

Transport Assessment

**Proposed Residential Development
Cwm Top Lane, Rochdale**

GLP Ltd and Barratt Homes

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1.0 INTRODUCTION

Overview

- 1.1 SCP have been appointed by GLP Ltd and Barratt Homes to provide transport planning and engineering advice in support of a full planning application for a residential development, comprising 495 dwellings, on land located to the south of Cowm Top Lane, Rochdale.
- 1.2 This Transport Assessment (TA) has been prepared to support the planning application and has been developed in accordance with the National Planning Practice Guidance (NPPG) and gives due regard to the National Planning Policy Framework (NPPF) and the now archived Department for Transport's (DfT's) March 2007 "Guidance on Transport Assessment" document.

Planning Background

- 1.3 An outline planning application (Application Reference: 21/01349/OUT) for up to 550 dwellings on the application site was validated by Rochdale Borough Council (RBC) on 16th September 2021. The planning application was supported with a detailed TA and Travel Plan (TP), dated August 2021, which assessed the impact of the development proposals on the local transport network.
- 1.4 RBC and National Highways (NH) provided comments on the TA and TP in email responses, dated 10th November 2021 and 24th October 2021, respectively. A Technical Note was submitted to both RBC and NH which provided the clarification / additional information requested.
- 1.5 Following a review of the submitted Technical Note, RBC provided a subsequent email response, dated 16th March 2022, raising no objections to the scheme subject to conditions, including a condition to ensure Cowm Top Lane is adopted prior to the proposed access being brought into use.
- 1.6 The Technical Note submitted in response to the NH comments was supplemented through additional discussions and email correspondence. In summary, NH accepted the revised development trip distribution and confirmed that the traffic impact of the scheme at the M62 Junction 20 would be minimal, with no detailed capacity assessments being required. However, NH did request that further work is undertaken to establish the baseline position at the A664 / A627(M) / Sandbrook Way junction, confirming that a detailed capacity assessment of the junction may not be required if it can be determined through the use of traffic counts and the application of the trip rates / distribution that the impact at the A664 / A627(M) / Sandbrook Way junction would be minimal.

- 1.7 This TA has therefore been produced to support the full planning application for 495 dwellings and demonstrate to the Local Planning / Highway Authority and NH that the development is satisfactory from a highway safety, traffic and access perspective. It should also be noted that the proposed development is for 60 dwellings less than the aforementioned outline application.
- 1.8 It should also be noted that the application site is a draft allocation site in the Places for Everyone (PfE) document under Allocation 25, Trows Farm, Castleton and the now superseded Greater Manchester Spatial Framework (GMSF) under Policy GM Allocation 29, Trows Farm, Castleton. As part of the GMSF process, a locality assessment was undertaken in consultation with Transport for Greater Manchester which provided an assessment of the cumulative impact of the proposed development and wider GMSF sites on the local highway network. This analysis also demonstrated that there were no highways reasons to prevent this site from coming forward.

Structure of the Report

- 1.9 This TA has been prepared in accordance with the specific scope and study area previously agreed with RBC. The structure of the TA is set out as follows: -
- Chapter 2 – describes in detail the site location, surrounding area, local highway network, existing traffic conditions and road safety record;
 - Chapter 3 – defines the development proposals including the proposed access, servicing and car parking arrangements;
 - Chapter 4 – summarises the national, regional and local transport policies and describes how the proposed development accords with these;
 - Chapter 5 – considers the location of the site with regard to the existing local sustainable transport infrastructure;
 - Chapter 6 – describes the future baseline traffic conditions on the local highway network in relation to committed development traffic flows and traffic growth;
 - Chapter 7 – estimates the number of trips generated by the development and distributes and assigns the vehicular trips on the local highway network;
 - Chapter 8 – presents an assessment of the impact of the development on the operational performance of the local highway network; and
 - Chapter 9 – provides a conclusion to this TA derived from the analysis presented in the above chapters.

2.0 EXISTING CONDITIONS

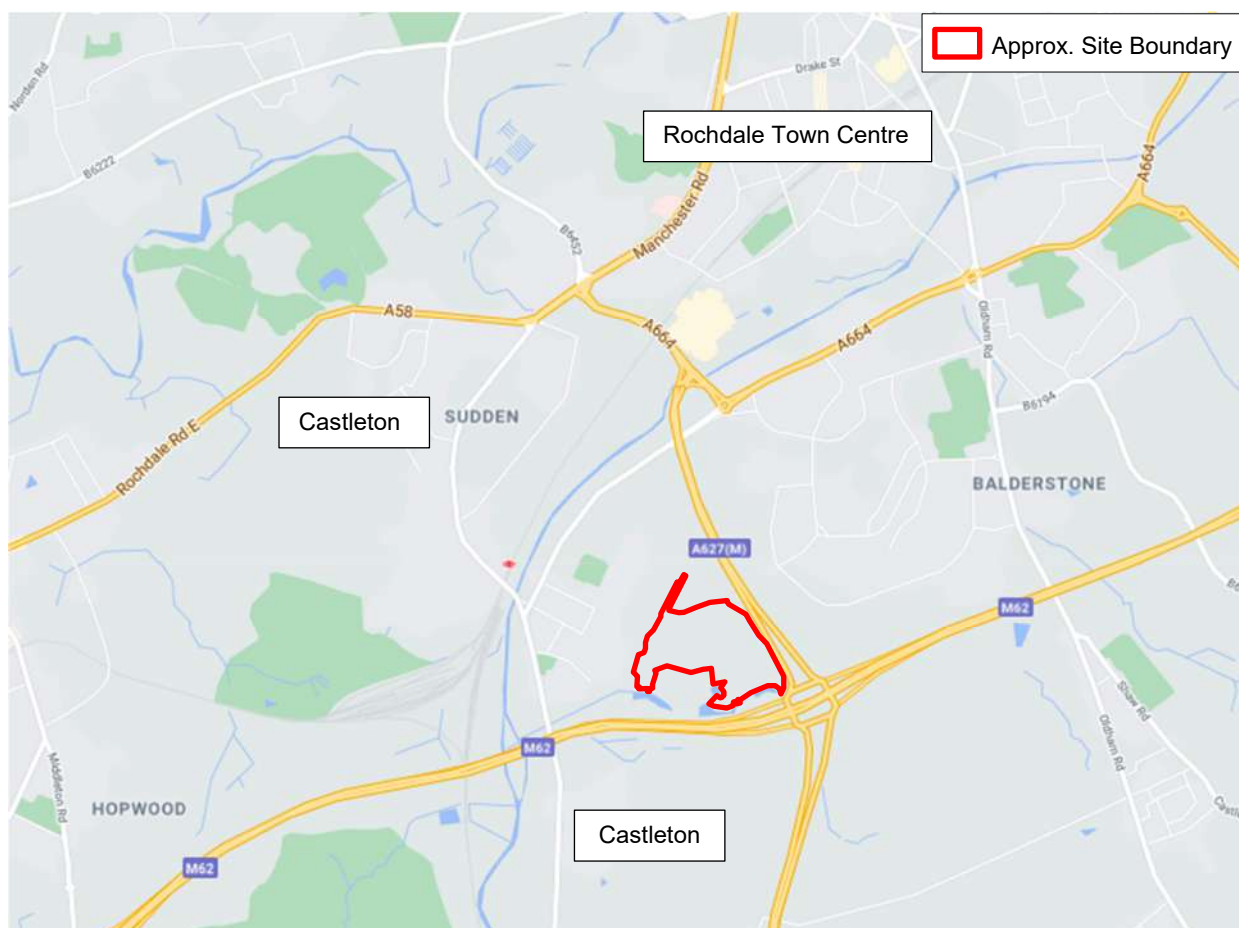
Overview

- 2.1 This Chapter provides a detailed description of the location and composition of the site, local highway network, existing traffic conditions and road safety record.

Site Location and Composition

- 2.2 The development site is located approximately 3.5km south of Rochdale Town Centre and comprises of undeveloped land.
- 2.3 The location of the site in relation to the wider highway network is shown on **Figure 2.1** below.

Figure 2.1: Site Location - Wider View



Source – Google Maps

- 2.4 The existing Public Rights of Way (PRoW) in the vicinity of the site have been reviewed and are shown in **Figure 2.2** below.

Figure 2.2: Public Rights of Way



Source - Rochdale Council

- 2.5 RocFFp23 runs north to south along Cowm Top Lane to the north of the site and connects to RocFFp25 which runs to the east of the site to the rear of the properties on Leander Drive. The two PRoWs also connect to RocFRupp24, which runs along Hillcrest Road and Cripple Gate Lane at the north of the site and connects to Ruskin Road to the east of the A627.
- 2.6 Other PRoWs are located to the south of the site which provide a network of pedestrian routes in the area, such as RocFFp28 which connects Trows Lane to the north of the M62 to Thornham New Road to the south of the M62.

Local Highway Network

Cowm Top Lane

- 2.7 Cowm Top Lane is located to the north of the site and currently serves a number of industrial units. Cowm Top Lane meets the A664 Queensway at a simple priority junction, which benefits from a ghost island right turn lane.
- 2.8 Cowm Top Lane has a carriageway width of approximately 7m and benefits from street lighting and footways along its length. A number of on-street parking bays are located on the eastern side of Cowm Top Lane in the vicinity of its junction with the A664 Queensway.
- 2.9 The northern section of Cowm Top Lane is unadopted and owned by RBC. It has a steep gradient running down to Queensway, which results in a number of surface water drainage issues and safety concerns for the Council. For these reasons, RBC have confirmed that they would not adopt this section of Cowm Top Lane in its current form.
- 2.10 The southern section of Cowm Top Lane was constructed more recently and has a less severe gradient. This section of road is subject to a signed Section 38 agreement dated 14th October 2014 although, at the time of writing this report, the construction of the road has not been fully completed.

Hillcrest Road / Cripple Gate Lane

- 2.11 Hillcrest Road provides a connection between Kirklee Road in the north-west and Cripple Gate Lane in the east. Hillcrest Road / Cripple Gate Lane is an unmetalled single-track lane and has a posted speed limit of 30mph.
- 2.12 As detailed earlier, Hillcrest Road / Cripple Gate Lane is a PRow and is also a TfGM cycle route, which connects to Ruskin Road via a Non-Motorised User (NMU) bridge over the A627.

Trows Lane

- 2.13 Trows Lane is located to the south of the site and serves a small number of residential dwellings and industrial / agricultural buildings. It consists of a single lane with a tarmac and concrete surfacing and has a carriageway width of approximately 4.5m.

Leander Drive

- 2.14 Leander Drive is located west of the site and currently has no link with the site. The speed limit is 30mph and the width of the carriageway is approximately 7m. It also benefits from street lighting and footways along its length.

TA Study Area

- 2.15 As detailed earlier, the study area for the TA has previously been agreed with RBC and includes the following junctions:
- Cowm Top Lane / A664 Queensway;
 - A664 Queensway / A664 Edinburgh Way; and,
 - A664 Manchester Road / A664 Queensway
- 2.16 In addition to the above, NH requested further work be undertaken to establish the baseline position at the A664 / A627(M) / Sandbrook Way junction, as detailed earlier, and therefore this junction has been included in the TA study area.

Cowm Top Lane / A664 Queensway

- 2.17 Cowm Top Lane is a simple priority junction with the A664 Queensway, which benefits from a ghost island right turn lane as shown in **Figure 2.3** below.

Figure 2.3: Cowm Top Lane / A664 Queensway - Current Junction Layout



[A664 Queensway / A664 Edinburgh Way](#)

- 2.18 A664 Queensway / A664 Edinburgh Way is a three-arm roundabout junction between the A664 Queensway and the A664 Edinburgh Way as shown in **Figure 2.4**.
- 2.19 The A664 Edinburgh Way links to the A627 and the M62, and benefits from a controlled pedestrian crossing approximately 55m from the roundabout.

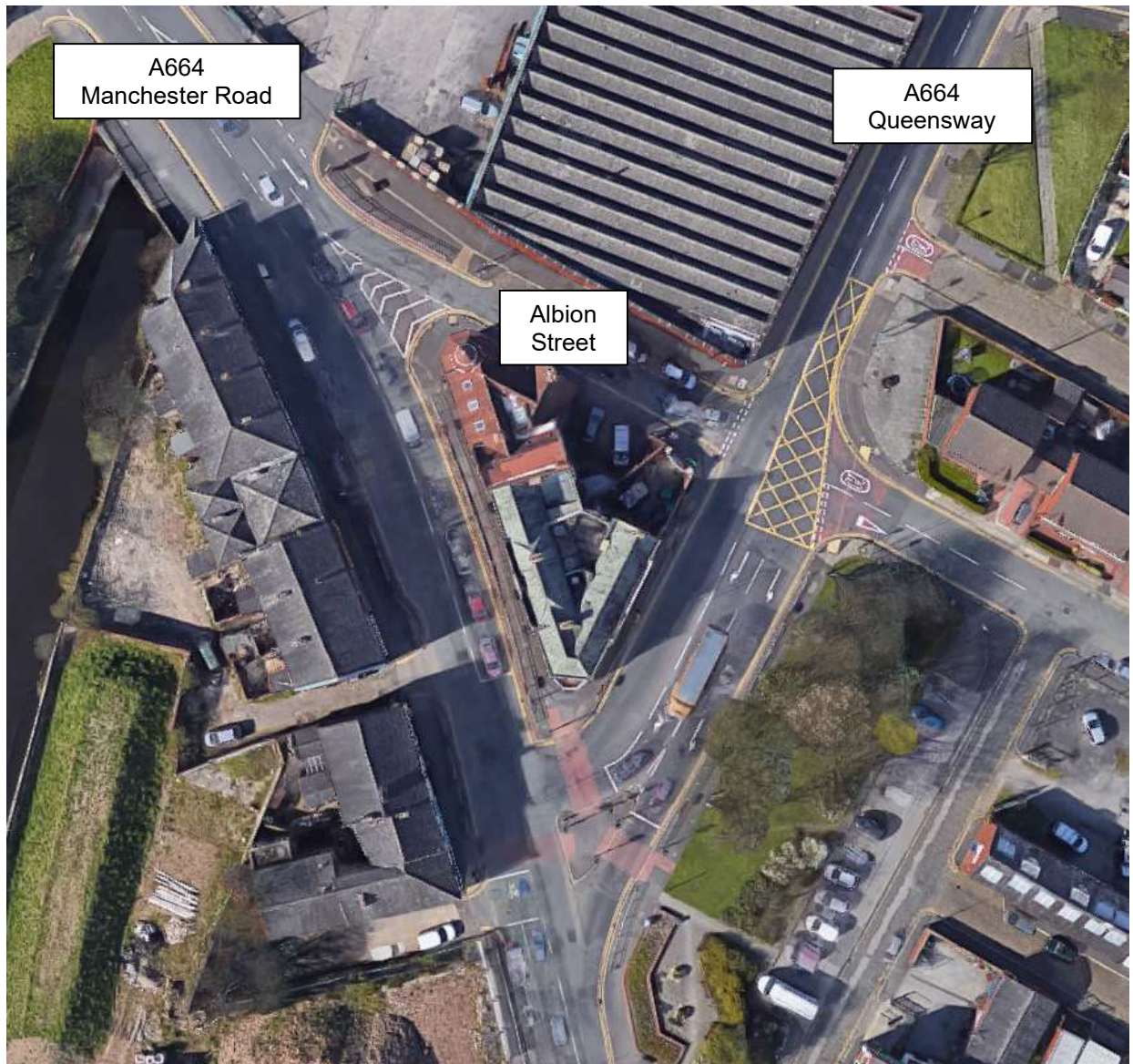
Figure 2.4: A664 Queensway / A664 Edinburgh Way - Current Junction Layout



[A664 Manchester Road / A664 Queensway / Albion Street](#)

- 2.20 As shown in **Figure 2.5**, the A664 Manchester Road / A664 Queensway is a signalised junction. Traffic coming from A664 Manchester Road (north) travelling to the A664 Queensway or Albion Street (south) must use Albion Street (north) as they cannot turn left at the A664 Manchester Road / A664 Queensway signalised junction.

Figure 2.5: A664 Manchester Road / A664 Queensway / Albion Street



A664 / A627(M) / Sandbrook Way

- 2.21 The A664 / A627(M) / Sandbrook Way junction takes the form of a four arm signal-controlled junction, as shown in **Figure 2.6**, and provides a link to the M62 Junction 20, to the south, and Sandbrook Park to the north.

Figure 2.6: A664 / A627(M) / Sandbrook Way



Traffic Surveys

2.22 In order to establish the existing traffic flow demand on the local highway network, manual classified turning count traffic flow surveys were undertaken on Wednesday 3rd October 2018 at the following junctions:

- Cowm Top Lane / A664 Queensway;
- A664 Queensway / A664 Edinburgh Way; and,
- A664 Manchester Road / A664 Queensway.

2.23 In addition to the above, NH requested further work be undertaken to establish the baseline position at the A664 / A627(M) / Sandbrook Way junction, as detailed earlier. Therefore, an additional manual classified turning count traffic flow survey was undertaken on Thursday 16th June 2022 in order to establish the existing traffic flow demand at this junction.

2.24 The peak hours were calculated for each junction individually in order to allow for a robust assessment. The peak hours for each junction are summarised below:

- Cowm Top Lane / A664 Queensway
 - AM Peak: 08:15 – 09:15
 - PM Peak: 16:00 – 17:00
- A664 Queensway / A664 Edinburgh Way
 - AM Peak: 08:15 – 09:15
 - PM Peak: 16:00 – 17:00
- A664 Manchester Road / A664 Queensway
 - AM Peak: 08:15 – 09:15
 - PM Peak: 16:30 – 17:30.
- A664 / A627(M) / Sandbrook Way
 - AM Peak: 07:30 – 08:30
 - PM Peak: 16:30 – 17:30.

2.25 The raw traffic survey data is presented in **Appendix A**, with the peak hour traffic flows shown diagrammatically on **Traffic Flow Figure 1**.

2.26 Given the current COVID-19 pandemic, travel patterns have inevitably changed with many people continuing to work from home, reducing the number of people travelling to work in peak hours. Having regard to this, using historic traffic data in the capacity assessments is considered a robust approach. No queries were raised by RBC in relation to the use of this data as part of the outline application on the site.

Road Safety

2.27 The NPPG document “Guidance on Transport Assessment” states that, “*Critical locations on the road network with poor accident records should be identified. This is to determine if the proposed development will exacerbate existing problems or, if proposed, whether highway mitigation works or traffic management measures will help to alleviate the problems*”.

2.28 The Personal Injury Accident data for the local highway network has been obtained from the Crashmap website for the most recently available five-year period. The injuries caused by the accidents are classified as ‘slight’, ‘serious’ or ‘fatal’.

2.29 A plan showing the location and severity of the accidents is provided in **Appendix B** with the key points from the 5-year accident data being summarised in **Table 2.1**.

Table 2.1: Accident Data

Location	Fatal	Serious	Slight	Total
A664 / A627(M) / Sandbrook Way	0	0	1	1
A664 Queensway / A664 Edinburgh Way	0	1	3	4
A664 Queensway – Near Cowm Top Lane	0	0	2	2
A664 Queensway / Malcolm Street	0	1	1	2
A664 Queensway / Hillcrest road	0	0	1	1
A664 Queensway / Albion Street	0	0	3	3
A664 Manchester Road / A664 Queensway.	0	0	1	1

2.30 The key points from this accident analysis are:

- One slight accident occurred at the A664 / A627(M) / Sandbrook Way junction.
- Four accidents have occurred at the A664 Queensway / A664 Edinburgh Way junction, including one serious.
- Two slight accidents have occurred in the vicinity of the junction between Cowm Top Lane and the A664 Queensway.
- One slight accident occurred at the A664 Queensway / A664 Manchester Road junction, although three slight accidents have occurred at A664 Queensway / Albion Street junction.
- A number of sporadic accidents have occurred along the A664 Queensway, but no specific accident cluster spot has been found.

2.31 The above results therefore suggest that there is no inherent road safety issue present on the local adopted highway network in the vicinity of the application site which the proposed development would exacerbate.

3.0 PROPOSED DEVELOPMENT

Overview

- 3.1 The development proposals consist of a residential development, comprising 495 dwellings, on land located to the south of Cowm Top Lane, Rochdale.
- 3.2 The proposed site layout plan is presented in [Appendix C](#).

Proposed Access Arrangement

- 3.3 Vehicular access will be provided from an extension to Cowm Top Lane, as shown on drawing number SCP/15399/F01 Revision G, presented in [Appendix D](#). The access will provide a 5.5m wide carriageway and 2m wide footways on both sides of the road. The access will cross the existing PRoW running along Cripple Gate Lane (RocFRupp24), where dropped kerbs and tactile paving will be provided to assist pedestrians crossing.
- 3.4 In addition, traffic calming and drainage improvements will be provided to the existing section of Cowm Top Lane to address RBC's concerns over the existing gradient and drainage matters. The improvement scheme is shown on drawing number SCP/15399/001 presented in [Appendix E](#) and involves the introduction of a number of raised junction tables at the existing accesses to the industrial units, along with areas of anti-skid surface treatment to help reduce traffic speeds. It is also proposed that linear drainage channels (ACO drains) are introduced across the full width of the road at the top of each of the raised tables, which will connect into the existing surface water carrier drains. The introduction of the raised tables will also help to slow the flow of water down Cowm Top Lane and address existing issues.
- 3.5 Discussions have taken place with RBC, as highway authority, who have provided their agreement to the improvement scheme and confirmed that if these works are to be implemented then they would be willing to adopt Cowm Top Lane. A copy of a letter from RBC confirming their position is presented in [Appendix F](#).
- 3.6 Pedestrian and cycle access to the site will be provided at the same location as the main vehicular access off Cowm Top Lane and a separate pedestrian connection is also provided onto Leander Drive, to the west of the site.

- 3.7 In addition to the above, continuous 2m wide footways are provided throughout the development and a 5.5m wide shared footway / cycleway connection is proposed onto Trows Lane which will act as a separate emergency vehicle access. The access will be controlled with retractable bollards, as shown on drawing number SCP/15399/ATR02, presented in **Appendix G**, which demonstrates through swept path analysis that the emergency access can accommodate a fire appliance.
- 3.8 Furthermore, a 3m wide north-south and east-west shared footway / cycleway connection is proposed linking the site to the existing PRow running along Cripple Gate Lane (RocFRupp24), via both traffic free routes and lightly trafficked internal estate roads, with dropped kerbs and tactile paving provided where it crosses the access road to assist pedestrians crossing.
- 3.9 Also, the developer is committed to providing a contribution towards upgrading the existing PRow running along Cripple Gate Lane (RocFRupp24) which will benefit both residents of the site and existing users of the PRow.

Servicing

- 3.10 The proposed site layout has been designed to ensure that the movements of a refuse vehicle can be accommodated without allowing their requirements to dominate the layout. Swept path analysis has been undertaken of the layout, as shown on drawings SCP/15399/ATR01, presented in **Appendix H**, which demonstrates that a refuse vehicle can turn within the site at the proposed turning heads.

Parking

- 3.11 RBC's parking standards are set out in Appendix 5 of their Adopted Core Strategy document which sets out a requirement for 2 car parking spaces per dwelling with 2 or more bedrooms in this location.
- 3.12 As shown on the site layout plan, presented in **Appendix C**, an approx. average of 2 spaces per dwelling is provided across the site and therefore, the overall level of parking to be provided is in line with RBC's parking standards.

4.0 PLANNING POLICY CONTEXT

Introduction

- 4.1 This chapter provides a summary of relevant national, regional and local transport policies and provides a brief analysis of how the proposed development will contribute towards their aims and objectives.

National Planning Policy Framework (NPPF)

- 4.2 NPPF is published by the Ministry for Communities and Local Government to set the framework under which local transport, parking and accessibility plans and policies are set. The NPPF has been revised most recently in July 2021.
- 4.3 At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development which for decision-taking means:
- “approving development proposals that accord with an up-to-date development plan without delay; or
 - where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
 - the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
 - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.”
- 4.4 In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:
- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
 - b) safe and suitable access to the site can be achieved for all users; and
 - c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 46; and
 - d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

4.5 Importantly, NPPF states that:

‘development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe’.

‘Within this context, applications for development should:

- a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*

All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.

Local Policy – Greater Manchester Transport Strategy 2040

4.6 In February 2017, Transport for Greater Manchester (TfGM) published the Greater Manchester Transport Strategy 2040 which sets out the vision for Greater Manchester and provides a plan to “*establish a fully integrated, high capacity transport system across Greater Manchester*”.

4.7 The Transport Strategy has identified the following key challenges to help protect the environment:

- *“Increasing the use of sustainable transport to reduce the negative impacts of car use. Many people do not currently see sustainable modes as realistic alternatives and we must continue to work hard to improve the quality of our walking, cycling and public transport networks and to provide people with the facilities and training to make them natural, easy choices. The design of new development needs to make it easier for people to use sustainable modes.*

- *Reducing transport emissions is a particular challenge, given that economic and population growth will increase the demand for travel, hence more radical measures will be needed to enable Greater Manchester to meet challenging standards and targets, in terms of air quality and in response to the challenge of climate change.*
- *Making the best use of existing infrastructure will help to reduce environmental impacts. Locating new development where there is good access to public transport and services will reduce car travel and therefore emissions. Road and rail networks must also be used as efficiently as possible and be well maintained.”*

4.8 As such, “TfGM will continue to work with planning authorities and developers to better integrate transport and new development in accordance with the principles of:

- *Reducing the need to travel by car, and the distance travelled;*
- *Maximising accessibility by sustainable modes;*
- *Making the best use of existing infrastructure, particularly through increasing the density of development close to public transport nodes;*
- *Maximising opportunities to provide additional public transport; and,*
- *Designing to encourage active travel.”*

Local Policy – Places for Everyone

4.9 The PfE is a joint plan for Greater Manchester and was first drafted in October 2016. The publication version was published in August 2021.

4.10 Chapter 11 of the PfE provides the proposed allocations within Greater Manchester and includes the proposed development site under Policy JP - Allocation 25, Trows Farm, Castleton.

Local Policy – Rochdale Adopted Core Strategy

4.11 The Rochdale Adopted Core Strategy was adopted in October 2016 and sets out the long-term spatial strategy for future development of Rochdale Borough until 2028.

4.12 In terms of accessibility, the main challenges are highlighted as follow:

- *“Ensuring transport improvements are co-ordinated with, and support, future development;*
- *Solving congestion at peak times across the borough;*
- *Improving transport links to the city centre for employment and leisure;*
- *Improving accessibility to jobs in the borough and elsewhere in Greater Manchester; and,*

- *Improving public transport and other forms sustainable transport to improve air quality along the M62 and A58 road corridors and to reduce emissions.”*

4.13 Chapter 11 of the Core Strategy states that “*to improve accessibility and enhance sustainable travel, our policies seek to:*

- *deliver transport improvements at a strategic, borough-wide and local level to support development proposals;*
- *ensure that development is in the most appropriate and accessible locations;*
- *minimise trips, especially single occupancy car journeys, and trip length;*
- *promote wider travel choice and increase trips made by sustainable forms of travel, including public transport, cycling and walking;*
- *support measures that enhance safety and access for people with impaired mobility, protect traffic-sensitive town centres and residential communities; and,*
- *reduce emissions from traffic (particularly NOx gases, PM10 particulates and CO2 levels) contributing to Greater Manchester Local Transport Plan (GMLTP) and national targets by encouraging more sustainable travel choices and forms of travel, more active and healthier travel behaviour and take advantage of technological innovations.”*

4.14 As a result, Policy T2 advocates that “[RBC] *will improve accessibility by locating development where good access to public transport is available or can be provided, backed by measures to reduce the need for travel and effective provision for cyclists, pedestrians and people with impaired mobility. Development will be appropriately located to minimise the need to travel by car and the number and length of car trips made to access local amenities.”*

4.15 The push for sustainable transport is backed by other policies within the Core Strategy, such as G1 and P3.

4.16 Finally, Policy C2 also states that RBC will encourage the delivery of new housing at the Castleton corridor / Crown Business Park (Policy E3/2).

Consideration of the Application Site against Existing Policy Background

4.17 In general, the relevant transport policies set out above follow similar themes and promote common aims in respect of accessibility by non-car modes. These are to provide sustainable development with good access to encourage non-car modes of transport, to ensure that the highways impact of new developments is acceptable or mitigated against and to promote good site design with appropriate parking levels.

- 4.18 The following chapter demonstrates that the proposed development is well located in relation to sustainable transport facilities making the development accessible by non-car modes of transport.
- 4.19 The above analysis of relevant national and local transport policies confirms that the proposed development is therefore compliant with the aspirations of relevant transport planning policies and can specifically help contribute to their objectives.

5.0 SUSTAINABLE TRANSPORT APPRAISAL

Overview

- 5.1 This chapter presents a review of the accessibility of the site by walking, cycling and public transport modes. Policies to encourage travel by sustainable modes are developed further within the Travel Plan for the development that accompanies this application.
- 5.2 Access between the site and local areas by non-motorised modes has been assessed by comparison with the following typical threshold distances:

Table 5.1: Typical Threshold Distances (Not Upper Limits)

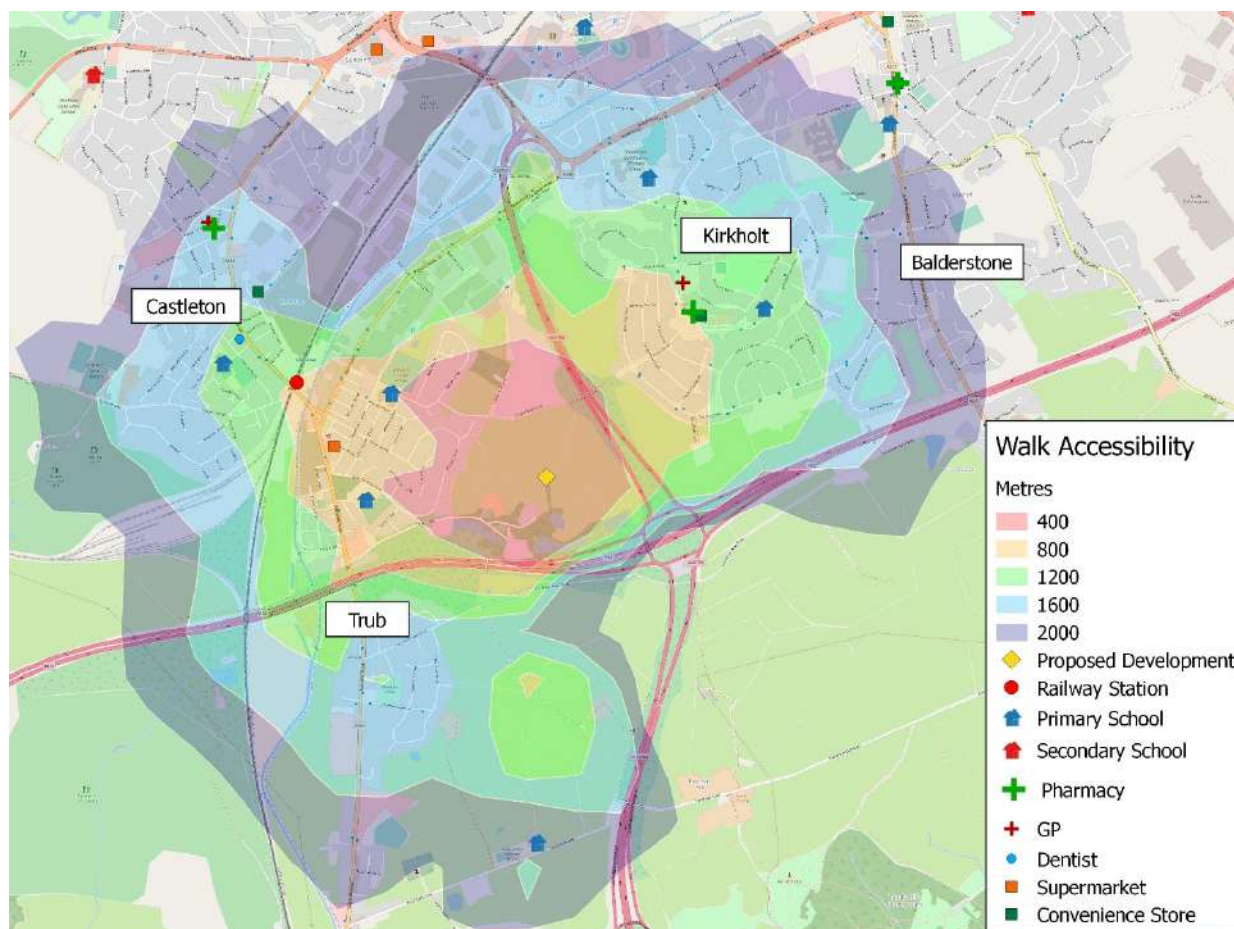
Threshold Distance	Significance
800m	Motorised modes are rarely used for trips of around 800m or less
2km	Walking offers the greatest potential to replace short car trips particularly those under 2km.
5km	Cycling also has potential to substitute for short car trips, particularly those under 5km and form part of a longer journey by public transport.

Source: MfS para 4.4 and PPS13

Pedestrian Accessibility

- 5.3 TRACC software has been used to assess the accessibility of the development on foot for a 2km walk distance from the site, as shown in **Figure 5.1**. The plan shows the areas reachable on foot from the centre of the site for a journey up to a maximum of 2km. The routes are divided into 400m coloured bands to demonstrate the relative attractiveness of areas by direction out of the site.

Figure 5.1: Walk Accessibility



- 5.4 In terms of the areas within the 2km walk distance threshold, the site is located within walking distance of numerous neighbourhoods such as Castleton, Kirkholt, Balderstone and Trub.
- 5.5 A number of local amenities are also within a 2km walk of the site (up to 10 minutes' walk) which will encourage travel via sustainable modes. A small selection of local amenities within an acceptable walk distance is shown in **Table 5.2**.

Table 5.2: Accessibility to Local Amenities from the Development Site

Service	Detail	Distance (Straight line)
Primary School	St Gabriels RC Primary School	550m
Primary School	Castleton Primary School	590m
Convenience Store	The Co-Op Food	710m
Pharmacy	Strand Pharmacy	800m
Pharmacy	Well Castleton	860m
GP	Kirkholt Medical Practice	1030m
Dentist	Dental Air Service UK Ltd	1080m
Dentist	Better Dental Rochdale	1170m
Convenience Store	NISA Local	1400m
GP	Castleton Health Centre	1450m

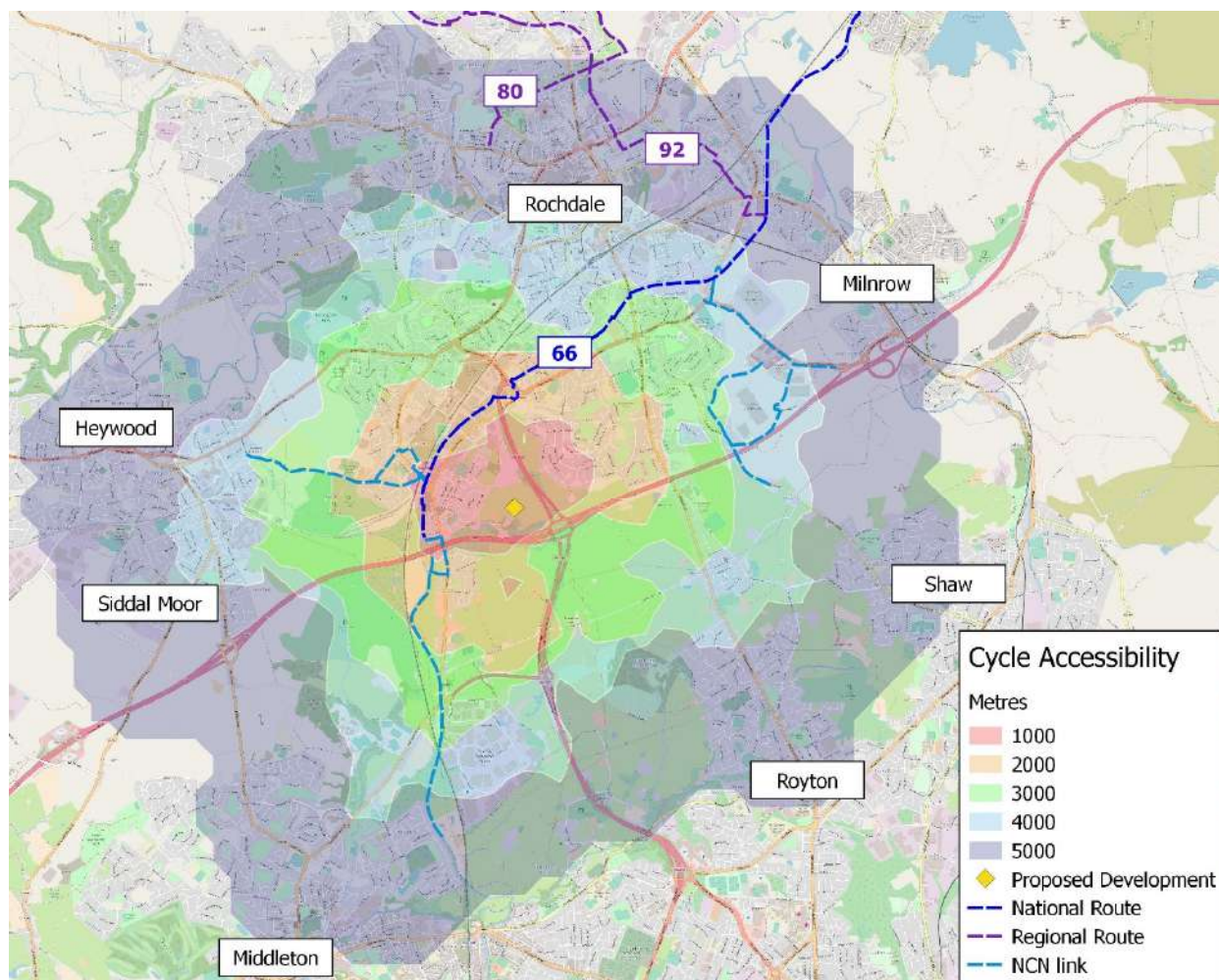
- 5.6 Generally, there are good, well surfaced and street-lit footways on both sides of the roads in the built-up areas to the west and north of the site as well as natural surveillance by virtue of the residential and council properties in the area.
- 5.7 Pedestrian and cycle access to the site will be provided at the same location as the main vehicular access off Cowm Top Lane and a separate pedestrian connection is also provided onto Leander Drive, to the west of the site.
- 5.8 In addition to the above, continuous 2m wide footways are provided throughout the development and a 3.7m wide shared footway / cycleway connection is proposed onto Trows Lane. Furthermore, a 3m wide north-south and east-west shared footway / cycleway connection is proposed linking the site to the existing PRow running along Cripple Gate Lane (RocFRupp24), via both traffic free routes and lightly trafficked internal estate roads, with dropped kerbs and tactile paving provided where it crosses the access road to assist pedestrians crossing.
- 5.9 Also, the developer is committed to providing a contribution towards upgrading the existing PRow running along Cripple Gate Lane (RocFRupp24) which will benefit both residents of the site and existing users of the PRow.

Cycling

- 5.10 Transport Policy identifies that cycling represents a realistic and healthy option to use of the private car for making journeys up to 5km as a whole journey or as part of a longer journey by public transport.

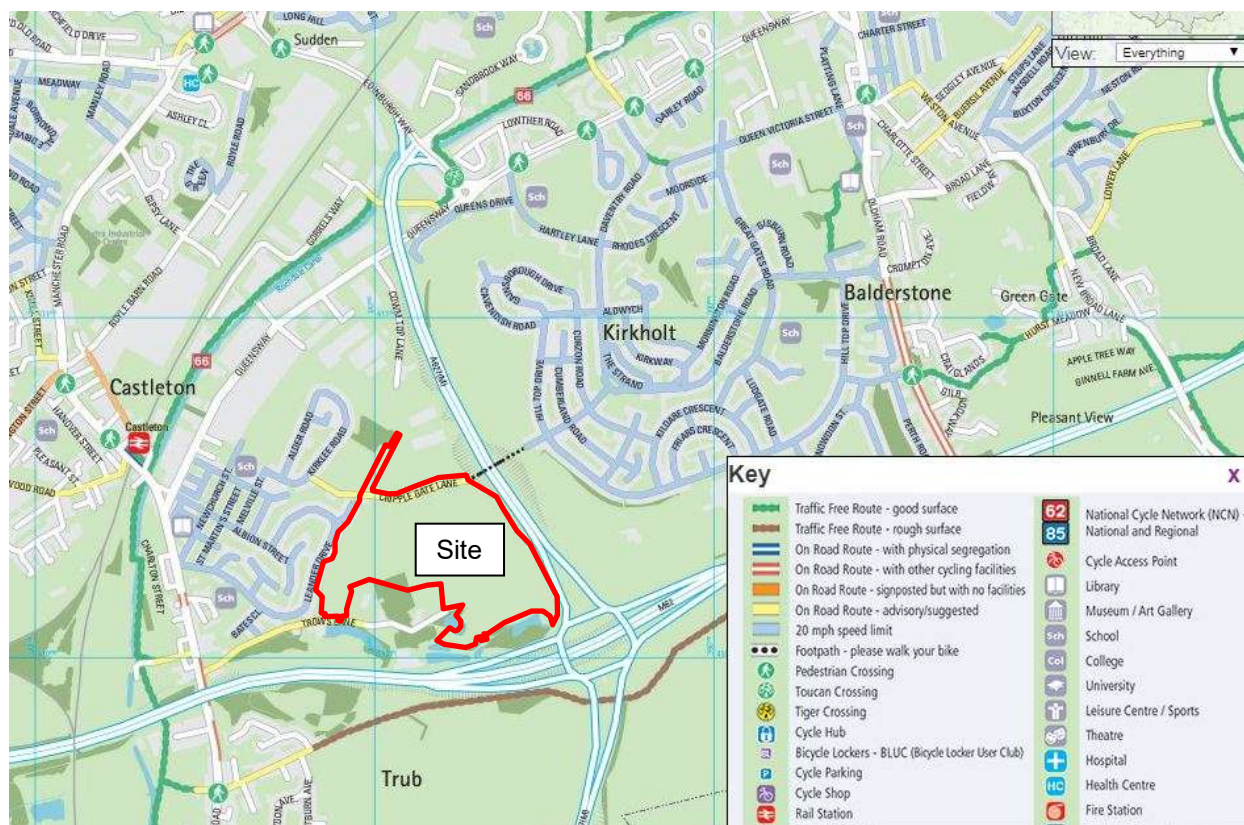
- 5.11 TRACC software has been used to assess the accessibility of the development by bike for a 5km distance from the site, as shown in **Figure 5.2**. The plan shows the areas that may be reached within 1000m coloured bands from the site up to the maximum 5km journey distance.
- 5.12 The plan demonstrates that Rochdale, Heywood, Siddal Moor, Middleton, Royton, Shaw and Milnrow are all within a 5km cycle distance from the site.

Figure 5.2: Cycle Accessibility



- 5.13 National Cycle Route (NCR) 66 is located approximately 970m north of the site and runs from central Manchester to Spurn Head via Bradford, Leeds, York, Beverley, and Kingston upon Hull. Regional Routes 80 and 92 are also located near the site, approximately 3960m and 3670m north-east of the site respectively. The Regional Routes provide connections with local destinations such as Rochdale town centre, Whitworth and Shawforth.
- 5.14 As shown in **Figure 5.3**, local cycle routes are also available near the site, including dedicated cycle lanes and unpaved trails.

Figure 5.3: TfGM Cycle Route Network – with site boundary



- 5.15 In addition to the above, a number of cycle infrastructure improvements have specifically been announced around Castleton, including Castleton Local Centre Corridor (CLCC) and TfGM's Bee Network. **Figure 5.4** below shows the improvements proposed along the canal and Cripple Gate Lane / Hillcrest Road as well as the junctions being improved.
- 5.16 As detailed earlier, a 3m wide north-south and east-west shared footway / cycleway connection is proposed linking the site to the proposed infrastructure improvements along Cripple Gate Lane (RocFRupp24) and the developer is committed to providing a contribution to improving the surface of Cripple Gate Lane / Hillcrest Road to promote walking and cycling trips to / from the site and assist in the delivery of this section of the Bee Network.

Figure 5.4: Cycling improvements planned around Castleton – with site boundary



5.17 As the application site is within an acceptable cycle distance of a range of areas and associated facilities, cycling is considered to be a viable alternative to private car use for prospective residents of the site.

Public Transport

5.18 The nearest bus stops to the site are located on A664 Queensway, immediately to the east of its junction with Cowm Top Lane, and on A664 Manchester Road, less than 900m from the centre of the site.

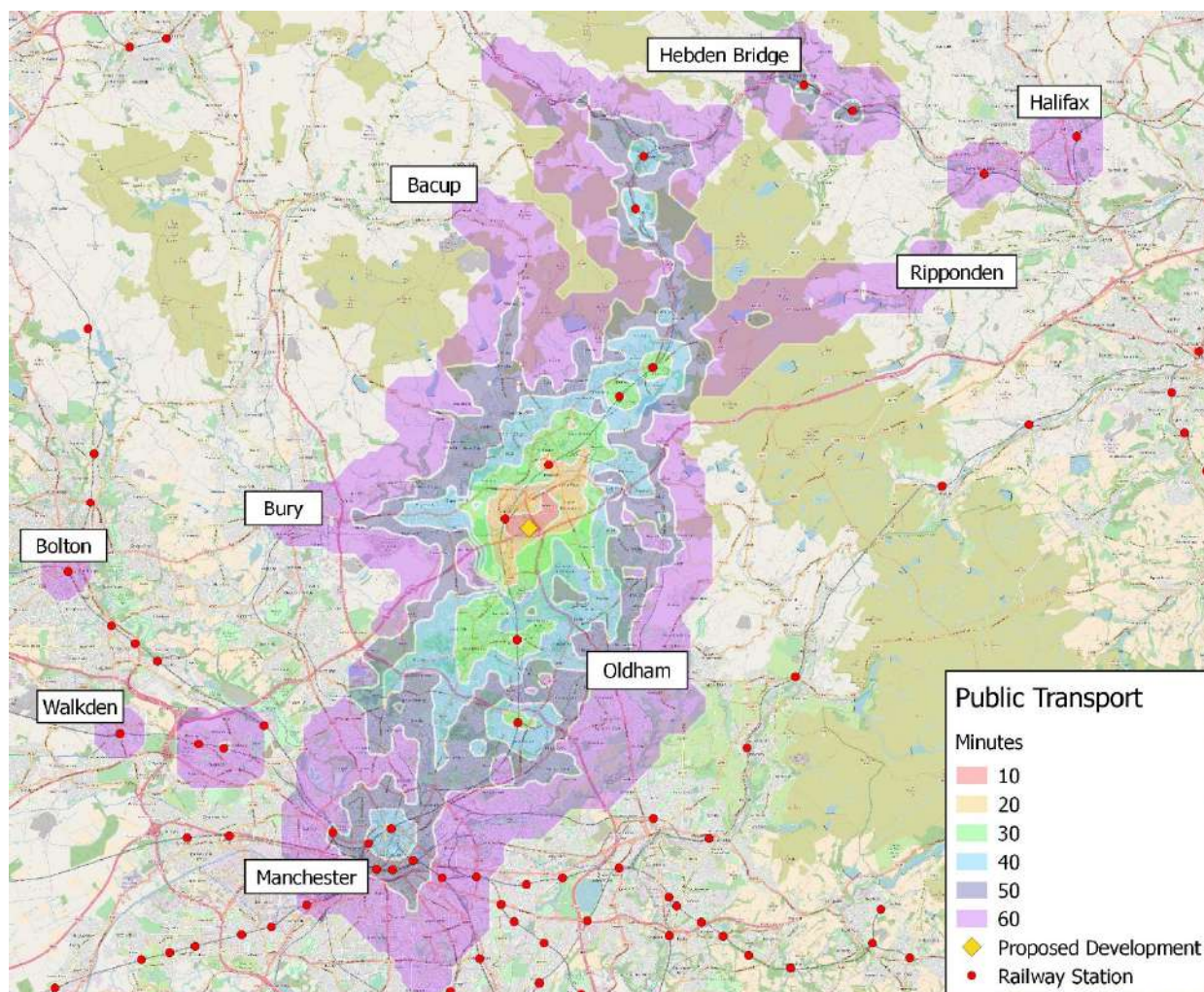
5.19 The bus services available in the vicinity of the site are listed in **Table 5.3** below.

Table 5.3: Local Bus Services

Number	Route Description	Average Frequency		
		Mon - Fri	Saturday	Sunday
R7	Middleton – Rochdale Via Stakehill and Kirkholt	1 hour	1 hour	1 hour
17 / 17A	Manchester – Rochdale Via Middleton (17A – Via Stakehill Industrial Estate)	10 min	10 min	15 min

- 5.20 Castleton Railway Station is located approximately 900m west of the proposed site, and is therefore well within walking distance, providing direct connections to Rochdale, Clitheroe, Blackburn and Manchester.
- 5.21 TRACC software has been used to assess the accessibility of the development within a 60-minute public transport (bus and rail) commute, as shown in **Figure 5.5**.

Figure 5.5: Public Transport Accessibility



- 5.22 The map shows the areas that may be reached within 10-minute coloured bands from the site for the maximum hour-long journey, including the walk to the bus stops / railway station. **Figure 5.5** demonstrates that key areas of Manchester, Bury, Bolton, Walkden, Halifax, Ripponden and Hebden Bridge, amongst others, are within an acceptable 60-minute public transport commute.

Accessibility Summary

- 5.23 Having regard to the above, it is considered that the site already possesses good levels of accessibility by the main non-car modes of transport. In order to maximise the opportunities available, the development will link into the existing and new pedestrian and cycling infrastructure. This will ensure that future residents can walk and cycle to local facilities, bus stops and train stations in preference, particularly for short journeys, rather than make use of the private car.
- 5.24 In addition, the developer is committed to encourage travel via sustainable modes through the implementation of a Travel Plan aiming to reduce travel via the private car.

6.0 FUTURE BASELINE TRAFFIC CONDITIONS

Overview

- 6.1 This chapter describes the existing and future baseline traffic conditions on the local highway network in relation to traffic growth and committed development traffic flows.

Traffic Growth

- 6.2 The capacity assessments in this TA are undertaken in the future assessment year of 2027 (year of application + 5 years).
- 6.3 In order to quantify the level of background traffic growth that could occur on the local network between the date of the baseline traffic data and the future assessment year, National Traffic Model (NTM) growth factors, modified by TEMPRO local growth factors, have been used for the Rochdale Area (E02001148). The traffic growth factors are summarised in **Table 6.1** below:

Table 6.1: TEMPRO Growth Factors

Year	AM Peak	PM Peak
2018 – 2027	1.0999	1.0964
2022 – 2027	1.0425	1.0419

- 6.4 The above growth factors have been applied to the surveyed traffic flows to obtain the 2027 base traffic flows, as shown in **Traffic Flow Figure 2**.
- 6.5 Given the current COVID-19 pandemic, travel patterns have inevitably changed with many people working from home, reducing the number of people travelling to work in peak hours. Whilst it is not possible to accurately predict future travel patterns, it is reasonable to assume that there will be a reduction in future traffic growth, making it unlikely that the growth factors presented above will be realised. Having regard to this it is likely to make the assessments presented later in this report robust.

Committed Developments

- 6.6 As part of the original TA scoping discussions, RBC confirmed that there are no committed developments in the vicinity of the site that need to be taken into account.

- 6.7 As part of the aforementioned outline application on the site, NH provided a consultation response recommending that the requirements for committed developments are reconfirmed with RBC given the time passed since the TA scoping correspondence. It should be noted that RBC reviewed the TA submitted with the outline planning application and provided a detailed consultation response confirming that *“The TA was prepared in line with scoping discussions between SCP and the Highway Authority”* and they did not request the assessments were revised to include any new committed developments.
- 6.8 Having regard to the above, the TEMPRO growth factors presented earlier are therefore sufficient to capture future traffic growth in the area, particularly given that the traffic surveys relevant to the capacity assessments in this TA were undertaken pre-Covid and the presented growth factors are unlikely to be realised.

7.0 TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

Overview

- 7.1 This chapter provides an estimate of the trips generated by the proposed development, along with its distribution and assignment on the local highway network.

Proposed Residential Development Trip Generation

- 7.2 In order to estimate the trip generating potential of the proposed residential development, the average trip rates presented in the TA submitted with the previously mentioned outline application have been used. These trip rates were obtained from the industry-standard TRICS Database and the selection criteria for the TRICS based trip rates is as follows:

- i) Residential;
- ii) Houses – Privately-owned;
- iii) Multi modal surveys;
- iv) Selection by number of units (275 to 1100);
- v) Weekday surveys only; and
- vi) Only sites in ‘suburban area’ and ‘Edge of Town’ locations have been selected.

- 7.3 The multi modal TRICS outputs for the proposed residential development are presented in **Appendix I** and are summarised in **Table 7.1** below.

Table 7.1: Privately Owned Houses - Trip Rates

Mode	Weekday AM Peak Hour (08:00 to 09:00)		Weekday PM Peak Hour (17:00 to 18:00)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	0.139	0.381	0.349	0.163
Pedestrians	0.005	0.011	0.008	0.005
Cyclists	0.024	0.115	0.040	0.024
Public Transport	0.003	0.038	0.020	0.004

7.4 RBC's consultation response in relation to the previously mentioned outline application stated that the above trip rates appear low given that the site is remote from the highway and the TRICS data used is for edge of town developments. As detailed earlier, a Technical Note was submitted to RBC which provided the following justification in relation to the trip rates:

"The trip rates presented in the submitted TA have been obtained using TRICS Good Practice Guidelines and are considered acceptable for use in the assessments for the following reasons:

- TRICS defines 'Edge of Town' as "At the physical edge of the town/city, where the town/city meets the countryside. The actual physical distance from the site to the beginning of the countryside can vary proportionately to the size of the town/city". Rochdale is a large town with a large number of residents and amenities etc. and the site is clearly located on the physical edge of the town where the town meets the countryside. Therefore, the use of 'Edge of Town' comparator sites is considered wholly appropriate.*
- Furthermore, the use of 'Edge of Town' comparator sites allows for a robust assessment when considering research undertaken by TRICS which states "vehicular analysis by location type did show an overall structured and consistent variation in trip rates. The ranked comparison of TRICS® location types showed the Edge of Town category ranking mostly at the top in terms of trip rates, with the Town Centre/Edge of Town Centre grouping of categories ranking mostly at the bottom".*
- Travel patterns have inevitably changed due to the current COVID-19 pandemic, with many people working from home, reducing the number of people traveling to work in the peak hours. Whilst it is not possible to accurately predict future travel patterns, it is reasonable to assume that there will be a reduction in future commuters on the network, when compared to recent years (when the TRICS surveys were undertaken), as a result of workplaces providing flexibility to more employees to work from home.*
- The site benefits from good levels of accessibility being within an acceptable walk distance of several amenities including retail, education, leisure and healthcare. The development is also reasonably well served by public transport, as confirmed by TfGM, with bus stops located on the A664 Queensway immediately to the east of its junction with Cowm Top Lane and on the A664 Manchester Road, less than 900m from the centre of the site. Furthermore, Castleton Railway Station is located approximately 1.2km walk distance (14-minute walk) from the centre of the site and provides convenient access to Rochdale, Clitheroe, Blackburn and Manchester, amongst others. Therefore, prospective residents will not be wholly reliant on the private car to travel to/from the site.*

- *In addition to the above, the developer is committed to encourage travel via sustainable modes through the implementation of a Travel Plan aiming to reduce travel via the private car.*

Having regard to the above, the trip rates presented in the TA are considered highly appropriate, particularly when considering that TfGM have confirmed “the trip rates provided within the TA are acceptable” and the trip rates have been reviewed by an independent transport consultancy on behalf of NH who found “the trip rates to be acceptable for the purposes of this TA”.

- 7.5 Following a review of the submitted Technical Note, RBC provided a subsequent email response, dated 16th March 2022, raising no objections to the scheme subject to conditions. Therefore, the above trip rates have been applied to the proposed 495 dwellings to determine the multimodal trip generation of the development, as summarised in **Table 7.2**.

Table 7.2: Privately Owned Houses - Trip Generation

Mode	Weekday AM Peak Hour (08:00 to 09:00)		Weekday PM Peak Hour (17:00 to 18:00)	
	Arrivals	Departures	Arrivals	Departures
Vehicles	69	189	173	81
Pedestrians	2	5	4	2
Cyclists	12	57	20	12
Public Transport	1	19	10	2

Trip Distribution and Assignment

- 7.6 The trip distribution of the development-related traffic routing through the TA study area was based on location of usual residence and place of work data, obtained from the national census for all “out-moves” from the Rochdale 017 ward (E02001148), in the TA submitted as part of the previously mentioned outline application.
- 7.7 Both RBC and NH raised concerns with the distribution and NH recommended that sensitivity analysis was undertaken to account for the propensity for residents to be attracted to other key employment areas which may route via the SRN, particularly Manchester, but also Bury and Oldham.
- 7.8 As detailed earlier, a Technical Note was submitted to both RBC and NH which stated the following in relation to the presented trip distribution:

“The trip distribution presented in the TA is considered acceptable given that it is based on a widely accepted journey to work Census distribution methodology and whilst it is acknowledged that Census data is outdated, it is considered the best data available for the purpose of determining a suitable distribution. For this reason, the assessments within the TA are also considered acceptable particularly when considering the robustness of the trip rates, as detailed earlier.

Notwithstanding the above and following the request of NH, a sensitivity test has been undertaken to account for the potential attractiveness of key employment areas to residents. The key employment areas considered in the sensitivity distribution analysis are listed below and the sensitivity distribution is presented diagrammatically in Traffic Figure 1, with the distribution spreadsheet / routing information provided at Appendix A.

- Stakehill Industrial Estate
- Heywood Distribution Park
- Bridge Hall Trading Site
- Pilsworth Industrial Estate
- Bury town centre
- Rochdale town centre
- Manchester city centre
- Oldham town centre
- Stockport town centre
- Widnes town centre and surrounding commercial area including Catalyst Industrial Estate
- Birchwood Industrial Park
- Broadway Industrial Estate
- Agecroft Commerce Park”

7.9 The submitted Technical Note was reviewed by an independent transport consultancy on behalf of NH who confirmed *“the revised approach has resulted in a logical distribution that is accepted for the purposes of this TA”* and RBC’s subsequent email response to the submitted Technical Note raised no objections to the scheme, as detailed earlier.

7.10 The accepted routing information is re-presented in [Appendix J](#) and the trip distribution percentages on the local highway network are summaries in [Table 7.3](#) below.

Table 7.3 – Trip Distribution

Route Description	Percentage
A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) / M62 (West)	13%
A664 Queensway (East) / A664 Rochdale Bypass (North)	23%
A664 Queensway (West) / A664 Manchester Road (South)	17%
A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) Straight across M62 Junction 20	12%
A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) / M62 (East)	3%
A664 Queensway (East) / A664 Rochdale Bypass (East)	23%
A664 Queensway (West) / A664 Manchester Road (North)	10%

- 7.11 The percentage distribution of vehicular trips generated by the proposed residential development is also presented diagrammatically in **Traffic Flow Figure 3**.

Traffic Assignment

- 7.12 The traffic assignment of the proposed development has been obtained by applying the trip distribution proportions to the relevant estimated traffic generation figures and are presented diagrammatically on **Traffic Flow Figure 4**.

8.0 ANTICIPATED HIGHWAY IMPACTS

Overview

- 8.1 This chapter describes the impact of the additional trips generated by the proposed development on the operation of the local highway network.
- 8.2 As detailed earlier, the study area for the TA has previously been agreed with RBC and includes the following junctions:
- Cowm Top Lane / A664 Queensway;
 - A664 Queensway / A664 Edinburgh Way; and,
 - A664 Manchester Road / A664 Queensway
- 8.3 In addition to the above, NH requested further work be undertaken to establish the baseline position at the A664 / A627(M) / Sandbrook Way junction, as detailed earlier, and therefore this junction has been included in the TA study area.

Assessment Methodology

- 8.4 Assessments of the priority controlled junctions within the study area have been undertaken using Junctions 9 (PICADY and ARCADY) software and for the signal junctions LINSIG software.
- 8.5 With the Junctions 9 models the results generated provide a Ratio to Flow capacity (RFC) along with an estimate of the likely traffic queues. RFC values between 0.00 and 0.85 are generally accepted as representing stable and acceptable operating conditions. Values between 0.85 and 1 represents variable operation (i.e. possible queues building up at the junction during the period under consideration and increases in vehicular delay moving through the junction). RFC values in excess of 1 represents overloaded conditions (i.e. congested conditions).
- 8.6 LINSIG software presents results as a percentage Degree of Saturation (DoS) and corresponding likely traffic queues for each modelled link at the junction. For Traffic Signals it is generally accepted that DoS of 90% or less on individual links represents satisfactory signal operation. DoS of between 90% and 100% represent variable operation which warrants further investigation and values in excess of 100% represent overloaded conditions.
- 8.7 Capacity assessments have been undertaken in the future assessment year of 2027 in the 'with' and 'without' development scenarios.

- 8.8 The 2027 'without' development traffic flows are presented in **Traffic Flow Figure 2** and the 2027 'with' development traffic flows are equal to the sum of the 2027 'without' development traffic flows and the proposed development traffic flows, as shown on **Traffic Flow Figure 5**.

Cowm Top Lane / A664 Queensway Junction

- 8.9 Junctions 9 PICADY software has been used in the assessment of the Cowm Top Lane / A664 Queensway junction. The PICADY results are presented in **Appendix K**, with the results summarised in **Table 8.1**.

Table 8.1: PICADY Outputs for Cowm Top Lane / A664 Queensway

Arm	Weekday AM Peak		Weekday PM Peak	
	Queue (PCU)	RFC	Queue (PCU)	RFC
Base 2027				
Cowm Top Lane (Left)	0.10	0.1	0.06	0.1
Cowm Top Lane (Right)	0.19	0.2	0.24	0.3
A664 Queensway (West)	0.04	0.0	0.02	0.0
Base 2027 + Development				
Cowm Top Lane (Left)	0.35	0.5	0.12	0.1
Cowm Top Lane (Right)	0.80	3.1	0.50	1.0
A664 Queensway (West)	0.09	0.1	0.13	0.2

- 8.10 The results above show that Cowm Top Lane / A664 Queensway will operate well within its practical capacity in the future assessment year of 2027 with the proposed development in place.

A664 Queensway / A664 Edinburgh Way

- 8.11 Junctions 9 ARCADY software has been used in the assessment of the A664 Queensway / A664 Edinburgh Way junction. The ARCADY results are presented in **Appendix L**, with the results summarised in **Table 8.2**.

Table 8.2: ARCADY Outputs for A664 Queensway / A664 Edinburgh Way

Arm	Weekday AM Peak		Weekday PM Peak	
	Queue (PCU)	RFC	Queue (PCU)	RFC
Base 2027				
A664 Queensway (East)	1.7	0.63	1.8	0.65
A664 Queensway (West)	1.1	0.52	0.9	0.46
A664 Edinburgh Way	1.6	0.62	1.2	0.55
Base 2027 + Development				
A664 Queensway (East)	1.8	0.65	2.3	0.69
A664 Queensway (West)	1.5	0.61	1.0	0.50
A664 Edinburgh Way	1.8	0.64	1.5	0.60

- 8.12 The results above show that the existing layout of the A664 Queensway / A664 Edinburgh Way will operate well within its practical capacity in the future assessment year of 2027 with the proposed development in place.

A664 Manchester Road / A664 Queensway

- 8.13 LinSig software has been used in the assessment of the A664 Manchester Road / A664 Queensway junction. The signal staging and timing data has been obtained from TfGM and used to build the LinSig model and the LinSig results are presented in **Appendix M**, with the results summarised in **Table 8.3**.

Table 8.3: LinSig Outputs for A664 Manchester Road / A664 Queensway

Arm	Weekday AM Peak		Weekday PM Peak	
	DoS (%)	Queue (PCU)	DoS (%)	Queue (PCU)
Base 2027				
A664 Manchester Road (North) – Ahead	83.4%	18.3	58.7%	10.4
Albion Street (Ahead and Right)	65.2%	4.6	64.2%	5.6
A664 Manchester Road (South) – Right and Ahead	70.0%	10.3	89.2%	20.5
A664 Queensway (Right and Left)	83.5%	11.3	88.0%	13.4
Overall PRC	7.8%		0.9%	
Base 2027 + Development				
A664 Manchester Road (North) – Ahead	86.8%	19.6	58.7%	10.5
Albion Street (Ahead and Right)	68.3%	5.6	71.1%	7.1
A664 Manchester Road (South) – Right and Ahead	72.1%	10.9	90.1%	21.9
A664 Queensway (Right and Left)	86.7%	13.7	89.9%	14.5
Overall PRC	3.6%		-0.1%	

- 8.14 As can be seen from the above, in the 2027 ‘without’ development scenario the junction is forecast to operate within capacity in the AM peak hour, although close to the 90% threshold on some arms in PM peak hour.
- 8.15 With the additional traffic generated by the development there will be a slight increase in the DoS and queue lengths on a number of the links when compared to the 2027 ‘without’ development scenario. However, the development will only result in just over 1 additional two-way vehicle movement per minute at this junction which cannot be classed as material or ‘severe’ in accordance with the NPPF. Furthermore, the greatest increase in queues occurs on the A664 Queensway link during the AM peak period where there is an increase of just 2.4 PCU. This is not considered material, particularly when having regard to the daily variation in queuing that typically occurs at signal junctions. Having regard to this, the impact of the development at this junction is not considered to be material and no mitigation measures are required.

- 8.16 It should be noted that as part of the previously mentioned outline application, TfGM suggested the junction should also be modelled with the pedestrian stage called every cycle given that it is not known how often the pedestrian stage appears and there may be periods during the peak periods when the stage appears every cycle.
- 8.17 Having regard to the above, the A664 Manchester Road / A664 Queensway junction has also been modelled with the pedestrian stage called every cycle and the LinSig results are presented in **Appendix M**, with the results summarised in **Table 8.4**.

Table 8.4: LinSig Outputs for A664 Manchester Road / A664 Queensway

Arm	Weekday AM Peak		Weekday PM Peak	
	DoS (%)	Queue (PCU)	DoS (%)	Queue (PCU)
Base 2027				
A664 Manchester Road (North) – Ahead	90.6%	21.0	65.9%	11.2
Albion Street (Ahead and Right)	65.3%	4.8	65.8%	5.5
A664 Manchester Road (South) – Right and Ahead	73.6 %	11.2	95.9%	27.2
A664 Queensway (Right and Left)	89.5%	13.0	97.1%	19.9
Overall PRC	-0.6%		-7.9%	
Base 2027 + Development				
A664 Manchester Road (North) – Ahead	93.2%	22.8	67.9%	11.4
Albion Street (Ahead and Right)	68.3%	5.6	73.3%	6.9
A664 Manchester Road (South) – Right and Ahead	75.2 %	11.6	98.6%	32.7
A664 Queensway (Right and Left)	94.0%	17.1	96.3%	19.2
Overall PRC	-4.5%		-9.5%	

- 8.18 As can be seen from the above, a number of links are predicted to operate over or close to the 90% threshold on some links in both the AM and PM peak hours in the 2027 ‘without’ development scenario when the junction is modelled with pedestrian stage called every cycle.

- 8.19 With the additional traffic generated by the development there will be a slight increase in the DoS and queue lengths on a number of the links when compared to the 2027 'without' development scenario. However, as detailed earlier, the development will only result in just over 1 additional two-way vehicle movement per minute at this junction which cannot be classed as material or 'severe' in accordance with the NPPF. Furthermore, the greatest increase in queues occurs on the A664 Queensway link during the AM peak period where there is an increase of 5.5 PCU. This is not considered material, particularly when having regard to the daily variation in queuing that typically occurs at signal junctions. Having regard to this, the impact of the development at this junction is not considered to be material and no mitigation measures are required.

Impact on Strategic Road Network

- 8.20 As detailed earlier, both RBC and NH raised concerns with the development trip distribution and NH recommended that sensitivity analysis was undertaken to account for the propensity for residents to be attracted to other key employment areas which may route via the SRN, particularly Manchester, but also Bury and Oldham.
- 8.21 The revised trip distribution was reviewed and accepted by an independent transport consultancy on behalf of NH, as detailed earlier, and NH accepted the traffic impact of the scheme at the M62 Junction 20 would be minimal, with no detailed assessment required. However, NH requested further work be undertaken to establish the baseline position at the A664 / A627(M) / Sandbrook Way junction, noting their primary concern in this location is safety and how the additional traffic in the peak might impact the queues between the A664 / A627(M) / Sandbrook Way junction and the M62 Junction 20. NH confirmed that a detailed capacity assessment of the junction may not be required if it can be determined through the use of traffic counts and the application of the trip rates / distribution that the impact at the A664 / A627(M) / Sandbrook Way junction would be minimal.
- 8.22 It should be noted that RBC confirmed no detailed assessment was required at this junction and the full application this TA has been prepared for is for 60 dwellings less than the outline application and therefore, the development impact previously considered by NH will be less. Notwithstanding this, the following section describes the development impact on the A664 / A627(M) / Sandbrook Way junction, as requested by NH.

A664 / A627(M) / Sandbrook Way Accident Review

- 8.23 As detailed earlier, NH noted their primary concern in this location is safety and how the additional traffic in the peak might impact the queues between the A664 / A627(M) / Sandbrook Way junction and the M62 Junction 20.
- 8.24 In terms of safety, a review of CrashMap has been undertaken to identify any critical locations on the network with a poor accident record, as detailed earlier, with the location and severity of any accidents during a 5-year study period presented in **Appendix B**. This demonstrates that only one accident (average of 0.2 per year) was recorded at the A664 / A627(M) / Sandbrook Way junction during the 5-year study period which resulted in 'slight' severity injuries. The accident analysis therefore demonstrates that there are no recurring highway safety problems that could be affected by the development proposals, particularly when considering the level of traffic generated by the development, as detailed below.

A664 / A627(M) / Sandbrook Way Impact

- 8.25 As detailed earlier, a manual classified turning count traffic flow survey was undertaken on Thursday 16th June 2022 in order to establish the existing traffic flow demand at the A664 / A627(M) / Sandbrook Way junction and the raw traffic survey and queue data is presented in **Appendix A**. The survey data was analysed, with the peak hours identified as 07:30 – 08:30 and 16:30 – 17:30, and then growthed to the future assessment year of 2027, as shown in **Traffic Flow Figure 2**.
- 8.26 The additional development traffic at the A664 / A627(M) / Sandbrook Way junction, based on the accepted traffic distribution and trip rates, is presented diagrammatically on **Traffic Flow Figure 4**. This demonstrates that the development will result in only 1 additional vehicle every 1-2 minutes approaching the M62 Junction 20 and the A664/A627(M) junction in the worst case peak hours. In total, the proposed development will result in less than a 3% impact at the A664 / A627(M) junction when compared to the 2027 baseline scenario, which cannot be viewed as severe. It should also be noted that there is approximately 3km of queuing capacity on the A627(M) approach to the A664 / A627(M) / Sandbrook Way junction, space for circa 562 vehicles, before queues block back to the M62 junction.
- 8.27 In terms of existing queues, the queue length surveys are presented in **Appendix A** and the peak hour camera footage screen shots presented in **Appendix N**, detailed the existing level of queuing that takes place on the A627(M) arm. A maximum queue length of 30 PCU was recorded on the A627(M) arm during the survey period, spread across 3 lanes, equating to a maximum queuing distance of just 78m (Lane 2), well within the available safe queuing distance.

- 8.28 Given that the A664 / A627(M) / Sandbrook Way junction is evidently operating safely, there is approximately 3km of queuing capacity on the A627(M), space for circa 562 vehicles before blocking back would occur to the M62, and at the proposed development will only result in 1 additional vehicle every 1-2 minutes approaching the M62 Junction 20 and the A664/A627(M) junction, the proposed development is not anticipated to result in any material safety issues or have a material impact on the operation of the strategic road network.

9.0 SUMMARY AND CONCLUSIONS

- 9.1 SCP have been appointed by GLP Ltd and Barratt Homes to provide transport planning and engineering advice in support of a full planning application for a residential development, comprising 495 dwellings, on land located to the south of Cowm Top Lane, Rochdale.
- 9.2 The personal injury accident data for the most recently available five-year period has been reviewed and does not represent a material concern in the context of the proposed development.
- 9.3 It has been demonstrated that the development is sustainable with good accessibility to the site provided to those travelling by foot, bicycle and public transport. In order to maximise the opportunities available, the development will link into the existing and new pedestrian and cycling infrastructure. This will ensure that future residents can walk and cycle to local facilities, bus stops and train station in preference, particularly for short journeys, rather than make use of the private car. In addition, the developer is committed to encourage travel via sustainable modes through the implementation of a Travel Plan aiming to reduce travel via the private car.
- 9.4 Vehicular access will be provided from an extension to Cowm Top Lane and the access will provide a 6.7m wide carriageway and 2m wide footways on both sides of the road. The access will cross the existing PRow running along Cripple Gate Lane (RocFRupp24), where dropped kerbs and tactile paving will be provided to assist pedestrians crossing. In addition to the road extension, traffic-calming and drainage improvements will be provided to the existing section of Cowm Top Lane, as previously agreed with RBC, which will allow Cowm Top Lane to be adopted under a section 38 agreement.
- 9.5 Pedestrian and cycle access to the site will be provided at the same location as the main vehicular access off Cowm Top Lane and a separate pedestrian connection is also provided onto Leander Drive, to the west of the site. In addition, continuous 2m wide footways are provided throughout the development and a 3.7m wide shared footway / cycleway connection is proposed onto Trows Lane which will act as a separate emergency vehicle access.
- 9.6 The impact of the traffic arising from the scheme has been tested in detail at the Cowm Top Lane / A664 Queensway, the A664 Queensway / A664 Edinburgh Way and the A664 Manchester Road / A664 Queensway junctions. The assessment show that the Cowm Top Lane / A664 Queensway junction and the A664 Queensway / A664 Edinburgh Way roundabout will operate within capacity in the future assessment year of 2027 with the proposed development in place.

- 9.7 The A664 Manchester Road / A664 Queensway signalised junction is shown to operate close to the 90% threshold on some arms in PM peak hour in the 2027 'without' development scenario however, the proposed development impact is shown to be minimal. It should be noted that there is no change to the conclusions when the junction is modelled with a pedestrian stage called every cycle, as suggested by TfGM, particularly when considering the development will only result in just over 1 additional two-way vehicle movement per minute at this junction which cannot be classed as material or 'severe' in accordance with the NPPF
- 9.8 A review of the traffic impact of the scheme on the A664 / A627(M) / Sandbrook Way junction has also been undertaken, as requested by National Highways. In summary, the A664 / A627(M) / Sandbrook Way junction is evidently operating safely, there is ample queuing capacity before blocking back would occur to the M6 junction, and the proposed development will only result in 1 additional vehicle every 1-2 minutes approaching the M62 Junction 20 and the A664/A627(M) junction, which cannot be considered severe. Having regard to this, the development is not anticipated to result in any material safety concerns in this location.
- 9.9 It is therefore concluded that there is no reason on highway or transport grounds why the development proposals should not be granted planning permission.

S|C|P

APPENDICES

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APPENDIX A

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / COWN TOP LANE

ARM: QUEENSWAY NORTH

TIME / CLASS	LEFT TO COWN TOP LANE								PCU	STRAIGHT TO QUEENSWAY SOUTH								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL		PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	7	1	0	0	0	8	8	0	1	112	17	5	2	0	137	145
8:15 - 8:30	0	0	10	3	0	1	0	14	15	2	0	133	12	2	0	1	150	164
8:30 - 8:45	0	0	13	2	1	0	0	16	17	0	1	139	11	4	1	0	156	172
8:45 - 9:00	0	0	17	0	0	0	0	17	17	0	2	150	14	6	2	0	174	191
HOURLY TOTAL	0	0	47	6	1	1	0	55		2	4	534	54	17	5	1	617	672
9:00 - 9:15	0	0	5	1	1	0	0	7	8	0	1	120	14	2	1	1	139	146
9:15 - 9:30	0	1	6	0	0	1	0	8	9	0	0	127	13	3	3	0	146	154
9:30 - 9:45	0	0	3	0	2	0	0	5	7	0	0	111	8	5	0	0	124	129
9:45 - 10:00	0	0	5	3	0	0	0	8	8	0	1	105	6	2	1	0	115	123
HOURLY TOTAL	0	1	19	4	3	1	0	28		0	2	463	41	12	5	1	524	552
PERIOD TOTAL	0	1	66	10	4	2	0	83		2	6	997	95	29	10	2	1141	1224
15:00 - 15:15	0	0	3	1	1	0	0	5		0	1	104	19	4	2	0	130	135
15:15 - 15:30	0	0	4	1	1	0	0	6		0	1	93	27	2	1	2	126	132
15:30 - 15:45	0	0	0	2	1	1	0	4		0	3	136	37	5	2	0	183	187
15:45 - 16:00	0	0	0	1	1	0	0	2		0	0	115	23	5	1	0	144	146
HOURLY TOTAL	0	0	7	5	4	1	0	17		0	5	448	106	16	6	2	583	600
16:00 - 16:15	0	0	2	1	0	0	0	3		0	1	128	33	7	1	0	170	173
16:15 - 16:30	0	0	9	2	1	0	0	12		0	0	115	29	6	0	0	150	162
16:30 - 16:45	0	0	0	2	0	0	0	2		1	2	112	16	3	1	1	136	138
16:45 - 17:00	0	0	1	2	1	0	0	4		2	2	131	25	5	2	0	167	171
HOURLY TOTAL	0	0	12	7	2	0	0	21		3	5	486	103	21	4	1	623	644
17:00 - 17:15	0	0	0	3	1	0	0	4		2	1	126	15	1	0	0	145	149
17:15 - 17:30	0	0	2	0	0	0	0	2		0	0	119	18	2	1	1	141	143
17:30 - 17:45	0	0	1	1	0	0	0	2		0	0	125	16	0	1	0	142	144
17:45 - 18:00	0	0	0	0	0	0	0	0		0	0	89	17	1	2	0	109	109
HOURLY TOTAL	0	0	3	4	1	0	0	8		2	1	459	66	4	4	1	537	545
PERIOD TOTAL	0	0	22	16	7	1	0	46		5	11	1393	275	41	14	4	1743	1789

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / COWN TOP LANE

ARM: COWN TOP LANE

TIME / CLASS	LEFT TO QUEENSWAY SOUTH								RIGHT TO QUEENSWAY NORTH								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	4	4
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	2	2	1	1	0	6	6
8:30 - 8:45	0	0	2	0	0	0	0	2	0	0	1	1	2	0	0	4	6
8:45 - 9:00	0	0	1	1	2	0	0	4	0	0	1	3	1	1	0	6	10
HOURLY TOTAL	0	0	3	1	2	0	0	6	0	0	4	8	4	4	0	20	26
9:00 - 9:15	0	0	1	1	0	0	0	2	0	0	0	1	2	1	0	4	6
9:15 - 9:30	0	0	3	2	1	2	0	8	0	0	2	4	1	2	0	9	17
9:30 - 9:45	0	0	2	1	1	0	0	4	0	0	1	1	0	1	0	3	7
9:45 - 10:00	0	0	2	0	0	0	0	2	0	0	1	1	0	0	0	2	4
HOURLY TOTAL	0	0	8	4	2	2	0	16	0	0	4	7	3	4	0	18	34
PERIOD TOTAL	0	0	11	5	4	2	0	22	0	0	8	15	7	8	0	38	60
15:00 - 15:15	0	0	3	1	1	0	0	5	0	0	2	3	1	0	0	6	11
15:15 - 15:30	0	0	0	1	0	0	0	1	0	0	4	2	0	2	0	8	9
15:30 - 15:45	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0	2	3
15:45 - 16:00	0	0	1	0	0	0	0	1	0	0	4	2	1	2	0	9	10
HOURLY TOTAL	0	0	4	2	2	0	0	8	0	0	12	7	2	4	0	25	33
16:00 - 16:15	0	0	3	0	0	0	0	3	0	0	4	2	2	0	0	8	11
16:15 - 16:30	0	0	1	3	1	0	0	5	0	0	6	4	0	0	0	10	15
16:30 - 16:45	0	0	3	0	0	0	0	3	0	0	13	3	0	0	0	16	19
16:45 - 17:00	0	0	1	0	0	0	0	1	0	0	12	3	0	0	0	15	16
HOURLY TOTAL	0	0	8	3	1	0	0	12	0	0	35	12	2	0	0	49	61
17:00 - 17:15	0	0	5	0	0	0	0	5	0	0	15	1	0	0	0	16	21
17:15 - 17:30	0	0	2	0	0	0	0	2	0	0	10	0	0	0	0	10	12
17:30 - 17:45	0	0	3	0	0	0	0	3	0	0	6	0	0	0	0	6	9
17:45 - 18:00	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7	7
HOURLY TOTAL	0	0	10	0	0	0	0	10	0	0	38	1	0	0	0	39	49
PERIOD TOTAL	0	0	22	5	3	0	0	30	0	0	85	20	4	4	0	113	143

survey and presentation by traffic**sense** Ltd.

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / COWN TOP LANE

ARM: QUEENSWAY SOUTH

TIME / CLASS	STRAIGHT TO QUEENSWAY NORTH								RIGHT TO COWN TOP LANE								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	#REF!	
8:00 - 8:15	2	0	125	12	2	2	2	145	0	0	3	0	0	0	0	3	148
8:15 - 8:30	1	1	167	14	1	2	1	187	0	0	3	1	0	0	0	4	191
8:30 - 8:45	0	0	179	13	1	0	0	193	0	0	3	0	1	0	0	4	197
8:45 - 9:00	0	1	164	10	1	1	1	178	0	0	4	1	0	0	0	5	183
HOURLY TOTAL	3	2	635	49	5	5	4	703	0	0	13	2	1	0	0	16	719
9:00 - 9:15	0	2	172	13	4	1	0	192	0	0	3	2	0	0	0	5	197
9:15 - 9:30	1	0	131	14	3	0	0	149	0	0	2	0	0	0	0	2	151
9:30 - 9:45	0	1	133	14	4	1	1	154	0	0	1	1	0	0	0	2	156
9:45 - 10:00	0	2	112	11	3	0	1	129	0	0	3	0	0	0	0	3	132
HOURLY TOTAL	1	5	548	52	14	2	2	624	0	0	9	3	0	0	0	12	636
PERIOD TOTAL	4	7	1183	101	19	7	6	1327	0	0	22	5	1	0	0	28	1355
15:00 - 15:15	0	1	68	12	5	2	0	88	0	0	2	1	0	0	0	3	91
15:15 - 15:30	1	0	84	7	4	2	0	98	0	0	0	0	0	0	0	0	98
15:30 - 15:45	1	0	80	18	2	2	2	105	0	0	0	0	1	0	0	1	106
15:45 - 16:00	0	0	75	13	3	0	1	92	0	0	0	0	0	0	0	0	92
HOURLY TOTAL	2	1	307	50	14	6	3	383	0	0	2	1	1	0	0	4	387
16:00 - 16:15	0	2	131	25	5	1	1	165	0	0	1	1	0	0	0	2	167
16:15 - 16:30	1	1	97	23	3	0	1	126	0	0	1	0	0	0	0	1	127
16:30 - 16:45	1	0	141	20	3	0	1	166	0	0	3	0	0	0	0	3	169
16:45 - 17:00	3	1	128	19	3	1	0	155	0	0	1	0	0	0	0	1	156
HOURLY TOTAL	5	4	497	87	14	2	3	612	0	0	6	1	0	0	0	7	619
17:00 - 17:15	2	4	139	21	1	0	0	167	0	0	3	0	0	0	0	3	170
17:15 - 17:30	0	0	145	22	2	0	1	170	0	0	0	0	0	0	0	0	170
17:30 - 17:45	1	2	133	17	1	0	2	156	0	0	1	0	0	0	0	1	157
17:45 - 18:00	0	0	91	10	5	1	0	107	0	0	0	0	0	0	0	0	107
HOURLY TOTAL	3	6	508	70	9	1	3	600	0	0	4	0	0	0	0	4	604
PERIOD TOTAL	10	11	1312	207	37	9	9	1595	0	0	12	2	1	0	0	15	1610

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / EDINBURGH WAY

ARM: QUEENSWAY SOUTH

TIME / CLASS	LEFT TO EDINBURGH WAY								STRAIGHT TO QUEENSWAY NORTH								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	2	0	62	4	2	1	0	71	0	0	71	10	2	2	2	87	158
8:15 - 8:30	0	1	82	6	0	3	0	92	1	0	84	8	0	1	0	94	186
8:30 - 8:45	0	0	93	8	1	1	0	103	0	0	88	7	1	0	1	97	200
8:45 - 9:00	0	0	96	11	1	0	0	108	0	1	80	4	0	0	0	85	193
HOURLY TOTAL	2	1	333	29	4	5	0	374	1	1	323	29	3	3	3	363	737
9:00 - 9:15	0	2	89	11	4	2	1	109	0	0	73	5	2	0	0	80	189
9:15 - 9:30	1	0	72	11	3	1	0	88	0	0	69	2	1	1	0	73	161
9:30 - 9:45	0	1	63	8	3	2	0	77	0	0	70	6	1	0	1	78	155
9:45 - 10:00	0	0	58	8	2	0	0	68	0	2	63	6	0	0	1	72	140
HOURLY TOTAL	1	3	282	38	12	5	1	342	0	2	275	19	4	1	2	303	645
PERIOD TOTAL	3	4	615	67	16	10	1	716	1	3	598	48	7	4	5	666	1382
15:00 - 15:15	0	0	27	7	3	1	0	38	0	0	41	9	2	1	0	53	91
15:15 - 15:30	0	1	33	7	0	5	0	46	0	0	58	3	4	0	0	65	111
15:30 - 15:45	0	0	34	11	2	2	0	49	1	0	45	7	0	0	2	55	104
15:45 - 16:00	0	0	26	5	3	1	0	35	0	0	56	10	1	0	1	68	103
HOURLY TOTAL	0	1	120	30	8	9	0	168	1	0	200	29	7	1	3	241	409
16:00 - 16:15	0	0	57	10	3	1	0	71	0	0	72	19	5	0	1	97	168
16:15 - 16:30	0	1	51	13	1	0	0	66	1	0	44	10	0	0	1	56	122
16:30 - 16:45	0	0	81	10	0	0	0	91	0	0	73	11	2	0	1	87	178
16:45 - 17:00	0	1	62	7	0	1	0	71	0	0	90	17	2	0	0	109	180
HOURLY TOTAL	0	2	251	40	4	2	0	299	1	0	279	57	9	0	3	349	648
17:00 - 17:15	0	2	76	12	2	1	0	93	0	1	66	11	1	0	0	79	172
17:15 - 17:30	0	0	68	10	1	0	0	79	0	0	83	12	2	0	1	98	177
17:30 - 17:45	0	0	62	9	1	0	0	72	0	1	71	9	0	1	2	84	156
17:45 - 18:00	0	0	45	5	3	0	0	53	0	0	56	6	2	0	0	64	117
HOURLY TOTAL	0	2	251	36	7	1	0	297	0	2	276	38	5	1	3	325	622
PERIOD TOTAL	0	5	622	106	19	12	0	764	2	2	755	124	21	2	9	915	1679

survey and presentation by traffic**sense** Ltd.

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / EDINBURGH WAY

ARM: EDINBURGH WAY

TIME / CLASS	LEFT TO QUEENS WAY NORTH								RIGHT TO QUEENSWAY SOUTH								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	98	12	8	2	1	121	0	0	49	10	3	2	0	64	185
8:15 - 8:30	0	0	91	14	10	4	0	119	0	0	58	9	2	1	0	70	189
8:30 - 8:45	0	2	120	20	13	2	1	158	0	1	62	7	3	2	0	75	233
8:45 - 9:00	0	3	135	18	18	3	1	178	0	1	60	8	4	2	0	75	253
HOURLY TOTAL	0	5	444	64	49	11	3	576	0	2	229	34	12	7	0	284	860
9:00 - 9:15	0	0	96	13	9	1	0	119	0	0	58	7	2	1	0	68	187
9:15 - 9:30	0	1	89	11	7	2	0	110	0	0	51	6	1	1	0	59	169
9:30 - 9:45	0	0	81	9	5	0	0	95	0	0	47	4	2	1	0	54	149
9:45 - 10:00	0	0	79	6	3	1	0	89	0	0	42	2	2	0	0	46	135
HOURLY TOTAL	0	1	345	39	24	4	0	413	0	0	198	19	7	3	0	227	640
PERIOD TOTAL	0	6	789	103	73	15	3	989	0	2	427	53	19	10	0	511	1500
15:00 - 15:15	0	0	122	18	8	0	0	148	0	0	48	9	0	1	0	58	206
15:15 - 15:30	0	0	92	23	5	3	2	125	0	0	30	7	2	3	1	43	168
15:30 - 15:45	0	0	124	26	3	0	0	153	0	0	52	12	5	2	0	71	224
15:45 - 16:00	0	0	139	21	9	4	1	174	0	0	59	11	3	1	0	74	248
HOURLY TOTAL	0	0	477	88	25	7	3	600	0	0	189	39	10	7	1	246	846
16:00 - 16:15	0	2	133	28	6	1	1	171	0	1	43	13	4	2	0	63	234
16:15 - 16:30	0	1	146	22	2	2	1	174	0	0	63	21	2	0	0	86	260
16:30 - 16:45	2	0	143	32	9	1	1	188	0	1	60	11	1	2	0	75	263
16:45 - 17:00	0	0	135	22	5	2	0	164	0	0	58	17	1	1	0	77	241
HOURLY TOTAL	2	3	557	104	22	6	3	697	0	2	224	62	8	5	0	301	998
17:00 - 17:15	1	3	141	20	3	2	0	170	0	0	75	9	0	1	0	85	255
17:15 - 17:30	0	0	146	26	4	1	0	177	0	0	70	10	0	1	0	81	258
17:30 - 17:45	0	1	139	22	3	2	0	167	0	0	65	8	0	2	0	75	242
17:45 - 18:00	0	0	128	19	2	1	0	150	0	0	58	7	0	1	0	66	216
HOURLY TOTAL	1	4	554	87	12	6	0	664	0	0	268	34	0	5	0	307	971
PERIOD TOTAL	3	7	1588	279	59	19	6	1961	0	2	681	135	18	17	1	854	2815

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / EDINBURGH WAY

ARM: QUEENS WAY NORTH

TIME / CLASS	STRAIGHT TO QUEENSWAY SOUTH								RIGHT TO EDINBURGH WAY								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	#REF!	
8:00 - 8:15	0	1	74	9	2	0	0	86	0	0	108	9	4	3	2	126	212
8:15 - 8:30	2	0	85	6	1	0	1	95	0	0	121	12	6	2	0	141	236
8:30 - 8:45	0	0	92	5	2	1	0	100	0	0	114	10	4	1	1	130	230
8:45 - 9:00	0	0	104	4	1	0	0	109	0	0	102	7	1	4	0	114	223
HOURLY TOTAL	2	1	355	24	6	1	1	390	0	0	445	38	15	10	3	511	901
9:00 - 9:15	0	2	81	8	1	0	1	93	0	0	81	10	3	3	2	99	192
9:15 - 9:30	0	0	79	4	2	0	0	85	0	0	72	10	4	1	1	88	173
9:30 - 9:45	0	0	72	6	3	0	0	81	0	0	74	9	1	1	2	87	168
9:45 - 10:00	0	1	77	5	1	0	0	84	0	0	83	6	1	2	3	95	179
HOURLY TOTAL	0	3	309	23	7	0	1	343	0	0	310	35	9	7	8	369	712
PERIOD TOTAL	2	4	664	47	13	1	2	733	0	0	755	73	24	17	11	880	1613
15:00 - 15:15	0	1	52	10	3	0	1	67	0	0	53	14	5	2	1	75	142
15:15 - 15:30	0	0	71	22	2	0	2	97	0	0	139	29	5	2	0	175	272
15:30 - 15:45	0	0	89	32	2	0	1	124	0	3	138	29	6	3	3	182	306
15:45 - 16:00	0	0	59	10	3	0	0	72	0	0	108	19	7	1	3	138	210
HOURLY TOTAL	0	1	271	74	10	0	4	360	0	3	438	91	23	8	7	570	930
16:00 - 16:15	0	0	84	22	3	0	0	109	0	0	137	26	1	4	1	169	278
16:15 - 16:30	0	0	57	7	5	0	0	69	0	0	112	16	3	2	1	134	203
16:30 - 16:45	0	1	61	8	2	0	0	72	0	0	120	22	3	2	0	147	219
16:45 - 17:00	0	0	70	9	4	0	0	83	0	0	112	15	0	2	0	129	212
HOURLY TOTAL	0	1	272	46	14	0	0	333	0	0	481	79	7	10	2	579	912
17:00 - 17:15	0	0	49	11	0	0	0	60	0	0	118	15	6	1	0	140	200
17:15 - 17:30	0	0	44	7	2	0	1	54	0	0	94	12	2	3	0	111	165
17:30 - 17:45	2	0	58	9	1	0	0	70	0	0	88	11	4	1	1	105	175
17:45 - 18:00	0	0	27	7	1	0	0	35	0	0	79	9	3	1	0	92	127
HOURLY TOTAL	2	0	178	34	4	0	1	219	0	0	379	47	15	6	1	448	667
PERIOD TOTAL	2	2	721	154	28	0	5	912	0	3	1298	217	45	24	10	1597	2509

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: MANCHESTER ROAD SOUTH

TIME / CLASS	LEFT TO HOPE PLACE								STRAIGHT TO MANCHESTER ROAD NORTG								RIGHT TO QUEENSWAY								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	70	9	1	0	1	81	0	0	51	4	3	1	0	59	140
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	92	9	2	2	1	106	0	0	56	9	2	0	1	68	174
8:30 - 8:45	0	0	1	0	0	0	0	1	0	0	106	13	1	0	1	121	0	0	67	9	2	2	0	80	202
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	112	12	0	1	3	128	0	0	78	9	1	0	1	89	217
HOURLY TOTAL	0	0	1	0	0	0	0	1	0	0	380	43	4	3	6	436	0	0	252	31	8	3	2	296	733
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	101	10	1	1	1	114	0	0	63	6	2	1	0	72	186
9:15 - 9:30	0	0	0	1	0	0	0	1	0	0	89	7	2	1	2	101	0	0	59	7	1	1	0	68	170
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	84	9	1	0	2	96	0	0	53	5	1	0	0	59	155
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	76	11	0	0	1	88	0	0	55	4	3	0	1	63	151
HOURLY TOTAL	0	0	0	1	0	0	0	1	0	0	350	37	4	2	6	399	0	0	230	22	7	2	1	262	662
PERIOD TOTAL	0	0	1	1	0	0	0	2	0	0	730	80	8	5	12	835	0	0	482	53	15	5	3	558	1395
15:00 - 15:15	0	0	0	0	0	0	0	0	0	1	91	12	3	1	2	110	0	0	45	7	0	0	0	52	162
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	62	11	1	3	0	77	0	0	54	3	1	1	0	59	136
15:30 - 15:45	0	0	0	0	0	0	0	0	1	0	74	12	0	1	3	91	0	0	46	7	1	0	1	55	146
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	104	13	0	1	1	119	0	0	54	11	2	2	0	69	188
HOURLY TOTAL	0	0	0	0	0	0	0	0	1	1	331	48	4	6	6	397	0	0	199	28	4	3	1	235	632
16:00 - 16:15	0	0	0	0	0	0	0	0	1	2	112	12	1	0	0	128	1	1	69	7	2	0	0	80	208
16:15 - 16:30	0	0	0	0	0	0	0	0	0	1	90	17	3	5	7	123	0	0	64	13	1	0	1	79	202
16:30 - 16:45	0	0	0	0	0	0	0	0	0	0	132	23	2	1	3	161	0	0	80	8	1	0	1	90	251
16:45 - 17:00	0	0	0	0	0	0	0	0	1	0	132	20	1	1	1	156	2	0	86	6	3	0	0	97	253
HOURLY TOTAL	0	0	0	0	0	0	0	0	2	3	466	72	7	7	11	568	3	1	299	34	7	0	2	346	914
17:00 - 17:15	0	0	0	0	0	0	0	0	0	0	126	16	1	4	1	148	1	1	60	6	2	0	0	70	218
17:15 - 17:30	0	0	0	0	0	0	0	0	0	1	119	12	1	5	1	139	0	1	62	9	1	1	0	74	213
17:30 - 17:45	0	0	0	0	0	0	0	0	0	0	124	10	1	4	1	140	0	0	58	7	1	0	0	66	206
17:45 - 18:00	0	0	0	0	0	0	0	0	0	0	129	14	0	3	0	146	0	0	64	8	0	0	0	72	218
HOURLY TOTAL	0	0	0	0	0	0	0	0	0	1	498	52	3	16	3	573	1	2	244	30	4	1	0	282	855
PERIOD TOTAL	0	0	0	0	0	0	0	0	3	5	1295	172	14	29	20	1538	4	3	742	92	15	4	3	863	2401

survey and presentation by traffic**sense** Ltd.

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: MANCHESTER ROAD NORTH

TIME / CLASS	LEFT TO QUEENSWAY								STRAIGHT TO MANCHESTER ROAD SOUTH								RIGHT TO HOPE PLACE								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	98	10	2	1	1	112	0	0	0	0	0	0	0	0	112
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	126	15	3	2	1	147	0	0	0	0	0	0	0	0	147
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	122	17	2	4	2	147	0	0	0	0	0	0	0	0	147
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	135	23	5	6	3	172	0	0	0	0	0	0	0	0	172
HOURLY TOTAL	0	0	0	0	0	0	0	0	0	0	481	65	12	13	7	578	0	0	0	0	0	0	0	0	578
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	116	19	3	5	2	145	0	0	0	0	0	0	0	0	145
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	95	15	2	4	1	117	0	0	0	0	0	0	0	0	117
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	76	14	3	2	1	96	0	0	0	0	0	0	0	0	96
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	68	13	3	2	1	87	0	0	0	0	0	0	0	0	87
HOURLY TOTAL	0	0	0	0	0	0	0	0	0	0	355	61	11	13	5	445	0	0	0	0	0	0	0	0	445
PERIOD TOTAL	0	0	0	0	0	0	0	0	0	0	836	126	23	26	12	1023	0	0	0	0	0	0	0	0	1023
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	56	5	0	1	2	64	0	0	0	0	0	0	0	0	64
15:15 - 15:30	0	0	0	0	0	0	0	0	0	1	74	9	1	1	1	87	0	0	0	0	0	0	0	0	87
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	89	9	1	1	3	103	0	0	0	0	0	0	0	0	103
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	80	15	1	1	2	99	0	0	0	0	0	0	0	0	99
HOURLY TOTAL	0	0	0	0	0	0	0	0	0	1	299	38	3	4	8	353	0	0	0	0	0	0	0	0	353
16:00 - 16:15	0	0	0	0	0	0	0	0	0	1	74	9	1	1	2	88	0	0	0	0	0	0	0	0	88
16:15 - 16:30	0	0	0	0	0	0	0	0	0	0	80	5	0	0	1	86	0	0	0	0	0	0	0	0	86
16:30 - 16:45	0	0	0	0	0	0	0	0	1	0	89	10	2	0	1	103	0	0	0	0	0	0	0	0	103
16:45 - 17:00	0	0	0	0	0	0	0	0	0	0	116	11	1	1	1	130	0	0	0	0	0	0	0	0	130
HOURLY TOTAL	0	0	0	0	0	0	0	0	1	1	359	35	4	2	5	407	0	0	0	0	0	0	0	0	407
17:00 - 17:15	0	0	0	0	0	0	0	0	0	1	89	12	0	0	2	104	0	0	0	0	0	0	0	0	104
17:15 - 17:30	0	0	0	0	0	0	0	0	0	0	84	12	1	1	1	99	0	0	0	0	0	0	0	0	99
17:30 - 17:45	0	0	0	0	0	0	0	0	0	0	87	9	1	2	1	100	0	0	0	0	0	0	0	0	100
17:45 - 18:00	0	0	0	0	0	0	0	0	0	0	72	11	0	1	1	85	0	0	0	0	0	0	0	0	85
HOURLY TOTAL	0	0	0	0	0	0	0	0	0	1	332	44	2	4	5	388	0	0	0	0	0	0	0	0	388
PERIOD TOTAL	0	0	0	0	0	0	0	0	1	3	990	117	9	10	18	1148	0	0	0	0	0	0	0	0	1148

survey and presentation by traffic**sense** Ltd.

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: QUEENSWAY

TIME / CLASS	LEFT TO MANCHESTER ROAD SOUTH								STRAIGHT TO HOPE PLACE								RIGHT TO MANCHESTER ROAD NORTH								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	59	6	4	0	0	69	0	0	0	0	0	0	0	0	0	0	50	11	0	0	0	61	130
8:15 - 8:30	0	0	68	7	2	2	1	80	0	0	0	0	0	0	0	0	0	0	59	2	0	0	0	61	141
8:30 - 8:45	0	0	71	10	3	1	0	85	0	0	0	0	0	0	0	0	0	0	53	1	1	0	0	55	140
8:45 - 9:00	1	0	75	12	5	1	0	94	0	0	0	0	0	0	0	0	0	0	61	4	0	1	0	66	160
HOURLY TOTAL	1	0	273	35	14	4	1	328	0	0	0	0	0	0	0	0	0	0	223	18	1	1	0	243	571
9:00 - 9:15	0	0	67	9	1	0	1	78	0	0	0	0	0	0	0	0	0	0	57	5	1	0	0	63	141
9:15 - 9:30	0	0	51	9	3	1	0	64	0	0	0	0	0	0	0	0	0	0	52	4	0	0	0	56	120
9:30 - 9:45	0	0	45	4	4	1	1	55	0	0	0	0	0	0	0	0	0	0	49	6	0	1	0	56	111
9:45 - 10:00	0	0	49	7	3	2	0	61	0	0	0	0	0	0	0	0	0	0	54	3	0	0	0	57	118
HOURLY TOTAL	0	0	212	29	11	4	2	258	0	0	0	0	0	0	0	0	0	0	212	18	1	1	0	232	490
PERIOD TOTAL	1	0	485	64	25	8	3	586	0	0	0	0	0	0	0	0	0	0	435	36	2	2	0	475	1061
15:00 - 15:15	0	0	37	13	2	0	0	52	0	0	0	0	0	0	0	0	0	0	61	6	1	2	0	70	122
15:15 - 15:30	0	0	30	16	3	0	0	49	0	0	0	0	0	0	0	0	0	0	70	10	0	1	2	83	132
15:30 - 15:45	0	0	51	17	4	0	3	75	0	0	0	0	0	0	0	0	0	3	66	16	1	1	0	87	162
15:45 - 16:00	0	1	40	11	4	0	0	56	0	0	0	0	0	0	0	0	0	0	75	14	0	1	1	91	147
HOURLY TOTAL	0	1	158	57	13	0	3	232	0	0	0	0	0	0	0	0	0	3	272	46	2	5	3	331	563
16:00 - 16:15	0	1	61	12	1	1	0	76	0	0	0	0	0	0	0	0	0	0	58	20	4	1	0	83	159
16:15 - 16:30	0	0	43	17	2	1	0	63	0	0	0	0	0	0	0	0	0	0	56	16	0	0	0	72	135
16:30 - 16:45	1	1	49	9	1	1	0	62	0	0	0	0	0	0	0	0	0	0	71	10	3	0	0	84	146
16:45 - 17:00	2	0	61	8	4	0	1	76	0	0	0	0	0	0	0	0	0	1	84	15	1	3	0	104	180
HOURLY TOTAL	3	2	214	46	8	3	1	277	0	0	0	0	0	0	0	0	0	1	269	61	8	4	0	343	620
17:00 - 17:15	0	0	50	12	0	0	0	62	0	0	0	0	0	0	0	0	1	1	65	5	2	0	0	74	136
17:15 - 17:30	0	0	50	6	0	0	0	56	0	0	0	0	0	0	0	0	0	1	86	12	2	1	0	102	158
17:30 - 17:45	0	0	47	7	1	0	0	55	0	0	0	0	0	0	0	0	0	0	84	9	1	0	0	94	149
17:45 - 18:00	0	0	43	6	1	0	0	50	0	0	0	0	0	0	0	0	0	0	62	10	1	1	0	74	124
HOURLY TOTAL	0	0	190	31	2	0	0	223	0	0	0	0	0	0	0	0	1	2	297	36	6	2	0	344	567
PERIOD TOTAL	3	3	562	134	23	3	4	732	0	0	0	0	0	0	0	0	1	6	838	143	16	11	3	1018	1750

survey and presentation by traffic**sense** Ltd.

Manual Classified Turning Counts, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: ALBION STREET

TIME / CLASS	LEFT TO QUEENSWAY								STRAIGH TO ALBION STREET								TOTAL MOVEMENT FROM ARM
	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	PEDAL CYCLE	MOTOR CYCLE	CAR TAXI	LGV	OGV 1	OGV 2	BUS COACH	TOTAL	
8:00 - 8:15	0	0	71	8	0	2	0	81	0	0	9	1	0	0	0	10	91
8:15 - 8:30	0	0	69	5	1	0	0	75	0	0	5	0	0	0	0	5	80
8:30 - 8:45	0	0	70	3	0	1	0	74	0	0	7	1	0	0	0	8	82
8:45 - 9:00	0	0	67	6	0	0	0	73	0	0	8	0	0	0	1	9	82
HOURLY TOTAL	0	0	277	22	1	3	0	303	0	0	29	2	0	0	1	32	335
9:00 - 9:15	0	1	66	8	0	1	0	76	0	0	8	0	0	0	0	8	84
9:15 - 9:30	0	0	58	7	2	0	0	67	0	0	6	1	0	0	0	7	74
9:30 - 9:45	0	1	54	8	3	1	0	67	0	0	10	0	0	0	0	10	77
9:45 - 10:00	0	0	52	7	0	0	0	59	0	0	6	1	0	0	0	7	66
HOURLY TOTAL	0	2	230	30	5	2	0	269	0	0	30	2	0	0	0	32	301
PERIOD TOTAL	0	2	507	52	6	5	0	572	0	0	59	4	0	0	1	64	636
15:00 - 15:15	0	0	24	2	2	1	0	29	0	1	12	3	0	0	0	16	45
15:15 - 15:30	0	0	26	2	2	0	0	30	0	0	9	1	0	0	0	10	40
15:30 - 15:45	0	0	33	5	0	1	1	40	0	0	12	1	0	0	0	13	53
15:45 - 16:00	0	1	28	3	2	0	2	36	0	0	11	2	0	0	0	13	49
HOURLY TOTAL	0	1	111	12	6	2	3	135	0	1	44	7	0	0	0	52	187
16:00 - 16:15	0	1	65	12	0	0	0	78	0	0	9	1	0	0	0	10	88
16:15 - 16:30	0	0	36	11	1	3	0	51	0	0	13	1	0	0	1	15	66
16:30 - 16:45	0	0	44	7	1	3	0	55	0	0	12	1	0	0	0	13	68
16:45 - 17:00	0	1	35	7	0	2	0	45	0	0	18	1	0	0	0	19	64
HOURLY TOTAL	0	2	180	37	2	8	0	229	0	0	52	4	0	0	1	57	286
17:00 - 17:15	0	1	57	12	0	0	0	70	0	0	14	1	0	0	0	15	85
17:15 - 17:30	0	0	50	11	0	0	0	61	1	0	12	0	0	0	0	13	74
17:30 - 17:45	0	0	49	11	0	0	0	60	0	0	14	0	0	0	0	14	74
17:45 - 18:00	0	0	32	6	2	0	0	40	0	0	11	0	0	0	0	11	51
HOURLY TOTAL	0	1	188	40	2	0	0	231	1	0	51	1	0	0	0	53	284
PERIOD TOTAL	0	4	479	89	10	10	3	595	1	1	147	12	0	0	1	162	757

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / COWN TOP LANE

ARM: QUEENSWAY NORTH

	LANE 1			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	0	0	0	0.0
8:05 - 8:10	0	0	0	0.0
8:10 - 8:15	0	0	0	0.0
8:15 - 8:20	0	0	0	0.0
8:20 - 8:25	0	0	0	0.0
8:25 - 8:30	0	0	0	0.0
8:30 - 8:35	0	0	0	0.0
8:35 - 8:40	0	0	0	0.0
8:40 - 8:45	0	0	0	0.0
8:45 - 8:50	0	0	0	0.0
8:50 - 8:55	0	0	0	0.0
8:55 - 9:00	0	0	0	0.0
9:00 - 9:05	0	0	0	0.0
9:05 - 9:10	0	0	0	0.0
9:10 - 9:15	0	0	0	0.0
9:15 - 9:20	0	0	0	0.0
9:20 - 9:25	0	0	0	0.0
9:25 - 9:30	0	0	0	0.0
9:30 - 9:35	0	0	0	0.0
9:35 - 9:40	0	0	0	0.0
9:40 - 9:45	0	0	0	0.0
9:45 - 9:50	0	0	0	0.0
9:50 - 9:55	0	0	0	0.0
9:55 - 10:00	0	0	0	0.0

15:00 - 15:05	0	0	0	0.0
15:05 - 15:10	0	0	0	0.0
15:10 - 15:15	0	0	0	0.0
15:15 - 15:20	0	0	0	0.0
15:20 - 15:25	0	0	0	0.0
15:25 - 15:30	0	0	0	0.0
15:30 - 15:35	0	0	0	0.0
15:35 - 15:40	0	0	0	0.0
15:40 - 15:45	0	0	0	0.0
15:45 - 15:50	0	0	0	0.0
15:50 - 15:55	0	0	0	0.0
15:55 - 16:00	0	0	0	0.0
16:00 - 16:05	0	0	0	0.0
16:05 - 16:10	0	0	0	0.0
16:10 - 16:15	0	0	0	0.0
16:15 - 16:20	0	0	0	0.0
16:20 - 16:25	0	0	0	0.0
16:25 - 16:30	0	0	0	0.0
16:30 - 16:35	0	0	0	0.0
16:35 - 16:40	0	0	0	0.0
16:40 - 16:45	0	0	0	0.0
16:45 - 16:50	0	0	0	0.0
16:50 - 16:55	0	0	0	0.0
16:55 - 17:00	0	0	0	0.0
17:00 - 17:05	0	0	0	0.0
17:05 - 17:10	0	0	0	0.0
17:10 - 17:15	0	0	0	0.0
17:15 - 17:20	0	0	0	0.0
17:20 - 17:25	0	0	0	0.0
17:25 - 17:30	0	0	0	0.0
17:30 - 17:35	0	0	0	0.0
17:35 - 17:40	0	0	0	0.0
17:40 - 17:45	0	0	0	0.0
17:45 - 17:50	0	0	0	0.0
17:50 - 17:55	0	0	0	0.0
17:55 - 18:00	0	0	0	0.0

ARM: COWN TOP LANE

	LANE 1			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	0	1	15	0.0
8:05 - 8:10	0	0	0	0.0
8:10 - 8:15	0	1	15	0.0
8:15 - 8:20	0	0	0	0.0
8:20 - 8:25	0	0	0	0.0
8:25 - 8:30	0	1	15	0.0
8:30 - 8:35	0	0	0	0.0
8:35 - 8:40	0	0	0	0.0
8:40 - 8:45	0	1	15	0.0
8:45 - 8:50	1	0	5.5	0.0
8:50 - 8:55	0	0	0	0.0
8:55 - 9:00	1	1	20.5	50.0
9:00 - 9:05	1	0	5.5	0.0
9:05 - 9:10	0	0	0	0.0
9:10 - 9:15	0	1	15	0.0
9:15 - 9:20	2	0	11	0.0
9:20 - 9:25	0	0	0	0.0
9:25 - 9:30	1	1	20.5	50.0
9:30 - 9:35	1	0	5.5	0.0
9:35 - 9:40	0	1	15	0.0
9:40 - 9:45	1	1	20.5	50.0
9:45 - 9:50	0	0	0	0.0
9:50 - 9:55	1	0	5.5	0.0
9:55 - 10:00	0	1	15	0.0

15:00 - 15:05	0	0	0	0.0
15:05 - 15:10	0	0	0	0.0
15:10 - 15:15	0	1	15	0.0
15:15 - 15:20	0	1	15	0.0
15:20 - 15:25	0	0	0	0.0
15:25 - 15:30	0	1	15	0.0
15:30 - 15:35	0	1	15	0.0
15:35 - 15:40	0	0	0	0.0
15:40 - 15:45	0	0	0	0.0
15:45 - 15:50	0	1	15	0.0
15:50 - 15:55	0	0	0	0.0
15:55 - 16:00	0	0	0	0.0
16:00 - 16:05	0	1	15	0.0
16:05 - 16:10	0	0	0	0.0
16:10 - 16:15	0	0	0	0.0
16:15 - 16:20	2	0	11	0.0
16:20 - 16:25	1	1	20.5	50.0
16:25 - 16:30	0	0	0	0.0
16:30 - 16:35	3	0	16.5	0.0
16:35 - 16:40	4	0	22	0.0
16:40 - 16:45	2	1	26	33.3
16:45 - 16:50	0	0	0	0.0
16:50 - 16:55	4	0	22	0.0
16:55 - 17:00	2	0	11	0.0
17:00 - 17:05	3	0	16.5	0.0
17:05 - 17:10	1	0	5.5	0.0
17:10 - 17:15	0	0	0	0.0
17:15 - 17:20	1	0	5.5	0.0
17:20 - 17:25	1	0	5.5	0.0
17:25 - 17:30	0	0	0	0.0
17:30 - 17:35	0	0	0	0.0
17:35 - 17:40	0	0	0	0.0
17:40 - 17:45	0	0	0	0.0
17:45 - 17:50	0	0	0	0.0
17:50 - 17:55	0	0	0	0.0
17:55 - 18:00	0	0	0	0.0

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / COWN TOP LANE

ARM: QUEENSWAY SOUTH

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	0	0	0	0.0	0	0	0	0.0
8:05 - 8:10	0	0	0	0.0	1	0	5.5	0.0
8:10 - 8:15	0	0	0	0.0	0	1	15	0.0
8:15 - 8:20	0	0	0	0.0	2	0	11	0.0
8:20 - 8:25	0	0	0	0.0	1	0	5.5	0.0
8:25 - 8:30	0	0	0	0.0	0	0	0	0.0
8:30 - 8:35	0	0	0	0.0	1	0	5.5	0.0
8:35 - 8:40	0	0	0	0.0	0	1	15	0.0
8:40 - 8:45	0	0	0	0.0	1	0	5.5	0.0
8:45 - 8:50	0	0	0	0.0	3	0	16.5	0.0
8:50 - 8:55	0	0	0	0.0	2	0	11	0.0
8:55 - 9:00	0	0	0	0.0	2	0	11	0.0
9:00 - 9:05	0	0	0	0.0	1	0	5.5	0.0
9:05 - 9:10	0	0	0	0.0	1	0	5.5	0.0
9:10 - 9:15	0	0	0	0.0	1	0	5.5	0.0
9:15 - 9:20	0	0	0	0.0	0	0	0	0.0
9:20 - 9:25	0	0	0	0.0	0	0	0	0.0
9:25 - 9:30	0	0	0	0.0	1	0	5.5	0.0
9:30 - 9:35	0	0	0	0.0	0	0	0	0.0
9:35 - 9:40	0	0	0	0.0	2	0	11	0.0
9:40 - 9:45	0	0	0	0.0	1	0	5.5	0.0
9:45 - 9:50	0	0	0	0.0	2	0	11	0.0
9:50 - 9:55	0	0	0	0.0	1	0	5.5	0.0
9:55 - 10:00	0	0	0	0.0	2	0	11	0.0

15:00 - 15:05	0	0	0	0.0	1	0	5.5	0.0
15:05 - 15:10	0	0	0	0.0	0	0	0	0.0
15:10 - 15:15	0	0	0	0.0	0	0	0	0.0
15:15 - 15:20	0	0	0	0.0	0	0	0	0.0
15:20 - 15:25	0	0	0	0.0	0	0	0	0.0
15:25 - 15:30	0	0	0	0.0	0	1	15	0.0
15:30 - 15:35	0	0	0	0.0	0	0	0	0.0
15:35 - 15:40	0	0	0	0.0	1	0	5.5	0.0
15:40 - 15:45	0	0	0	0.0	0	1	15	0.0
15:45 - 15:50	0	0	0	0.0	0	0	0	0.0
15:50 - 15:55	0	0	0	0.0	0	0	0	0.0
15:55 - 16:00	0	0	0	0.0	0	0	0	0.0
16:00 - 16:05	0	0	0	0.0	0	0	0	0.0
16:05 - 16:10	0	0	0	0.0	0	0	0	0.0
16:10 - 16:15	0	0	0	0.0	0	0	0	0.0
16:15 - 16:20	0	0	0	0.0	0	0	0	0.0
16:20 - 16:25	0	0	0	0.0	1	0	5.5	0.0
16:25 - 16:30	0	0	0	0.0	0	0	0	0.0
16:30 - 16:35	0	0	0	0.0	0	0	0	0.0
16:35 - 16:40	0	0	0	0.0	2	0	11	0.0
16:40 - 16:45	0	0	0	0.0	1	0	5.5	0.0
16:45 - 16:50	0	0	0	0.0	0	0	0	0.0
16:50 - 16:55	0	0	0	0.0	1	0	5.5	0.0
16:55 - 17:00	0	0	0	0.0	0	0	0	0.0
17:00 - 17:05	0	0	0	0.0	0	0	0	0.0
17:05 - 17:10	0	0	0	0.0	0	0	0	0.0
17:10 - 17:15	0	0	0	0.0	1	0	5.5	0.0
17:15 - 17:20	0	0	0	0.0	0	0	0	0.0
17:20 - 17:25	0	0	0	0.0	0	0	0	0.0
17:25 - 17:30	0	0	0	0.0	1	0	5.5	0.0
17:30 - 17:35	0	0	0	0.0	0	0	0	0.0
17:35 - 17:40	0	0	0	0.0	0	0	0	0.0
17:40 - 17:45	0	0	0	0.0	1	0	5.5	0.0
17:45 - 17:50	0	0	0	0.0	0	0	0	0.0
17:50 - 17:55	0	0	0	0.0	0	0	0	0.0
17:55 - 18:00	0	0	0	0.0	0	0	0	0.0

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / EDINBURGH WAY

ARM: QUEENSWAY SOUTH

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	5	0	27.5	0.0	5	0	27.5	0.0
8:05 - 8:10	4	0	22	0.0	7	0	38.5	0.0
8:10 - 8:15	6	0	33	0.0	5	0	27.5	0.0
8:15 - 8:20	5	1	42.5	16.7	6	0	33	0.0
8:20 - 8:25	4	0	22	0.0	5	1	42.5	16.7
8:25 - 8:30	5	0	27.5	0.0	6	0	33	0.0
8:30 - 8:35	6	0	33	0.0	7	0	38.5	0.0
8:35 - 8:40	4	1	37	20.0	8	0	44	0.0
8:40 - 8:45	5	0	27.5	0.0	5	0	27.5	0.0
8:45 - 8:50	7	0	38.5	0.0	6	1	48	14.3
8:50 - 8:55	5	0	27.5	0.0	7	0	38.5	0.0
8:55 - 9:00	6	0	33	0.0	5	0	27.5	0.0
9:00 - 9:05	8	1	59	11.1	6	0	33	0.0
9:05 - 9:10	7	0	38.5	0.0	4	0	22	0.0
9:10 - 9:15	5	0	27.5	0.0	5	1	42.5	16.7
9:15 - 9:20	6	0	33	0.0	6	0	33	0.0
9:20 - 9:25	7	0	38.5	0.0	7	0	38.5	0.0
9:25 - 9:30	5	0	27.5	0.0	5	0	27.5	0.0
9:30 - 9:35	6	0	33	0.0	6	1	48	14.3
9:35 - 9:40	4	1	37	20.0	8	0	44	0.0
9:40 - 9:45	5	0	27.5	0.0	5	0	27.5	0.0
9:45 - 9:50	6	0	33	0.0	6	1	48	14.3
9:50 - 9:55	4	0	22	0.0	4	0	22	0.0
9:55 - 10:00	5	0	27.5	0.0	5	0	27.5	0.0

15:00 - 15:05	4	1	37	20.0	7	1	53.5	12.5
15:05 - 15:10	5	0	27.5	0.0	6	0	33	0.0
15:10 - 15:15	6	0	33	0.0	5	0	27.5	0.0
15:15 - 15:20	5	1	42.5	16.7	8	0	44	0.0
15:20 - 15:25	5	0	27.5	0.0	6	0	33	0.0
15:25 - 15:30	6	0	33	0.0	5	0	27.5	0.0
15:30 - 15:35	4	1	37	20.0	8	0	44	0.0
15:35 - 15:40	7	0	38.5	0.0	9	1	64.5	10.0
15:40 - 15:45	7	0	38.5	0.0	9	0	49.5	0.0
15:45 - 15:50	5	1	42.5	16.7	7	0	38.5	0.0
15:50 - 15:55	4	0	22	0.0	5	0	27.5	0.0
15:55 - 16:00	5	0	27.5	0.0	8	1	59	11.1
16:00 - 16:05	9	0	49.5	0.0	10	0	55	0.0
16:05 - 16:10	5	0	27.5	0.0	8	0	44	0.0
16:10 - 16:15	6	0	33	0.0	9	0	49.5	0.0
16:15 - 16:20	7	1	53.5	12.5	7	0	38.5	0.0
16:20 - 16:25	5	0	27.5	0.0	11	1	75.5	8.3
16:25 - 16:30	5	0	27.5	0.0	8	0	44	0.0
16:30 - 16:35	6	1	48	14.3	5	0	27.5	0.0
16:35 - 16:40	8	0	44	0.0	6	0	33	0.0
16:40 - 16:45	5	0	27.5	0.0	7	0	38.5	0.0
16:45 - 16:50	6	1	48	14.3	8	0	44	0.0
16:50 - 16:55	4	0	22	0.0	7	1	53.5	12.5
16:55 - 17:00	5	0	27.5	0.0	6	0	33	0.0
17:00 - 17:05	6	0	33	0.0	8	0	44	0.0
17:05 - 17:10	4	0	22	0.0	8	0	44	0.0
17:10 - 17:15	5	1	42.5	16.7	5	0	27.5	0.0
17:15 - 17:20	7	0	38.5	0.0	7	0	38.5	0.0
17:20 - 17:25	5	0	27.5	0.0	5	1	42.5	16.7
17:25 - 17:30	6	0	33	0.0	8	0	44	0.0
17:30 - 17:35	7	0	38.5	0.0	9	0	49.5	0.0
17:35 - 17:40	5	1	42.5	16.7	7	0	38.5	0.0
17:40 - 17:45	7	1	53.5	12.5	6	0	33	0.0
17:45 - 17:50	5	0	27.5	0.0	7	1	53.5	12.5
17:50 - 17:55	6	0	33	0.0	5	0	27.5	0.0
17:55 - 18:00	8	0	44	0.0	5	0	27.5	0.0

ARM: EDINBURGH WAY

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	8	0	44	0.0	2	0	11	0.0
8:05 - 8:10	6	0	33	0.0	2	0	11	0.0
8:10 - 8:15	7	0	38.5	0.0	2	1	26	33.3
8:15 - 8:20	5	0	27.5	0.0	2	0	11	0.0
8:20 - 8:25	6	0	33	0.0	4	0	22	0.0
8:25 - 8:30	5	0	27.5	0.0	2	0	11	0.0
8:30 - 8:35	6	0	33	0.0	3	0	16.5	0.0
8:35 - 8:40	8	0	44	0.0	2	1	26	33.3
8:40 - 8:45	6	0	33	0.0	2	0	11	0.0
8:45 - 8:50	5	0	27.5	0.0	3	0	16.5	0.0
8:50 - 8:55	4	0	22	0.0	2	0	11	0.0
8:55 - 9:00	7	0	38.5	0.0	1	0	5.5	0.0
9:00 - 9:05	5	0	27.5	0.0	2	0	11	0.0
9:05 - 9:10	6	0	33	0.0	2	1	26	33.3
9:10 - 9:15	6	0	33	0.0	3	0	16.5	0.0
9:15 - 9:20	5	0	27.5	0.0	4	0	22	0.0
9:20 - 9:25	5	0	27.5	0.0	2	0	11	0.0
9:25 - 9:30	6	0	33	0.0	2	0	11	0.0
9:30 - 9:35	8	0	44	0.0	3	0	16.5	0.0
9:35 - 9:40	5	0	27.5	0.0	1	1	20.5	50.0
9:40 - 9:45	6	0	33	0.0	2	1	26	33.3
9:45 - 9:50	4	0	22	0.0	3	0	16.5	0.0
9:50 - 9:55	5	0	27.5	0.0	1	0	5.5	0.0
9:55 - 10:00	6	0	33	0.0	2	0	11	0.0

15:00 - 15:05	8	0	44	0.0	4	0	22	0.0
15:05 - 15:10	7	0	38.5	0.0	3	1	31.5	25.0
15:10 - 15:15	9	0	49.5	0.0	5	0	27.5	0.0
15:15 - 15:20	10	1	70	9.1	3	0	16.5	0.0
15:20 - 15:25	7	0	38.5	0.0	5	2	57.5	28.6
15:25 - 15:30	8	1	59	11.1	5	1	42.5	16.7
15:30 - 15:35	10	0	55	0.0	6	0	33	0.0
15:35 - 15:40	14	0	77	0.0	4	1	37	20.0
15:40 - 15:45	12	0	66	0.0	5	0	27.5	0.0
15:45 - 15:50	10	0	55	0.0	6	0	33	0.0
15:50 - 15:55	11	1	75.5	8.3	5	1	42.5	16.7
15:55 - 16:00	12	0	66	0.0	6	1	48	14.3
16:00 - 16:05	8	0	44	0.0	4	0	22	0.0
16:05 - 16:10	9	0	49.5	0.0	5	0	27.5	0.0
16:10 - 16:15	7	1	53.5	12.5	5	1	42.5	16.7
16:15 - 16:20	12	0	66	0.0	4	0	22	0.0
16:20 - 16:25	10	0	55	0.0	5	1	42.5	16.7
16:25 - 16:30	8	0	44	0.0	6	1	48	14.3
16:30 - 16:35	7	0	38.5	0.0	4	1	37	20.0
16:35 - 16:40	9	1	64.5	10.0	5	0	27.5	0.0
16:40 - 16:45	7	0	38.5	0.0	3	0	16.5	0.0
16:45 - 16:50	8	0	44	0.0	4	1	37	20.0
16:50 - 16:55	9	0	49.5	0.0	2	0	11	0.0
16:55 - 17:00	7	0	38.5	0.0	3	0	16.5	0.0
17:00 - 17:05	6	1	48	14.3	4	0	22	0.0
17:05 - 17:10	8	0	44	0.0	2	1	26	33.3
17:10 - 17:15	9	0	49.5	0.0	5	0	27.5	0.0
17:15 - 17:20	5	0	27.5	0.0	3	0	16.5	0.0
17:20 - 17:25	6	0	33	0.0	4	1	37	20.0
17:25 - 17:30	5	1	42.5	16.7	2	0	11	0.0
17:30 - 17:35	7	1	53.5	12.5	3	0	16.5	0.0
17:35 - 17:40	5	0	27.5	0.0	4	1	37	20.0
17:40 - 17:45	6	0	33	0.0	2	1	26	33.3
17:45 - 17:50	7	1	53.5	12.5	3	0	16.5	0.0
17:50 - 17:55	5	0	27.5	0.0	4	0	22	0.0
17:55 - 18:00	6	0	33	0.0	2	1	26	33.3

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: QUEENSWAY / EDINBURGH WAY

ARM: QUEENSWAY NORTH

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	5	0	27.5	0.0	9	0	49.5	0.0
8:05 - 8:10	4	0	22	0.0	5	0	27.5	0.0
8:10 - 8:15	5	0	27.5	0.0	8	1	59	11.1
8:15 - 8:20	6	0	33	0.0	10	0	55	0.0
8:20 - 8:25	5	0	27.5	0.0	8	0	44	0.0
8:25 - 8:30	5	0	27.5	0.0	6	1	48	14.3
8:30 - 8:35	4	0	22	0.0	7	0	38.5	0.0
8:35 - 8:40	7	0	38.5	0.0	8	0	44	0.0
8:40 - 8:45	5	0	27.5	0.0	9	0	49.5	0.0
8:45 - 8:50	6	0	33	0.0	8	1	59	11.1
8:50 - 8:55	8	0	44	0.0	9	0	49.5	0.0
8:55 - 9:00	6	0	33	0.0	8	0	44	0.0
9:00 - 9:05	5	0	27.5	0.0	9	0	49.5	0.0
9:05 - 9:10	7	0	38.5	0.0	7	0	38.5	0.0
9:10 - 9:15	5	0	27.5	0.0	8	1	59	11.1
9:15 - 9:20	6	0	33	0.0	8	0	44	0.0
9:20 - 9:25	5	0	27.5	0.0	7	0	38.5	0.0
9:25 - 9:30	5	0	27.5	0.0	6	0	33	0.0
9:30 - 9:35	7	0	38.5	0.0	8	1	59	11.1
9:35 - 9:40	5	0	27.5	0.0	9	0	49.5	0.0
9:40 - 9:45	6	0	33	0.0	7	0	38.5	0.0
9:45 - 9:50	4	0	22	0.0	8	1	59	11.1
9:50 - 9:55	5	0	27.5	0.0	6	0	33	0.0
9:55 - 10:00	5	0	27.5	0.0	8	1	59	11.1

15:00 - 15:05	7	0	38.5	0.0	10	0	55	0.0
15:05 - 15:10	10	0	55	0.0	10	1	70	9.1
15:10 - 15:15	10	0	55	0.0	11	0	60.5	0.0
15:15 - 15:20	10	0	55	0.0	12	0	66	0.0
15:20 - 15:25	12	0	66	0.0	10	1	70	9.1
15:25 - 15:30	10	0	55	0.0	16	0	88	0.0
15:30 - 15:35	14	0	77	0.0	10	0	55	0.0
15:35 - 15:40	10	0	55	0.0	13	1	86.5	7.1
15:40 - 15:45	10	0	55	0.0	14	0	77	0.0
15:45 - 15:50	14	0	77	0.0	10	0	55	0.0
15:50 - 15:55	13	1	86.5	7.1	13	0	71.5	0.0
15:55 - 16:00	10	0	55	0.0	14	1	92	6.7
16:00 - 16:05	14	0	77	0.0	14	0	77	0.0
16:05 - 16:10	12	0	66	0.0	15	0	82.5	0.0
16:10 - 16:15	11	0	60.5	0.0	12	0	66	0.0
16:15 - 16:20	8	0	44	0.0	11	1	75.5	8.3
16:20 - 16:25	9	0	49.5	0.0	14	0	77	0.0
16:25 - 16:30	7	0	38.5	0.0	10	0	55	0.0
16:30 - 16:35	8	0	44	0.0	11	1	75.5	8.3
16:35 - 16:40	9	1	64.5	10.0	10	0	55	0.0
16:40 - 16:45	7	0	38.5	0.0	14	0	77	0.0
16:45 - 16:50	8	0	44	0.0	13	1	86.5	7.1
16:50 - 16:55	9	0	49.5	0.0	10	0	55	0.0
16:55 - 17:00	7	0	38.5	0.0	14	0	77	0.0
17:00 - 17:05	8	1	59	11.1	10	1	70	9.1
17:05 - 17:10	9	0	49.5	0.0	12	0	66	0.0
17:10 - 17:15	8	0	44	0.0	9	1	64.5	10.0
17:15 - 17:20	8	0	44	0.0	7	0	38.5	0.0
17:20 - 17:25	6	0	33	0.0	8	0	44	0.0
17:25 - 17:30	5	0	27.5	0.0	9	0	49.5	0.0
17:30 - 17:35	7	0	38.5	0.0	8	0	44	0.0
17:35 - 17:40	0	0	0	0.0	0	0	0	0.0
17:40 - 17:45	0	0	0	0.0	0	0	0	0.0
17:45 - 17:50	0	0	0	0.0	0	0	0	0.0
17:50 - 17:55	0	0	0	0.0	0	0	0	0.0
17:55 - 18:00	0	0	0	0.0	0	0	0	0.0

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: MANCHESTER ROAD SOUTH

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	8	0	44	0.0	7	0	38.5	0.0
8:05 - 8:10	9	0	49.5	0.0	5	0	27.5	0.0
8:10 - 8:15	10	0	55	0.0	6	0	33	0.0
8:15 - 8:20	8	1	59	11.1	5	1	42.5	16.7
8:20 - 8:25	9	0	49.5	0.0	6	0	33	0.0
8:25 - 8:30	10	0	55	0.0	4	0	22	0.0
8:30 - 8:35	8	0	44	0.0	5	0	27.5	0.0
8:35 - 8:40	7	0	38.5	0.0	4	0	22	0.0
8:40 - 8:45	8	1	59	11.1	2	0	11	0.0
8:45 - 8:50	11	0	60.5	0.0	3	0	16.5	0.0
8:50 - 8:55	9	0	49.5	0.0	4	1	37	20.0
8:55 - 9:00	10	0	55	0.0	2	0	11	0.0
9:00 - 9:05	11	1	75.5	8.3	3	0	16.5	0.0
9:05 - 9:10	8	0	44	0.0	4	0	22	0.0
9:10 - 9:15	7	0	38.5	0.0	2	0	11	0.0
9:15 - 9:20	9	0	49.5	0.0	5	0	27.5	0.0
9:20 - 9:25	8	1	59	11.1	2	0	11	0.0
9:25 - 9:30	8	0	44	0.0	3	0	16.5	0.0
9:30 - 9:35	7	0	38.5	0.0	5	0	27.5	0.0
9:35 - 9:40	5	0	27.5	0.0	2	0	11	0.0
9:40 - 9:45	6	0	33	0.0	3	1	31.5	25.0
9:45 - 9:50	7	0	38.5	0.0	4	0	22	0.0
9:50 - 9:55	8	0	44	0.0	2	0	11	0.0
9:55 - 10:00	8	0	44	0.0	3	0	16.5	0.0

15:00 - 15:05	9	1	64.5	10.0	5	0	27.5	0.0
15:05 - 15:10	8	0	44	0.0	4	0	22	0.0
15:10 - 15:15	9	1	64.5	10.0	6	0	33	0.0
15:15 - 15:20	8	0	44	0.0	5	0	27.5	0.0
15:20 - 15:25	9	0	49.5	0.0	5	1	42.5	16.7
15:25 - 15:30	10	0	55	0.0	4	0	22	0.0
15:30 - 15:35	11	1	75.5	8.3	6	0	33	0.0
15:35 - 15:40	12	0	66	0.0	5	0	27.5	0.0
15:40 - 15:45	10	0	55	0.0	6	0	33	0.0
15:45 - 15:50	9	0	49.5	0.0	5	1	42.5	16.7
15:50 - 15:55	14	1	92	6.7	9	0	49.5	0.0
15:55 - 16:00	10	0	55	0.0	5	0	27.5	0.0
16:00 - 16:05	12	0	66	0.0	4	0	22	0.0
16:05 - 16:10	10	1	70	9.1	7	0	38.5	0.0
16:10 - 16:15	8	0	44	0.0	5	0	27.5	0.0
16:15 - 16:20	9	0	49.5	0.0	6	0	33	0.0
16:20 - 16:25	7	0	38.5	0.0	5	0	27.5	0.0
16:25 - 16:30	13	1	86.5	7.1	8	0	44	0.0
16:30 - 16:35	14	0	77	0.0	5	0	27.5	0.0
16:35 - 16:40	10	0	55	0.0	6	0	33	0.0
16:40 - 16:45	10	0	55	0.0	4	0	22	0.0
16:45 - 16:50	8	1	59	11.1	5	0	27.5	0.0
16:50 - 16:55	9	0	49.5	0.0	6	0	33	0.0
16:55 - 17:00	14	0	77	0.0	4	0	22	0.0
17:00 - 17:05	15	0	82.5	0.0	5	0	27.5	0.0
17:05 - 17:10	10	1	70	9.1	5	0	27.5	0.0
17:10 - 17:15	14	0	77	0.0	6	0	33	0.0
17:15 - 17:20	15	0	82.5	0.0	4	0	22	0.0
17:20 - 17:25	16	0	88	0.0	5	0	27.5	0.0
17:25 - 17:30	17	1	108.5	5.6	6	0	33	0.0
17:30 - 17:35	10	0	55	0.0	4	0	22	0.0
17:35 - 17:40	15	0	82.5	0.0	5	0	27.5	0.0
17:40 - 17:45	17	1	108.5	5.6	6	0	33	0.0
17:45 - 17:50	10	0	55	0.0	4	0	22	0.0
17:50 - 17:55	8	0	44	0.0	5	0	27.5	0.0
17:55 - 18:00	9	1	64.5	10.0	5	0	27.5	0.0

ARM: MANCHESTER ROAD NORTH

	LANE 1			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	10	0	55	0.0
8:05 - 8:10	8	1	59	11.1
8:10 - 8:15	9	0	49.5	0.0
8:15 - 8:20	12	1	81	7.7
8:20 - 8:25	10	0	55	0.0
8:25 - 8:30	14	2	107	12.5
8:30 - 8:35	15	1	97.5	6.3
8:35 - 8:40	16	0	88	0.0
8:40 - 8:45	14	0	77	0.0
8:45 - 8:50	12	1	81	7.7
8:50 - 8:55	14	0	77	0.0
8:55 - 9:00	15	1	97.5	6.3
9:00 - 9:05	10	2	85	16.7
9:05 - 9:10	8	0	44	0.0
9:10 - 9:15	11	1	75.5	8.3
9:15 - 9:20	12	0	66	0.0
9:20 - 9:25	10	1	70	9.1
9:25 - 9:30	15	2	112.5	11.8
9:30 - 9:35	16	1	103	5.9
9:35 - 9:40	10	0	55	0.0
9:40 - 9:45	10	0	55	0.0
9:45 - 9:50	12	1	81	7.7
9:50 - 9:55	9	2	79.5	18.2
9:55 - 10:00	8	1	59	11.1

15:00 - 15:05	11	0	60.5	0.0
15:05 - 15:10	12	1	81	7.7
15:10 - 15:15	10	0	55	0.0
15:15 - 15:20	9	0	49.5	0.0
15:20 - 15:25	8	2	74	20.0
15:25 - 15:30	7	0	38.5	0.0
15:30 - 15:35	8	0	44	0.0
15:35 - 15:40	5	2	57.5	28.6
15:40 - 15:45	6	0	33	0.0
15:45 - 15:50	8	0	44	0.0
15:50 - 15:55	7	1	53.5	12.5
15:55 - 16:00	5	0	27.5	0.0
16:00 - 16:05	6	1	48	14.3
16:05 - 16:10	7	0	38.5	0.0
16:10 - 16:15	5	0	27.5	0.0
16:15 - 16:20	5	0	27.5	0.0
16:20 - 16:25	6	2	63	25.0
16:25 - 16:30	4	0	22	0.0
16:30 - 16:35	5	0	27.5	0.0
16:35 - 16:40	6	1	48	14.3
16:40 - 16:45	4	0	22	0.0
16:45 - 16:50	2	0	11	0.0
16:50 - 16:55	3	0	16.5	0.0
16:55 - 17:00	4	1	37	20.0
17:00 - 17:05	5	0	27.5	0.0
17:05 - 17:10	5	0	27.5	0.0
17:10 - 17:15	8	0	44	0.0
17:15 - 17:20	10	1	70	9.1
17:20 - 17:25	8	0	44	0.0
17:25 - 17:30	9	0	49.5	0.0
17:30 - 17:35	7	0	38.5	0.0
17:35 - 17:40	10	1	70	9.1
17:40 - 17:45	8	0	44	0.0
17:45 - 17:50	9	0	49.5	0.0
17:50 - 17:55	8	1	59	11.1
17:55 - 18:00	6	0	33	0.0

Queue Lengths, Rochdale

DATE: WEDNESDAY 3rd OCTOBER 2018

LOCATION: MANCHESTER ROAD / QUEENSWAY / ALBION STREET

ARM: QUEENSWAY

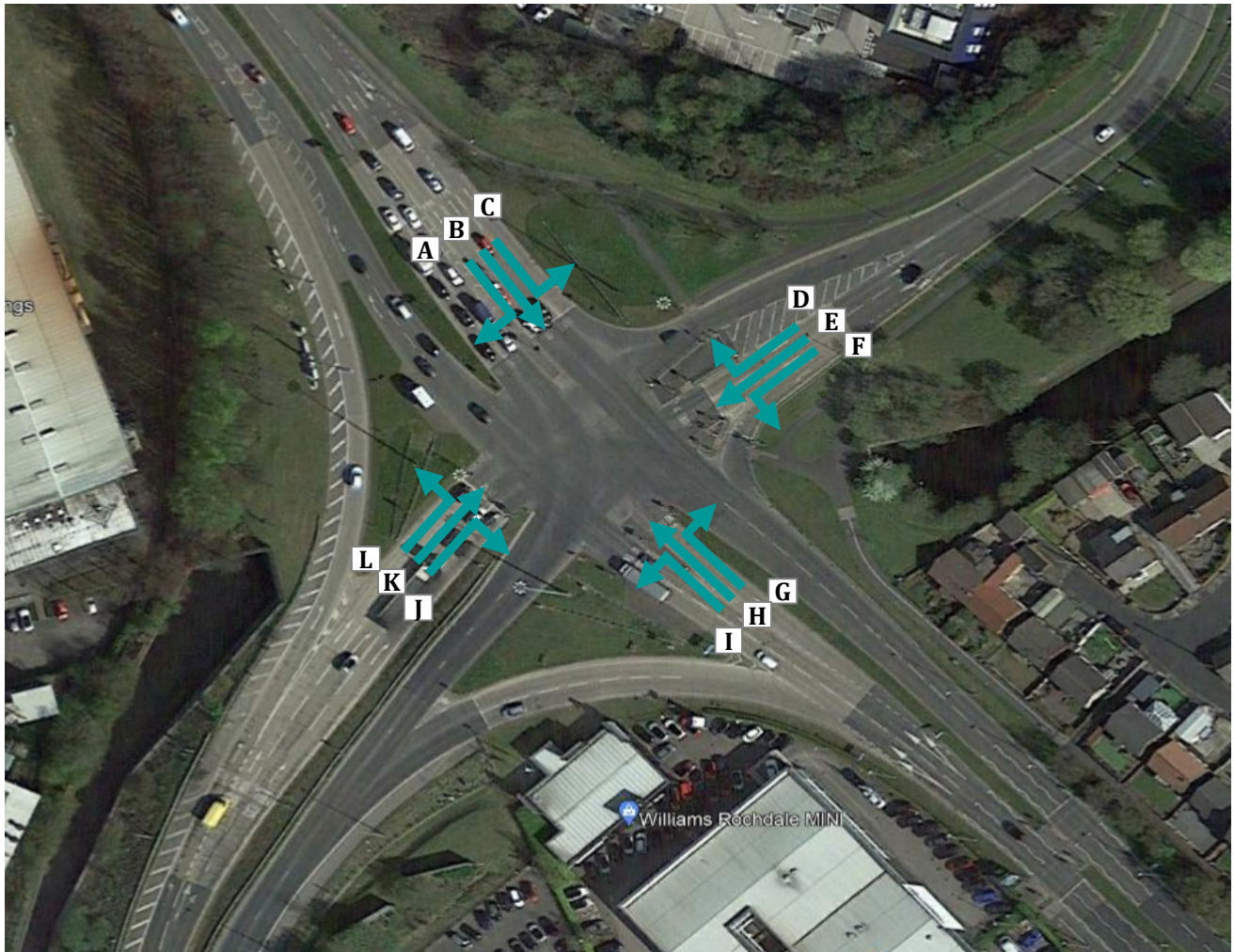
	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	4	0	22	0.0	5	1	42.5	16.7
8:05 - 8:10	2	0	11	0.0	6	0	33	0.0
8:10 - 8:15	3	1	31.5	25.0	7	1	53.5	12.5
8:15 - 8:20	4	0	22	0.0	5	0	27.5	0.0
8:20 - 8:25	5	0	27.5	0.0	6	0	33	0.0
8:25 - 8:30	5	0	27.5	0.0	5	0	27.5	0.0
8:30 - 8:35	3	0	16.5	0.0	5	1	42.5	16.7
8:35 - 8:40	4	0	22	0.0	5	0	27.5	0.0
8:40 - 8:45	2	0	11	0.0	7	0	38.5	0.0
8:45 - 8:50	3	0	16.5	0.0	5	1	42.5	16.7
8:50 - 8:55	4	0	22	0.0	8	0	44	0.0
8:55 - 9:00	2	0	11	0.0	5	0	27.5	0.0
9:00 - 9:05	2	0	11	0.0	6	1	48	14.3
9:05 - 9:10	3	0	16.5	0.0	5	0	27.5	0.0
9:10 - 9:15	4	0	22	0.0	7	0	38.5	0.0
9:15 - 9:20	2	0	11	0.0	5	1	42.5	16.7
9:20 - 9:25	3	0	16.5	0.0	6	0	33	0.0
9:25 - 9:30	4	0	22	0.0	4	0	22	0.0
9:30 - 9:35	2	0	11	0.0	5	1	42.5	16.7
9:35 - 9:40	2	0	11	0.0	6	0	33	0.0
9:40 - 9:45	3	0	16.5	0.0	7	0	38.5	0.0
9:45 - 9:50	4	0	22	0.0	5	1	42.5	16.7
9:50 - 9:55	2	1	26	33.3	5	0	27.5	0.0
9:55 - 10:00	3	0	16.5	0.0	6	1	48	14.3

15:00 - 15:05	4	0	22	0.0	7	0	38.5	0.0
15:05 - 15:10	5	0	27.5	0.0	8	0	44	0.0
15:10 - 15:15	5	0	27.5	0.0	9	1	64.5	10.0
15:15 - 15:20	4	0	22	0.0	9	0	49.5	0.0
15:20 - 15:25	5	0	27.5	0.0	10	0	55	0.0
15:25 - 15:30	5	0	27.5	0.0	11	1	75.5	8.3
15:30 - 15:35	4	0	22	0.0	7	0	38.5	0.0
15:35 - 15:40	5	0	27.5	0.0	8	0	44	0.0
15:40 - 15:45	5	1	42.5	16.7	9	0	49.5	0.0
15:45 - 15:50	4	0	22	0.0	7	1	53.5	12.5
15:50 - 15:55	5	0	27.5	0.0	8	0	44	0.0
15:55 - 16:00	5	0	27.5	0.0	9	0	49.5	0.0
16:00 - 16:05	4	1	37	20.0	7	0	38.5	0.0
16:05 - 16:10	5	0	27.5	0.0	5	0	27.5	0.0
16:10 - 16:15	5	0	27.5	0.0	11	1	75.5	8.3
16:15 - 16:20	4	0	22	0.0	12	0	66	0.0
16:20 - 16:25	5	0	27.5	0.0	10	0	55	0.0
16:25 - 16:30	3	1	31.5	25.0	14	0	77	0.0
16:30 - 16:35	4	0	22	0.0	10	0	55	0.0
16:35 - 16:40	2	0	11	0.0	12	1	81	7.7
16:40 - 16:45	3	0	16.5	0.0	9	0	49.5	0.0
16:45 - 16:50	4	0	22	0.0	8	0	44	0.0
16:50 - 16:55	2	1	26	33.3	10	1	70	9.1
16:55 - 17:00	3	0	16.5	0.0	12	0	66	0.0
17:00 - 17:05	4	0	22	0.0	10	0	55	0.0
17:05 - 17:10	5	0	27.5	0.0	8	0	44	0.0
17:10 - 17:15	4	0	22	0.0	9	0	49.5	0.0
17:15 - 17:20	5	0	27.5	0.0	7	1	53.5	12.5
17:20 - 17:25	4	0	22	0.0	13	0	71.5	0.0
17:25 - 17:30	3	0	16.5	0.0	10	0	55	0.0
17:30 - 17:35	4	0	22	0.0	8	0	44	0.0
17:35 - 17:40	4	0	22	0.0	9	0	49.5	0.0
17:40 - 17:45	4	0	22	0.0	7	0	38.5	0.0
17:45 - 17:50	2	0	11	0.0	5	0	27.5	0.0
17:50 - 17:55	3	0	16.5	0.0	6	0	33	0.0
17:55 - 18:00	1	0	5.5	0.0	8	0	44	0.0

ARM: ALBION STREET

	LANE 1				LANE 2			
	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES	LIGHTS	HEAVIES	QUEUE LENGTH (M)	%AGE HEAVIES
8:00 - 8:05	7	1	53.5	12.5	2	0	11	0.0
8:05 - 8:10	5	0	27.5	0.0	3	0	16.5	0.0
8:10 - 8:15	8	1	59	11.1	2	0	11	0.0
8:15 - 8:20	6	0	33	0.0	3	0	16.5	0.0
8:20 - 8:25	8	0	44	0.0	1	0	5.5	0.0
8:25 - 8:30	6	1	48	14.3	2	0	11	0.0
8:30 - 8:35	7	0	38.5	0.0	2	0	11	0.0
8:35 - 8:40	5	0	27.5	0.0	1	0	5.5	0.0
8:40 - 8:45	8	0	44	0.0	1	0	5.5	0.0
8:45 - 8:50	7	1	53.5	12.5	2	0	11	0.0
8:50 - 8:55	8	0	44	0.0	2	0	11	0.0
8:55 - 9:00	6	0	33	0.0	2	0	11	0.0
9:00 - 9:05	8	1	59	11.1	3	0	16.5	0.0
9:05 - 9:10	8	0	44	0.0	1	0	5.5	0.0
9:10 - 9:15	7	0	38.5	0.0	2	0	11	0.0
9:15 - 9:20	5	1	42.5	16.7	2	0	11	0.0
9:20 - 9:25	6	0	33	0.0	1	0	5.5	0.0
9:25 - 9:30	8	0	44	0.0	2	0	11	0.0
9:30 - 9:35	5	0	27.5	0.0	3	0	16.5	0.0
9:35 - 9:40	6	0	33	0.0	1	0	5.5	0.0
9:40 - 9:45	8	1	59	11.1	2	0	11	0.0
9:45 - 9:50	8	0	44	0.0	2	0	11	0.0
9:50 - 9:55	8	0	44	0.0	2	0	11	0.0
9:55 - 10:00	7	0	38.5	0.0	1	0	5.5	0.0

15:00 - 15:05	4	0	22	0.0	4	0	22	0.0
15:05 - 15:10	5	0	27.5	0.0	2	0	11	0.0
15:10 - 15:15	6	0	33	0.0	3	0	16.5	0.0
15:15 - 15:20	5	1	42.5	16.7	2	0	11	0.0
15:20 - 15:25	5	0	27.5	0.0	2	0	11	0.0
15:25 - 15:30	4	0	22	0.0	2	0	11	0.0
15:30 - 15:35	5	1	42.5	16.7	3	0	16.5	0.0
15:35 - 15:40	5	0	27.5	0.0	4	0	22	0.0
15:40 - 15:45	6	0	33	0.0	2	0	11	0.0
15:45 - 15:50	5	0	27.5	0.0	3	0	16.5	0.0
15:50 - 15:55	5	1	42.5	16.7	2	0	11	0.0
15:55 - 16:00	6	0	33	0.0	4	0	22	0.0
16:00 - 16:05	4	0	22	0.0	2	0	11	0.0
16:05 - 16:10	5	0	27.5	0.0	3	0	16.5	0.0
16:10 - 16:15	6	1	48	14.3	1	0	5.5	0.0
16:15 - 16:20	4	1	37	20.0	2	0	11	0.0
16:20 - 16:25	5	0	27.5	0.0	3	0	16.5	0.0
16:25 - 16:30	6	0	33	0.0	1	0	5.5	0.0
16:30 - 16:35	4	0	22	0.0	2	0	11	0.0
16:35 - 16:40	5	0	27.5	0.0	3	0	16.5	0.0
16:40 - 16:45	6	0	33	0.0	4	0	22	0.0
16:45 - 16:50	4	0	22	0.0	2	0	11	0.0
16:50 - 16:55	5	1	42.5	16.7	2	0	11	0.0
16:55 - 17:00	6	0	33	0.0	3	0	16.5	0.0
17:00 - 17:05	4	1	37	20.0	1	0	5.5	0.0
17:05 - 17:10	5	0	27.5	0.0	2	0	11	0.0
17:10 - 17:15	6	0	33	0.0	3	0	16.5	0.0
17:15 - 17:20	4	1	37	20.0	1	1	20.5	50.0
17:20 - 17:25	5	0	27.5	0.0	2	0	11	0.0
17:25 - 17:30	4	0	22	0.0	2	0	11	0.0
17:30 - 17:35	4	0	22	0.0	1	0	5.5	0.0
17:35 - 17:40	2	0	11	0.0	2	0	11	0.0
17:40 - 17:45	3	0	16.5	0.0	2	0	11	0.0
17:45 - 17:50	5	0	27.5	0.0	2	0	11	0.0
17:50 - 17:55	6	0	33	0.0	3	0	16.5	0.0
17:55 - 18:00	4	0	22	0.0	1	0	5.5	0.0



			MOVEMENT A							MOVEMENT B							MOVEMENT C						
			CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:30	-	07:45	237	46	1	3	1	1	0	74	7	2	0	0	0	0	14	0	0	0	0	0	0
07:45	-	08:00	212	27	7	4	0	1	0	71	18	0	1	2	1	0	28	2	0	0	0	2	0
TOTAL			449	73	8	7	1	2	0	145	25	2	1	2	1	0	42	2	0	0	0	2	0
08:00	-	08:15	177	35	3	4	0	0	0	79	6	2	1	0	1	0	18	3	0	0	0	0	0
08:15	-	08:30	143	23	1	1	0	2	0	102	9	1	1	0	0	0	23	4	0	0	0	0	0
08:30	-	08:45	144	24	1	3	0	0	0	73	13	3	1	0	1	0	23	1	0	0	0	0	0
08:45	-	09:00	186	33	8	5	1	1	0	66	15	4	0	1	1	1	41	1	0	0	0	0	0
TOTAL			650	115	13	13	1	3	0	320	43	10	3	1	3	1	105	9	0	0	0	0	0
09:00	-	09:15	167	27	14	4	0	1	0	79	14	1	0	0	0	0	25	2	0	0	0	0	0
09:15	-	09:30	150	39	9	7	1	0	0	57	14	0	0	0	0	1	15	0	0	0	0	0	0
TOTAL			317	66	23	11	1	1	0	136	28	1	0	0	0	1	40	2	0	0	0	0	0
PERIOD TOTAL			1416	254	44	31	3	6	0	601	96	13	4	3	4	2	187	13	0	0	0	2	0
16:30	-	16:45	199	24	0	5	2	2	0	87	6	4	0	1	1	0	24	0	0	0	0	0	0
16:45	-	17:00	220	31	3	1	1	0	0	84	9	0	0	0	1	0	25	2	0	0	0	0	0
TOTAL			419	55	3	6	3	2	0	171	15	4	0	1	2	0	49	2	0	0	0	0	0
17:00	-	17:15	206	16	2	2	1	2	0	106	10	0	0	0	0	0	30	3	0	0	0	0	0
17:15	-	17:30	221	27	1	0	2	0	0	101	4	0	0	0	0	0	42	3	0	0	0	0	0
17:30	-	17:45	196	12	1	1	1	0	0	96	7	0	2	0	1	0	27	2	0	0	0	0	0
17:45	-	18:00	155	17	0	0	0	1	0	84	9	0	0	0	2	0	30	2	0	0	0	0	0
TOTAL			778	72	4	3	4	3	0	387	30	0	2	0	3	0	129	10	0	0	0	0	0
18:00	-	18:15	169	18	2	2	1	0	0	77	4	0	0	0	3	0	36	1	1	0	0	0	0
18:15	-	18:30	174	20	2	2	0	0	0	92	8	0	0	0	1	1	37	3	0	0	0	0	0
TOTAL			343	38	4	4	1	0	0	169	12	0	0	0	4	1	73	4	1	0	0	0	0
PERIOD TOTAL			1540	165	11	13	8	5	0	727	57	4	2	1	9	1	251	16	1	0	0	0	0
DAILY TOTAL			2956	419	55	44	11	11	0	1328	153	17	6	4	13	3	438	29	1	0	0	2	0
GRAND TOTAL			3496							1524							470						



PROJECT NUMBER: 220603

PROJECT MANAGER: ADAM CARTER

DATE: THUR 16TH JUNE 2022

SURVEY DESCRIPTION: SANDBROOK WAY, ROCHDALE - MCC - SITE PLAN

			MOVEMENT D							MOVEMENT E							MOVEMENT F						
			CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:30	-	07:45	5	2	1	0	0	0	0	12	1	0	0	0	0	0	6	3	0	0	0	0	0
07:45	-	08:00	21	1	0	0	0	0	0	4	3	0	0	0	0	0	14	1	0	0	0	0	0
TOTAL			26	3	1	0	0	0	0	16	4	0	0	0	0	0	20	4	0	0	0	0	0
08:00	-	08:15	8	1	0	0	0	0	0	7	2	0	0	0	0	0	6	2	2	0	0	0	0
08:15	-	08:30	5	1	1	0	0	0	0	3	1	0	0	0	0	0	11	0	0	0	0	0	0
08:30	-	08:45	9	1	0	0	0	0	0	4	2	0	0	0	0	0	11	3	0	0	0	0	0
08:45	-	09:00	11	0	1	0	0	0	0	8	2	0	0	0	0	0	11	2	0	0	0	0	0
TOTAL			20	1	1	0	0	0	0	22	7	0	0	0	0	0	22	5	0	0	0	0	0
09:00	-	09:15	9	1	0	0	0	0	0	4	2	0	0	0	0	0	14	2	0	0	0	0	0
09:15	-	09:30	13	1	2	0	0	0	0	6	1	0	0	0	0	0	14	2	0	0	0	0	0
TOTAL			22	2	2	0	0	0	0	10	3	0	0	0	0	0	28	4	0	0	0	0	0
PERIOD TOTAL			68	6	4	0	0	0	0	48	14	0	0	0	0	0	70	13	0	0	0	0	0
16:30	-	16:45	23	1	0	0	0	2	0	17	3	0	0	0	0	0	29	0	0	0	0	0	0
16:45	-	17:00	33	0	0	0	0	0	0	15	1	0	0	0	0	0	24	1	0	0	0	0	0
TOTAL			56	1	0	0	0	2	0	32	4	0	0	0	0	0	53	1	0	0	0	0	0
17:00	-	17:15	33	0	0	0	0	0	0	26	2	0	0	0	0	0	32	3	0	0	0	0	0
17:15	-	17:30	25	2	0	0	0	0	0	26	0	0	0	0	0	0	25	2	0	0	0	0	0
17:30	-	17:45	34	1	0	0	0	0	0	45	1	0	0	0	0	0	33	3	0	0	0	0	0
17:45	-	18:00	29	2	0	0	0	0	0	17	1	0	0	0	0	0	21	2	0	0	0	0	0
TOTAL			63	3	0	0	0	0	0	114	4	0	0	0	0	0	54	5	0	0	0	0	0
18:00	-	18:15	37	4	0	0	0	0	0	23	1	0	0	0	0	0	24	2	0	0	0	0	0
18:15	-	18:30	24	2	0	0	0	0	0	21	3	0	0	0	0	0	27	0	0	0	0	0	0
TOTAL			61	6	0	0	0	0	0	44	4	0	0	0	0	0	51	2	0	0	0	0	0
PERIOD TOTAL			180	10	0	0	0	2	0	190	12	0	0	0	0	0	158	8	0	0	0	0	0
DAILY TOTAL			248	16	4	0	0	2	0	238	26	0	0	0	0	0	228	21	0	0	0	0	0
GRAND TOTAL			270							264							249						



PROJECT NUMBER: 220603

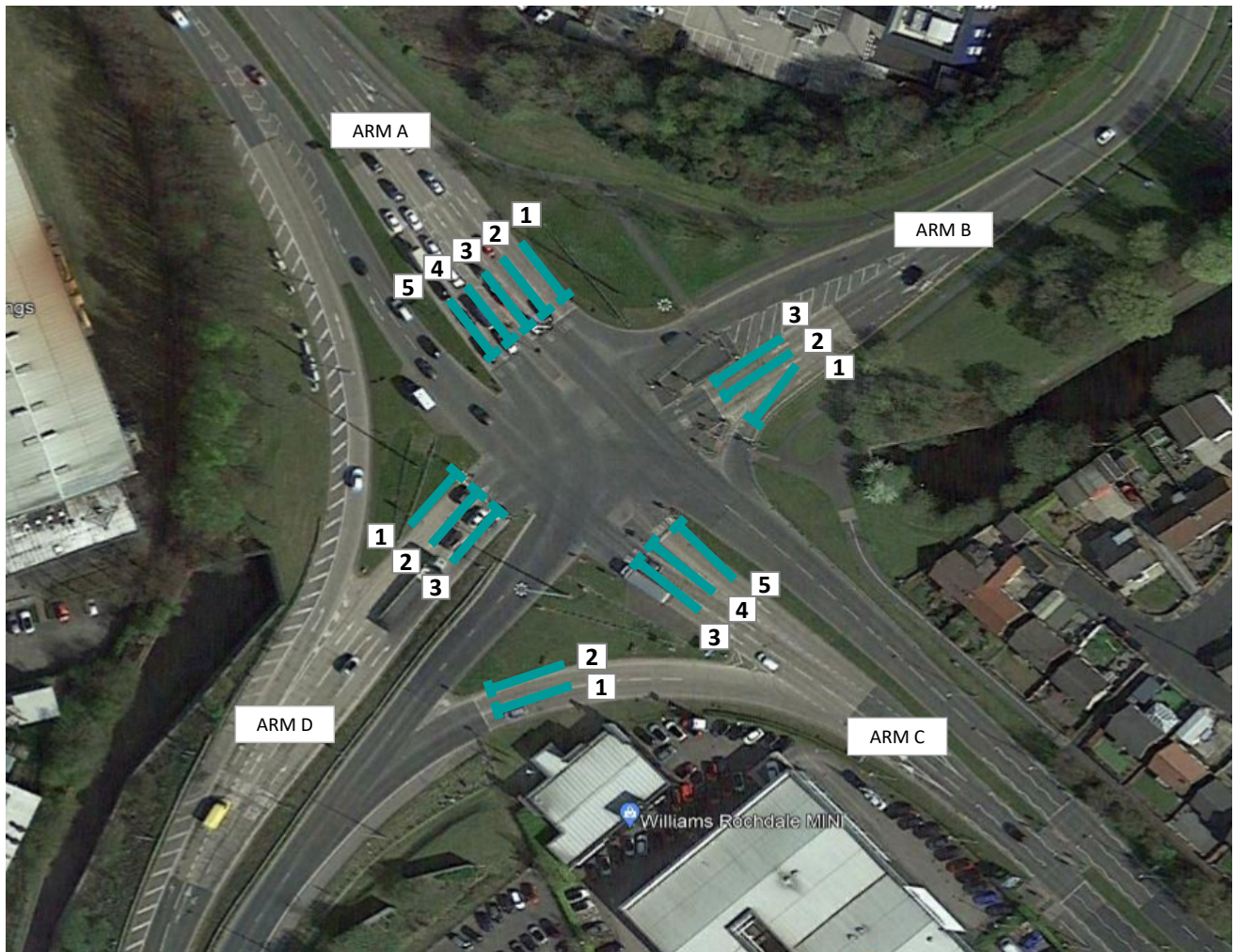
PROJECT MANAGER: ADAM CARTER

DATE: THUR 16TH JUNE 2022

SURVEY DESCRIPTION: SANDBROOK WAY, ROCHDALE - MCC - SITE PLAN

			MOVEMENT G							MOVEMENT H							MOVEMENT I						
			CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:30	-	07:45	17	3	0	0	0	0	0	61	14	0	1	0	1	1	90	19	6	5	2	0	0
07:45	-	08:00	20	0	0	0	0	0	0	86	15	1	0	0	1	0	101	17	10	3	1	1	0
TOTAL			37	3	0	0	0	0	0	147	29	1	1	0	2	1	191	36	16	8	3	1	0
08:00	-	08:15	7	3	1	0	0	0	0	104	11	2	1	0	0	0	107	27	2	0	0	1	0
08:15	-	08:30	14	1	0	0	0	0	0	77	10	3	2	1	2	0	76	22	3	6	1	0	0
08:30	-	08:45	18	0	0	0	0	0	0	77	11	4	1	0	0	0	97	24	5	9	0	2	0
08:45	-	09:00	30	1	0	0	0	0	0	69	10	5	0	0	0	0	68	24	5	2	0	1	0
TOTAL			69	5	1	0	0	0	0	327	42	14	4	1	2	0	348	97	15	17	1	4	0
09:00	-	09:15	31	1	0	0	0	0	0	80	15	1	0	0	0	0	78	18	3	2	0	0	0
09:15	-	09:30	18	1	1	0	0	0	0	56	12	3	2	1	0	0	70	15	9	5	0	0	0
TOTAL			49	2	1	0	0	0	0	136	27	4	2	1	0	0	148	33	12	7	0	0	0
PERIOD TOTAL			155	10	2	0	0	0	0	610	98	19	7	2	4	1	687	166	43	32	4	5	0
16:30	-	16:45	31	2	0	0	0	0	0	103	12	0	0	0	2	0	128	18	6	2	0	1	0
16:45	-	17:00	21	0	0	0	0	0	0	102	11	0	0	0	0	0	134	14	2	3	0	2	0
TOTAL			52	2	0	0	0	0	0	205	23	0	0	0	2	0	262	32	8	5	0	3	0
17:00	-	17:15	16	2	0	0	0	0	0	101	10	0	1	0	3	3	125	12	3	1	0	1	0
17:15	-	17:30	31	3	0	0	0	0	0	86	6	3	0	0	1	0	99	12	2	2	0	0	0
17:30	-	17:45	18	2	0	0	0	0	0	78	5	0	0	0	1	0	87	9	1	1	0	1	0
17:45	-	18:00	20	0	0	0	0	0	0	65	5	0	0	0	1	0	79	11	2	0	0	5	0
TOTAL			85	7	0	0	0	0	0	330	26	3	1	0	6	3	390	44	8	4	0	7	0
18:00	-	18:15	23	1	0	0	0	0	0	99	12	1	0	0	2	0	68	15	0	3	0	0	0
18:15	-	18:30	21	1	0	0	0	0	0	74	9	0	2	0	1	0	76	6	0	2	0	0	0
TOTAL			44	2	0	0	0	0	0	173	21	1	2	0	3	0	144	21	0	5	0	0	0
PERIOD TOTAL			181	11	0	0	0	0	0	708	70	4	3	0	11	3	796	97	16	14	0	10	0
DAILY TOTAL			336	21	2	0	0	0	0	1318	168	23	10	2	15	4	1483	263	59	46	4	15	0
GRAND TOTAL			359							1540							1870						

			MOVEMENT J							MOVEMENT K							MOVEMENT L						
			CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE	CAR	LGV	OGV 1	OGV 2	PSV	M/C	CYCLE
07:30	-	07:45	94	32	3	5	0	2	0	21	2	0	0	0	0	204	35	6	3	0	2	0	
07:45	-	08:00	111	24	2	2	0	1	0	19	6	0	0	0	0	222	33	3	5	0	2	0	
TOTAL			205	56	5	7	0	3	0	40	8	0	0	0	0	426	68	9	8	0	4	0	
08:00	-	08:15	100	19	7	2	1	0	0	20	7	0	0	0	0	231	33	8	4	0	0	0	
08:15	-	08:30	111	18	8	6	1	0	0	28	3	1	0	0	0	200	39	6	6	3	2	0	
08:30	-	08:45	87	26	3	4	0	0	0	39	2	0	0	0	0	218	35	11	6	2	0	0	
08:45	-	09:00	107	19	3	5	1	1	0	42	1	0	0	0	0	197	35	5	4	3	0	0	
TOTAL			405	82	21	17	3	1	0	129	13	1	0	0	0	846	142	30	20	8	2	0	
09:00	-	09:15	87	21	5	3	0	0	0	16	2	1	0	0	0	146	32	6	8	2	1	0	
09:15	-	09:30	70	24	5	1	1	0	0	13	1	1	0	0	0	162	40	4	4	1	0	0	
TOTAL			157	45	10	4	1	0	0	29	3	2	0	0	0	308	72	10	12	3	1	0	
PERIOD TOTAL			767	183	36	28	4	4	0	198	24	3	0	0	0	1580	282	49	40	11	7	0	
16:30	-	16:45	101	29	5	0	0	1	0	13	0	0	0	0	0	198	39	1	5	0	1	0	
16:45	-	17:00	87	26	4	4	0	1	0	9	5	0	0	0	0	226	35	4	2	2	2	0	
TOTAL			188	55	9	4	0	2	0	22	5	0	0	0	0	424	74	5	7	2	3	0	
17:00	-	17:15	75	14	4	1	0	0	0	12	1	0	0	0	0	210	45	4	3	0	0	0	
17:15	-	17:30	109	20	1	2	0	0	0	13	0	0	0	0	0	220	24	3	2	0	1	0	
17:30	-	17:45	122	14	4	1	0	1	0	14	1	0	0	0	0	222	30	0	4	0	1	0	
17:45	-	18:00	105	12	2	1	0	1	0	24	1	0	0	0	0	240	23	1	2	0	2	0	
TOTAL			411	60	11	5	0	2	0	63	3	0	0	0	0	892	122	8	11	0	4	0	
18:00	-	18:15	88	10	2	4	0	0	0	25	0	0	0	0	0	194	30	1	4	0	3	0	
18:15	-	18:30	82	7	2	5	0	1	0	14	2	0	0	0	0	164	25	1	3	0	0	0	
TOTAL			170	17	4	9	0	1	0	39	2	0	0	0	0	358	55	2	7	0	3	0	
PERIOD TOTAL			769	132	24	18	0	5	0	124	10	0	0	0	0	1674	251	15	25	2	10	0	
DAILY TOTAL			1536	315	60	46	4	9	0	322	34	3	0	0	0	3254	533	64	65	13	17	0	
GRAND TOTAL			1970							359							3946						



[illegible]



Time		Vehicle Count							PCU TOTAL	Vehicle Count							PCU TOTAL	Vehicle Count							PCU TOTAL
		LANE 1								LANE 2								LANE 3							
		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C	
07:30	- 07:35	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
07:35	- 07:40	3	0	0	0	0	0	0	3	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	2
07:40	- 07:45	0	1	0	0	0	0	0	1	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2
07:45	- 07:50	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5	0	0	0	0	0	0	5
07:50	- 07:55	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	2	1	0	0	0	0	0	3
07:55	- 08:00	4	0	0	0	0	0	0	4	1	1	0	0	0	0	0	2	2	0	0	0	0	0	0	2
08:00	- 08:05	0	0	1	0	0	0	0	1.5	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
08:05	- 08:10	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
08:10	- 08:15	2	0	0	0	0	0	0	2	2	1	0	0	0	0	0	3	1	1	0	0	0	0	0	2
08:15	- 08:20	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1
08:20	- 08:25	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
08:25	- 08:30	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	2.5
08:30	- 08:35	1	1	0	0	0	0	0	2	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1
08:35	- 08:40	1	0	1	0	0	0	0	2.5	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
08:40	- 08:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
08:45	- 08:50	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
08:50	- 08:55	3	0	0	0	0	0	0	3	0	1	0	0	0	0	0	1	2	0	0	0	0	0	0	2
08:55	- 09:00	1	2	0	0	0	0	0	3	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
09:00	- 09:05	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
09:05	- 09:10	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
09:10	- 09:15	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	1	1	0	0	0	0	0	2
09:15	- 09:20	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	2	1	0	0	0	0	0	3
09:20	- 09:25	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1
09:25	- 09:30	2	1	0	0	0	0	0	3	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	3
PERIOD TOTAL		36	7	2	0	0	0	0	46	19	7	0	0	0	0	0	26	36	10	1	0	0	0	0	47.5
PERIOD AVG		1.5	0.29	0.08	0	0	0	0	1.92	0.79	0.29	0	0	0	0	0	1.08	1.5	0.42	0.04	0	0	0	0	1.98
16:30	- 16:35	4	0	0	0	0	0	0	4	1	1	0	0	0	0	0	2	2	0	0	0	0	0	0	2
16:35	- 16:40	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	5	1	0	0	0	0	0	6
16:40	- 16:45	5	0	0	0	0	0	0	5	2	0	0	0	0	0	0	2	5	0	0	0	0	0	0	5
16:45	- 16:50	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4	6	0	0	0	0	0	0	6
16:50	- 16:55	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2	3	0	0	0	0	0	0	3
16:55	- 17:00	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	5	0	0	0	0	0	0	5
17:00	- 17:05	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4
17:05	- 17:10	3	0	0	0	0	0	0	3	6	0	0	0	0	0	0	6	5	0	0	0	0	0	0	5
17:10	- 17:15	5	0	0	0	0	0	0	5	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4
17:15	- 17:20	3	0	0	0	0	0	0	3	6	0	0	0	0	0	0	6	3	0	0	0	0	0	0	3
17:20	- 17:25	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3
17:25	- 17:30	4	0	0	0	0	0	0	4	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0	4
17:30	- 17:35	5	0	0	0	0	0	0	5	2	0	0	0	0	0	0	2	6	0	0	0	0	0	0	6
17:35	- 17:40	6	0	0	0	0	0	0	6	7	0	0	0	0	0	0	7	6	0	0	0	0	0	0	6
17:40	- 17:45	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3	5	0	0	0	0	0	0	5
17:45	- 17:50	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	7
17:50	- 17:55	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3	1	2	0	0	0	0	0	3
17:55	- 18:00	5	0	0	0	0	0	0	5	1	0	0	0	0	0	0	1	5	0	0	0	0	0	0	5
18:00	- 18:05	2	1	0	0	0	0	0	3	2	1	0	0	0	0	0	3	4	1	0	0	0	0	0	5
18:05	- 18:10	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	8	0	0	0	0	0	0	8
18:10	- 18:15	4	0	0	0	0	0	0	4	6	0	0	0	0	0	0	6	5	2	0	0	0	0	0	7
18:15	- 18:20	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3	5	0	0	0	0	0	0	5
18:20	- 18:25	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	1	2	0	0	0	0	0	3
18:25	- 18:30	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	7
PERIOD TOTAL		89	1	0	0	0	0	0	90	72	2	0	0	0	0	0	74	109	8	0	0	0	0	0	117
PERIOD AVG		3.71	0.04	0	0	0	0	0	3.75	3	0.08	0	0	0	0	0	3.08	4.54	0.33	0	0	0	0	0	4.88
DAILY TOTAL		125	8	2	0	0	0	0	136	91	9	0	0	0	0	0	100	145	18	1	0	0	0	0	165
DAILY AVG		2.6	0.17	0.04	0	0	0	0	2.83	1.9	0.19	0	0	0	0	0	2.08	3.02	0.38	0.02	0	0	0	0	3.43

SURVEY DESCRIPTION: SANDBROOK WAY, ROCHDALE - QUEUE LENGTH COUNT

Time	(LANE 1 IS NEAREST TO KERR)																										
	Vehicle Count								PCU TOTAL	Vehicle Count								PCU TOTAL	Vehicle Count								PCU TOTAL
	LANE 1									LANE 2									LANE 4								
	CARS	LDV	OV01	OV02	PSV	M/C	B/C			CARS	LDV	OV01	OV02	PSV	M/C	B/C			CARS	LDV	OV01	OV02	PSV	M/C	B/C		
0730	0735	2	0	2	0	0	0	0	5	4	3	0	0	0	0	7	1	0	0	0	0	0	0	0	0	2	
0735	0740	3	0	2	0	0	0	0	6	8	2	0	0	0	0	10	3	0	0	0	0	0	0	0	0	6	
0740	0745	5	1	0	2	0	0	0	11	4	1	0	0	0	0	5	1	0	1	0	0	0	0	0	0	3	
0745	0750	1	1	1	0	0	0	0	3.5	4	0	1	0	0	0	5.5	5	0	1	0	0	0	0	0	0	4	
0750	0755	4	1	0	0	0	0	0	5	3	1	1	0	0	0	5.5	4	0	0	0	0	0	0	0	0	2	
0755	0800	1	2	0	2	0	0	0	6	7	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	4	
0800	0805	7	1	0	0	0	0	0	8	6	0	0	0	0	0	6	5	0	0	0	0	0	0	0	0	1	
0805	0810	5	0	1	0	0	0	0	6.5	2	2	1	0	0	0	5.5	4	0	0	0	0	0	0	0	0	1	
0810	0815	4	2	0	0	0	0	0	6	5	0	0	0	0	0	5	2	0	0	1	0	0	0	0	0	1	
0815	0820	2	0	1	2	0	0	0	8.5	3	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	2	
0820	0825	3	3	0	0	0	0	0	6	1	1	0	0	0	0	3	3	0	0	0	0	0	0	0	0	3	
0825	0830	1	0	1	1	0	0	0	5	3	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	2	
0830	0835	3	2	0	0	0	0	0	5	4	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	2	
0835	0840	3	1	1	0	0	0	0	5.5	3	1	0	0	0	0	4	1	1	1	0	0	0	0	0	0	2	
0840	0845	1	1	0	2	0	0	0	7	7	0	0	0	0	0	7	3	1	0	0	0	0	0	0	0	2	
0845	0850	2	2	1	0	0	0	0	5.5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	
0850	0855	5	1	0	0	0	0	0	5	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	
0855	0900	2	1	0	1	0	0	0	5.5	4	0	0	0	0	0	4	4	0	1	0	0	0	0	0	0	4	
0900	0905	6	0	0	0	0	0	0	6	1	0	0	0	0	0	1	4	1	0	0	0	0	0	0	0	2	
0905	0910	1	1	1	2	0	0	0	8.5	5	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	4	
0910	0915	2	0	1	1	0	0	0	6	5	0	0	0	0	0	5	0	1	0	0	0	0	0	0	0	4	
0915	0920	2	1	2	0	0	0	0	6	6	5	1	0	0	0	6	1	0	0	1	0	0	0	0	0	7.5	
0920	0925	1	1	1	0	0	0	0	8.5	5	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	4	
0925	0930	1	1	1	0	0	0	0	3.5	3	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	3	
PERIOD TOTAL		74	22	18	11	0	0	0	151	90	14	3	0	0	0	109	57	10	4	2	0	0	0	0	0	71.5	
PERIOD AVG		3.08	0.92	0.75	0.46	0	0	0	6.27	3.75	0.58	0.13	0	0	0	4.52	2.38	0.42	0.17	0.08	0	0	0	0	0	2.98	
1630	1635	5	1	0	0	0	0	0	6	6	5	0	0	0	0	5	2	1	0	0	0	0	0	0	0	5	
1635	1640	4	0	1	0	0	0	0	5.5	6	0	0	0	0	0	6	8	2	0	0	0	0	0	0	0	5	
1640	1645	5	1	1	0	0	0	0	8	8	2	0	0	0	0	8	9	2	0	0	0	0	0	0	0	5	
1645	1650	9	0	0	0	0	0	0	9	5	0	0	0	0	0	5	5	1	0	0	0	0	0	0	0	5	
1650	1655	5	1	0	1	0	0	0	8.5	7	2	0	0	0	0	9	4	0	0	0	0	0	0	0	0	3	
1655	1700	4	0	2	0	0	0	0	7	7	0	0	0	0	0	7	3	1	0	0	0	0	0	0	0	3	
1700	1705	4	1	0	1	0	0	0	7.5	5	1	0	0	0	0	6	3	1	0	0	0	0	0	0	0	1	
1705	1710	6	0	0	0	0	0	0	6	6	3	0	0	0	0	8	6	1	0	0	0	0	0	0	0	4	
1710	1715	7	1	1	0	0	0	0	9.5	3	2	0	0	0	0	5	3	0	0	0	0	0	0	0	0	3	
1715	1720	7	0	1	0	0	0	0	8.5	3	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0	3	
1720	1725	2	1	1	0	0	0	0	4.5	4	0	0	0	0	0	4	2	0	1	0	0	0	0	0	0	8	
1725	1730	5	0	0	0	0	0	0	5	3	1	0	0	0	0	4	3	1	0	0	0	0	0	0	0	4	
1730	1735	5	0	0	0	0	0	0	5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	
1735	1740	5	0	0	0	0	0	0	5	4	0	0	0	0	0	4	5	0	0	0	0	0	0	0	0	2	
1740	1745	4	2	0	0	0	0	0	6	3	1	0	0	0	0	4	4	0	0	0	0	0	0	0	0	2	
1745	1750	2	1	0	0	0	0	0	3	1	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	2	
1750	1755	3	0	0	0	0	0	0	3	2	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	3	
1755	1800	2	0	0	0	0	0	0	2.5	1	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	5	
1800	1805	3	0	0	0	0	0	0	5.5	2	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	4	
1805	1810	5	0	0	1	0	0	0	5	1	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0	4	
1810	1815	2	1	0	0	0	0	0	3	2	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	2	
1815	1820	8	1	0	0	0	0	0	9	2	0	0	0	0	0	2	1	0	0	2	0	0	0	0	0	4	
1820	1825	5	0	0	0	0	0	0	5	1	1	0	0	0	0	2	1	1	0	0	0	0	0	0	0	3	
1825	1830	6	0	0	0	0	0	0	6	5	0	0	0	0	0	5	3	1	0	0	0	0	0	0	0	4	
PERIOD TOTAL		115	35	6	14	0	0	0	211	115	0	0	0	0	0	146	153	0	2	2	0	0	0	0	0	76	
PERIOD AVG		4.79	0.46	0.25	0.13	0.04	0	0	5.96	3.46	0.46	0	0	0	0	3.92	3.77	0.46	0.04	0.08	0.08	0	0	0	0	3.42	
DAILY TOTAL		189	33	24	14	0	1	0	294	173	25	0	0	0	0	203	131	21	5	4	0	0	0	0	0	154	
DAILY AVG		3.94	0.69	0.5	0.29	0.02	0	0	6.11	3.6	0.52	0.06	0	0	0	4.22	2.77	0.44	0.1	0.08	0	0.2	0	0	0	3.3	



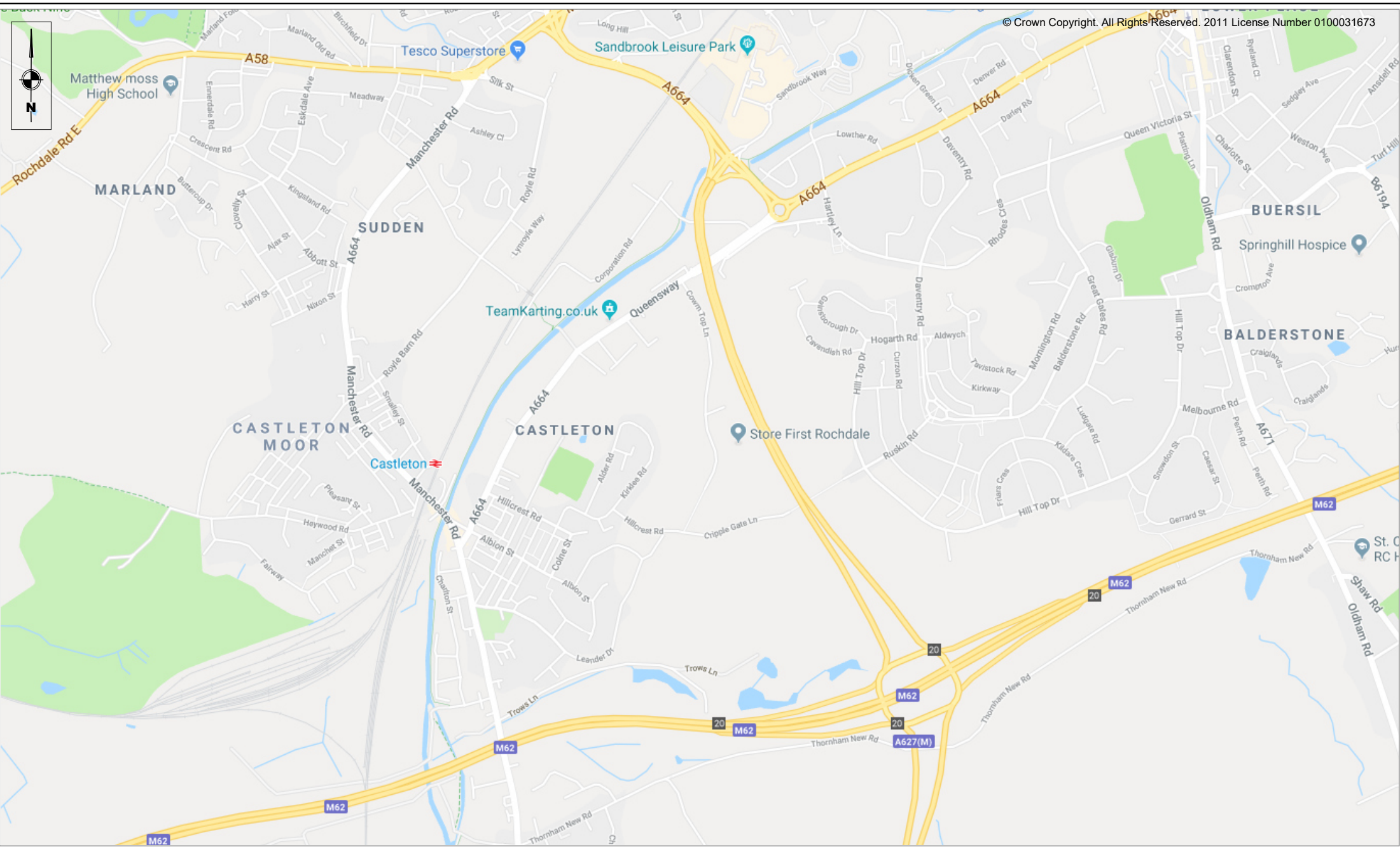
Time		Vehicle Count							PCU TOTAL	Vehicle Count							PCU TOTAL	Vehicle Count							PCU TOTAL
		LANE 1								LANE 2								LANE 3							
		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C		CARS	LGV	OGV1	OGV2	PSV	M/C	B/C	
07:30	- 07:35	4	0	0	0	0	0	0	4	13	0	0	0	0	0	0	13	6	1	0	0	0	0	0	7
07:35	- 07:40	3	0	0	0	0	0	0	3	7+	3	1	1	0	0	0	####	3	0	0	1	0	0	0	5.5
07:40	- 07:45	4	0	0	0	0	0	0	4	9+	5	0	0	0	0	0	####	5	1	2	0	0	0	0	9
07:45	- 07:50	1	1	0	0	0	0	0	2	8	1	1	0	0	0	0	10.5	7	1	0	0	0	0	0	8
07:50	- 07:55	2	1	0	0	0	0	0	3	8	2	0	0	0	0	0	10	8	0	0	0	0	0	0	8
07:55	- 08:00	3	0	0	0	0	0	0	3	6	1	0	0	0	0	0	7	7	1	0	1	0	0	0	10.5
08:00	- 08:05	4	0	0	0	0	0	0	4	7	1	0	1	0	0	0	10.5	5	1	0	1	0	0	0	8.5
08:05	- 08:10	4	0	0	0	0	0	0	4	4	5	0	0	0	0	0	9	5	0	0	0	0	0	0	5
08:10	- 08:15	1	3	0	0	0	0	0	4	8	0	0	0	0	0	0	8	6	1	0	0	0	0	0	7
08:15	- 08:20	3	0	0	0	0	0	0	3	5	3	0	0	0	0	0	8	4	0	0	1	0	0	0	6.5
08:20	- 08:25	2	1	1	0	0	0	0	4.5	7	2	0	0	0	0	0	9	6	0	0	0	0	0	0	6
08:25	- 08:30	3	1	0	0	0	0	0	4	5	2	2	0	0	0	0	10	3	3	0	0	0	0	0	6
08:30	- 08:35	4	0	0	0	0	0	0	4	10+	2	1	0	0	0	0	####	2	5	0	2	0	0	0	12
08:35	- 08:40	3	1	0	0	0	0	0	4	8	0	0	0	0	0	0	8	3	1	0	0	0	0	0	4
08:40	- 08:45	6	0	0	0	0	0	0	6	8	1	0	1	0	0	0	11.5	6	1	0	0	0	0	0	7
08:45	- 08:50	5	0	0	0	0	0	0	5	2	1	0	2	0	0	0	8	5	1	0	0	0	0	0	6
08:50	- 08:55	4	0	0	0	0	0	0	4	6	1	1	0	0	0	0	8.5	8	0	0	0	0	0	0	8
08:55	- 09:00	4	0	0	0	0	0	0	4	6	2	0	2	0	0	0	13	3	0	0	0	0	1	0	3.5
09:00	- 09:05	3	0	0	0	0	0	0	3	6	2	1	0	0	0	0	9.5	9	1	0	0	0	0	0	10
09:05	- 09:10	1	1	0	0	0	0	0	2	7	0	2	0	0	0	0	10	4	1	0	0	0	0	0	5
09:10	- 09:15	2	0	0	0	0	0	0	2	6	0	1	0	0	0	0	7.5	4	1	0	0	0	0	0	5
09:15	- 09:20	1	0	1	0	0	0	0	2.5	8	1	0	0	0	0	0	9	4	0	0	0	0	0	0	4
09:20	- 09:25	4	0	0	0	0	0	0	4	6	2	0	0	0	0	0	8	4	2	0	0	0	0	0	6
09:25	- 09:30	1	1	0	0	0	0	0	2	3	3	1	0	0	0	0	7.5	3	0	0	0	0	0	0	3
PERIOD TOTAL		72	10	2	0	0	0	0	85	137	40	11	7	0	0	0	####	120	22	2	6	0	1	0	161
PERIOD AVG		3	0.42	0.08	0	0	0	0	3.54	6.52	1.67	0.46	0.29	0	0	0	####	5	0.92	0.08	0.25	0	0.04	0	6.69
16:30	- 16:35	2	0	0	0	0	0	0	2	6	2	0	0	0	0	0	8	1	2	1	0	0	0	0	4.5
16:35	- 16:40	3	0	0	0	0	0	0	3	7	2	0	0	0	1	0	9.5	3	2	1	0	0	0	0	6.5
16:40	- 16:45	3	0	0	0	0	0	0	3	8	0	1	0	0	0	0	9.5	3	2	2	0	0	0	0	8
16:45	- 16:50	2	0	0	0	0	0	0	2	5	0	1	1	0	0	0	9	4	1	0	0	0	0	0	5
16:50	- 16:55	2	1	0	0	0	0	0	3	9	2	0	0	0	0	0	11	6	2	0	0	0	0	0	8
16:55	- 17:00	2	0	0	0	0	0	0	2	6	2	0	0	0	0	0	8	3	0	0	2	0	0	0	8
17:00	- 17:05	2	0	0	0	0	0	0	2	5	1	1	0	0	0	0	7.5	1	2	0	0	0	0	0	3
17:05	- 17:10	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	7	4	1	1	0	0	0	0	6.5
17:10	- 17:15	1	1	0	0	0	0	0	2	7	0	0	0	0	0	0	7	3	1	0	0	0	0	0	4
17:15	- 17:20	1	0	0	0	0	0	0	1	8	1	0	0	0	0	0	9	4	2	0	0	0	0	0	6
17:20	- 17:25	3	0	0	0	0	0	0	3	8	2	0	0	0	0	0	10	4	0	0	1	0	0	0	6.5
17:25	- 17:30	1	0	0	0	0	0	0	1	9	1	0	0	0	0	0	10	6	1	0	0	0	0	0	7
17:30	- 17:35	3	0	0	0	0	0	0	3	10	1	1	0	0	0	0	12.5	5	0	0	0	0	0	0	5
17:35	- 17:40	4	0	0	0	0	0	0	4	8	0	0	1	0	0	0	10.5	6	0	0	0	0	0	0	6
17:40	- 17:45	2	0	0	0	0	0	0	2	9	1	1	0	0	0	0	11.5	4	0	0	0	0	0	0	4
17:45	- 17:50	4	0	0	0	0	0	0	4	5	3	0	0	0	0	0	8	7	0	0	0	0	0	0	7
17:50	- 17:55	1	0	0	0	0	0	0	1	5	0	1	0	0	0	0	6.5	4	0	0	0	0	0	0	4
17:55	- 18:00	1	0	0	0	0	0	0	1	8	1	0	0	0	0	0	9	7	0	0	0	0	0	0	7
18:00	- 18:05	4	0	0	0	0	0	0	4	8	0	0	1	0	0	0	10.5	5+	1	0	1	0	0	0	####
18:05	- 18:10	2	0	0	0	0	0	0	2	6	0	0	0	0	0	0	6	2	1	0	0	0	0	0	3
18:10	- 18:15	3	0	0	0	0	0	0	3	8	0	1	0	0	0	0	9.5	4	1	0	0	0	0	0	5
18:15	- 18:20	1	0	0	0	0	0	0	1	7	1	0	0	0	0	0	8	4	1	0	0	0	0	0	5
18:20	- 18:25	1	0	0	0	0	0	0	1	3	0	1	0	0	0	0	4.5	2	0	0	0	0	0	0	2
18:25	- 18:30	3	0	0	0	0	0	0	3	4	1	0	1	0	0	0	7.5	2	0	0	1	0	0	0	4.5
PERIOD TOTAL		53	2	0	0	0	0	0	55	166	21	8	4	0	1	0	210	89	20	5	5	0	0	0	####
PERIOD AVG		2.21	0.08	0	0	0	0	0	2.29	6.92	0.88	0.33	0.17	0	0.04	0	8.73	3.87	0.83	0.21	0.21	0	0	0	####
DAILY TOTAL		125	12	2	0	0	0	0	140	303	61	19	11	0	1	0	####	209	42	7	11	0	1	0	####
DAILY AVG		2.6	0.25	0.04	0	0	0	0	2.92	6.72	1.27	0.4	0.23	0	0.02	0	####	4.43	0.88	0.15	0.23	0	0.02	0	####

S|C|P

APPENDIX B

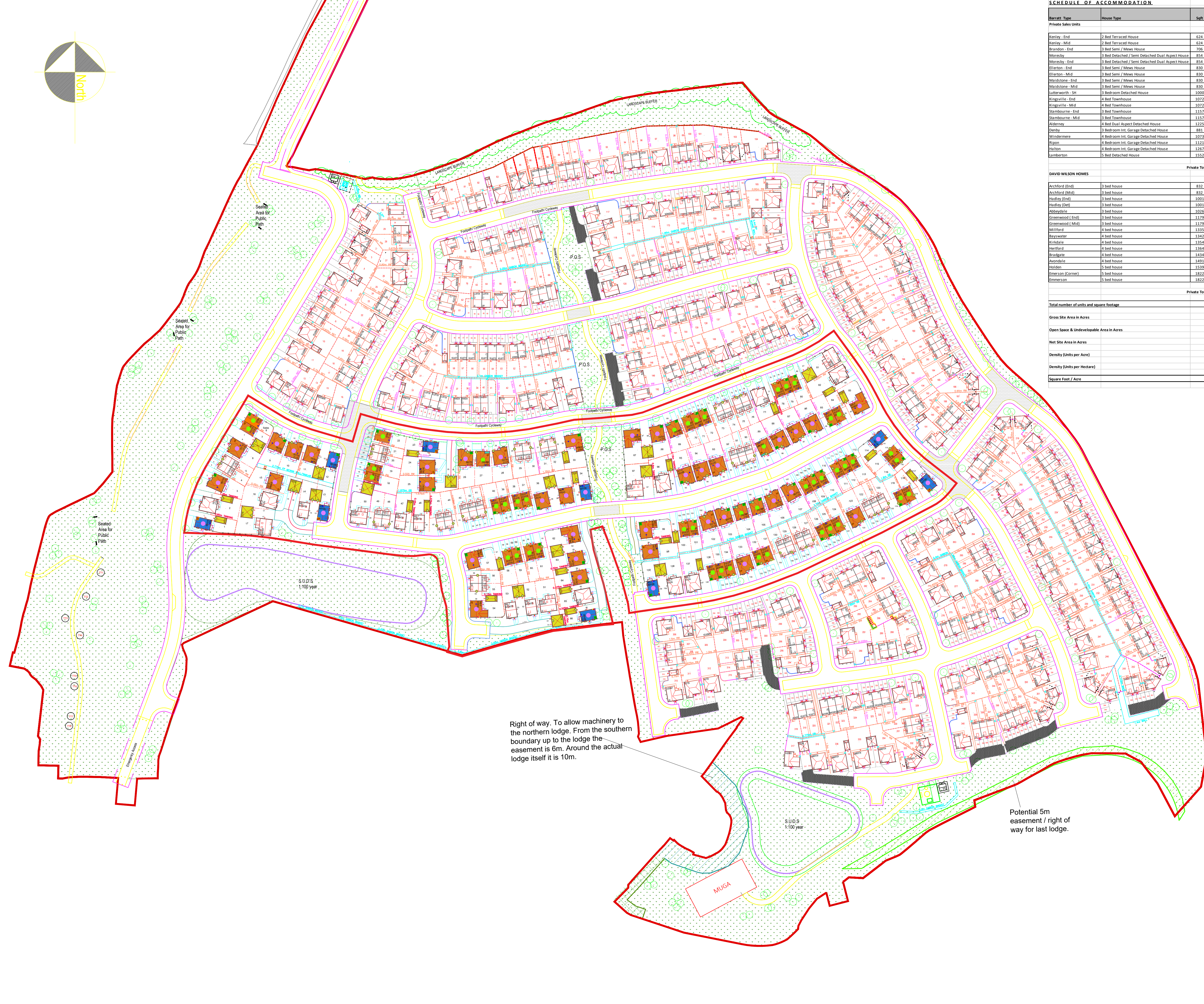


S C P Transportation Planning : Infrastructure Design www.scptransport.co.uk	Project Title COWM TOP LANE, ROCHDALE	Drawing Title ROAD SAFETY PLAN	Scale NTS	By CT	Rev	Description	Date	By	Drawing No.
			Date 07.07.2022	Checked PT	-	-	-	-	
			Approved/Unapproved APPROVED	Status PLANNING	-	-	-	-	
					-	-	-	-	Revision



S|C|P

APPENDIX C

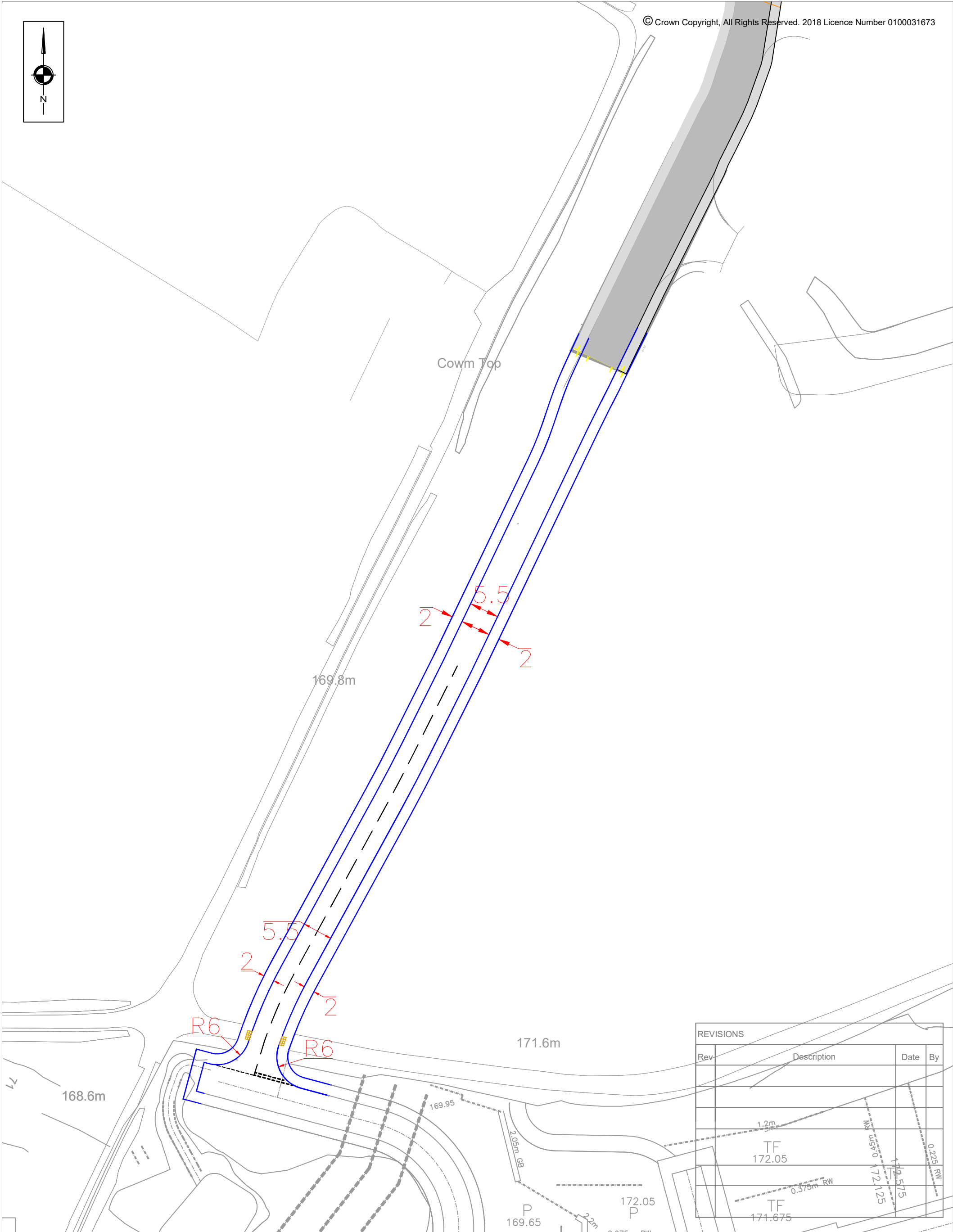


WARNING TO HOUSE PURCHASERS Property Misdescriptions Act 1991	
Buyers are warned that this is a working drawing and is not intended to be treated as descriptive material describing, in relation to any particular property or development, any of the specified matters prescribed by any Order made under the above act. The contents of this drawing may be subject to change at any time, and alterations and variations can occur during the progress of the works without revisions of the drawing. Consequently the layout, form, content and dimensions of the finished construction may differ materially from those shown. Nor do the contents of this drawing constitute a contract, part of any contract, or warranty.	
KEY:	
	Application Boundary Red Edge
	5m Access Way
	6m Access Way
	10m Access Way
	Landscape Buffer
	Proposed dwelling and house type code
	Proposed garage(s) to be built
	Denotes handing of plot (As or Opposite)
	Personnel gates
	Indicative Tree Planting
Refer to PG&L Landscaping Design for actual positions	

 BARRATT HOMES MANCHESTER			
Barratt Homes Manchester (A division of BDW Trading Ltd) 4 Brindley Road City Park Manchester M16 9HQ Tel: 0161 872 0161 Fax: 0161 855 2828			
Job TROWS FARM CASTLETON			
Title PLANNING LAYOUT FULL			
Design By	Date	Drawing Number	Rev
AA	APR 22	496 - P - PLF - 01	04
Drawn By	Scale @ A1		
NC	1:1000		

S|C|P

APPENDIX D



SCP Transportation Planning : Infrastructure Design Colwyn Chambers, 19 York Street, Manchester, M2 3BA, Tel 0161 832 4400, www.scptransport.co.uk, Email info@scptransport.co.uk	Client BARRATT HOMES	Drawing Title PROPOSED SITE ACCESS ARRANGEMENTS	Scale 1:1250 @ A3	By AM	Drawing No. SCP/15399/D06
	Project Title LAND SOUTH OF CRIPPLEGATE LANE, ROCHDALE		Date 11.08.2022	Checked PT	
			Approved/Unapproved -	Status PLANNING	Revision -

S|C|P

APPENDIX E

S|C|P

APPENDIX F



FAO Peter Todd
Colwyn Chambers
19 York Street
MANCHESTER
M2 3BA

Neighbourhoods

**Director
Mark Widdup**

Property, Highways and Facilities Management

Donna L Bowler
Head of Service

Floor 2, No.1 Riverside,
Smith Street, Rochdale, OL16 1XU

Telephone: 01706 924607
E-mail: john.gillighan@rochdale.gov.uk
Web Site: www.rochdale.gov.uk

Your Ref.
Our Ref. JG-CTL-001
Enquiries: John Gillighan
Extension: 4607
Date: 1st June 2017

To whom it may concern,

I write regarding the adoption of the Highway known as Cowm Top Lane in Rochdale. We have experienced some problems in adopting this road due to issues relating to the gradient of the road and issues with surface water drainage.

Following site meetings and various communications I am satisfied that the proposals made by SCP Transport Planning would successfully mitigate against both the on-site gradient and issues regarding drainage.

I am now in a position to confirm that should the works outlined in plan SCP-15399-0000-001 be undertaken Rochdale Borough Council would be willing to adopt the Highway.

Please note that this is subject to any works the Street Lighting Partnership requires being undertaken also.

Yours sincerely,

J. W. N. G.

John Gillighan
Senior Engineer

S|C|P

APPENDIX G



SCALE 1:250 @ A3
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NOTES

7.7

4.2

7.700m

2.430m

3.512m

0.397m

2.380m

5.00s

7.400m

Dennis Sabre Fire Tender (LWB)
Overall Length
Overall Width
Overall Body Height
Min Body Ground Clearance
Track Width
Lock to lock time
Kerb to Kerb Turning Radius

REVISIONS

REV	DESCRIPTION	DATE	BY
-	-	-	-

S|C|P

Transportation Planning : Infrastructure Design

Colwyn Chambers, 19 York Street, Manchester, M2 3BA, Tel 0161 832 4400, www.scptransport.co.uk, Email info@scptransport.co.uk

Client Name:

BARRATT HOMES

Project Title:

PROPOSED RESIDENTIAL DEVELOPMENT, CRIPPLE GATE LANE, ROCHDALE

Drawing Title:

EMERGENCY ACCESS ARRANGEMENTS/ TROWS LANE

Drawn By:

AM

Date:

11.08.2022

Checked:

PT

Scale:

1:500 @ A3

Status:

PLANNING

Approved/Unapproved:

-

Drawing No.

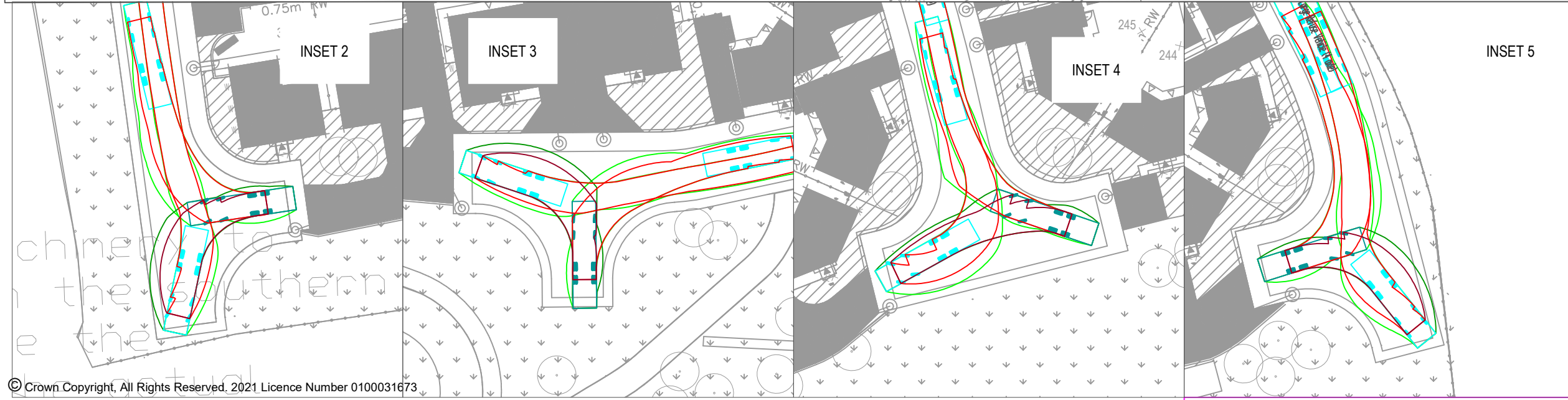
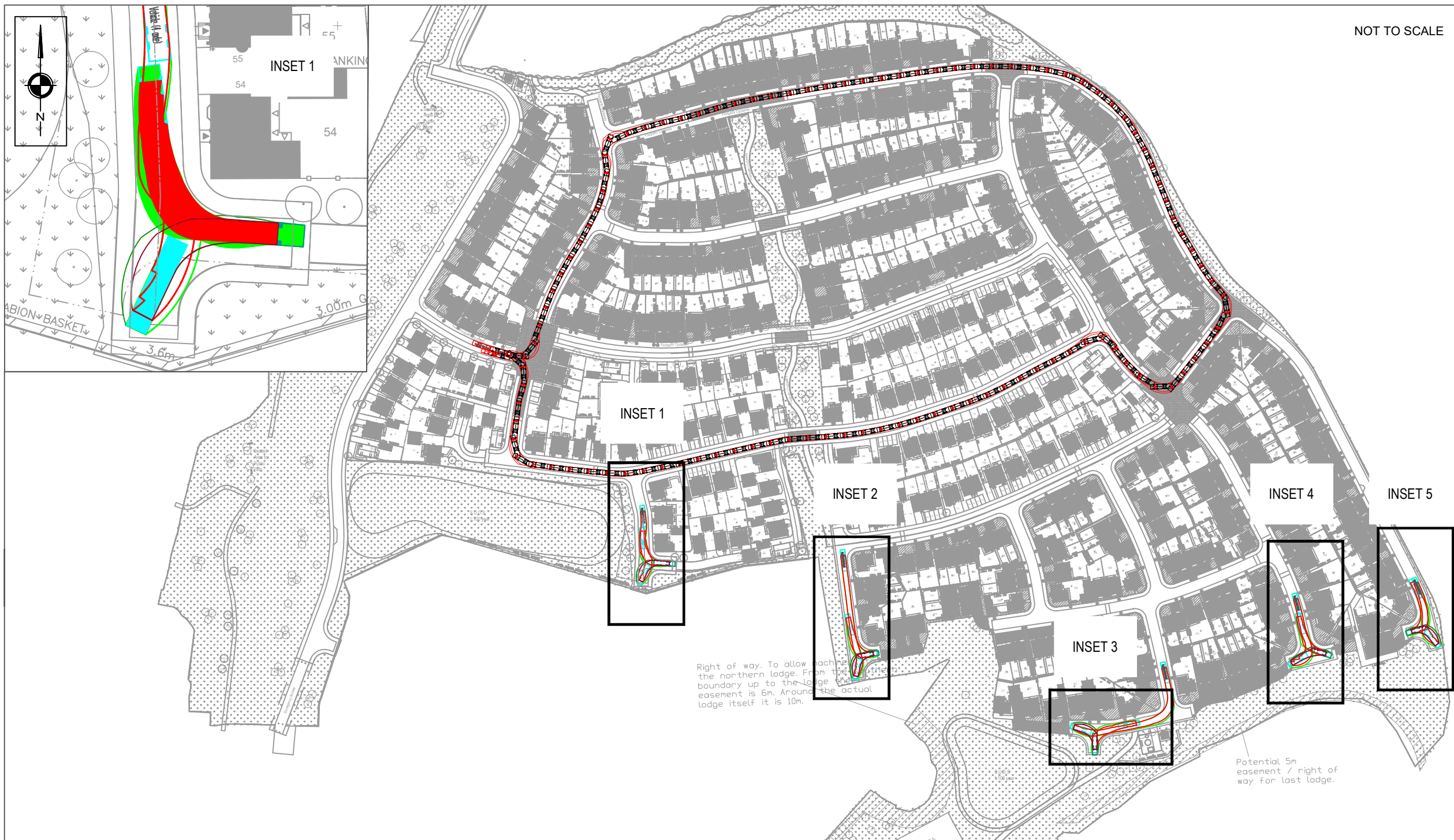
SCP/15399/ATR02

Rev.

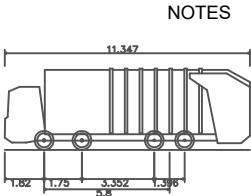
-

S|C|P

APPENDIX H



NOT TO SCALE



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

REVISIONS

REV	DESCRIPTION	DATE	BY
-	-	-	-

S|C|P

Transportation Planning : Infrastructure Design

Colwyn Chambers, 19 York Street, Manchester, M2 3BA, Tel 0161 832 4400, www.scptransport.co.uk, Email info@scptransport.co.uk

Client Name:
BARRATT HOMES

Project Title:
PROPOSED RESIDENTIAL DEVELOPMENT, CRIPPLE GATE LANE, ROCHDALE

Drawing Title:
SWEPT PATH ANALYSIS

Drawn By: **AM** Date: **11.08.2022**

Checked: **PT** Scale: **1:500 @ A3**

Status: **PLANNING** Approved/Unapproved: **-**

Drawing No. **SCP/15399/ATR01** Rev. **-**

S|C|P

APPENDIX I

Calculation Reference: AUDIT-726001-210107-0152

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : A - HOUSES PRIVATELY OWNED

MULTI-MODAL TOTAL VEHICLESSelected regions and areas:

02 SOUTH EAST	
ES EAST SUSSEX	1 days
KC KENT	2 days
WS WEST SUSSEX	1 days
04 EAST ANGLIA	
NF NORFOLK	2 days
05 EAST MIDLANDS	
DS DERBYSHIRE	1 days
07 YORKSHIRE & NORTH LINCOLNSHIRE	
NE NORTH EAST LINCOLNSHIRE	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: 275 to 984 (units:)
 Range Selected by User: 275 to 1100 (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: 01/01/01 to 24/09/19

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	2 days
Tuesday	3 days
Wednesday	2 days
Thursday	1 days

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

Selected survey types:

Manual count	8 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 undertaken using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	7

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	7
No Sub Category	1

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

8 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:

1,001 to 5,000 1 days

5,001 to 10,000 2 days

10,001 to 15,000 4 days

20,001 to 25,000 1 days

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

Population within 5 miles:

25,001 to 50,000 1 days

50,001 to 75,000 3 days

75,001 to 100,000 2 days

125,001 to 250,000 2 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 4 days

1.1 to 1.5 4 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:

Not Known 1 days

Yes 3 days

No 4 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 8 days

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

LIST OF SITES relevant to selection parameters

1	DS-03-A-02	MIXED HOUSES	DERBYSHIRE
	RADBOURNE LANE DERBY		
	Edge of Town Residential Zone		
	Total No of Dwellings:	371	
	Survey date: TUESDAY	10/07/18	Survey Type: MANUAL
2	ES-03-A-01	MIXED HOUSES/FLATS	EAST SUSSEX
	OLD MALLING WAY LEWES		
	SOUTH MALLING Edge of Town		
	Residential Zone		
	Total No of Dwellings:	491	
	Survey date: THURSDAY	29/03/01	Survey Type: MANUAL
3	KC-03-A-06	MIXED HOUSES & FLATS	KENT
	MARGATE ROAD HERNE BAY		
	Suburban Area (PPS6 Out of Centre) Residential Zone		
	Total No of Dwellings:	363	
	Survey date: WEDNESDAY	27/09/17	Survey Type: MANUAL
4	KC-03-A-07	MIXED HOUSES	KENT
	RECVLVER ROAD HERNE BAY		
	Edge of Town Residential Zone		
	Total No of Dwellings:	288	
	Survey date: WEDNESDAY	27/09/17	Survey Type: MANUAL
5	NE-03-A-02	SEMI DETACHED & DETACHED	NORTH EAST LINCOLNSHIRE
	HANOVER WALK SCUNTHORPE		
	Edge of Town No Sub Category		
	Total No of Dwellings:	432	
	Survey date: MONDAY	12/05/14	Survey Type: MANUAL
6	NF-03-A-06	MIXED HOUSES	NORFOLK
	BEAUFORT WAY GREAT YARMOUTH		
	BRADWELL Edge of Town		
	Residential Zone		
	Total No of Dwellings:	275	
	Survey date: MONDAY	23/09/19	Survey Type: MANUAL
7	NF-03-A-09	MIXED HOUSES & FLATS	NORFOLK
	ROUND HOUSE WAY NORWICH		
	CRINGLEFORD Edge of Town		
	Residential Zone		
	Total No of Dwellings:	984	
	Survey date: TUESDAY	24/09/19	Survey Type: MANUAL
8	WS-03-A-11	MIXED HOUSES	WEST SUSSEX
	ELLIS ROAD WEST HORSHAM		
	S BROADBRIDGE HEATH Edge of Town		
	Residential Zone		
	Total No of Dwellings:	918	
	Survey date: TUESDAY	02/04/19	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**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	8	515	0.061	8	515	0.295	8	515	0.356
08:00 - 09:00	8	515	0.139	8	515	0.381	8	515	0.520
09:00 - 10:00	8	515	0.139	8	515	0.163	8	515	0.302
10:00 - 11:00	8	515	0.101	8	515	0.128	8	515	0.229
11:00 - 12:00	8	515	0.114	8	515	0.115	8	515	0.229
12:00 - 13:00	8	515	0.142	8	515	0.133	8	515	0.275
13:00 - 14:00	8	515	0.133	8	515	0.122	8	515	0.255
14:00 - 15:00	8	515	0.148	8	515	0.152	8	515	0.300
15:00 - 16:00	8	515	0.226	8	515	0.165	8	515	0.391
16:00 - 17:00	8	515	0.262	8	515	0.156	8	515	0.418
17:00 - 18:00	8	515	0.349	8	515	0.163	8	515	0.512
18:00 - 19:00	8	515	0.314	8	515	0.172	8	515	0.486
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.128			2.145			4.273

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.

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Parameter summary

Trip rate parameter range selected:	275 - 984 (units:)
Survey date range:	01/01/01 - 24/09/19
Number of weekdays (Monday-Friday):	8
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 shown. 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 CYCLISTS**Calculation factor: 1 DWELLS****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	8	515	0.003	8	515	0.005	8	515	0.008
08:00 - 09:00	8	515	0.005	8	515	0.011	8	515	0.016
09:00 - 10:00	8	515	0.001	8	515	0.002	8	515	0.003
10:00 - 11:00	8	515	0.000	8	515	0.002	8	515	0.002
11:00 - 12:00	8	515	0.001	8	515	0.002	8	515	0.003
12:00 - 13:00	8	515	0.001	8	515	0.001	8	515	0.002
13:00 - 14:00	8	515	0.002	8	515	0.001	8	515	0.003
14:00 - 15:00	8	515	0.002	8	515	0.001	8	515	0.003
15:00 - 16:00	8	515	0.004	8	515	0.002	8	515	0.006
16:00 - 17:00	8	515	0.008	8	515	0.005	8	515	0.013
17:00 - 18:00	8	515	0.008	8	515	0.005	8	515	0.013
18:00 - 19:00	8	515	0.006	8	515	0.005	8	515	0.011
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.041			0.042			0.083

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.

Singleton Clamp & Partners Mount Street Manchester

Licence No: 726001

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL PEDESTRIANS**Calculation factor: 1 DWELLS****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	8	515	0.010	8	515	0.041	8	515	0.051
08:00 - 09:00	8	515	0.024	8	515	0.115	8	515	0.139
09:00 - 10:00	8	515	0.021	8	515	0.026	8	515	0.047
10:00 - 11:00	8	515	0.016	8	515	0.019	8	515	0.035
11:00 - 12:00	8	515	0.015	8	515	0.013	8	515	0.028
12:00 - 13:00	8	515	0.020	8	515	0.011	8	515	0.031
13:00 - 14:00	8	515	0.016	8	515	0.018	8	515	0.034
14:00 - 15:00	8	515	0.023	8	515	0.021	8	515	0.044
15:00 - 16:00	8	515	0.078	8	515	0.025	8	515	0.103
16:00 - 17:00	8	515	0.044	8	515	0.015	8	515	0.059
17:00 - 18:00	8	515	0.040	8	515	0.024	8	515	0.064
18:00 - 19:00	8	515	0.036	8	515	0.032	8	515	0.068
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.343			0.360			0.703

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.

Singleton Clamp & Partners Mount Street Manchester

Licence No: 726001

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL PUBLIC TRANSPORT USERS**Calculation factor: 1 DWELLS****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	8	515	0.001	8	515	0.024	8	515	0.025
08:00 - 09:00	8	515	0.003	8	515	0.038	8	515	0.041
09:00 - 10:00	8	515	0.007	8	515	0.012	8	515	0.019
10:00 - 11:00	8	515	0.006	8	515	0.007	8	515	0.013
11:00 - 12:00	8	515	0.005	8	515	0.010	8	515	0.015
12:00 - 13:00	8	515	0.007	8	515	0.004	8	515	0.011
13:00 - 14:00	8	515	0.007	8	515	0.005	8	515	0.012
14:00 - 15:00	8	515	0.010	8	515	0.005	8	515	0.015
15:00 - 16:00	8	515	0.032	8	515	0.007	8	515	0.039
16:00 - 17:00	8	515	0.025	8	515	0.004	8	515	0.029
17:00 - 18:00	8	515	0.020	8	515	0.004	8	515	0.024
18:00 - 19:00	8	515	0.017	8	515	0.007	8	515	0.024
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.140			0.127			0.267

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.

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APPENDIX J

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

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population	All usual residents aged 16 and over in employment the week before the census
units	Persons
date	2011
method of travel to work	Driving a car or van

place of work : 2011 super output area - middle layer	usual residence			A	B	C	D	E	F	G
	E02001148 : Rochdale 017	%	Route	A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) / M62 (West)	A664 Queensway (East) / A664 Rochdale Bypass (North)	A664 Queensway (West) / A664 Manchester Road (South)	A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) Straight across M62 Junction 20	A664 Queensway (East) / A664 Rochdale Bypass (North) / A627(M) / M62 (East)	A664 Queensway (East) / A664 Rochdale Bypass (East)	A664 Queensway (West) / A664 Manchester Road (North)
E02002580 : Halton 007	6	0.3% A		12.5%	23.0%	16.9%	11.7%	2.9%	23.2%	9.8%
E02002593 : Warrington 004	9	0.4% A								
E02001019 : Bury 001	7	0.3% A								
E02001022 : Bury 004	4	0.2% A								
E02001025 : Bury 007	30	1.4% A								
E02001026 : Bury 008	11	0.5% A								
E02001026 : Bury 008	11	0.5% B								
E02001027 : Bury 009	6	0.3% A								
E02001029 : Bury 011	21	1.0% A								
E02001031 : Bury 013	31	1.4% A								
E02001033 : Bury 015	4	0.2% A								
E02001034 : Bury 016	5	0.2% A								
E02001038 : Bury 020	4	0.2% A								
E02001046 : Manchester 002	15	0.7% C								
E02001050 : Manchester 006	25	1.1% C								
E02001052 : Manchester 008	10	0.5% C								
E02001053 : Manchester 009	10	0.5% C								
E02001056 : Manchester 012	2	0.1% C								
E02001056 : Manchester 012	2	0.1% D								
E02001059 : Manchester 015	5	0.2% C								
E02001059 : Manchester 015	5	0.2% D								
E02001061 : Manchester 017	2	0.1% C								
E02001061 : Manchester 017	2	0.1% A								
E02001062 : Manchester 018	9	0.4% D								
E02001063 : Manchester 019	7	0.3% D								
E02001066 : Manchester 022	9	0.4% D								
E02001097 : Manchester 053	6	0.3% D								
E02006902 : Manchester 054	35	1.6% C								
E02006902 : Manchester 054	0	0.0% A								
E02006912 : Manchester 055	9	0.4% C								
E02006912 : Manchester 055	9	0.4% D								
E02006914 : Manchester 057	6	0.3% D								
E02006915 : Manchester 058	5	0.2% C								
E02006917 : Manchester 060	10	0.4% C								
E02006917 : Manchester 060	10	0.4% A								
E02001098 : Oldham 001	4	0.2% F								
E02001099 : Oldham 002	13	0.6% F								
E02001100 : Oldham 003	9	0.4% F								
E02001105 : Oldham 008	8	0.4% D								
E02001106 : Oldham 009	22	1.0% D								
E02001107 : Oldham 010	4	0.2% D								
E02001108 : Oldham 011	9	0.4% D								
E02001110 : Oldham 013	4	0.2% E								
E02001111 : Oldham 014	31	1.4% D								
E02001112 : Oldham 015	12	0.5% C								
E02001113 : Oldham 016	27	1.2% D								
E02001114 : Oldham 017	22	1.0% D								
E02001116 : Oldham 019	4	0.2% D								
E02001119 : Oldham 022	9	0.4% D								
E02001121 : Oldham 024	22	1.0% D								
E02001124 : Oldham 027	9	0.4% D								
E02001125 : Oldham 028	22	1.0% C								
E02001126 : Oldham 029	4	0.2% D								
E02001127 : Oldham 030	4	0.2% D								
E02001128 : Oldham 031	4	0.2% D								
E02001129 : Oldham 032	9	0.4% D								

E02001132 : Rochdale 001	26	1.2% E
E02001133 : Rochdale 002	8	0.4% F
E02001134 : Rochdale 003	5	0.2% E
E02001134 : Rochdale 003	5	0.2% F
E02001135 : Rochdale 004	23	1.1% F
E02001136 : Rochdale 005	23	1.0% B
E02001136 : Rochdale 005	23	1.0% F
E02001137 : Rochdale 006	9	0.4% B
E02001138 : Rochdale 007	17	0.8% B
E02001139 : Rochdale 008	65	3.0% F
E02001140 : Rochdale 009	55	2.5% B
E02001141 : Rochdale 010	156	7.1% B
E02001141 : Rochdale 010	156	7.1% F
E02001142 : Rochdale 011	12	0.5% B
E02001143 : Rochdale 012	51	2.3% F
E02001144 : Rochdale 013	12	0.5% F
E02001144 : Rochdale 013	12	0.5% E
E02001145 : Rochdale 014	7	0.3% E
E02001146 : Rochdale 015	95	4.3% F
E02001147 : Rochdale 016	44	2.0% F
E02001148 : Rochdale 017	215	9.8% G
E02001149 : Rochdale 018	73	3.3% B
E02001150 : Rochdale 019	33	1.5% B
E02001151 : Rochdale 020	93	4.3% B
E02001152 : Rochdale 021	100	4.6% C
E02001153 : Rochdale 022	16	0.7% C
E02001153 : Rochdale 022	0	0.0% A
E02001154 : Rochdale 023	11	0.5% C
E02001155 : Rochdale 024	71	3.2% C
E02001156 : Rochdale 025	4	0.2% C
E02001164 : Salford 008	5	0.2% A
E02001168 : Salford 012	4	0.2% A
E02001176 : Salford 020	4	0.2% A
E02001177 : Salford 021	7	0.3% A
E02001178 : Salford 022	5	0.2% C
E02001178 : Salford 022	5	0.2% A
E02001184 : Salford 028	20	0.9% A
E02001186 : Salford 030	6	0.3% A
E02001200 : Stockport 014	7	0.3% A
E02001241 : Tameside 013	8	0.4% D
E02001245 : Tameside 017	7	0.3% D
E02001259 : Trafford 001	12	0.5% A
E02001260 : Trafford 002	11	0.5% A
E02001261 : Trafford 003	4	0.2% A
E02001262 : Trafford 004	4	0.2% A
E02001264 : Trafford 006	16	0.7% A
E02001270 : Trafford 012	5	0.2% A
E02001273 : Trafford 015	4	0.2% A
E02005279 : Rossendale 002	4	0.2% A
E02005280 : Rossendale 003	5	0.2% B
E02005281 : Rossendale 004	6	0.3% A
E02005285 : Rossendale 008	5	0.2% B
E02005286 : Rossendale 009	8	0.4% B
E02006884 : Rossendale 010	4	0.2% B
E02002299 : Kirklees 029	5	0.2% E
E02006875 : Leeds 111	4	0.2% E

2,185

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

S|C|P

APPENDIX K

Junctions 9									
PICADY 9 - Priority Intersection Module									
Version: 9.5.1.7462									
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For sales and distribution information, program advice and maintenance, contact TRL:									
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk									
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution									

Filename: Cowm Top Lane_A664 Queensway_490 Dwellings_July_2022.j9

Path: M:\Job Library\2015\15399 - Cripple Gate Lane, Rochdale\Traffic Data\Full Application\PICADY

Report generation date: 08/07/2022 15:40:50

- »Base 2018, AM
- »Base 2018, PM
- »Base 2027, AM
- »Base 2027, PM
- »2027 Assessment, AM
- »2027 Assessment, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base 2018									
Stream B-C	D3	0.1	8.16	0.09	A	D4	0.1	8.80	0.05	A
Stream B-A		0.2	16.58	0.16	C		0.2	14.77	0.20	B
Stream C-AB		0.0	8.05	0.04	A		0.0	7.58	0.02	A
	Base 2027									
Stream B-C	D5	0.1	8.66	0.10	A	D6	0.1	9.22	0.06	A
Stream B-A		0.2	19.59	0.19	C		0.3	16.91	0.24	C
Stream C-AB		0.0	8.41	0.04	A		0.0	7.86	0.02	A
	2027 Assessment									
Stream B-C	D7	0.5	25.41	0.35	D	D8	0.1	11.17	0.12	B
Stream B-A		3.1	70.34	0.80	F		1.0	29.65	0.50	D
Stream C-AB		0.1	8.98	0.09	A		0.2	9.24	0.13	A

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

File summary

File Description

Title	
Location	
Site number	
Date	18/09/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SCP\Jeanne Watrin
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	perTimeSegment	s	-Min	perMin

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	Base 2018	AM	DIRECT	08:00	09:30	90	15
D4	Base 2018	PM	DIRECT	15:45	17:15	90	15
D5	Base 2027	AM	DIRECT	08:00	09:30	90	15
D6	Base 2027	PM	DIRECT	15:45	17:15	90	15
D7	2027 Assessment	AM	DIRECT	08:00	09:30	90	15
D8	2027 Assessment	PM	DIRECT	15:45	17:15	90	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Base 2018, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		0.53	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A664 Queensway (east)		Major
B	Cowm Top Lane		Minor
C	A664 Queensway (west)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A664 Queensway (west)	7.00		✓	2.60	100.0	✓	2.00

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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Cowm Top Lane	One lane plus flare	10.00	5.30	4.50	4.20	4.00	✓	2.00	32	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/TS)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	149.314	0.104	0.263	0.165	0.376
B-C	145.001	0.085	0.215	-	-
C-B	164.846	0.244	0.244	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

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 period length (min)	Time segment length (min)
D3	Base 2018	AM	DIRECT	08:00	09:30	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	8.00	144.00
		6.00	0.00	0.00
		151.00	3.00	0.00

Demand (PCU/TS)

08:15 - 08:30	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	15.00	152.00
		8.00	0.00	0.00
		190.00	4.00	0.00

Demand (PCU/TS)

08:30 - 08:45	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	17.00	161.00
		6.00	0.00	2.00
		194.00	5.00	0.00

Demand (PCU/TS)

08:45 - 09:00	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	17.00	181.00
		8.00	0.00	6.00
		181.00	5.00	0.00

Demand (PCU/TS)

09:00 - 09:15	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	8.00	143.00
		7.00	0.00	2.00
		196.00	5.00	0.00

Demand (PCU/TS)

09:15 - 09:30	From	To		
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
		0.00	9.00	152.00
		12.00	0.00	11.00
		152.00	2.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

From	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.09	8.16	0.1	A
B-A	0.16	16.58	0.2	C
C-AB	0.04	8.05	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	0.00	111.36	0.000	0.00	0.0	0.000	A
B-A	6.00	84.50	0.071	5.92	0.1	11.444	B
C-AB	3.00	127.79	0.023	2.98	0.0	7.211	A
C-A	151.00			151.00			
A-B	8.00			8.00			
A-C	144.00			144.00			

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	0.00	108.06	0.000	0.00	0.0	0.000	A
B-A	8.00	74.83	0.107	7.96	0.1	13.450	B
C-AB	4.01	124.23	0.032	4.00	0.0	7.484	A
C-A	189.99			189.99			
A-B	15.00			15.00			
A-C	152.00			152.00			

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	2.00	115.09	0.017	1.98	0.0	7.956	A
B-A	6.00	68.67	0.087	6.02	0.1	14.369	B
C-AB	5.01	121.68	0.041	5.00	0.0	7.714	A
C-A	193.99			193.99			
A-B	17.00			17.00			
A-C	161.00			161.00			

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	6.00	116.17	0.052	5.96	0.1	8.164	A
B-A	8.00	62.20	0.129	7.95	0.1	16.576	C
C-AB	5.01	116.79	0.043	5.01	0.0	8.051	A
C-A	180.99			180.99			
A-B	17.00			17.00			
A-C	181.00			181.00			

09:00 - 09:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	2.00	118.81	0.017	2.04	0.0	7.709	A
B-A	7.00	74.32	0.094	7.04	0.1	13.384	B
C-AB	5.01	128.25	0.039	5.02	0.0	7.305	A
C-A	195.99			195.99			
A-B	8.00			8.00			
A-C	143.00			143.00			

09:15 - 09:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	11.00	124.75	0.088	10.92	0.1	7.900	A
B-A	12.00	74.16	0.162	11.92	0.2	14.441	B
C-AB	2.00	125.54	0.016	2.03	0.0	7.287	A
C-A	152.00			152.00			
A-B	9.00			9.00			
A-C	152.00			152.00			

Base 2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		0.72	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	Base 2018	PM	DIRECT	15:45	17:15	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Am	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

15:45 - 16:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	3.00	150.00
	B - Cowm Top Lane	12.00	0.00	1.00
	C - A664 Queensway (west)	96.00	0.00	0.00

Demand (PCU/TS)

16:00 - 16:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	3.00	178.00
	B - Cowm Top Lane	10.00	0.00	3.00
	C - A664 Queensway (west)	171.00	2.00	0.00

Demand (PCU/TS)

16:15 - 16:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	13.00	156.00
	B - Cowm Top Lane	10.00	0.00	6.00
	C - A664 Queensway (west)	129.00	1.00	0.00

Demand (PCU/TS)

16:30 - 16:45

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From				
	A - A664 Queensway (east)	0.00	2.00	140.00
	B - Cowm Top Lane	16.00	0.00	3.00
	C - A664 Queensway (west)	170.00	3.00	0.00

Demand (PCU/TS)

16:45 - 17:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From				
	A - A664 Queensway (east)	0.00	5.00	172.00
	B - Cowm Top Lane	15.00	0.00	1.00
	C - A664 Queensway (west)	157.00	1.00	0.00

Demand (PCU/TS)

17:00 - 17:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From				
	A - A664 Queensway (east)	0.00	5.00	145.00
	B - Cowm Top Lane	16.00	0.00	5.00
	C - A664 Queensway (west)	165.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From				
	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.05	8.80	0.1	A
B-A	0.20	14.77	0.2	B
C-AB	0.02	7.58	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	1.00	110.80	0.009	0.99	0.0	8.196	A
B-A	12.00	94.82	0.127	11.86	0.1	10.829	B
C-AB	0.00	256.19	0.000	0.00	0.0	0.000	A
C-A	96.00			96.00			
A-B	3.00			3.00			
A-C	150.00			150.00			

16:00 - 16:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	3.00	110.23	0.027	2.98	0.0	8.391	A
B-A	10.00	70.90	0.141	9.98	0.2	14.769	B
C-AB	2.00	120.66	0.017	1.98	0.0	7.583	A
C-A	171.00			171.00			
A-B	3.00			3.00			
A-C	178.00			178.00			

16:15 - 16:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	6.00	120.42	0.050	5.98	0.1	7.862	A
B-A	10.00	79.12	0.126	10.01	0.1	13.027	B
C-AB	1.00	123.56	0.008	1.01	0.0	7.346	A
C-A	129.00			129.00			
A-B	13.00			13.00			
A-C	156.00			156.00			

16:30 - 16:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	3.00	114.17	0.026	3.02	0.0	8.098	A
B-A	16.00	82.12	0.195	15.91	0.2	13.573	B
C-AB	3.00	130.24	0.023	2.99	0.0	7.072	A
C-A	170.00			170.00			
A-B	2.00			2.00			
A-C	140.00			140.00			

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	1.00	103.35	0.010	1.02	0.0	8.795	A
B-A	15.00	76.77	0.195	15.00	0.2	14.569	B
C-AB	1.00	121.60	0.008	1.02	0.0	7.463	A
C-A	157.00			157.00			
A-B	5.00			5.00			
A-C	172.00			172.00			

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5.00	115.69	0.043	4.97	0.0	8.125	A
B-A	16.00	79.54	0.201	15.99	0.2	14.160	B
C-AB	3.00	128.28	0.023	2.99	0.0	7.183	A
C-A	165.00			165.00			
A-B	5.00			5.00			
A-C	145.00			145.00			

Base 2027, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		0.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	Base 2027	AM	DIRECT	08:00	09:30	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Am	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From			
	A - A664 Queensway (east)	0.00	9.00	158.00
	B - Cowm Top Lane	7.00	0.00	0.00
	C - A664 Queensway (west)	166.00	3.00	0.00

Demand (PCU/TS)

08:15 - 08:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From			
	A - A664 Queensway (east)	0.00	16.00	168.00
	B - Cowm Top Lane	9.00	0.00	0.00
	C - A664 Queensway (west)	209.00	4.00	0.00

Demand (PCU/TS)

08:30 - 08:45

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From			
	A - A664 Queensway (east)	0.00	19.00	177.00
	B - Cowm Top Lane	7.00	0.00	2.00
	C - A664 Queensway (west)	213.00	5.00	0.00

Demand (PCU/TS)

08:45 - 09:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	19.00	199.00
	B - Cowm Top Lane	9.00	0.00	7.00
	C - A664 Queensway (west)	199.00	5.00	0.00

Demand (PCU/TS)

09:00 - 09:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	9.00	157.00
	B - Cowm Top Lane	8.00	0.00	2.00
	C - A664 Queensway (west)	216.00	5.00	0.00

Demand (PCU/TS)

09:15 - 09:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	9.00	167.00
	B - Cowm Top Lane	13.00	0.00	12.00
	C - A664 Queensway (west)	167.00	2.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.10	8.66	0.1	A
B-A	0.19	19.59	0.2	C
C-AB	0.04	8.41	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	0.00	107.81	0.000	0.00	0.0	0.000	A
B-A	7.00	78.23	0.089	6.90	0.1	12.602	B
C-AB	3.00	124.13	0.024	2.98	0.0	7.426	A
C-A	166.00			166.00			
A-B	9.00			9.00			
A-C	158.00			158.00			

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	0.00	103.90	0.000	0.00	0.0	0.000	A
B-A	9.00	67.37	0.134	8.95	0.2	15.389	C
C-AB	4.01	120.11	0.033	4.00	0.0	7.751	A
C-A	208.99			208.99			
A-B	16.00			16.00			
A-C	168.00			168.00			

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	2.00	109.45	0.018	1.98	0.0	8.373	A
B-A	7.00	61.88	0.113	7.02	0.1	16.411	C
C-AB	5.02	117.34	0.043	5.01	0.0	8.012	A
C-A	212.98			212.98			
A-B	19.00			19.00			
A-C	177.00			177.00			

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	7.00	110.89	0.063	6.95	0.1	8.655	A
B-A	9.00	54.82	0.164	8.94	0.2	19.587	C
C-AB	5.02	111.97	0.045	5.02	0.0	8.414	A
C-A	198.98			198.98			
A-B	19.00			19.00			
A-C	199.00			199.00			

09:00 - 09:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	2.00	113.96	0.018	2.05	0.0	8.046	A
B-A	8.00	67.86	0.118	8.06	0.1	15.065	C
C-AB	5.01	124.63	0.040	5.02	0.0	7.526	A
C-A	215.99			215.99			
A-B	9.00			9.00			
A-C	157.00			157.00			

09:15 - 09:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12.00	120.23	0.100	11.91	0.1	8.302	A
B-A	13.00	68.35	0.190	12.91	0.2	16.206	C
C-AB	2.00	121.88	0.016	2.03	0.0	7.509	A
C-A	167.00			167.00			
A-B	9.00			9.00			
A-C	167.00			167.00			

Base 2027, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		0.81	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	Base 2027	PM	DIRECT	15:45	17:15	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Am	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

15:45 - 16:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	3.00	164.00
	B - Cowm Top Lane	13.00	0.00	1.00
	C - A664 Queensway (west)	106.00	0.00	0.00

Demand (PCU/TS)

16:00 - 16:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	3.00	195.00
	B - Cowm Top Lane	11.00	0.00	3.00
	C - A664 Queensway (west)	188.00	2.00	0.00

Demand (PCU/TS)

16:15 - 16:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	14.00	171.00
	B - Cowm Top Lane	11.00	0.00	7.00
	C - A664 Queensway (west)	142.00	1.00	0.00

Demand (PCU/TS)

16:30 - 16:45

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	2.00	153.00
	B - Cowm Top Lane	18.00	0.00	3.00
	C - A664 Queensway (west)	186.00	3.00	0.00

Demand (PCU/TS)

16:45 - 17:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	5.00	189.00
	B - Cowm Top Lane	16.00	0.00	1.00
	C - A664 Queensway (west)	172.00	1.00	0.00

Demand (PCU/TS)

17:00 - 17:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	5.00	158.00
	B - Cowm Top Lane	18.00	0.00	5.00
	C - A664 Queensway (west)	181.00	3.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.06	9.22	0.1	A
B-A	0.24	16.91	0.3	C
C-AB	0.02	7.86	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	1.00	107.08	0.009	0.99	0.0	8.483	A
B-A	13.00	89.56	0.145	12.83	0.2	11.708	B
C-AB	0.00	249.31	0.000	0.00	0.0	0.000	A
C-A	106.00			106.00			
A-B	3.00			3.00			
A-C	164.00			164.00			

16:00 - 16:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	3.00	104.94	0.029	2.98	0.0	8.827	A
B-A	11.00	64.15	0.171	10.96	0.2	16.911	C
C-AB	2.00	116.52	0.017	1.98	0.0	7.857	A
C-A	188.00			188.00			
A-B	3.00			3.00			
A-C	195.00			195.00			

16:15 - 16:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	7.00	116.54	0.060	6.97	0.1	8.211	A
B-A	11.00	73.07	0.151	11.02	0.2	14.513	B
C-AB	1.00	119.65	0.008	1.01	0.0	7.588	A
C-A	142.00			142.00			
A-B	14.00			14.00			
A-C	171.00			171.00			

16:30 - 16:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	3.00	109.44	0.027	3.03	0.0	8.460	A
B-A	18.00	76.44	0.235	17.88	0.3	15.336	C
C-AB	3.00	127.07	0.024	2.99	0.0	7.253	A
C-A	186.00			186.00			
A-B	2.00			2.00			
A-C	153.00			153.00			

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	1.00	98.66	0.010	1.02	0.0	9.220	A
B-A	16.00	69.90	0.229	16.00	0.3	16.701	C
C-AB	1.00	117.45	0.009	1.02	0.0	7.731	A
C-A	172.00			172.00			
A-B	5.00			5.00			
A-C	189.00			189.00			

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5.00	110.58	0.045	4.96	0.0	8.518	A
B-A	18.00	74.12	0.243	17.98	0.3	16.025	C
C-AB	3.00	125.12	0.024	2.99	0.0	7.369	A
C-A	181.00			181.00			
A-B	5.00			5.00			
A-C	158.00			158.00			

2027 Assessment, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		7.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D7	2027 Assessment	AM	DIRECT	08:00	09:30	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Am	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From	A - A664 Queensway (east)	0.00	21.00
		B - Cowm Top Lane	41.00	0.00
		C - A664 Queensway (west)	166.00	8.00
				0.00

Demand (PCU/TS)

08:15 - 08:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From	A - A664 Queensway (east)	0.00	29.00
		B - Cowm Top Lane	43.00	0.00
		C - A664 Queensway (west)	209.00	9.00
				0.00

Demand (PCU/TS)

08:30 - 08:45

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
	From	A - A664 Queensway (east)	0.00	31.00
		B - Cowm Top Lane	41.00	0.00
		C - A664 Queensway (west)	213.00	10.00
				0.00

Demand (PCU/TS)

08:45 - 09:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	31.00	199.00
	B - Cowm Top Lane	43.00	0.00	19.00
	C - A664 Queensway (west)	199.00	10.00	0.00

Demand (PCU/TS)

09:00 - 09:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	21.00	157.00
	B - Cowm Top Lane	42.00	0.00	15.00
	C - A664 Queensway (west)	216.00	10.00	0.00

Demand (PCU/TS)

09:15 - 09:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	22.00	167.00
	B - Cowm Top Lane	47.00	0.00	25.00
	C - A664 Queensway (west)	167.00	7.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.35	25.41	0.5	D
B-A	0.80	70.34	3.1	F
C-AB	0.09	8.98	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12.00	92.51	0.130	11.85	0.1	11.138	B
B-A	41.00	72.79	0.563	39.79	1.2	26.420	D
C-AB	8.05	121.83	0.066	7.98	0.1	7.900	A
C-A	165.95			165.95			
A-B	21.00			21.00			
A-C	158.00			158.00			

08:15 - 08:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12.00	73.94	0.162	11.96	0.2	14.510	B
B-A	43.00	62.32	0.690	42.24	2.0	43.114	E
C-AB	9.10	117.95	0.077	9.08	0.1	8.266	A
C-A	208.90			208.90			
A-B	29.00			29.00			
A-C	168.00			168.00			

08:30 - 08:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	15.00	70.06	0.214	14.92	0.3	16.297	C
B-A	41.00	57.94	0.708	40.78	2.2	51.135	F
C-AB	10.14	115.65	0.088	10.13	0.1	8.528	A
C-A	212.86			212.86			
A-B	31.00			31.00			
A-C	177.00			177.00			

08:45 - 09:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	19.00	53.91	0.352	18.74	0.5	25.407	D
B-A	43.00	53.76	0.800	42.07	3.1	70.341	F
C-AB	10.16	110.33	0.092	10.15	0.1	8.985	A
C-A	198.84			198.84			
A-B	31.00			31.00			
A-C	199.00			199.00			

09:00 - 09:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	15.00	77.95	0.192	15.28	0.2	14.420	B
B-A	42.00	63.61	0.660	42.97	2.2	45.450	E
C-AB	10.12	122.82	0.082	10.13	0.1	7.988	A
C-A	215.88			215.88			
A-B	21.00			21.00			
A-C	157.00			157.00			

09:15 - 09:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25.00	78.67	0.318	24.79	0.5	16.626	C
B-A	47.00	67.68	0.695	46.97	2.2	43.145	E
C-AB	7.03	119.25	0.059	7.06	0.1	8.026	A
C-A	166.97			166.97			
A-B	22.00			22.00			
A-C	167.00			167.00			

2027 Assessment, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cowm Top Lane - A664 Queensway	T-Junction	Two-way		2.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D8	2027 Assessment	PM	DIRECT	15:45	17:15	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A - A664 Queensway (east)		✓	100.000
B - Cowm Top Lane		✓	100.000
C - A664 Queensway (west)		✓	100.000

Origin-Destination Data

Demand (PCU/TS)

15:45 - 16:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	35.00	164.00
	B - Cowm Top Lane	28.00	0.00	6.00
	C - A664 Queensway (west)	106.00	11.00	0.00

Demand (PCU/TS)

16:00 - 16:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	35.00	195.00
	B - Cowm Top Lane	26.00	0.00	9.00
	C - A664 Queensway (west)	188.00	14.00	0.00

Demand (PCU/TS)

16:15 - 16:30

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	46.00	171.00
	B - Cowm Top Lane	26.00	0.00	12.00
	C - A664 Queensway (west)	142.00	13.00	0.00

Demand (PCU/TS)

16:30 - 16:45

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	34.00	153.00
	B - Cowm Top Lane	32.00	0.00	9.00
	C - A664 Queensway (west)	186.00	15.00	0.00

Demand (PCU/TS)

16:45 - 17:00

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	37.00	189.00
	B - Cowm Top Lane	31.00	0.00	6.00
	C - A664 Queensway (west)	172.00	13.00	0.00

Demand (PCU/TS)

17:00 - 17:15

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0.00	37.00	158.00
	B - Cowm Top Lane	32.00	0.00	11.00
	C - A664 Queensway (west)	181.00	15.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - A664 Queensway (east)	B - Cowm Top Lane	C - A664 Queensway (west)
From	A - A664 Queensway (east)	0	0	1
	B - Cowm Top Lane	0	0	0
	C - A664 Queensway (west)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.12	11.17	0.1	B
B-A	0.50	29.65	1.0	D
C-AB	0.13	9.24	0.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	6.00	101.35	0.059	5.94	0.1	9.427	A
B-A	28.00	79.58	0.352	27.47	0.5	17.109	C
C-AB	11.09	117.17	0.095	10.99	0.1	8.469	A
C-A	105.91			105.91			
A-B	35.00			35.00			
A-C	164.00			164.00			

16:00 - 16:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	9.00	91.56	0.098	8.95	0.1	10.890	B
B-A	26.00	55.76	0.466	25.70	0.8	29.652	D
C-AB	14.40	111.75	0.129	14.36	0.2	9.238	A
C-A	187.60			187.60			
A-B	35.00			35.00			
A-C	195.00			195.00			

16:15 - 16:30

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12.00	101.75	0.118	11.98	0.1	10.023	B
B-A	26.00	67.25	0.387	26.17	0.7	22.012	C
C-AB	13.22	113.74	0.116	13.24	0.1	8.960	A
C-A	141.78			141.78			
A-B	46.00			46.00			
A-C	171.00			171.00			

16:30 - 16:45

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	9.00	97.89	0.092	9.03	0.1	10.133	B
B-A	32.00	67.14	0.477	31.78	0.9	25.278	D
C-AB	15.37	122.09	0.126	15.36	0.1	8.434	A
C-A	185.63			185.63			
A-B	34.00			34.00			
A-C	153.00			153.00			

16:45 - 17:00

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	6.00	86.62	0.069	6.03	0.1	11.172	B
B-A	31.00	61.64	0.503	30.90	1.0	29.133	D
C-AB	13.29	112.04	0.119	13.29	0.1	9.117	A
C-A	171.71			171.71			
A-B	37.00			37.00			
A-C	189.00			189.00			

17:00 - 17:15

Stream	Total Demand (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	11.00	96.91	0.114	10.95	0.1	10.463	B
B-A	32.00	65.71	0.487	32.00	1.0	26.727	D
C-AB	15.38	120.16	0.128	15.37	0.1	8.591	A
C-A	180.62			180.62			
A-B	37.00			37.00			
A-C	158.00			158.00			

S|C|P

APPENDIX L

Junctions 9									
ARCADY 9 - Roundabout Module									
Version: 9.5.1.7462 © Copyright TRL Limited, 2019									
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Filename: A664 Edinburgh Way - A664 Queensway roundabout_490 Dwellings_July 2022.j9
Path: M:\Job Library\2015\15399 - Cripple Gate Lane, Rochdale\Traffic Data\Full Application\ARCADY
Report generation date: 11/07/2022 09:20:27

- »Base 2018, AM
- »Base 2018, PM
- »Base 2027, AM
- »Base 2027, PM
- »2027 Assessment, AM
- »2027 Assessment, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base 2018									
1 - A664 Queensway (east)	D1	1.3	4.68	0.56	A	D2	1.4	4.89	0.58	A
2 - A664 Queensway (west)		0.9	3.68	0.47	A		0.7	3.44	0.41	A
3 - A664 Edinburgh Way		1.2	3.93	0.55	A		1.0	3.51	0.50	A
	Base 2027									
1 - A664 Queensway (east)	D3	1.7	5.55	0.63	A	D4	1.8	5.81	0.65	A
2 - A664 Queensway (west)		1.1	4.21	0.52	A		0.9	3.85	0.46	A
3 - A664 Edinburgh Way		1.6	4.64	0.62	A		1.2	3.99	0.55	A
	2027 Assessment									
1 - A664 Queensway (east)	D5	1.8	5.91	0.65	A	D6	2.3	6.93	0.69	A
2 - A664 Queensway (west)		1.5	5.10	0.61	A		1.0	4.14	0.50	A
3 - A664 Edinburgh Way		1.8	5.09	0.64	A		1.5	4.53	0.60	A

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

File summary

File Description

Title	A664 Queensway / A664 Edinburgh Way
Location	
Site number	
Date	18/09/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SCP\Jeanne Watrin
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

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Base 2018	AM	ONE HOUR	08:00	09:30	15
D2	Base 2018	PM	ONE HOUR	15:45	17:15	15
D3	Base 2027	AM	ONE HOUR	08:00	09:30	15
D4	Base 2027	PM	ONE HOUR	15:45	17:15	15
D5	2027 Assessment	AM	ONE HOUR	08:00	09:30	15
D6	2027 Assessment	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Base 2018, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	4.11	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A664 Queensway (east)	
2	A664 Queensway (west)	
3	A664 Edinburgh Way	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - A664 Queensway (east)	6.10	6.80	6.9	20.0	60.0	33.0	
2 - A664 Queensway (west)	6.30	7.40	14.5	20.4	60.0	25.0	
3 - A664 Edinburgh Way	7.50	7.90	6.0	20.0	60.0	35.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A664 Queensway (east)	0.604	1988
2 - A664 Queensway (west)	0.651	2217
3 - A664 Edinburgh Way	0.662	2331

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Base 2018	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	911	100.000
2 - A664 Queensway (west)		✓	784	100.000
3 - A664 Edinburgh Way		✓	1039	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From				
	1 - A664 Queensway (east)	0	399	512
	2 - A664 Queensway (west)	360	0	424
	3 - A664 Edinburgh Way	726	313	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From				
	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.56	4.68	1.3	A
2 - A664 Queensway (west)	0.47	3.68	0.9	A
3 - A664 Edinburgh Way	0.55	3.93	1.2	A

Base 2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	4.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Base 2018	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	946	100.000
2 - A664 Queensway (west)		✓	665	100.000
3 - A664 Edinburgh Way		✓	938	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	347	599
	2 - A664 Queensway (west)	361	0	304
	3 - A664 Edinburgh Way	634	304	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.58	4.89	1.4	A
2 - A664 Queensway (west)	0.41	3.44	0.7	A
3 - A664 Edinburgh Way	0.50	3.51	1.0	A

Base 2027, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	4.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	Base 2027	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	1002	100.000
2 - A664 Queensway (west)		✓	862	100.000
3 - A664 Edinburgh Way		✓	1143	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	439	563
	2 - A664 Queensway (west)	396	0	466
	3 - A664 Edinburgh Way	799	344	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.63	5.55	1.7	A
2 - A664 Queensway (west)	0.52	4.21	1.1	A
3 - A664 Edinburgh Way	0.62	4.64	1.6	A

Base 2027, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	4.63	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	Base 2027	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	1036	100.000
2 - A664 Queensway (west)		✓	729	100.000
3 - A664 Edinburgh Way		✓	1028	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	380	656
	2 - A664 Queensway (west)	396	0	333
	3 - A664 Edinburgh Way	695	333	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.65	5.81	1.8	A
2 - A664 Queensway (west)	0.46	3.85	0.9	A
3 - A664 Edinburgh Way	0.55	3.99	1.2	A

2027 Assessment, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	5.35	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2027 Assessment	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	1018	100.000
2 - A664 Queensway (west)		✓	1000	100.000
3 - A664 Edinburgh Way		✓	1177	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From				
	1 - A664 Queensway (east)	0	455	563
	2 - A664 Queensway (west)	440	0	560
	3 - A664 Edinburgh Way	799	378	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
From				
	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.65	5.91	1.8	A
2 - A664 Queensway (west)	0.61	5.10	1.5	A
3 - A664 Edinburgh Way	0.64	5.09	1.8	A

2027 Assessment, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A664 Queensway / A664 Edinburgh Way	Standard Roundabout		1, 2, 3	5.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2027 Assessment	PM	ONE HOUR	15:45	17:15	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A664 Queensway (east)		✓	1076	100.000
2 - A664 Queensway (west)		✓	788	100.000
3 - A664 Edinburgh Way		✓	1114	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
From		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
	1 - A664 Queensway (east)	0	420	656
	2 - A664 Queensway (west)	415	0	373
	3 - A664 Edinburgh Way	695	419	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
From		1 - A664 Queensway (east)	2 - A664 Queensway (west)	3 - A664 Edinburgh Way
	1 - A664 Queensway (east)	0	1	1
	2 - A664 Queensway (west)	1	0	1
	3 - A664 Edinburgh Way	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A664 Queensway (east)	0.69	6.93	2.3	A
2 - A664 Queensway (west)	0.50	4.14	1.0	A
3 - A664 Edinburgh Way	0.60	4.53	1.5	A

S|C|P

APPENDIX M

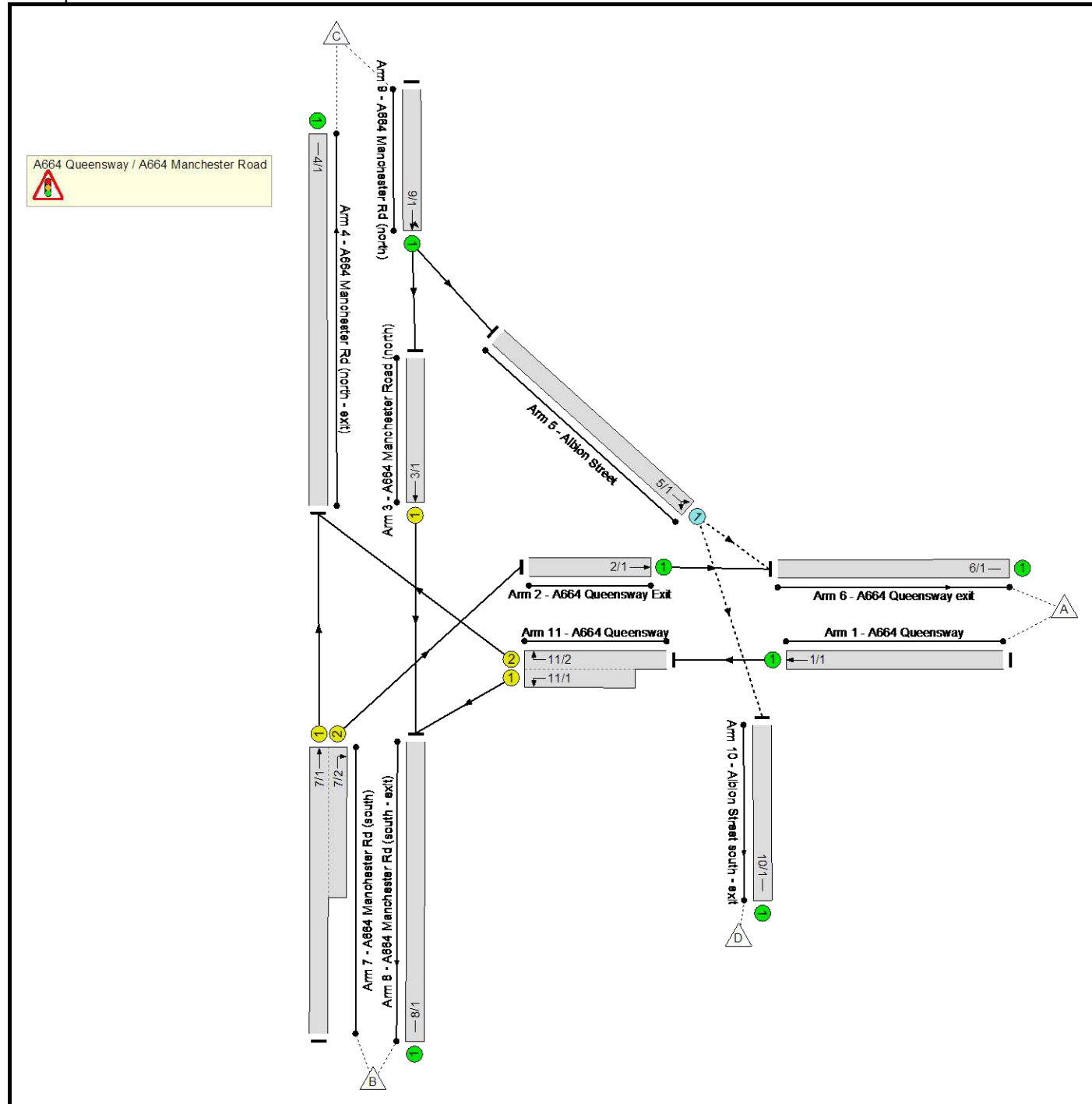
Full Input Data And Results

User and Project Details

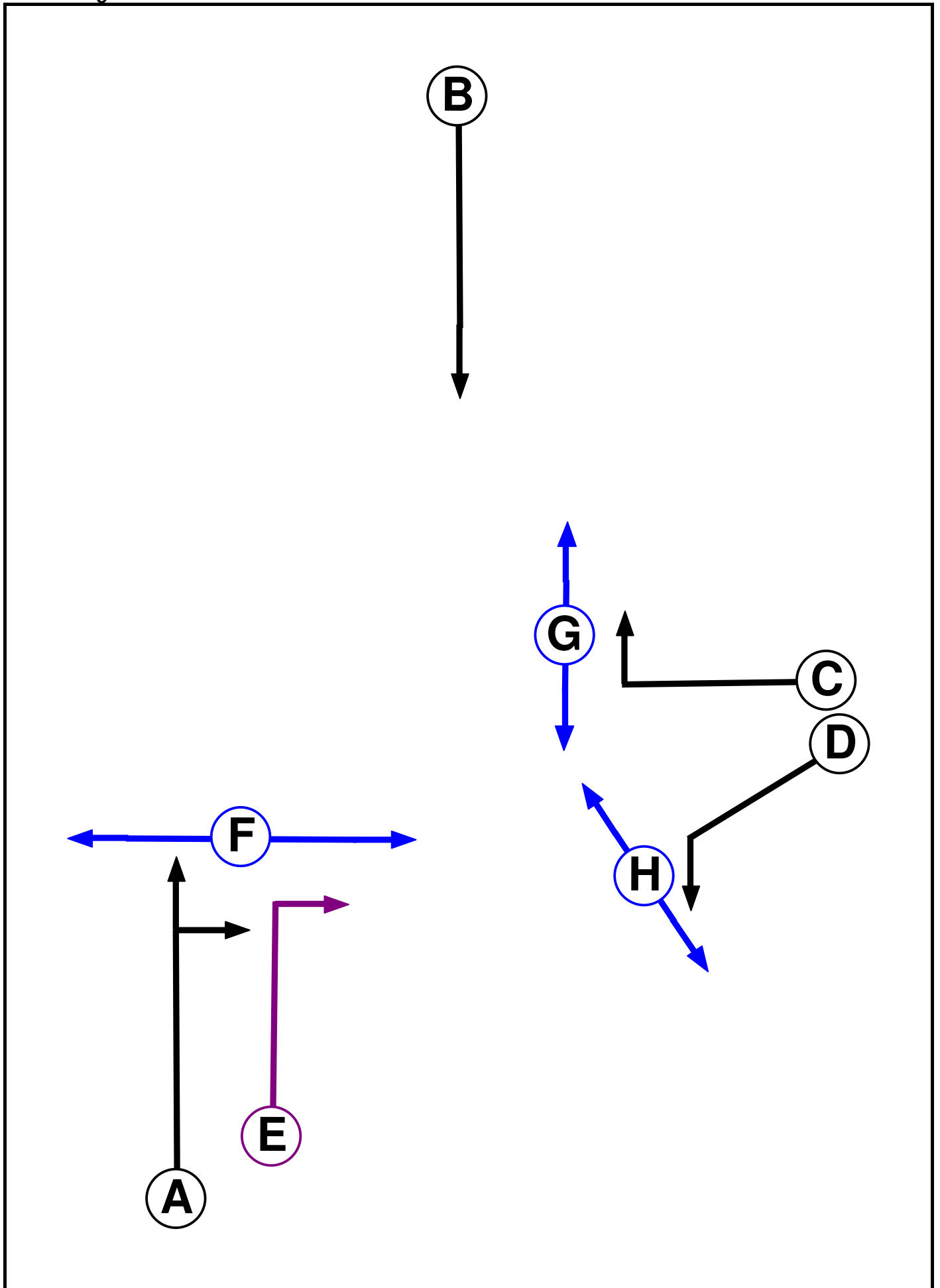
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Location:	
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Author:	
Company:	
Address:	

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	Ind. Arrow	A	4	4
F	Pedestrian		6	6
G	Pedestrian		5	5
H	Pedestrian		5	5

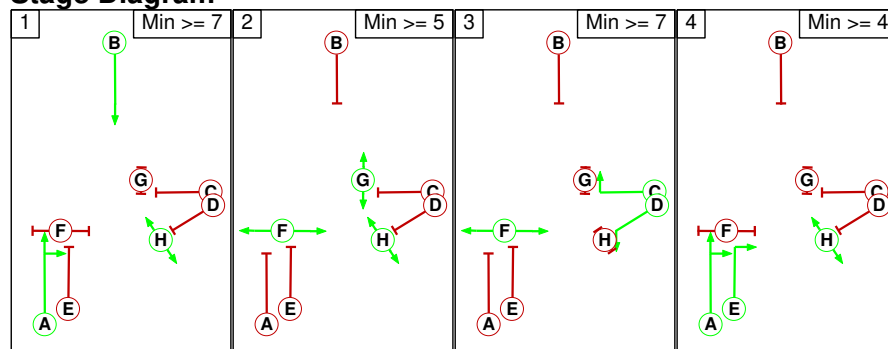
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	A	-	6	-	-	5	8	-
	B	-	-	5	7	4	7	-
	C	6	7	-	6	-	5	-
	D	-	4	-	-	-	-	5
	E	-	3	6	-	5	8	-
	F	9	9	-	9	-	-	-
	G	7	-	8	-	7	-	-
	H	-	-	-	5	-	-	-

Phases in Stage

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

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	4	G	Losing	2	2

Prohibited Stage Change

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

Full Input Data And Results

Give-Way Lane Input Data

Junction: A664 Queensway / A664 Manchester 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)
5/1 (Albion Street)	6/1 (Ahead)	715	0	2/1	0.22	All	-	-	-	-	-
	10/1 (Right)	1439	0	2/1	1.09	All					
				1/1	1.09	All					

Lane Input Data

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	U		2	3	60.0	Geom	-	3.60	0.00	Y	Arm 11 Ahead	Inf
2/1 (A664 Queensway Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (A664 Manchester Road (north))	U	B	2	3	13.9	Geom	-	4.18	0.00	Y	Arm 8 Ahead	Inf
4/1 (A664 Manchester Rd (north - exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Albion Street)	O		2	3	13.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf
6/1 (A664 Queensway exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A664 Manchester Rd (south))	U	A	2	3	60.0	Geom	-	2.65	0.00	Y	Arm 4 Ahead	Inf
7/2 (A664 Manchester Rd (south))	U	A E	2	3	12.2	Geom	-	2.50	0.00	N	Arm 2 Right	20.00
8/1 (A664 Manchester Rd (south - exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (A664 Manchester Rd (north))	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Albion Street south - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A664 Queensway)	U	D	2	3	9.0	Geom	-	4.20	0.00	Y	Arm 8 Left	25.00
11/2 (A664 Queensway)	U	C	2	3	60.0	Geom	-	3.30	0.00	N	Arm 4 Right	15.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base 2018 AM'	08:15	09:15	01:00	

Full Input Data And Results

2: 'Base 2018 PM'	16:30	17:30	01:00	
3: 'Base 2027 AM'	08:15	09:15	01:00	
4: 'Base 2027 PM'	16:30	17:30	01:00	
5: '2027 Assessment AM'	08:15	09:15	01:00	
6: '2027 Assessment PM'	16:30	17:30	01:00	

Scenario 1: 'Base 2018 AM' (FG1: 'Base 2018 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	354	248	0	602
	B	322	0	485	0	807
	C	301	651	0	31	983
	D	0	0	0	0	0
	Tot.	623	1005	733	31	2392

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Base 2018 AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	602
2/1	322
3/1	651
4/1	733
5/1	332
6/1	623
7/1 (with short)	807(In) 485(Out)
7/2 (short)	322
8/1	1005
9/1	983
10/1	31
11/1 (short)	354
11/2 (with short)	602(In) 248(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.7 % 9.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 2: 'Base 2018 PM' (FG2: 'Base 2018 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	261	374	0	635
	B	338	0	627	0	965
	C	236	448	0	60	744
	D	0	0	0	0	0
	Tot.	574	709	1001	60	2344

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: Base 2018 PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	635
2/1	338
3/1	448
4/1	1001
5/1	296
6/1	574
7/1 (with short)	965(In) 627(Out)
7/2 (short)	338
8/1	709
9/1	744
10/1	60
11/1 (short)	261
11/2 (with short)	635(In) 374(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	79.7 % 20.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 3: 'Base 2027 AM' (FG3: 'Base 2027 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	389	273	0	662
	B	354	0	533	0	887
	C	331	716	0	34	1081
	D	0	0	0	0	0
	Tot.	685	1105	806	34	2630

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: Base 2027 AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	662
2/1	354
3/1	716
4/1	806
5/1	365
6/1	685
7/1 (with short)	887(In) 533(Out)
7/2 (short)	354
8/1	1105
9/1	1081
10/1	34
11/1 (short)	389
11/2 (with short)	662(In) 273(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.7 % 9.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 4: 'Base 2027 PM' (FG4: 'Base 2027 PM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	286	410	0	696
	B	370	0	687	0	1057
	C	259	491	0	65	815
	D	0	0	0	0	0
	Tot.	629	777	1097	65	2568

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: Base 2027 PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	696
2/1	370
3/1	491
4/1	1097
5/1	324
6/1	629
7/1 (with short)	1057(In) 687(Out)
7/2 (short)	370
8/1	777
9/1	815
10/1	65
11/1 (short)	286
11/2 (with short)	696(In) 410(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	79.9 % 20.1 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 5: '2027 Assessment AM' (FG5: '2027 Assessment AM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	421	291	0	712
	B	365	0	533	0	898
	C	337	716	0	34	1087
	D	0	0	0	0	0
	Tot.	702	1137	824	34	2697

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2027 Assessment AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	712
2/1	365
3/1	716
4/1	824
5/1	371
6/1	702
7/1 (with short)	898(In) 533(Out)
7/2 (short)	365
8/1	1137
9/1	1087
10/1	34
11/1 (short)	421
11/2 (with short)	712(In) 291(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.8 % 9.2 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 6: '2027 Assessment PM' (FG6: '2027 Assessment PM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	300	418	0	718
	B	399	0	687	0	1086
	C	276	491	0	65	832
	D	0	0	0	0	0
	Tot.	675	791	1105	65	2636

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2027 Assessment PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	718
2/1	399
3/1	491
4/1	1105
5/1	341
6/1	675
7/1 (with short)	1086(In) 687(Out)
7/2 (short)	399
8/1	791
9/1	832
10/1	65
11/1 (short)	300
11/2 (with short)	718(In) 418(Out)

Lane Saturation Flows

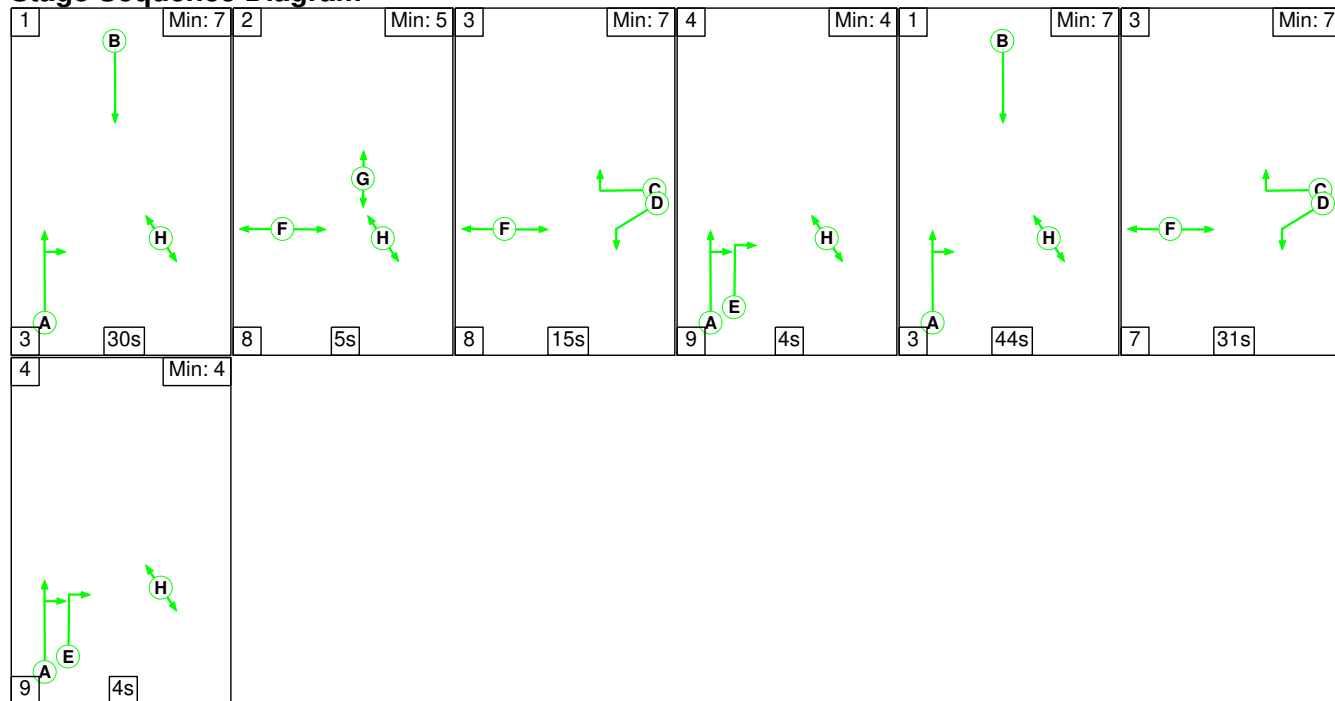
Junction: A664 Queensway / A664 Manchester Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	80.9 % 19.1 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 1: 'Base 2018 AM' (FG1: 'Base 2018 AM', Plan 1: 'Network Control Plan 1')

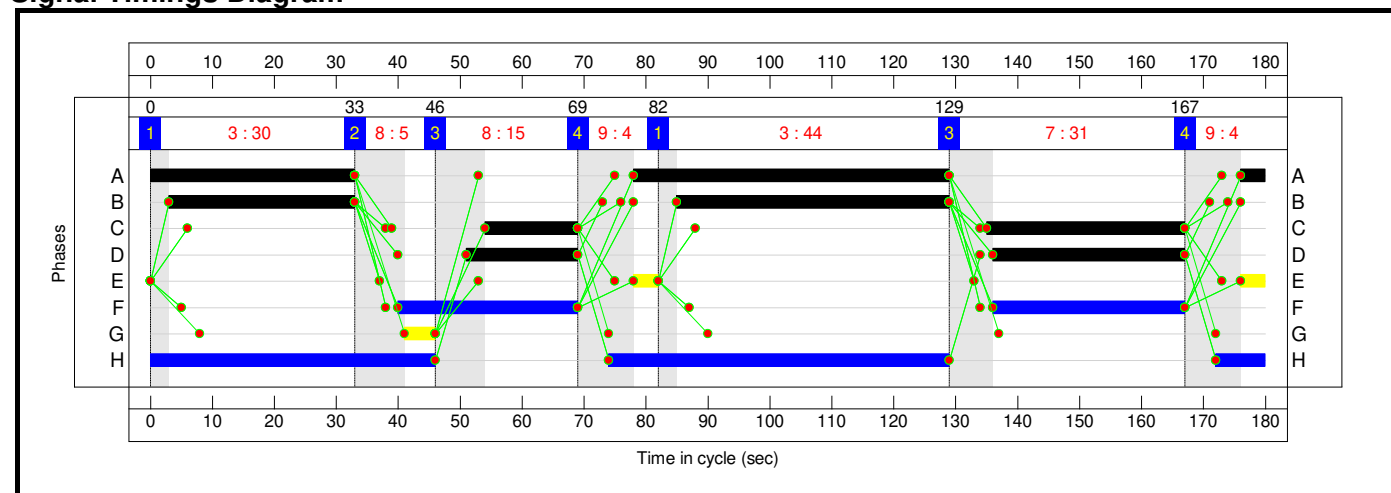
Stage Sequence Diagram



Stage Timings

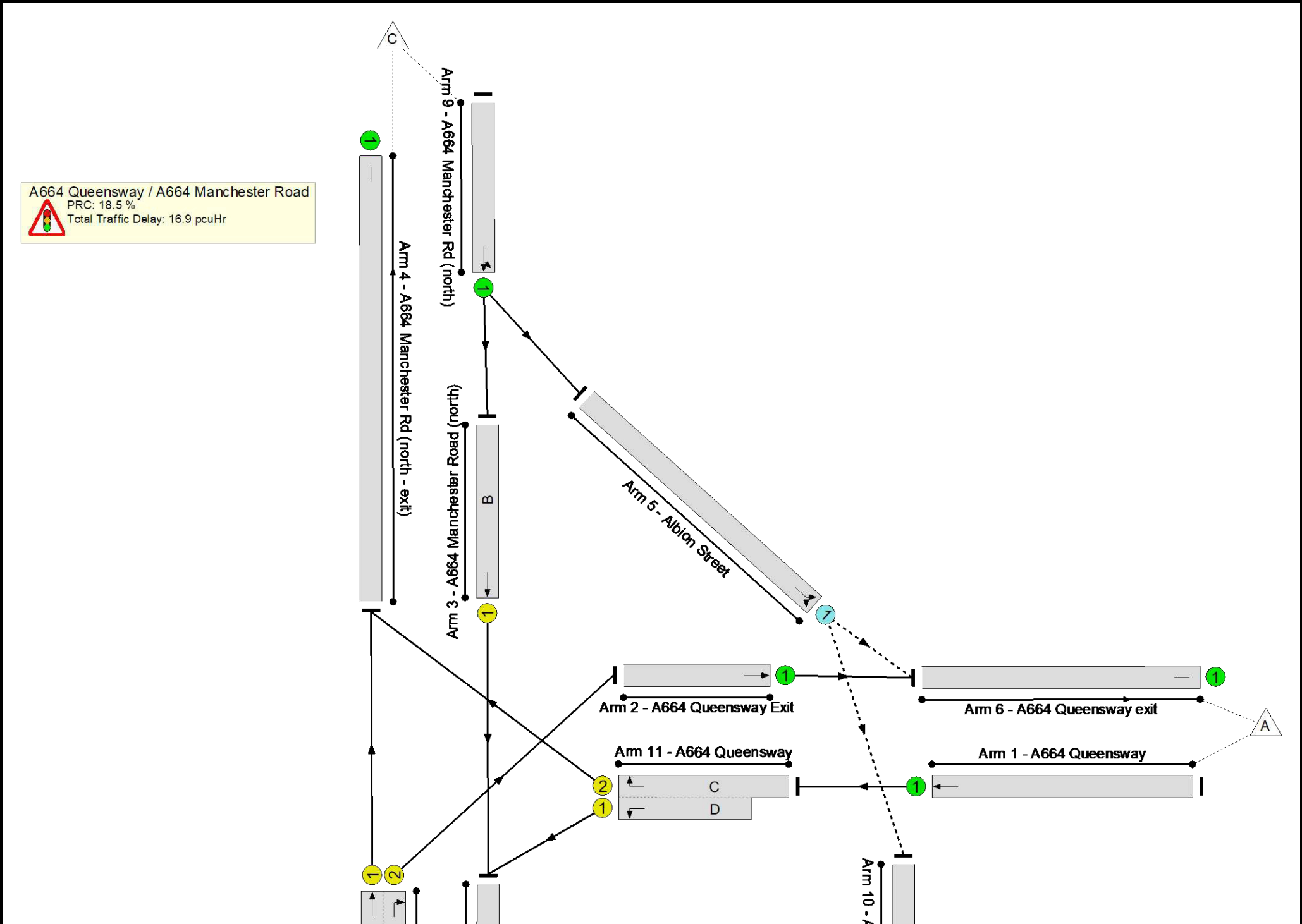
Stage	1	2	3	4	1	3	4
Duration	30	5	15	4	44	31	4
Change Point	0	33	46	69	82	129	167

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	-	-		-	-	-	-	-	-	76.0%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	76.0%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	602	1975	1975	30.5%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	74	-	651	2033	858	75.8%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	733	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	332	2015	584	56.9%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	623	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	88	8	807	1880:1865	762+506	63.7 : 63.7%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	983	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	31	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	47:49	-	602	1895:1920	327+466	76.0 : 76.0%

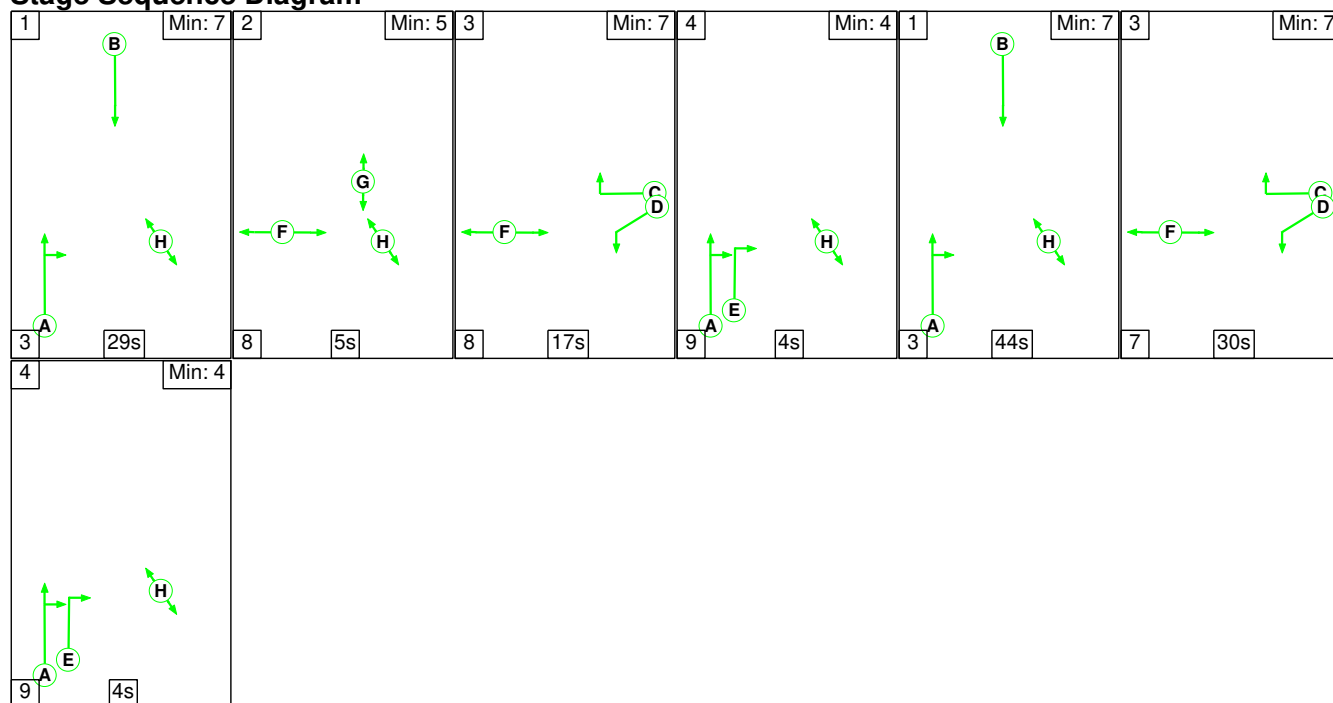
Full Input Data And Results

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	-	-	332	0	0	12.1	4.8	0.0	16.9	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	332	0	0	12.1	4.8	0.0	16.9	-	-	-	-
1/1	602	602	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
2/1	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	651	651	-	-	-	4.0	1.5	-	5.5	30.7	13.9	1.5	15.5
4/1	733	733	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	332	332	332	0	0	0.2	0.7	-	0.8	8.9	2.5	0.7	3.1
6/1	623	623	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	807	807	-	-	-	3.3	0.9	-	4.1	18.4	8.2	0.9	9.1
8/1	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	983	983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	31	31	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	602	602	-	-	-	4.7	1.6	-	6.2	37.3	7.9	1.6	9.4
C1 PRC for Signalled Lanes (%): 18.5 Total Delay for Signalled Lanes (pcuHr): 15.91 Cycle Time (s): 180 PRC Over All Lanes (%): 18.5 Total Delay Over All Lanes(pcuHr): 16.95													

Full Input Data And Results

Scenario 2: 'Base 2018 PM' (FG2: 'Base 2018 PM', Plan 1: 'Network Control Plan 1')

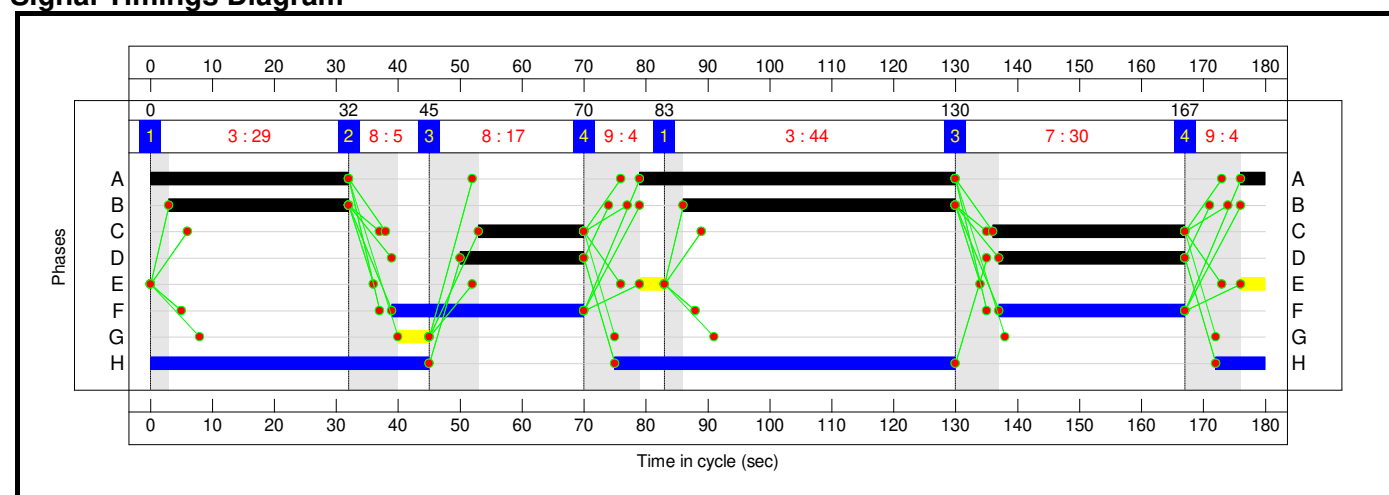
Stage Sequence Diagram



Stage Timings

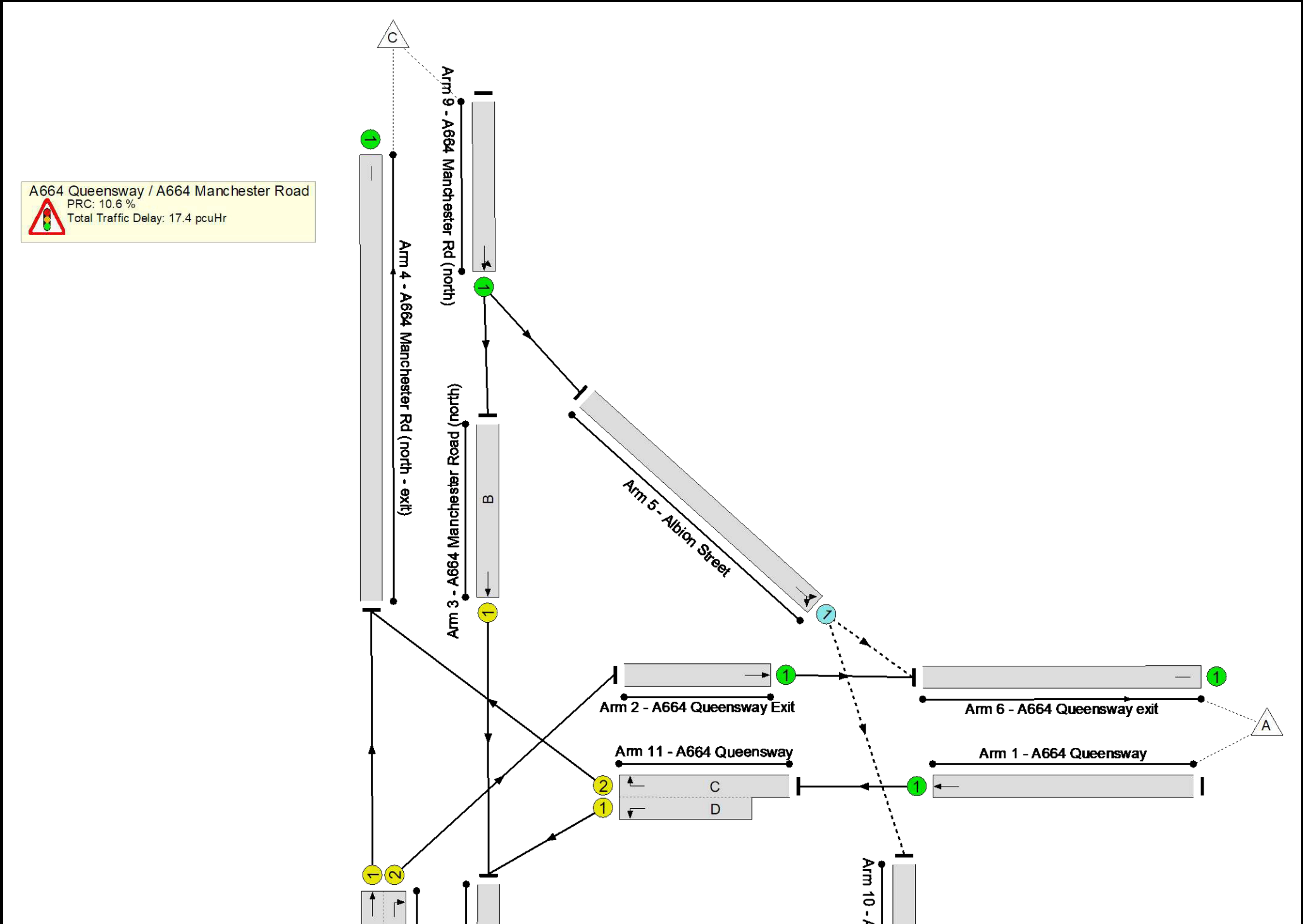
Stage	1	2	3	4	1	3	4
Duration	29	5	17	4	44	30	4
Change Point	0	32	45	70	83	130	167

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	-	-		-	-	-	-	-	-	81.3%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	81.3%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	635	1975	1975	32.2%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	338	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	73	-	448	2033	847	52.9%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1001	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	296	2015	557	53.2%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	87	8	965	1880:1865	777+419	80.7 : 80.7%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	744	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	48:50	-	635	1895:1920	460+321	81.3 : 81.3%

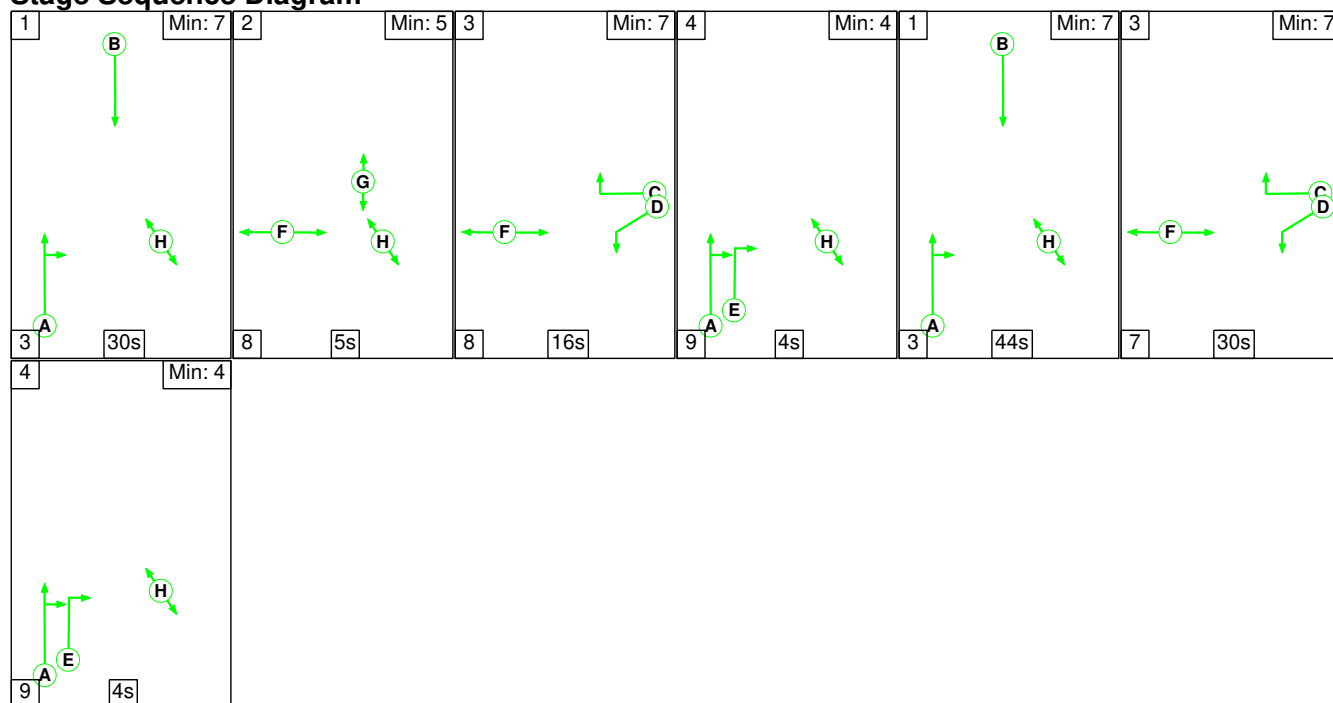
Full Input Data And Results

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	-	-	296	0	0	11.9	5.5	0.0	17.4	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	296	0	0	11.9	5.5	0.0	17.4	-	-	-	-
1/1	635	635	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
2/1	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	448	448	-	-	-	2.4	0.6	-	3.0	24.1	8.3	0.6	8.9
4/1	1001	1001	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	296	296	296	0	0	0.2	0.6	-	0.7	9.0	2.3	0.6	2.9
6/1	574	574	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	965	965	-	-	-	4.3	2.1	-	6.4	23.8	12.0	2.1	14.1
8/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	744	744	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	635	635	-	-	-	4.9	2.1	-	7.1	40.1	8.3	2.1	10.4
C1 PRC for Signalled Lanes (%): 10.6 Total Delay for Signalled Lanes (pcuHr): 16.45 Cycle Time (s): 180 PRC Over All Lanes (%): 10.6 Total Delay Over All Lanes(pcuHr): 17.43													

Full Input Data And Results

Scenario 3: 'Base 2027 AM' (FG3: 'Base 2027 AM', Plan 1: 'Network Control Plan 1')

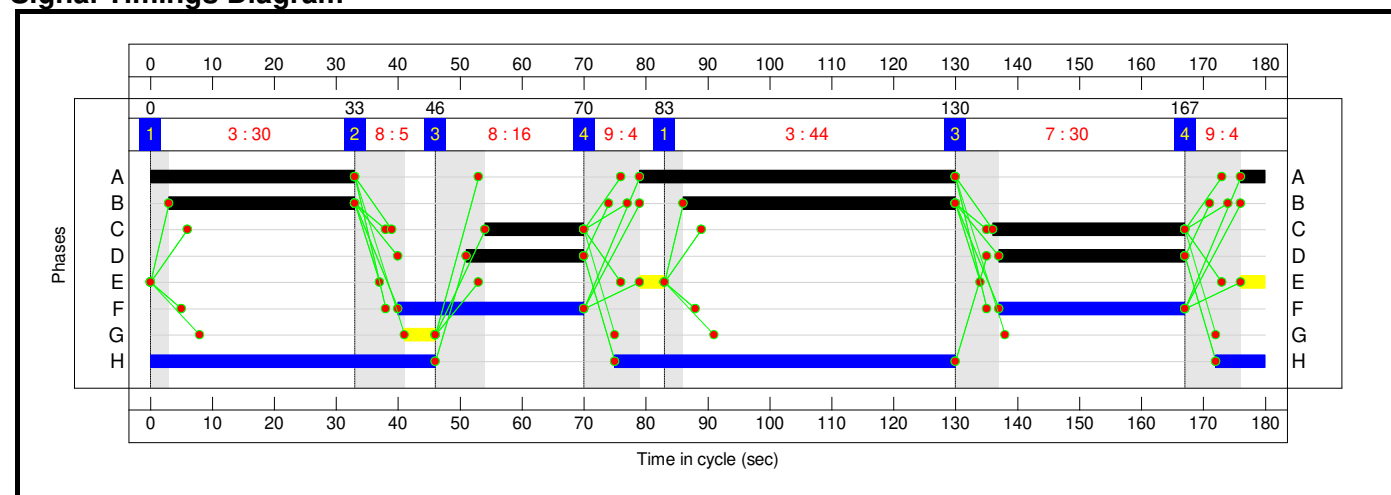
Stage Sequence Diagram



Stage Timings

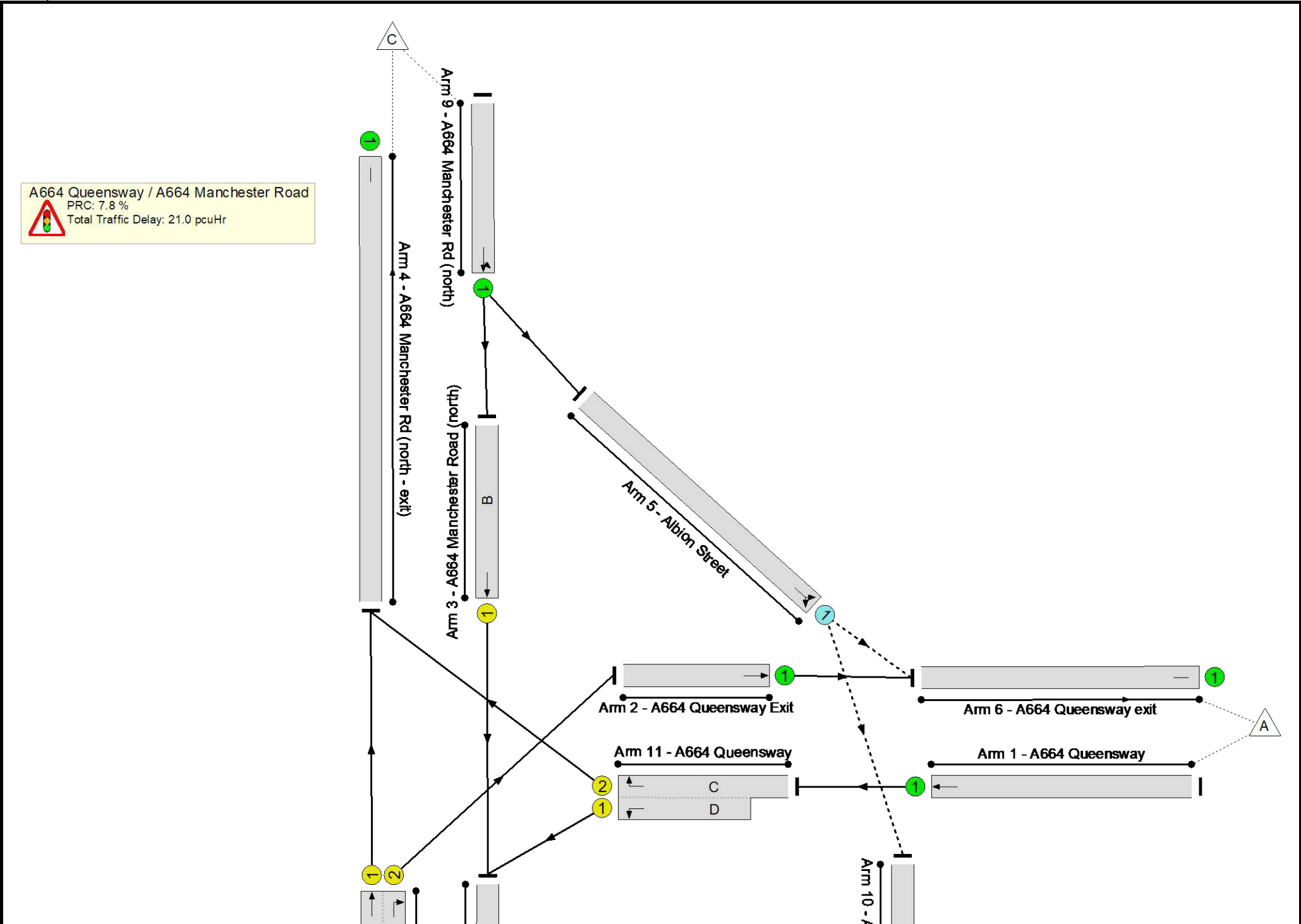
Stage	1	2	3	4	1	3	4
Duration	30	5	16	4	44	30	4
Change Point	0	33	46	70	83	130	167

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	-	-		-	-	-	-	-	-	83.5%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	83.5%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	662	1975	1975	33.5%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	74	-	716	2033	858	83.4%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	806	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	365	2015	560	65.2%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	88	8	887	1880:1865	762+506	70.0 : 70.0%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	1081	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	47:49	-	662	1895:1920	327+466	83.5 : 83.5%

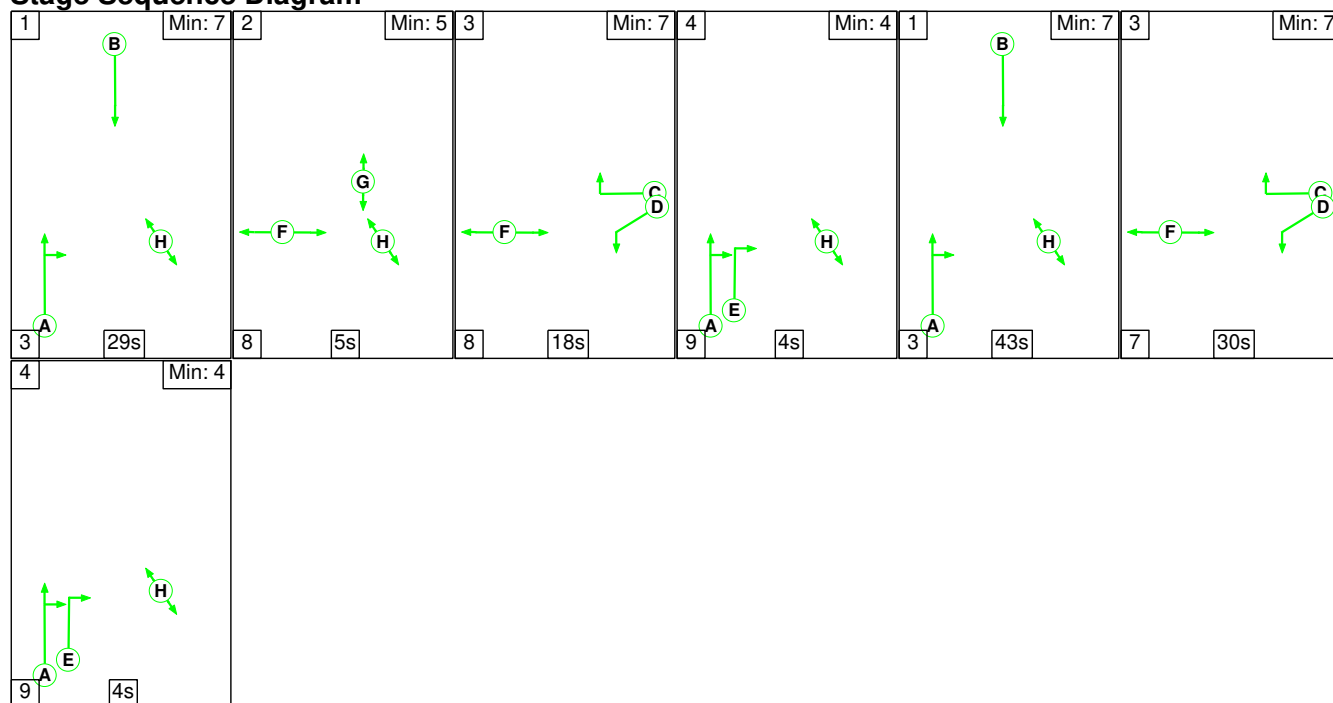
Full Input Data And Results

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	-	-	365	0	0	13.8	7.2	0.0	21.0	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	365	0	0	13.8	7.2	0.0	21.0	-	-	-	-
1/1	662	662	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	354	354	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	716	716	-	-	-	4.6	2.4	-	7.0	35.4	15.9	2.4	18.3
4/1	806	806	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	365	365	365	0	0	0.3	0.9	-	1.2	11.9	3.7	0.9	4.6
6/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	887	887	-	-	-	3.7	1.2	-	4.8	19.7	9.2	1.2	10.3
8/1	1105	1105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	1081	1081	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	34	34	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	662	662	-	-	-	5.2	2.4	-	7.7	41.8	8.9	2.4	11.3
C1 PRC for Signalled Lanes (%): 7.8 Total Delay for Signalled Lanes (pcuHr): 19.58 Cycle Time (s): 180 PRC Over All Lanes (%): 7.8 Total Delay Over All Lanes(pcuHr): 21.04													

Full Input Data And Results

Scenario 4: 'Base 2027 PM' (FG4: 'Base 2027 PM', Plan 1: 'Network Control Plan 1')

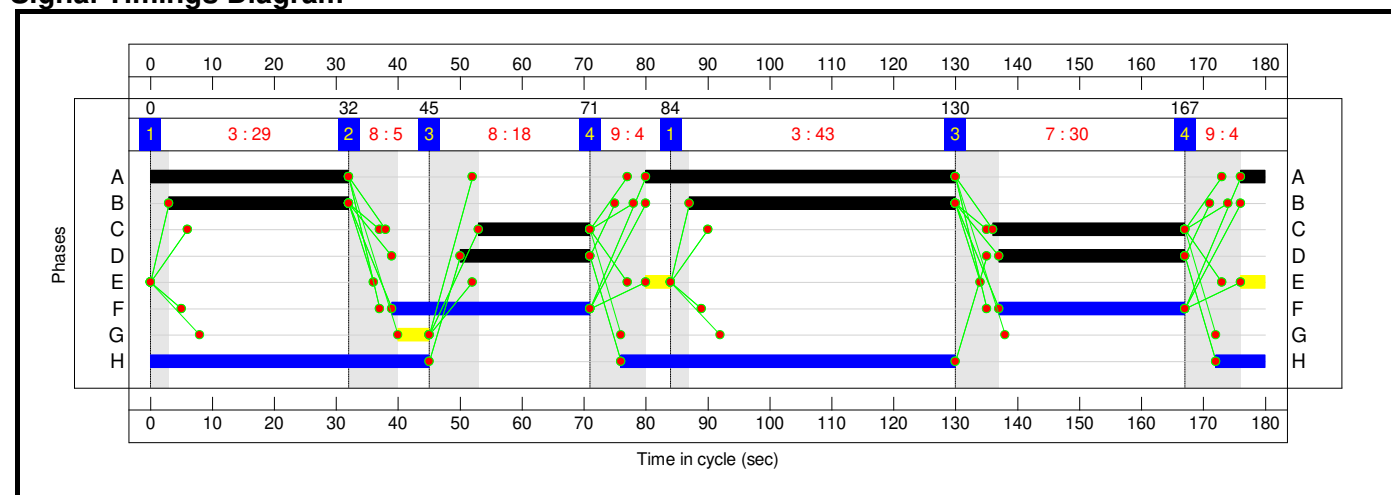
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	1	3	4
Duration	29	5	18	4	43	30	4
Change Point	0	32	45	71	84	130	167

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	-	-		-	-	-	-	-	-	89.2%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	89.2%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	696	1975	1975	35.2%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	72	-	491	2033	836	58.7%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	324	2015	505	64.2%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	86	8	1057	1880:1865	770+415	89.2 : 89.2%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	49:51	-	696	1895:1920	466+325	88.0 : 88.0%

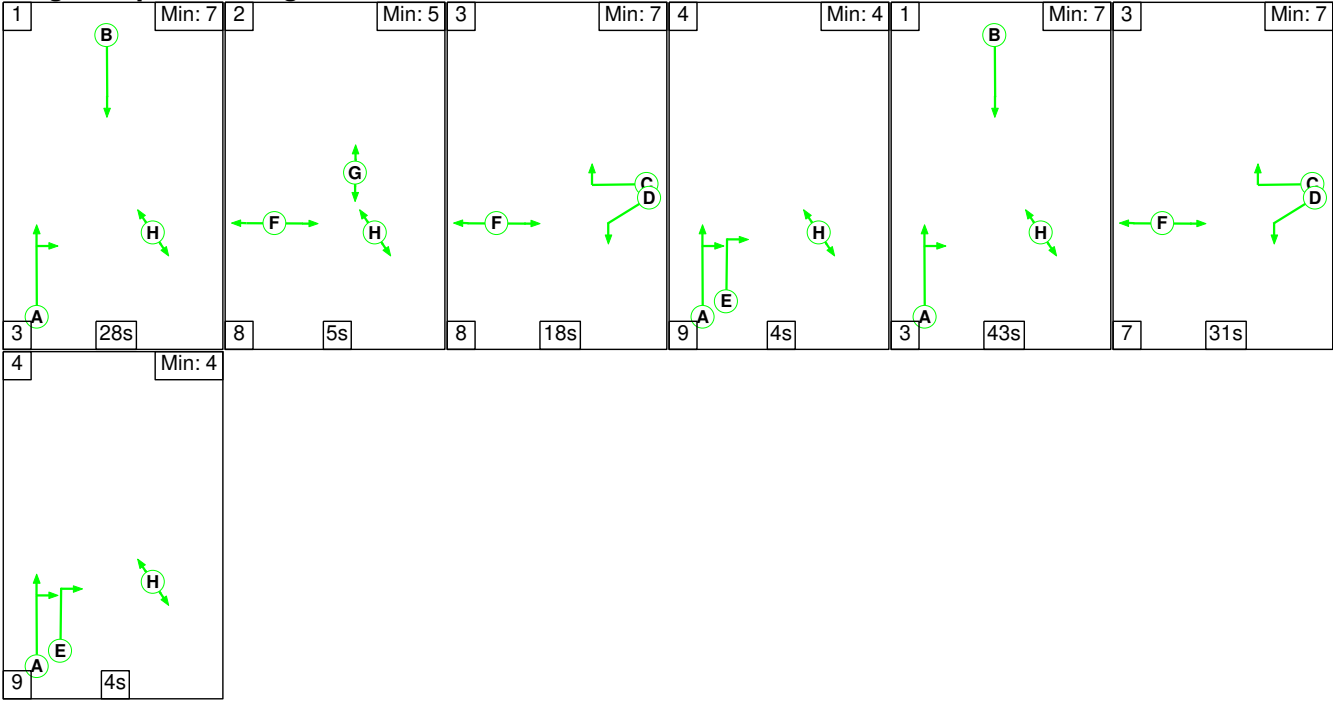
Full Input Data And Results

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	-	-	324	0	0	13.7	9.2	0.0	22.9	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	324	0	0	13.7	9.2	0.0	22.9	-	-	-	-
1/1	696	696	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	491	491	-	-	-	2.8	0.7	-	3.5	25.8	9.7	0.7	10.4
4/1	1097	1097	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	324	324	324	0	0	0.4	0.9	-	1.3	14.1	4.7	0.9	5.6
6/1	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	1057	1057	-	-	-	5.1	3.9	-	9.0	30.6	16.6	3.9	20.5
8/1	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	815	815	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	696	696	-	-	-	5.5	3.4	-	8.9	45.9	10.0	3.4	13.4
C1 PRC for Signalled Lanes (%): 0.9 Total Delay for Signalled Lanes (pcuHr): 21.37 Cycle Time (s): 180 PRC Over All Lanes (%): 0.9 Total Delay Over All Lanes(pcuHr): 22.91													

Full Input Data And Results

Scenario 5: '2027 Assessment AM' (FG5: '2027 Assessment AM', Plan 1: 'Network Control Plan 1')

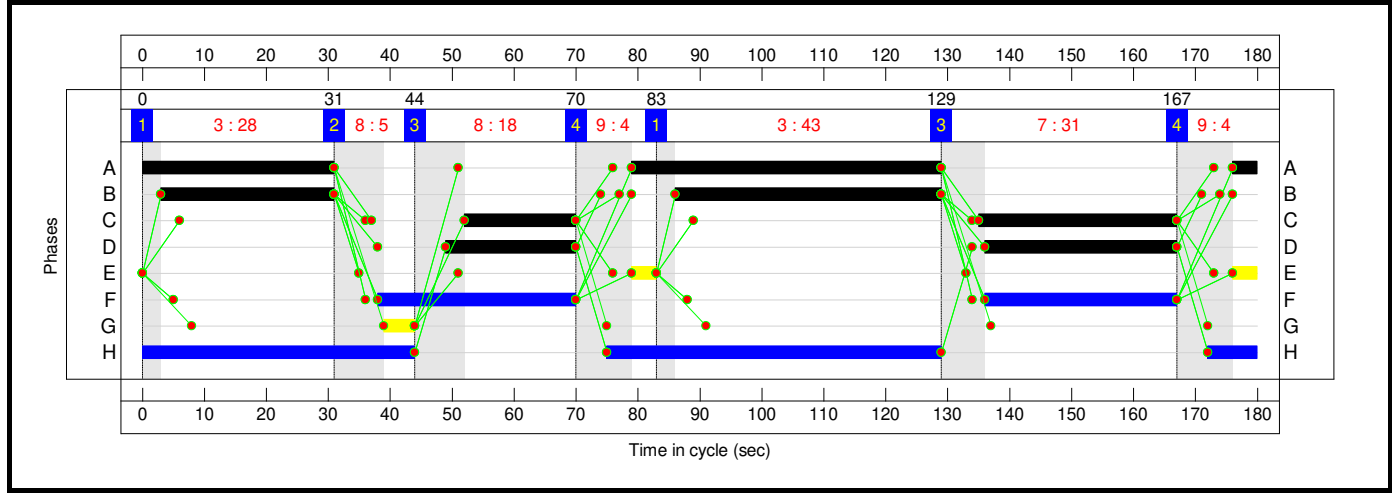
Stage Sequence Diagram



Stage Timings

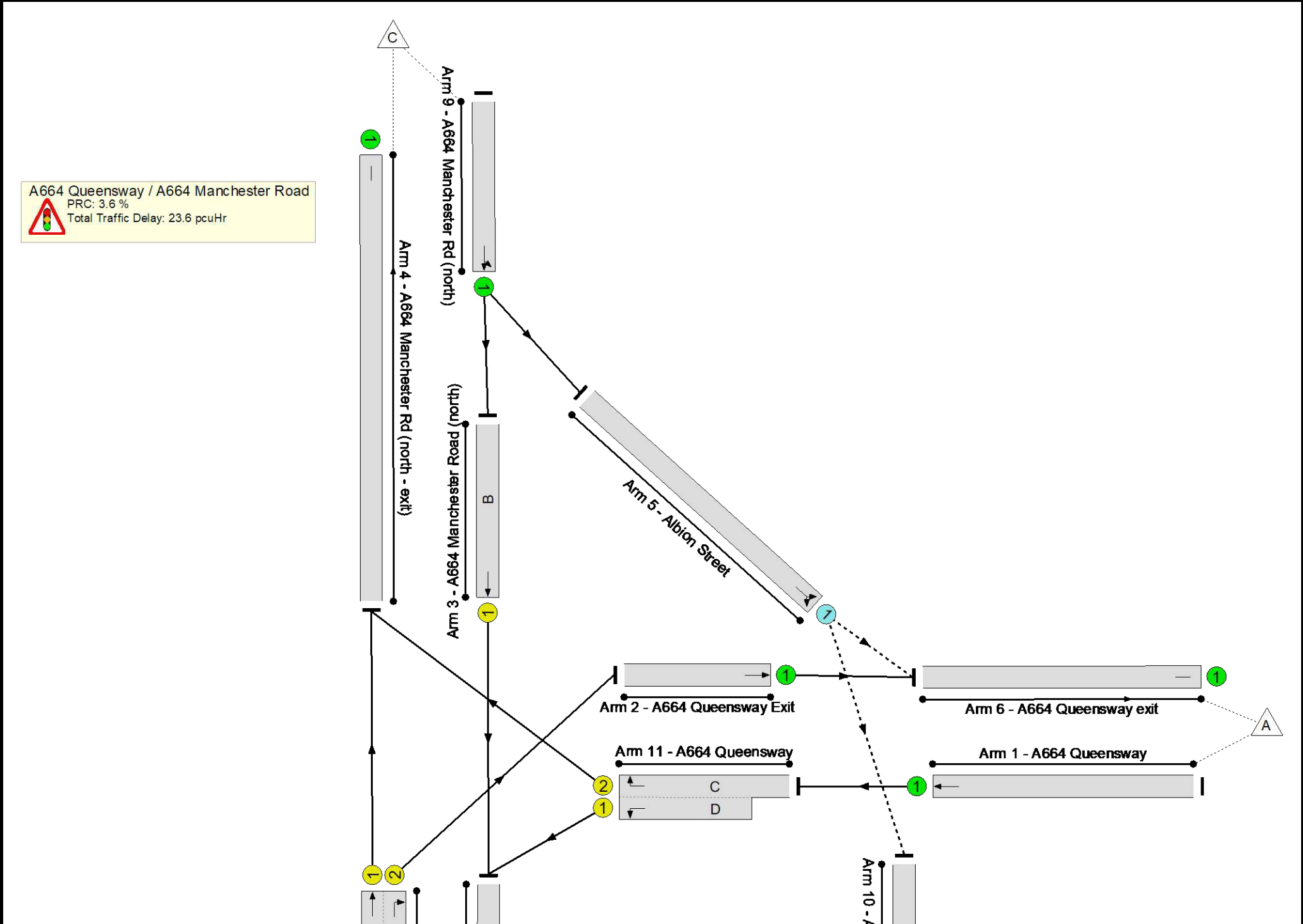
Stage	1	2	3	4	1	3	4
Duration	28	5	18	4	43	31	4
Change Point	0	31	44	70	83	129	167

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	-	-		-	-	-	-	-	-	86.8%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	86.8%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	712	1975	1975	36.1%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	365	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	71	-	716	2033	824	86.8%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	824	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	371	2015	543	68.3%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	85	8	898	1880:1865	740+507	72.1 : 72.1%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	1087	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	50:52	-	712	1895:1920	336+485	86.7 : 86.7%

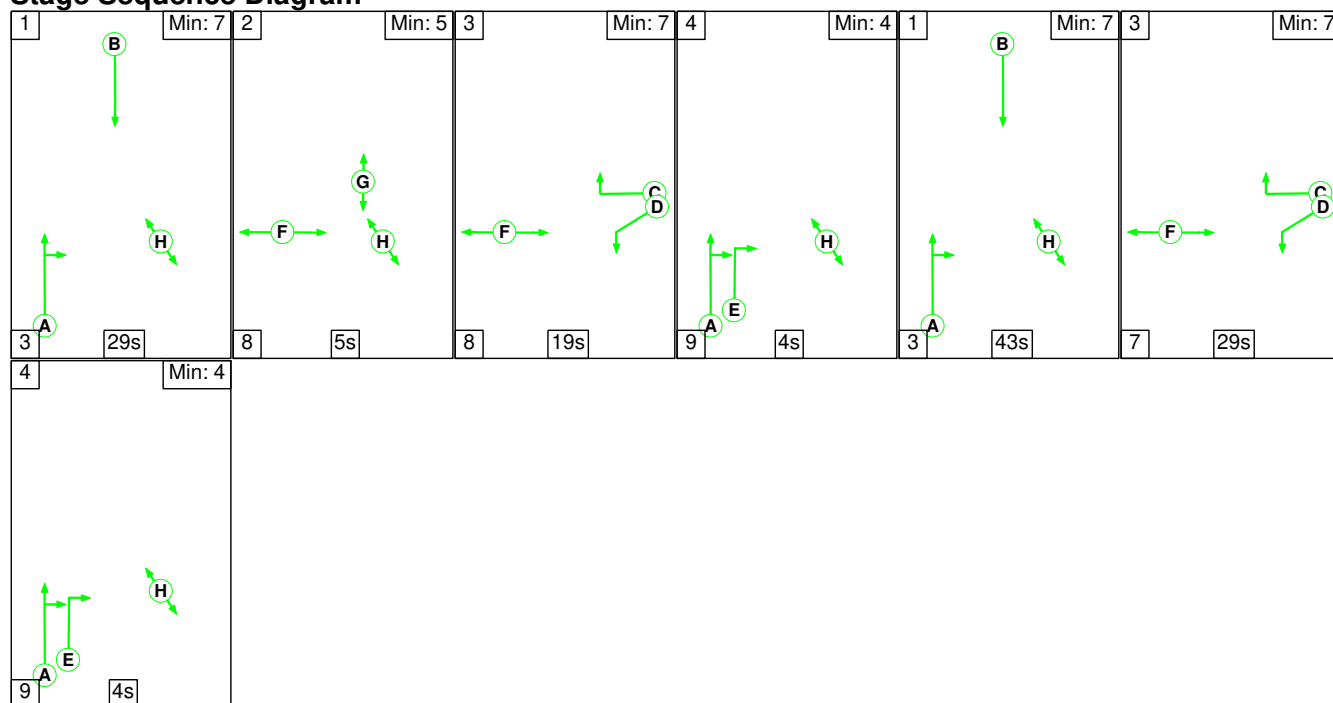
Full Input Data And Results

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	-	-	371	0	0	14.7	8.8	0.0	23.6	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	371	0	0	14.7	8.8	0.0	23.6	-	-	-	-
1/1	712	712	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	365	365	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	716	716	-	-	-	4.9	3.1	-	8.0	40.2	16.5	3.1	19.6
4/1	824	824	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	371	371	371	0	0	0.4	1.1	-	1.4	14.0	4.5	1.1	5.6
6/1	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	898	898	-	-	-	4.0	1.3	-	5.3	21.2	9.6	1.3	10.9
8/1	1137	1137	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	1087	1087	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	34	34	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	712	712	-	-	-	5.5	3.1	-	8.6	43.4	10.6	3.1	13.7
C1 PRC for Signalled Lanes (%): 3.6 Total Delay for Signalled Lanes (pcuHr): 21.86 Cycle Time (s): 180 PRC Over All Lanes (%): 3.6 Total Delay Over All Lanes(pcuHr): 23.59													

Full Input Data And Results

Scenario 6: '2027 Assessment PM' (FG6: '2027 Assessment PM', Plan 1: 'Network Control Plan 1')

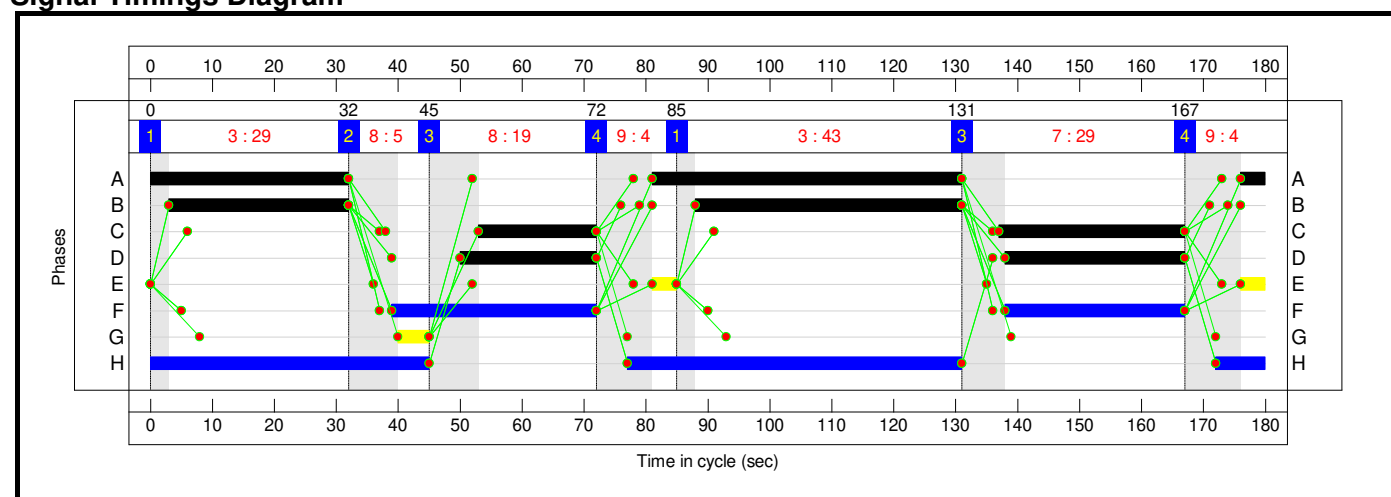
Stage Sequence Diagram



Stage Timings

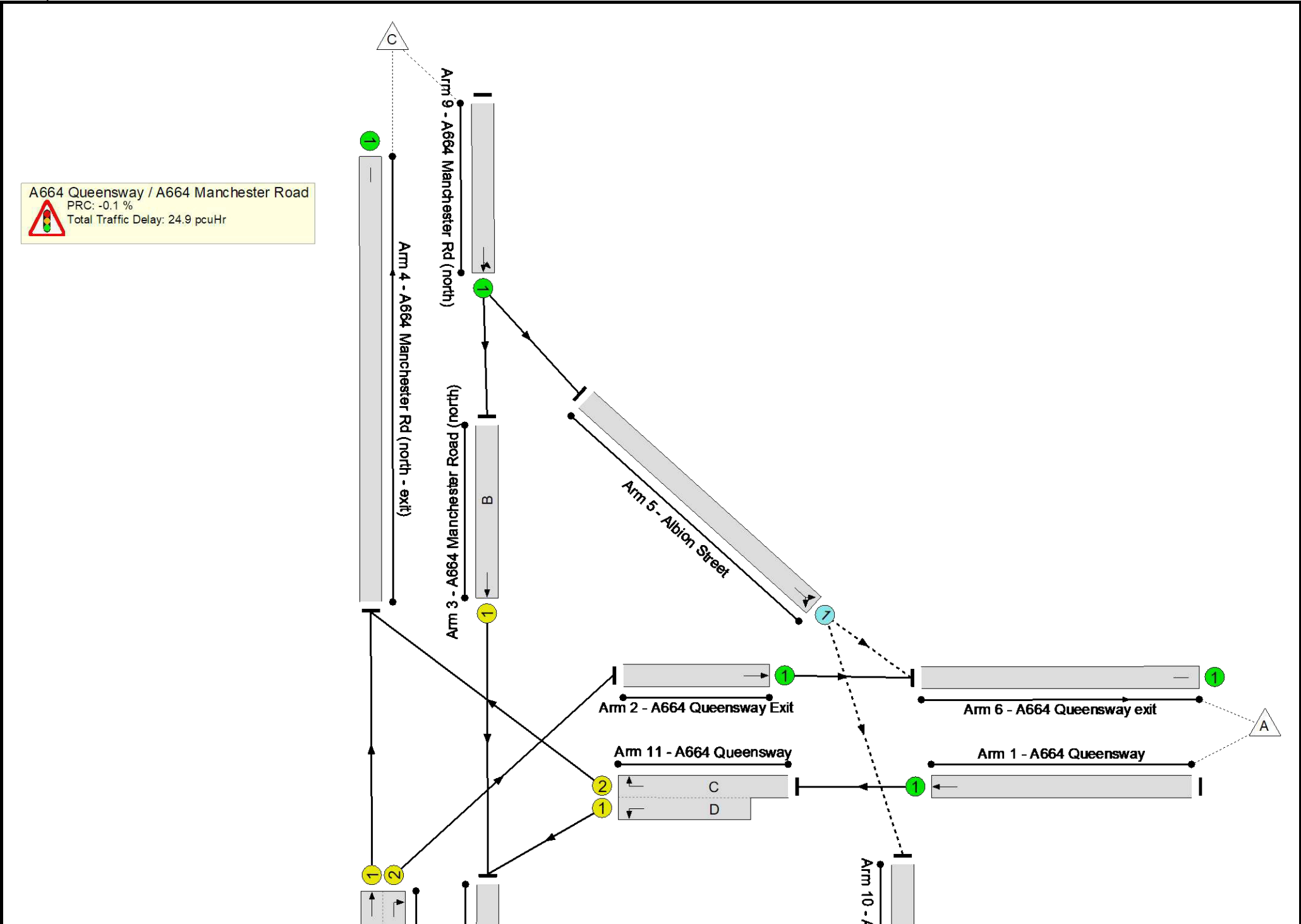
Stage	1	2	3	4	1	3	4
Duration	29	5	19	4	43	29	4
Change Point	0	32	45	72	85	131	167

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	-	-		-	-	-	-	-	-	90.1%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	90.1%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	718	1975	1975	36.4%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		2	72	-	491	2033	836	58.7%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	341	2015	479	71.1%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	2	86	8	1086	1880:1865	763+443	90.1 : 90.1%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		2	49:51	-	718	1895:1920	465+334	89.9 : 89.9%

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	-	-	341	0	0	14.4	10.5	0.0	24.9	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	341	0	0	14.4	10.5	0.0	24.9	-	-	-	-
1/1	718	718	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	491	491	-	-	-	2.8	0.7	-	3.5	25.8	9.8	0.7	10.5
4/1	1105	1105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	341	341	341	0	0	0.6	1.2	-	1.8	19.2	5.9	1.2	7.1
6/1	675	675	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	1086	1086	-	-	-	5.3	4.2	-	9.5	31.5	17.6	4.2	21.9
8/1	791	791	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	718	718	-	-	-	5.7	4.1	-	9.7	48.8	10.4	4.1	14.5
C1 PRC for Signalled Lanes (%): -0.1 Total Delay for Signalled Lanes (pcuHr): 22.75 Cycle Time (s): 180 PRC Over All Lanes (%): -0.1 Total Delay Over All Lanes(pcuHr): 24.85													

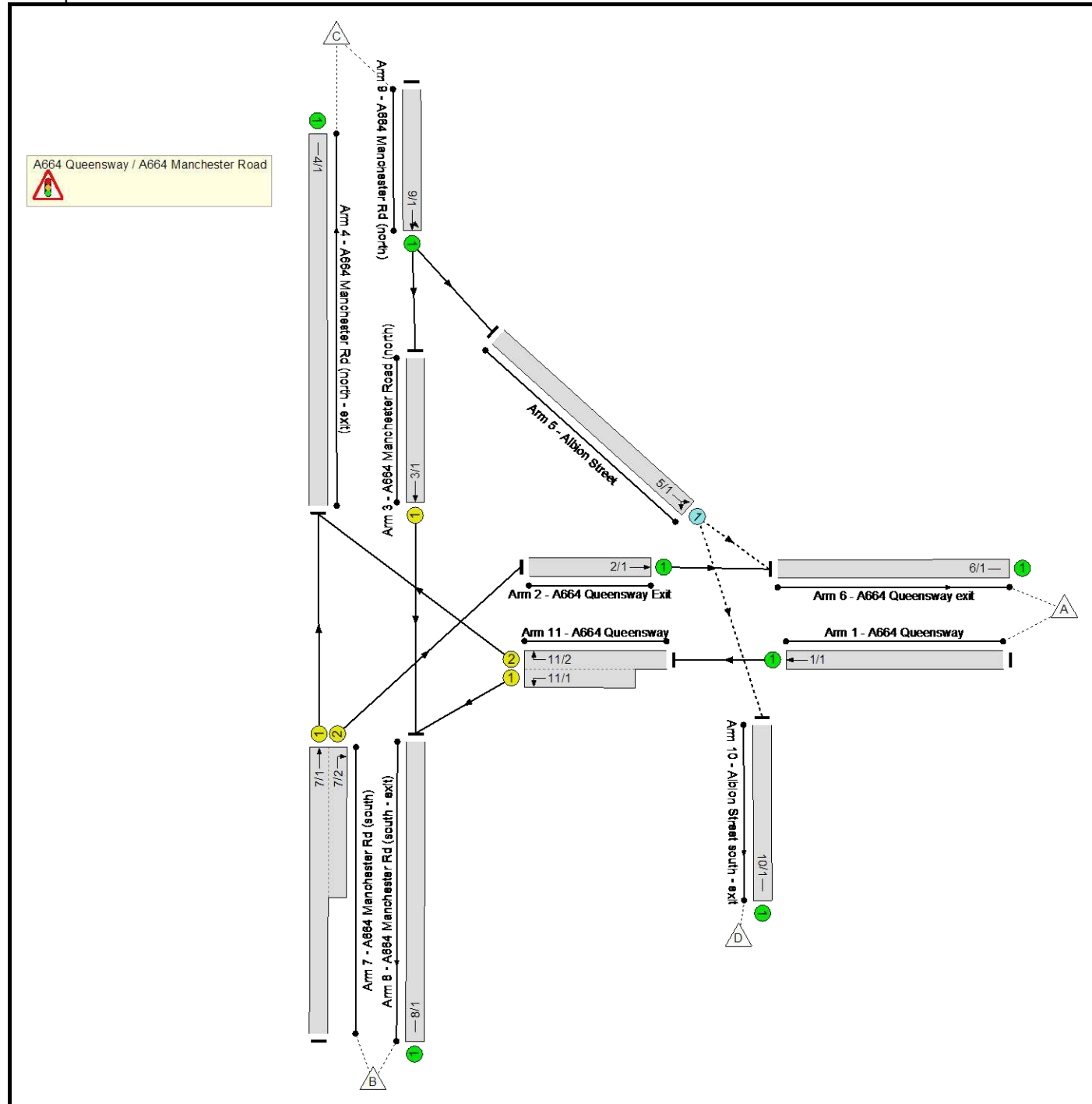
Full Input Data And Results

User and Project Details

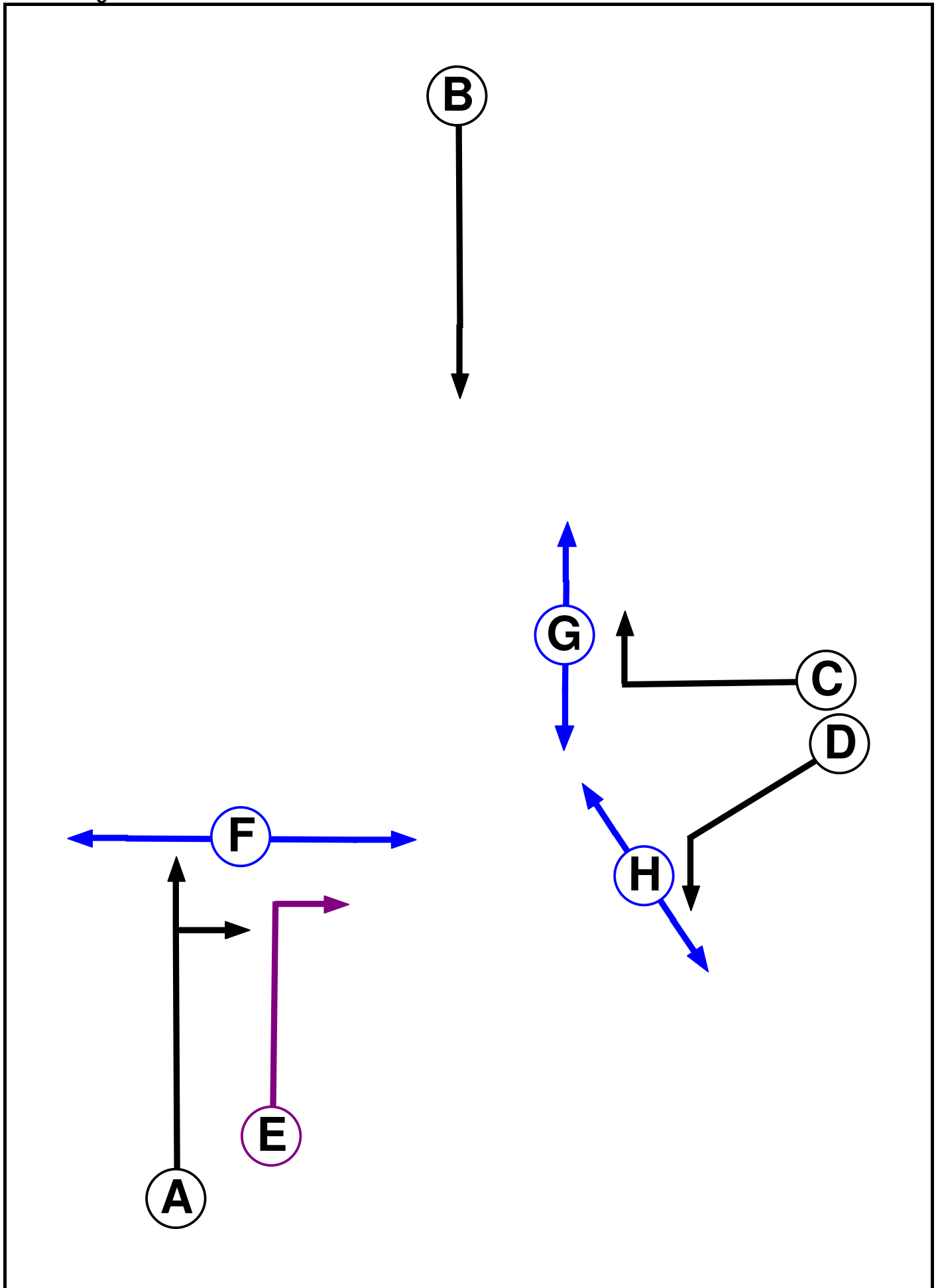
Project:	
Title:	
Location:	
Additional detail:	
File name:	A664 Queensway_A664 Manchester Road_490_July 2022 - Ped every cycle.lsg3x
Author:	
Company:	
Address:	

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	Ind. Arrow	A	4	4
F	Pedestrian		6	6
G	Pedestrian		5	5
H	Pedestrian		5	5

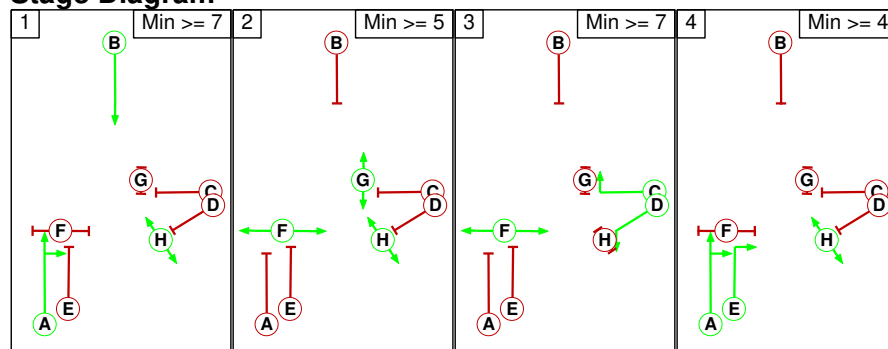
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	A	-	6	-	-	5	8	-
	B	-	-	5	7	4	7	-
	C	6	7	-	6	-	5	-
	D	-	4	-	-	-	-	5
	E	-	3	6	-	5	8	-
	F	9	9	-	9	-	-	-
	G	7	-	8	-	7	-	-
	H	-	-	-	5	-	-	-

Phases in Stage

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

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	4	G	Losing	2	2

Prohibited Stage Change

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

Full Input Data And Results

Give-Way Lane Input Data

Junction: A664 Queensway / A664 Manchester 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)
5/1 (Albion Street)	6/1 (Ahead)	715	0	2/1	0.22	All	-	-	-	-	-
	10/1 (Right)	1439	0	2/1	1.09	All					
				1/1	1.09	All					

Lane Input Data

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	U		2	3	60.0	Geom	-	3.60	0.00	Y	Arm 11 Ahead	Inf
2/1 (A664 Queensway Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (A664 Manchester Road (north))	U	B	2	3	13.9	Geom	-	4.18	0.00	Y	Arm 8 Ahead	Inf
4/1 (A664 Manchester Rd (north - exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Albion Street)	O		2	3	13.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf
6/1 (A664 Queensway exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A664 Manchester Rd (south))	U	A	2	3	60.0	Geom	-	2.65	0.00	Y	Arm 4 Ahead	Inf
7/2 (A664 Manchester Rd (south))	U	A E	2	3	12.2	Geom	-	2.50	0.00	N	Arm 2 Right	20.00
8/1 (A664 Manchester Rd (south - exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (A664 Manchester Rd (north))	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Albion Street south - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A664 Queensway)	U	D	2	3	9.0	Geom	-	4.20	0.00	Y	Arm 8 Left	25.00
11/2 (A664 Queensway)	U	C	2	3	60.0	Geom	-	3.30	0.00	N	Arm 4 Right	15.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base 2018 AM'	08:15	09:15	01:00	

Full Input Data And Results

2: 'Base 2018 PM'	16:30	17:30	01:00	
3: 'Base 2027 AM'	08:15	09:15	01:00	
4: 'Base 2027 PM'	16:30	17:30	01:00	
5: '2027 Assessment AM'	08:15	09:15	01:00	
6: '2027 Assessment PM'	16:30	17:30	01:00	

Scenario 1: 'Base 2018 AM' (FG1: 'Base 2018 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	354	248	0	602
	B	322	0	485	0	807
	C	301	651	0	31	983
	D	0	0	0	0	0
	Tot.	623	1005	733	31	2392

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Base 2018 AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	602
2/1	322
3/1	651
4/1	733
5/1	332
6/1	623
7/1 (with short)	807(In) 485(Out)
7/2 (short)	322
8/1	1005
9/1	983
10/1	31
11/1 (short)	354
11/2 (with short)	602(In) 248(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.7 % 9.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 2: 'Base 2018 PM' (FG2: 'Base 2018 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	261	374	0	635
	B	338	0	627	0	965
	C	236	448	0	60	744
	D	0	0	0	0	0
	Tot.	574	709	1001	60	2344

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: Base 2018 PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	635
2/1	338
3/1	448
4/1	1001
5/1	296
6/1	574
7/1 (with short)	965(In) 627(Out)
7/2 (short)	338
8/1	709
9/1	744
10/1	60
11/1 (short)	261
11/2 (with short)	635(In) 374(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	79.7 % 20.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 3: 'Base 2027 AM' (FG3: 'Base 2027 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	389	273	0	662
	B	354	0	533	0	887
	C	331	716	0	34	1081
	D	0	0	0	0	0
	Tot.	685	1105	806	34	2630

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: Base 2027 AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	662
2/1	354
3/1	716
4/1	806
5/1	365
6/1	685
7/1 (with short)	887(In) 533(Out)
7/2 (short)	354
8/1	1105
9/1	1081
10/1	34
11/1 (short)	389
11/2 (with short)	662(In) 273(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.7 % 9.3 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 4: 'Base 2027 PM' (FG4: 'Base 2027 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	286	410	0	696
	B	370	0	687	0	1057
	C	259	491	0	65	815
	D	0	0	0	0	0
	Tot.	629	777	1097	65	2568

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: Base 2027 PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	696
2/1	370
3/1	491
4/1	1097
5/1	324
6/1	629
7/1 (with short)	1057(In) 687(Out)
7/2 (short)	370
8/1	777
9/1	815
10/1	65
11/1 (short)	286
11/2 (with short)	696(In) 410(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	79.9 % 20.1 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 5: '2027 Assessment AM' (FG5: '2027 Assessment AM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	421	291	0	712
	B	365	0	533	0	898
	C	337	716	0	34	1087
	D	0	0	0	0	0
	Tot.	702	1137	824	34	2697

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2027 Assessment AM
Junction: A664 Queensway / A664 Manchester Road	
1/1	712
2/1	365
3/1	716
4/1	824
5/1	371
6/1	702
7/1 (with short)	898(In) 533(Out)
7/2 (short)	365
8/1	1137
9/1	1087
10/1	34
11/1 (short)	421
11/2 (with short)	712(In) 291(Out)

Lane Saturation Flows

Junction: A664 Queensway / A664 Manchester 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 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	90.8 % 9.2 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 6: '2027 Assessment PM' (FG6: '2027 Assessment PM', Plan 1: 'Network Control Plan 1')
Traffic Flows, Desired
Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	300	418	0	718
	B	399	0	687	0	1086
	C	276	491	0	65	832
	D	0	0	0	0	0
	Tot.	675	791	1105	65	2636

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2027 Assessment PM
Junction: A664 Queensway / A664 Manchester Road	
1/1	718
2/1	399
3/1	491
4/1	1105
5/1	341
6/1	675
7/1 (with short)	1086(In) 687(Out)
7/2 (short)	399
8/1	791
9/1	832
10/1	65
11/1 (short)	300
11/2 (with short)	718(In) 418(Out)

Lane Saturation Flows

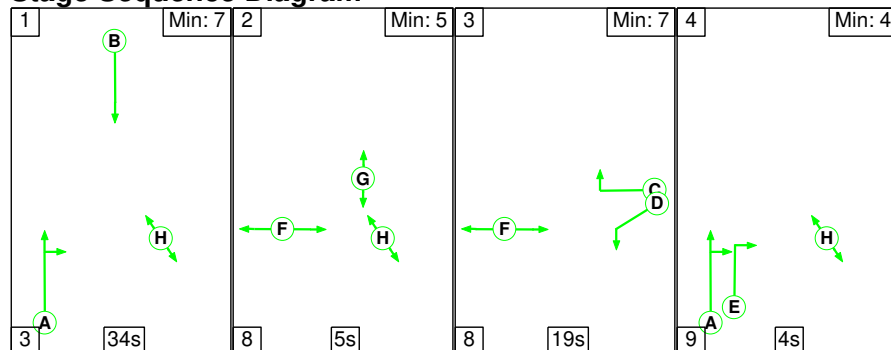
Junction: A664 Queensway / A664 Manchester Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A664 Queensway)	3.60	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1975	1975
2/1 (A664 Queensway Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (A664 Manchester Road (north))	4.18	0.00	Y	Arm 8 Ahead	Inf	100.0 %	2033	2033
4/1 (A664 Manchester Rd (north - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Albion Street)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf Inf	80.9 % 19.1 %	2015	2015
6/1 (A664 Queensway exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A664 Manchester Rd (south))	2.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1880	1880
7/2 (A664 Manchester Rd (south))	2.50	0.00	N	Arm 2 Right	20.00	100.0 %	1865	1865
8/1 (A664 Manchester Rd (south - exit) Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A664 Manchester Rd (north) Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

10/1 (Albion Street south - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
11/1 (A664 Queensway)	4.20	0.00	Y	Arm 8 Left	25.00	100.0 %	1920	1920
11/2 (A664 Queensway)	3.30	0.00	N	Arm 4 Right	15.00	100.0 %	1895	1895

Scenario 1: 'Base 2018 AM' (FG1: 'Base 2018 AM', Plan 1: 'Network Control Plan 1')

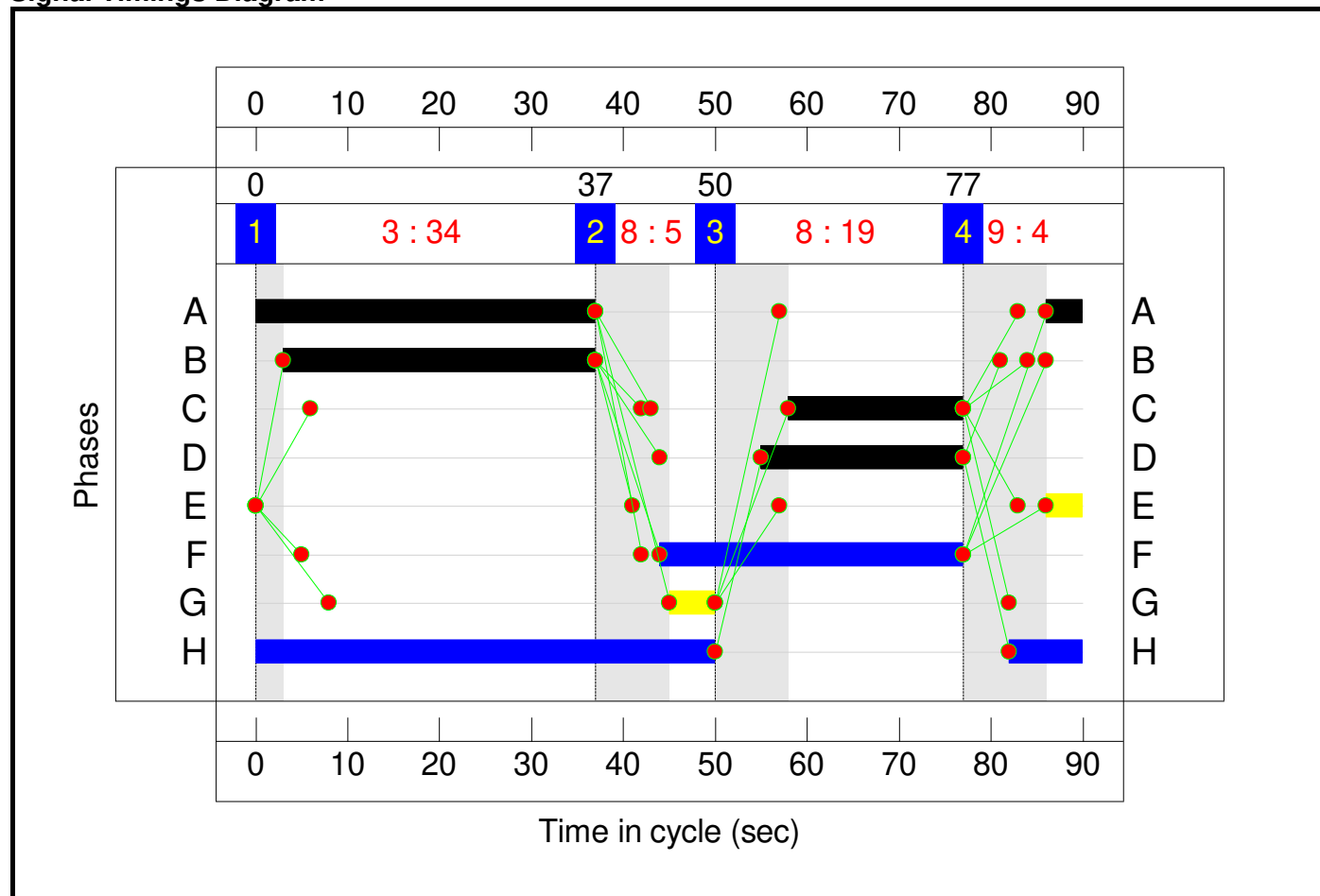
Stage Sequence Diagram



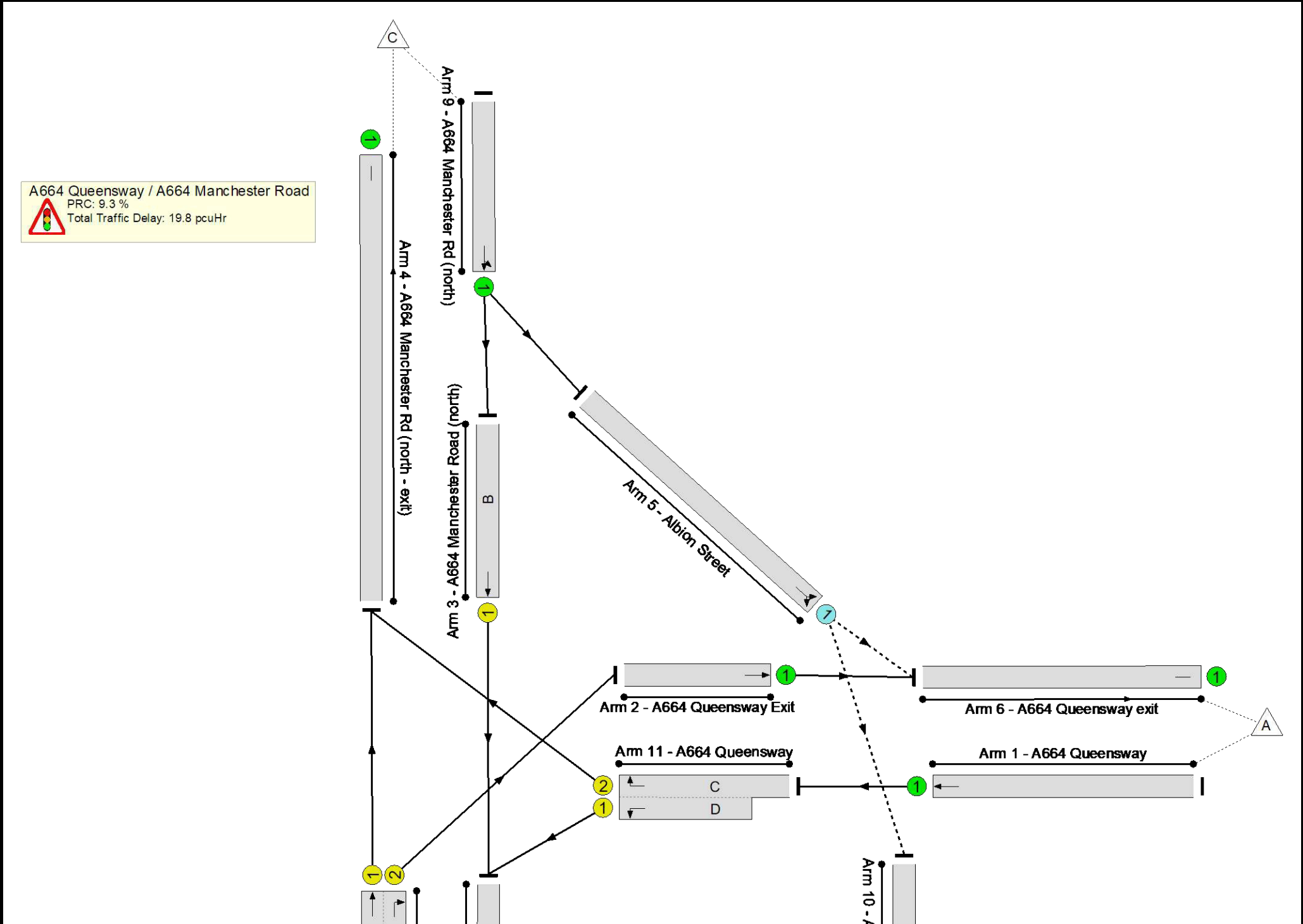
Stage Timings

Stage	1	2	3	4
Duration	34	5	19	4
Change Point	0	37	50	77

Signal Timings Diagram



Full Input Data And Results



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	-	-		-	-	-	-	-	-	82.3%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	82.3%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	602	1975	1975	30.5%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	34	-	651	2033	791	82.3%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	733	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	332	2015	584	56.9%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	623	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	41	4	807	1880:1865	724+481	67.0 : 67.0%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	983	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	31	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	19:22	-	602	1895:1920	305+435	81.4 : 81.4%

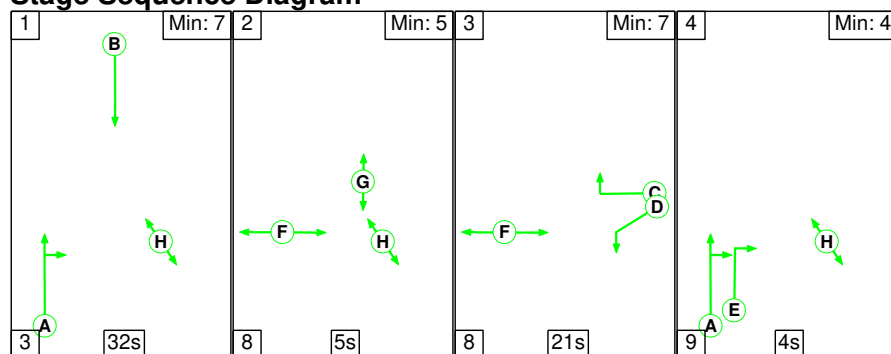
Full Input Data And Results

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	-	-	332	0	0	13.5	6.3	0.0	19.8	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	332	0	0	13.5	6.3	0.0	19.8	-	-	-	-
1/1	602	602	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
2/1	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	651	651	-	-	-	4.5	2.3	-	6.7	37.2	14.5	2.3	16.7
4/1	733	733	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	332	332	332	0	0	0.2	0.7	-	0.8	9.0	2.5	0.7	3.1
6/1	623	623	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	807	807	-	-	-	3.7	1.0	-	4.7	21.0	8.6	1.0	9.6
8/1	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	983	983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	31	31	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	602	602	-	-	-	5.2	2.1	-	7.3	43.6	8.1	2.1	10.2
C1 PRC for Signalled Lanes (%): 9.3 Total Delay for Signalled Lanes (pcuHr): 18.74 Cycle Time (s): 90 PRC Over All Lanes (%): 9.3 Total Delay Over All Lanes(pcuHr): 19.79													

Full Input Data And Results

Scenario 2: 'Base 2018 PM' (FG2: 'Base 2018 PM', Plan 1: 'Network Control Plan 1')

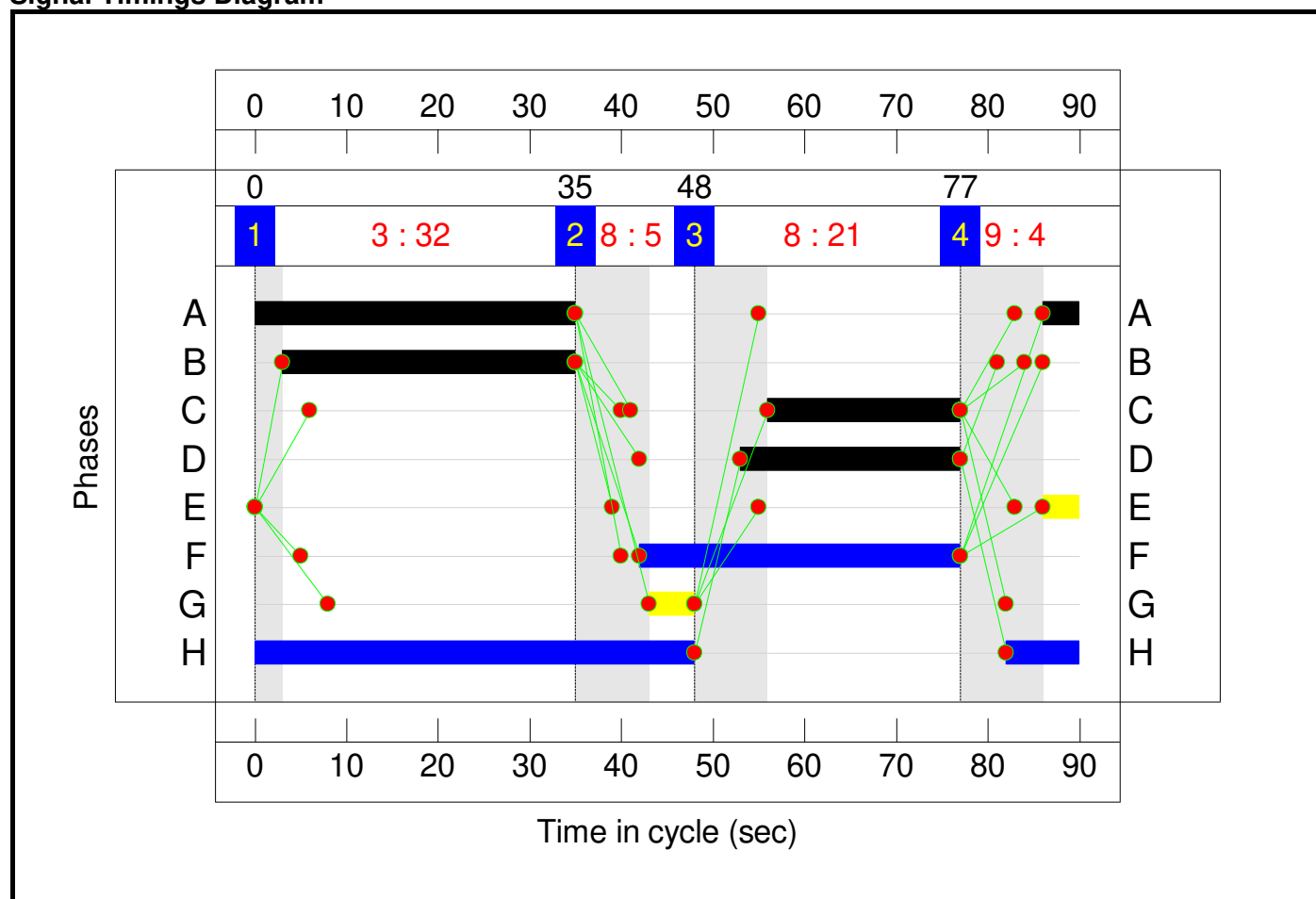
Stage Sequence Diagram



Stage Timings

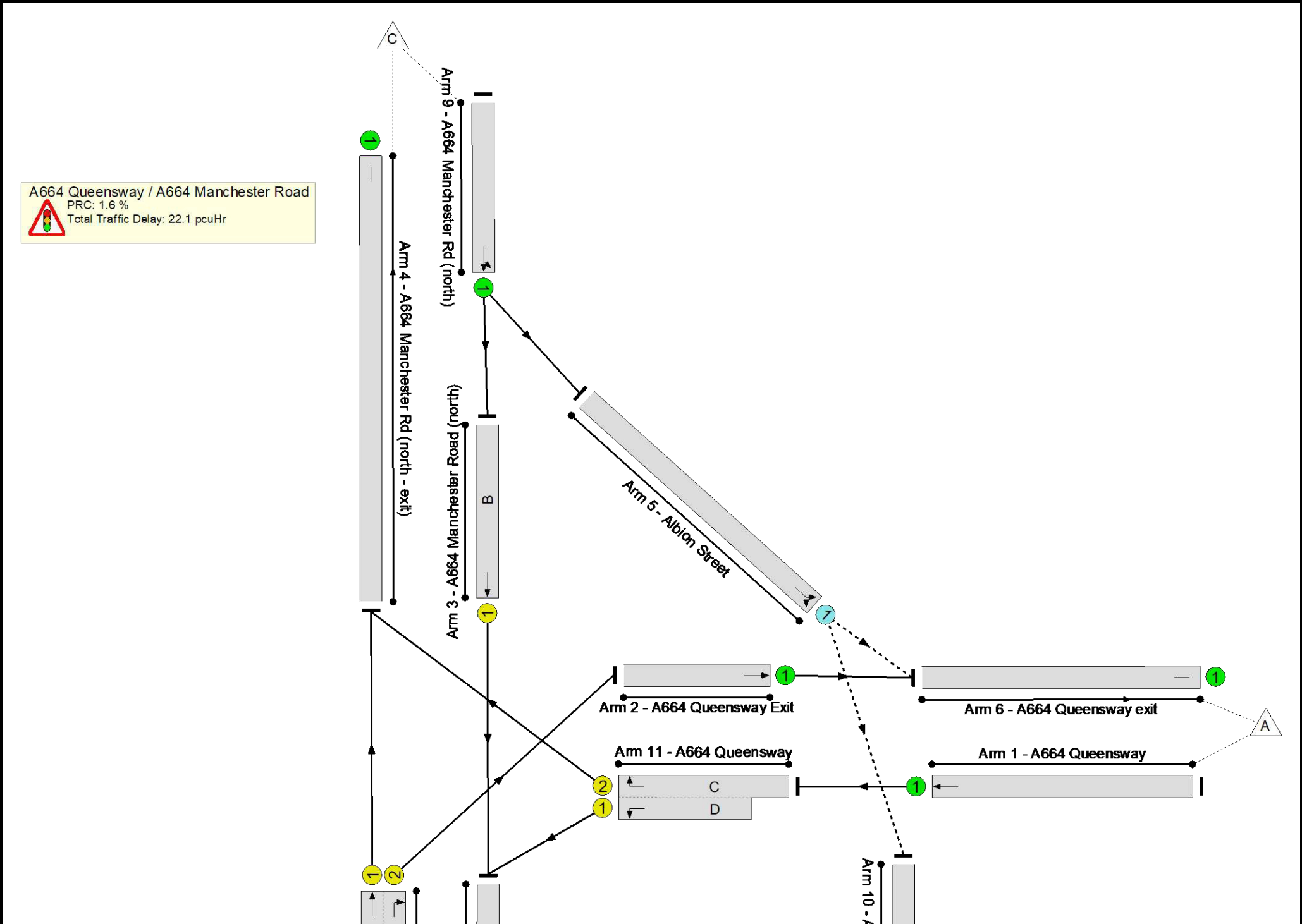
Stage	1	2	3	4
Duration	32	5	21	4
Change Point	0	35	48	77

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	-	-		-	-	-	-	-	-	88.6%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	88.6%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	635	1975	1975	32.2%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	338	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	32	-	448	2033	745	60.1%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1001	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	296	2015	557	53.2%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	39	4	965	1880:1865	716+386	87.5 : 87.5%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	744	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	21:24	-	635	1895:1920	422+295	88.6 : 88.6%

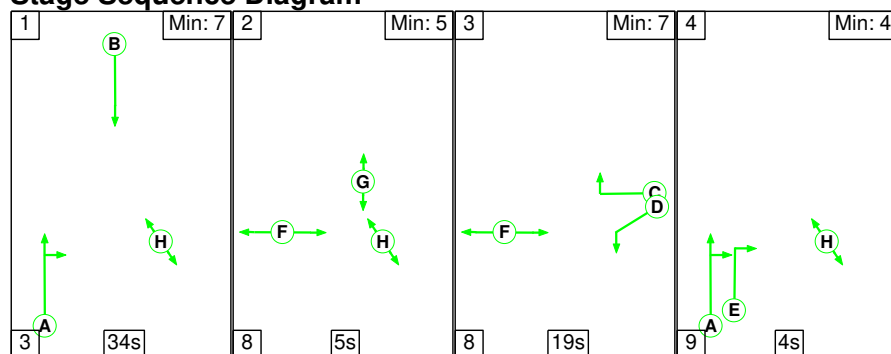
Full Input Data And Results

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	-	-	296	0	0	13.6	8.5	0.0	22.1	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	296	0	0	13.6	8.5	0.0	22.1	-	-	-	-
1/1	635	635	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
2/1	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	448	448	-	-	-	2.9	0.7	-	3.6	29.2	9.1	0.7	9.8
4/1	1001	1001	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	296	296	296	0	0	0.2	0.6	-	0.8	9.2	2.5	0.6	3.0
6/1	574	574	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	965	965	-	-	-	5.2	3.4	-	8.6	32.0	14.1	3.4	17.4
8/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	744	744	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	635	635	-	-	-	5.3	3.6	-	8.9	50.2	8.7	3.6	12.3
C1 PRC for Signalled Lanes (%): 1.6 Total Delay for Signalled Lanes (pcuHr): 21.07 Cycle Time (s): 90 PRC Over All Lanes (%): 1.6 Total Delay Over All Lanes(pcuHr): 22.07													

Full Input Data And Results

Scenario 3: 'Base 2027 AM' (FG3: 'Base 2027 AM', Plan 1: 'Network Control Plan 1')

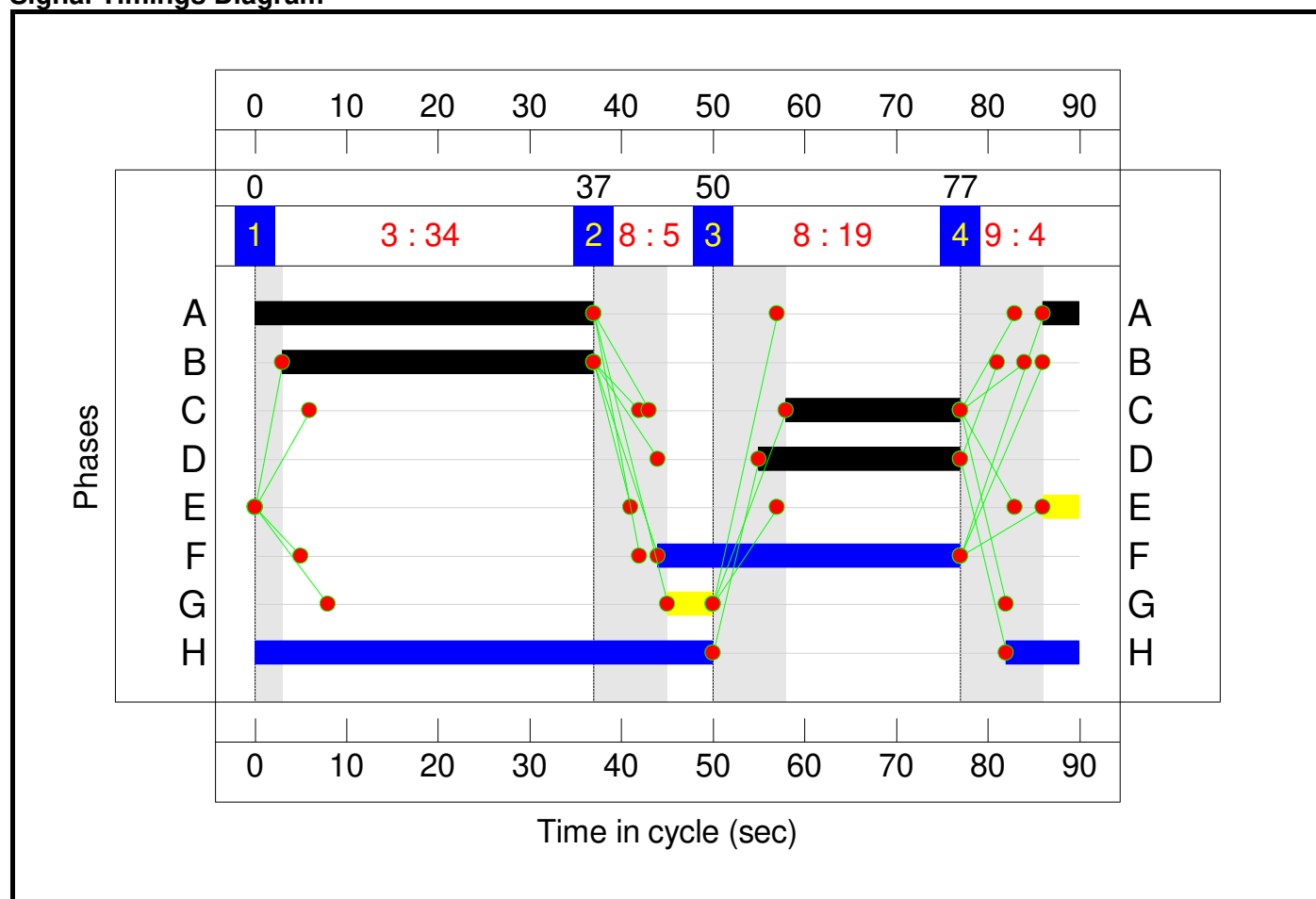
Stage Sequence Diagram



Stage Timings

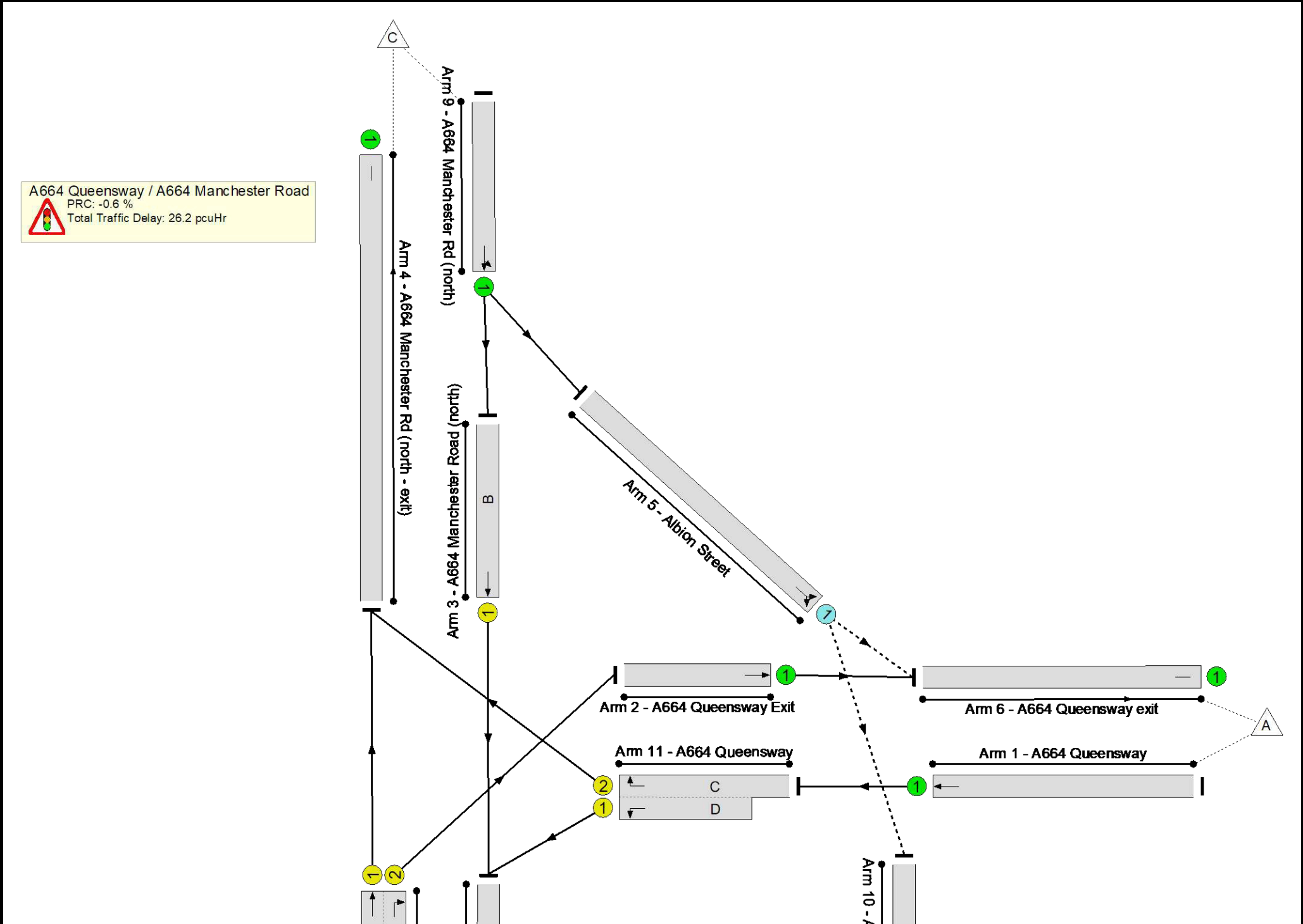
Stage	1	2	3	4
Duration	34	5	19	4
Change Point	0	37	50	77

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	-	-		-	-	-	-	-	-	90.6%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	90.6%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	662	1975	1975	33.5%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	34	-	716	2033	791	90.6%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	806	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	365	2015	559	65.3%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	41	4	887	1880:1865	724+481	73.6 : 73.6%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	1081	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	19:22	-	662	1895:1920	305+435	89.5 : 89.5%

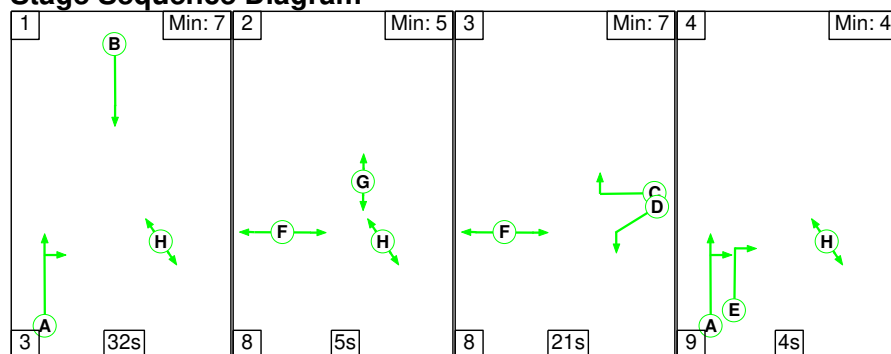
Full Input Data And Results

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	-	-	365	0	0	15.5	10.7	0.0	26.2	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	365	0	0	15.5	10.7	0.0	26.2	-	-	-	-
1/1	662	662	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	354	354	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	716	716	-	-	-	5.2	4.3	-	9.5	47.6	16.7	4.3	21.0
4/1	806	806	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	365	365	365	0	0	0.3	0.9	-	1.2	12.3	3.9	0.9	4.8
6/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	887	887	-	-	-	4.2	1.4	-	5.6	22.7	9.8	1.4	11.2
8/1	1105	1105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	1081	1081	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	34	34	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	662	662	-	-	-	5.8	3.9	-	9.7	52.5	9.2	3.9	13.0
C1 PRC for Signalled Lanes (%): -0.6 Total Delay for Signalled Lanes (pcuHr): 24.70 Cycle Time (s): 90 PRC Over All Lanes (%): -0.6 Total Delay Over All Lanes(pcuHr): 26.20													

Full Input Data And Results

Scenario 4: 'Base 2027 PM' (FG4: 'Base 2027 PM', Plan 1: 'Network Control Plan 1')

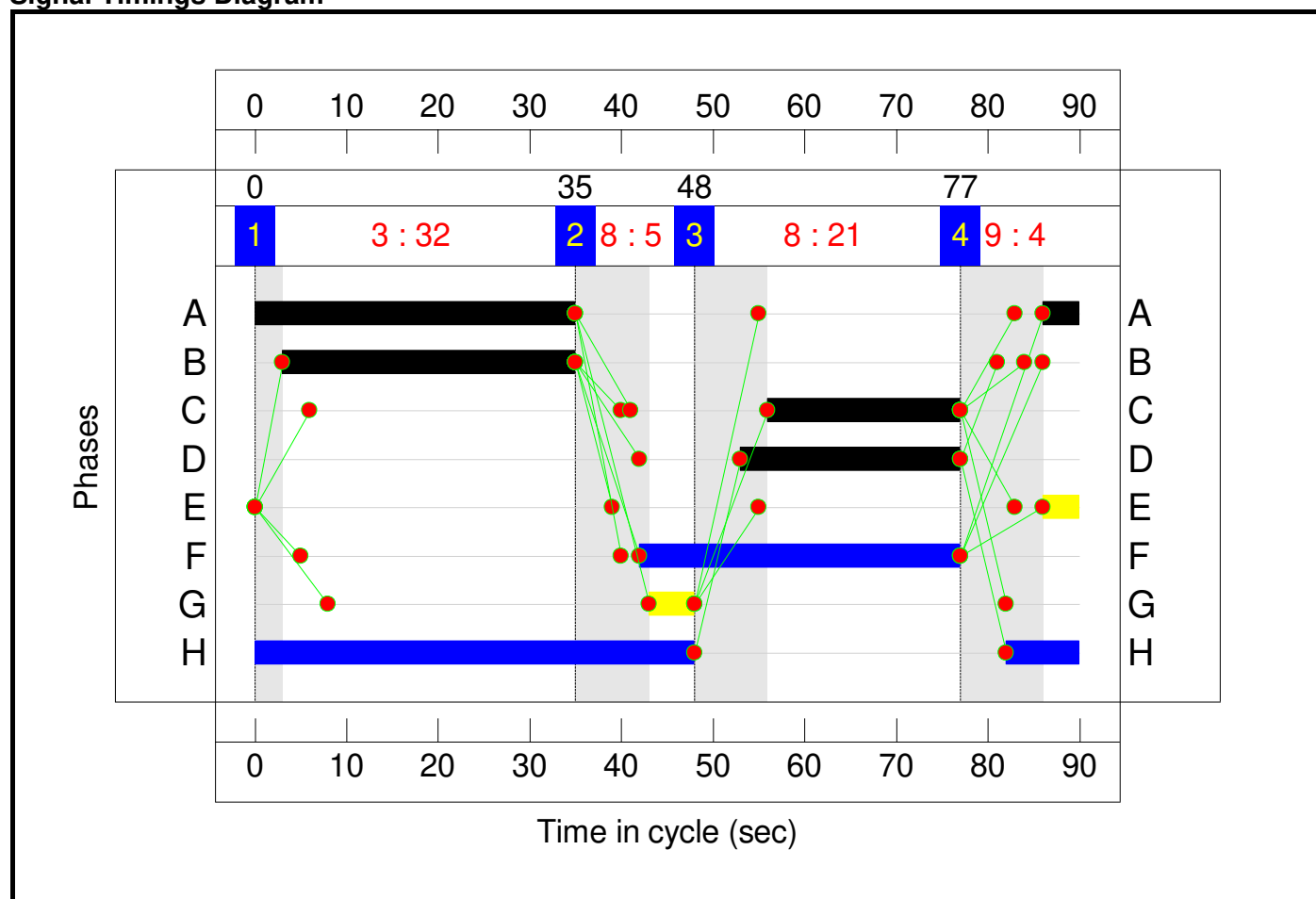
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	32	5	21	4
Change Point	0	35	48	77

Signal Timings Diagram

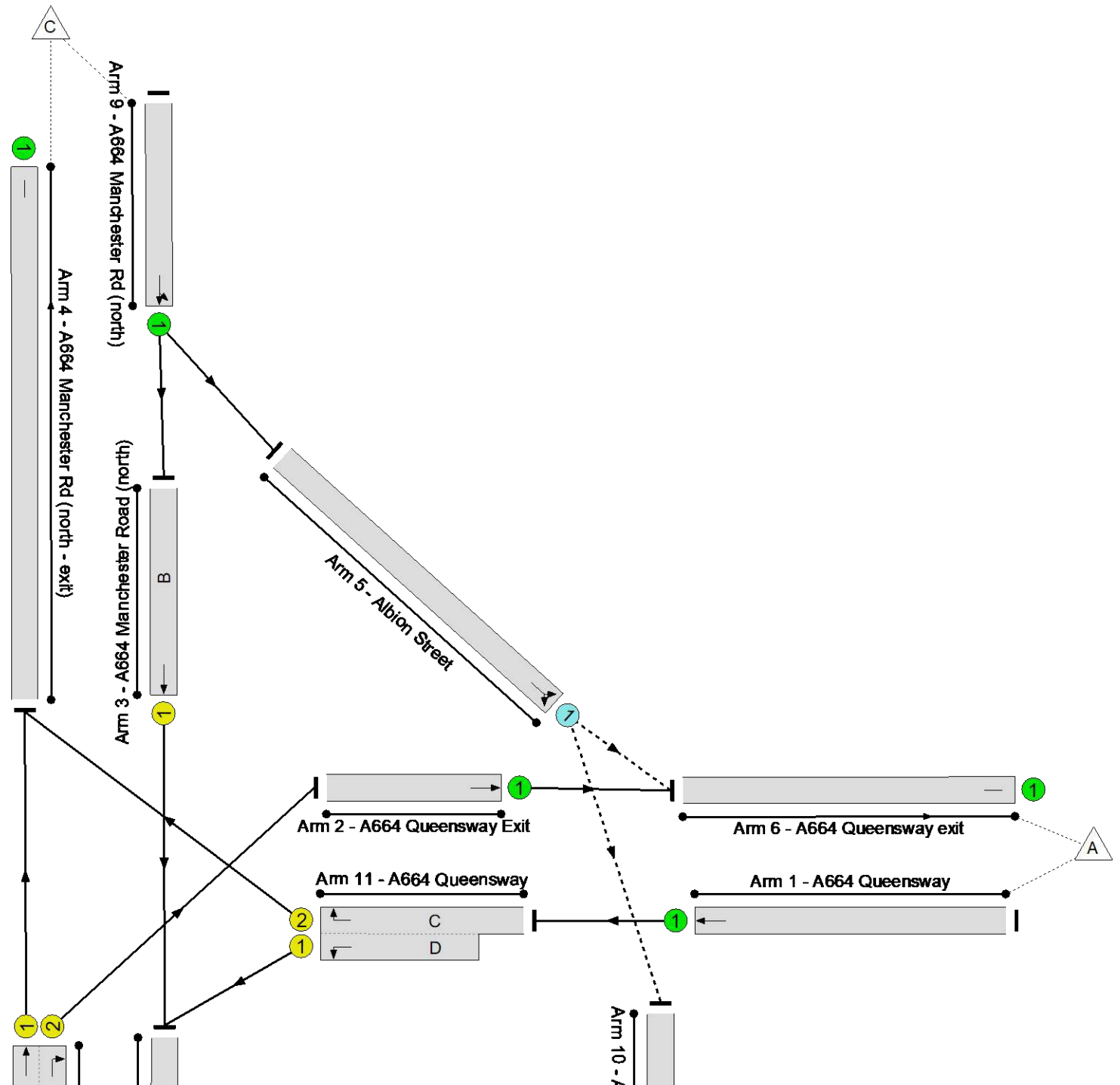


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results

A664 Queensway / A664 Manchester Road
 PRC: -7.9 %
 Total Traffic Delay: 35.4 pcuHr



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	-	-		-	-	-	-	-	-	97.1%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	97.1%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	696	1975	1975	35.2%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	32	-	491	2033	745	65.9%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	324	2015	492	65.8%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	39	4	1057	1880:1865	716+386	95.9 : 95.9%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	21:24	-	696	1895:1920	422+295	97.1 : 97.1%

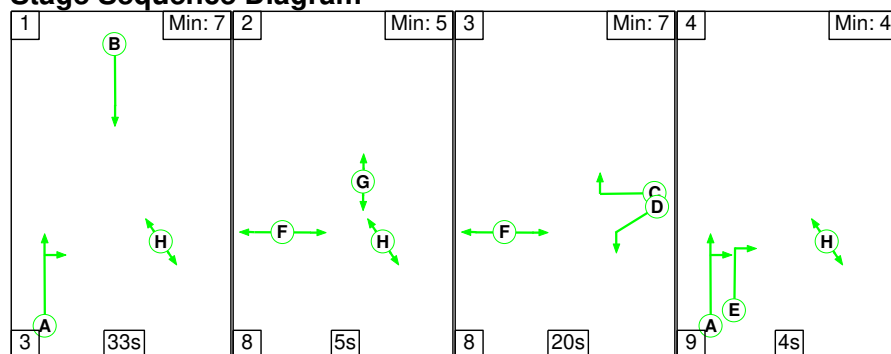
Full Input Data And Results

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	-	-	324	0	0	15.8	19.6	0.0	35.4	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	324	0	0	15.8	19.6	0.0	35.4	-	-	-	-
1/1	696	696	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	491	491	-	-	-	3.2	1.0	-	4.2	30.8	10.2	1.0	11.2
4/1	1097	1097	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	324	324	324	0	0	0.4	1.0	-	1.4	15.3	4.5	1.0	5.5
6/1	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	1057	1057	-	-	-	6.1	8.5	-	14.6	49.9	18.7	8.5	27.2
8/1	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	815	815	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	696	696	-	-	-	6.0	9.0	-	14.9	77.1	10.9	9.0	19.9
C1 PRC for Signalled Lanes (%): -7.9 Total Delay for Signalled Lanes (pcuHr): 33.75 Cycle Time (s): 90 PRC Over All Lanes (%): -7.9 Total Delay Over All Lanes(pcuHr): 35.40													

Full Input Data And Results

Scenario 5: '2027 Assessment AM' (FG5: '2027 Assessment AM', Plan 1: 'Network Control Plan 1')

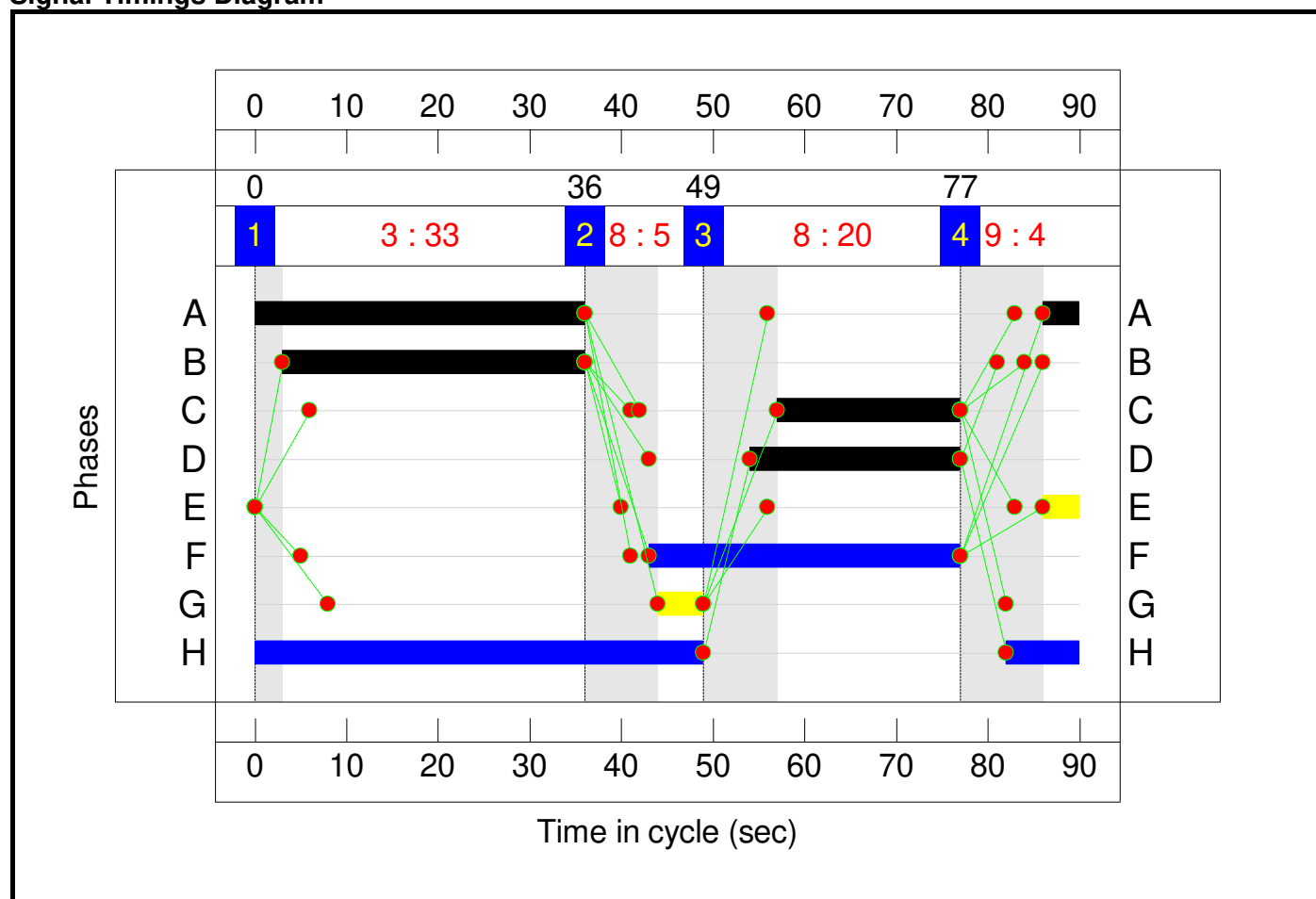
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	33	5	20	4
Change Point	0	36	49	77

Signal Timings 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	-	-		-	-	-	-	-	-	94.0%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	94.0%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	712	1975	1975	36.1%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	365	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	33	-	716	2033	768	93.2%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	824	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	371	2015	543	68.3%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	40	4	898	1880:1865	709+485	75.2 : 75.2%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	1087	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	20:23	-	712	1895:1920	310+448	94.0 : 94.0%

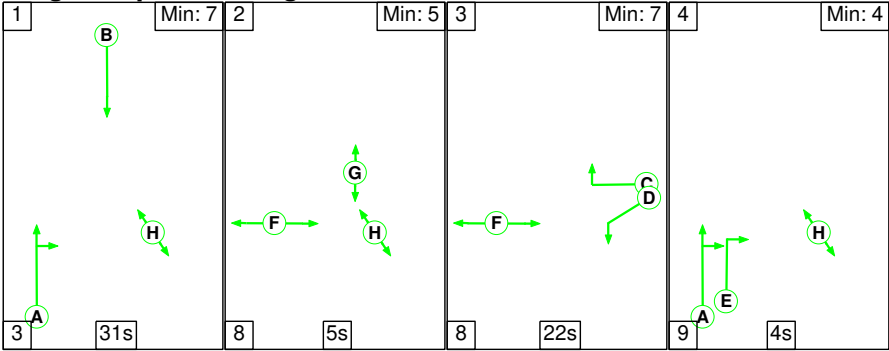
Full Input Data And Results

[illegible]

Full Input Data And Results

Scenario 6: '2027 Assessment PM' (FG6: '2027 Assessment PM', Plan 1: 'Network Control Plan 1')

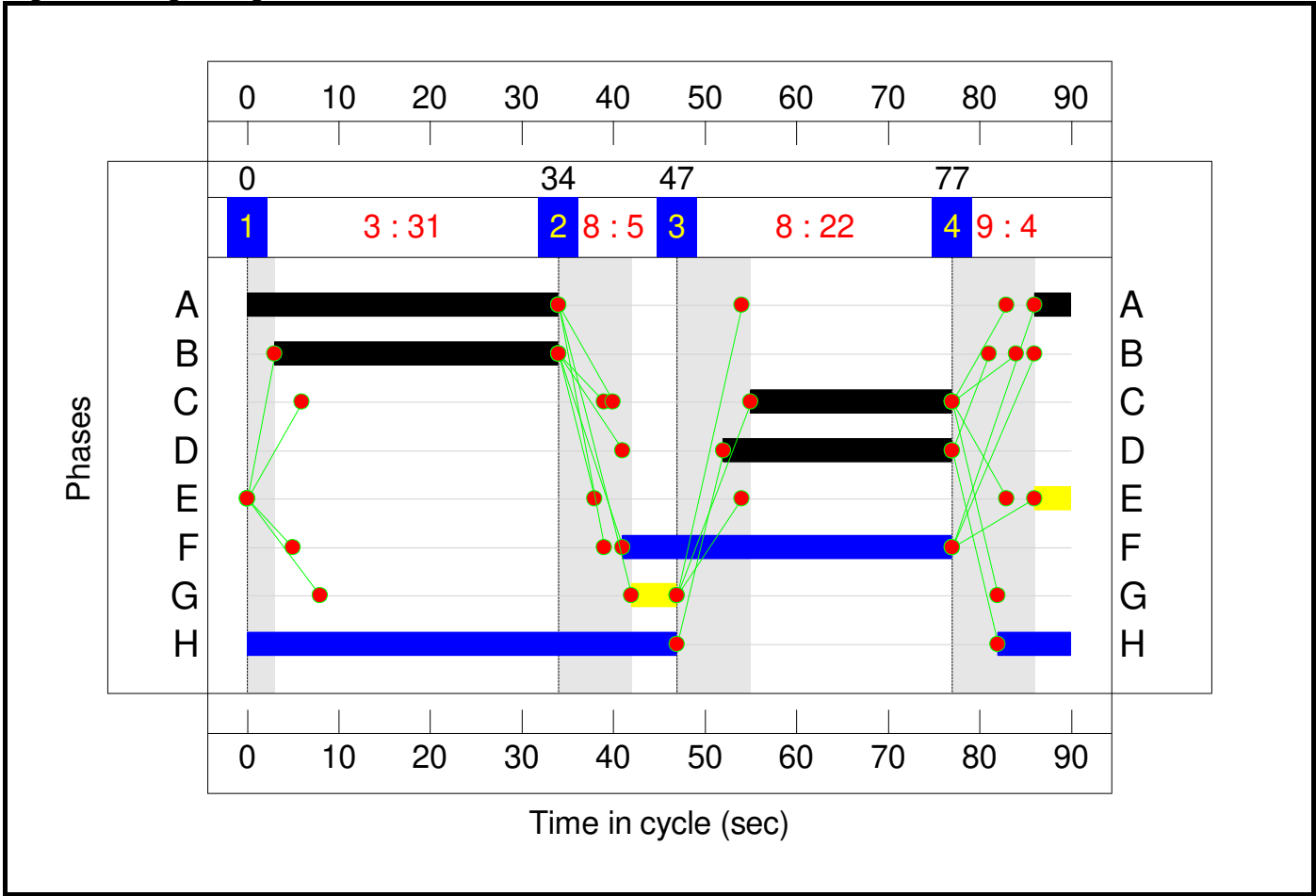
Stage Sequence Diagram

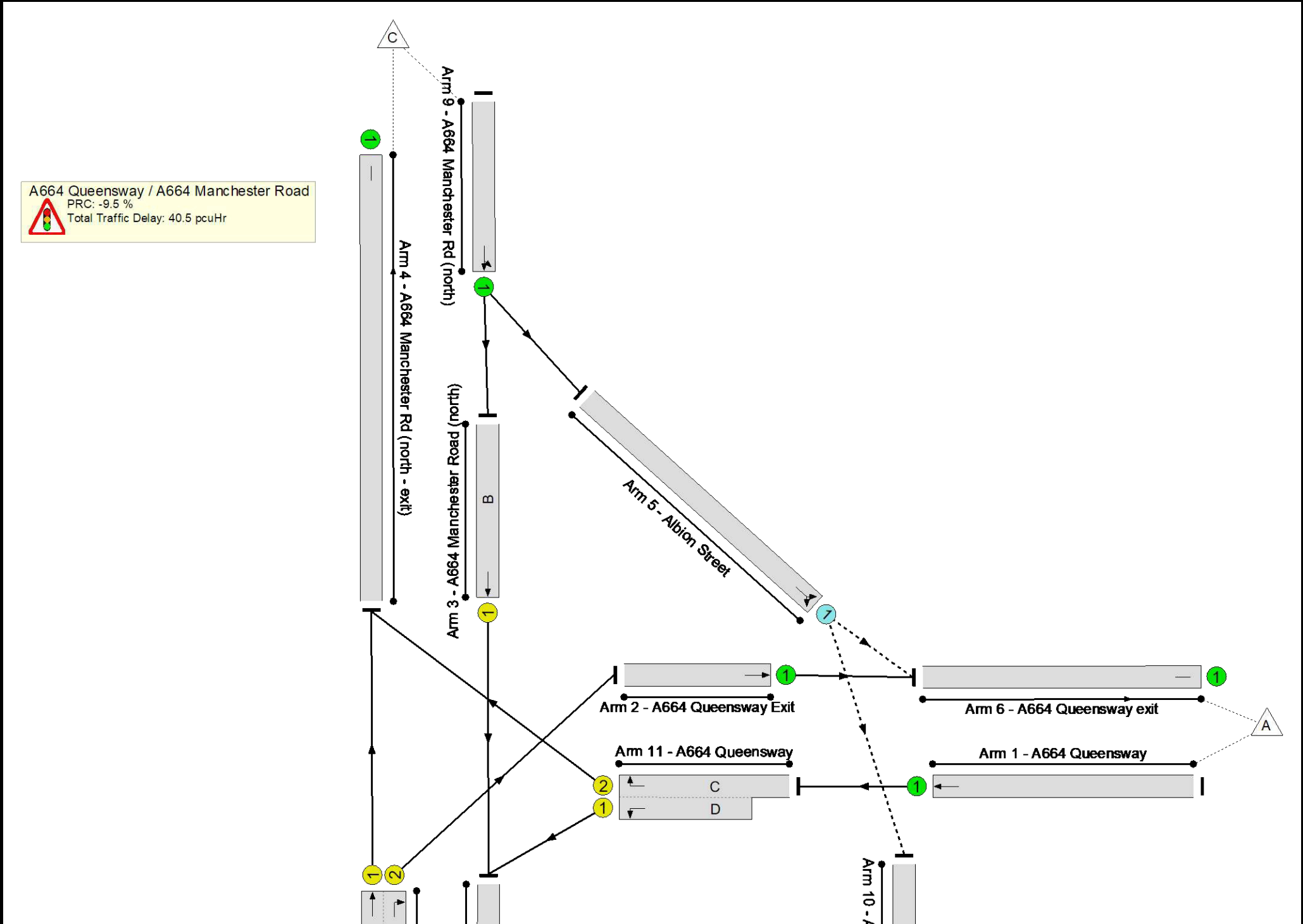


Stage Timings

Stage	1	2	3	4
Duration	31	5	22	4
Change Point	0	34	47	77

Signal Timings 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	-	-		-	-	-	-	-	-	98.6%
A664 Queensway / A664 Manchester Road	-	-	N/A	-	-		-	-	-	-	-	-	98.6%
1/1	A664 Queensway Ahead	U	N/A	N/A	-		-	-	-	718	1975	1975	36.4%
2/1	A664 Queensway Exit Ahead	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
3/1	A664 Manchester Road (north) Ahead	U	N/A	N/A	B		1	31	-	491	2033	723	67.9%
4/1	A664 Manchester Rd (north - exit)	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
5/1	Albion Street Ahead Right	O	N/A	N/A	-		-	-	-	341	2015	465	73.3%
6/1	A664 Queensway exit	U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
7/1+7/2	A664 Manchester Rd (south) Right Ahead	U	N/A	N/A	A	E	1	38	4	1086	1880:1865	697+405	98.6 : 98.6%
8/1	A664 Manchester Rd (south - exit)	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
9/1	A664 Manchester Rd (north) Ahead Left	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
10/1	Albion Street south - exit	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
11/2+11/1	A664 Queensway Right Left	U	N/A	N/A	C D		1	22:25	-	718	1895:1920	434+311	96.3 : 96.3%

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	-	-	341	0	0	16.7	23.9	0.0	40.5	-	-	-	-
A664 Queensway / A664 Manchester Road	-	-	341	0	0	16.7	23.9	0.0	40.5	-	-	-	-
1/1	718	718	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
2/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	491	491	-	-	-	3.4	1.0	-	4.4	32.3	10.4	1.0	11.4
4/1	1105	1105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	341	341	341	0	0	0.7	1.3	-	2.0	21.3	5.6	1.3	6.9
6/1	675	675	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	1086	1086	-	-	-	6.6	13.0	-	19.6	65.0	19.7	13.0	32.7
8/1	791	791	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2+11/1	718	718	-	-	-	6.0	8.2	-	14.2	71.2	11.0	8.2	19.2
C1 PRC for Signalled Lanes (%): -9.5 Total Delay for Signalled Lanes (pcuHr): 38.22 Cycle Time (s): 90 PRC Over All Lanes (%): -9.5 Total Delay Over All Lanes(pcuHr): 40.52													

S|C|P

APPENDIX N

A664 / A627(M) / Sandbrook Way Queues









TLC200 PRO 2022/06/16 08:16:01



TLC200 PRO 2022/06/16 08:29:11



TLC200 PRO 2022/06/16 16:32:46





TLC200 PRO 2022/06/16 17:02:55



TLC200 PRO 2022/06/16 17:15:18



TLC200 PRO 2022/06/16 17:34:26

S|C|P

TRAFFIC FLOW FIGURES

