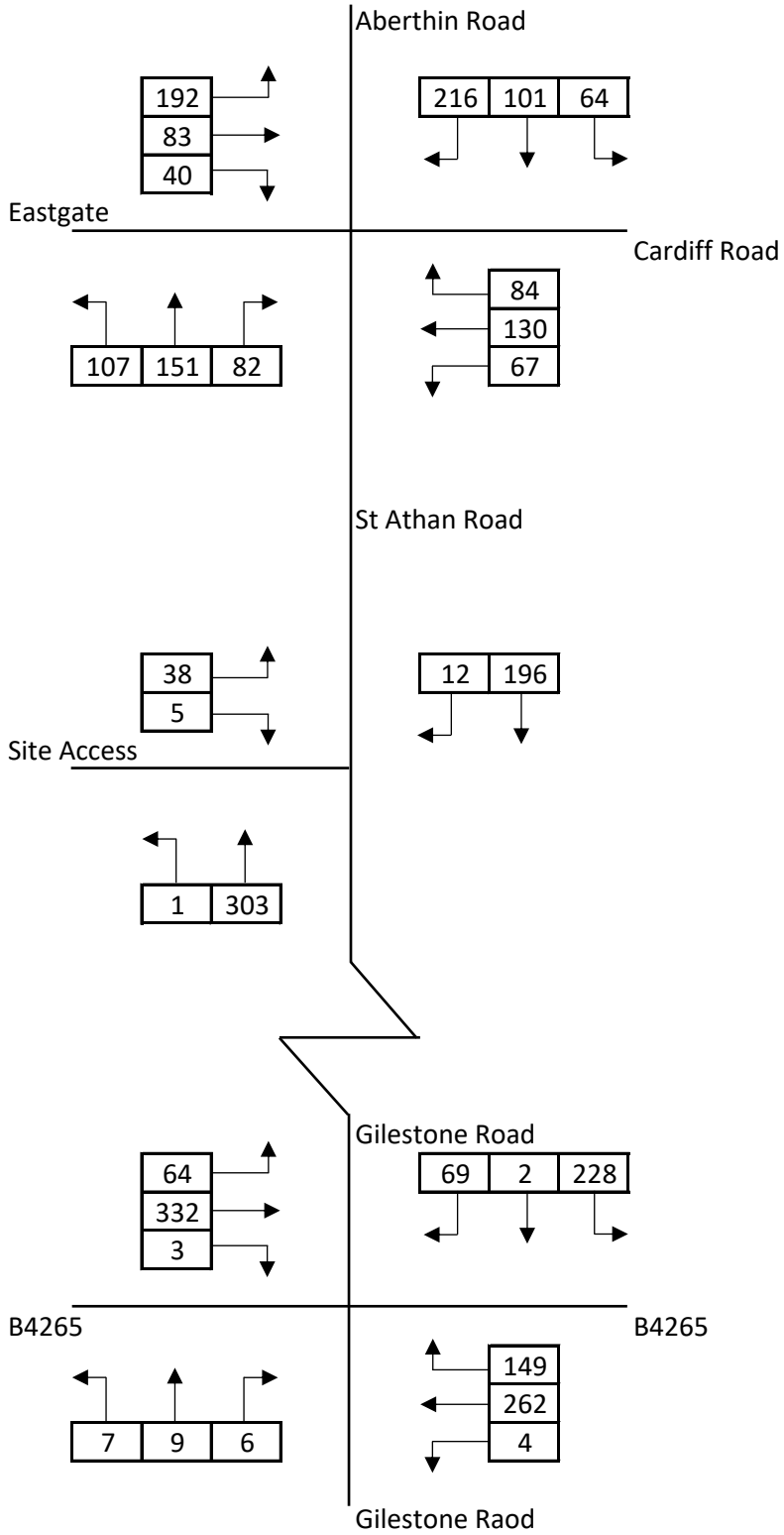
Total Development AM



	A	B	C	D
A		0	5	0
B	0		4	0
C	16	12		9
D	0	0	3	

	A	B	C
A		1	0
B	5		38
C	0	12	

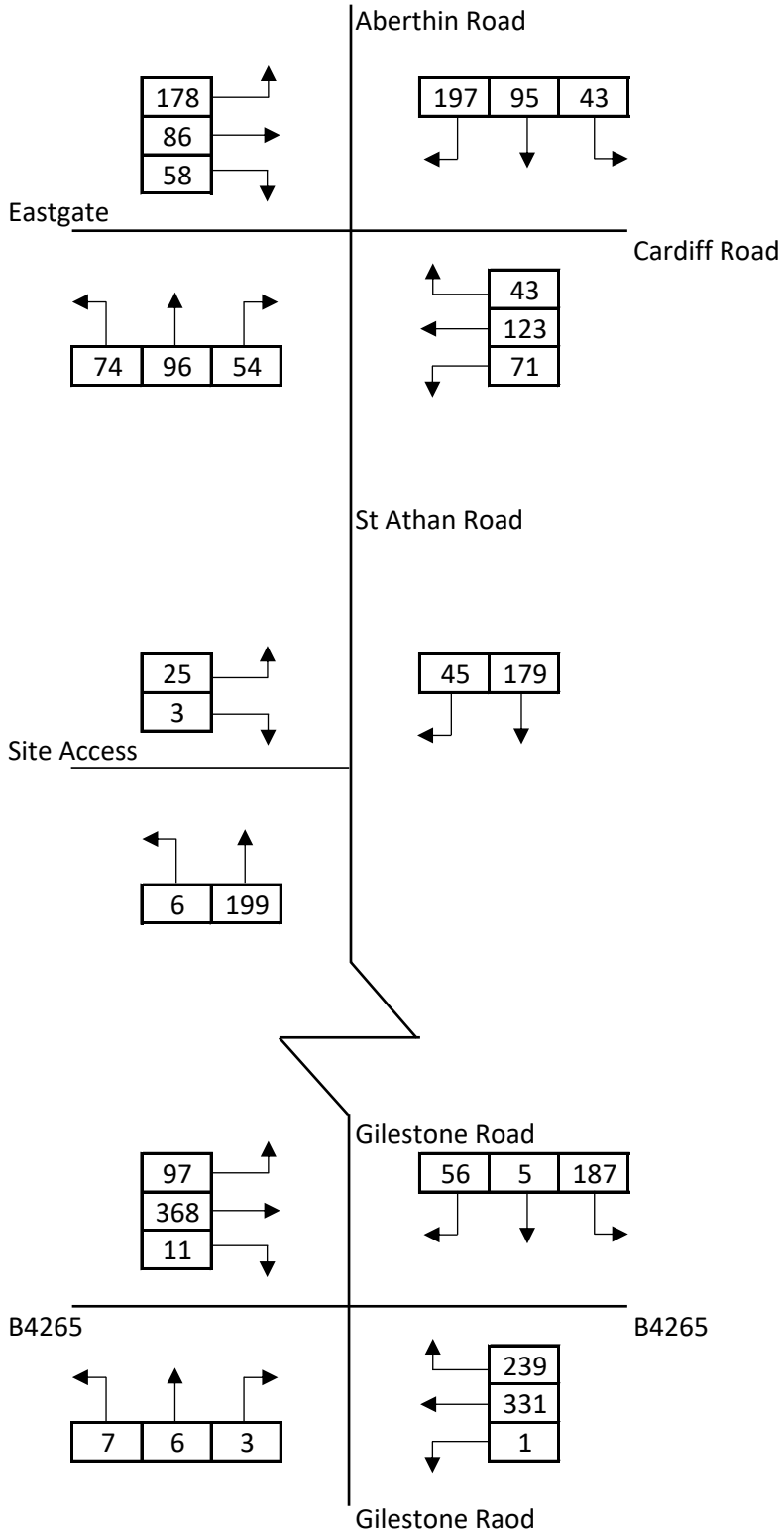
2022 + Committed + Development AM - PCU



	A	B	C	D
A		64	101	216
B	84		67	130
C	151	82		107
D	192	83	40	

	A	B	C
A		1	303
B	5		38
C	196	12	

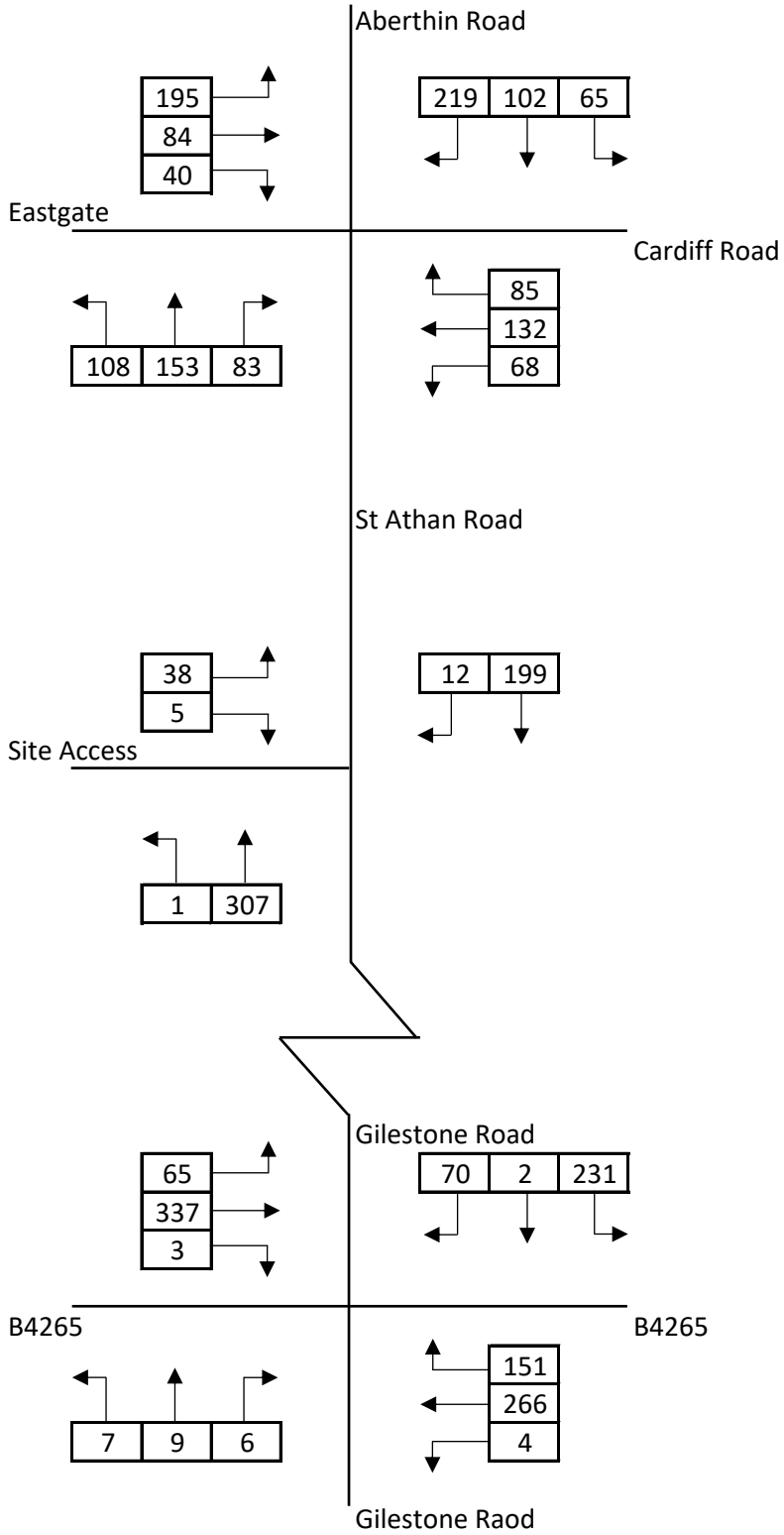
2022 + Committed + Development PM - PCU



	A	B	C	D
A		43	95	197
B	43		71	123
C	96	54		74
D	178	86	58	

	A	B	C
A		6	199
B	3		25
C	179	45	

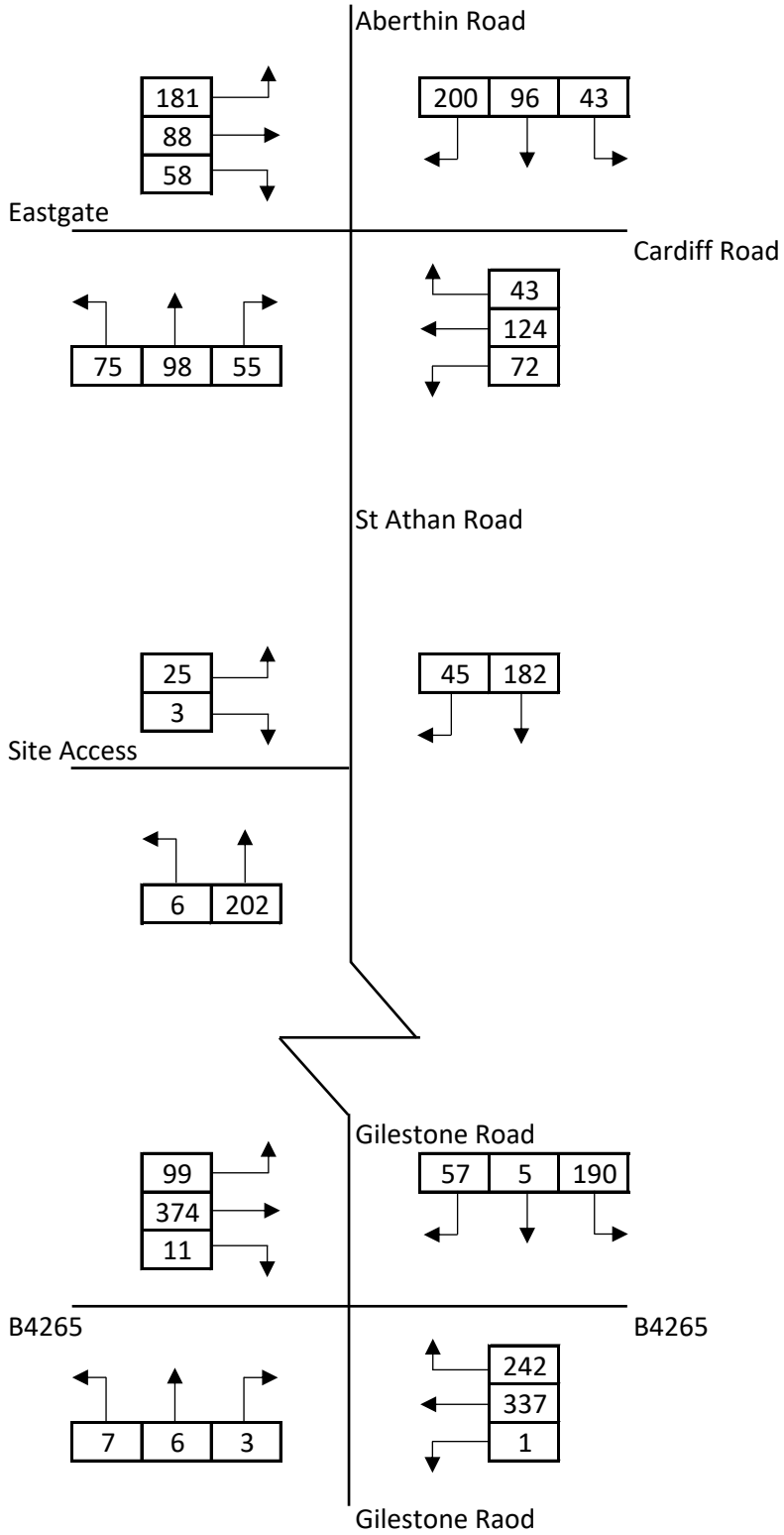
2024 + Committed + Development AM - PCU



	A	B	C	D
A		65	102	219
B	85		68	132
C	153	83		108
D	195	84	40	

	A	B	C
A		1	307
B	5		38
C	199	12	

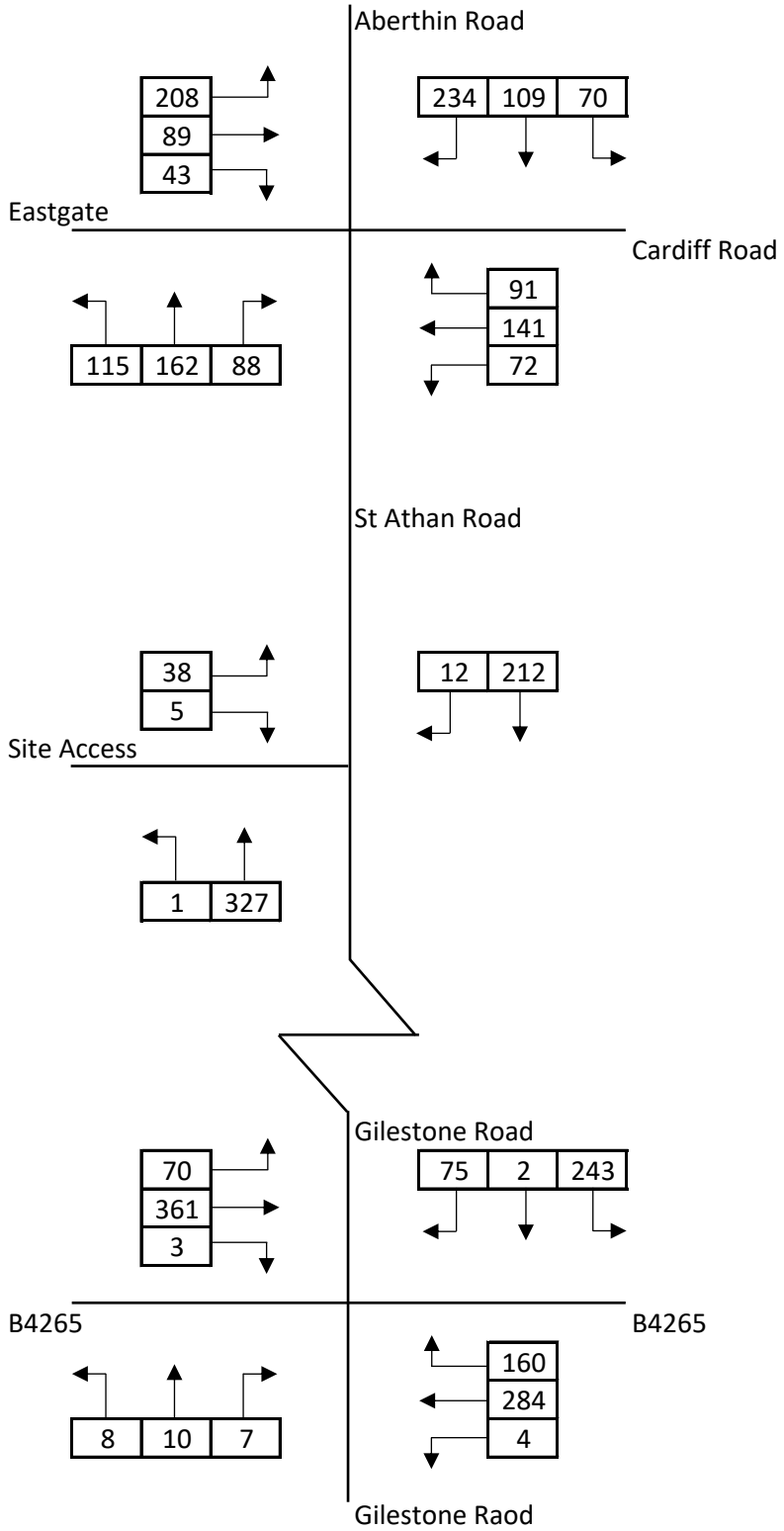
2024 + Committed + Development PM - PCU



	A	B	C	D
A		43	96	200
B	43		72	124
C	98	55		75
D	181	88	58	

	A	B	C
A		6	202
B	3		25
C	182	45	

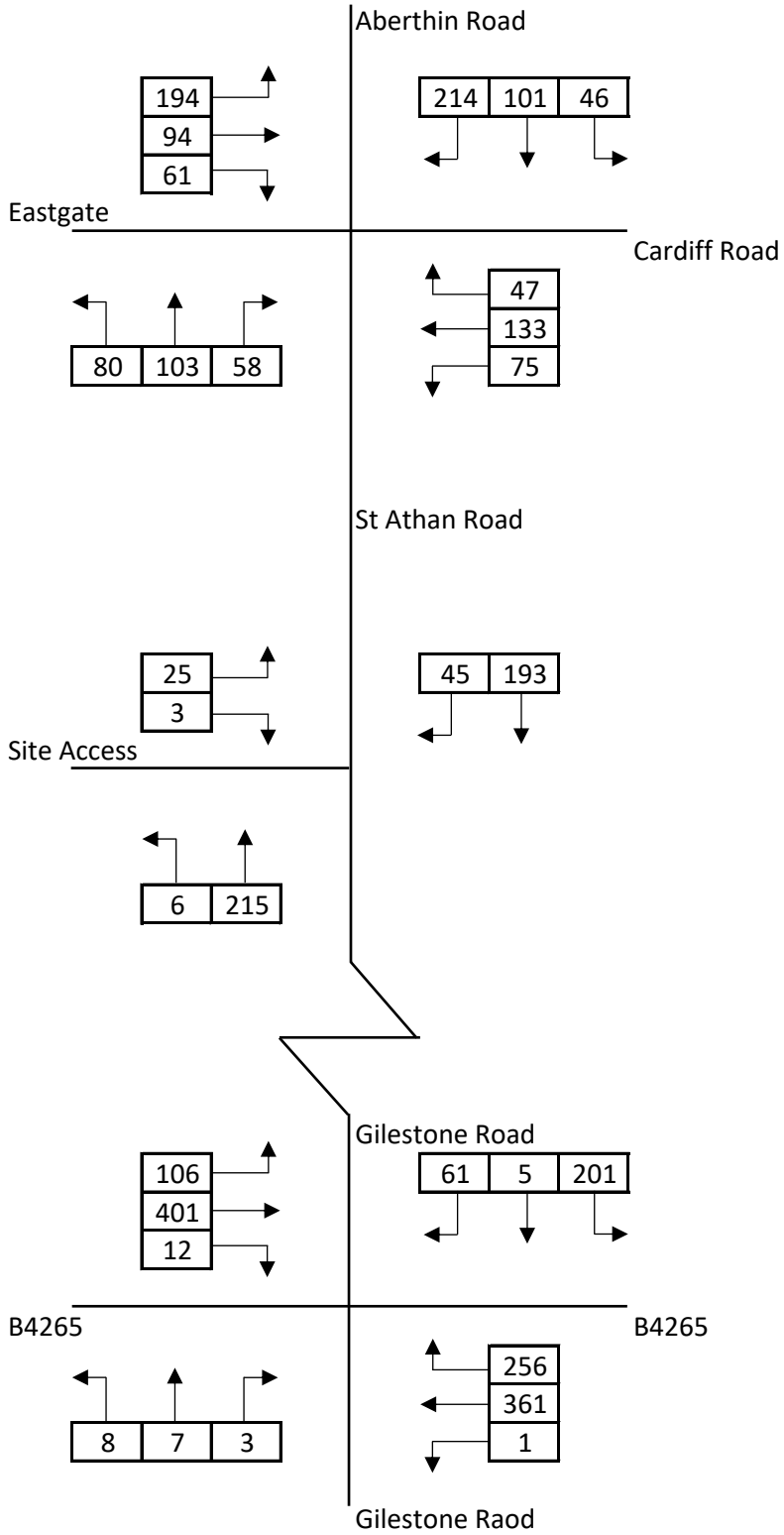
2034 + Committed + Development AM - PCU



	A	B	C	D
A		70	109	234
B	91		72	141
C	162	88		115
D	208	89	43	

	A	B	C
A		1	327
B	5		38
C	212	12	

2034 + Committed + Development PM - PCU



	A	B	C	D
A		46	101	214
B	47		75	133
C	103	58		80
D	194	94	61	

	A	B	C
A		6	215
B	3		25
C	193	45	

vectos.

Appendix H

MCC Data

Cowbridge, Wednesday 16th February 2022

Junction: 1
Approach: Aberthin Road

Queues Measured as Stationary Vehicles (Maxiumum Queue every 5 Minutes)

	Left to Cardiff Road						Ahead to St. Athan Road						Right to Eastgate					
TIME	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs
07:00 - 07:15	3	0	4	0	7	12.2	17	0	0	0	17	17.0	27	1	0	0	28	28.5
07:15 - 07:30	3	1	0	0	4	4.5	18	0	0	0	18	18.0	30	1	1	0	32	33.8
07:30 - 07:45	8	0	2	0	10	12.6	17	1	0	0	18	18.5	36	1	0	0	37	37.5
07:45 - 08:00	9	0	1	0	10	11.3	21	0	0	0	21	21.0	47	2	0	0	49	50.0
Hourly Total	**23**	**1**	**7**	**0**	**31**	**40.6**	**73**	**1**	**0**	**0**	**74**	**74.5**	**140**	**5**	**1**	**0**	**146**	**149.8**
08:00 - 08:15	15	2	0	2	19	22.0	12	0	0	0	12	12.0	37	0	0	4	41	45.0
08:15 - 08:30	12	0	1	0	13	14.3	18	0	0	0	18	18.0	49	2	0	4	55	60.0
08:30 - 08:45	18	0	0	2	20	22.0	31	0	0	0	31	31.0	49	0	0	1	50	51.0
08:45 - 09:00	6	0	0	0	6	6.0	31	0	0	0	31	31.0	55	0	2	0	57	59.6
Hourly Total	**51**	**2**	**1**	**4**	**58**	**64.3**	**92**	**0**	**0**	**0**	**92**	**92.0**	**190**	**2**	**2**	**9**	**203**	**215.6**
09:00 - 09:15	3	1	0	0	4	4.5	11	0	0	0	11	11.0	47	1	0	2	50	52.5
09:15 - 09:30	7	1	0	0	8	8.5	11	0	0	0	11	11.0	37	0	0	1	38	39.0
09:30 - 09:45	6	1	1	0	8	9.8	10	0	0	0	10	10.0	40	1	0	1	42	43.5
09:45 - 10:00	1	2	0	0	3	4.0	11	0	0	0	11	11.0	28	1	0	0	29	29.5
Hourly Total	**17**	**5**	**1**	**0**	**23**	**26.8**	**43**	**0**	**0**	**0**	**43**	**43.0**	**152**	**3**	**0**	**4**	**159**	**164.5**
TOTAL	**91**	**8**	**9**	**4**	**112**	**131.7**	**208**	**1**	**0**	**0**	**209**	**209.5**	**482**	**10**	**3**	**13**	**508**	**529.9**
16:00 - 16:15	12	0	0	0	12	12.0	21	0	0	0	21	21.0	51	0	0	1	52	53.0
16:15 - 16:30	5	0	0	0	5	5.0	11	0	0	0	11	11.0	39	0	0	0	39	39.0
16:30 - 16:45	12	0	0	0	12	12.0	25	0	0	0	25	25.0	56	1	0	0	57	57.5
16:45 - 17:00	12	1	0	0	13	13.5	11	0	0	0	11	11.0	47	0	0	0	47	47.0
Hourly Total	**41**	**1**	**0**	**0**	**42**	**42.5**	**68**	**0**	**0**	**0**	**68**	**68.0**	**193**	**1**	**0**	**1**	**195**	**196.5**
17:00 - 17:15	9	0	0	0	9	9.0	16	0	0	0	16	16.0	38	0	0	0	38	38.0
17:15 - 17:30	8	0	0	0	8	8.0	18	0	0	0	18	18.0	37	0	0	0	37	37.0
17:30 - 17:45	5	0	0	0	5	5.0	17	0	0	0	17	17.0	34	0	0	1	35	36.0
17:45 - 18:00	2	1	0	0	3	3.5	17	0	0	0	17	17.0	42	0	0	0	42	42.0
Hourly Total	**24**	**1**	**0**	**0**	**25**	**25.5**	**68**	**0**	**0**	**0**	**68**	**68.0**	**151**	**0**	**0**	**1**	**152**	**153.0**
18:00 - 18:15	4	0	0	0	4	4.0	18	0	0	0	18	18.0	38	0	0	0	38	38.0
18:15 - 18:30	3	0	0	0	3	3.0	14	0	0	0	14	14.0	17	0	0	0	17	17.0
18:30 - 18:45	1	0	0	0	1	1.0	9	0	0	0	9	9.0	28	0	0	0	28	28.0
18:45 - 19:00	5	0	0	0	5	5.0	9	0	0	0	9	9.0	26	0	0	0	26	26.0
Hourly Total	**13**	**0**	**0**	**0**	**13**	**13.0**	**50**	**0**	**0**	**0**	**50**	**50.0**	**109**	**0**	**0**	**0**	**109**	**109.0**
TOTAL	**78**	**2**	**0**	**0**	**80**	**81.0**	**186**	**0**	**0**	**0**	**186**	**186.0**	**453**	**1**	**0**	**2**	**456**	**458.5**

PCU Factors:	
LIGHT	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

TIME	Queue Lengths (Vehicles)
700	0
705	2
710	2
715	2
720	0
725	2
730	2
735	4
740	2
745	2
750	0
755	2
800	3
805	4
810	0
815	4
820	2
825	5
830	2
835	0
840	2
845	3
850	3
855	2
900	2
905	3
910	2
915	2
920	0
925	2
930	3
935	2
940	2
945	0
950	2
955	2

TIME	Queue Lengths (Vehicles)
1600	2
1605	0
1610	2
1615	2
1620	2
1625	0
1630	3
1635	2
1640	0
1645	2
1650	0
1655	2
1700	2
1705	2
1710	4
1715	3
1720	2
1725	2
1730	0
1735	2
1740	2
1745	0
1750	0
1755	0
1800	0
1805	0
1810	0
1815	0
1820	2
1825	0
1830	0
1835	0
1840	0
1845	0
1850	0
1855	0

Cowbridge, Wednesday 16th February 2022

Junction: 1
Approach: Cardiff Road

Queues Measured as Stationary Vehicles (Maxiumum Queue every 5 Minutes)

	Left to St. Athan Road						Ahead to Eastgate						Right to Aberthin Road					
TIME	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs
07:00 - 07:15	2	0	0	0	2	2.0	4	1	1	0	6	7.8	2	1	1	0	4	5.8
07:15 - 07:30	4	2	0	0	6	7.0	8	1	0	0	9	9.5	1	2	0	0	3	4.0
07:30 - 07:45	3	1	0	0	4	4.5	17	0	0	0	17	17.0	5	2	0	0	7	8.0
07:45 - 08:00	11	1	0	0	12	12.5	19	0	0	0	19	19.0	17	0	0	0	17	17.0
Hourly Total	**20**	**4**	**0**	**0**	**24**	**26.0**	**48**	**2**	**1**	**0**	**51**	**53.3**	**25**	**5**	**1**	**0**	**31**	**34.8**
08:00 - 08:15	7	1	0	0	8	8.5	23	0	0	1	24	25.0	22	0	0	2	24	26.0
08:15 - 08:30	9	0	0	0	9	9.0	13	0	0	0	13	13.0	15	0	1	2	18	21.3
08:30 - 08:45	19	0	0	1	20	21.0	41	2	0	2	45	48.0	20	1	1	0	22	23.8
08:45 - 09:00	22	0	0	0	22	22.0	37	2	0	0	39	40.0	13	0	0	0	13	13.0
Hourly Total	**57**	**1**	**0**	**1**	**59**	**60.5**	**114**	**4**	**0**	**3**	**121**	**126.0**	**70**	**1**	**2**	**4**	**77**	**84.1**
09:00 - 09:15	9	1	0	0	10	10.5	31	0	0	1	32	33.0	3	0	0	0	3	3.0
09:15 - 09:30	7	0	0	0	7	7.0	29	0	0	0	29	29.0	4	0	1	0	5	6.3
09:30 - 09:45	6	0	0	0	6	6.0	29	0	0	1	30	31.0	6	0	0	0	6	6.0
09:45 - 10:00	5	1	0	0	6	6.5	26	1	0	1	28	29.5	6	0	0	0	6	6.0
Hourly Total	**27**	**2**	**0**	**0**	**29**	**30.0**	**115**	**1**	**0**	**3**	**119**	**122.5**	**19**	**0**	**1**	**0**	**20**	**21.3**
TOTAL	**104**	**7**	**0**	**1**	**112**	**116.5**	**277**	**7**	**1**	**6**	**291**	**301.8**	**114**	**6**	**4**	**4**	**128**	**140.2**
16:00 - 16:15	14	0	0	0	14	14.0	31	1	0	1	33	34.5	11	0	0	0	11	11.0
16:15 - 16:30	13	0	0	0	13	13.0	17	0	0	0	17	17.0	7	0	1	0	8	9.3
16:30 - 16:45	6	0	0	0	6	6.0	19	0	0	0	19	19.0	4	1	2	0	7	10.1
16:45 - 17:00	12	0	1	0	13	14.3	44	2	0	0	46	47.0	10	0	1	0	11	12.3
Hourly Total	**45**	**0**	**1**	**0**	**46**	**47.3**	**111**	**3**	**0**	**1**	**115**	**117.5**	**32**	**1**	**4**	**0**	**37**	**42.7**
17:00 - 17:15	10	0	0	0	10	10.0	25	0	0	1	26	27.0	7	0	0	0	7	7.0
17:15 - 17:30	13	0	0	0	13	13.0	33	0	0	1	34	35.0	3	0	0	0	3	3.0
17:30 - 17:45	8	0	0	0	8	8.0	22	0	0	0	22	22.0	4	0	0	0	4	4.0
17:45 - 18:00	19	0	0	0	19	19.0	18	0	0	0	18	18.0	8	0	0	0	8	8.0
Hourly Total	**50**	**0**	**0**	**0**	**50**	**50.0**	**98**	**0**	**0**	**2**	**100**	**102.0**	**22**	**0**	**0**	**0**	**22**	**22.0**
18:00 - 18:15	6	0	0	0	6	6.0	14	0	0	0	14	14.0	3	0	0	0	3	3.0
18:15 - 18:30	7	0	0	0	7	7.0	17	0	0	0	17	17.0	8	0	0	0	8	8.0
18:30 - 18:45	6	0	0	0	6	6.0	23	0	0	0	23	23.0	7	0	0	0	7	7.0
18:45 - 19:00	4	0	0	0	4	4.0	15	0	1	1	17	19.3	8	0	0	0	8	8.0
Hourly Total	**23**	**0**	**0**	**0**	**23**	**23.0**	**69**	**0**	**1**	**1**	**71**	**73.3**	**26**	**0**	**0**	**0**	**26**	**26.0**
TOTAL	**118**	**0**	**1**	**0**	**119**	**120.3**	**278**	**3**	**1**	**4**	**286**	**292.8**	**80**	**1**	**4**	**0**	**85**	**90.7**

PCU Factors:	
LIGHT	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

TIME	Queue Lengths (Vehicles)
700	4
705	6
710	9
715	7
720	7
725	11
730	5
735	7
740	6
745	8
750	7
755	8
800	4
805	6
810	6
815	7
820	8
825	10
830	5
835	7
840	6
845	6
850	5
855	6
900	3
905	2
910	4
915	4
920	4
925	4
930	3
935	6
940	12
945	2
950	3
955	3

TIME	Queue Lengths (Vehicles)
1600	6
1605	10
1610	7
1615	4
1620	6
1625	6
1630	5
1635	6
1640	5
1645	8
1650	15
1655	11
1700	12
1705	12
1710	7
1715	9
1720	10
1725	8
1730	6
1735	8
1740	8
1745	7
1750	8
1755	8
1800	5
1805	5
1810	5
1815	4
1820	8
1825	7
1830	4
1835	4
1840	3
1845	3
1850	5
1855	4

Cowbridge, Wednesday 16th February 2022

Junction: 1
Approach: St. Athan Road

Queues Measured as Stationary Vehicles (Maxiumum Queue every 5 Minutes)

	Left to Eastgate						Ahead to Aberthin Road						Right to Cardiff Road					
TIME	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs
07:00 - 07:15	3	0	0	0	3	3.0	6	0	0	0	6	6.0	11	0	0	0	11	11.0
07:15 - 07:30	6	0	0	0	6	6.0	7	1	0	0	8	8.5	15	0	0	0	15	15.0
07:30 - 07:45	6	0	0	0	6	6.0	16	1	0	0	17	17.5	23	0	0	0	23	23.0
07:45 - 08:00	19	0	0	0	19	19.0	18	0	0	0	18	18.0	18	0	0	0	18	18.0
Hourly Total	**34**	**0**	**0**	**0**	**34**	**34.0**	**47**	**2**	**0**	**0**	**49**	**50.0**	**67**	**0**	**0**	**0**	**67**	**67.0**
08:00 - 08:15	15	0	0	0	15	15.0	26	0	0	0	26	26.0	21	0	0	0	21	21.0
08:15 - 08:30	11	0	0	0	11	11.0	30	0	0	0	30	30.0	17	0	0	0	17	17.0
08:30 - 08:45	21	1	0	0	22	22.5	34	0	0	0	34	34.0	8	0	0	0	8	8.0
08:45 - 09:00	35	1	0	2	38	40.5	32	0	0	0	32	32.0	17	0	0	0	17	17.0
Hourly Total	**82**	**2**	**0**	**2**	**86**	**89.0**	**122**	**0**	**0**	**0**	**122**	**122.0**	**63**	**0**	**0**	**0**	**63**	**63.0**
09:00 - 09:15	30	0	0	0	30	30.0	21	0	0	0	21	21.0	23	0	0	0	23	23.0
09:15 - 09:30	13	1	0	0	14	14.5	4	0	0	0	4	4.0	15	0	0	0	15	15.0
09:30 - 09:45	15	0	0	0	15	15.0	15	0	0	0	15	15.0	9	0	0	0	9	9.0
09:45 - 10:00	15	1	0	0	16	16.5	13	0	0	0	13	13.0	11	0	0	0	11	11.0
Hourly Total	**73**	**2**	**0**	**0**	**75**	**76.0**	**53**	**0**	**0**	**0**	**53**	**53.0**	**58**	**0**	**0**	**0**	**58**	**58.0**
TOTAL	**189**	**4**	**0**	**2**	**195**	**199.0**	**222**	**2**	**0**	**0**	**224**	**225.0**	**188**	**0**	**0**	**0**	**188**	**188.0**
16:00 - 16:15	18	0	0	0	18	18.0	21	0	0	0	21	21.0	10	0	0	0	10	10.0
16:15 - 16:30	15	0	0	0	15	15.0	24	0	0	0	24	24.0	11	0	0	0	11	11.0
16:30 - 16:45	17	0	0	0	17	17.0	21	0	0	0	21	21.0	13	0	0	0	13	13.0
16:45 - 17:00	12	0	0	0	12	12.0	14	0	0	0	14	14.0	7	0	0	0	7	7.0
Hourly Total	**62**	**0**	**0**	**0**	**62**	**62.0**	**80**	**0**	**0**	**0**	**80**	**80.0**	**41**	**0**	**0**	**0**	**41**	**41.0**
17:00 - 17:15	18	1	0	0	19	19.5	22	0	0	0	22	22.0	8	0	0	0	8	8.0
17:15 - 17:30	12	0	0	0	12	12.0	11	0	0	0	11	11.0	5	1	0	0	6	6.5
17:30 - 17:45	6	0	0	0	6	6.0	17	0	0	0	17	17.0	6	0	0	0	6	6.0
17:45 - 18:00	14	0	0	0	14	14.0	21	0	0	0	21	21.0	5	0	0	0	5	5.0
Hourly Total	**50**	**1**	**0**	**0**	**51**	**51.5**	**71**	**0**	**0**	**0**	**71**	**71.0**	**24**	**1**	**0**	**0**	**25**	**25.5**
18:00 - 18:15	8	0	0	0	8	8.0	13	0	0	0	13	13.0	5	0	0	0	5	5.0
18:15 - 18:30	5	0	0	0	5	5.0	11	0	0	0	11	11.0	3	0	0	0	3	3.0
18:30 - 18:45	8	0	0	0	8	8.0	17	0	0	0	17	17.0	4	0	0	0	4	4.0
18:45 - 19:00	2	0	0	0	2	2.0	9	0	0	0	9	9.0	11	0	0	0	11	11.0
Hourly Total	**23**	**0**	**0**	**0**	**23**	**23.0**	**50**	**0**	**0**	**0**	**50**	**50.0**	**23**	**0**	**0**	**0**	**23**	**23.0**
TOTAL	**135**	**1**	**0**	**0**	**136**	**136.5**	**201**	**0**	**0**	**0**	**201**	**201.0**	**88**	**1**	**0**	**0**	**89**	**89.5**

PCU Factors:	
LIGHT	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

TIME	Queue Lengths (Vehicles)
700	2
705	5
710	4
715	5
720	5
725	7
730	3
735	5
740	4
745	4
750	4
755	4
800	3
805	6
810	5
815	4
820	5
825	4
830	3
835	5
840	7
845	6
850	6
855	5
900	3
905	3
910	2
915	2
920	2
925	2
930	2
935	3
940	2
945	2
950	2
955	2

TIME	Queue Lengths (Vehicles)
1600	4
1605	6
1610	5
1615	2
1620	2
1625	2
1630	2
1635	4
1640	3
1645	4
1650	4
1655	5
1700	5
1705	7
1710	9
1715	8
1720	8
1725	6
1730	3
1735	4
1740	4
1745	2
1750	2
1755	2
1800	2
1805	4
1810	3
1815	3
1820	6
1825	4
1830	3
1835	3
1840	4
1845	3
1850	3
1855	3

Cowbridge, Wednesday 16th February 2022

Junction: 1
Approach: Eastgate

Queues Measured as Stationary Vehicles (Maxiumum Queue every 5 Minutes)

	Left to Aberthin Road						Ahead to Cardiff Road						Right to St. Athan Road					
TIME	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs	LIGHT	OGV1	OGV2	BUS	TOTAL	PCUs
07:00 - 07:15	11	2	0	0	13	14.0	4	0	0	0	4	4.0	5	0	0	0	5	5.0
07:15 - 07:30	19	1	0	0	20	20.5	5	0	0	0	5	5.0	8	0	0	0	8	8.0
07:30 - 07:45	24	0	0	0	24	24.0	13	0	0	3	16	19.0	7	1	0	0	8	8.5
07:45 - 08:00	42	0	0	3	45	48.0	22	1	0	0	23	23.5	12	0	0	0	12	12.0
Hourly Total	**96**	**3**	**0**	**3**	**102**	**106.5**	**44**	**1**	**0**	**3**	**48**	**51.5**	**32**	**1**	**0**	**0**	**33**	**33.5**
08:00 - 08:15	45	0	1	4	50	55.3	15	0	0	1	16	17.0	7	0	0	0	7	7.0
08:15 - 08:30	45	1	1	0	47	48.8	15	0	1	0	16	17.3	6	0	0	0	6	6.0
08:30 - 08:45	41	0	0	2	43	45.0	16	1	0	1	18	19.5	13	1	0	0	14	14.5
08:45 - 09:00	37	1	0	2	40	42.5	19	0	0	0	19	19.0	6	0	0	1	7	8.0
Hourly Total	**168**	**2**	**2**	**8**	**180**	**191.6**	**65**	**1**	**1**	**2**	**69**	**72.8**	**32**	**1**	**0**	**1**	**34**	**35.5**
09:00 - 09:15	28	0	0	0	28	28.0	11	0	0	1	12	13.0	9	1	0	0	10	10.5
09:15 - 09:30	19	1	0	0	20	20.5	23	2	0	0	25	26.0	6	1	0	0	7	7.5
09:30 - 09:45	24	1	1	0	26	27.8	16	1	0	1	18	19.5	12	0	0	0	12	12.0
09:45 - 10:00	32	2	0	1	35	37.0	18	0	0	0	18	18.0	5	2	0	0	7	8.0
Hourly Total	**103**	**4**	**1**	**1**	**109**	**113.3**	**68**	**3**	**0**	**2**	**73**	**76.5**	**32**	**4**	**0**	**0**	**36**	**38.0**
TOTAL	**367**	**9**	**3**	**12**	**391**	**411.4**	**177**	**5**	**1**	**7**	**190**	**200.8**	**96**	**6**	**0**	**1**	**103**	**107.0**
16:00 - 16:15	47	0	0	0	47	47.0	17	0	1	0	18	19.3	13	0	0	0	13	13.0
16:15 - 16:30	49	0	0	0	49	49.0	18	0	0	0	18	18.0	5	0	0	0	5	5.0
16:30 - 16:45	35	1	0	0	36	36.5	19	0	0	1	20	21.0	12	0	0	0	12	12.0
16:45 - 17:00	44	1	0	0	45	45.5	23	0	0	0	23	23.0	10	0	0	0	10	10.0
Hourly Total	**175**	**2**	**0**	**0**	**177**	**178.0**	**77**	**0**	**1**	**1**	**79**	**81.3**	**40**	**0**	**0**	**0**	**40**	**40.0**
17:00 - 17:15	41	0	0	1	42	43.0	27	0	0	1	28	29.0	20	0	0	0	20	20.0
17:15 - 17:30	32	0	0	0	32	32.0	23	1	0	0	24	24.5	10	0	0	0	10	10.0
17:30 - 17:45	41	0	0	0	41	41.0	10	0	0	1	11	12.0	11	0	0	0	11	11.0
17:45 - 18:00	42	0	0	1	43	44.0	24	0	0	0	24	24.0	14	0	0	0	14	14.0
Hourly Total	**156**	**0**	**0**	**2**	**158**	**160.0**	**84**	**1**	**0**	**2**	**87**	**89.5**	**55**	**0**	**0**	**0**	**55**	**55.0**
18:00 - 18:15	40	0	0	0	40	40.0	18	0	0	2	20	22.0	10	0	0	0	10	10.0
18:15 - 18:30	23	0	0	0	23	23.0	15	0	0	0	15	15.0	8	0	0	0	8	8.0
18:30 - 18:45	20	0	0	0	20	20.0	15	0	0	0	15	15.0	6	0	0	0	6	6.0
18:45 - 19:00	20	0	0	0	20	20.0	22	0	0	1	23	24.0	6	0	0	0	6	6.0
Hourly Total	**103**	**0**	**0**	**0**	**103**	**103.0**	**70**	**0**	**0**	**3**	**73**	**76.0**	**30**	**0**	**0**	**0**	**30**	**30.0**
TOTAL	**434**	**2**	**0**	**2**	**438**	**441.0**	**231**	**1**	**1**	**6**	**239**	**246.8**	**125**	**0**	**0**	**0**	**125**	**125.0**

PCU Factors:	
LIGHT	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

TIME	Queue Lengths (Vehicles)
700	4
705	7
710	8
715	11
720	12
725	14
730	13
735	13
740	11
745	9
750	10
755	10
800	12
805	12
810	8
815	11
820	11
825	7
830	13
835	10
840	9
845	12
850	14
855	8
900	11
905	7
910	7
915	4
920	5
925	4
930	4
935	4
940	6
945	4
950	2
955	3

TIME	Queue Lengths (Vehicles)
1600	3
1605	2
1610	6
1615	5
1620	5
1625	8
1630	7
1635	10
1640	12
1645	12
1650	8
1655	13
1700	11
1705	9
1710	11
1715	8
1720	8
1725	10
1730	6
1735	8
1740	7
1745	7
1750	7
1755	7
1800	4
1805	6
1810	5
1815	5
1820	6
1825	6
1830	3
1835	4
1840	3
1845	3
1850	3
1855	5

vectos.

Appendix I

Site Access PICADY Report

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: 195148 - Site Access(A04 Rev A) - V2.j10
Path: H:\Projects\W190000\195148 - Windmill Lane, Cowbridge\Technical\A - Transport Assessment\Modelling\Picady
Report generation date: 06/12/2022 11:00:42

Summary of junction performance

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	2022 + Com + Dev					
Stream B-AC	0.1	6.81	0.08	0.1	6.25	0.05
Stream C-AB	0.0	5.76	0.03	0.2	5.99	0.10
	2024 + Com + Dev					
Stream B-AC	0.1	6.82	0.08	0.1	6.27	0.05
Stream C-AB	0.0	5.75	0.03	0.2	5.99	0.10
	2034 + Com + Dev					
Stream B-AC	0.1	6.91	0.08	0.1	6.31	0.05
Stream C-AB	0.0	5.72	0.03	0.2	5.95	0.11

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	09/03/2022
Version	
Status	(new file)
Identifier	
Client	

Jobnumber	
Enumerator	VECTOS\ellen.hill
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	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

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	2022 + Com + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D2	2022 + Com + Dev	PM	ONE HOUR	15:45	17:15	15	✓
D3	2024 + Com + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 + Com + Dev	PM	ONE HOUR	15:45	17:15	15	✓
D5	2034 + Com + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2034 + Com + Dev	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

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

2022 + Com + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.70	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.70	A

Arms

Arms

Arm	Name	Description	Arm type
A	St Athan Road (S)		Major
B	Site Access		Minor
C	St Athan Road (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - St Athan Road (N)	6.00			22.5	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Site Access	One lane	3.20	95	85

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	562	0.102	0.259	0.163	0.370
B-C	691	0.106	0.268	-	-
C-B	587	0.227	0.227	-	-

The slopes and intercepts shown above include custom intercept adjustments only.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

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	2022 + Com + 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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	304	100.000
B - Site Access		ONE HOUR	✓	43	100.000
C - St Athan Road (N)		ONE HOUR	✓	208	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	1	303
	B - Site Access	5	0	38
	C - St Athan Road (N)	196	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	1
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	6.81	0.1	A	39	59
C-AB	0.03	5.76	0.0	A	15	23
C-A					175	263
A-B					0.92	1
A-C					278	417

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	607	0.053	32	0.0	0.1	6.262	A
C-AB	12	3	639	0.018	12	0.0	0.0	5.755	A
C-A	145	36			145				
A-B	0.75	0.19			0.75				
A-C	228	57			228				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	594	0.065	39	0.1	0.1	6.480	A
C-AB	15	4	650	0.023	15	0.0	0.0	5.684	A
C-A	172	43			172				
A-B	0.90	0.22			0.90				
A-C	272	68			272				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	576	0.082	47	0.1	0.1	6.807	A
C-AB	20	5	665	0.029	20	0.0	0.0	5.590	A
C-A	209	52			209				
A-B	1	0.28			1				

A-C	334	83			334				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	576	0.082	47	0.1	0.1	6.807	A
C-AB	20	5	665	0.029	20	0.0	0.0	5.594	A
C-A	209	52			209				
A-B	1	0.28			1				
A-C	334	83			334				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	594	0.065	39	0.1	0.1	6.485	A
C-AB	15	4	650	0.023	15	0.0	0.0	5.690	A
C-A	172	43			172				
A-B	0.90	0.22			0.90				
A-C	272	68			272				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	607	0.053	32	0.1	0.1	6.265	A
C-AB	12	3	639	0.018	12	0.0	0.0	5.759	A
C-A	145	36			145				
A-B	0.75	0.19			0.75				
A-C	228	57			228				

2022 + Com + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.18	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.18	A

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	2022 + Com + Dev	PM	ONE HOUR	15:45	17:15	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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	205	100.000
B - Site Access		ONE HOUR	✓	28	100.000
C - St Athan Road (N)		ONE HOUR	✓	224	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	6	199
	B - Site Access	3	0	25
	C - St Athan Road (N)	179	45	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	0
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.25	0.1	A	26	39
C-AB	0.10	5.99	0.2	A	56	83
C-A					150	225
A-B					6	8
A-C					183	274

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	628	0.034	21	0.0	0.0	5.927	A

C-AB	43	11	645	0.066	42	0.0	0.1	5.981	A
C-A	126	31			126				
A-B	5	1			5				
A-C	150	37			150				

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	619	0.041	25	0.0	0.0	6.061	A
C-AB	54	13	657	0.082	54	0.1	0.1	5.979	A
C-A	148	37			148				
A-B	5	1			5				
A-C	179	45			179				

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	606	0.051	31	0.0	0.1	6.254	A
C-AB	70	18	674	0.104	70	0.1	0.2	5.978	A
C-A	176	44			176				
A-B	7	2			7				
A-C	219	55			219				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	606	0.051	31	0.1	0.1	6.255	A
C-AB	70	18	674	0.104	70	0.2	0.2	5.983	A
C-A	176	44			176				
A-B	7	2			7				
A-C	219	55			219				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	619	0.041	25	0.1	0.0	6.062	A
C-AB	54	13	657	0.082	54	0.2	0.1	5.985	A
C-A	148	37			148				
A-B	5	1			5				
A-C	179	45			179				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	628	0.034	21	0.0	0.0	5.930	A
C-AB	43	11	645	0.067	43	0.1	0.1	5.994	A
C-A	126	31			126				
A-B	5	1			5				
A-C	150	37			150				

2024 + Com + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.69	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.69	A

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	2024 + Com + 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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	308	100.000
B - Site Access		ONE HOUR	✓	43	100.000
C - St Athan Road (N)		ONE HOUR	✓	211	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	1	307
	B - Site Access	5	0	38
	C - St Athan Road (N)	199	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	1
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	6.82	0.1	A	39	59
C-AB	0.03	5.75	0.0	A	15	23
C-A					178	267
A-B					0.92	1
A-C					282	423

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	606	0.053	32	0.0	0.1	6.272	A
C-AB	12	3	640	0.018	12	0.0	0.0	5.746	A
C-A	147	37			147				
A-B	0.75	0.19			0.75				
A-C	231	58			231				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	593	0.065	39	0.1	0.1	6.493	A
C-AB	15	4	651	0.023	15	0.0	0.0	5.674	A
C-A	175	44			175				
A-B	0.90	0.22			0.90				
A-C	276	69			276				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	575	0.082	47	0.1	0.1	6.824	A
C-AB	20	5	667	0.030	20	0.0	0.0	5.578	A
C-A	213	53			213				
A-B	1	0.28			1				
A-C	338	85			338				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	575	0.082	47	0.1	0.1	6.824	A
C-AB	20	5	667	0.030	20	0.0	0.0	5.582	A
C-A	213	53			213				
A-B	1	0.28			1				
A-C	338	85			338				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	593	0.065	39	0.1	0.1	6.495	A
C-AB	15	4	651	0.023	15	0.0	0.0	5.678	A
C-A	175	44			175				
A-B	0.90	0.22			0.90				
A-C	276	69			276				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	606	0.053	32	0.1	0.1	6.277	A
C-AB	12	3	640	0.018	12	0.0	0.0	5.751	A
C-A	147	37			147				
A-B	0.75	0.19			0.75				
A-C	231	58			231				

2024 + Com + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.17	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.17	A

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	2024 + Com + Dev	PM	ONE HOUR	15:45	17:15	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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	208	100.000
B - Site Access		ONE HOUR	✓	28	100.000
C - St Athan Road (N)		ONE HOUR	✓	227	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	6	202
	B - Site Access	3	0	25
	C - St Athan Road (N)	182	45	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	0
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.27	0.1	A	26	39
C-AB	0.10	5.99	0.2	A	56	84
C-A					152	229
A-B					6	8
A-C					185	278

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	627	0.034	21	0.0	0.0	5.933	A
C-AB	43	11	646	0.067	43	0.0	0.1	5.973	A
C-A	128	32			128				
A-B	5	1			5				
A-C	152	38			152				

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	618	0.041	25	0.0	0.0	6.069	A
C-AB	54	13	659	0.082	54	0.1	0.1	5.966	A
C-A	150	38			150				

A-B	5	1			5				
A-C	182	45			182				

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	605	0.051	31	0.0	0.1	6.265	A
C-AB	71	18	676	0.104	70	0.1	0.2	5.964	A
C-A	179	45			179				
A-B	7	2			7				
A-C	222	56			222				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	605	0.051	31	0.1	0.1	6.265	A
C-AB	71	18	676	0.105	71	0.2	0.2	5.971	A
C-A	179	45			179				
A-B	7	2			7				
A-C	222	56			222				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	618	0.041	25	0.1	0.0	6.070	A
C-AB	54	13	659	0.082	54	0.2	0.1	5.977	A
C-A	150	38			150				
A-B	5	1			5				
A-C	182	45			182				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	627	0.034	21	0.0	0.0	5.937	A
C-AB	43	11	647	0.067	43	0.1	0.1	5.986	A
C-A	128	32			128				
A-B	5	1			5				
A-C	152	38			152				

2034 + Com + Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.67	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.67	A

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
D5	2034 + Com + 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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	328	100.000
B - Site Access		ONE HOUR	✓	43	100.000
C - St Athan Road (N)		ONE HOUR	✓	224	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	1	327
	B - Site Access	5	0	38
	C - St Athan Road (N)	212	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	1
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	6.91	0.1	A	39	59
C-AB	0.03	5.72	0.0	A	16	24
C-A					190	285
A-B					0.92	1
A-C					300	450

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	602	0.054	32	0.0	0.1	6.315	A
C-AB	12	3	643	0.019	12	0.0	0.0	5.715	A
C-A	157	39			157				
A-B	0.75	0.19			0.75				
A-C	246	62			246				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	588	0.066	39	0.1	0.1	6.554	A
C-AB	15	4	655	0.023	15	0.0	0.0	5.637	A
C-A	186	47			186				
A-B	0.90	0.22			0.90				
A-C	294	73			294				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	568	0.083	47	0.1	0.1	6.908	A
C-AB	20	5	673	0.030	20	0.0	0.0	5.533	A
C-A	226	57			226				
A-B	1	0.28			1				
A-C	360	90			360				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	47	12	568	0.083	47	0.1	0.1	6.908	A
C-AB	20	5	673	0.030	20	0.0	0.0	5.535	A
C-A	226	57			226				
A-B	1	0.28			1				
A-C	360	90			360				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	588	0.066	39	0.1	0.1	6.556	A
C-AB	15	4	656	0.023	15	0.0	0.0	5.643	A
C-A	186	47			186				
A-B	0.90	0.22			0.90				
A-C	294	73			294				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	602	0.054	32	0.1	0.1	6.325	A
C-AB	12	3	643	0.019	12	0.0	0.0	5.719	A
C-A	157	39			157				
A-B	0.75	0.19			0.75				
A-C	246	62			246				

2034 + Com + Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.12	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.12	A

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
D6	2034 + Com + Dev	PM	ONE HOUR	15:45	17:15	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 (PCU/hr)	Scaling Factor (%)
A - St Athan Road (S)		ONE HOUR	✓	221	100.000
B - Site Access		ONE HOUR	✓	28	100.000
C - St Athan Road (N)		ONE HOUR	✓	238	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	6	215
	B - Site Access	3	0	25
	C - St Athan Road (N)	193	45	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - St Athan Road (S)	B - Site Access	C - St Athan Road (N)
From	A - St Athan Road (S)	0	0	0
	B - Site Access	0	0	0
	C - St Athan Road (N)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.31	0.1	A	26	39
C-AB	0.11	5.95	0.2	A	57	85
C-A					161	242
A-B					6	8
A-C					197	296

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	625	0.034	21	0.0	0.0	5.962	A
C-AB	44	11	650	0.067	43	0.0	0.1	5.943	A
C-A	136	34			136				
A-B	5	1			5				
A-C	162	40			162				

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	615	0.041	25	0.0	0.0	6.105	A
C-AB	55	14	663	0.083	55	0.1	0.1	5.935	A
C-A	159	40			159				
A-B	5	1			5				
A-C	193	48			193				

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	601	0.051	31	0.0	0.1	6.312	A
C-AB	72	18	681	0.106	72	0.1	0.2	5.925	A
C-A	190	47			190				
A-B	7	2			7				

A-C	237	59			237				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	601	0.051	31	0.1	0.1	6.312	A
C-AB	72	18	682	0.106	72	0.2	0.2	5.930	A
C-A	190	47			190				
A-B	7	2			7				
A-C	237	59			237				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	615	0.041	25	0.1	0.0	6.108	A
C-AB	55	14	663	0.083	55	0.2	0.1	5.941	A
C-A	159	40			159				
A-B	5	1			5				
A-C	193	48			193				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	625	0.034	21	0.0	0.0	5.965	A
C-AB	44	11	650	0.067	44	0.1	0.1	5.954	A
C-A	135	34			135				
A-B	5	1			5				
A-C	162	40			162				

Appendix J

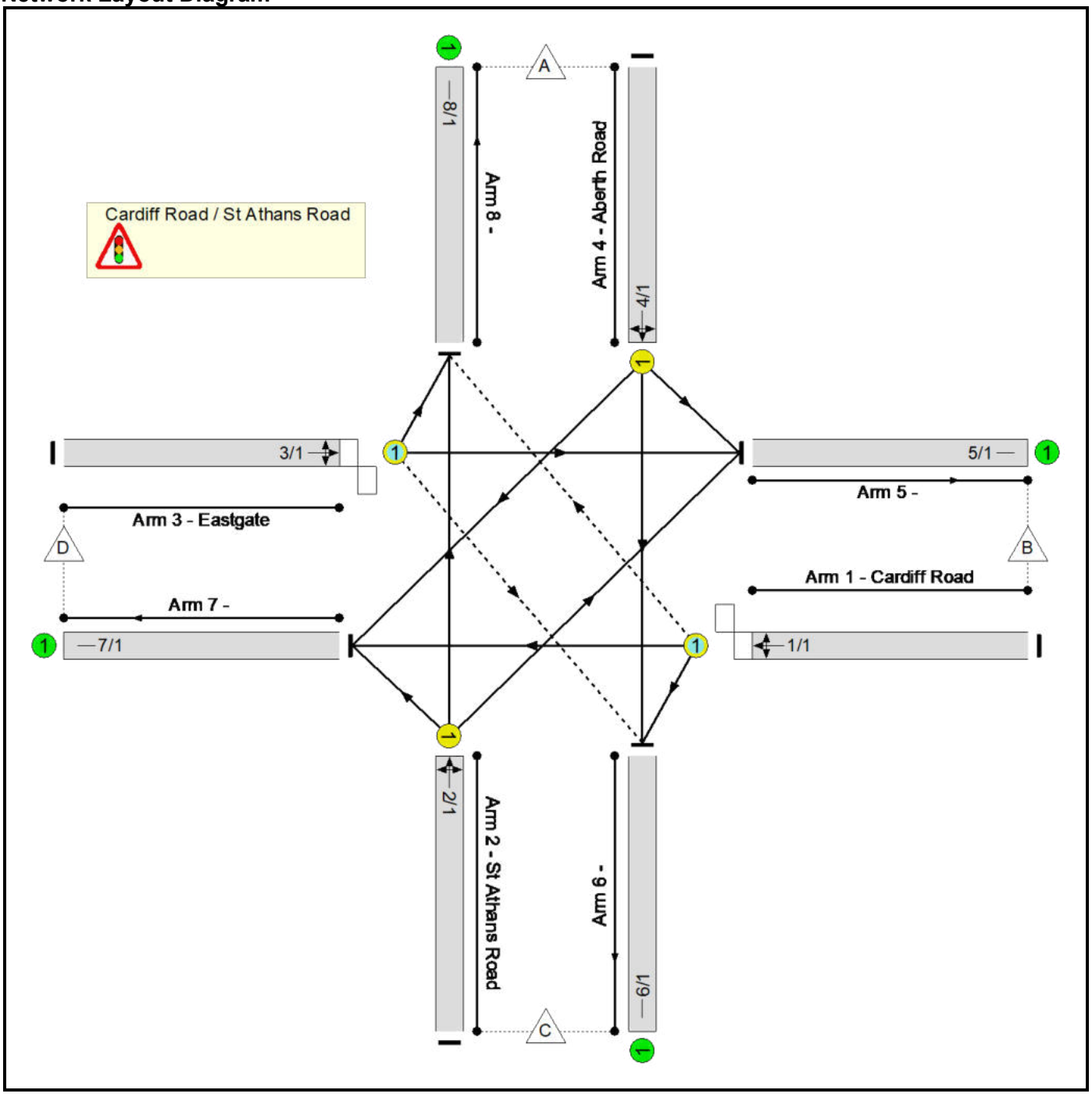
LinSig Output

Full Input Data And Results

User and Project Details

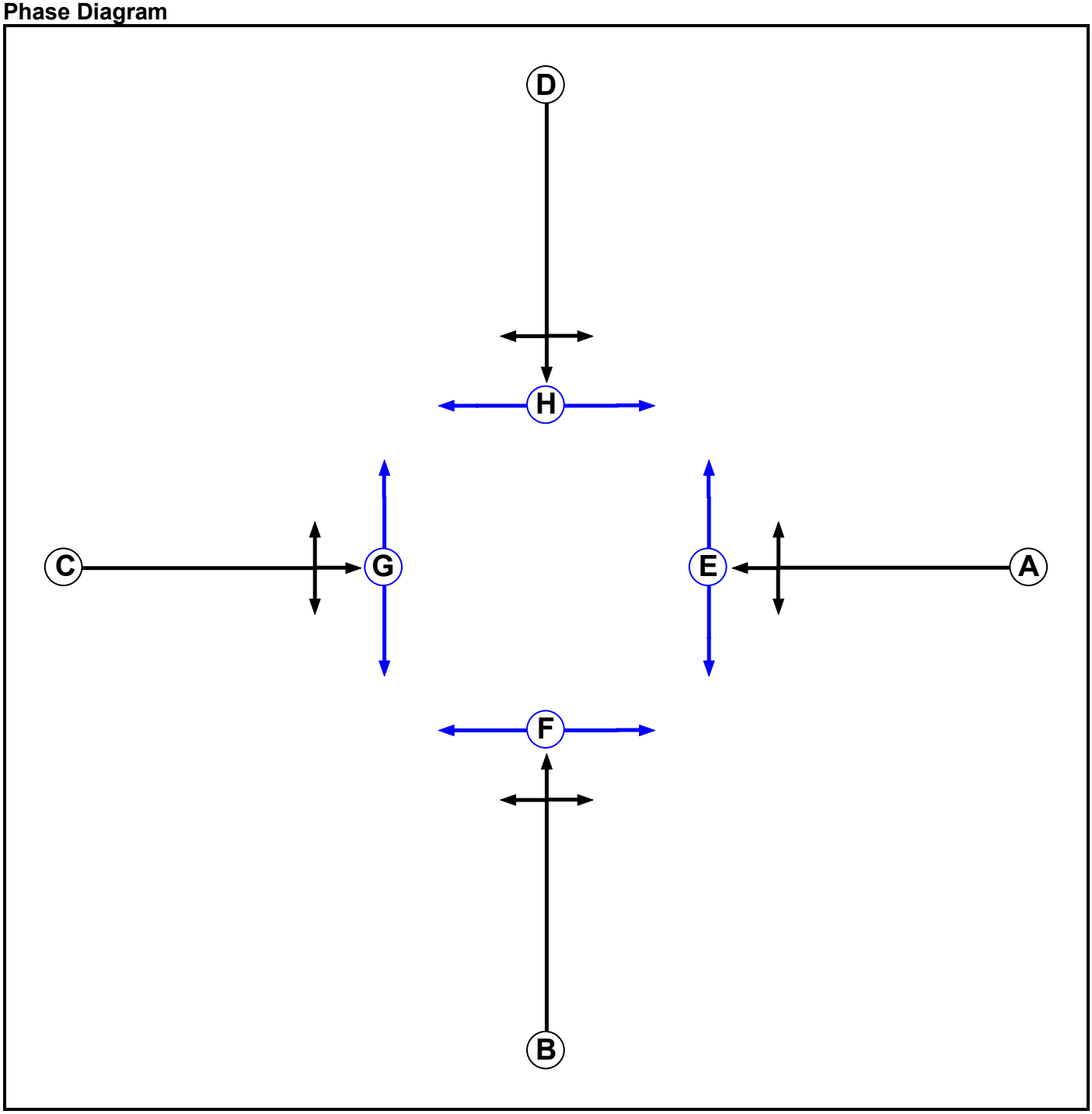
Project:	
Title:	
Location:	
Additional detail:	
File name:	195148 - Cardiff Road_St Athans Road - V2.lsg3x
Author:	Ben Stone
Company:	Vectos
Address:	Ground Floor, Helmont House, Churchill Way, Cardiff, CF10 2DX

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		4	4
F	Pedestrian		4	4
G	Pedestrian		4	4
H	Pedestrian		4	4

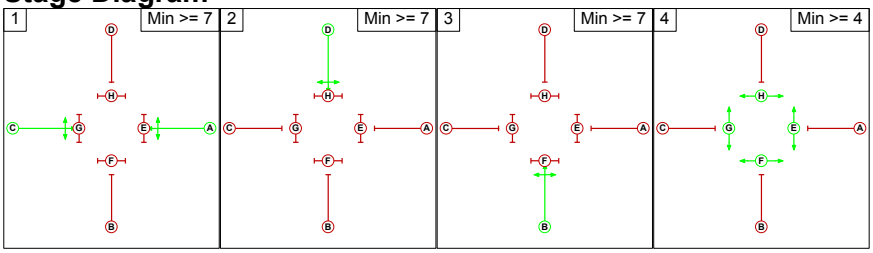
Phase Intergreens Matrix

		Starting Phase							
		A	B	C	D	E	F	G	H
Terminating Phase	A		9	-	7	7	9	9	9
	B	5		8	5	9	7	9	9
	C	-	5		7	9	8	6	9
	D	9	6	9		10	10	10	8
	E	11	11	11	11		-	-	-
	F	11	11	11	11	-		-	-
	G	11	11	11	11	-	-		-
	H	11	11	11	11	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	D
3	B
4	E F G H

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		7	9	9
	2	9		6	10
	3	8	5		9
	4	11	11	11	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Cardiff Road / St Athans Road											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Cardiff Road)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	2.00	1.00	0.50	2	2.00
3/1 (Eastgate)	6/1 (Right)	1439	0	1/1	1.09	To 6/1 (Left) To 7/1 (Ahead)	2.00	1.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: Cardiff Road / St Athans Road

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Cardiff Road)	O	A	2	3	60.0	Geom	-	4.25	0.00	Y	Arm 6 Left	12.50
											Arm 7 Ahead	Inf
											Arm 8 Right	10.00
2/1 (St Athans Road)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	15.00
											Arm 7 Left	7.50
											Arm 8 Ahead	Inf
3/1 (Eastgate)	O	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	10.00
											Arm 8 Left	5.00
4/1 (Aberth Road)	U	D	2	3	60.0	Geom	-	2.75	0.00	Y	Arm 5 Left	5.00
											Arm 6 Ahead	Inf
											Arm 7 Right	7.50
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2022 Observed AM'	08:00	09:00	01:00	
2: '2022 Observed PM'	16:00	17:00	01:00	
3: '2024 AM'	08:00	09:00	01:00	
4: '2024 PM'	16:00	17:00	01:00	
5: '2034 AM'	08:00	09:00	01:00	
6: '2034 PM'	16:00	17:00	01:00	
11: '2022 + Com AM'	08:00	09:00	01:00	F1+F9
12: '2022 + Com PM'	16:00	17:00	01:00	F2+F10
13: '2024 + Com AM'	08:00	09:00	01:00	F3+F9
14: '2024 + Com PM'	16:00	17:00	01:00	F4+F10
15: '2034 + Com AM'	08:00	09:00	01:00	F5+F9
16: '2034 + Com PM'	16:00	17:00	01:00	F6+F10
17: '2022 + Com + Dev AM'	08:00	09:00	01:00	F11+F7
18: '2022 + Com + Dev PM'	16:00	17:00	01:00	F12+F8
19: '2024 + Com + Dev AM'	08:00	09:00	01:00	F13+F7
20: '2024 + Com + Dev PM'	16:00	17:00	01:00	F14+F8
21: '2034 + Com + Dev AM'	08:00	09:00	01:00	F15+F7
22: '2034 + Com + Dev PM'	16:00	17:00	01:00	F16+F8

Scenario 1: '2022 Observed AM' (FG1: '2022 Observed AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	64	92	216	372
	B	84	0	61	126	271
	C	122	63	0	89	274
	D	192	73	36	0	301
	Tot.	398	200	189	431	1218

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2022 Observed AM
Junction: Cardiff Road / St Athans Road	
1/1	271
2/1	274
3/1	301
4/1	372
5/1	200
6/1	189
7/1	431
8/1	398

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.5 %	1900	1900
				Arm 7 Ahead	Inf	46.5 %		
				Arm 8 Right	10.00	31.0 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	23.0 %	1760	1760
				Arm 7 Left	7.50	32.5 %		
				Arm 8 Ahead	Inf	44.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	24.3 %	1604	1604
				Arm 6 Right	10.00	12.0 %		
				Arm 8 Left	5.00	63.8 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.2 %	1619	1619
				Arm 6 Ahead	Inf	24.7 %		
				Arm 7 Right	7.50	58.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: '2022 Observed PM' (FG2: '2022 Observed PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	68	197	308
	B	43	0	47	118	208
	C	80	41	0	62	183
	D	178	81	40	0	299
	Tot.	301	165	155	377	998

Traffic Lane Flows

Lane	Scenario 2: 2022 Observed PM
Junction: Cardiff Road / St Athans Road	
1/1	208
2/1	183
3/1	299
4/1	308
5/1	165
6/1	155
7/1	377
8/1	301

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.6 %	1928	1928
				Arm 7 Ahead	Inf	56.7 %		
				Arm 8 Right	10.00	20.7 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.4 %	1757	1757
				Arm 7 Left	7.50	33.9 %		
				Arm 8 Ahead	Inf	43.7 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.1 %	1618	1618
				Arm 6 Right	10.00	13.4 %		
				Arm 8 Left	5.00	59.5 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	14.0 %	1616	1616
				Arm 6 Ahead	Inf	22.1 %		
				Arm 7 Right	7.50	64.0 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2022 + Com AM' (FG11: '2022 + Com AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	64	96	216	376
	B	84	0	64	130	278
	C	135	70	0	98	303
	D	192	83	37	0	312
	Tot.	411	217	197	444	1269

Traffic Lane Flows

Lane	Scenario 3: 2022 + Com AM
Junction: Cardiff Road / St Athans Road	
1/1	278
2/1	303
3/1	312
4/1	376
5/1	217
6/1	197
7/1	444
8/1	411

Full Input Data And Results

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	23.0 %	1901	1901
				Arm 7 Ahead	Inf	46.8 %		
				Arm 8 Right	10.00	30.2 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	23.1 %	1760	1760
				Arm 7 Left	7.50	32.3 %		
				Arm 8 Ahead	Inf	44.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.6 %	1613	1613
				Arm 6 Right	10.00	11.9 %		
				Arm 8 Left	5.00	61.5 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.0 %	1621	1621
				Arm 6 Ahead	Inf	25.5 %		
				Arm 7 Right	7.50	57.4 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2022 + Com PM' (FG12: '2022 + Com PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	79	197	319
	B	43	0	54	123	220
	C	87	45	0	67	199
	D	178	86	46	0	310
	Tot.	308	174	179	387	1048

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2022 + Com PM
Junction: Cardiff Road / St Athans Road	
1/1	220
2/1	199
3/1	310
4/1	319
5/1	174
6/1	179
7/1	387
8/1	308

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	24.5 %	1927	1927
				Arm 7 Ahead	Inf	55.9 %		
				Arm 8 Right	10.00	19.5 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.6 %	1757	1757
				Arm 7 Left	7.50	33.7 %		
				Arm 8 Ahead	Inf	43.7 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.7 %	1624	1624
				Arm 6 Right	10.00	14.8 %		
				Arm 8 Left	5.00	57.4 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	13.5 %	1624	1624
				Arm 6 Ahead	Inf	24.8 %		
				Arm 7 Right	7.50	61.8 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 5: '2022 + Com + Dev AM' (FG17: '2022 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	64	101	216	381
	B	84	0	68	130	282
	C	151	82	0	107	340
	D	192	83	40	0	315
	Tot.	427	229	209	453	1318

Traffic Lane Flows

Lane	Scenario 5: 2022 + Com + Dev AM
Junction: Cardiff Road / St Athans Road	
1/1	282
2/1	340
3/1	315
4/1	381
5/1	229
6/1	209
7/1	453
8/1	427

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	24.1 %	1900	1900
				Arm 7 Ahead	Inf	46.1 %		
				Arm 8 Right	10.00	29.8 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	24.1 %	1762	1762
				Arm 7 Left	7.50	31.5 %		
				Arm 8 Ahead	Inf	44.4 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.3 %	1614	1614
				Arm 6 Right	10.00	12.7 %		
				Arm 8 Left	5.00	61.0 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	16.8 %	1624	1624
				Arm 6 Ahead	Inf	26.5 %		
				Arm 7 Right	7.50	56.7 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2022 + Com + Dev PM' (FG18: '2022 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	95	197	335
	B	43	0	71	123	237
	C	96	54	0	74	224
	D	178	86	58	0	322
	Tot.	317	183	224	394	1118

Traffic Lane Flows

Lane	Scenario 6: 2022 + Com + Dev PM
Junction: Cardiff Road / St Athans Road	
1/1	237
2/1	224
3/1	322
4/1	335
5/1	183
6/1	224
7/1	394
8/1	317

Full Input Data And Results

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	30.0 %	1919	1919
				Arm 7 Ahead	Inf	51.9 %		
				Arm 8 Right	10.00	18.1 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	24.1 %	1757	1757
				Arm 7 Left	7.50	33.0 %		
				Arm 8 Ahead	Inf	42.9 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.7 %	1626	1626
				Arm 6 Right	10.00	18.0 %		
				Arm 8 Left	5.00	55.3 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	12.8 %	1635	1635
				Arm 6 Ahead	Inf	28.4 %		
				Arm 7 Right	7.50	58.8 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2024 AM' (FG3: '2024 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	65	93	219	377
	B	85	0	61	128	274
	C	124	64	0	90	278
	D	195	74	36	0	305
	Tot.	404	203	190	437	1234

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2024 AM
Junction: Cardiff Road / St Athans Road	
1/1	274
2/1	278
3/1	305
4/1	377
5/1	203
6/1	190
7/1	437
8/1	404

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.3 %	1901	1901
				Arm 7 Ahead	Inf	46.7 %		
				Arm 8 Right	10.00	31.0 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	23.0 %	1760	1760
				Arm 7 Left	7.50	32.4 %		
				Arm 8 Ahead	Inf	44.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	24.3 %	1604	1604
				Arm 6 Right	10.00	11.8 %		
				Arm 8 Left	5.00	63.9 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.2 %	1618	1618
				Arm 6 Ahead	Inf	24.7 %		
				Arm 7 Right	7.50	58.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 8: '2024 PM' (FG4: '2024 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	69	200	312
	B	43	0	48	119	210
	C	81	42	0	63	186
	D	181	83	41	0	305
	Tot.	305	168	158	382	1013

Traffic Lane Flows

Lane	Scenario 8: 2024 PM
Junction: Cardiff Road / St Athans Road	
1/1	210
2/1	186
3/1	305
4/1	312
5/1	168
6/1	158
7/1	382
8/1	305

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.9 %	1928	1928
				Arm 7 Ahead	Inf	56.7 %		
				Arm 8 Right	10.00	20.5 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.6 %	1756	1756
				Arm 7 Left	7.50	33.9 %		
				Arm 8 Ahead	Inf	43.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.2 %	1619	1619
				Arm 6 Right	10.00	13.4 %		
				Arm 8 Left	5.00	59.3 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	13.8 %	1616	1616
				Arm 6 Ahead	Inf	22.1 %		
				Arm 7 Right	7.50	64.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2024 + Com AM' (FG13: '2024 + Com AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	65	97	219	381
	B	85	0	64	132	281
	C	137	71	0	99	307
	D	195	84	37	0	316
	Tot.	417	220	198	450	1285

Traffic Lane Flows

Lane	Scenario 9: 2024 + Com AM
Junction: Cardiff Road / St Athans Road	
1/1	281
2/1	307
3/1	316
4/1	381
5/1	220
6/1	198
7/1	450
8/1	417

Full Input Data And Results

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.8 %	1902	1902
				Arm 7 Ahead	Inf	47.0 %		
				Arm 8 Right	10.00	30.2 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	23.1 %	1761	1761
				Arm 7 Left	7.50	32.2 %		
				Arm 8 Ahead	Inf	44.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.6 %	1613	1613
				Arm 6 Right	10.00	11.7 %		
				Arm 8 Left	5.00	61.7 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.1 %	1621	1621
				Arm 6 Ahead	Inf	25.5 %		
				Arm 7 Right	7.50	57.5 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2024 + Com PM' (FG14: '2024 + Com PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	80	200	323
	B	43	0	55	124	222
	C	88	46	0	68	202
	D	181	88	47	0	316
	Tot.	312	177	182	392	1063

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2024 + Com PM
Junction: Cardiff Road / St Athans Road	
1/1	222
2/1	202
3/1	316
4/1	323
5/1	177
6/1	182
7/1	392
8/1	312

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	24.8 %	1927	1927
				Arm 7 Ahead	Inf	55.9 %		
				Arm 8 Right	10.00	19.4 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.8 %	1757	1757
				Arm 7 Left	7.50	33.7 %		
				Arm 8 Ahead	Inf	43.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.8 %	1625	1625
				Arm 6 Right	10.00	14.9 %		
				Arm 8 Left	5.00	57.3 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	13.3 %	1624	1624
				Arm 6 Ahead	Inf	24.8 %		
				Arm 7 Right	7.50	61.9 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 11: '2024 + Com + Dev AM' (FG19: '2024 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	65	102	219	386
	B	85	0	68	132	285
	C	153	83	0	108	344
	D	195	84	40	0	319
	Tot.	433	232	210	459	1334

Traffic Lane Flows

Lane	Scenario 11: 2024 + Com + Dev AM
Junction: Cardiff Road / St Athans Road	
1/1	285
2/1	344
3/1	319
4/1	386
5/1	232
6/1	210
7/1	459
8/1	433

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	23.9 %	1901	1901
				Arm 7 Ahead	Inf	46.3 %		
				Arm 8 Right	10.00	29.8 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	24.1 %	1762	1762
				Arm 7 Left	7.50	31.4 %		
				Arm 8 Ahead	Inf	44.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.3 %	1614	1614
				Arm 6 Right	10.00	12.5 %		
				Arm 8 Left	5.00	61.1 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	16.8 %	1624	1624
				Arm 6 Ahead	Inf	26.4 %		
				Arm 7 Right	7.50	56.7 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2024 + Com + Dev PM' (FG20: '2024 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	43	96	200	339
	B	43	0	72	124	239
	C	97	55	0	75	227
	D	181	88	59	0	328
	Tot.	321	186	227	399	1133

Traffic Lane Flows

Lane	Scenario 12: 2024 + Com + Dev PM
Junction: Cardiff Road / St Athans Road	
1/1	239
2/1	227
3/1	328
4/1	339
5/1	186
6/1	227
7/1	399
8/1	321

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	30.1 %	1919	1919
				Arm 7 Ahead	Inf	51.9 %		
				Arm 8 Right	10.00	18.0 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	24.2 %	1756	1756
				Arm 7 Left	7.50	33.0 %		
				Arm 8 Ahead	Inf	42.7 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.8 %	1627	1627
				Arm 6 Right	10.00	18.0 %		
				Arm 8 Left	5.00	55.2 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	12.7 %	1635	1635
				Arm 6 Ahead	Inf	28.3 %		
				Arm 7 Right	7.50	59.0 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 13: '2034 AM' (FG5: '2034 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	70	100	234	404
	B	91	0	66	137	294
	C	133	68	0	97	298
	D	208	79	39	0	326
	Tot.	432	217	205	468	1322

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 13: 2034 AM
Junction: Cardiff Road / St Athans Road	
1/1	294
2/1	298
3/1	326
4/1	404
5/1	217
6/1	205
7/1	468
8/1	432

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.4 %	1901	1901
				Arm 7 Ahead	Inf	46.6 %		
				Arm 8 Right	10.00	31.0 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.8 %	1760	1760
				Arm 7 Left	7.50	32.6 %		
				Arm 8 Ahead	Inf	44.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	24.2 %	1604	1604
				Arm 6 Right	10.00	12.0 %		
				Arm 8 Left	5.00	63.8 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.3 %	1618	1618
				Arm 6 Ahead	Inf	24.8 %		
				Arm 7 Right	7.50	57.9 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 14: '2034 PM' (FG6: '2034 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	46	74	214	334
	B	47	0	52	128	227
	C	87	45	0	68	200
	D	194	89	44	0	327
	Tot.	328	180	170	410	1088

Traffic Lane Flows

Lane	Scenario 14: 2034 PM
Junction: Cardiff Road / St Athans Road	
1/1	227
2/1	200
3/1	327
4/1	334
5/1	180
6/1	170
7/1	410
8/1	328

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.9 %	1927	1927
				Arm 7 Ahead	Inf	56.4 %		
				Arm 8 Right	10.00	20.7 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.5 %	1756	1756
				Arm 7 Left	7.50	34.0 %		
				Arm 8 Ahead	Inf	43.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.2 %	1619	1619
				Arm 6 Right	10.00	13.5 %		
				Arm 8 Left	5.00	59.3 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	13.8 %	1616	1616
				Arm 6 Ahead	Inf	22.2 %		
				Arm 7 Right	7.50	64.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 15: '2034 + Com AM' (FG15: '2034 + Com AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	70	104	234	408
	B	91	0	69	141	301
	C	146	75	0	106	327
	D	208	89	40	0	337
	Tot.	445	234	213	481	1373

Traffic Lane Flows

Lane	Scenario 15: 2034 + Com AM
Junction: Cardiff Road / St Athans Road	
1/1	301
2/1	327
3/1	337
4/1	408
5/1	234
6/1	213
7/1	481
8/1	445

Full Input Data And Results

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	22.9 %	1901	1901
				Arm 7 Ahead	Inf	46.8 %		
				Arm 8 Right	10.00	30.2 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.9 %	1760	1760
				Arm 7 Left	7.50	32.4 %		
				Arm 8 Ahead	Inf	44.6 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.4 %	1613	1613
				Arm 6 Right	10.00	11.9 %		
				Arm 8 Left	5.00	61.7 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	17.2 %	1621	1621
				Arm 6 Ahead	Inf	25.5 %		
				Arm 7 Right	7.50	57.4 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 16: '2034 + Com PM' (FG16: '2034 + Com PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	46	85	214	345
	B	47	0	59	133	239
	C	94	49	0	73	216
	D	194	94	50	0	338
	Tot.	335	189	194	420	1138

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 16: 2034 + Com PM
Junction: Cardiff Road / St Athans Road	
1/1	239
2/1	216
3/1	338
4/1	345
5/1	189
6/1	194
7/1	420
8/1	335

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	24.7 %	1926	1926
				Arm 7 Ahead	Inf	55.6 %		
				Arm 8 Right	10.00	19.7 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	22.7 %	1756	1756
				Arm 7 Left	7.50	33.8 %		
				Arm 8 Ahead	Inf	43.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	27.8 %	1624	1624
				Arm 6 Right	10.00	14.8 %		
				Arm 8 Left	5.00	57.4 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	13.3 %	1624	1624
				Arm 6 Ahead	Inf	24.6 %		
				Arm 7 Right	7.50	62.0 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 17: '2034 + Com + Dev AM' (FG21: '2034 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	70	109	234	413
	B	91	0	73	141	305
	C	162	87	0	115	364
	D	208	89	43	0	340
	Tot.	461	246	225	490	1422

Traffic Lane Flows

Lane	Scenario 17: 2034 + Com + Dev AM
Junction: Cardiff Road / St Athans Road	
1/1	305
2/1	364
3/1	340
4/1	413
5/1	246
6/1	225
7/1	490
8/1	461

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	23.9 %	1900	1900
				Arm 7 Ahead	Inf	46.2 %		
				Arm 8 Right	10.00	29.8 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	23.9 %	1762	1762
				Arm 7 Left	7.50	31.6 %		
				Arm 8 Ahead	Inf	44.5 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.2 %	1613	1613
				Arm 6 Right	10.00	12.6 %		
				Arm 8 Left	5.00	61.2 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	16.9 %	1623	1623
				Arm 6 Ahead	Inf	26.4 %		
				Arm 7 Right	7.50	56.7 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 18: '2034 + Com + Dev PM' (FG22: '2034 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	46	101	214	361
	B	47	0	76	133	256
	C	103	58	0	80	241
	D	194	94	62	0	350
	Tot.	344	198	239	427	1208

Traffic Lane Flows

Lane	Scenario 18: 2034 + Com + Dev PM
Junction: Cardiff Road / St Athans Road	
1/1	256
2/1	241
3/1	350
4/1	361
5/1	198
6/1	239
7/1	427
8/1	344

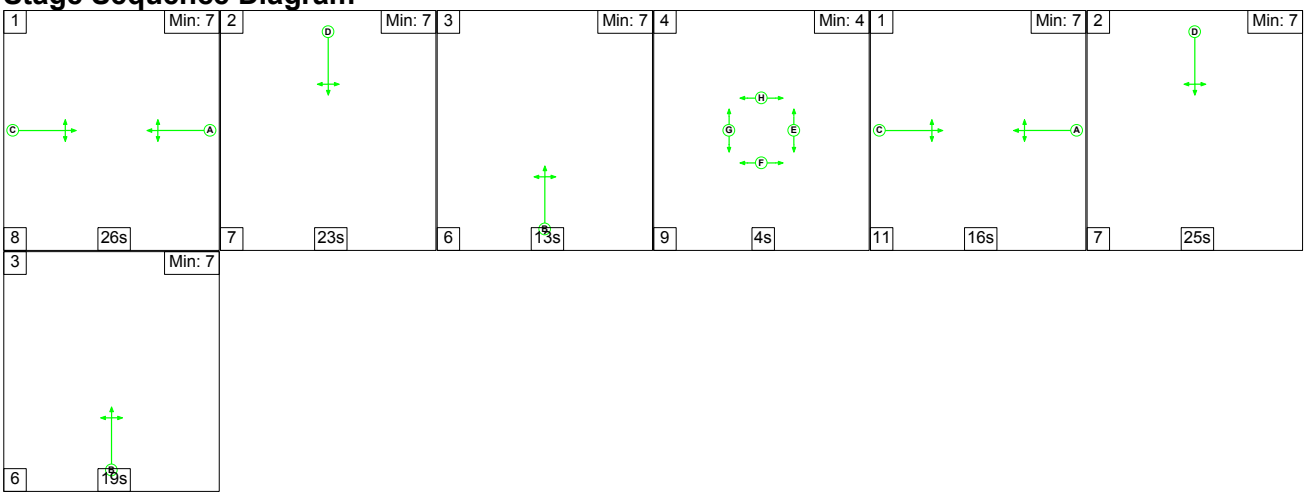
Full Input Data And Results

Lane Saturation Flows

Junction: Cardiff Road / St Athans Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Cardiff Road)	4.25	0.00	Y	Arm 6 Left	12.50	29.7 %	1919	1919
				Arm 7 Ahead	Inf	52.0 %		
				Arm 8 Right	10.00	18.4 %		
2/1 (St Athans Road)	3.00	0.00	Y	Arm 5 Right	15.00	24.1 %	1756	1756
				Arm 7 Left	7.50	33.2 %		
				Arm 8 Ahead	Inf	42.7 %		
3/1 (Eastgate)	3.25	0.00	Y	Arm 5 Ahead	Inf	26.9 %	1626	1626
				Arm 6 Right	10.00	17.7 %		
				Arm 8 Left	5.00	55.4 %		
4/1 (Aberth Road)	2.75	0.00	Y	Arm 5 Left	5.00	12.7 %	1634	1634
				Arm 6 Ahead	Inf	28.0 %		
				Arm 7 Right	7.50	59.3 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2022 Observed AM' (FG1: '2022 Observed AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

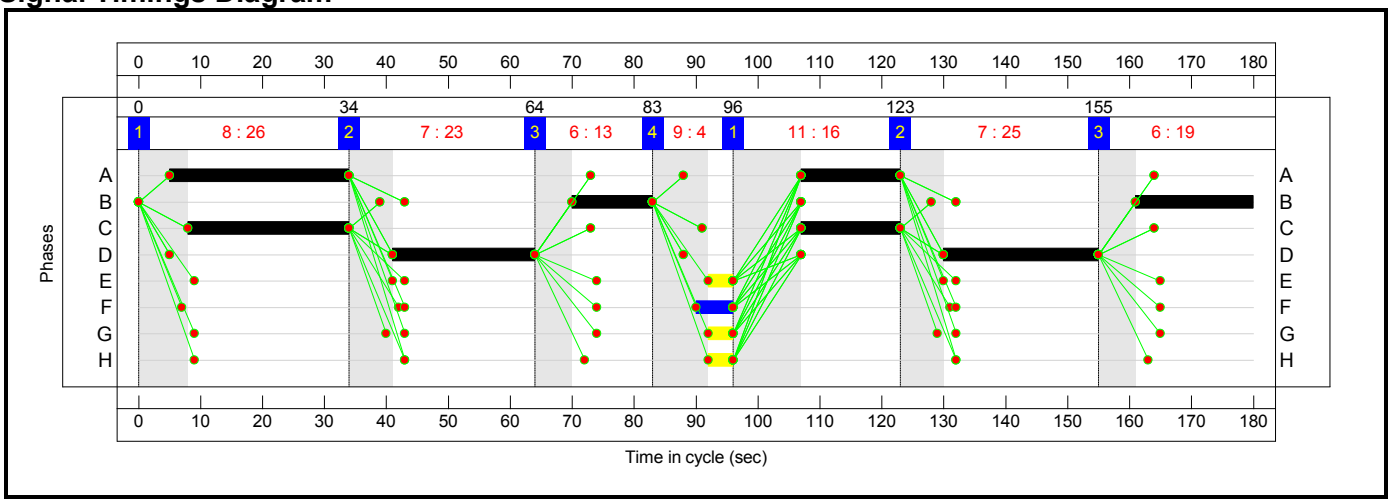


Stage Timings

Stage	1	2	3	4	1	2	3
Duration	26	23	13	4	16	25	19
Change Point	0	34	64	83	96	123	155

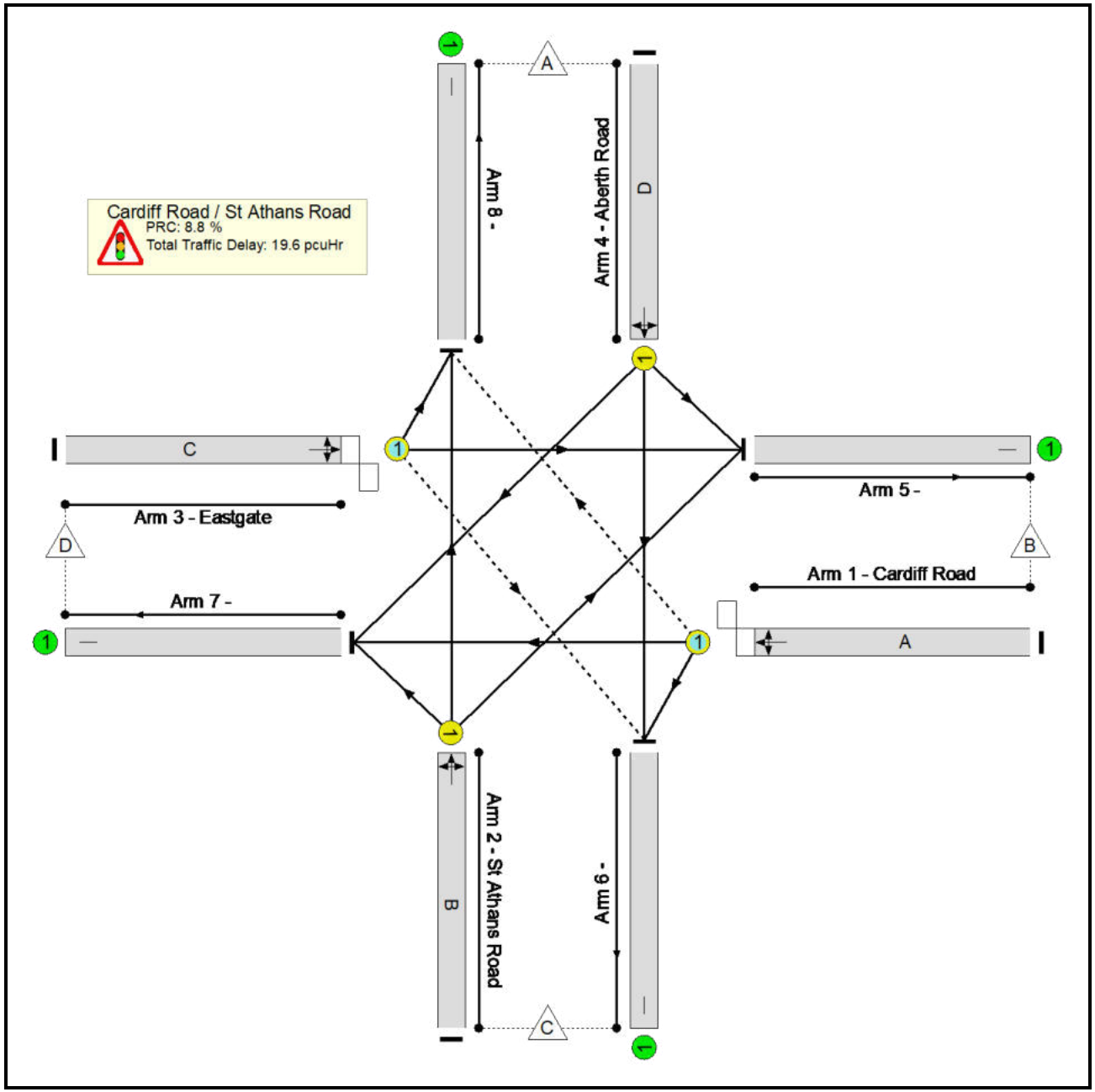
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.7%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.7%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	45	-	271	1900	329	82.4%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	32	-	274	1760	332	82.4%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	42	-	301	1604	392	76.8%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	48	-	372	1619	450	82.7%
5/1		U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	189	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	431	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	398	Inf	Inf	0.0%

Full Input Data And Results

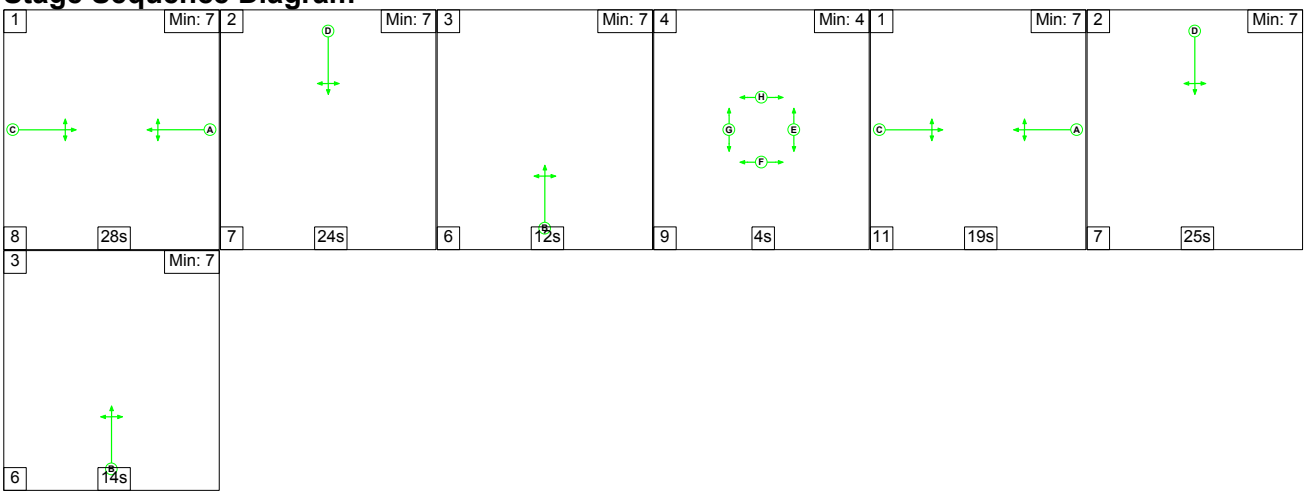
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**88**	**3**	**28**	**11.1**	**8.2**	**0.2**	**19.6**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**88**	**3**	**28**	**11.1**	**8.2**	**0.2**	**19.6**	**-**	**-**	**-**	**-**
1/1	271	271	54	3	27	2.7	2.2	0.2	5.0	66.7	6.7	2.2	8.9
2/1	274	274	-	-	-	2.7	2.2	-	4.9	63.8	6.9	2.2	9.1
3/1	301	301	34	0	2	2.7	1.6	0.0	4.3	51.1	7.4	1.6	9.0
4/1	372	372	-	-	-	3.1	2.3	-	5.4	52.4	8.7	2.3	10.9
5/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	431	431	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	398	398	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 8.8 Total Delay for Signalled Lanes (pcuHr): 19.56 Cycle Time (s): 180
PRC Over All Lanes (%): 8.8 Total Delay Over All Lanes(pcuHr): 19.56

Full Input Data And Results

Scenario 2: '2022 Observed PM' (FG2: '2022 Observed PM', Plan 1: 'Network Control Plan 1')

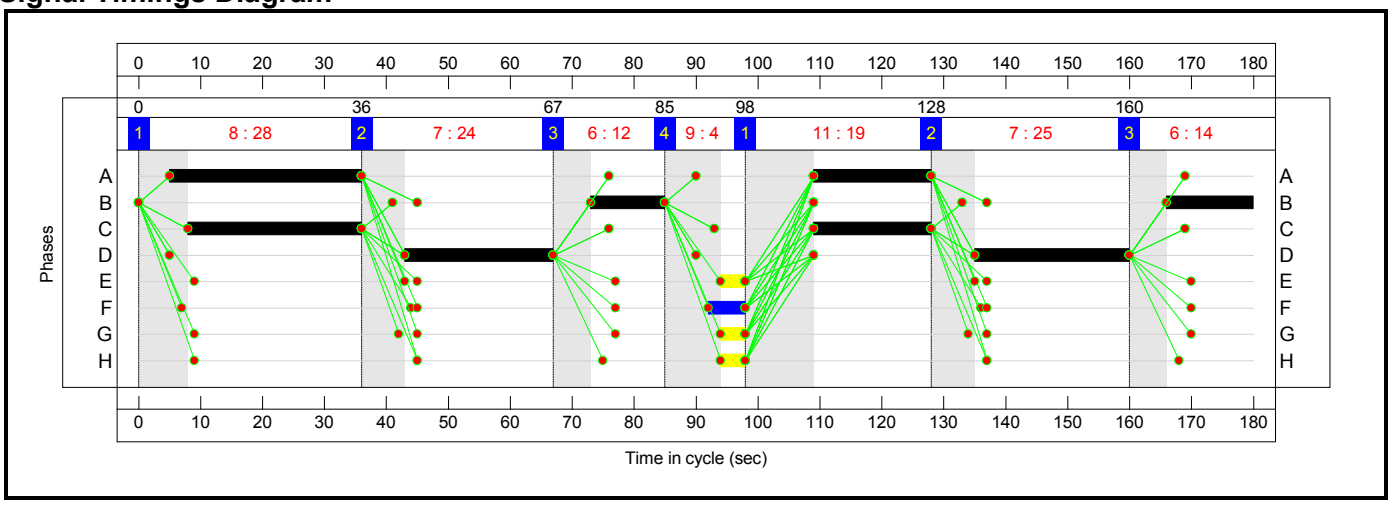
Stage Sequence Diagram



Stage Timings

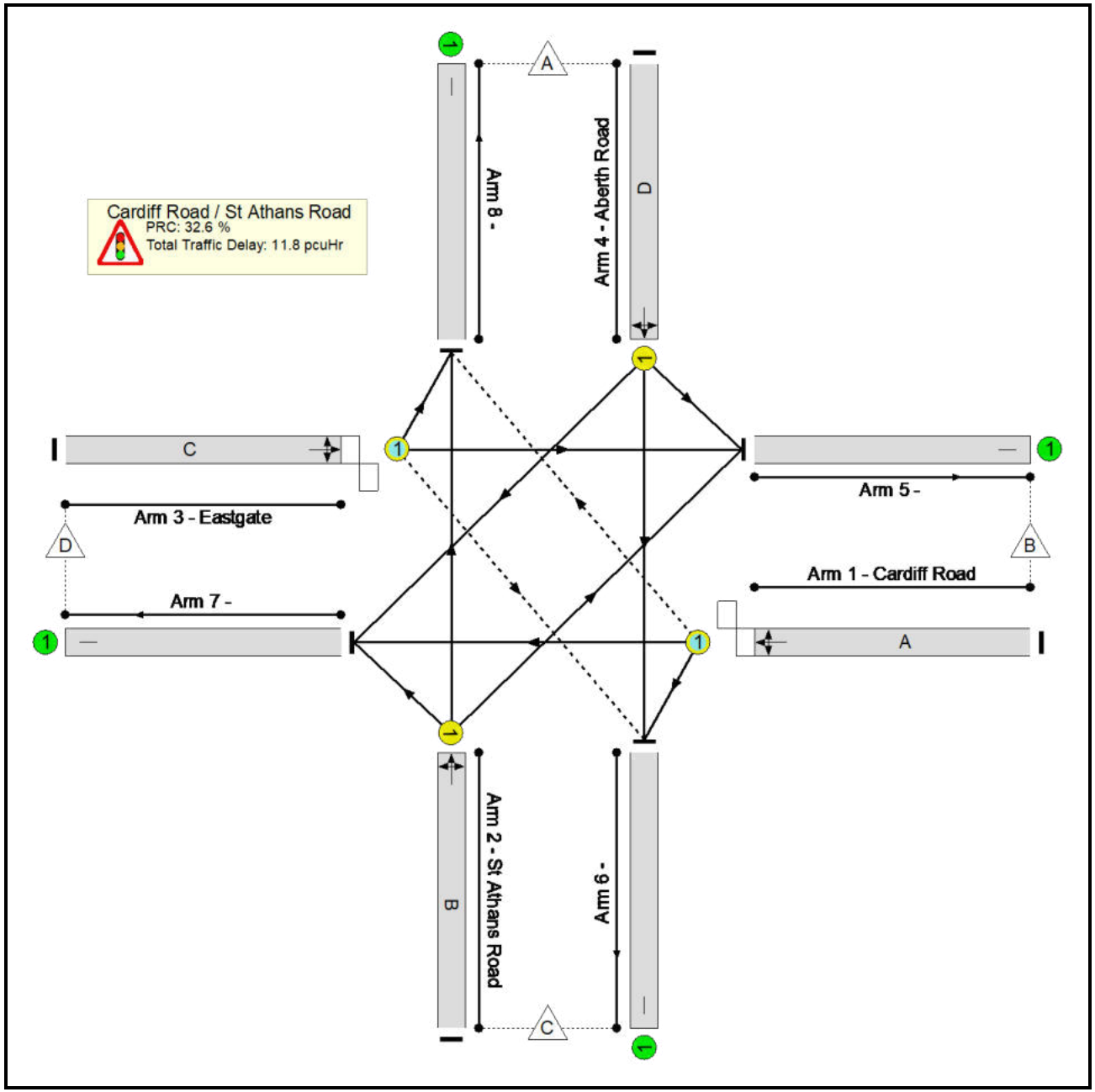
Stage	1	2	3	4	1	2	3
Duration	28	24	12	4	19	25	14
Change Point	0	36	67	85	98	128	160

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**67.9%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**67.9%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	208	1928	438	47.5%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	26	-	183	1757	273	67.0%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	299	1618	440	67.9%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	49	-	308	1616	458	67.3%
5/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	155	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	377	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	301	Inf	Inf	0.0%

Full Input Data And Results

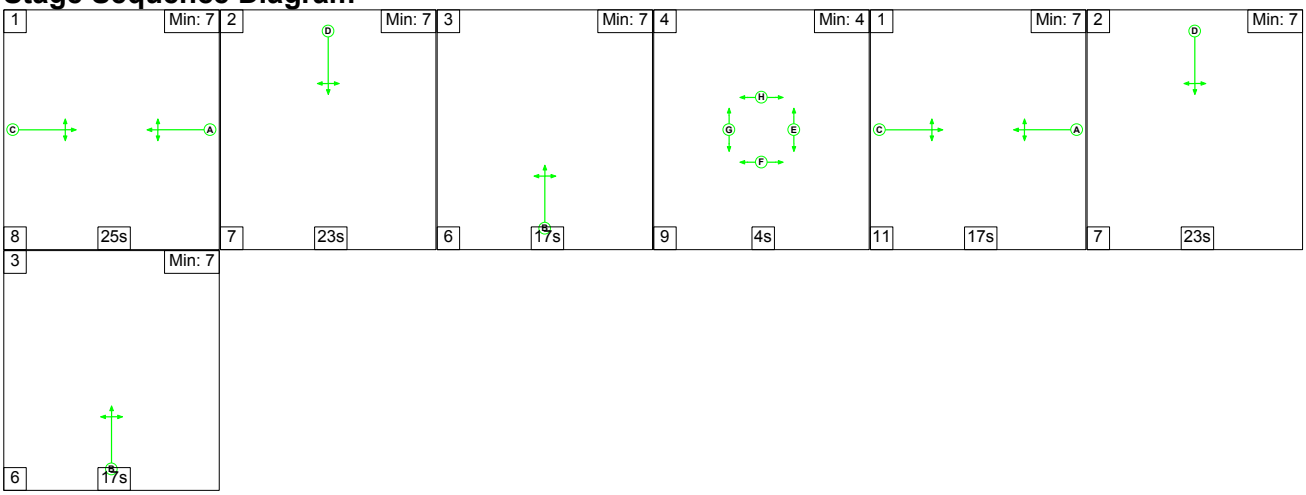
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**77**	**2**	**3**	**8.2**	**3.5**	**0.1**	**11.8**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**77**	**2**	**3**	**8.2**	**3.5**	**0.1**	**11.8**	**-**	**-**	**-**	**-**
1/1	208	208	38	2	3	1.5	0.5	0.1	2.0	34.9	4.6	0.5	5.1
2/1	183	183	-	-	-	1.8	1.0	-	2.8	55.4	4.5	1.0	5.5
3/1	299	299	40	0	0	2.5	1.0	0.0	3.5	42.3	7.3	1.0	8.4
4/1	308	308	-	-	-	2.4	1.0	-	3.5	40.5	7.0	1.0	8.0
5/1	165	165	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	155	155	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	377	377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 32.6 Total Delay for Signalled Lanes (pcuHr): 11.81 Cycle Time (s): 180
PRC Over All Lanes (%): 32.6 Total Delay Over All Lanes(pcuHr): 11.81

Full Input Data And Results

Scenario 3: '2022 + Com AM' (FG11: '2022 + Com AM', Plan 1: 'Network Control Plan 1')

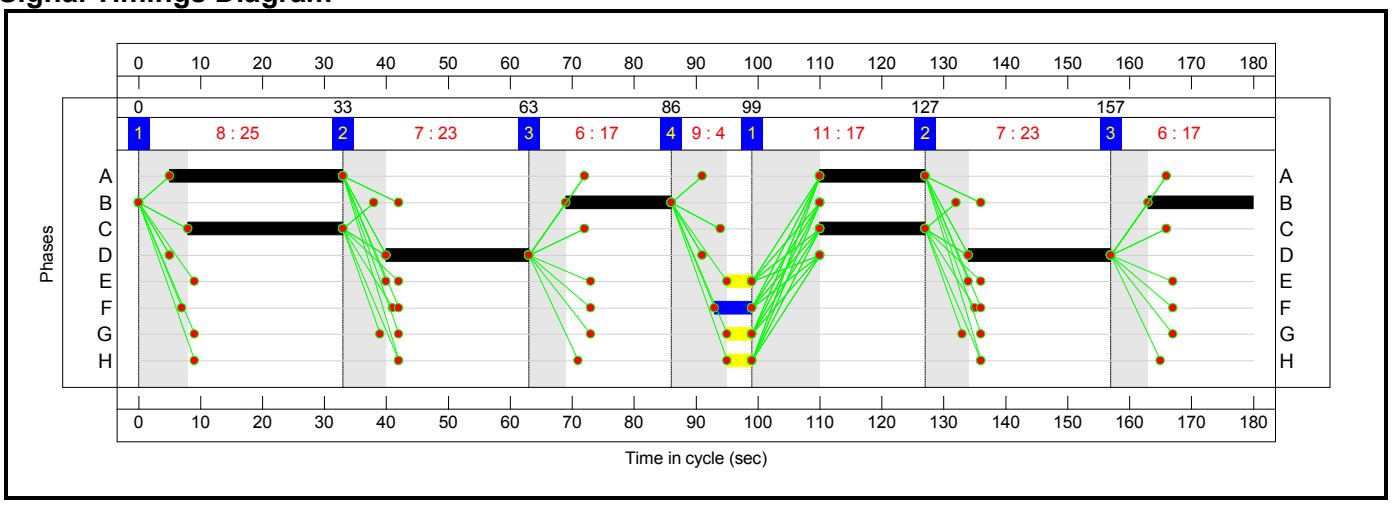
Stage Sequence Diagram



Stage Timings

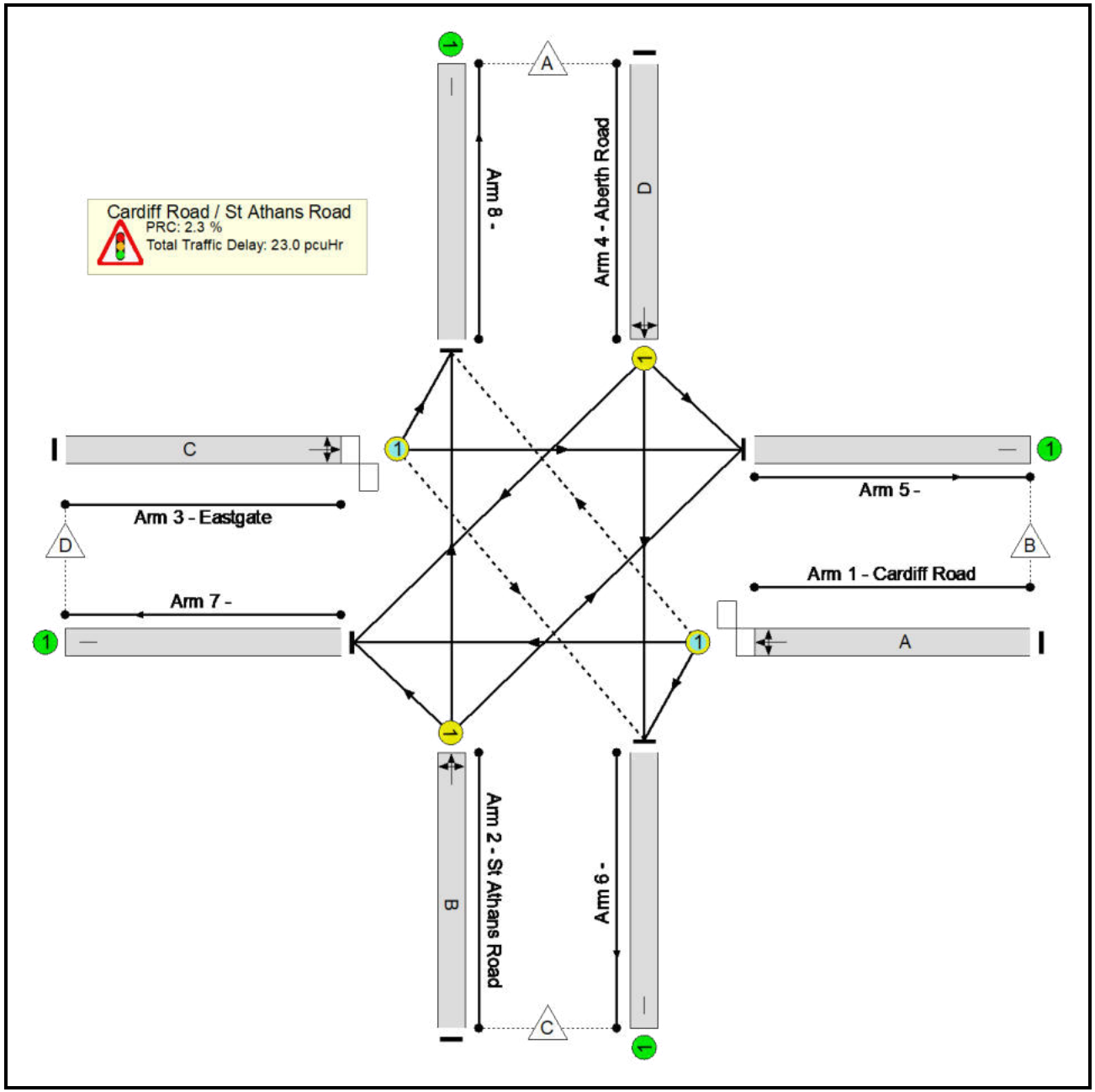
Stage	1	2	3	4	1	2	3
Duration	25	23	17	4	17	23	17
Change Point	0	33	63	86	99	127	157

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.9%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.9%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	45	-	278	1901	316	87.9%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	34	-	303	1760	352	86.1%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	42	-	312	1613	394	79.1%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	46	-	376	1621	432	87.0%
5/1		U	N/A	N/A	-		-	-	-	217	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	411	Inf	Inf	0.0%

Full Input Data And Results

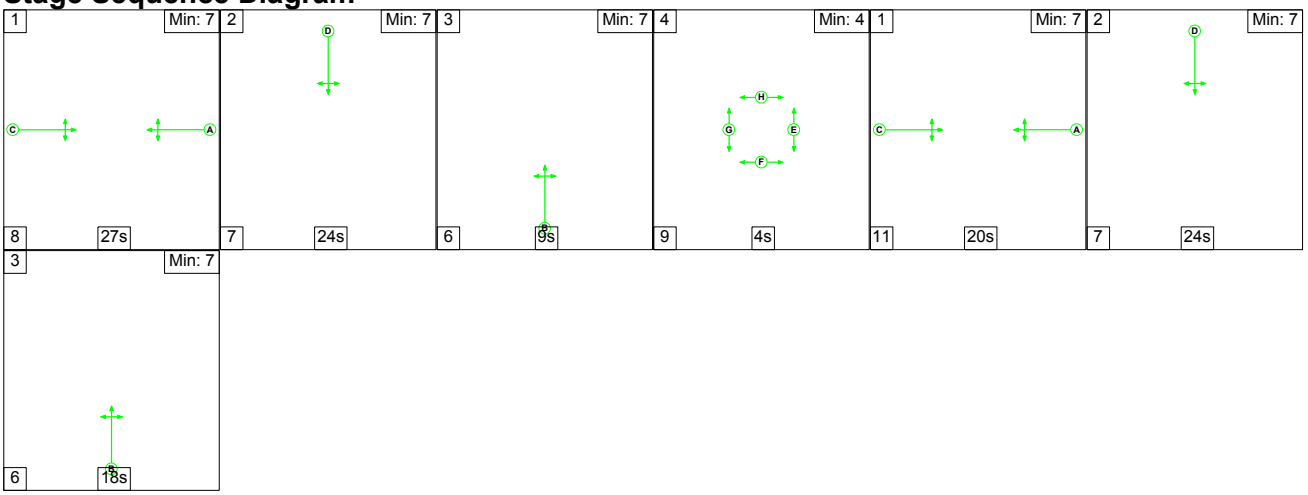
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**89**	**3**	**29**	**12.0**	**10.7**	**0.2**	**23.0**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**89**	**3**	**29**	**12.0**	**10.7**	**0.2**	**23.0**	**-**	**-**	**-**	**-**
1/1	278	278	54	3	27	2.9	3.1	0.2	6.3	81.3	7.8	3.1	10.9
2/1	303	303	-	-	-	2.9	2.8	-	5.7	67.9	7.7	2.8	10.4
3/1	312	312	35	0	2	2.8	1.8	0.0	4.7	53.9	8.1	1.8	10.0
4/1	376	376	-	-	-	3.3	3.0	-	6.3	60.5	9.5	3.0	12.5
5/1	217	217	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	444	444	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	411	411	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 2.3 Total Delay for Signalled Lanes (pcuHr): 22.98 Cycle Time (s): 180
PRC Over All Lanes (%): 2.3 Total Delay Over All Lanes(pcuHr): 22.98

Full Input Data And Results

Scenario 4: '2022 + Com PM' (FG12: '2022 + Com PM', Plan 1: 'Network Control Plan 1')

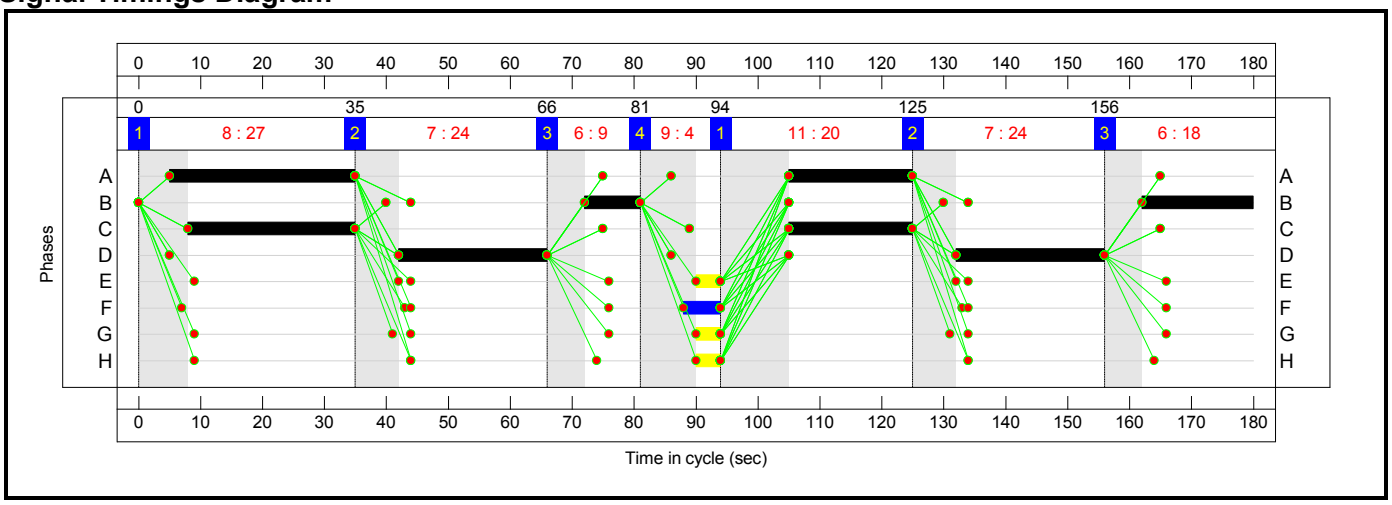
Stage Sequence Diagram



Stage Timings

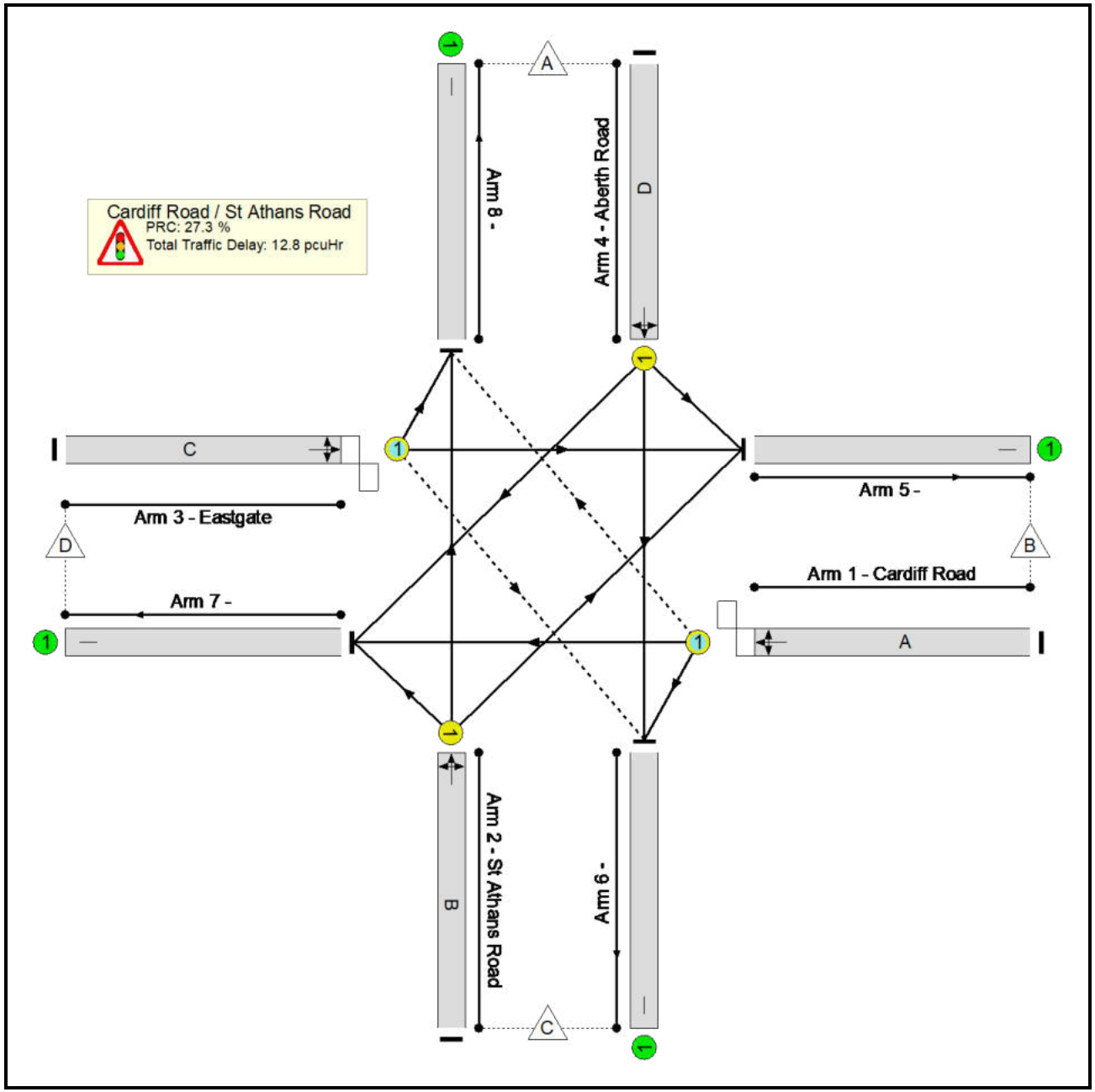
Stage	1	2	3	4	1	2	3
Duration	27	24	9	4	20	24	18
Change Point	0	35	66	81	94	125	156

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**70.7%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**70.7%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	220	1927	436	50.5%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	27	-	199	1757	283	70.3%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	310	1624	441	70.2%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	48	-	319	1624	451	70.7%
5/1		U	N/A	N/A	-		-	-	-	174	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	308	Inf	Inf	0.0%

Full Input Data And Results

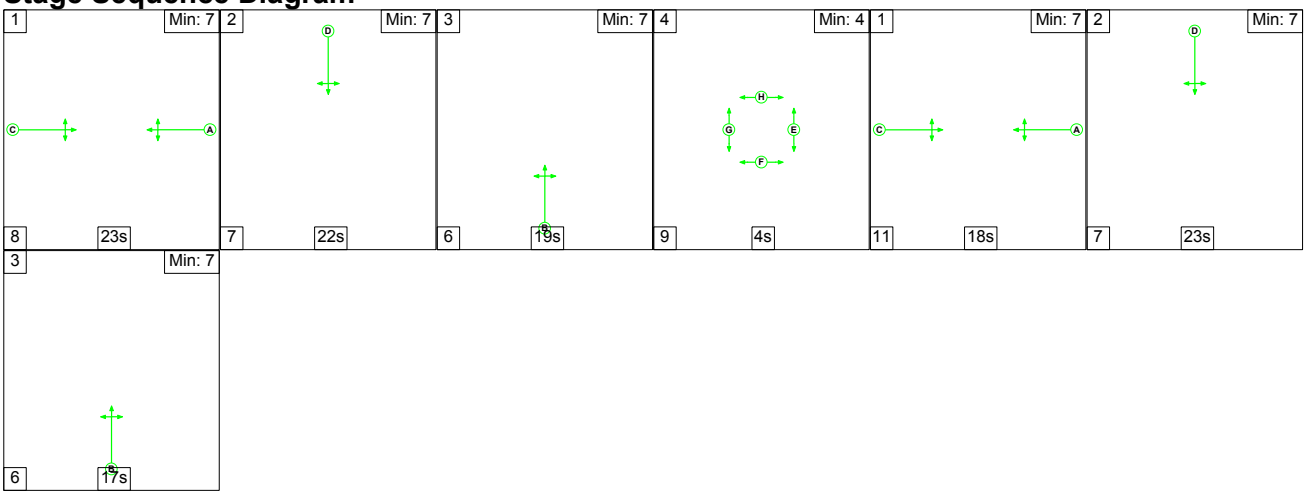
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**86**	**2**	**1**	**8.7**	**4.0**	**0.1**	**12.8**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**86**	**2**	**1**	**8.7**	**4.0**	**0.1**	**12.8**	**-**	**-**	**-**	**-**
1/1	220	220	40	2	0	1.6	0.5	0.1	2.2	35.3	4.7	0.5	5.2
2/1	199	199	-	-	-	2.0	1.2	-	3.1	56.7	5.0	1.2	6.1
3/1	310	310	45	0	1	2.5	1.2	0.0	3.7	43.3	7.3	1.2	8.5
4/1	319	319	-	-	-	2.6	1.2	-	3.8	42.6	7.1	1.2	8.3
5/1	174	174	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	179	179	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	308	308	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 27.3 Total Delay for Signalled Lanes (pcuHr): 12.79 Cycle Time (s): 180
PRC Over All Lanes (%): 27.3 Total Delay Over All Lanes(pcuHr): 12.79

Full Input Data And Results

Scenario 5: '2022 + Com + Dev AM' (FG17: '2022 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

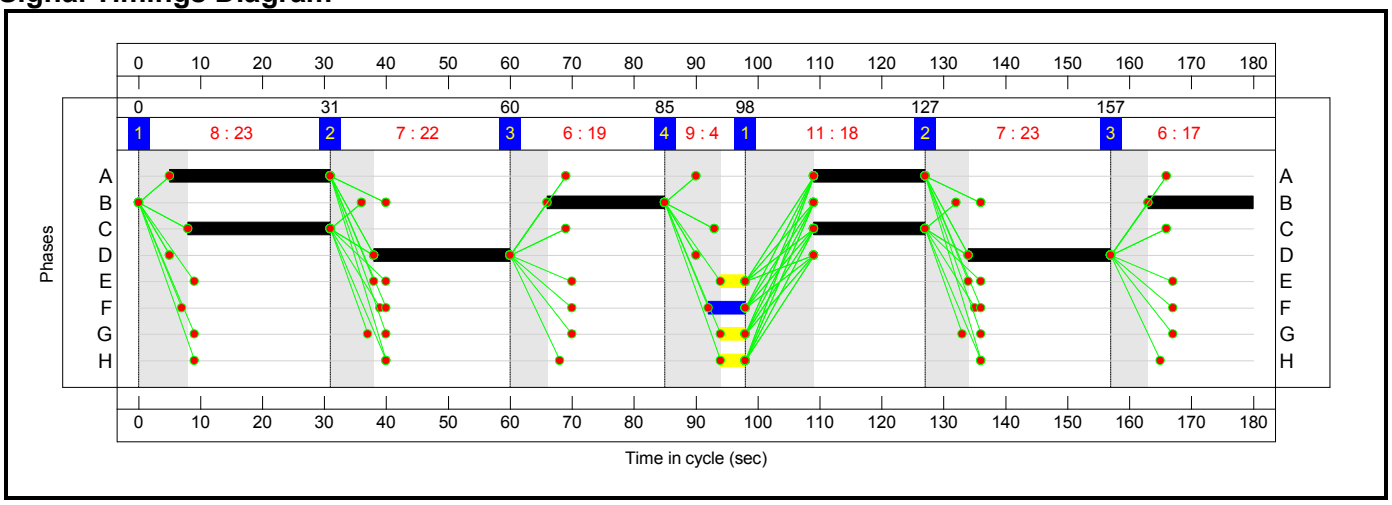
Stage Sequence Diagram



Stage Timings

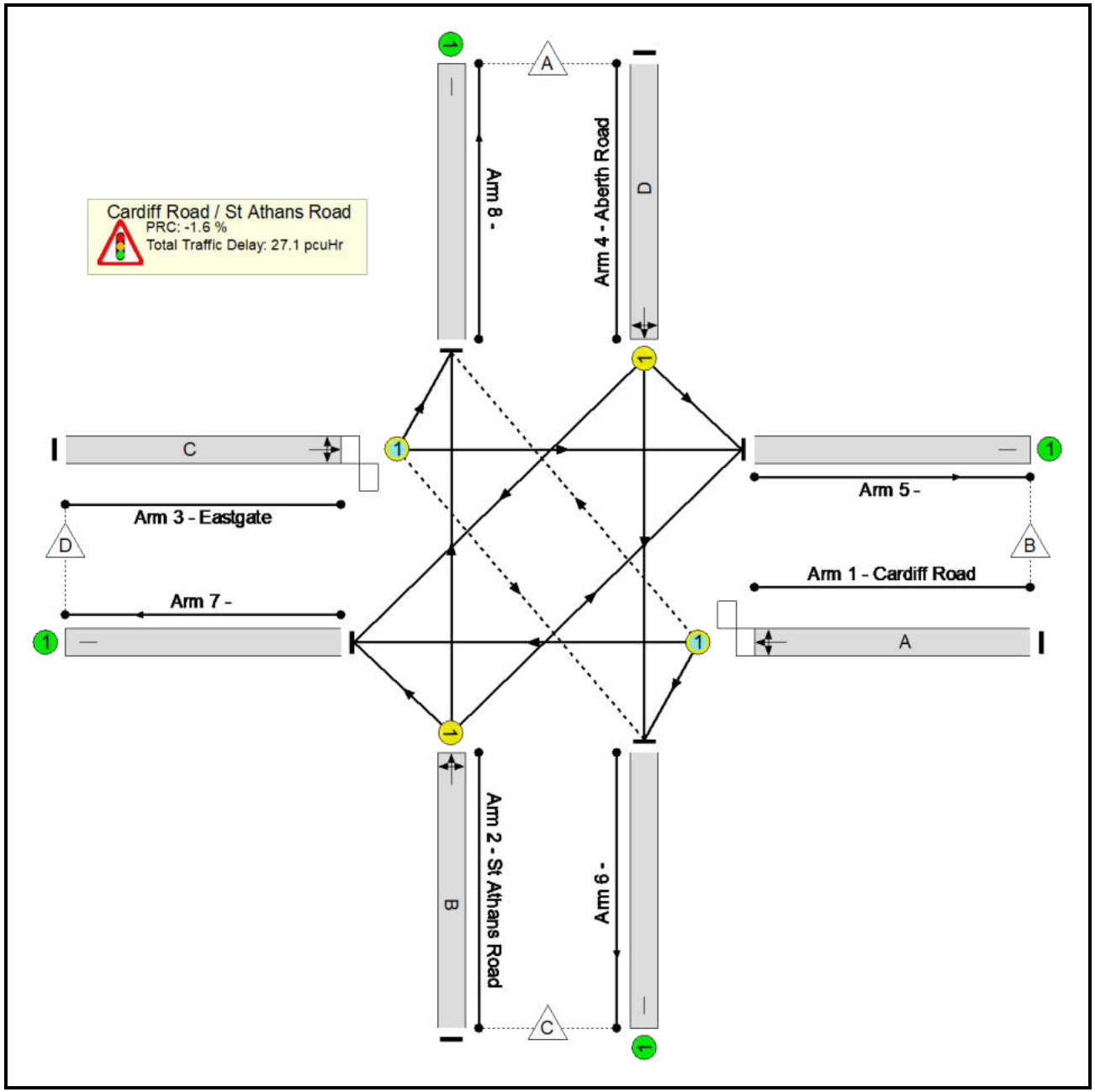
Stage	1	2	3	4	1	2	3
Duration	23	22	19	4	18	23	17
Change Point	0	31	60	85	98	127	157

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	44	-	282	1900	309	91.2%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	36	-	340	1762	372	91.4%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	41	-	315	1614	386	81.7%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	45	-	381	1624	424	89.8%
5/1		U	N/A	N/A	-		-	-	-	229	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	453	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%

Full Input Data And Results

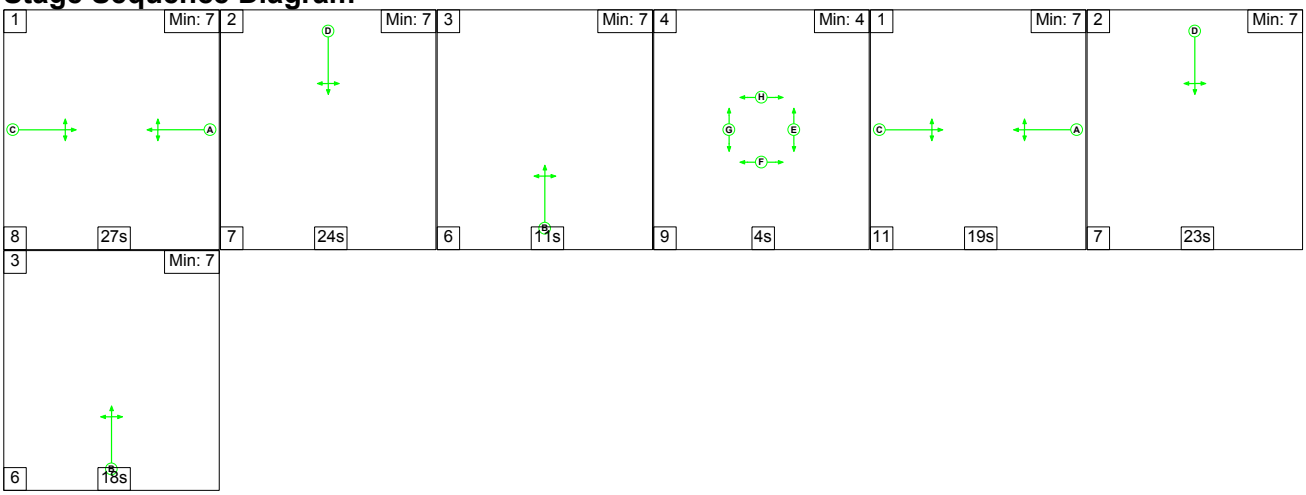
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**93**	**3**	**28**	**12.7**	**14.1**	**0.2**	**27.1**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**93**	**3**	**28**	**12.7**	**14.1**	**0.2**	**27.1**	**-**	**-**	**-**	**-**
1/1	282	282	54	3	26	3.1	4.0	0.2	7.3	92.8	7.5	4.0	11.5
2/1	340	340	-	-	-	3.4	4.2	-	7.6	80.3	9.0	4.2	13.2
3/1	315	315	38	0	2	2.9	2.1	0.0	5.0	57.3	8.3	2.1	10.4
4/1	381	381	-	-	-	3.4	3.8	-	7.2	68.0	10.1	3.8	13.8
5/1	229	229	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	453	453	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -1.6 Total Delay for Signalled Lanes (pcuHr): 27.07 Cycle Time (s): 180
PRC Over All Lanes (%): -1.6 Total Delay Over All Lanes(pcuHr): 27.07

Full Input Data And Results

Scenario 6: '2022 + Com + Dev PM' (FG18: '2022 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

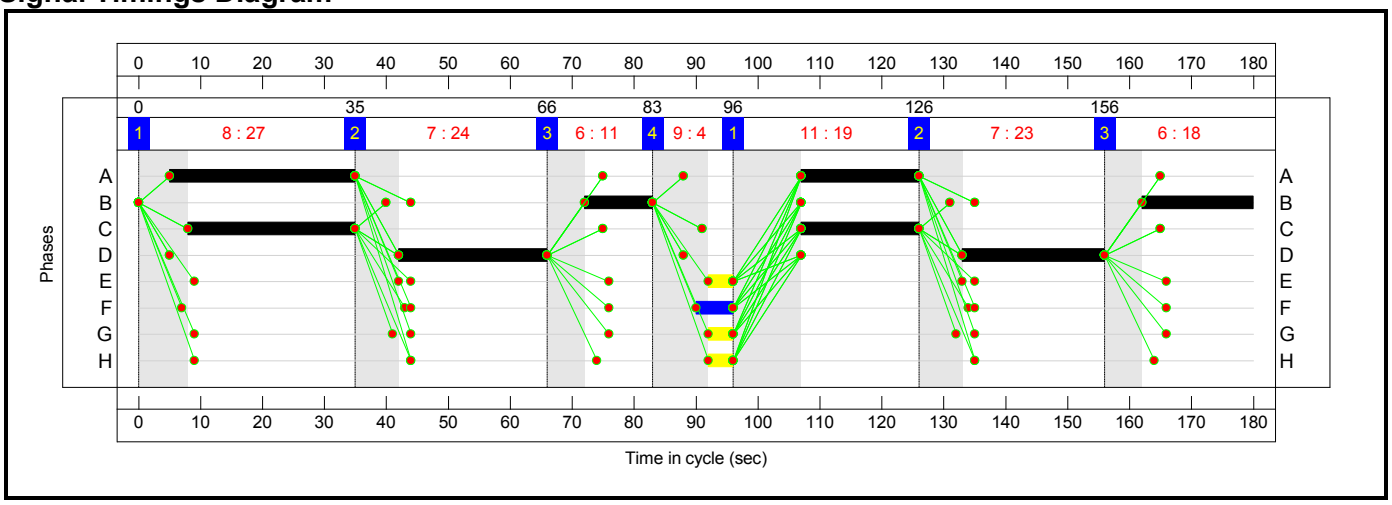
Stage Sequence Diagram



Stage Timings

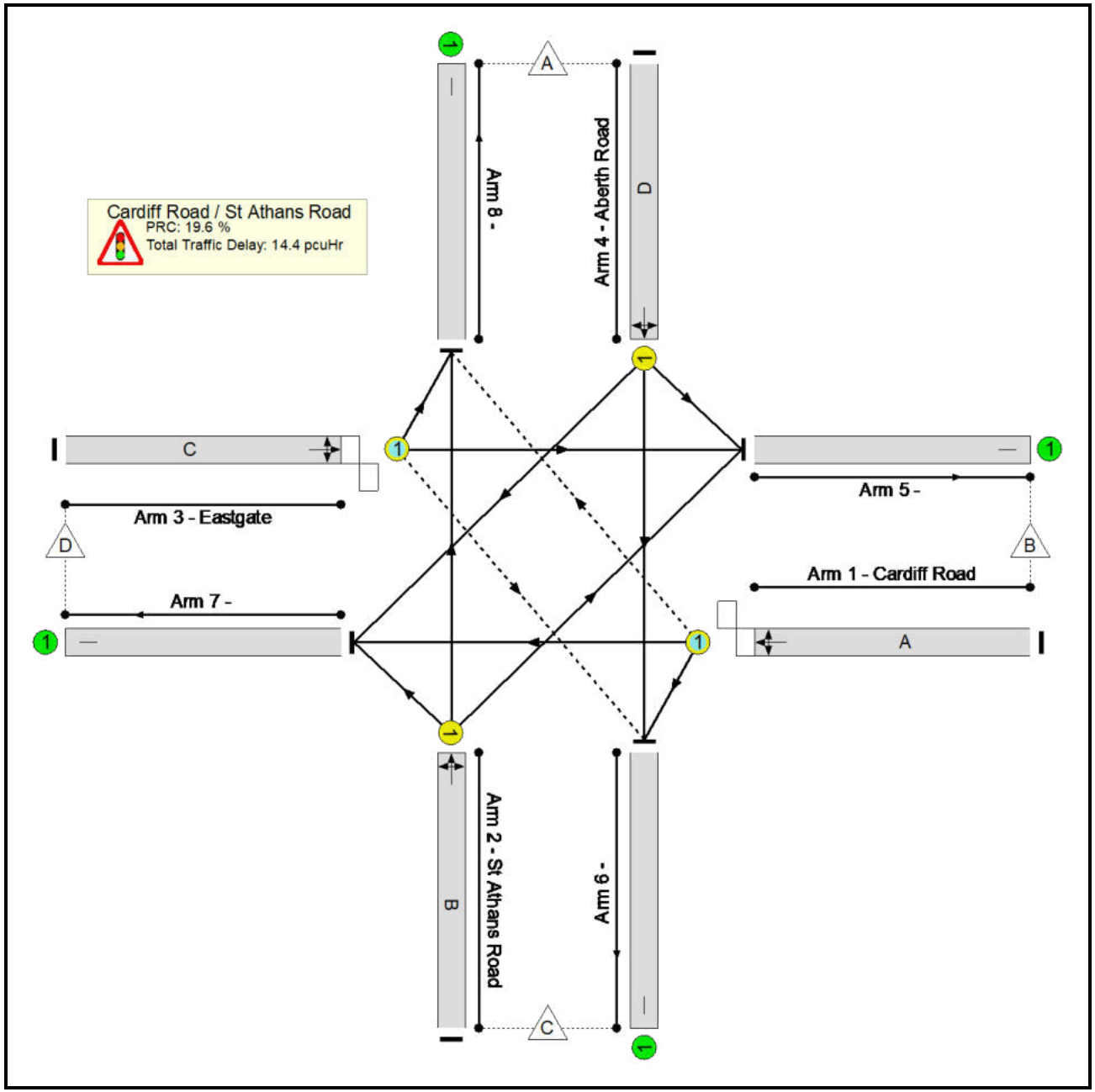
Stage	1	2	3	4	1	2	3
Duration	27	24	11	4	19	23	18
Change Point	0	35	66	83	96	126	156

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.3%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.3%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	49	-	237	1919	465	51.0%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	29	-	224	1757	303	74.0%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	46	-	322	1626	430	74.9%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	47	-	335	1635	445	75.3%
5/1		U	N/A	N/A	-		-	-	-	183	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	317	Inf	Inf	0.0%

Full Input Data And Results

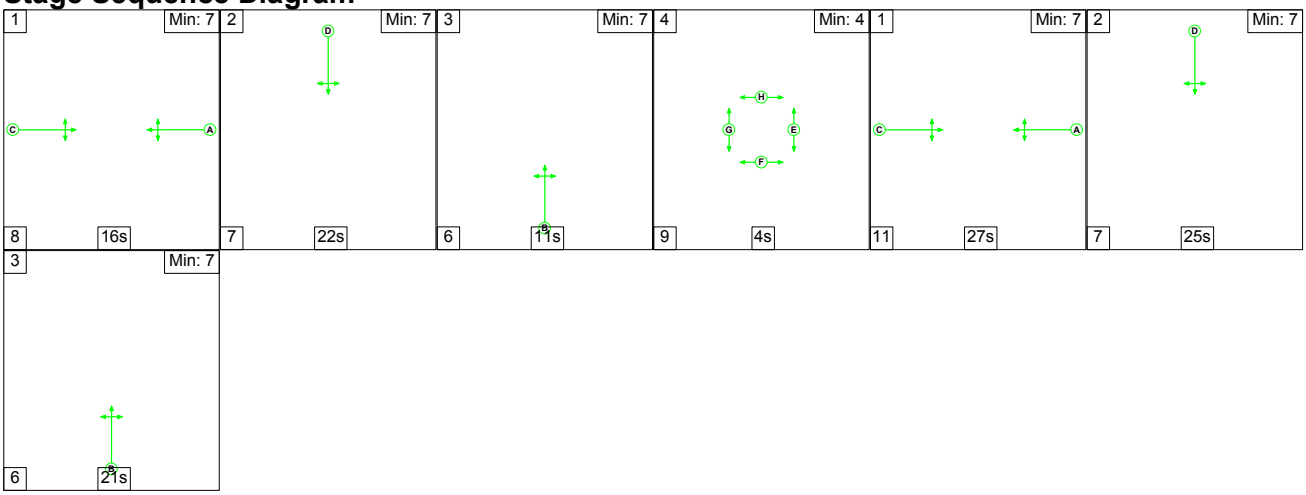
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**87**	**2**	**12**	**9.5**	**4.8**	**0.1**	**14.4**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**87**	**2**	**12**	**9.5**	**4.8**	**0.1**	**14.4**	**-**	**-**	**-**	**-**
1/1	237	237	30	2	11	1.8	0.5	0.1	2.3	35.6	5.3	0.5	5.9
2/1	224	224	-	-	-	2.2	1.4	-	3.6	57.6	5.5	1.4	6.9
3/1	322	322	57	0	1	2.7	1.4	0.0	4.2	47.1	8.0	1.4	9.4
4/1	335	335	-	-	-	2.8	1.5	-	4.3	45.9	7.7	1.5	9.2
5/1	183	183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	317	317	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 19.6 Total Delay for Signalled Lanes (pcuHr): 14.41 Cycle Time (s): 180
PRC Over All Lanes (%): 19.6 Total Delay Over All Lanes(pcuHr): 14.41

Full Input Data And Results

Scenario 7: '2024 AM' (FG3: '2024 AM', Plan 1: 'Network Control Plan 1')

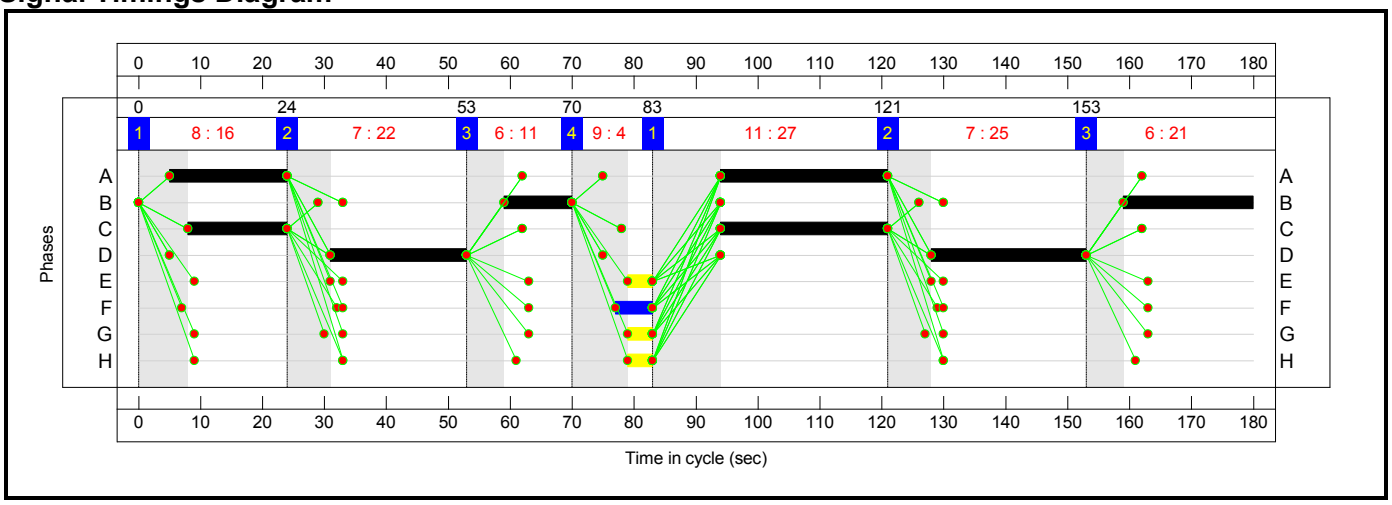
Stage Sequence Diagram



Stage Timings

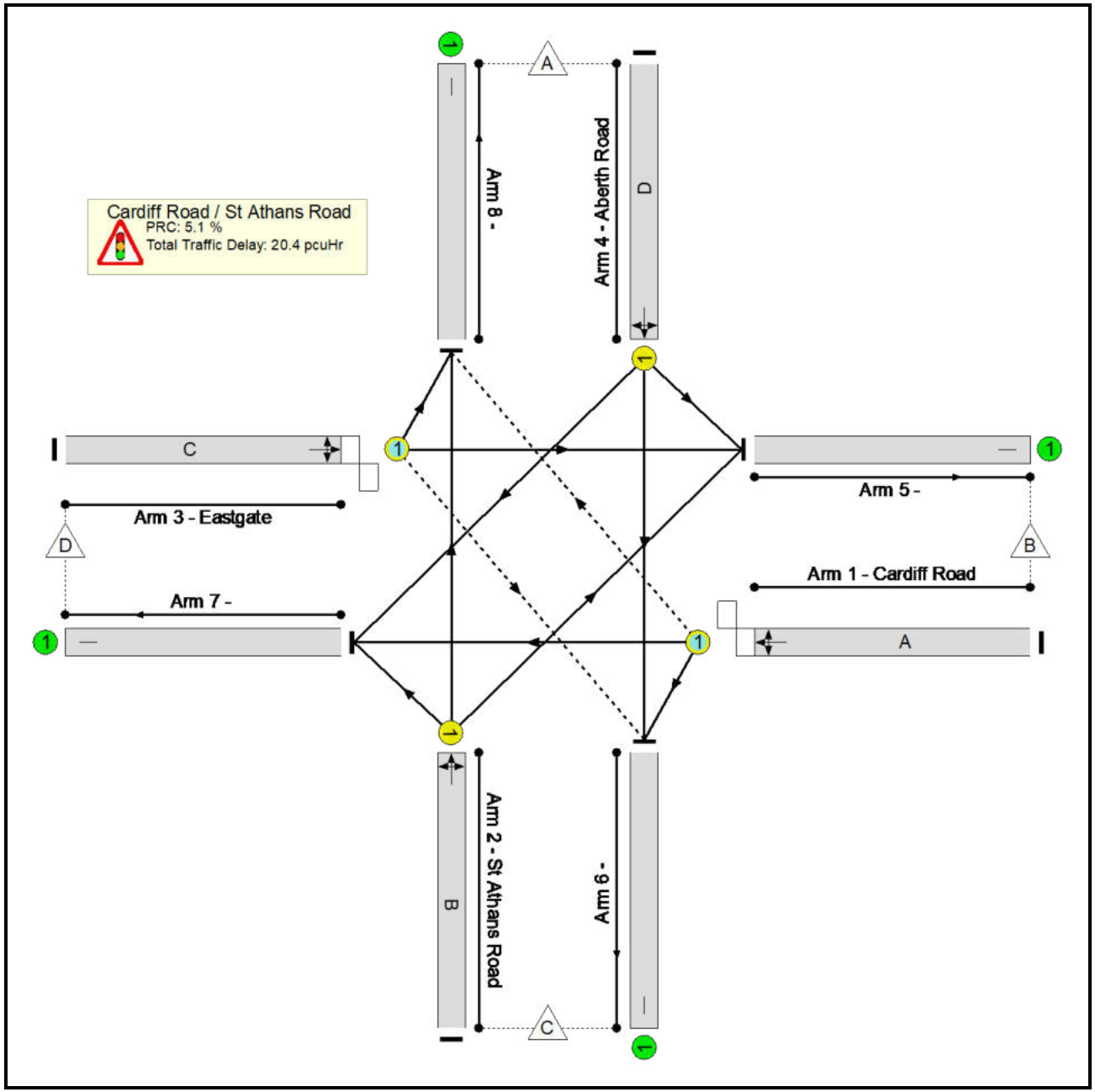
Stage	1	2	3	4	1	2	3
Duration	16	22	11	4	27	25	21
Change Point	0	24	53	70	83	121	153

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**85.6%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**85.6%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	46	-	274	1901	321	85.4%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	32	-	278	1760	332	83.6%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	43	-	305	1604	401	76.1%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	47	-	377	1618	440	85.6%
5/1		U	N/A	N/A	-		-	-	-	203	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	190	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	437	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%

Full Input Data And Results

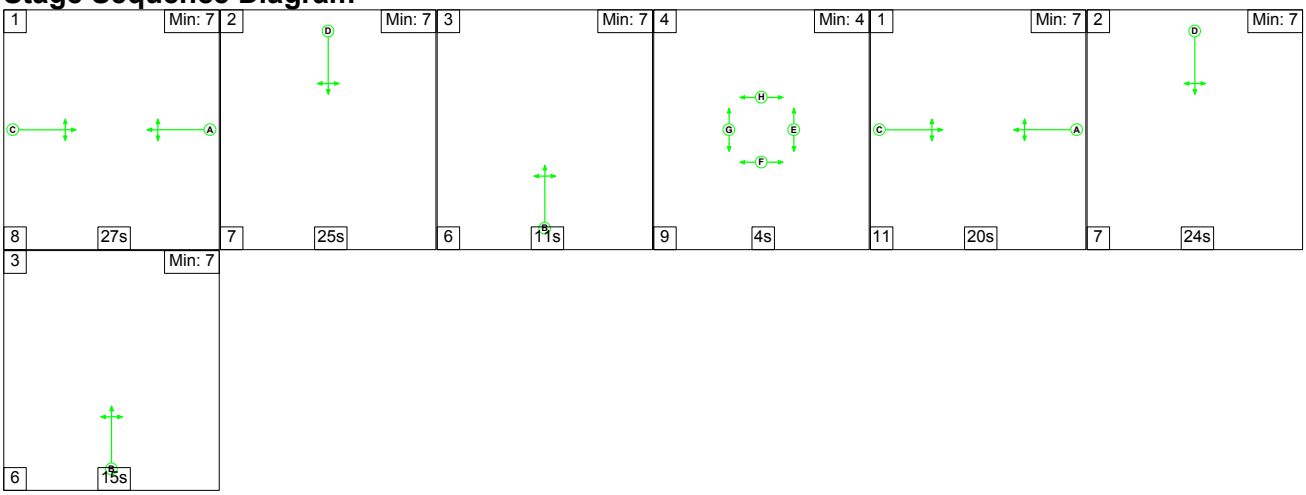
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**94**	**3**	**24**	**11.0**	**9.3**	**0.2**	**20.4**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**94**	**3**	**24**	**11.0**	**9.3**	**0.2**	**20.4**	**-**	**-**	**-**	**-**
1/1	274	274	59	3	23	2.2	2.6	0.2	5.0	65.9	7.1	2.6	9.7
2/1	278	278	-	-	-	2.8	2.4	-	5.2	67.1	8.0	2.4	10.4
3/1	305	305	35	0	1	2.6	1.5	0.0	4.2	49.7	7.2	1.5	8.7
4/1	377	377	-	-	-	3.3	2.7	-	6.0	57.7	10.1	2.7	12.8
5/1	203	203	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	190	190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	437	437	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 5.1 Total Delay for Signalled Lanes (pcuHr): 20.45 Cycle Time (s): 180
PRC Over All Lanes (%): 5.1 Total Delay Over All Lanes(pcuHr): 20.45

Full Input Data And Results

Scenario 8: '2024 PM' (FG4: '2024 PM', Plan 1: 'Network Control Plan 1')

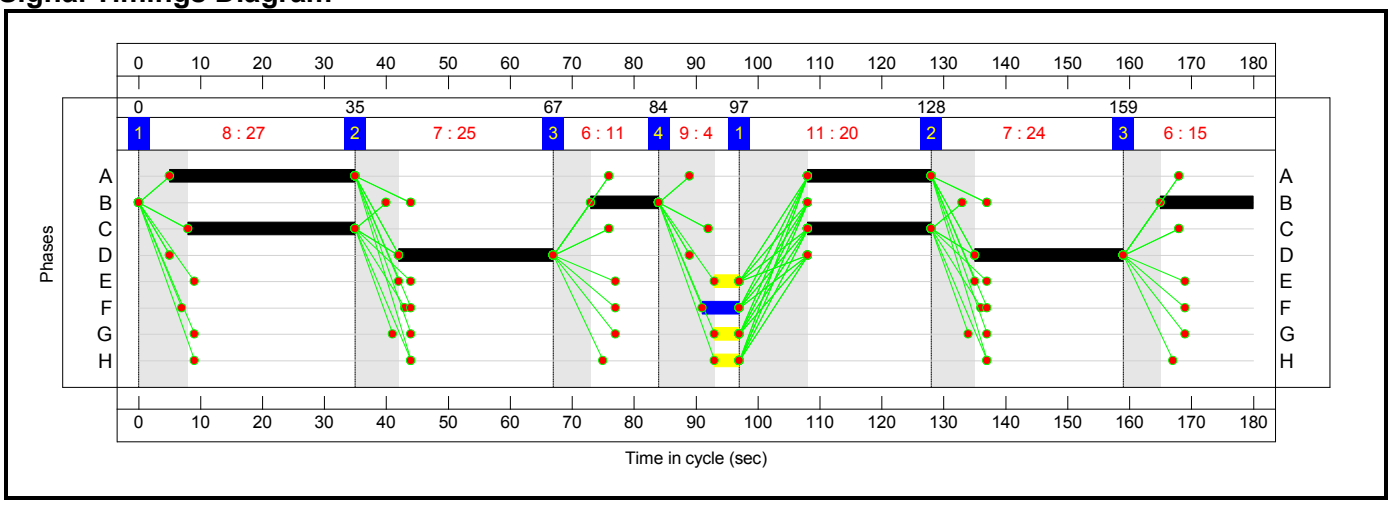
Stage Sequence Diagram



Stage Timings

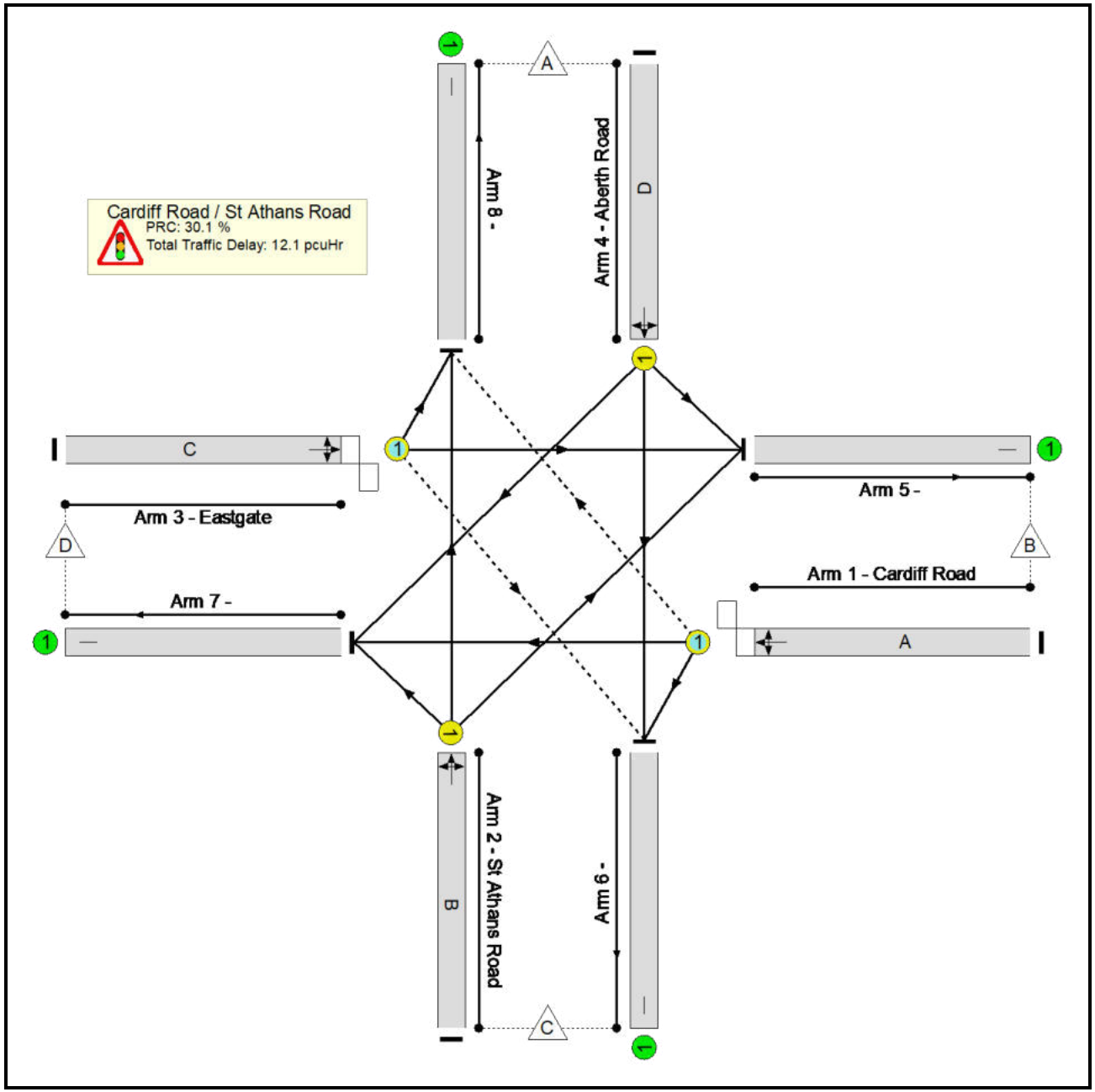
Stage	1	2	3	4	1	2	3
Duration	27	25	11	4	20	24	15
Change Point	0	35	67	84	97	128	159

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.2%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.2%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	210	1928	438	47.9%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	26	-	186	1756	273	68.1%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	305	1619	441	69.2%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	49	-	312	1616	458	68.1%
5/1		U	N/A	N/A	-		-	-	-	168	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	382	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%

Full Input Data And Results

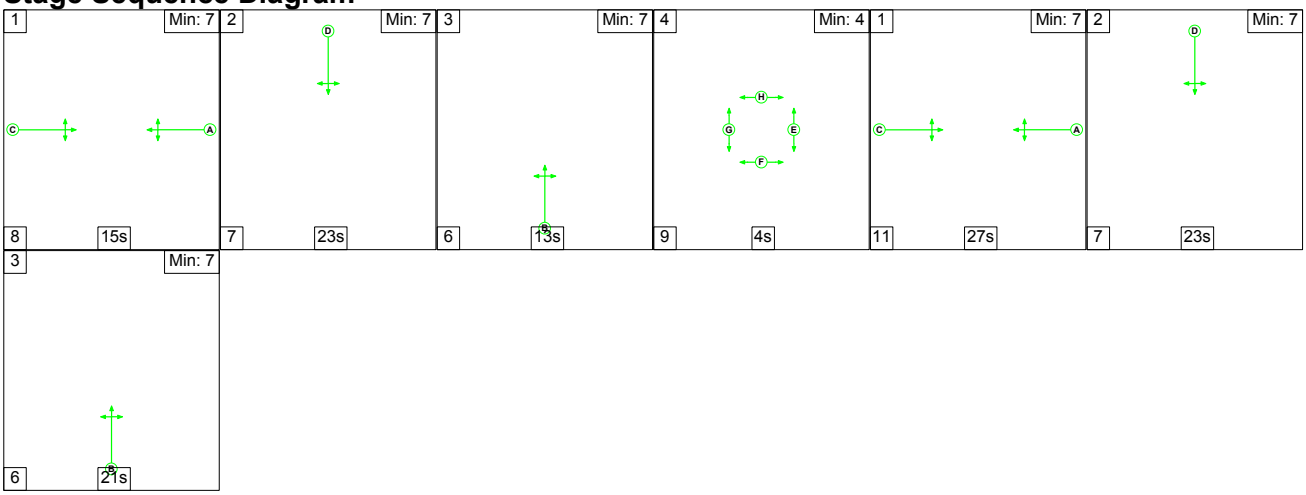
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**81**	**2**	**1**	**8.4**	**3.7**	**0.1**	**12.1**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**81**	**2**	**1**	**8.4**	**3.7**	**0.1**	**12.1**	**-**	**-**	**-**	**-**
1/1	210	210	40	2	0	1.5	0.5	0.1	2.0	35.0	4.7	0.5	5.1
2/1	186	186	-	-	-	1.9	1.0	-	2.9	56.2	4.6	1.0	5.6
3/1	305	305	41	0	0	2.5	1.1	0.0	3.6	43.0	7.5	1.1	8.6
4/1	312	312	-	-	-	2.5	1.1	-	3.5	40.9	7.2	1.1	8.2
5/1	168	168	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	158	158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 30.1 Total Delay for Signalled Lanes (pcuHr): 12.12 Cycle Time (s): 180
PRC Over All Lanes (%): 30.1 Total Delay Over All Lanes(pcuHr): 12.12

Full Input Data And Results

Scenario 9: '2024 + Com AM' (FG13: '2024 + Com AM', Plan 1: 'Network Control Plan 1')

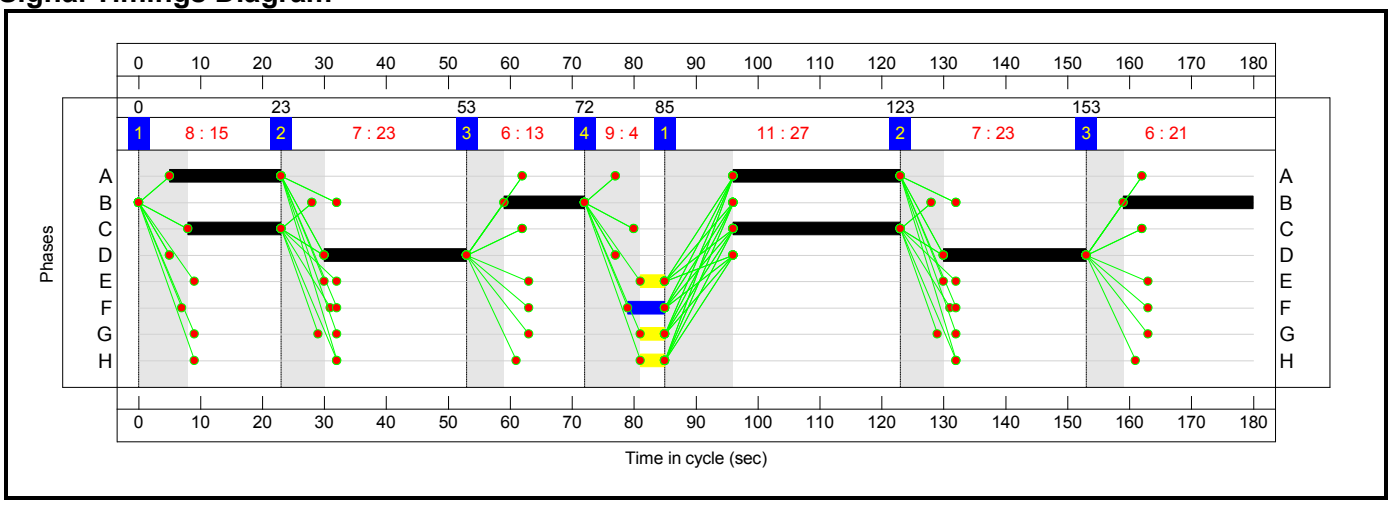
Stage Sequence Diagram



Stage Timings

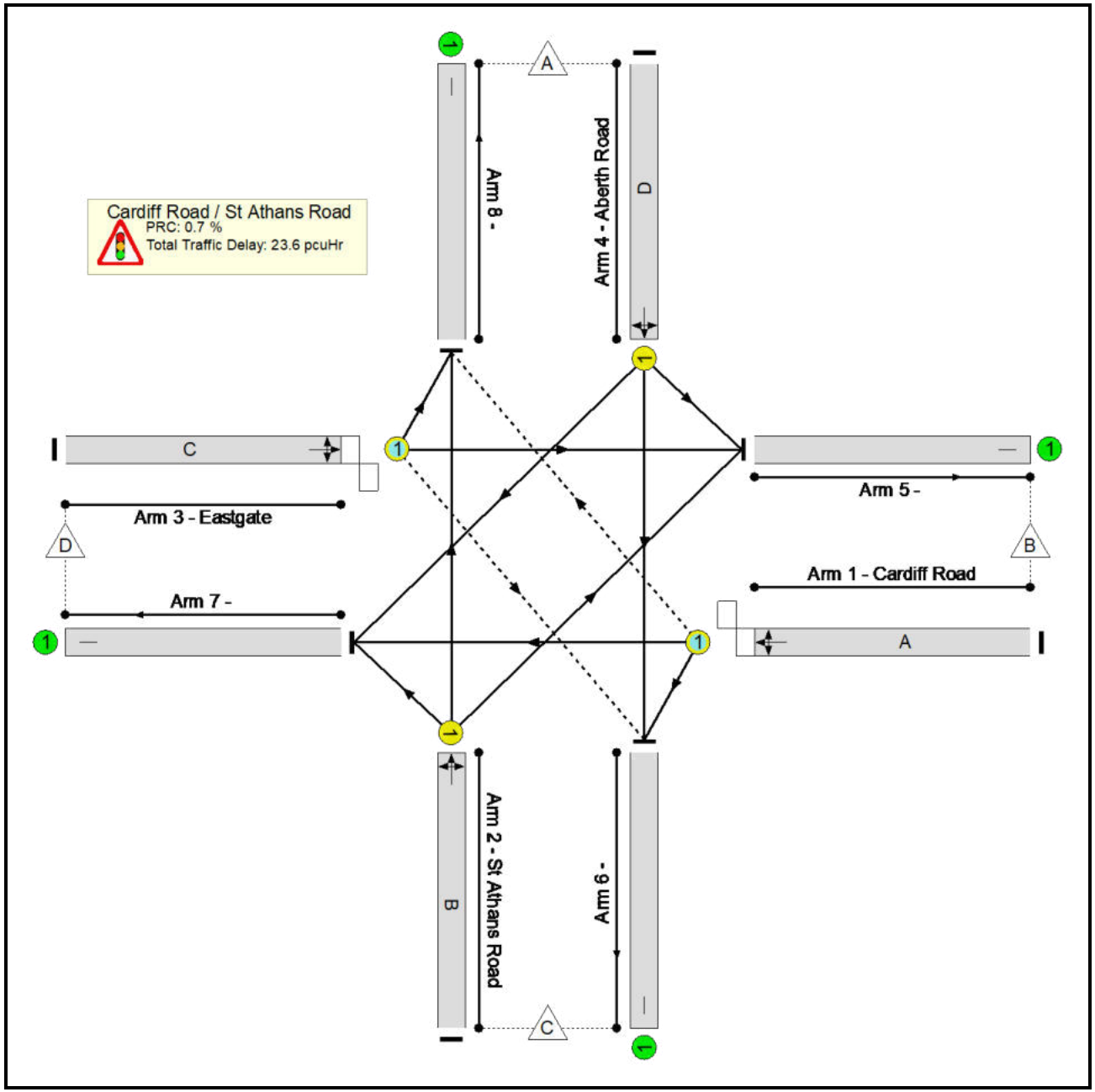
Stage	1	2	3	4	1	2	3
Duration	15	23	13	4	27	23	21
Change Point	0	23	53	72	85	123	153

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.4%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.4%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	45	-	281	1902	314	89.4%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	34	-	307	1761	352	87.2%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	42	-	316	1613	394	80.1%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	46	-	381	1621	432	88.1%
5/1		U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	198	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	450	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	417	Inf	Inf	0.0%

Full Input Data And Results

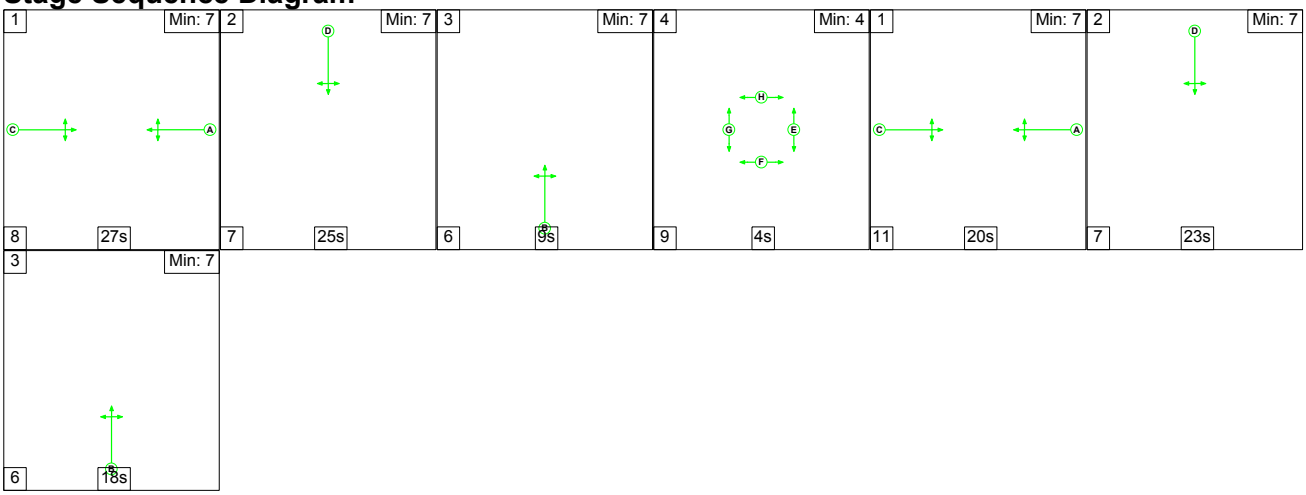
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**96**	**3**	**23**	**11.7**	**11.7**	**0.2**	**23.6**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**96**	**3**	**23**	**11.7**	**11.7**	**0.2**	**23.6**	**-**	**-**	**-**	**-**
1/1	281	281	60	3	22	2.3	3.5	0.2	6.0	76.8	7.6	3.5	11.1
2/1	307	307	-	-	-	3.1	3.0	-	6.1	71.4	8.9	3.0	11.9
3/1	316	316	35	0	2	2.8	1.9	0.0	4.8	54.2	7.8	1.9	9.7
4/1	381	381	-	-	-	3.4	3.3	-	6.7	63.5	10.5	3.3	13.8
5/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	198	198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	417	417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 0.7 Total Delay for Signalled Lanes (pcuHr): 23.56 Cycle Time (s): 180
PRC Over All Lanes (%): 0.7 Total Delay Over All Lanes(pcuHr): 23.56

Full Input Data And Results

Scenario 10: '2024 + Com PM' (FG14: '2024 + Com PM', Plan 1: 'Network Control Plan 1')

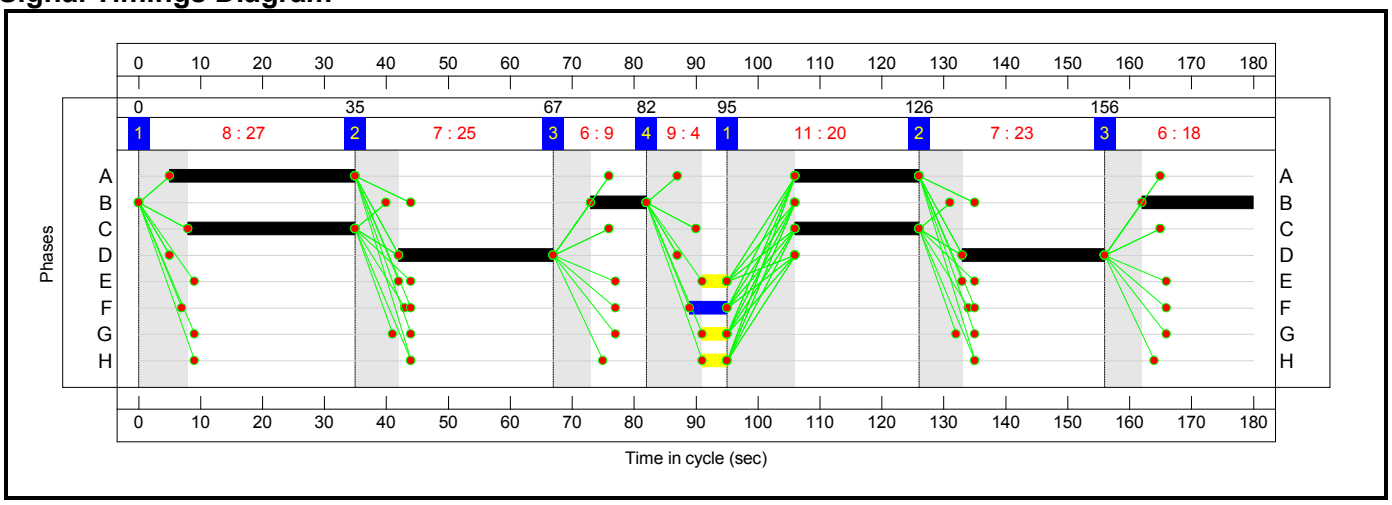
Stage Sequence Diagram



Stage Timings

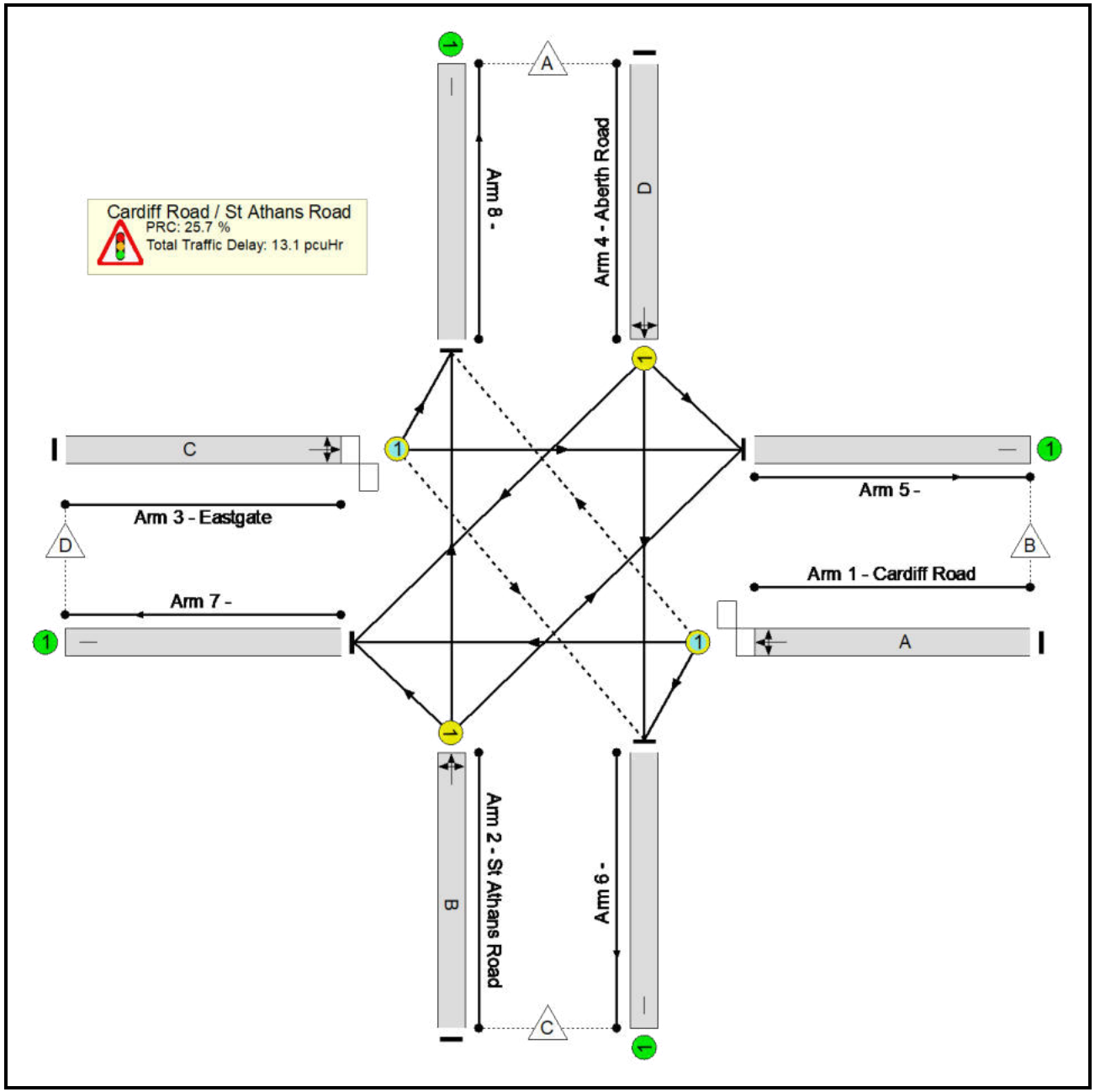
Stage	1	2	3	4	1	2	3
Duration	27	25	9	4	20	23	18
Change Point	0	35	67	82	95	126	156

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.6%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.6%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	222	1927	441	50.4%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	27	-	202	1757	283	71.4%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	316	1625	442	71.6%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	48	-	323	1624	451	71.6%
5/1		U	N/A	N/A	-		-	-	-	177	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	182	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%

Full Input Data And Results

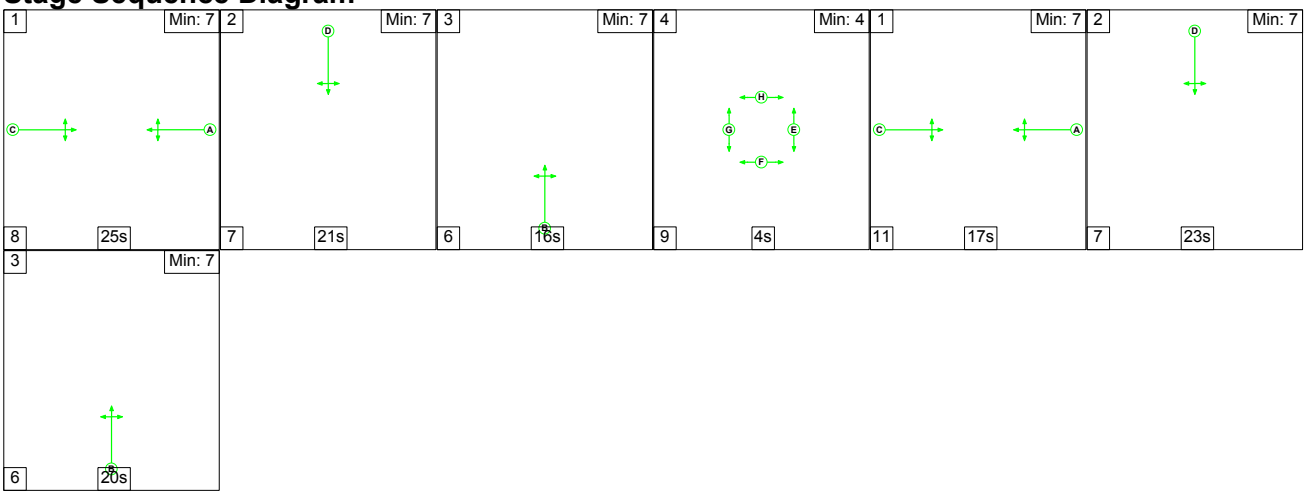
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**87**	**2**	**1**	**8.9**	**4.2**	**0.1**	**13.1**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**87**	**2**	**1**	**8.9**	**4.2**	**0.1**	**13.1**	**-**	**-**	**-**	**-**
1/1	222	222	40	2	1	1.6	0.5	0.1	2.2	35.3	4.9	0.5	5.4
2/1	202	202	-	-	-	2.0	1.2	-	3.2	57.4	5.0	1.2	6.2
3/1	316	316	46	0	1	2.6	1.2	0.0	3.9	44.1	7.6	1.2	8.9
4/1	323	323	-	-	-	2.6	1.2	-	3.9	43.1	7.3	1.2	8.5
5/1	177	177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	182	182	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	312	312	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 25.7 Total Delay for Signalled Lanes (pcuHr): 13.14 Cycle Time (s): 180
PRC Over All Lanes (%): 25.7 Total Delay Over All Lanes(pcuHr): 13.14

Full Input Data And Results

Scenario 11: '2024 + Com + Dev AM' (FG19: '2024 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

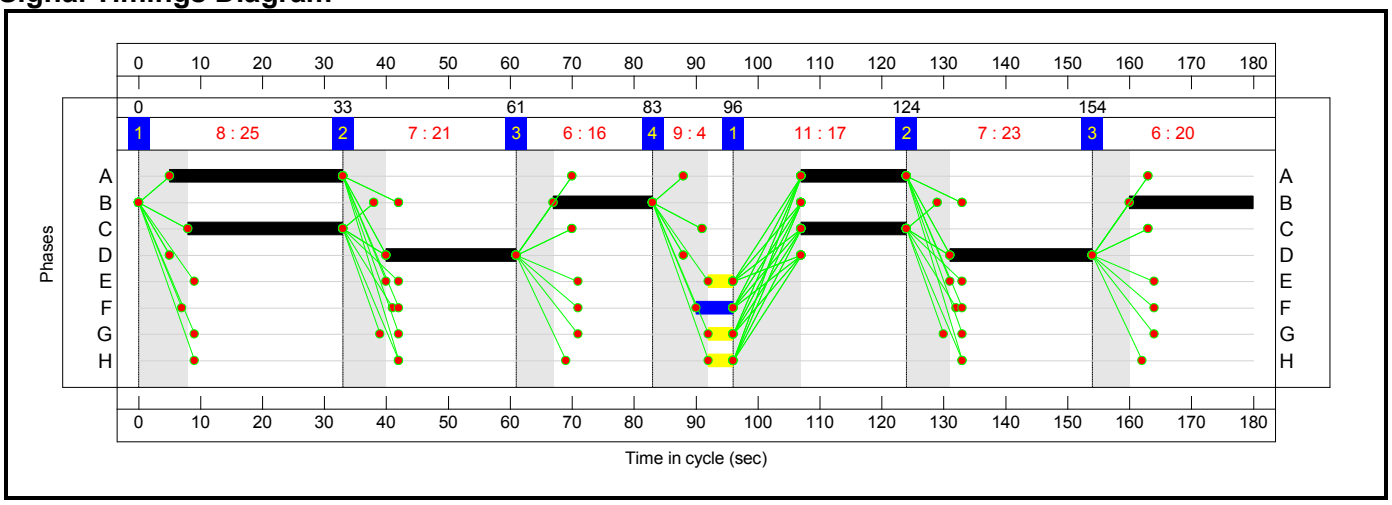
Stage Sequence Diagram



Stage Timings

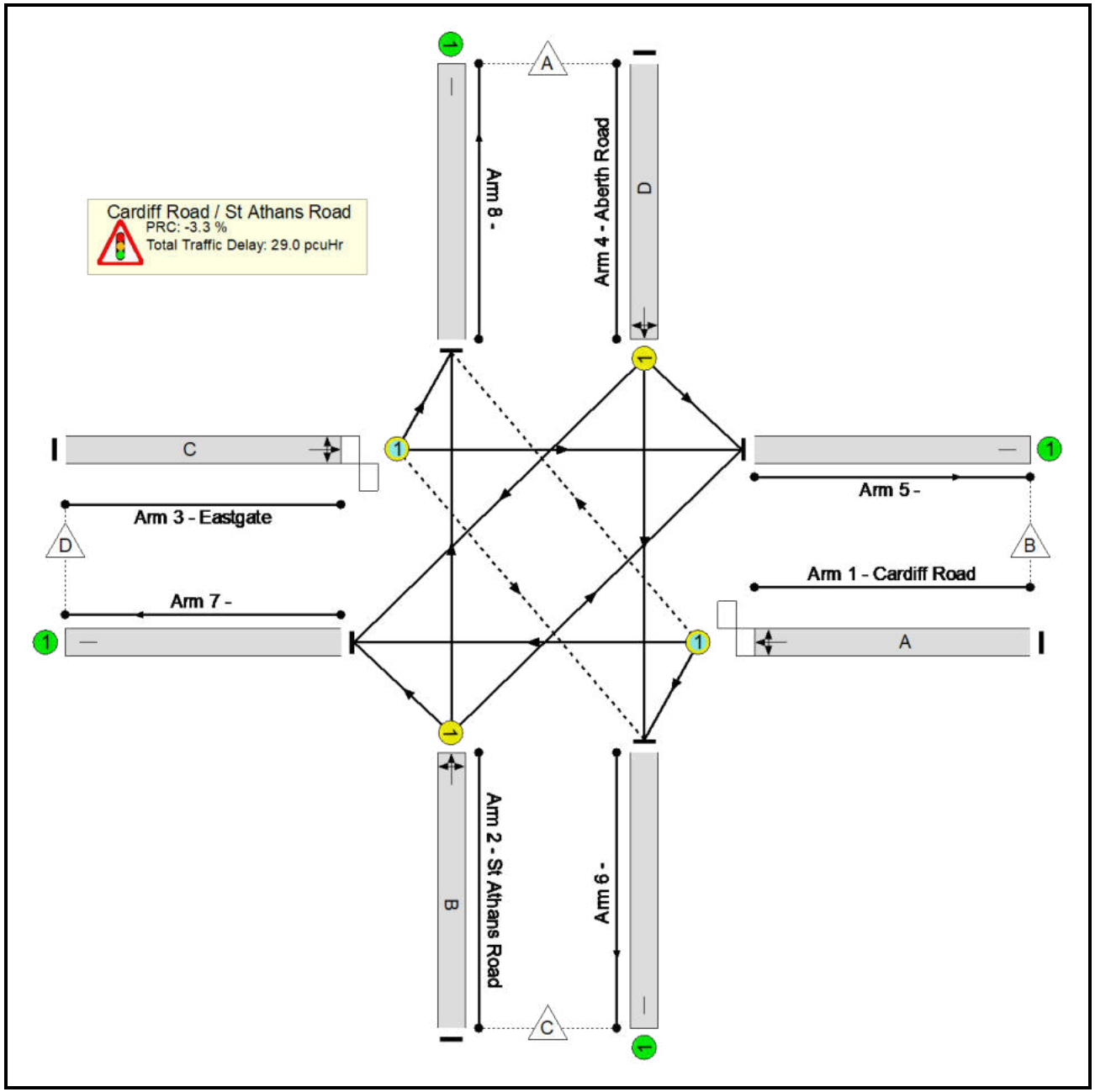
Stage	1	2	3	4	1	2	3
Duration	25	21	16	4	17	23	20
Change Point	0	33	61	83	96	124	154

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.0%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.0%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	45	-	285	1901	308	92.5%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	36	-	344	1762	372	92.5%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	42	-	319	1614	395	80.9%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	44	-	386	1624	415	93.0%
5/1		U	N/A	N/A	-		-	-	-	232	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	210	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	459	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	433	Inf	Inf	0.0%

Full Input Data And Results

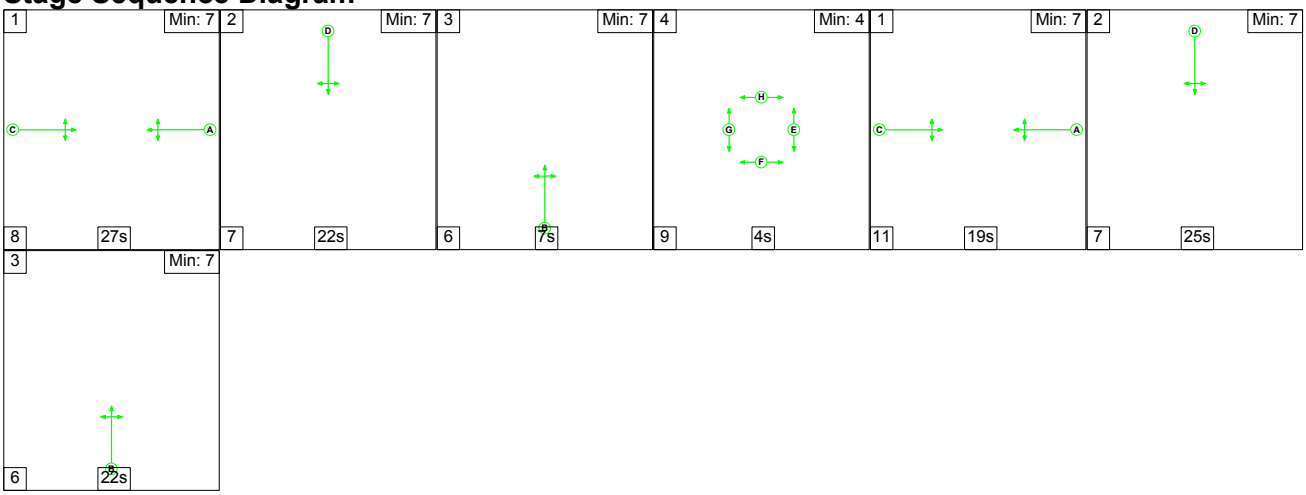
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**93**	**3**	**29**	**12.7**	**16.0**	**0.2**	**29.0**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**93**	**3**	**29**	**12.7**	**16.0**	**0.2**	**29.0**	**-**	**-**	**-**	**-**
1/1	285	285	55	3	26	3.0	4.5	0.2	7.6	96.5	8.2	4.5	12.7
2/1	344	344	-	-	-	3.3	4.6	-	8.0	83.3	9.0	4.6	13.6
3/1	319	319	38	0	2	2.9	2.0	0.0	4.9	55.1	8.0	2.0	10.0
4/1	386	386	-	-	-	3.5	5.0	-	8.5	79.0	9.6	5.0	14.6
5/1	232	232	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	459	459	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	433	433	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -3.3 Total Delay for Signalled Lanes (pcuHr): 28.96 Cycle Time (s): 180
PRC Over All Lanes (%): -3.3 Total Delay Over All Lanes(pcuHr): 28.96

Full Input Data And Results

Scenario 12: '2024 + Com + Dev PM' (FG20: '2024 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

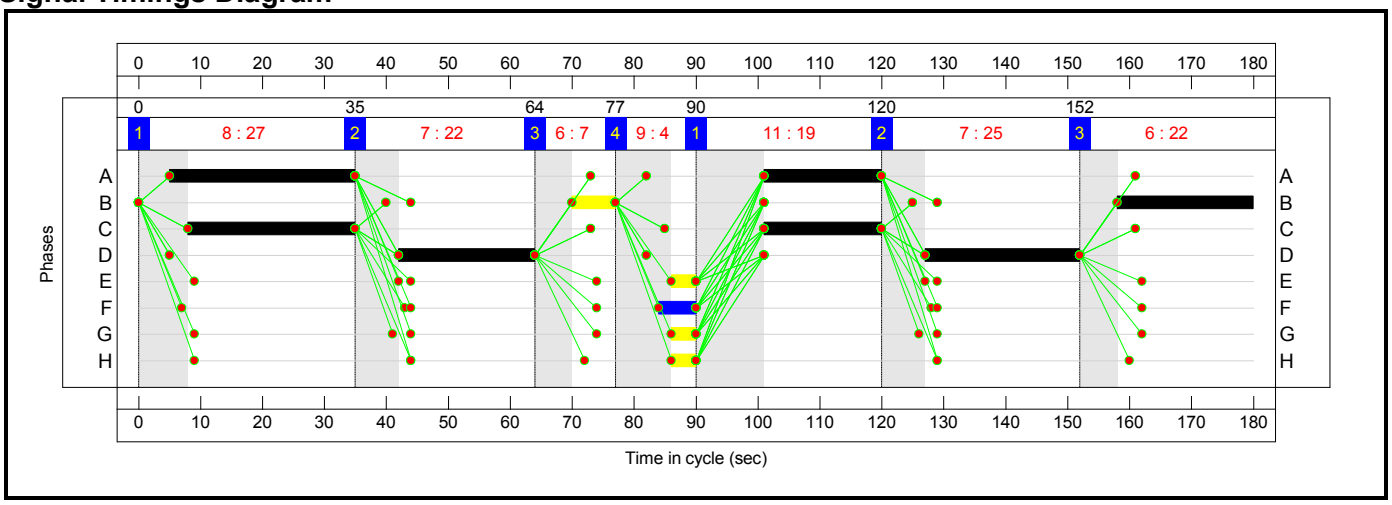
Stage Sequence Diagram



Stage Timings

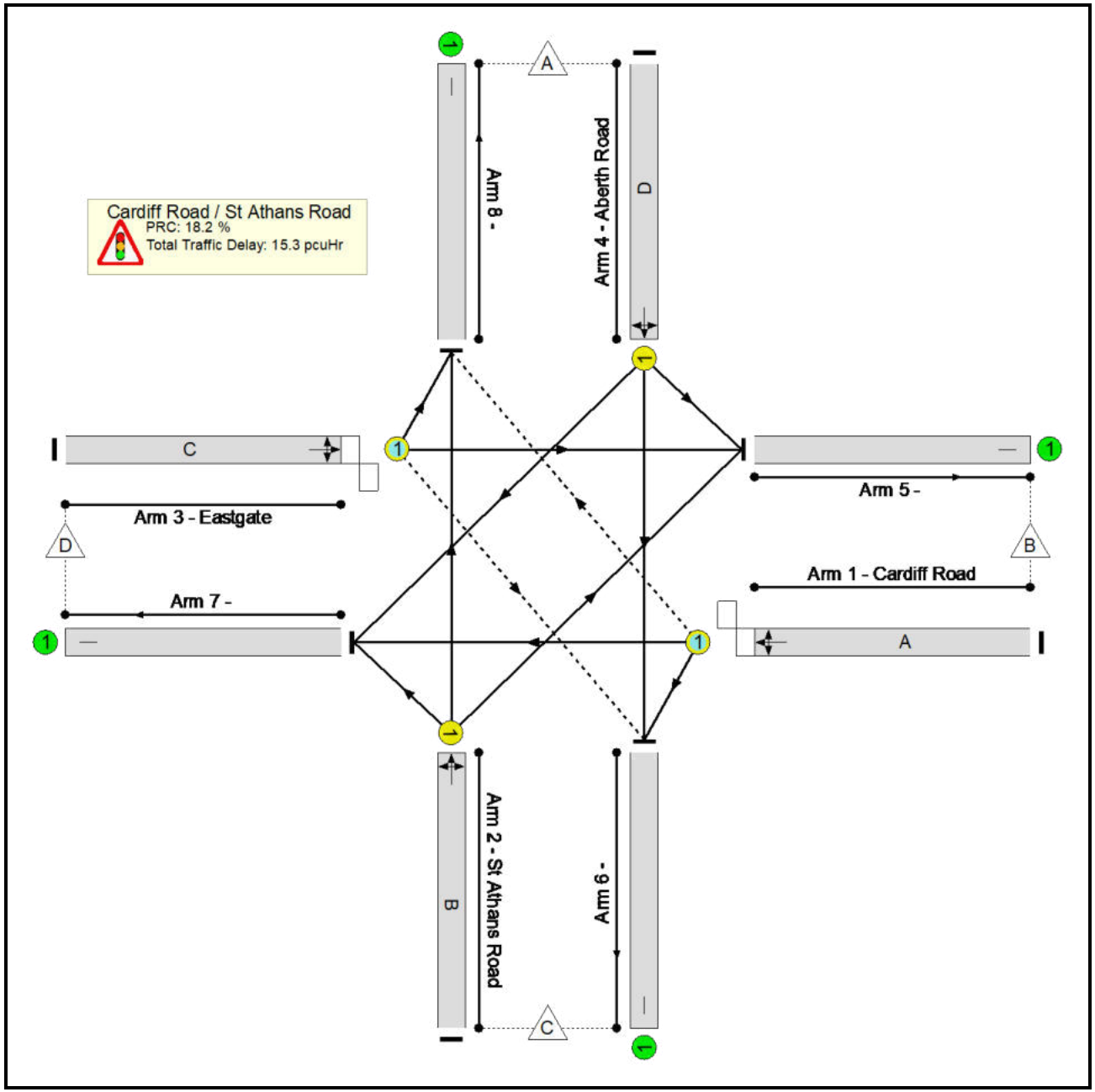
Stage	1	2	3	4	1	2	3
Duration	27	22	7	4	19	25	22
Change Point	0	35	64	77	90	120	152

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.2%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.2%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	49	-	239	1919	445	53.6%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	29	-	227	1756	302	75.1%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	46	-	328	1627	432	75.9%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	47	-	339	1635	445	76.2%
5/1		U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%

Full Input Data And Results

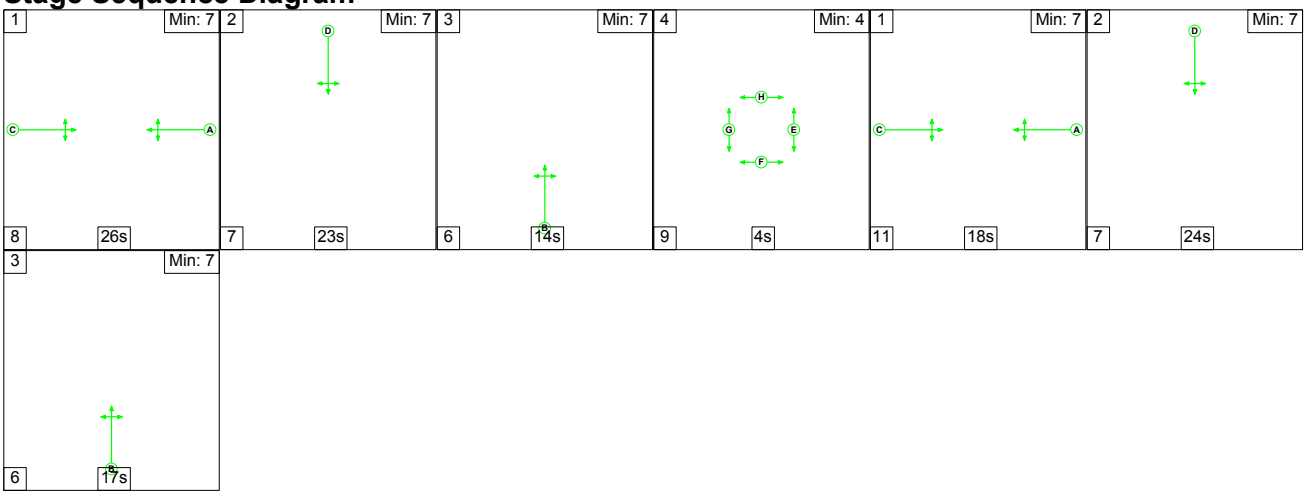
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**97**	**2**	**3**	**10.1**	**5.1**	**0.1**	**15.3**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**97**	**2**	**3**	**10.1**	**5.1**	**0.1**	**15.3**	**-**	**-**	**-**	**-**
1/1	239	239	39	2	2	1.8	0.6	0.1	2.4	36.2	4.9	0.6	5.5
2/1	227	227	-	-	-	2.7	1.4	-	4.2	66.3	6.9	1.4	8.3
3/1	328	328	58	0	1	2.8	1.5	0.0	4.3	47.6	7.6	1.5	9.1
4/1	339	339	-	-	-	2.8	1.6	-	4.4	46.6	8.2	1.6	9.7
5/1	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 18.2 Total Delay for Signalled Lanes (pcuHr): 15.31 Cycle Time (s): 180
PRC Over All Lanes (%): 18.2 Total Delay Over All Lanes(pcuHr): 15.31

Full Input Data And Results

Scenario 13: '2034 AM' (FG5: '2034 AM', Plan 1: 'Network Control Plan 1')

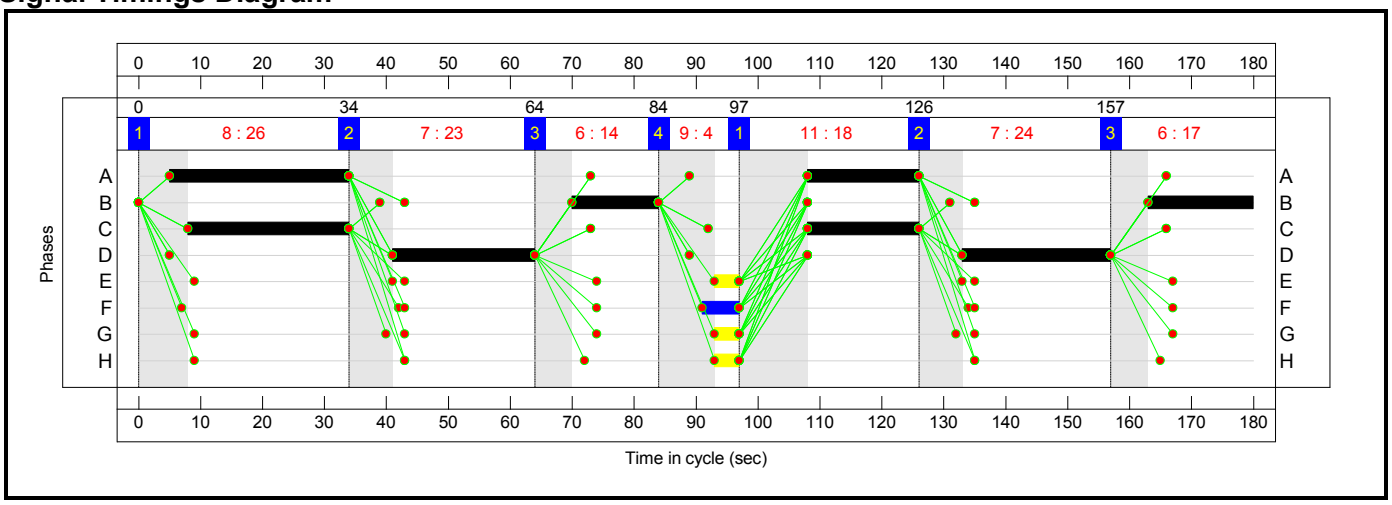
Stage Sequence Diagram



Stage Timings

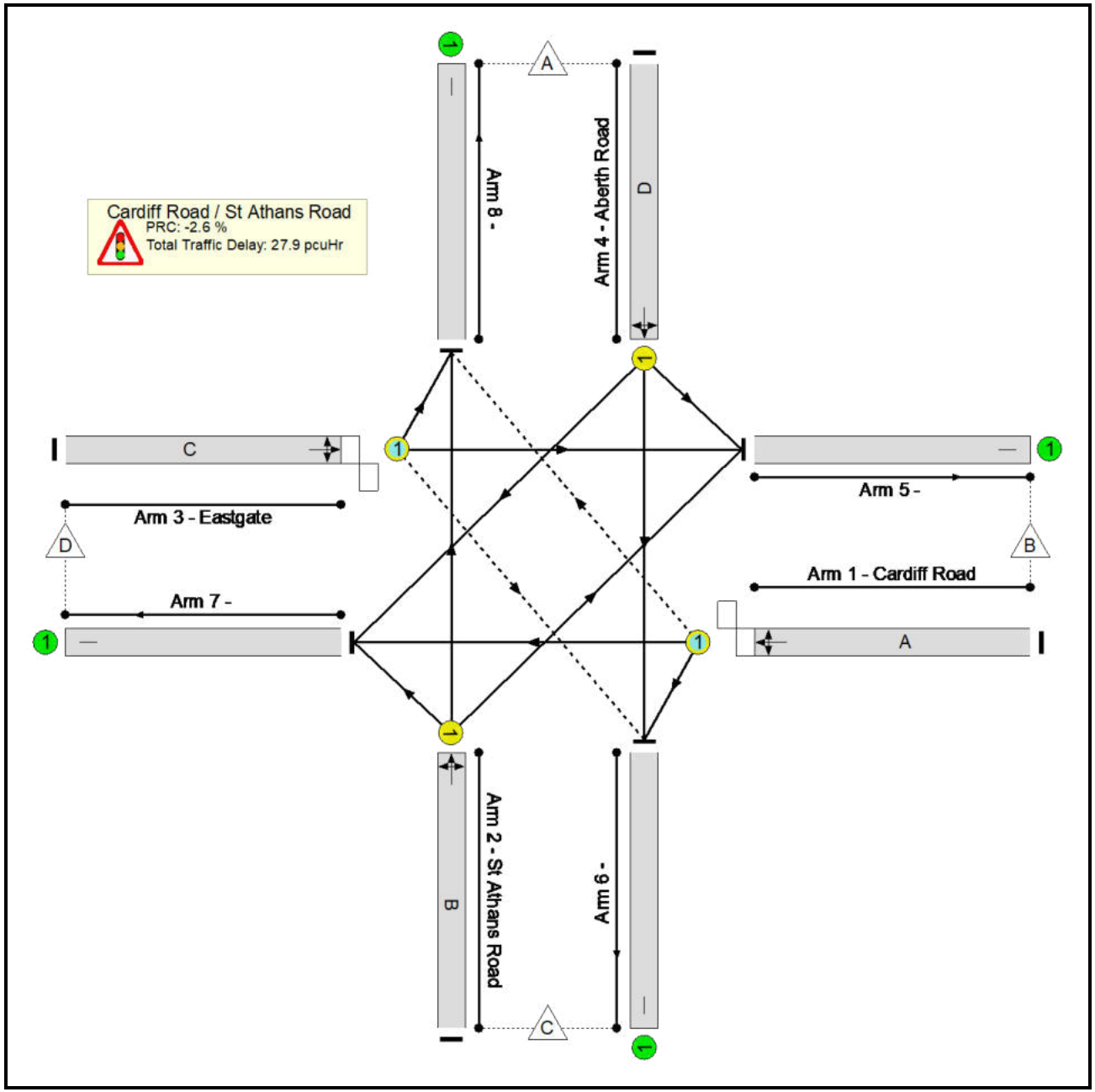
Stage	1	2	3	4	1	2	3
Duration	26	23	14	4	18	24	17
Change Point	0	34	64	84	97	126	157

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.4%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.4%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	47	-	294	1901	319	92.0%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	31	-	298	1760	323	92.4%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	44	-	326	1604	410	79.5%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	47	-	404	1618	440	91.7%
5/1		U	N/A	N/A	-		-	-	-	217	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	205	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	468	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	432	Inf	Inf	0.0%

Full Input Data And Results

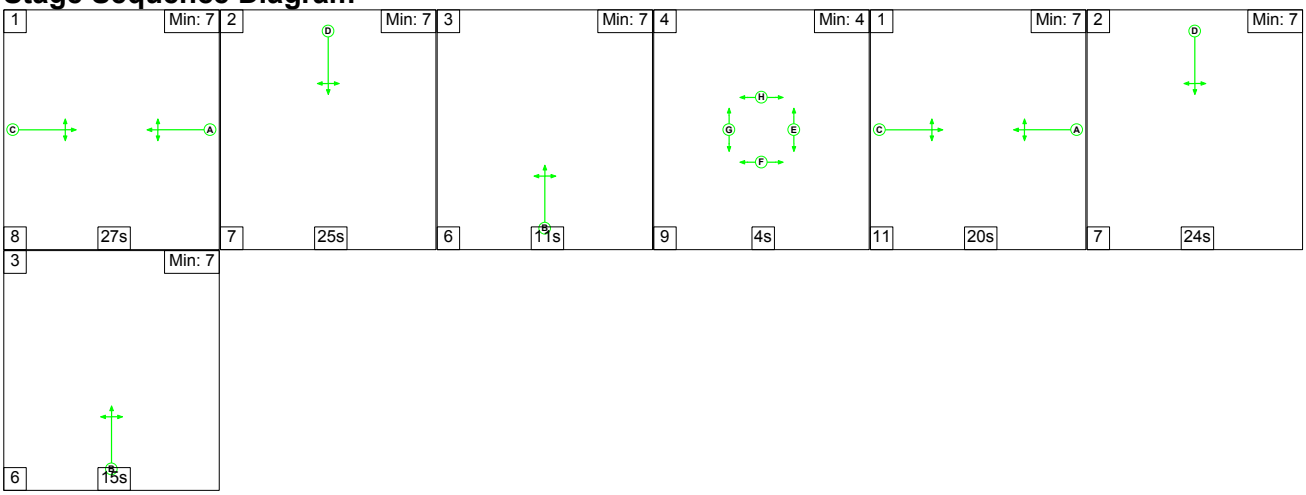
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**98**	**3**	**28**	**12.6**	**15.1**	**0.2**	**27.9**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**98**	**3**	**28**	**12.6**	**15.1**	**0.2**	**27.9**	**-**	**-**	**-**	**-**
1/1	294	294	61	3	27	3.2	4.3	0.2	7.7	94.8	8.8	4.3	13.2
2/1	298	298	-	-	-	3.0	4.4	-	7.4	89.9	7.7	4.4	12.1
3/1	326	326	37	0	2	2.9	1.9	0.0	4.7	52.4	8.2	1.9	10.1
4/1	404	404	-	-	-	3.6	4.5	-	8.0	71.5	10.1	4.5	14.6
5/1	217	217	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	205	205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	468	468	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	432	432	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -2.6 Total Delay for Signalled Lanes (pcuHr): 27.95 Cycle Time (s): 180
PRC Over All Lanes (%): -2.6 Total Delay Over All Lanes(pcuHr): 27.95

Full Input Data And Results

Scenario 14: '2034 PM' (FG6: '2034 PM', Plan 1: 'Network Control Plan 1')

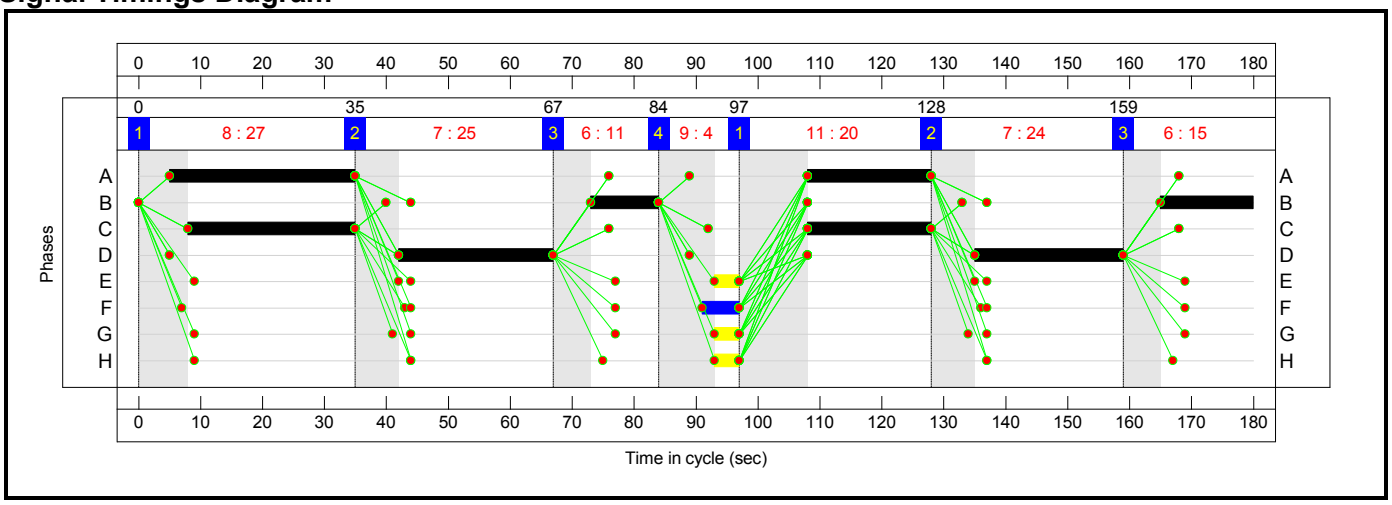
Stage Sequence Diagram



Stage Timings

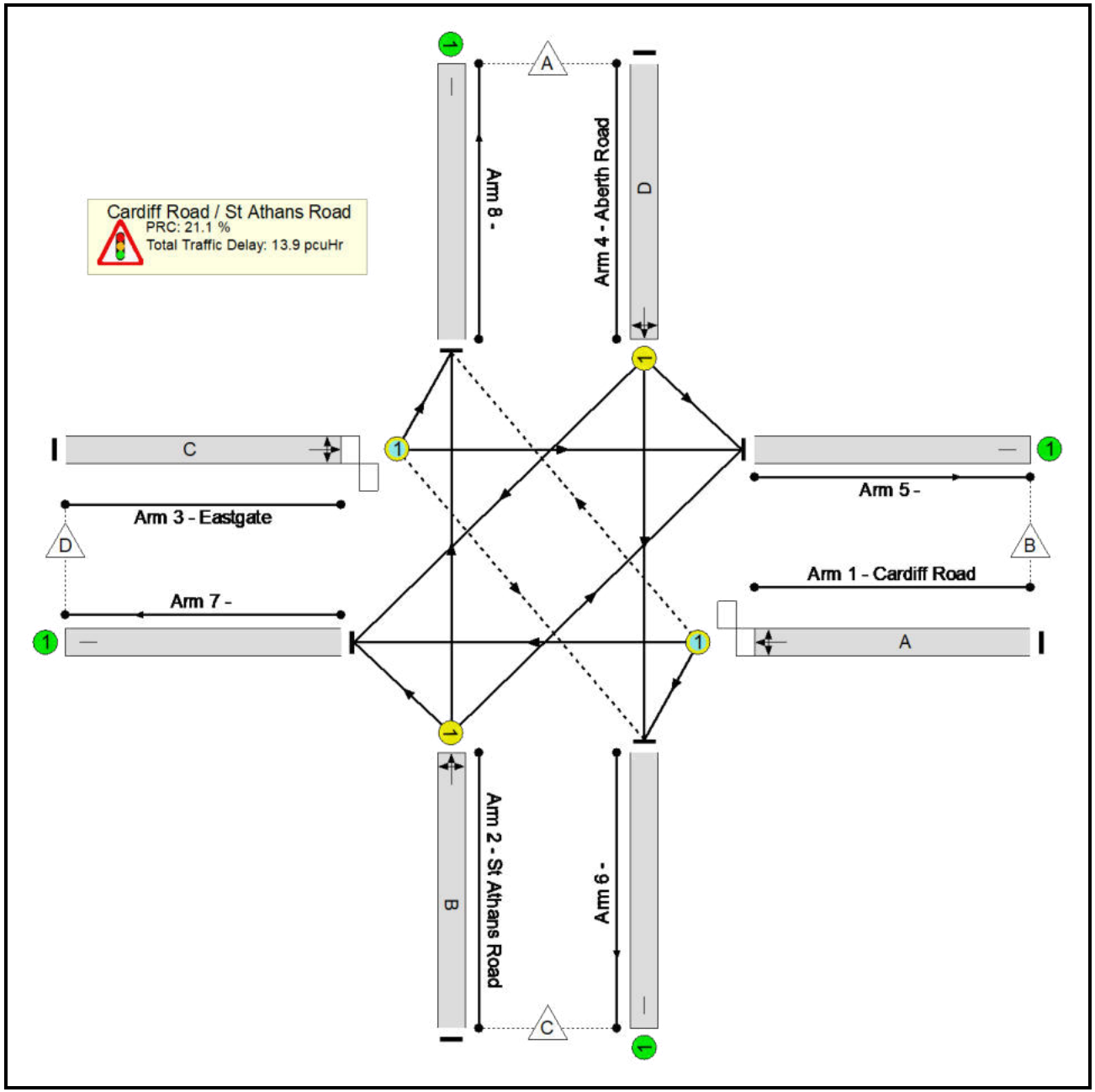
Stage	1	2	3	4	1	2	3
Duration	27	25	11	4	20	24	15
Change Point	0	35	67	84	97	128	159

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**74.3%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**74.3%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	227	1927	422	53.7%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	26	-	200	1756	273	73.2%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	327	1619	440	74.3%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	49	-	334	1616	458	72.9%
5/1		U	N/A	N/A	-		-	-	-	180	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	170	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%

Full Input Data And Results

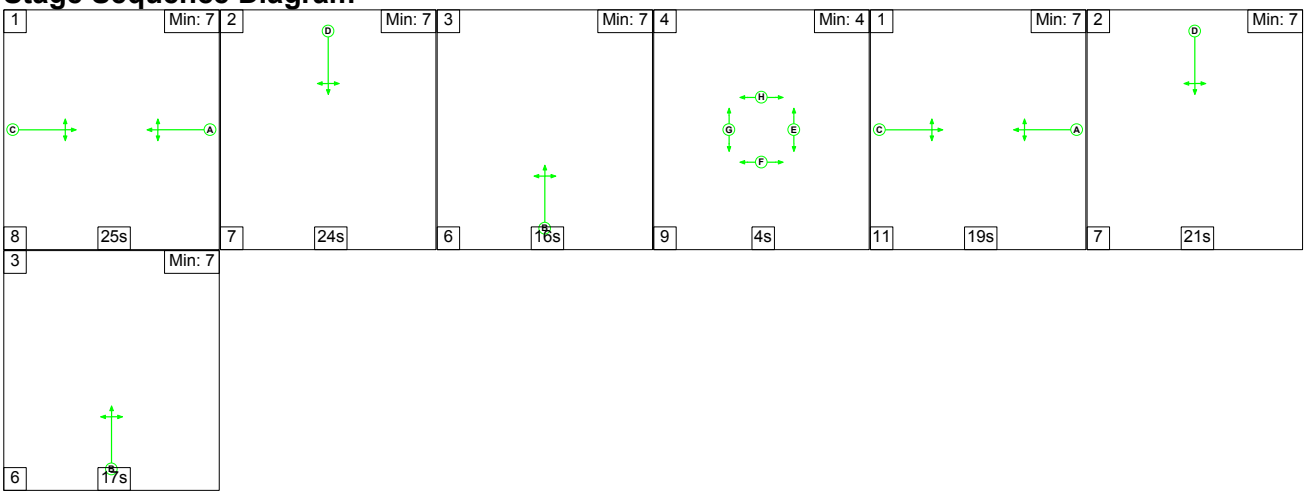
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**77**	**2**	**12**	**9.1**	**4.6**	**0.1**	**13.9**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**77**	**2**	**12**	**9.1**	**4.6**	**0.1**	**13.9**	**-**	**-**	**-**	**-**
1/1	227	227	34	2	11	1.7	0.6	0.1	2.3	36.8	5.1	0.6	5.7
2/1	200	200	-	-	-	2.0	1.3	-	3.3	60.1	5.0	1.3	6.3
3/1	327	327	44	0	0	2.7	1.4	0.0	4.2	46.0	8.2	1.4	9.6
4/1	334	334	-	-	-	2.7	1.3	-	4.0	43.4	7.8	1.3	9.1
5/1	180	180	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	170	170	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 21.1 Total Delay for Signalled Lanes (pcuHr): 13.86 Cycle Time (s): 180
PRC Over All Lanes (%): 21.1 Total Delay Over All Lanes(pcuHr): 13.86

Full Input Data And Results

Scenario 15: '2034 + Com AM' (FG15: '2034 + Com AM', Plan 1: 'Network Control Plan 1')

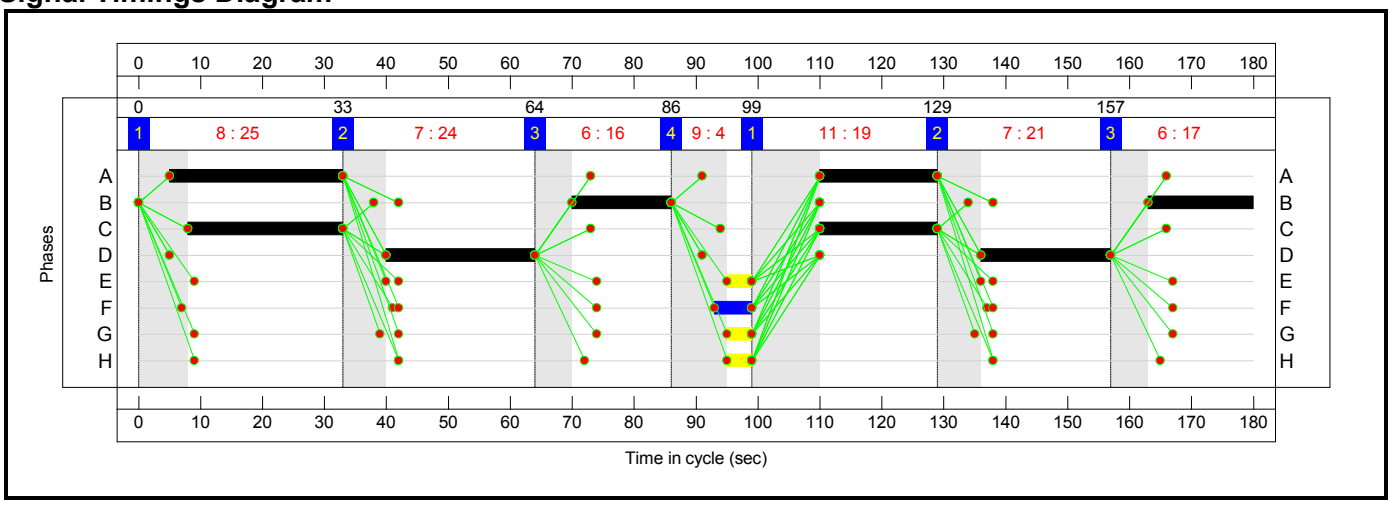
Stage Sequence Diagram



Stage Timings

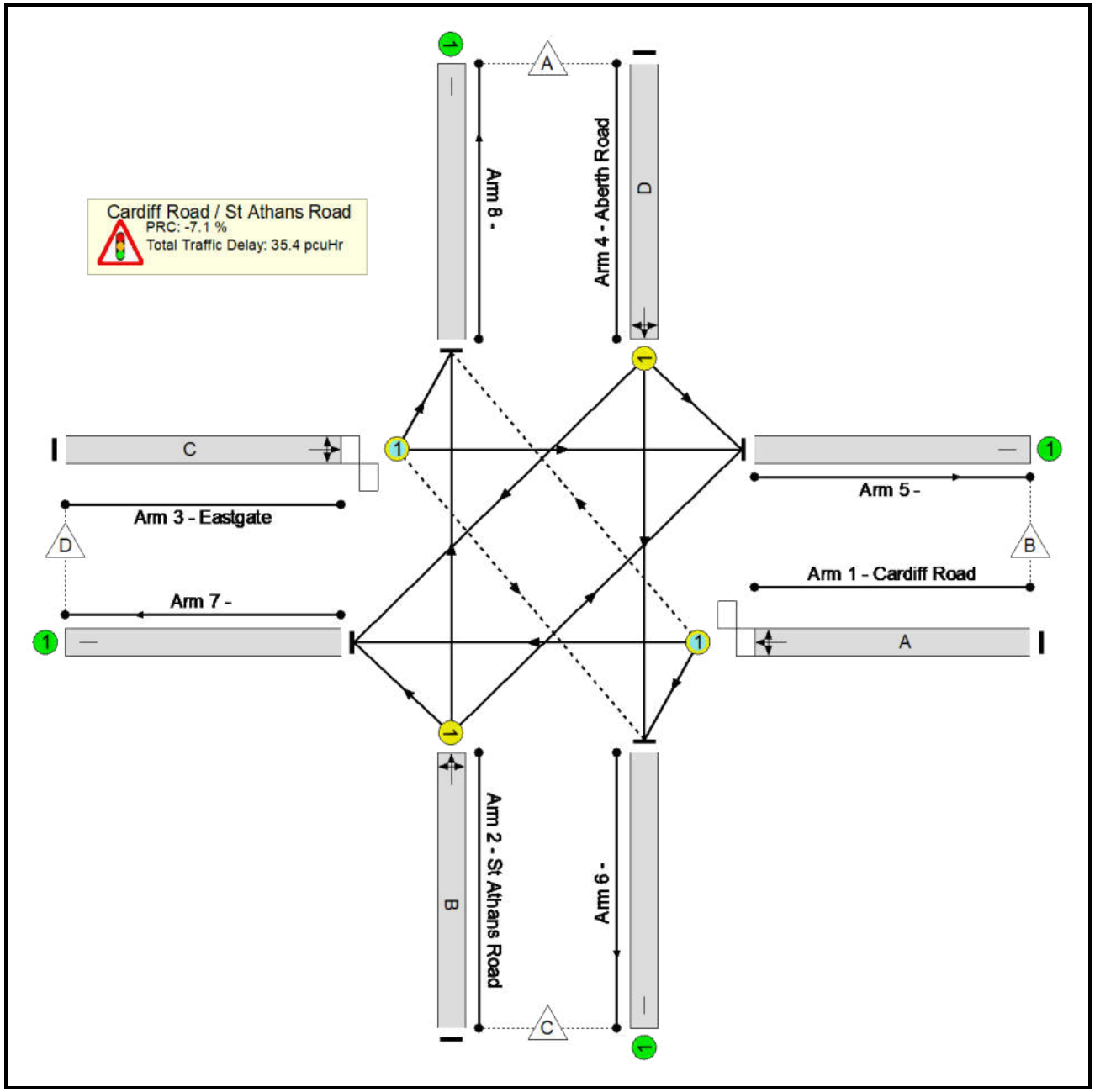
Stage	1	2	3	4	1	2	3
Duration	25	24	16	4	19	21	17
Change Point	0	33	64	86	99	129	157

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.4%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.4%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	47	-	301	1901	312	96.4%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	33	-	327	1760	342	95.6%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	44	-	337	1613	412	81.8%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	45	-	408	1621	423	96.4%
5/1		U	N/A	N/A	-		-	-	-	234	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	481	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	445	Inf	Inf	0.0%

Full Input Data And Results

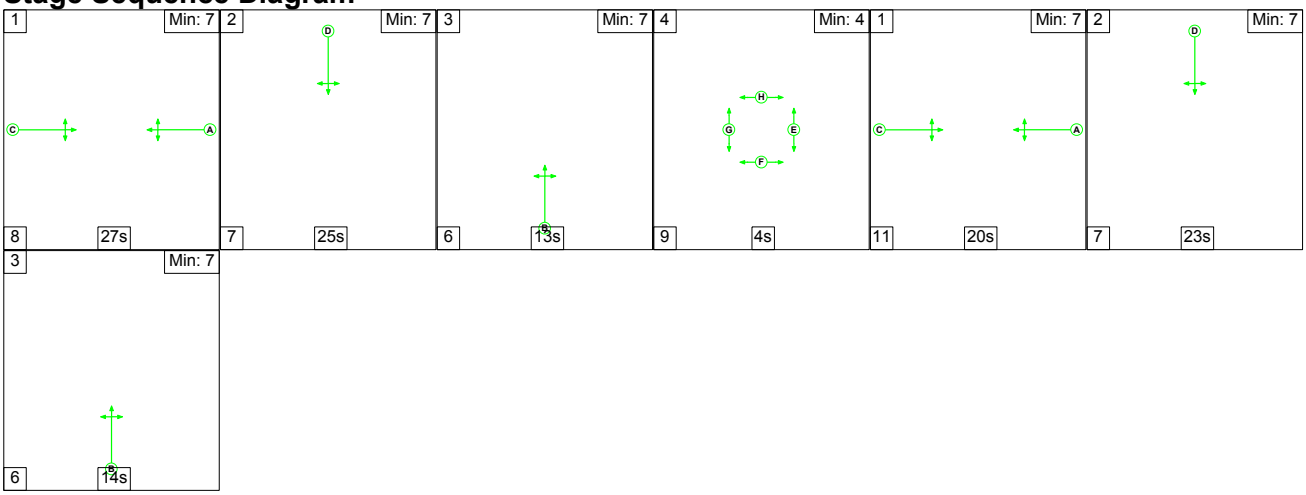
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**99**	**3**	**29**	**13.7**	**21.4**	**0.2**	**35.4**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**99**	**3**	**29**	**13.7**	**21.4**	**0.2**	**35.4**	**-**	**-**	**-**	**-**
1/1	301	301	61	3	27	3.4	6.3	0.2	9.9	118.8	9.0	6.3	15.3
2/1	327	327	-	-	-	3.3	6.0	-	9.3	102.1	8.4	6.0	14.5
3/1	337	337	38	0	2	3.0	2.1	0.0	5.2	55.1	9.0	2.1	11.1
4/1	408	408	-	-	-	4.0	7.0	-	11.0	97.2	10.5	7.0	17.5
5/1	234	234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	481	481	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	445	445	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -7.1 Total Delay for Signalled Lanes (pcuHr): 35.38 Cycle Time (s): 180
PRC Over All Lanes (%): -7.1 Total Delay Over All Lanes(pcuHr): 35.38

Full Input Data And Results

Scenario 16: '2034 + Com PM' (FG16: '2034 + Com PM', Plan 1: 'Network Control Plan 1')

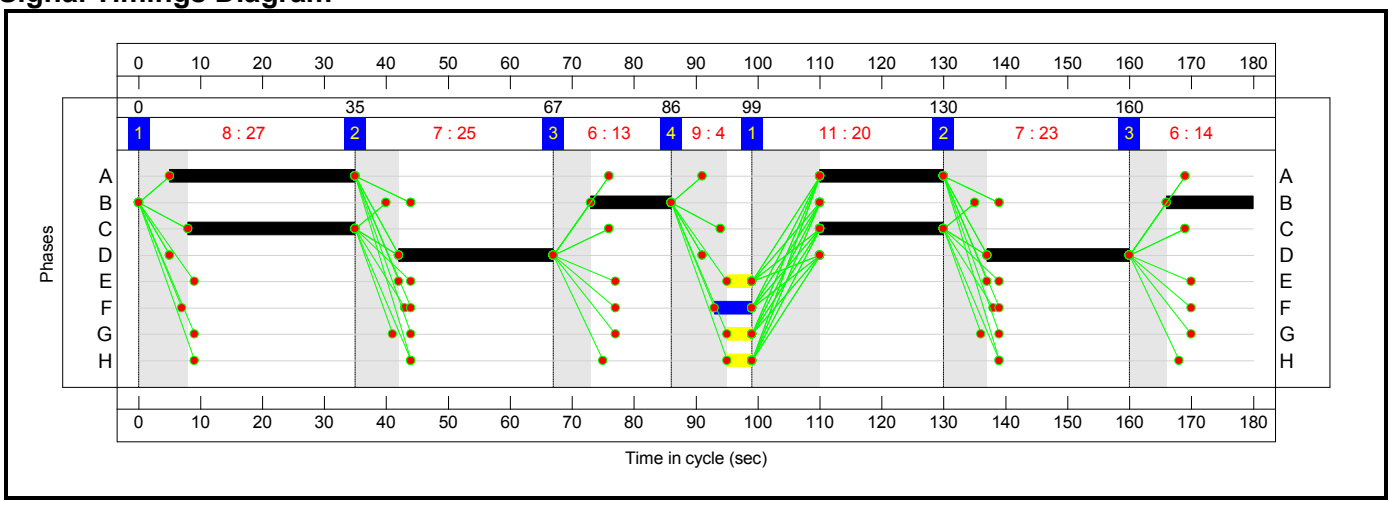
Stage Sequence Diagram



Stage Timings

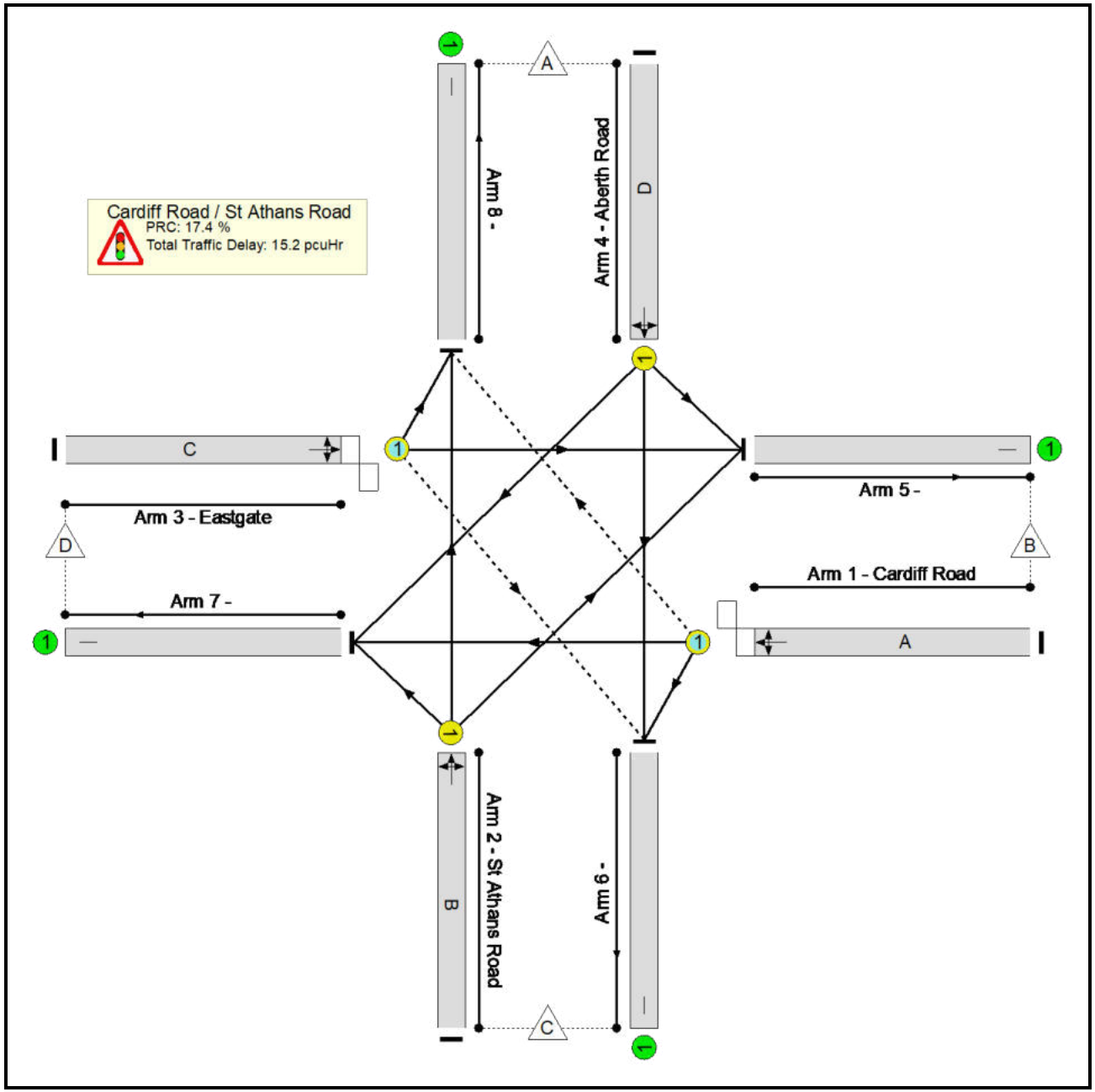
Stage	1	2	3	4	1	2	3
Duration	27	25	13	4	20	23	14
Change Point	0	35	67	86	99	130	160

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	50	-	239	1926	414	57.7%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	27	-	216	1756	283	76.3%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	47	-	338	1624	441	76.6%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	48	-	345	1624	451	76.5%
5/1		U	N/A	N/A	-		-	-	-	189	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	420	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	335	Inf	Inf	0.0%

Full Input Data And Results

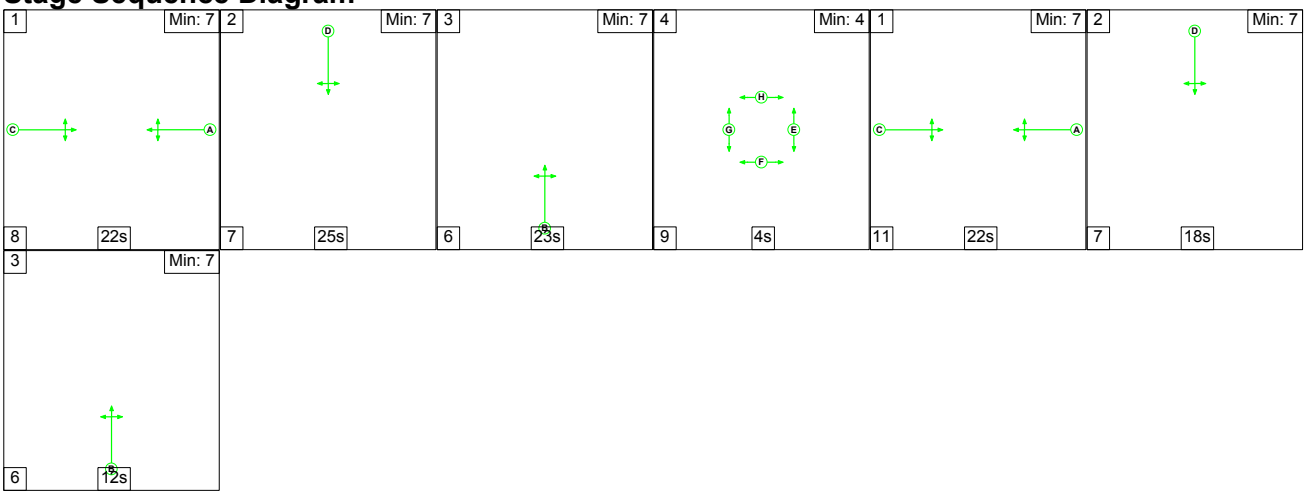
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**77**	**2**	**18**	**9.7**	**5.4**	**0.1**	**15.2**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**77**	**2**	**18**	**9.7**	**5.4**	**0.1**	**15.2**	**-**	**-**	**-**	**-**
1/1	239	239	28	2	17	1.8	0.7	0.1	2.6	38.5	5.6	0.7	6.3
2/1	216	216	-	-	-	2.2	1.5	-	3.7	61.9	5.4	1.5	6.9
3/1	338	338	49	0	1	2.9	1.6	0.0	4.5	48.0	8.8	1.6	10.4
4/1	345	345	-	-	-	2.9	1.6	-	4.4	46.4	8.3	1.6	9.9
5/1	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	420	420	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	335	335	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 17.4 Total Delay for Signalled Lanes (pcuHr): 15.22 Cycle Time (s): 180
PRC Over All Lanes (%): 17.4 Total Delay Over All Lanes(pcuHr): 15.22

Full Input Data And Results

Scenario 17: '2034 + Com + Dev AM' (FG21: '2034 + Com + Dev AM', Plan 1: 'Network Control Plan 1')

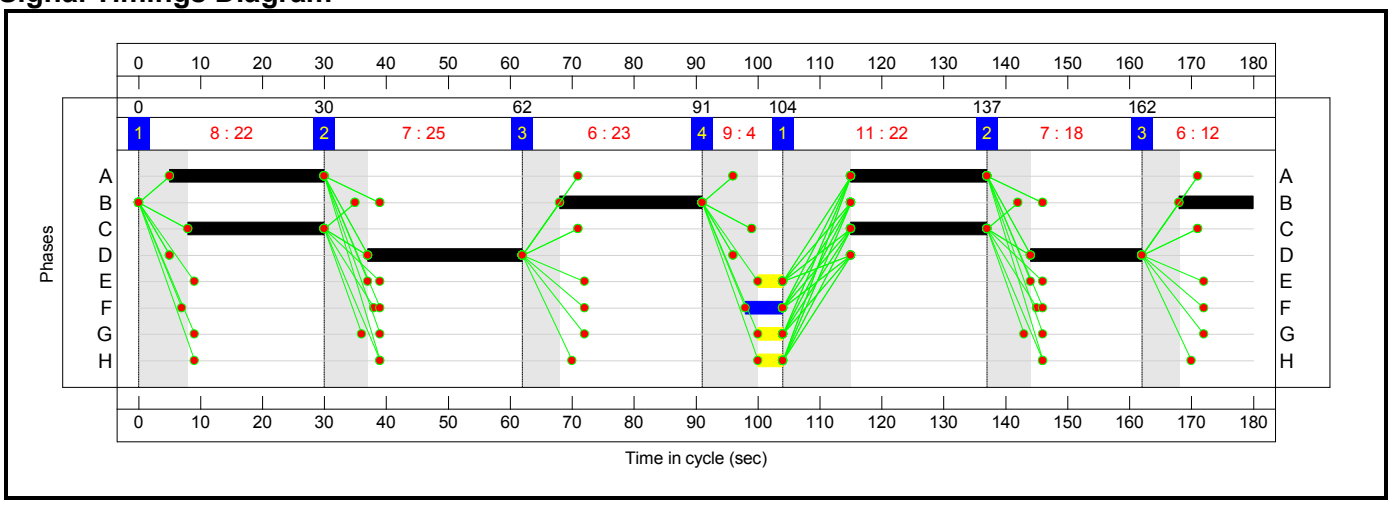
Stage Sequence Diagram



Stage Timings

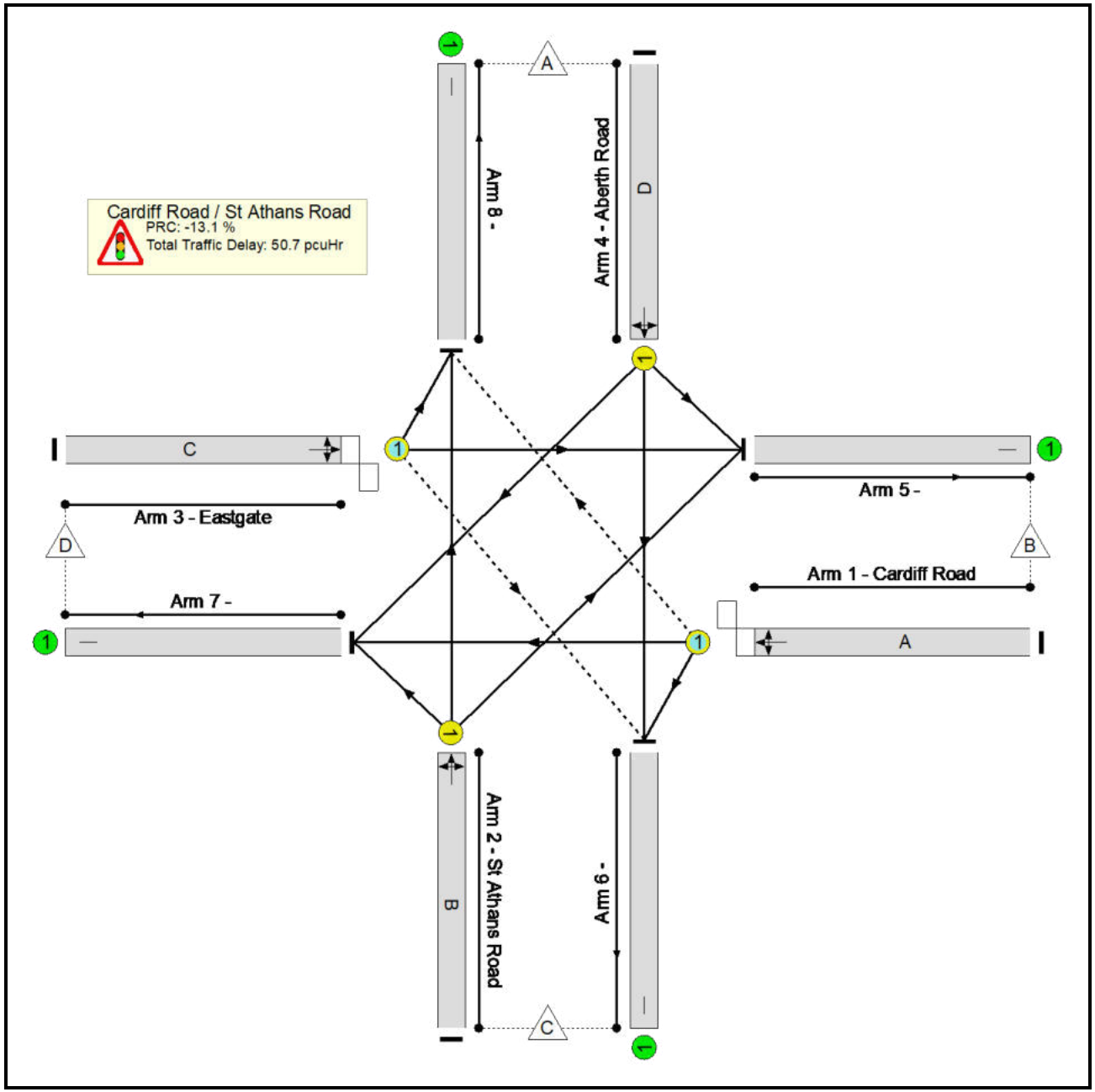
Stage	1	2	3	4	1	2	3
Duration	22	25	23	4	22	18	12
Change Point	0	30	62	91	104	137	162

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.8%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.8%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	47	-	305	1900	307	99.3%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	35	-	364	1762	362	100.5%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	44	-	340	1613	412	82.5%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	43	-	413	1623	406	101.8%
5/1		U	N/A	N/A	-		-	-	-	246	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	461	Inf	Inf	0.0%

Full Input Data And Results

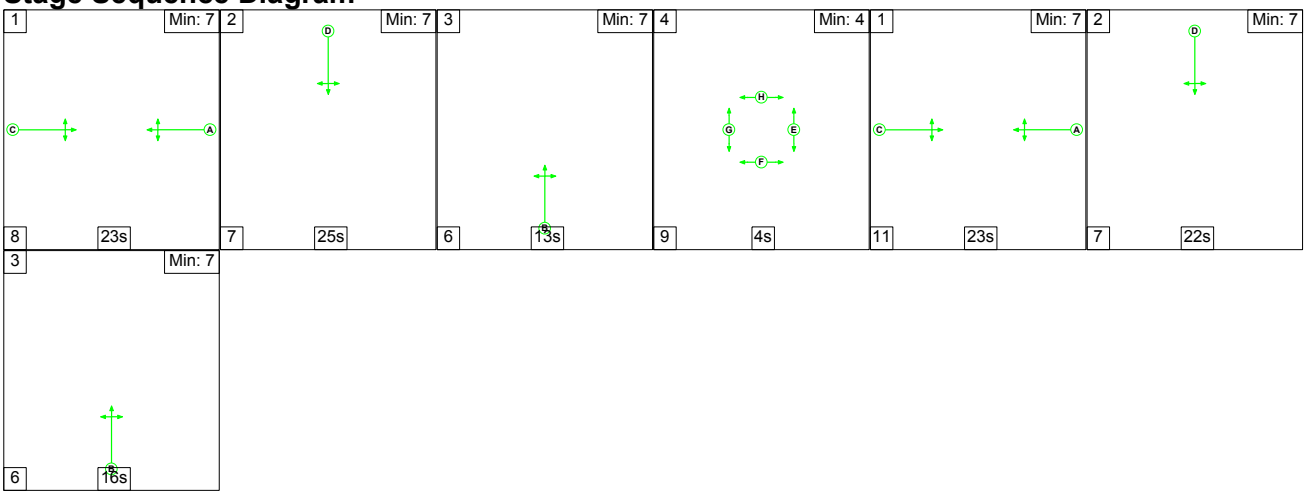
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**100**	**3**	**31**	**17.9**	**32.6**	**0.3**	**50.7**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**100**	**3**	**31**	**17.9**	**32.6**	**0.3**	**50.7**	**-**	**-**	**-**	**-**
1/1	305	305	59	3	28	3.9	8.2	0.2	12.3	144.9	9.3	8.2	17.5
2/1	364	362	-	-	-	5.0	10.0	-	15.0	148.4	11.9	10.0	21.9
3/1	340	340	41	0	2	3.2	2.2	0.0	5.4	57.5	10.0	2.2	12.2
4/1	413	406	-	-	-	5.8	12.1	-	17.9	156.5	12.4	12.1	24.6
5/1	244	244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	485	485	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -13.1 Total Delay for Signalled Lanes (pcuHr): 50.67 Cycle Time (s): 180
PRC Over All Lanes (%): -13.1 Total Delay Over All Lanes(pcuHr): 50.67

Full Input Data And Results

Scenario 18: '2034 + Com + Dev PM' (FG22: '2034 + Com + Dev PM', Plan 1: 'Network Control Plan 1')

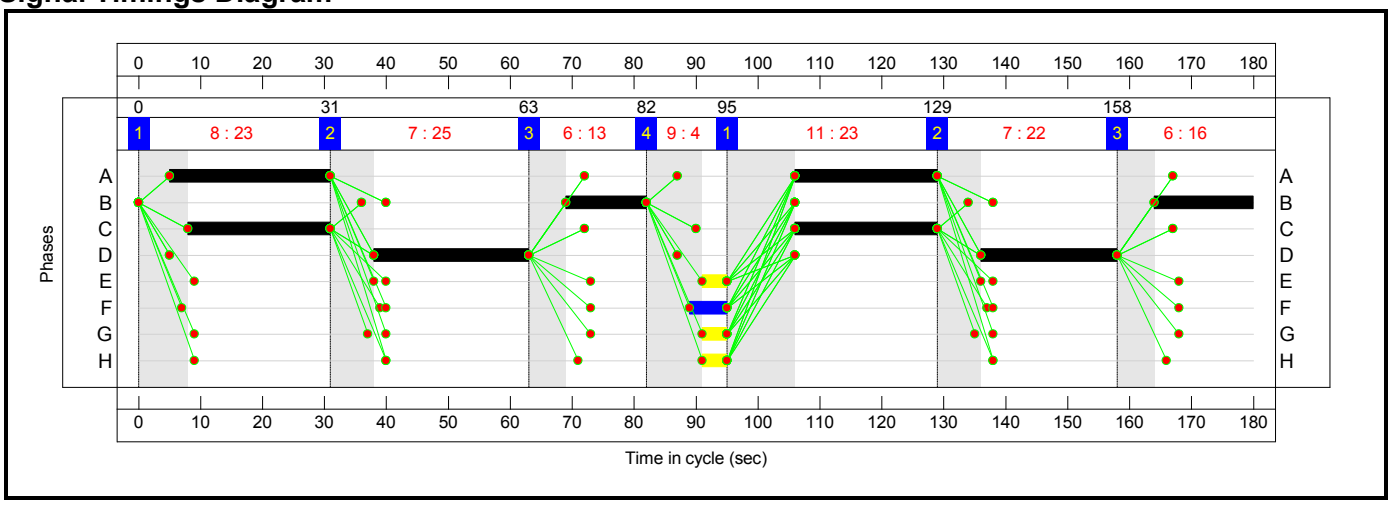
Stage Sequence Diagram



Stage Timings

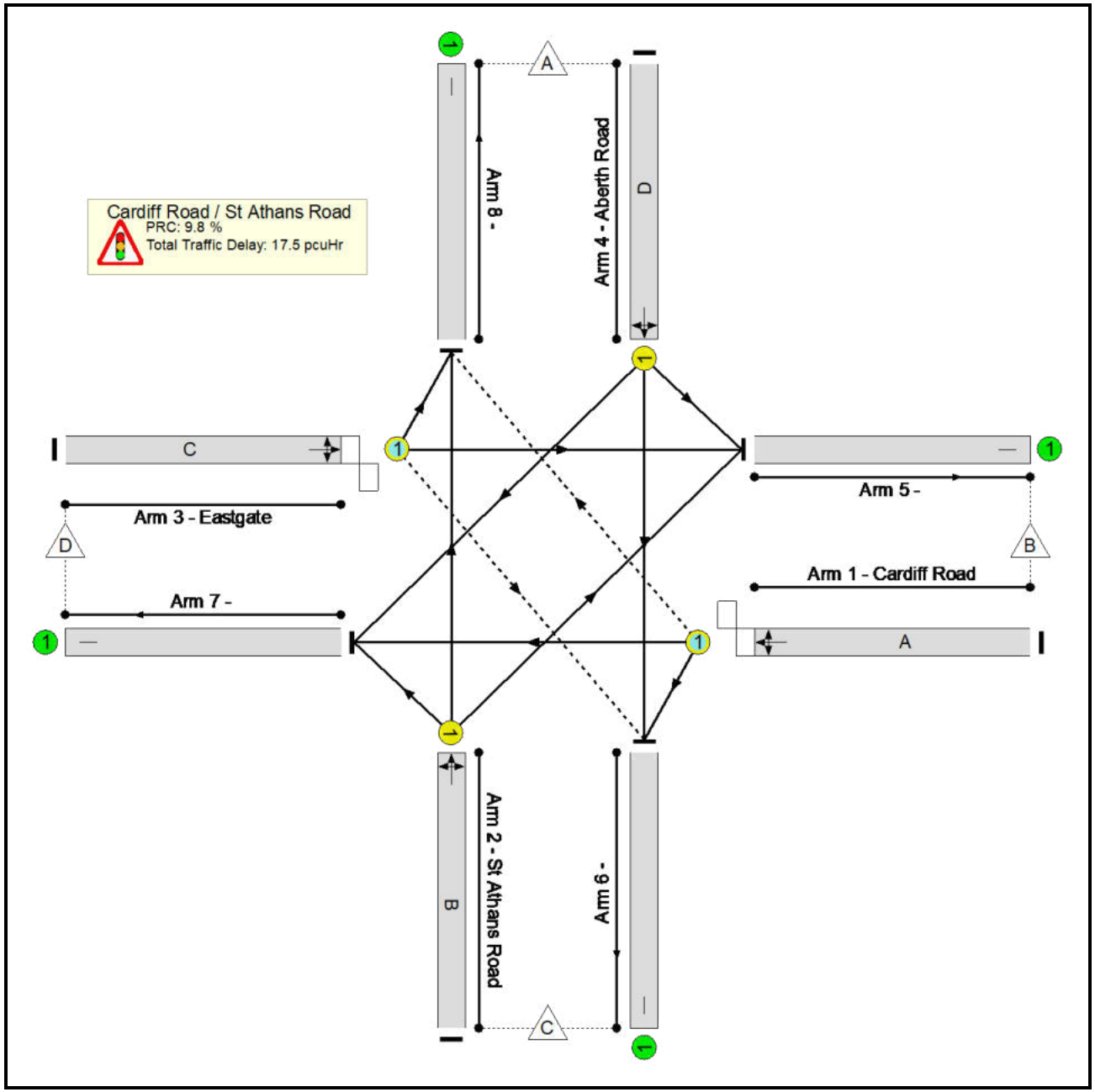
Stage	1	2	3	4	1	2	3
Duration	23	25	13	4	23	22	16
Change Point	0	31	63	82	95	129	158

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.0%**
Cardiff Road / St Athans Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.0%**
1/1	Cardiff Road Left Ahead Right	O	N/A	N/A	A		2	49	-	256	1919	421	60.8%
2/1	St Athans Road Right Left Ahead	U	N/A	N/A	B		2	29	-	241	1756	302	79.7%
3/1	Eastgate Ahead Right Left	O	N/A	N/A	C		2	46	-	350	1626	427	82.0%
4/1	Aberth Road Left Ahead Right	U	N/A	N/A	D		2	47	-	361	1634	445	81.2%
5/1		U	N/A	N/A	-		-	-	-	198	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	239	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**99**	**2**	**8**	**10.5**	**6.8**	**0.1**	**17.5**	**-**	**-**	**-**	**-**
Cardiff Road / St Athans Road	**-**	**-**	**99**	**2**	**8**	**10.5**	**6.8**	**0.1**	**17.5**	**-**	**-**	**-**	**-**
1/1	256	256	37	2	8	1.9	0.8	0.1	2.8	39.3	6.0	0.8	6.8
2/1	241	241	-	-	-	2.4	1.9	-	4.3	63.7	6.2	1.9	8.1
3/1	350	350	61	0	1	3.1	2.2	0.1	5.3	54.1	9.2	2.2	11.4
4/1	361	361	-	-	-	3.1	2.1	-	5.2	51.4	9.2	2.1	11.3
5/1	198	198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	239	239	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 9.8 Total Delay for Signalled Lanes (pcuHr): 17.47 Cycle Time (s): 180
PRC Over All Lanes (%): 9.8 Total Delay Over All Lanes(pcuHr): 17.47

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