

TRANSPORT ASSESSMENT

Aviva Investors

Land adjacent to Atlas Business Park, Wythenshawe

December 2022

Contents

1	Introduction	1
	Background	1
	Development Site and Location.....	1
	Proposed Development	2
	Report Structure	2
2	Planning Policy	3
	Introduction.....	3
	National Planning Policy Framework (July 2021)	3
	Manchester Core Strategy.....	5
	Guide to Development in Manchester Supplementary Planning Document & Planning Guidance	6
	Greater Manchester Transport Strategy.....	7
3	Existing Conditions	8
	Introduction.....	8
	Accessibility	10
4	Proposed Development.....	16
	Development Description	16
	Proposed Access Arrangements.....	16
	Parking.....	17
	EVCP Parking	17
	Servicing and Refuse Arrangements	17
	Road Safety Audit	18
5	Traffic Impact Assessment	19

Introduction.....	19
Traffic Surveys	19
Proposed Trip Generation	19
Traffic Distribution.....	19
Staff Trip Distribution.....	20
Operational Trip Distribution	20
Traffic Impact.....	21
6 Highway Assessment Methodology	22
Introduction.....	22
Junction Scope	22
Junction Scope	22
7 Junction Capacity Analysis.....	24
Introduction.....	24
Simonsway / M56 Junction 4 signalised junction	24
Poundswick Lane / Simonsway signalised junction.....	26
Brownley Road / Simonsway / Ruddpark Road signalised junction	26
Simonsway / Shadowmoss Road signalised junction.....	27
B1566 Styal Road / Finney Lane / Styal Road signalised junction	28
B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction	29
A555 Airport Spur / Outwood Lane signalised junction.....	31
Proposed Site Access.....	32
Merge Diverge Assessment	32
M56 Junction 4.....	34
M56 Junction 5.....	35

8 Summary and Conclusions.....	37
Summary.....	37

Appendices

Appendix A	– Pedestrian accessibility plan
Appendix B	– Cycle accessibility plan
Appendix C	– Proposed site layout
Appendix D	– Proposed site access junction design
Appendix E	– Proposed site access swept path analysis
Appendix F	– Internal swept path analysis
Appendix G	– RSA report and designers' response
Appendix H	– TRICS output reports
Appendix I	– Staff trip distribution
Appendix J	– Operational trip distribution
Appendix K	– Proposed development trip generation
Appendix L	– Junction capacity output results

1 Introduction

Background

- 1.1 Vectos are advising Aviva Investors in relation to proposals for the development of land adjacent to Atlas Business Park in Wythenshawe, Manchester ('the site').
- 1.2 The site is located 1.5 kilometres south-east of Wythenshawe town centre and 12 kilometres south of Manchester City Centre (as the crow flies). The surrounding area is formed by both employment and residential use, with the site currently accommodating vacant land located to the east of the wider Atlas Business Park site.
- 1.3 The site is located within the jurisdiction of Manchester City Council (MCC) who act as both the planning and highway authority.

Development Site and Location

- 1.4 The location of the site in a local context is shown below in **Figure 1.1**.

Figure 1.1: Site Location



- 1.5 The site is bound by grass verges bordering Simonsway and Styal Road to the north and east respectively. Overlapping part of the site is the Manchester Airport Public Safety Zone. The western portion of the site, approximately half of the overall site, is previously developed ('brownfield') land which is allocated for employment uses within the saved policies of the Manchester Unitary Development Plan. The balance of the site is located within the Greater Manchester Green Belt.

- 1.6 The existing Atlas Business Park borders the site to the west, with a large car park used to accommodate vehicles generated by Manchester Airport located to the south of the site.

Proposed Development

- 1.7 This Transport Assessment supports a full planning application for the construction of five units of use classes E(g)(iii), B2 and B8 comprising a total gross internal floor area of 39,536 square meters, with associated car parking. The scheme is also proposing an enhanced vehicle access from Simonsway, which also incorporates facilities for pedestrians and cyclists.

Report Structure

- 1.8 This Transport Assessment has been prepared in accordance with national and local policy guidance.
- 1.9 Following the introduction, the report provides the following information:
- Section 2 provides a review of the proposed in the context of both national and local planning policy guidelines;
 - Section 3 provides an overview of baseline transport conditions and the sites accessibility;
 - Section 4 provides a description of the proposed development and access arrangements;
 - Section 5 provides a traffic impact assessment;
 - Section 6 set out the methodology used to assess the highway network;
 - Section 7 reviews the operation of junctions in the vicinity of the site; and
 - Section 8 provides a summary and conclusion to the report.

2 Planning Policy

Introduction

- 2.1 This section of the report considers the planning policy guidance which is pertinent in the context of the development proposals.

National Planning Policy

National Planning Policy Framework (July 2021)

- 2.2 The National Planning Policy Framework (NPPF) was originally published by the Ministry of Housing, Communities and Local Government in March 2012. Since then, the NPPF has been updated in July 2018, February 2019 and the most recent version was updated and published in July 2021.
- 2.3 The NPPF sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced.
- 2.4 The three overarching objectives to achieve sustainable development outlined within the NPPF include:
- “a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
 - c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”
- 2.5 Chapter 9 covers the promotion of 'Sustainable Transport' and states in relation to parking standards:
- “If setting local parking standards for residential and non-residential development, policies should take into account:
- a) the accessibility of the development;
 - b) the type, mix and use of development;

- c) the availability of and opportunities for public transport;
- d) local car ownership levels; and
- e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.”

2.6 It goes on to state that:

“Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport (in accordance with chapter 11 of this Framework). In town centres, local authorities should seek to improve the quality of parking so that it is convenient, safe and secure, alongside measures to promote accessibility for pedestrians and cyclists.”

2.7 In relation to the development proposals, the NPPF states that 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;
- 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; 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.”

2.8 Guidance is provided on the consideration of proposals. It is mentioned 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.”

2.9 Within the above context it is stated that all applications for developments 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) to be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.”

2.10 With regard to the necessary documentation to be provided it is stated that:

“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

2.11 Relevant transport planning policy and guidance at the local level is contained within the Manchester Core Strategy document, the Guide to Development in Manchester SPD and the Greater Manchester Transport Strategy.

Manchester Core Strategy

2.12 The Core Strategy forms the key document in Manchester’s Local Development Framework and was adopted in 2012. It sets out a number of strategic policies that will guide the development of the city. Policy SP1 sets out the spatial principles that will guide development to 2027.

2.13 One of these principles is as follows:

- ‘New development will maximise the potential of the City’s transport infrastructure, in particular promoting walking, cycling and the use of public transport.’

2.14 In addition, the policy goes on to state that developments in all parts of the city should ‘improve access to jobs, services, education and open space by being located to reduce the need to travel and provide good access to sustainable transport provision’.

2.15 This is reinforced through Policy DM 1 of the Core Strategy, which concerns development management. This states that all developments should have regard to specific issues including the access to new development by sustainable transport modes, vehicular access and car parking.

2.16 Policy T1 of the Core Strategy concerns sustainable transport. It states that the Council will support proposals that “Improve choice by developing alternatives to the private car”.

2.17 It is also stated that the Council will “take account of the needs of road users according to a broad hierarchy consisting of, in order of priority:

- Pedestrians and disabled people;
- Cyclists, public transport;
- Commercial access;
- General off-peak traffic; and
- General peak time traffic.”

2.18 Policy T2 states that the Council will actively manage the pattern of development to ensure that new development:

- “Is located to ensure good access to the city’s main economic drivers, including... the Airport to ensure good national and international connections and is easily accessible by walking, cycling and public transport; connecting residents to jobs, centres, health, leisure, open space and educational opportunities”.

2.19 Policy EC 1 surrounds employment and economic growth in Manchester and states a minimum of 200 hectares of employment land will be development between 2010 and 2027, including distribution and warehousing. It is stated that this is to be done in key locations for major employment growth consisting of Manchester Airport and the surrounding area making up 50 hectares of the aforementioned provision.

2.20 Furthermore, Policy EC 10 focusses on employment space in Wythenshawe and states that within this part of Manchester development proposals should have regard to:

2.21 The revised NPPF was published in February 2019 by the Ministry of Housing, Communities and Local Government, replacing the previous versions published in March 2012 and July 2018.

2.22 The NPPF sets out the government’s planning policies for England and how these are expected to be applied. At the heart of the Framework is a presumption in favour of sustainable development.

- “Locations with good access to the national motorway network such and the M56 and M60 and their suitability for logistics”.

Guide to Development in Manchester Supplementary Planning Document & Planning Guidance

2.23 This document brings together the development principles that will apply to new developments in Manchester. Paragraph 2.22 of the document states that:

- “In order to reduce reliance on the car, workers should be within easy walking distance of facilities such as clinics, corner shops, newsagents and public transport”.

2.24 The guidance goes on to describe the need for Travel Plans in new developments, stating:

- “A Travel Plan is a package of measures and actions aimed at reducing the need to travel by car by providing alternative choices and encouraging walking, cycling, and public transport use. At the planning stage consideration should be given to the proximity of the development to existing travel

facilities and services, site layout, suitable density, cycling, pedestrian facilities and potential for parking restraint”.

Greater Manchester Transport Strategy

- 2.25 Transport for Greater Manchester (TfGM) has developed a 2040 Transport Strategy that sets out ambitions for a radical new approach to planning Manchester’s transport system in support of long-term needs and aspirations.
- 2.26 The vision is for Greater Manchester to have world class connections that support long-term, sustainable economic growth and access to opportunity for all. The Transport Vision aims are as follows:
- Supporting sustainable economic growth;
 - Protecting the environment;
 - Improving quality of life for all; and
 - Developing an innovative city region.

3 Existing Conditions

Introduction

- 3.1 This section of this report provides a review of the baseline transport conditions in the vicinity of the site, including the highway network and collision data.

Surrounding Highway Network

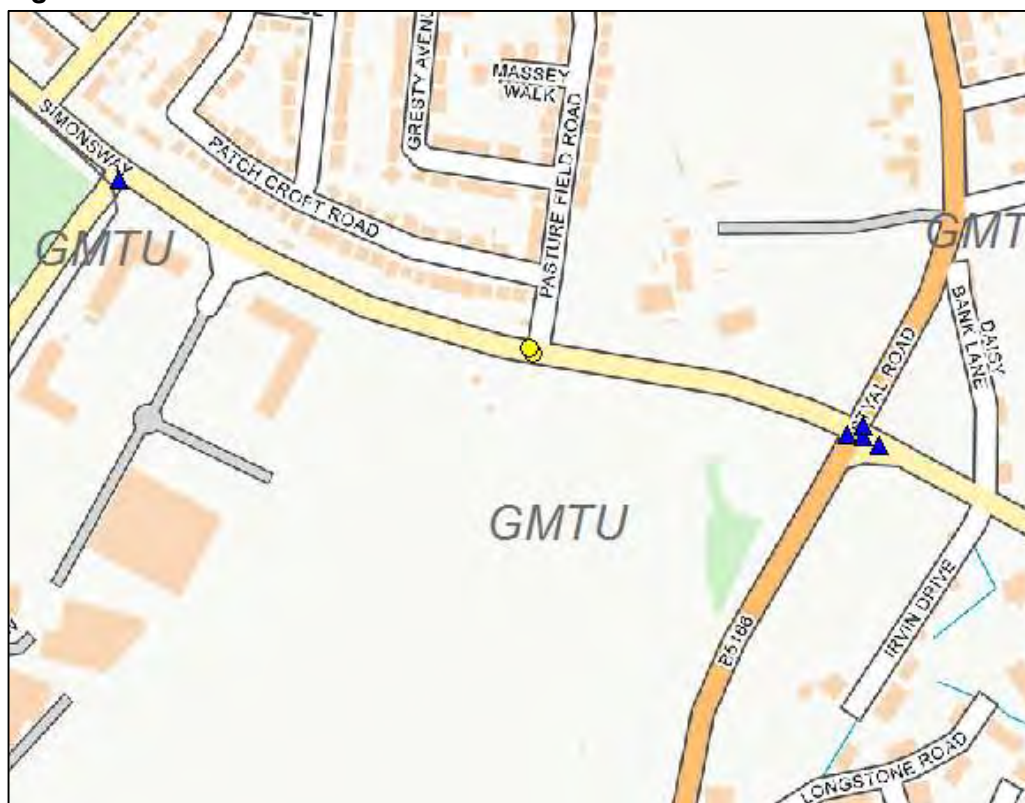
- 3.2 Vehicle access to the site is currently provided from an existing priority junction on Simonsway. Simonsway runs in a general east / west orientation between the B5166 Styal Road / Finney Lane / Simonsway signalised junction and Junction 4 of the M56.
- 3.3 Simonsway is a single carriageway road that is subject to a speed limit of 30 mph and is lit along its length. The carriageway width along Simonsway varies between 7 and 9m north of the site boundary, before increasing to around 15 metres at the aforementioned signalised junction to the east.
- 3.4 Each arm of the B5166 Styal Road / Finney Lane / Simonsway signalised junction facilitates both ahead movements, along with left and right turns via green filter lights. It is noted that vehicles approaching the junction from the south on the B5166 Styal Road benefit from a dedicated right turn lane at this location.
- 3.5 Located 30m east of the site's existing vehicle access on Simonsway is Pasture Field Road which is situated on the opposite side of the carriageway. Pasture Field Road connects to Lomond Road to the north, facilitating access to numerous residential streets located north of the site.
- 3.6 Lomond Road also provides a through-route between the B5166 Styal Road and Peel Hall Road, with both providing key routes north of the site into central Wythenshawe.
- 3.7 The B5166 Styal Road forms the northern and southern arms of the B5166 Styal Road / Finney Lane / Simonsway signalised junction. Styal Road is subject to a speed limit of 30mph to the north where a single carriageway arrangement continues to Gately village and connects to the A560 Altrincham Road.
- 3.8 To the south, the speed limit on the B5166 Styal Road increases to 40mph. The single-carriageway arrangement on this road continues before access to the A555 Manchester Airport Relief Road is provided further south.
- 3.9 The B5166 then continues southbound towards Cheshire, facilitating access to Wilmslow. The A55 Manchester Airport Relief Road provides a strategic connection between the M56 to the west and the A34 Wilmslow to Handforth Bypass to the east.
- 3.10 To the west of the site's existing access, Simonsway provides access to Shadowmoss Road via a signalised junction. To the south of this junction, Shadowmoss Road connects to the Ringway Road which provides another connection to the aforementioned A555 Manchester Airport Relief Road, further south via the B5166 Styal Road.

- 3.11 Further west of the Simonsway / Shadowmoss Road signalised junction is the Brownley Road / Simonsway / Ruddpark Road signalised junction. From this location Brownley Road continues north to Sharston Industrial Estate and meets the M6 motorway, with Ruddpark Road continuing south and providing access to numerous residential streets and cul-de-sacs.
- 3.12 The M56 motorway is accessible from Simonsway further west at Junction 4, as previously noted.

Accident Review

- 3.13 Transport for Greater Manchester's Accident Map is available through the Road Traffic Accident Database. This has been interrogated for the most recently available five-year period.
- 3.14 The analysis has been undertaken for the latest five-year period and is summarised in **Figure 3.1**.

Figure 3.1: GMTU Accident Data



- 3.15 A summary of collision statistics within the study area indicates the following incidents:
- Simonsway / Shadowmoss Road signalised junction – 2 slight collisions;
 - Simonsway / Pasture Field Road priority junction – 2 serious collisions; and
 - B5166 Styal Road / Finney Lane / Simonsway signalised junction - 9 slight collisions.
- 3.16 Given the volume of traffic which uses the highway network surrounding the site on a regular basis the number of incidents which have been recorded is considered very low, and certainly it gives no

indication that there are any safety issues with the design or operation of the surrounding road network.

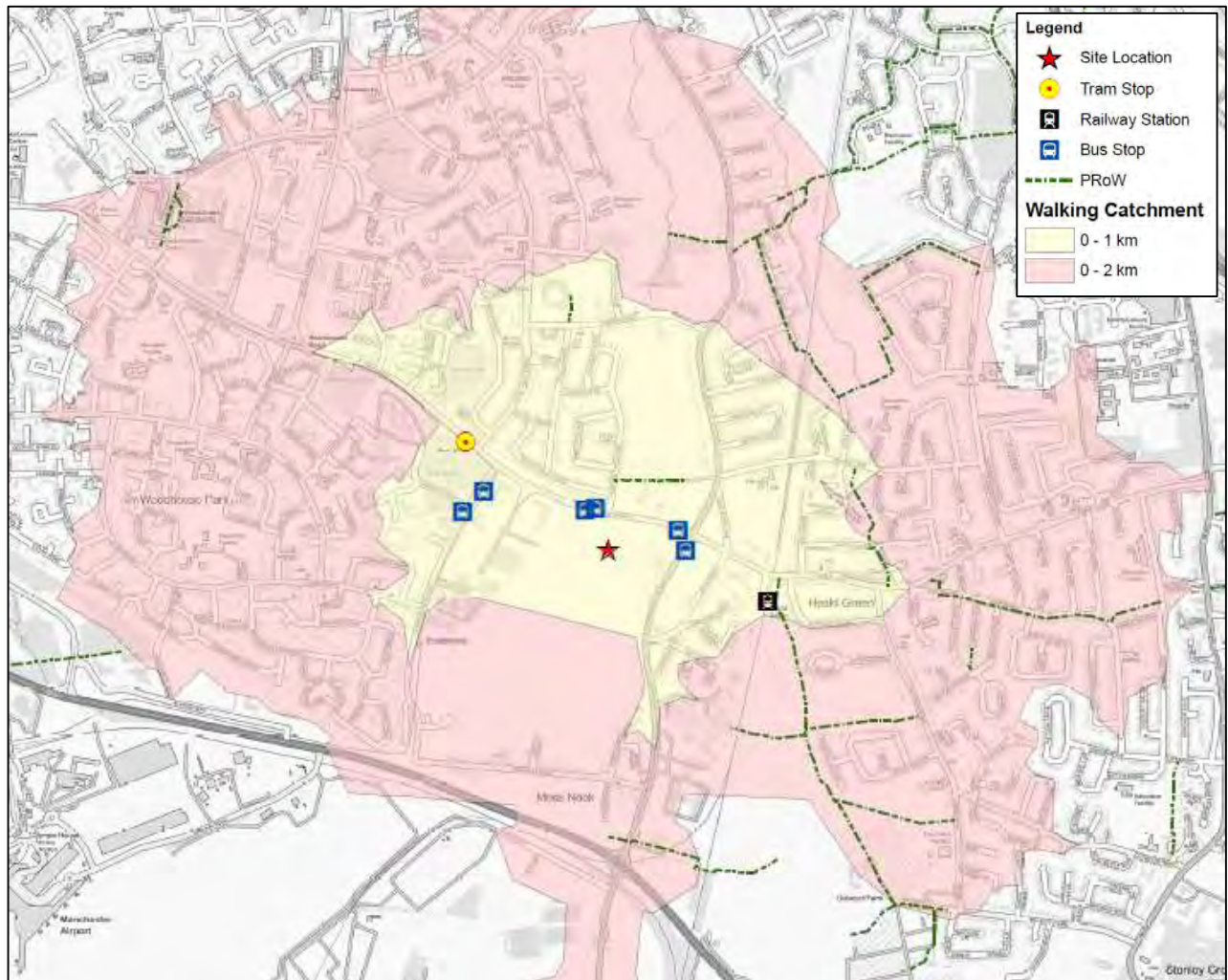
- 3.17 It is therefore concluded that there are no accident blackspots on the highway network in the vicinity of the site.

Accessibility

Pedestrian

- 3.18 To support pedestrian trips, street-lit footways are provided along Simonsway and the B5166 Styal Road which border the site to the north and east, respectively. These footways are flat, provide sufficient width and have a good surface condition providing a continuous connection between the site and its surroundings.
- 3.19 Footways in the vicinity of the site provide connections to the local transport network such as bus stops on both Simonsway and the B5166, as well as numerous Metrolink stops such as Peel Hall and Shadowmoss.
- 3.20 In addition, comprehensive controlled pedestrian crossing facilities are provided at the following junctions that includes dropped kerbs and tactile paving:
- B5166 Styal Road/ Finney Lane/ Simonsway signalised junction;
 - Simonsway / Shadowmoss Road signalised junction; and
 - Brownley Road / Simonsway / Ruddpark Road signalised junction.
- 3.21 These facilities assist with pedestrian accessibility to Heald Green, Gatley and Wythenshawe centre.
- 3.22 It is generally considered an acceptable walking distance for commuting purposes is 1 kilometre, with a preferred maximum distance of 2 kilometres. Walking can also be promoted as part of a multi-modal journey, particularly with public transport.
- 3.23 The Chartered Institute of Highways and Transportation Document 'Planning for Walking' (2015) states that 80% of journeys shorter than a mile (1.6 kilometres) are made wholly on foot.
- 3.24 An analysis of the pedestrian catchment area within the development site has been undertaken to illustrate the site's 1 and 2-kilometre walking catchment. An extract of the pedestrian accessibility plan has been shown in **Figure 3.2** and can be found in **Appendix A**.

Figure 3.2: Pedestrian Accessibility Catchment

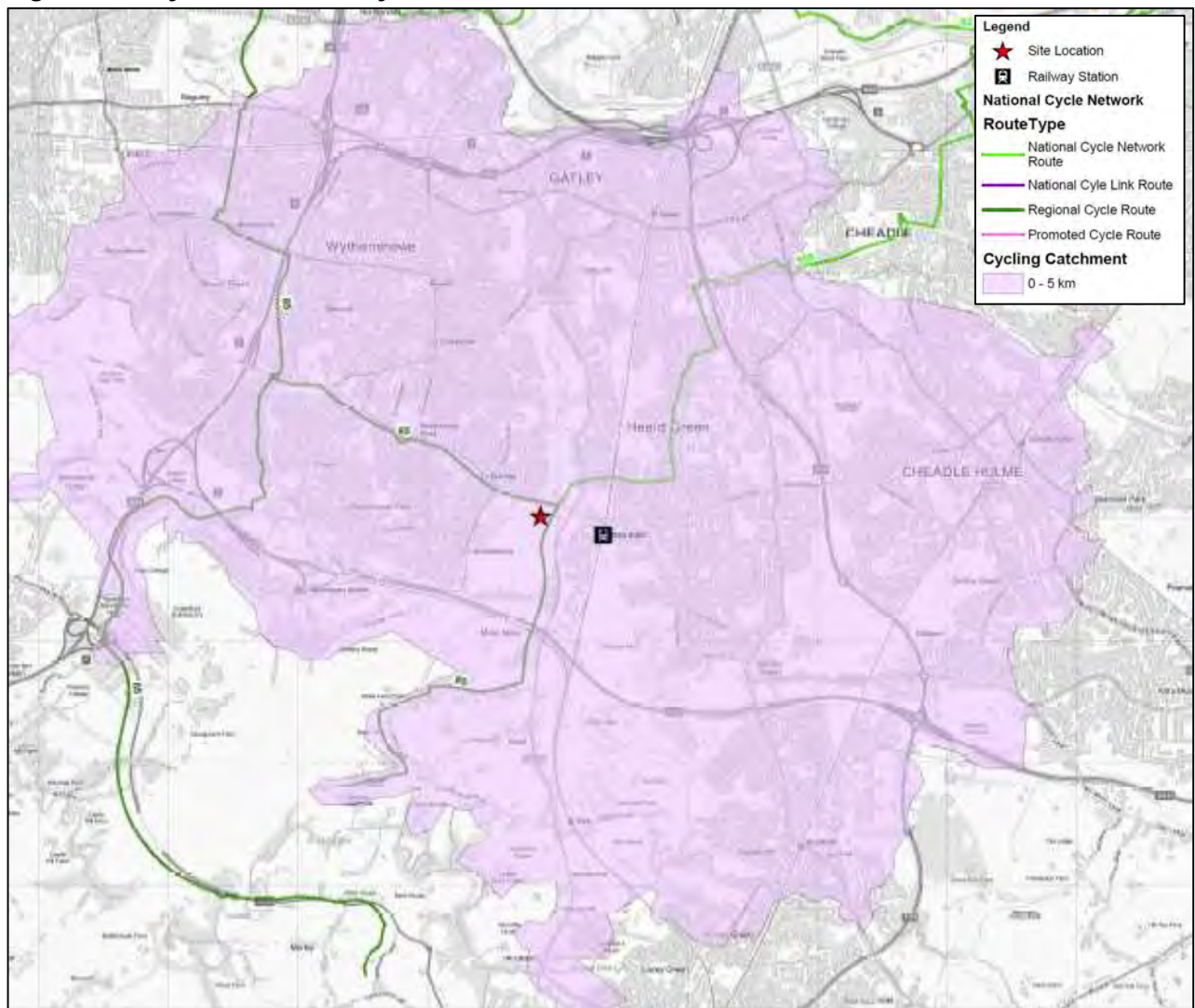


- 3.25 As illustrated within **Figure 3.2** the plan demonstrates that residential properties around Heald Green, Moss Nook and Woodhouse Park can be accessed within a walking catchment of the site, as well as numerous amenities located within Wythenshawe's Civic Centre. There are therefore opportunities for employees at the site to live locally and to walk to work.
- 3.26 It is therefore concluded that the site is highly accessible by this mode of travel.

Cycle

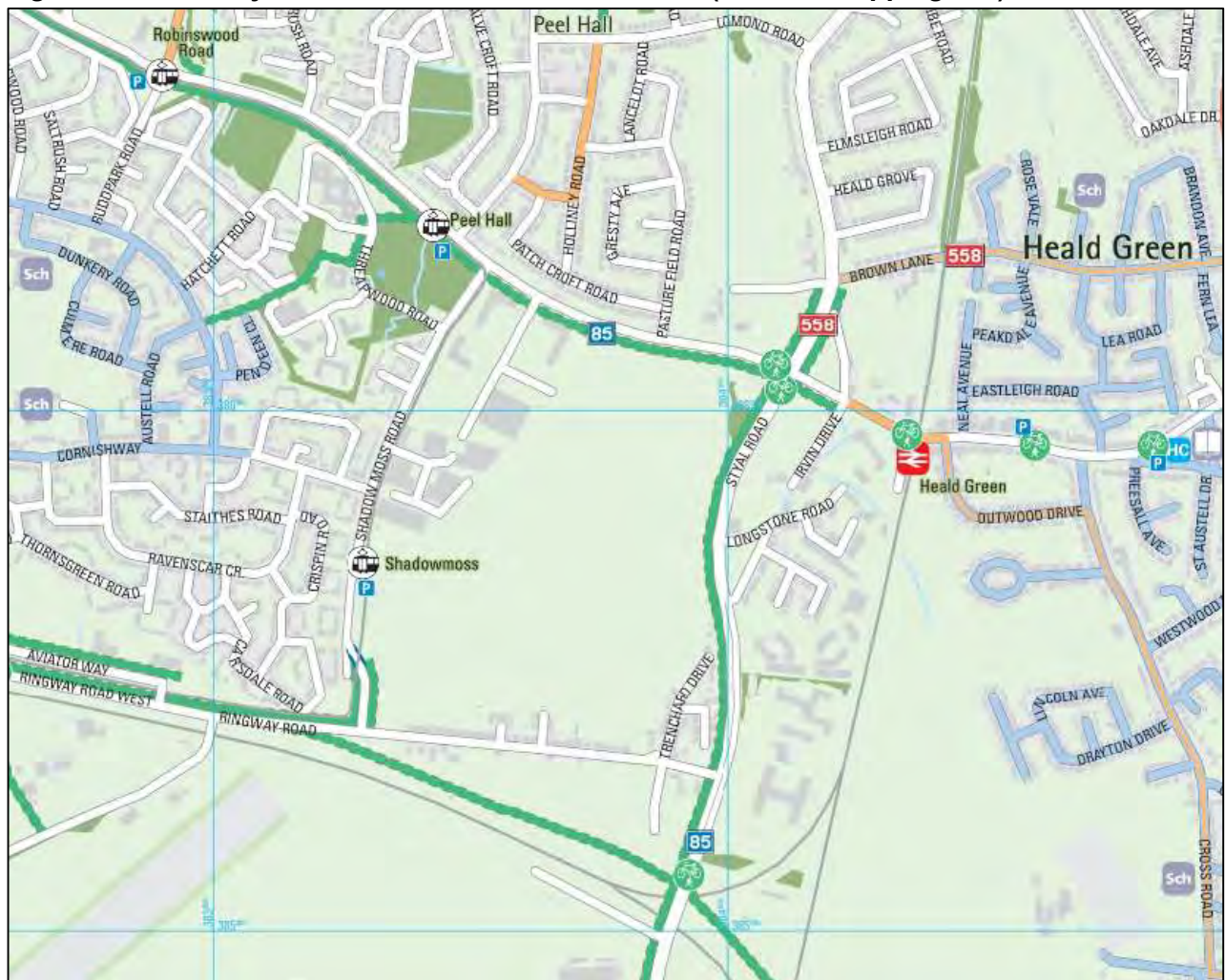
- 3.27 Cycling is becoming an increasingly popular mode of transport and is an effective mode for short trips. Consequently, cycling has the potential to replace short car journeys, particularly those under 5 kilometres.
- 3.28 To illustrate this a cycle accessibility plan has been produced to show a 5-kilometre cycle catchment from the site, that would equate to a journey of around 25 minutes based on a leisurely cycle speed of around 12 kilometres per hour. An extract of the cycle accessibility plan has been shown in **Figure 3.3** and can be found in **Appendix B**.

Figure 3.3: Cycle Accessibility Catchment



- 3.29 As shown within **Figure 3.3** the cycle catchment area covers the entirety of Wythenshawe, Heald Green and Gately, along with parts of Cheadle, Cheadle Hulme, Handforth and Styal, which demonstrates the potential for trips for employees to be undertaken by bicycle to and from these locations is a viable option.
- 3.30 Also within this 5-Kilometre catchment are a range of railway stations such as Heald Green and Manchester Airport railway stations. This offers a realistic opportunity for employees to undertake linked cycle / rail trips.
- 3.31 Reference to Greater Manchester's MappingGM facility shows that the site is located in close proximity to Transport for Greater Manchester's Cycle Network, as shown in **Figure 3.4** overleaf. These provide connections from the site to the aforementioned areas noted in the cycle catchment.

Figure 3.4: Local Cycle Routes and Sustrans Network (Source: Mapping GM)



- 3.32 As shown in **Figure 3.4** cycle route 85 passes the site and runs along Simonsway and Styal Road and facilitates cycle journeys from the west of Wilmslow to beyond Wythenshawe centre. In addition, Route 558 shown on the map runs from the B5166 Styal Road through Gately and Cheadle before connecting to National Cycle Route 62. As it passes the site, route 85 is an off-carriageway route that is shared with pedestrians.
- 3.33 To the east of the site toucan crossing facilities are provided at the Simonsway / Styal Road junction providing a safe route for pedestrians and cyclists.
- 3.34 Further to this, a number of signalised junctions in the vicinity of the site provide Advanced Stopping Lines (ASL). This is of benefit to cyclists as they provide a safe place to stop at busy crossing points and allow a dedicated position for cyclists to wait ahead of vehicles to provide segregation from the traffic.
- 3.35 It is therefore concluded that the site is accessible by bicycle, and that cycling can be promoted as a sustainable travel mode for staff and visitors travelling to / from the site.

Bus

- 3.36 The closest bus stops are located directly outside the existing site access point along Simonsway, providing eastbound and westbound services.
- 3.37 A summary of the bus services that can be accessed from the stops on Simonsway are provided in **Table 3.1**.

Table 3.1: Bus Services (Simonsway)

Service No.	Route	Approximate Frequency (Service per Hour)		
		Weekday	Sat	Sun
368	Wythenshawe Hospital to Stockport via Cheadle Hulme	4	3	2
752	Rosehill to Cheadle Heath via Cheadle	1	1	1
130	Macclesfield to Manchester Airport	1	1	-

- 3.38 As can be seen in **Table 3.1**, all accessible bus routes operate regular services through the week to key local destinations including Stockport, Cheadle and Wythenshawe.
- 3.39 The site is therefore concluded to be highly accessible by bus.

Metrolink Services

- 3.40 The site's nearest Metrolink Station is Peel Hall that is located approximately 450m walk distance along Simonsway. As such, pedestrians are able to use the aforementioned footways and the crossing facilities at the Simonsway / Shadowmoss Road junction when travelling between this transport node and the site. Shadowmoss is also located approximately 1km from the site's existing access point on Shadowmoss Road.
- 3.41 Peel Hall is located on the Airport Line of the Metrolink. Metrolink services operate on a 12-minute frequency Monday to Sunday with a combined frequency of 6 minutes during the day on Monday to Saturday. All lines operate between 06:00 and 00:00, with the Airport line operating from 03:00 from Deansgate Castlefield. Given the high frequency of Metrolink services it is considered that this presents a feasible travel alternative to / from the site as part of a linked trip.
- 3.42 All Metrolink stops provide shelters, seating and real-time journey information. All Metrolink trams and stations also provide disabled access in the form of step-free access, tactile paving and dropped kerbs.

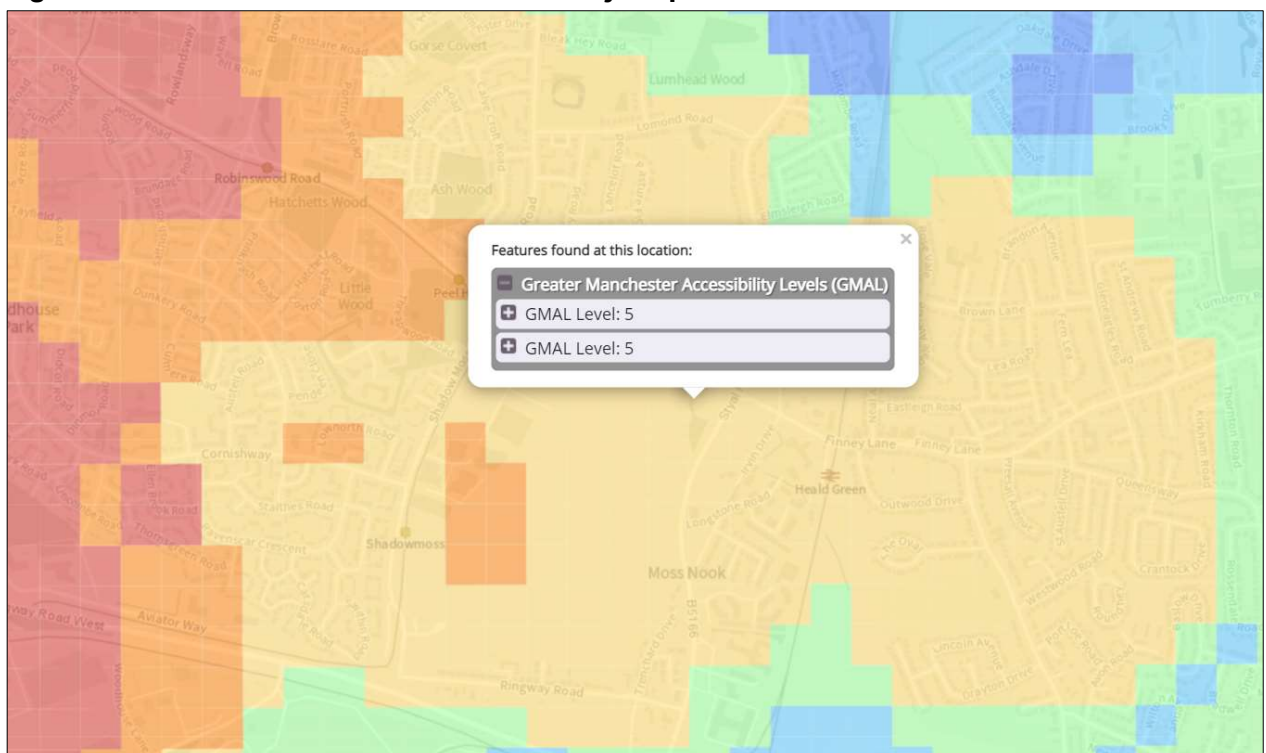
Rail Services

- 3.43 The nearest rail station is Heald Green located approximately 600m from the site, and therefore within a comfortable walking and cycling distance of the development.
- 3.44 Heald Green station is located on the Styal Line and services provide access to numerous destinations including Manchester City Centre (Piccadilly and Oxford Road), Manchester Airport, Salford Crescent, Preston Lancaster, Bolton, Chorley, Windermere, along with more local destinations including East Didsbury and Burgage.

Greater Manchester Accessibility Level (GMAL)

- 3.45 The site's Greater Manchester Accessibility Level (GMAL) has also been investigated. GMAL is a detailed and accurate measure of the site's accessibility using the public transport network. The method is essentially a way of measuring the density of public transport provision at any location within the Greater Manchester region. The site's location is shown in **Figure 3.5**.

Figure 3.5: Greater Manchester Accessibility Map Extract



- 3.46 As shown in **Figure 3.5**, the site is located within Accessibility Level 5 which translates as an area of good public transport accessibility.

4 Proposed Development

- 4.1 This section outlines the development proposals including the anticipated use of the site, proposed access arrangements, parking, and delivery and servicing arrangements at the site.

Development Description

- 4.2 As outlined, the development proposals comprise 5 units of E(g)(iii), B2 and B8 uses. The activity generated by these land uses consists of industrial use, along with storage and distribution.
- 4.3 The proposed site layout can be found in **Appendix C**, with the land uses and floor areas proposed at each unit summarised in the area schedule provided below in **Table 4.1**.

Table 4.1: Proposed Area Schedule

Unit / Land Use	Floor Area (square metres)
Unit 1	
Warehouse	7,391
Office	694
Total	8,086
Unit 2	
Warehouse	3,331
Office	289
Total	3,621
Unit 3	
Warehouse	4,495
Office	289
Total	4,785
Unit 4	
Warehouse	6,325
Office	888
Total	7,214
Unit 5	
Warehouse	14,950
Office	880
Total	15,830
Total	
-	39,536

Proposed Access Arrangements

- 4.4 The reuse of the existing access position from Simonsway is proposed in the form of a new priority junction with a ghost island right turn lane.
- 4.5 The proposed junction will provide access to the internal estate road which will accommodate a width of 7.3 metres and facilitate the simultaneous passing of cars and heavy goods vehicles.
- 4.6 The proposed junction design can be found in **Appendix D** and has been designed in line with standards, showing the required level of visibility can be achieved.
- 4.7 Swept path analysis at the proposed junction has been undertaken to show that a 16.5m max legal heavy goods vehicle can be accommodated that can also be found in **Appendix E**.

- 4.8 Footways will be provided on both side of the site's internal access road which will connect to the existing western footway that provides access to the westbound bus stop on Simonsway, creating a continued pedestrian link to the site's wider environment.
- 4.9 A 2-way cycle lane is also proposed on the eastern side of the site's internal estate road and will connect to the existing cycle route 85 that runs along Simonsway. This cycle lane is proposed to facilitate cycle trips to / from the proposed development amongst staff and visitors and build upon the area's exiting excellent cycling credentials.
- 4.10 As part of the proposed site access junction design the westbound bus stop outside the site on Simonsway will be relocated slightly west of its existing position. As stated, a footway link connecting the bus stop to the site will be provided as part of the proposals to ensure access to the stop is safe for all staff and visitors to the site.

Parking

- 4.11 Car parking will be provided within individual development plots to serve each unit, culminating in a provision of 382 spaces in total. Based on the floor area of each unit a breakdown of the proposed parking provision within each development plot has been shown in **Table 4.2**.

Table 4.2: Parking Provision

Unit	Car Parking Spaces	Cycle Parking Spaces
Unit 1	78	17
Unit 2	35	8
Unit 3	46	10
Unit 4	69	15
Unit 5	154	34
Total	382	84

- 4.12 The proposed parking provision has been assessed against Manchester City Council car parking standards contained within the Core Strategy document and shows the proposals are compliant with maximum car parking standards for B8 use. If more parking spaces are required as a result of a proposed B2 unit then additional spaces can be accommodated within the service areas of the specific plot as this will no longer be required.
- 4.13 In addition, a total of 84 cycle parking spaces will be provided as part of the proposals. Cycle parking for each unit has also been provided in line with Manchester City Councils minimum cycle parking standards for B2 and B8 uses.

EVCP Parking

- 4.14 In line with the minimum requirement of 1 Electric Vehicle Charge Point (EVCP) per 1,000sqm of floor space, the site will provide a total of 42 active and 84 passive EVCPs.

Servicing and Refuse Arrangements

- 4.15 Servicing and refuse arrangements will take place within a dedicated service yard area in each of the individual development plots.

- 4.16 Swept path analysis that indicates a 16.5m max legal vehicle can be accommodated within the site has been undertaken and can be found within **Appendix F**.

Road Safety Audit

- 4.17 As requested from Manchester City Council as part of the pre-application response a Stage 1 Road Safety audit has been undertaken to provide an assessment of the proposed site access junction that will serve the development from Simonsway.
- 4.18 A copy of the RSA report and designers' response can be found in **Appendix G**.

5 Traffic Impact Assessment

Introduction

5.1 This section outlines the anticipated trip generation of the proposed development scheme.

Traffic Surveys

5.2 Fully classified junction turning count surveys were commissioned in October 2022 to determine the existing traffic levels of junctions in the vicinity of the development site, during typical weekday hours.

5.3 Analysis of the survey data indicated the following peak hour periods across the network:

- AM Peak Hour = 07:30 – 08:30
- PM Peak Hour = 16:15 – 17:15

Proposed Trip Generation

5.4 To determine the traffic generation of the proposed development, the TRICS database was interrogated based on the total floor area of the site (38,211sqm - GIA). The full TRICS outputs for comparable B2, B8 and E(g)(iii) sites extracted from the database can be found in **Appendix H**.

5.5 As stated, the development site is proposed to be a mix of B2 / B8 and E(g)(iii) uses. The TRICS based assessment was undertaken for all possible uses and showed that the B2 trip rates were higher than the B8 and E(g)(iii) trip rates. Therefore, in order to be robust, the B2 trip rates have been utilised to inform the trip generation exercise.

5.6 The resultant B2 trip rates and associated vehicular trips for the AM and PM peak hours highlighted above are provided in **Table 5.1**.

Table 5.1: B2 Trip Rates and Vehicular Trips

Time Period	Trip Rate			Trips		
	Arrivals	Departures	Total	Arrivals	Departures	Total
07:30-08:30	0.602	0.182	0.784	230	69	299
16:15-17:15	0.287	0.601	0.888	110	230	340
Daily	4.622	4.591	9.213	1766	1754	3520

5.7 As presented in **Table 5.1**, it is expected that the proposed development will generate 299 two-way vehicle trips during the morning peak period of 07:30-08:30 and 340 two-way vehicle trips during the evening peak period of 16:15-17:15.

Traffic Distribution

5.8 In considering trip assignment, it is expected that the nature of vehicular trips generated by the proposed development will be split between staff commuter trips and operational trips.

- 5.9 Therefore, separate vehicular distributions for each trip type (staff and operational) have been assessed.

Staff Trip Distribution

- 5.10 The distribution of employees commuting to / from the proposed development has been calculated using “Usual Resident Population” Census data, for residential areas within an approximate 30-minute catchment of the site.
- 5.11 The catchment areas were then reviewed using Google Maps to indicate the likely route that will be taken for vehicles travelling to / from each area and the proposed development site.
- 5.12 The resultant staff distribution has been illustrated on the traffic flow diagram included within **Appendix I**.

Operational Trip Distribution

- 5.13 Operational trips have been distributed using the quickest routes to the strategic highway network, and initially attributed to the M56.
- 5.14 A review of DfT historic traffic data along the M56 indicates that there is an equal flow of HGV movements along the M56 for vehicles travelling northbound from Junction 4 and southbound via Junction 5.
- 5.15 Therefore, based on an initial assessment of development trip distribution, it is expected that 50% of operational movements are expected to pass through the following junctions:
- Simonsway / Shadowmoss Road signalised junction;
 - Brownley Road / Simonsway / Ruddpark Road signalised junction;
 - Poundswick Lane / Simonsway signalised junction; and
 - Simonsway / M56 Junction 4.
- 5.16 Vehicle movement onto the M56 is restricted to accessing this motorway northbound only. It is therefore expected that development traffic requiring to travel southbound on the motorway will be required to turn right out of the site access junction and use the A555 Manchester Airport Relief Road to access the M56 via Junction 5.
- 5.17 As such, it is expected that 50% of operational development trips are expected to pass through the following junctions:
- B1566 Styal Road / Finney Lane / Styal Road signalised junction;
 - B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction;
 - A555 Airport Spur / Outwood Lane signalised junction; and
 - M56 Junction 5.

- 5.18 The resultant operational distribution routing to / from the site has been illustrated on the traffic flow diagram included within **Appendix J**.

Traffic Impact

- 5.19 Based on the proposed trip generation and vehicle routing set out above the total uplift (staff and operational) in vehicle movements on the highway network within the vicinity of the development site during both the AM and PM peak hour periods can be seen on the traffic flow diagrams included within **Appendix K**.

6 Highway Assessment Methodology

Introduction

- 6.1 This Section of the report outlines the methodology used to undertake an assessment of the proposed development's relative impact of the local highway network.

Junction Scope

- 6.2 Based on the distribution of development trips and associated expectant traffic impact discussed in the previous chapter the following junctions have been assessed:
- Simonsway / M56 Junction 4 signalised junction;
 - Poundswick Lane / Simonsway signalised junction;
 - Brownley Road / Simonsway / Ruddpark Road signalised junction;
 - Simonsway / Shadowmoss Road signalised junction;
 - B1566 Styal Road / Finney Lane / Styal Road signalised junction;
 - B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction;
 - A555 Airport Spur / Outwood Lane signalised junction;
 - M56 Junction 5; and
 - Proposed Site Access.
- 6.3 In addition, a merge - diverge assessment to analyse the impact of the proposed development on the slip roads serving Junction 4 and Junction 5 of the M56 has also been undertaken.

Junction Scope

- 6.4 For the purposes of this assessment the following scenarios were tested as part of the junction capacity analysis:
- AM & PM 2022 Baseline (Survey Data)
 - AM & PM 2030 with Development (Future Year Scenario / 5 years post opening)
 - AM & PM 2032 with Development (Future Year Scenario) – for National Highways junctions only (Simonsway / M56 Junction 4 signalised junction and merge diverge assessments)
- 6.5 A review of historic traffic data along the M56 and local roads within the vicinity of the site indicates there has been no identifiable trend for background traffic growth within the local area.
- 6.6 However, to ensure a robust assessment is undertaken we have applied growth to represent a 2032 future year on the strategic road network. It should be noted that for the remainder of the highway

network we have assumed no growth on local roads in the vicinity of the development site apart from those anticipated to be generated by the proposed scheme.

- 6.7 Whilst the most recent Census Data shows that only 46.3% of workers in the Manchester 052 area travel to work via private car in order to be robust no reductions have been applied to the proposed staff numbers. As detailed above and based on the data available alongside a review of ever-changing travel habits / the increased prevalence of working from home (23.4% in Manchester 052) it is considered that this is an acceptable approach.
- 6.8 However, for the purposes of this assessment and in line with National Highways (NH) requirements for the junctions under NH ownership growth factors have been applied, for the 2032 period (a date ten years after the date of registration of the associated planning application).
- 6.9 Therefore, to represent this future year scenario the 2022 survey data was subject to growth factors extracted from TEMPRO software to forecast the increase in traffic levels within the Manchester 052 middle layer super output area. The TEMPRO growth factors utilised to generate the future year scenario has been provided within **Table 6.1** below.

Table 6.1: Traffic Growth Factors (MSOA – Manchester 052)

Growth Years	AM Peak	PM Peak
2022 – 2032	1.129	1.133

- 6.10 Further to this a list of the committed development sites that were reviewed as part of the assessment have been set out in **Table 6.2** below.

Table 6.2: Committed Development Sites

Application Reference	Description
131453/FO/2021	Erection of 4 no. industrial units with ancillary office space (B8 use), with associated landscaping, car parking, bin and cycle stores Vacant Land To The North Of Longstone Road Manchester M22 5LB
120302/FO/2018	Creation of a 743 space off-airport car park with access road off Styal Road, installation of 2.4-metre-high weld mesh fencing and gates, 45 lighting columns and office cabin with associated landscaping Heald Green House Irvin Drive Manchester M22 5LS
128682/FO/2020	Erection of 9 No. dwellinghouses and a 3-storey apartment building providing 9 Assisted Living Apartments (Class C2), together with landscaping, associated access and car parking following demolition of existing public house Former Happy Man Public House 22 Portway Manchester M22 1UB
131335/FO/2021	Erection of a single storey building to form Drive Thru Cafe together with associated landscaping and parking Manchester International Office Centre Styal Road Manchester M22 5WB
128916/FO/2020	Erection of a part two/part three storey building to form Hotel (C1 use) together with associated car parking and landscaping The Moss Nook At The Corner Of Trenchard Drive And Ringway Road Manchester M22 5NA

- 6.11 A review of the trip generation associated with each of the committed development sites presented within **Table 6.2** indicates there would be minimal uplift in traffic movements on the surrounding highway network and it is considered that the traffic associated with each of these sites has been accounted as detailed within the assessment methodology above.

7 Junction Capacity Analysis

Introduction

- 7.1 This Section of the report provides a summary of a series of detailed capacity assessments undertaken for key junctions in the vicinity of the proposed development site.
- 7.2 For the purposes of the assessment the results of the 2022 baseline and 2030 future year scenarios have been presented. In addition, as previously detailed a future year 2032 assessment has also been undertaken for the junctions under the ownership of National Highways.
- 7.3 The junction capacity assessments for signalised junctions have been modelled using the 'LinSIG' software which is the industry standard package for assessment of signalised junctions. It is generally considered that lanes operating at a Degree of Saturation (DoS) of less than 90% are operating satisfactorily and should experience no excess queuing whilst a lane operating with a DoS of 100% is operating at its maximum theoretical capacity.
- 7.4 The theoretical capacity of individual junction models should not be considered as a pass/fail trigger for a planning proposal. The results of the individual junction models are presented to enable a judgement to be made regarding the capacity of the overall network and the impact of the development proposals. The results of the modelling should be viewed in this context.
- 7.5 As detailed, an independent traffic survey was undertaken of the highway network which formed the study area for the proposed development. This provided traffic flows for the 2022 Base scenario. The surveys were undertaken by video which were then counted by the survey provider.
- 7.6 The videos have also been reviewed in order to inform the cycle times used for the signalised junctions and, where relevant, the frequency of use of (non-traffic) pedestrian stages and to monitor queueing.
- 7.7 In the case of the junction of the A555 / Styal Road, the videos have also been used to inform the saturation flows used in the modelling, as it was found that the 'geometric calculation' within the Linsig package was not reflecting the actual saturation flows. All other junctions have used the conventional geometric calculation for saturation flows.
- 7.8 The full modelling outputs for the capacity assessment of all the junctions tested are included within **Appendix L** of this report, with a summary of the results set out below.

Simonsway / M56 Junction 4 signalised junction

- 7.9 The capacity of the Simonsway / M56 Junction 4 signals has been assessed in the industry standard LinSig software package.
- 7.10 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.1** for both the AM and PM peak hours.

Table 7.1: Simonsway / M56 Junction 4 LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (West) EB Left	49.9	6	40.4	5
Simonsway (West) EB Ahead	55.9	5	55.1	4
Simonsway (Internal) EB Ahead	50.2	1	48.8	1
Simonsway (Internal) EB Ahead	51.7	1	50.9	1
M56 Off Slip SB Left	57.9	9	59.4	10
M56 Off Slip SB Right	47.9	4	31.2	2
Simonsway (West) WB Ahead	56.7	7	46.9	5
Simonsway (Internal) WB Ahead	39.6	2	29.9	0
Simonsway (Internal) WB Right	42.0	6	42.3	6

- 7.11 As shown, the results presented in **Tables 7.1** demonstrate that the junction is operating well within capacity in its current form with a maximum degree of saturation equating to 59.4% with an associated queue length of 10 vehicles on the M56 Off Slip SB Left, during the PM peak hour period.
- 7.12 The junction has then been tested using the traffic flows generated for the 2032 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.2** below.
- 7.13 As previously stated, given this junction is under the ownership of NH growth has been applied to the baseline traffic data to represent the future year 2032 scenario.

Table 7.2: Simonsway / M56 Junction 4 LinSig Results Summary – 2032 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (West) EB Left	58.4	7	47.5	6
Simonsway (West) EB Ahead	69.5	6	68.0	5
Simonsway (Internal) EB Ahead	61.4	1	59.9	1
Simonsway (Internal) EB Ahead	63.8	2	62.5	2
M56 Off Slip SB Left	75.3	15	71.5	14
M56 Off Slip SB Right	54.2	5	35.5	3
Simonsway (West) WB Ahead	64.9	8	64.9	8
Simonsway (Internal) WB Ahead	44.9	3	34.2	1
Simonsway (Internal) WB Right	50.6	6	59.2	6

- 7.14 The results presented in **7.2** demonstrate that the Simonsway / M56 Junction 4 signals would continue to operate well within capacity in a 2032 future year scenario when growth and development traffic is considered with a maximum degree of saturation equating to 71.5% on the M56 Off Slip SB Left and the additional queueing on the off slips can be catered for / would not impact the mainline flow.

Poundswick Lane / Simonsway signalised junction

- 7.15 The capacity of the Poundswick Lane / Simonsway signalised junction has been assessed in the industry standard LinSig software package.
- 7.16 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.3** for both the AM and PM peak hours.

Table 7.3: Poundswick Lane / Simonsway signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Right	47.7	7	61.1	11
Simonsway (West) Ahead Left	72.6	14	78.0	17
Poundswick Lane Left Right	73.3	6	75.1	9

- 7.17 The results presented in **Tables 7.1** demonstrate that the Poundswick Lane / Simonsway junction is operating within capacity in a 2022 baseline scenario with a maximum degree of saturation equating to 78% on the Simonsway (West) arm during the PM peak hour period.
- 7.18 The junction has then been tested using the traffic flows generated for the 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.4**.

Table 7.4: Poundswick Lane / Simonsway signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Right	50.4	7	72.6	16
Simonsway (West) Ahead Left	84.7	20	82.6	20
Poundswick Lane Left Right	85.5	8	83.0	10

- 7.19 The results presented in **Table 7.4** demonstrate that the junction will continue to operate well within capacity on all arms when development traffic is considered with spare capacity available and DoS values shown to be under 86% across all arms.

Brownley Road / Simonsway / Ruddpark Road signalised junction

- 7.20 The capacity of the Brownley Road / Simonsway / Ruddpark Road signalised junction has been assessed in the industry standard LinSig software package.
- 7.21 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.5** for both the AM and PM peak hours.

Table 7.5: Brownley Road / Simonsway / Ruddpark Road signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Right Left	64.3	9	66.6	17
Ruddpark Road Left Ahead Right	57.8	2	66.6	4
Simonsway (West) Left Ahead Right	53.8	7	61.0	11
Brownley Road Left	15.4	2	14.0	3
Brownley Road Right Ahead	29.7	2	29.5	2

- 7.22 The results presented in **Tables 7.5** demonstrate that the junction is operating well within capacity in its current form, based on the 2022 baseline scenario flows.
- 7.23 The junction has then been tested using the traffic flows generated for the 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.6**.

Table 7.6: Brownley Road / Simonsway / Ruddpark Road signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Right Left	68.4	11	78.6	29
Ruddpark Road Left Ahead Right	67.3	2	78.4	5
Simonsway (West) Left Ahead Right	69.4	11	65.8	16
Brownley Road Left	17.0	2	15.2	3
Brownley Road Right Ahead	33.4	2	32.6	2

- 7.24 The results presented in **Tables 7.6** demonstrates that the junction would also continue to operate well within capacity in a 2030 future year scenario when traffic from the proposed development site is considered, with a maximum degree of saturation equating to 78.6% on the Simonsway (East) arm.

Simonsway / Shadowmoss Road signalised junction

- 7.25 The capacity of the Simonsway / Shadowmoss Road signalised junction has been assessed in the industry standard LinSig software package.
- 7.26 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.7** for both the AM and PM peak hours.

Table 7.7: Simonsway / Shadowmoss Road signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Left	43.2	4	59.8	6
Simonsway (West) Ahead Right	50.3	4	53.7	5
Shadowmoss Rd Right Left	29.0	1	54.6	3

7.27 The junction has then been tested using the traffic flows generated for the future year 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.8**.

Table 7.8: Simonsway / Shadowmoss Road signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Simonsway (East) Ahead Left	48.0	5	75.8	9
Simonsway (West) Ahead Right	64.4	7	61.6	6
Shadowmoss Rd Right Left	29.0	1	54.6	3

7.28 The results presented in **Tables 7.7** and **7.8** demonstrate that the junction will continue to operate well within capacity in a 2025 opening year scenario when traffic from the development site is considered with a maximum degree of saturation equating to 75.8% on the Simonsway (east) arm of the junction during the PM peak hour period.

B1566 Styal Road / Finney Lane / Styal Road signalised junction

7.29 The capacity of the B1566 Styal Road / Finney Lane / Styal Road signalised junction has been assessed in the industry standard LinSig software package. A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.9** for both the AM and PM peak hours.

Table 7.9: B1566 Styal Road / Finney Lane / Styal Road signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Finney Lane Left	13.4	2	8.3	1
Finney Lane Ahead Right Left	58.1	7	79.0	8
Styal Road (South) Left Ahead	59.4	12	79.0	19
Styal Road (South) Right	32.7	2	54.3	5
Simonsway (West) Left Ahead	51.6	7	77.9	17
Simonsway (West) Ahead Right	60.1	5	71.3	9
Styal Road (North) Left Ahead	57.3	10	52.8	9
Styal Road (North) Right Ahead	40.7	3	74.9	5

- 7.30 As shown within **Table 7.9** the results show that the junction is operating within capacity in its current form during a 2022 baseline scenario with spare capacity available on all arms.
- 7.31 The junction has then been tested using the traffic flows generated for the 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.10**.

Table 7.10: B1566 Styal Road / Finney Lane / Styal Road signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Finney Lane Left	8.0	1	4.5	1
Finney Lane Ahead Right Left	63.9	7	88.7	10
Styal Road (South) Left Ahead	67.0	14	82.5	20
Styal Road (South) Right	34.0	2	54.3	5
Simonsway (West) Left Ahead	53.9	8	82.2	18
Simonsway (West) Ahead Right	67.5	6	81.9	12
Styal Road (North) Left Ahead	58.8	11	52.8	9
Styal Road (North) Right Ahead	60.5	5	92.3	9

- 7.32 The results presented in **Table 7.10** demonstrates that the junction will also continue to operate within capacity in a future year 2030 scenario when development traffic is considered with all DoS values shown to be under 90% with the exception of the Styal Road (North) right turn lane that is still within capacity with a value of 92.3% and an average queue length of just 9 vehicles. The results also demonstrate that there would be no negative impacts on the operation of the junction in terms of queueing.

B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction

- 7.33 The capacity of the B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction has been assessed in the industry standard LinSig software package.
- 7.34 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.11** for both the AM and PM peak hours.

Table 7.11: B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
A555 (East) Ahead Left	87.9	36	71.1	23
A555 (East) Ahead	87.8	37	70.2	24
A555 (East) Right	85.7	20	91.9	19
Styal Road (South) Left	39.2	10	39.1	10
Styal Road (South) Ahead Right	85.8	12	92.4	17
A555 (West) Left	39.8	10	41.7	10
A555 (West) Ahead	71.4	22	90.4	35
A555 (West) Ahead	72.5	24	91.0	38
A555 (West) Right	88.9	16	78.8	13
Styal Road (North) Left Ahead	88.5	14	79.4	15
Styal Road (North) Right Ahead	54.0	6	73.7	7

7.35 As shown within **Table 7.11** the results show that that the junction is operating within capacity in its current form during the 2022 baseline scenario.

7.36 The junction has then been tested using the traffic flows generated for the 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.12**.

Table 7.12: B1566 Styal Road / A555 Manchester Airport Relief Road signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
A555 (East) Ahead Left	89.1	36	72.1	23
A555 (East) Ahead	89.0	38	71.2	24
A555 (East) Right	88.7	21	90.5	18
Styal Road (South) Left	38.4	10	38.4	10
Styal Road (South) Ahead Right	86.9	13	90.7	16
A555 (West) Left	43.7	11	44.8	11
A555 (West) Ahead	72.6	23	93.2	38
A555 (West) Ahead	73.7	25	93.8	41
A555 (West) Right	88.9	16	78.8	13
Styal Road (North) Left Ahead	90.2	15	86.7	15
Styal Road (North) Right Ahead	56.6	6	78.4	8

7.37 The results presented in **Table 7.12** demonstrate that the junction would also continue to operate within capacity in a 2030 future year scenario when development traffic is considered with spare capacity on all arms and all Dos values under 95% and a maximum uplift of just 3 vehicles on the

A555 (West) Ahead arm as a result of the proposed development, with no material impact increase in queue lengths.

A555 Airport Spur / Outwood Lane signalised junction

- 7.38 The capacity of the A555 Airport Spur / Outwood Lane signalised junction has been assessed in the industry standard LinSig software package.
- 7.39 A summary of the 2022 Baseline scenario for this junction is provided in **Table 7.13** for both the AM and PM peak hours.

Table 7.13: A555 Airport Spur / Outwood Lane signalised junction LinSig Results Summary – 2022 Baseline

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
A555 Outwood Ln (West) EB Ahead	44.5	7	55.2	11
A555 Outwood Ln (West) EB Ahead	46.2	8	56.6	12
Ringway Rd (East) WB Left	10.9	1	9.8	1
Ringway Rd (East) WB Ahead	80.1	14	87.1	17
Outwood Ln (South) EB Ahead	70.0	10	80.0	13
Outwood Ln (South) EB Right Ahead	77.7	5	81.0	10
A555 Airport Spur EB Ahead	76.7	7	84.2	8
A555 Airport Spur EB Ahead	78.4	8	85.8	9
A555 Outwood Ln (West) EB Ahead	42.9	1	51.3	1

- 7.40 As shown within **Table 7.13** the results show that that the junction is operating within capacity in its current form during the 2022 baseline scenario.
- 7.41 The junction has then been tested using the traffic flows generated for the 2030 with Development scenario. A summary of the AM and PM peak hour results is provided in **Table 7.14**.

Table 7.14: A555 Airport Spur / Outwood Lane signalised junction LinSig Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
A555 Outwood Ln (West) EB Ahead	45.3	7	55.7	11
A555 Outwood Ln (West) EB Ahead	46.9	8	57.0	12
Ringway Rd (East) WB Left	10.9	1	9.8	1
Ringway Rd (East) WB Ahead	80.8	14	88.2	19
Outwood Ln (South) EB Ahead	70.0	10	70.7	11
Outwood Ln (South) EB Right Ahead	77.7	5	81.0	11
A555 Airport Spur EB Ahead	76.7	7	84.2	8

A555 Airport Spur EB Ahead	78.4	8	85.8	9
A555 Outwood Ln (West) EB Ahead	42.9	1	51.3	1

- 7.42 As shown within **Table 7.14** The results presented demonstrate that the junction would continue to operate within capacity when development traffic is considered in a 2030 future year scenario.

Proposed Site Access

- 7.43 The capacity of the proposed site access junction has been assessed using the industry standard JUNCTIONS 10 software package.
- 7.44 The software expresses capacity using a Ratio of Flow (RFC) value for each arm of the junction and a corresponding queue value which is given in PCUs. An RFC value of between 0.85-1.00 typically indicates that a junction is at or approaching capacity. A value over 1.00 indicates that traffic demand has exceeded the theoretical capacity of the junction in question.
- 7.45 The junction has been tested with consideration of development traffic when the site when in full operation. The traffic flows generated for the future year 2030 with Development scenario for the AM and PM peak hour periods are provided in **Table 7.15**.

Table 7.15: Proposed Site Access Results Summary – 2030 with Development

Arm	AM Peak		PM Peak	
	RFC	Queue (PCU)	RFC	Queue (PCU)
Simonsway East	0.10	0	0.31	1
Development Site	0.12	0	0.40	1
Simonsway West	0.29	0	0.15	0

- 7.46 The results presented in **Table 7.15** demonstrate that the site access junction would operate well within capacity with minimal queue lengths when development traffic is considered, with a maximum RFC value of 0.40 on the site access arm in the PM peak hour period.

Merge Diverge Assessment

- 7.47 To further assess the impact of development traffic from the proposed site, a merge / diverge assessment of the slip road arrangements at Junction 4 of the M56 has been undertaken, in accordance with the guidance provided in CD122.
- 7.48 In addition, a merge / diverge assessment of Junction 5 has also be undertaken to assess the impact of the proposed development on the operation of this junction.
- 7.49 The guidance contained within the CD122 document can be used to determine the type of merge or diverge arrangement that is required based on the relationship between traffic joining or leaving the carriageway and the mainline flows.
- 7.50 For ease of reference, the applicable merging and diverging diagrams contained with CD122 have been reproduced in **Figures 7.1** and **7.2** respectively.

Figure 7.1: Motorway Merge Layout Guidance (source: CD122 – Figure 3.12b)

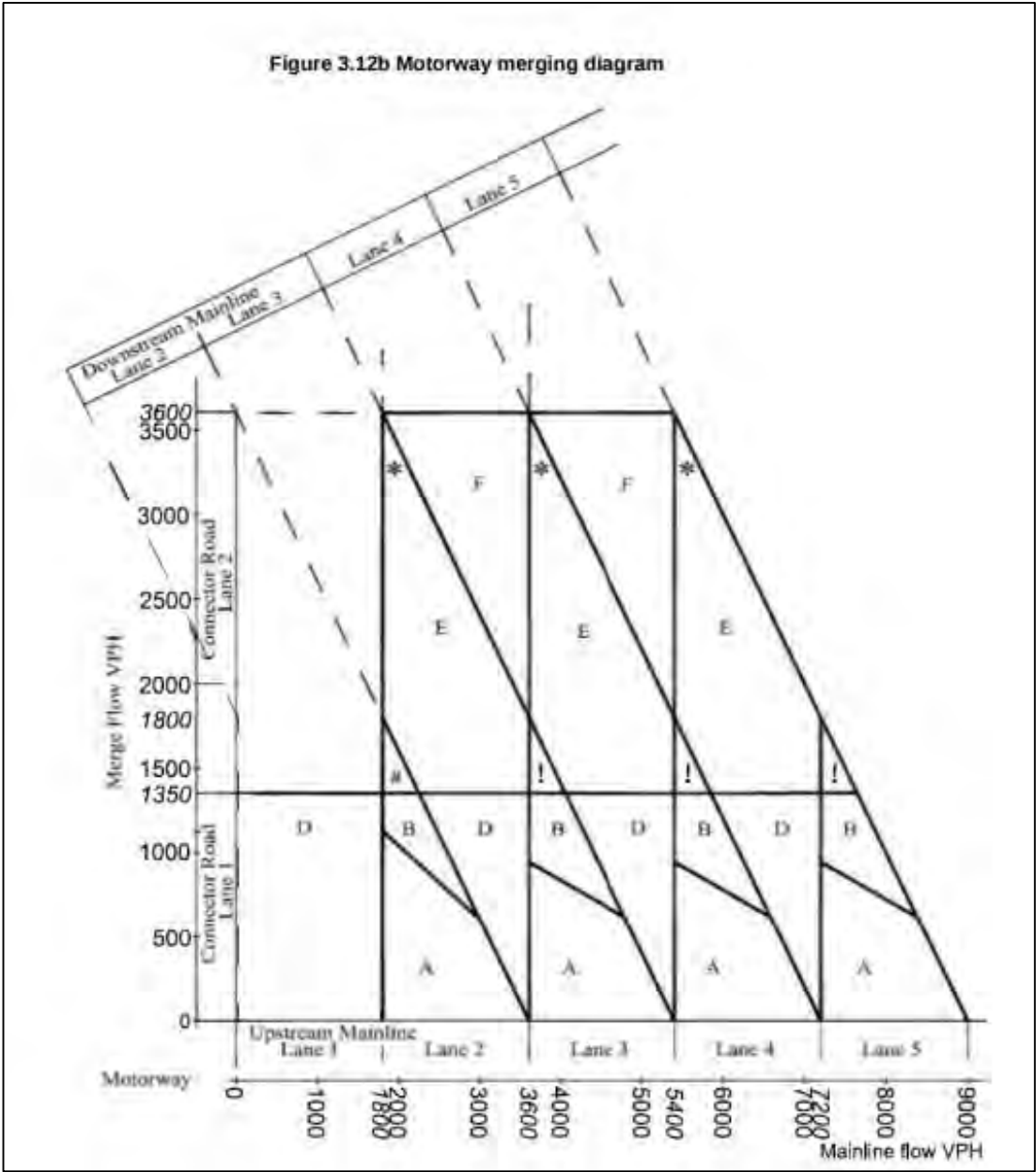
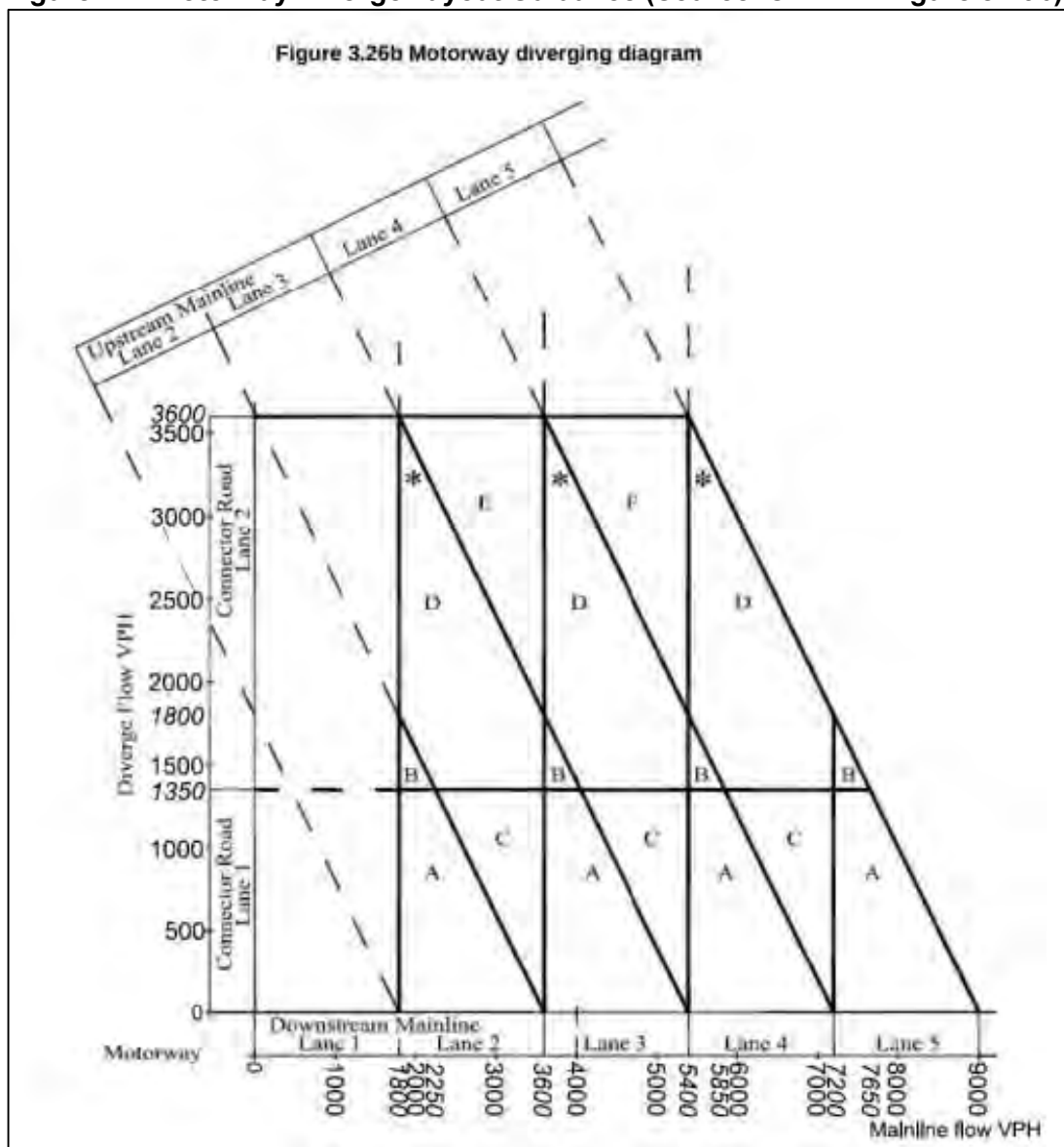


Figure 7.2: Motorway Diverge Layout Guidance (Source: CD122 – Figure 3.26b)



7.51 Traffic data from the Department for Transport (DfT) was interrogated to obtain flows for the mainline of the M56 motorway in the vicinity of both junctions.

M56 Junction 4

7.52 The results for the 2032 Baseline scenario for the M56 Junction 4 have been shown in **Table 7.16**.

Table 7.16: M56 Junction 4 Merge-Diverge Requirements – 2032 Baseline (without development)

Flow	AM Peak			PM Peak		
	Mainline (M56)	Merge	Slip Road Type	Mainline (M56)	Merge	Slip Road Type
Northbound Merge	5657	900	D	5843	836	D
Flow	Mainline (M56)	Diverge	Slip Road Type	Mainline (M56)	Diverge	Slip Road Type
Southbound Diverge	5888	1008	C	6123	963	C

7.53 The results for the 2032 Baseline with Development scenario for the M56 Junction 4 have been shown in **Table 7.17**.

Table 7.17: M56 Junction 4 Merge-Diverge Requirements – 2030 Baseline + Development

Flow	AM Peak			PM Peak		
	Mainline (M56)	Merge	Slip Road Type	Mainline (M56)	Merge	Slip Road Type
Northbound Merge	5657	945	D	5843	974	D
Flow	Mainline (M56)	Diverge	Slip Road Type	Mainline (M56)	Diverge	Slip Road Type
Southbound Diverge	5888	1148	C	6123	1031	C

7.54 As shown in **Table 7.17**, with the addition of development traffic from the proposed site the lane configuration requirements at Junction 4 remain unchanged in the 2032 with Development scenario as a result of the proposed scheme.

M56 Junction 5

7.55 Given the location of the site and the proximity of Junction 4 and 5 of the M56 it is considered that all vehicles travelling southbound along the motorway to access the site would use the slip road diverge at Junction 4.

7.56 As there are no development traffic flows that have been attributed to the Junction 5 southbound off slip road only the northbound off slip road at Junction 5 has been tested as part of this assessment.

7.57 The results for the 2032 Baseline scenario at the M56 Junction 5 have been shown in **Table 7.18**.

Table 7.18: M56 Junction 5 Merge-Diverge Requirements – 2032 Baseline (without development)

Flow	AM Peak			PM Peak		
	Mainline (M56)	Merge	Slip Road Type	Mainline (M56)	Merge	Slip Road Type
Southbound Merge	4846	1217	!	5291	1562	E
Flow	Mainline (M56)	Diverge	Slip Road Type	Mainline (M56)	Diverge	Slip Road Type
Northbound Diverge	5405	1645	D	5694	1609	D

7.58 The results for the 2032 Baseline ‘With Development’ scenario for the M56 Junction 5 have been shown in **Table 7.19**.

Table 7.19: M56 Junction 5 Merge-Diverge Requirements – 2032 Baseline + Development

Flow	AM Peak			PM Peak		
	Mainline (M56)	Merge	Slip Road Type	Mainline (M56)	Merge	Slip Road Type
Southbound Merge	4846	1225	!	5291	1578	E
Flow	Mainline (M56)	Diverge	Slip Road Type	Mainline (M56)	Diverge	Slip Road Type
Northbound Diverge	5405	1663	D	5694	1619	D

7.59 As shown in **Table 7.19**, with the addition of development traffic from the proposed site the lane configuration requirements at Junction 5 remain unchanged in the 2032 with Development scenario as a result of the scheme.

7.60 In summary, the merge-diverge assessments demonstrate that no changes to the slip road configuration requirements at junction 4 or 5 of the M56 occur as a result of the proposed development traffic.

8 Summary and Conclusions

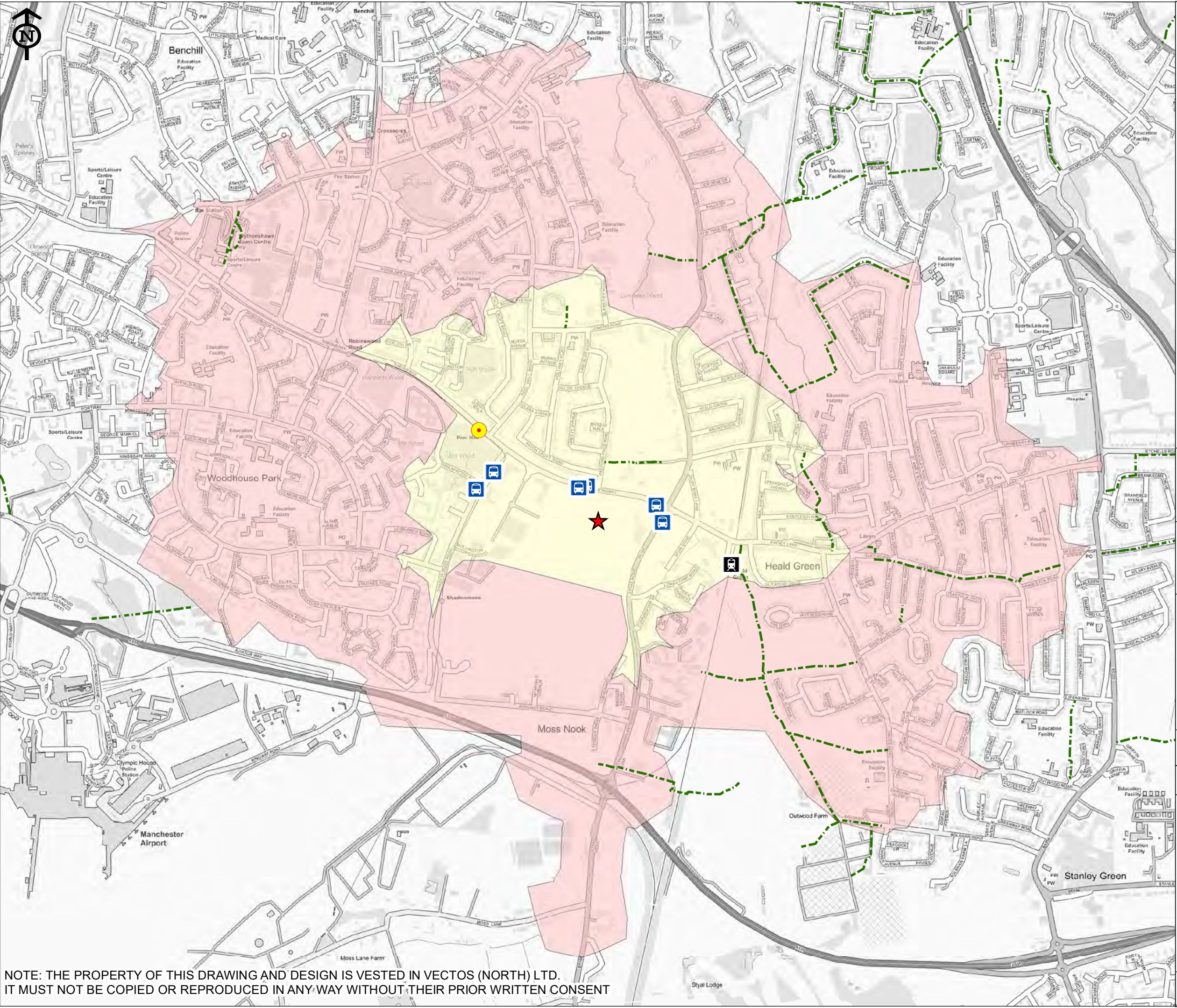
Summary

- 8.1 Vectos are advising Aviva Investors in relation to proposals for the development of land adjacent to Atlas Business Park in Wythenshawe, Manchester.
- 8.2 The site is located 1.5 kilometres south-east of Wythenshawe town centre and 12 kilometres south of Manchester City Centre (as the crow flies). The surrounding area is formed by both employment and residential use, with the site currently accommodating vacant land located to the east of the wider Atlas Business Park site.
- 8.3 This Transport Assessment supports a full planning application for the construction of five units of use classes E(g)(iii), B2 and B8 comprising a total gross internal floor area of 39,536 square meters, with associated car parking.
- 8.4 The reuse of the existing access position from Simonsway is proposed in the form of a new priority junction with a ghost island right turn lane. The proposed junction will provide access to the internal estate road which will accommodate a width of 7.3 metres and facilitate the simultaneous passing of cars and heavy goods vehicles.
- 8.5 The proposed parking provision has been assessed against Manchester City Council car parking standards contained within the Core Strategy document and shows the proposals are compliant with car and cycle parking standards for B2 and B8 uses.
- 8.6 In line with the minimum requirement of 1 Electric Vehicle Charge Point (EVCP) per 1,000sqm of floor space, the site will provide a total of 42 active and 84 passive EVCPs.
- 8.7 Swept path analysis that indicates service and refuse trips can be accommodated within the site has been undertaken.
- 8.8 A review of historic traffic data along the M56 and local roads within the vicinity of the site indicates there has been no identifiable trend for background traffic growth within the local area.
- 8.9 Junction capacity assessments undertaken at a number of junctions in the vicinity of the development site have demonstrated that traffic associated with the proposed scheme can be accommodated on the highway network.
- 8.10 The merge-diverge assessments undertaken at junctions 4 and 5 of the M56 demonstrate that no changes to the slip road configuration requirements occur as a result of the proposed development traffic.

Conclusion

- 8.11 It is therefore concluded that the proposed scheme would not result in a severe or material impact in transport terms. As such, there are no transport reasons why the proposed development should not come forward and be granted planning permission.

Appendix A



Legend

- ★ Site Location
- Tram Stop
- 🚉 Railway Station
- 🚌 Bus Stop
- PRoW

Walking Catchment

- 0 - 1 km
- 0 - 2 km

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CLIENT:

Aviva Investors

Atlas Park, Wythenshawe

DRAWING TITLE:

Walking Catchment

SCALE: **N.T.S**

DRAWN: AT	CHECKED: TP	DATE: 14/12/2022
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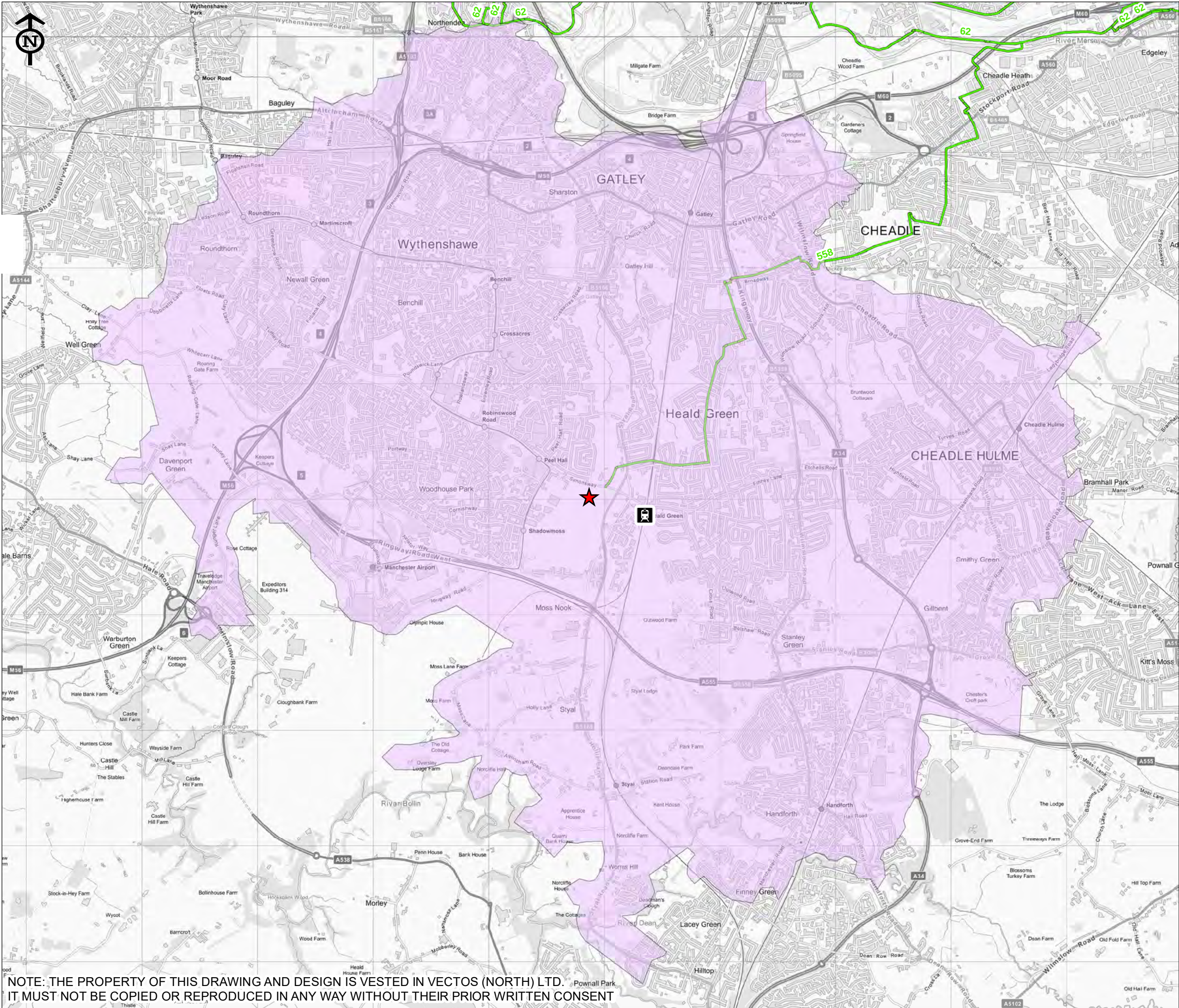


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Appendix B



Legend

- ★ Site Location
- 🚉 Railway Station

National Cycle Network

RouteType

- National Cycle Network Route

Cycling Catchment

- 0 - 5 km

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CLIENT:

Aviva Investors

PROJECT TITLE:

Atlas Park, Wythenshawe

DRAWING TITLE:

Cycling Catchment

SCALE: N.T.S

DRAWN: AT	CHECKED: TP	DATE: 14/12/2022
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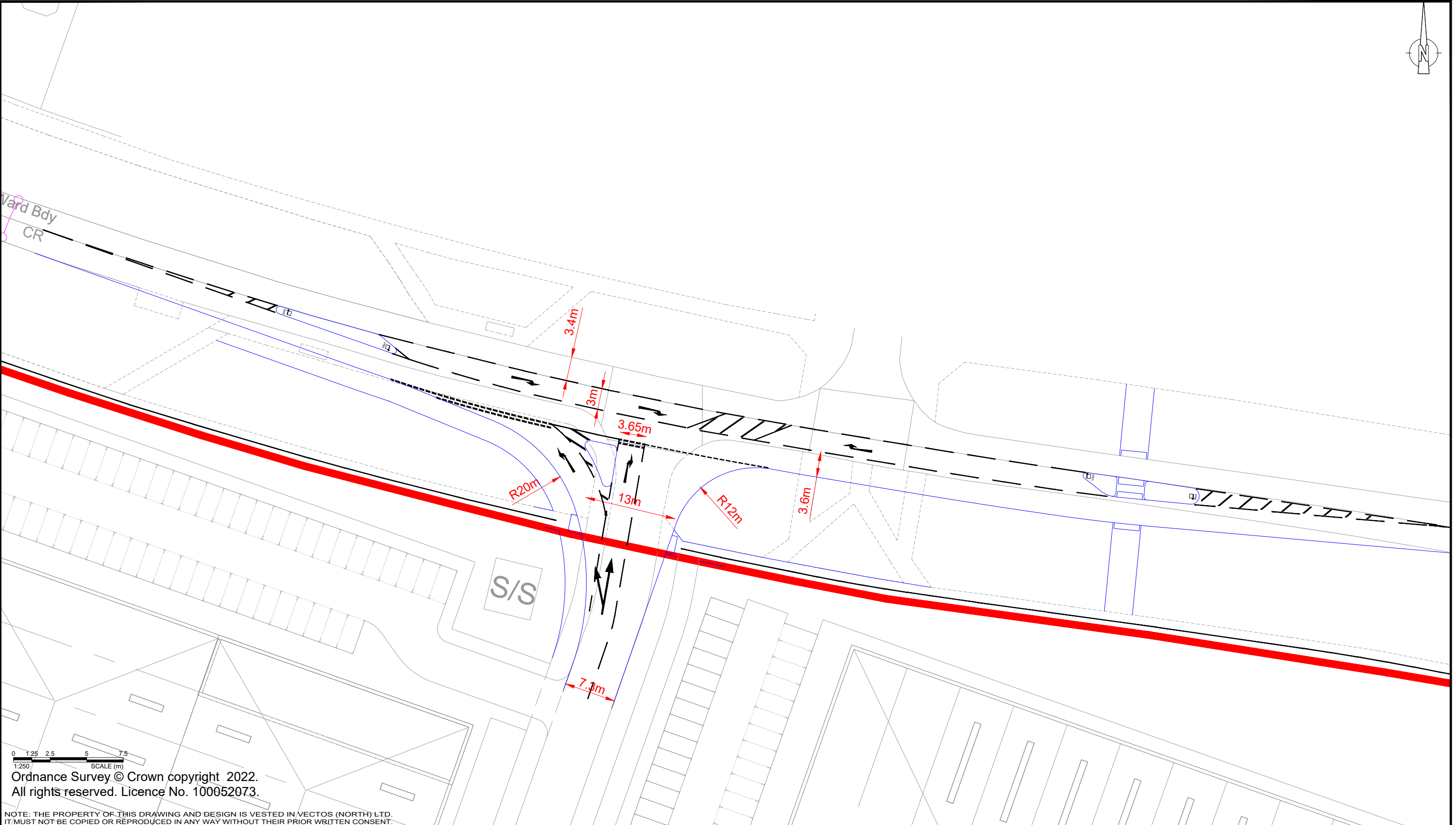
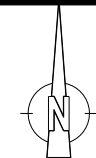
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Appendix C

Appendix D



0 1.25 2.5 5 7.5
1:250 SCALE (m)
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A	Amendments based on RSA comments	DJR	TP	01.12.22

Notes:

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Atlas Park, Wythenshawe

General Arrangement - Proposed Access
Junction with Ghost Island

DRAWN:
CG

CHECKED:
DR

DATE:
21.10.22

SCALES:
1:500 at A3

Aviva Investors

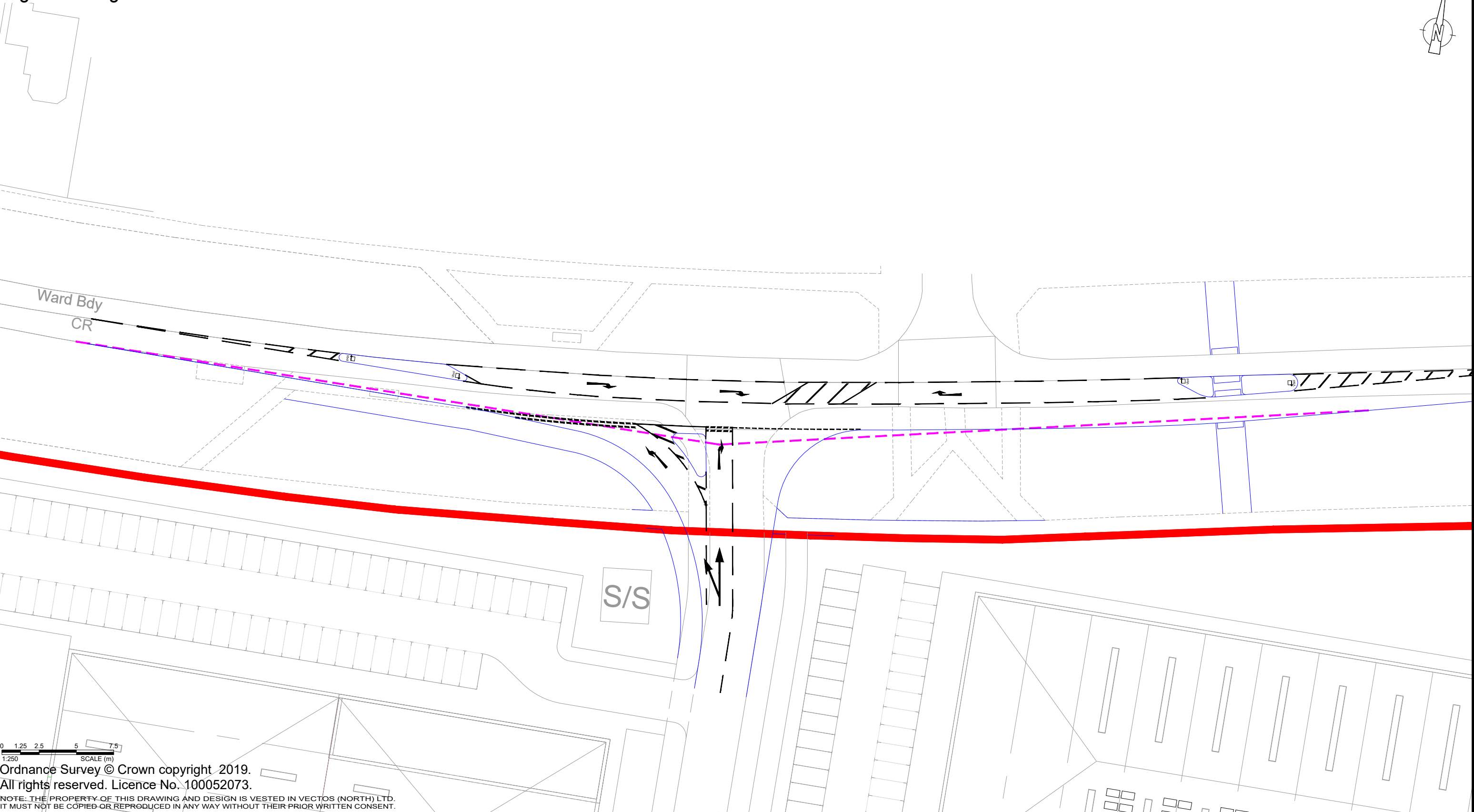
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REVISION:
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Right Turn Egress



0 1.25 2.5 5 7.5
1:250 SCALE (m)

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Notes:

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2.4m x 90m Visibility Splay in accordance with DMRB CD109 for 30mph road speed

Atlas Park, Wythenshawe

Proposed Junction - Visibility Splay

DRAWN: CG

CHECKED: DR

DATE: 02.11.22

SCALES: 1:500 at A3

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Left Turn Egress



nonsway
Ward Bdy

0 1.25 2.5 5 7.5
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Atlas Park, Wythenshawe

Proposed Junction - Visibility Splay

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DATE: 02.11.22

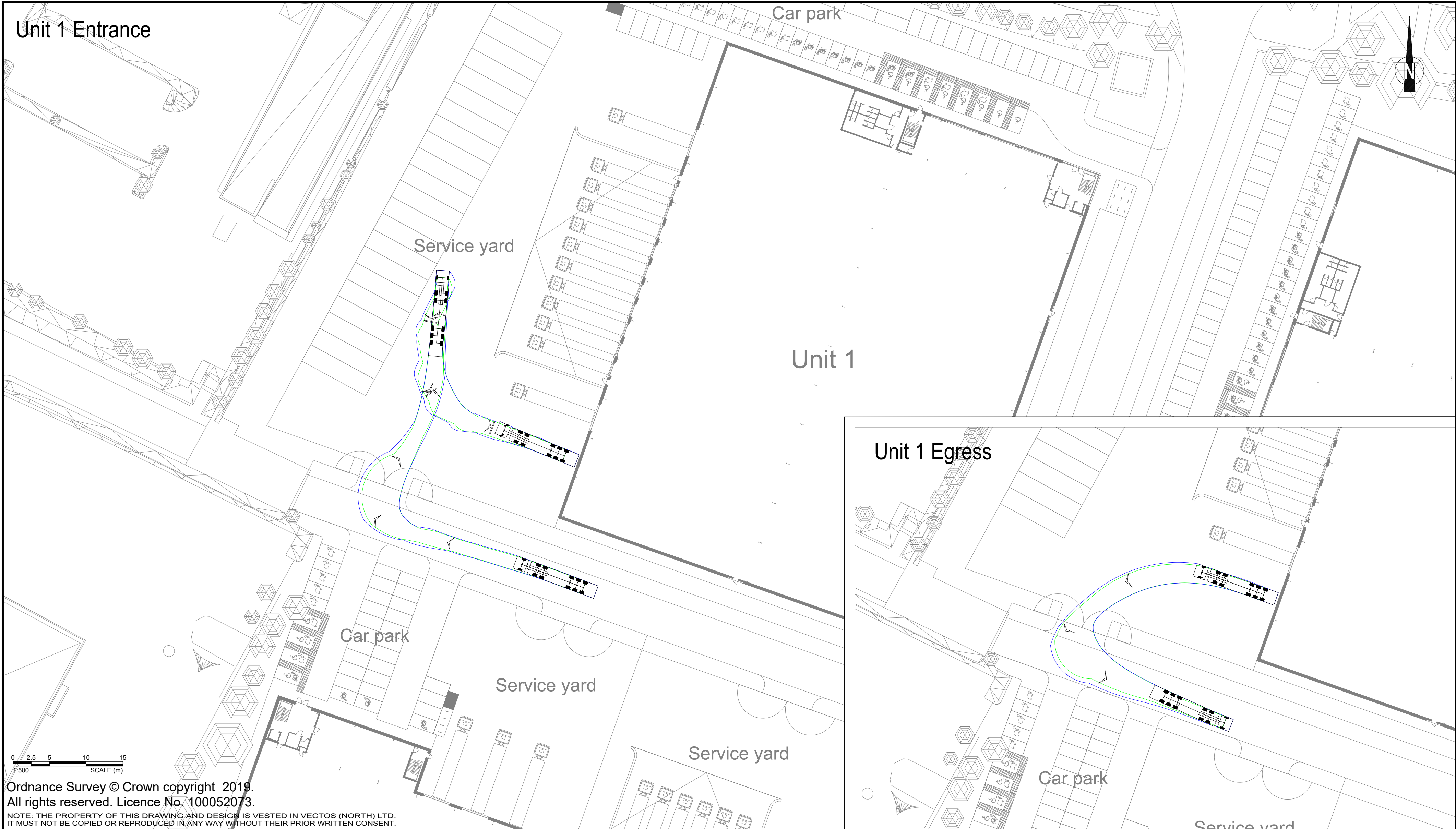
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Appendix E

Appendix F

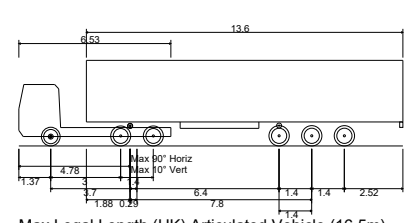
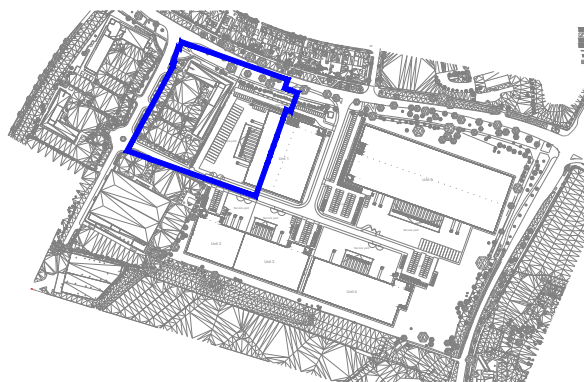


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Notes:

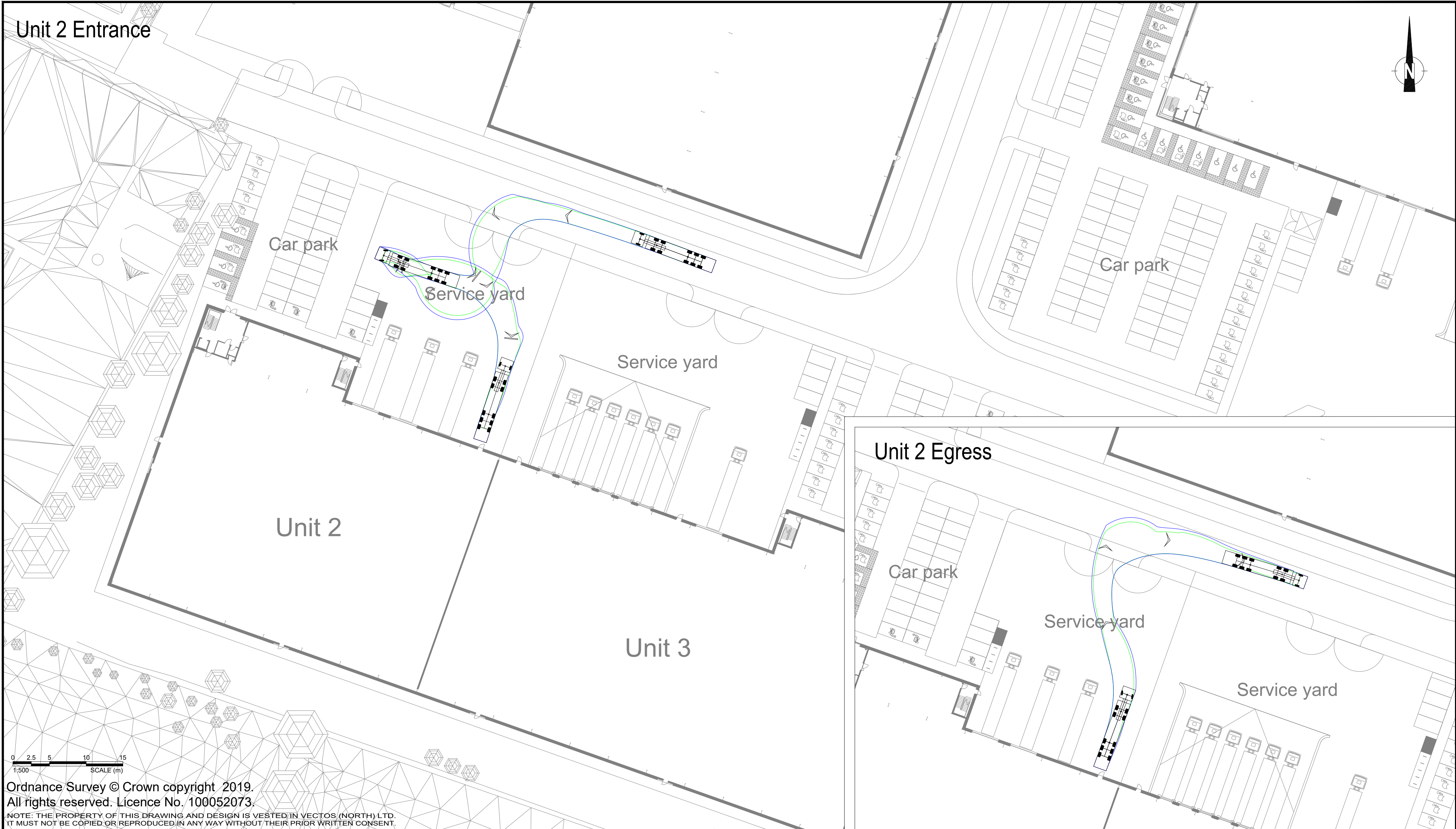
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Max Legal Length (UK) Articulated Vehicle (16.5m)	16.500m
Overall Length	2.550m
Overall Width	3.881m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

Atlas Park, Wythenshawe			Aviva Investors	
Swept Path Analysis - 16.5m Articulated Vehicle				
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				REVISION: A

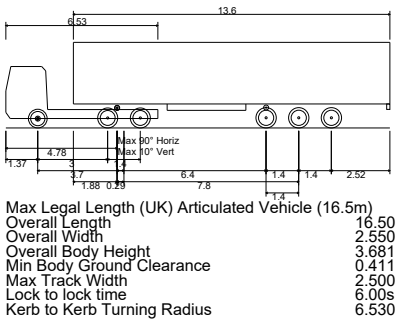
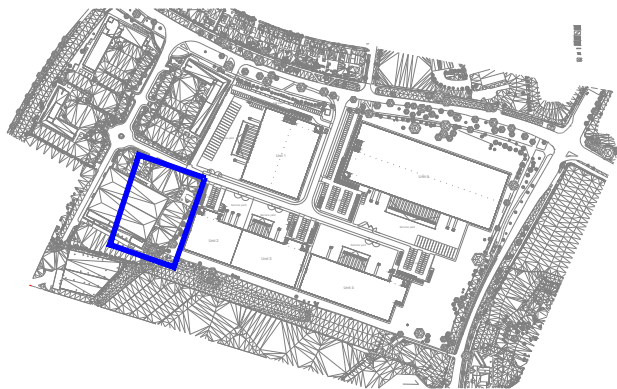
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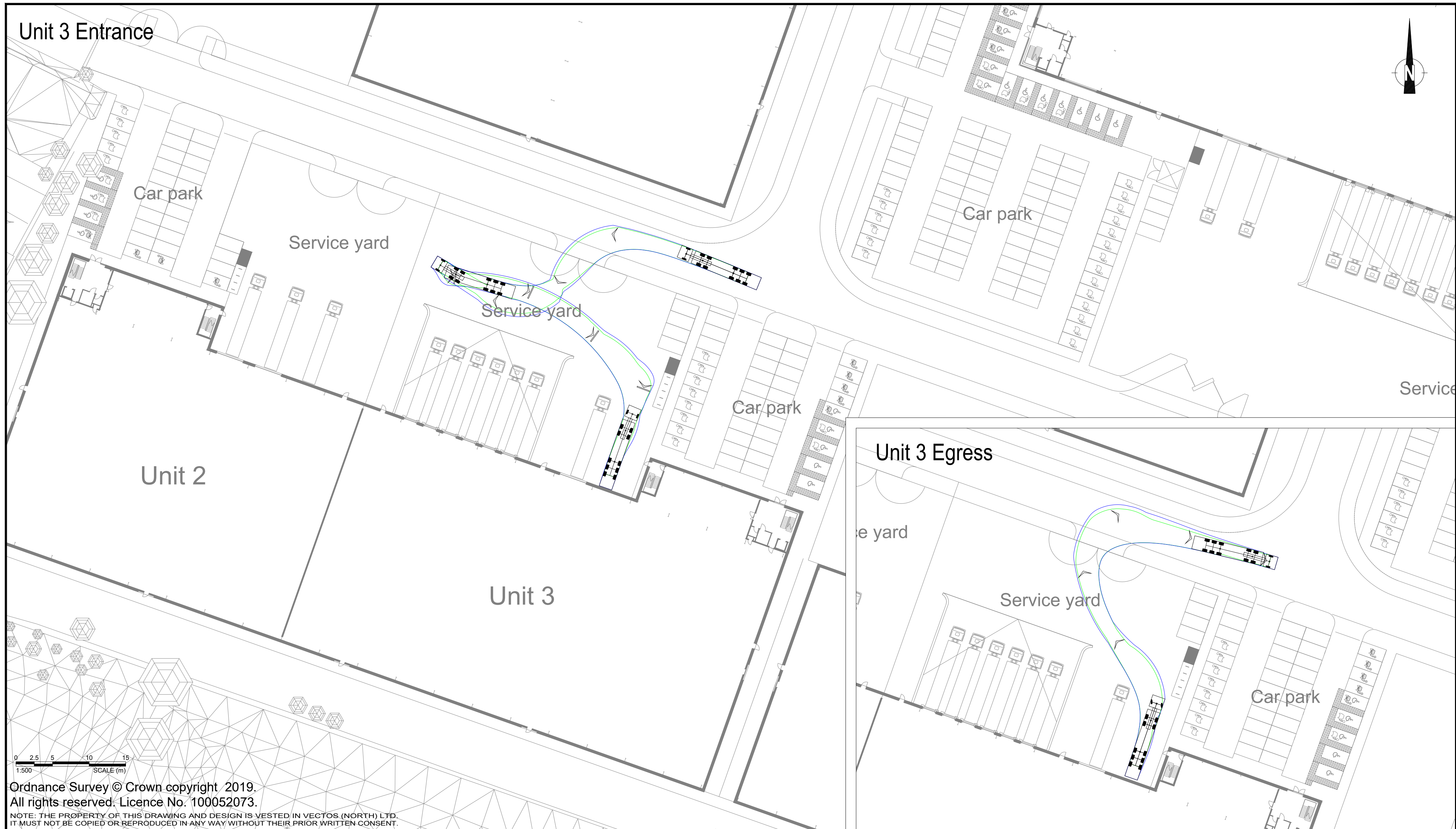
Atlas Park, Wythenshawe

Swept Path Analysis - 16.5m Articulated Vehicle

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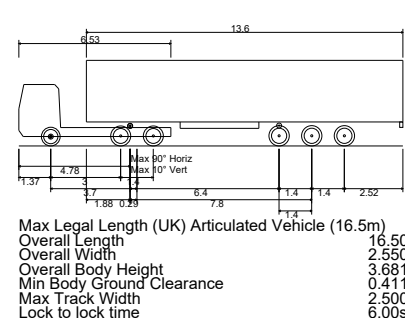
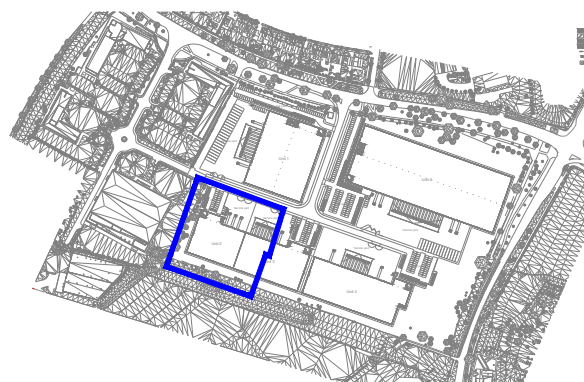


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Swept Path Analysis - 16.5m Articulated Vehicle

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DATE: 11.08.22

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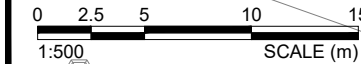
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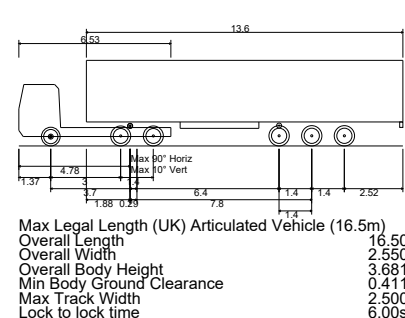
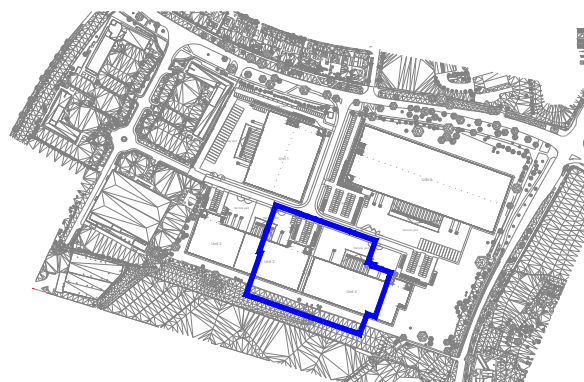


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Atlas Park, Wythenshawe

Swept Path Analysis - 16.5m Articulated Vehicle

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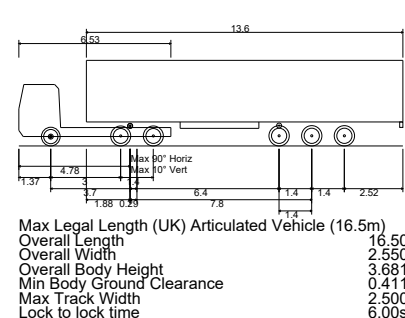
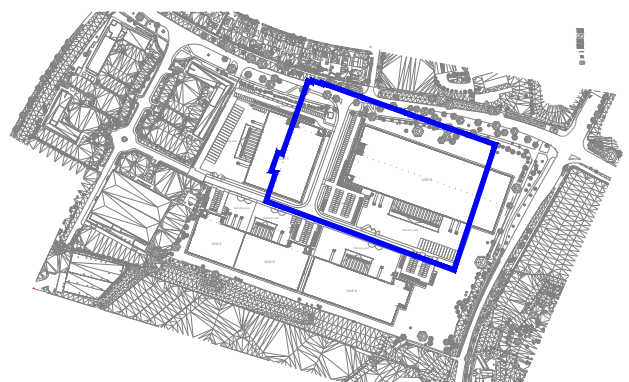
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Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.550m
Overall Body Height 3.881m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.530m

Atlas Park, Wythenshawe				Aviva Investors	
Swept Path Analysis - 16.5m Articulated Vehicle				 4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ 0161 228 1008 e: manchester@vectos.co.uk	
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Appendix G



meraki alliance

Highways, Transportation & Safety Consulting

Proposed Access Improvements: Atlas Business Park, Wythenshawe

Road Safety Audit: Stage 1

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M60 2LA

Jonathan Birkett
Meraki Alliance Ltd
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Wetherby
LS22 5NB
[Tel: +44](tel:+4417966296302) (0) 7966296302



meraki alliance

Highways, Transportation & Safety Consulting

Proposed Access Improvements: Atlas Business Park, Wythenshawe

Road Safety Audit: Stage 1

Report Produced for:	Manchester City Council
Report Produced by:	Jonathan Birkett
Report Dated:	16 November 2022
Report Reference:	MAL/ABPW RSA1Rev0
Road Safety Audit Team Leader:	Jonathan Birkett

Proposed Access Improvements: Atlas Business Park, Wythenshawe

Road Safety Audit: Stage 1

Contents Amendment Record

This report has been issued & amended as follows:

Issue	Revision	Description	Date	Signed
1	0	Draft Report	16 Nov 2022	JB
1	0	FINAL REPORT	16 Nov 2022	JB/GK

Report Circulation Record

This report has been circulated, as follows:

Person	Organisation	No. of Copies	Date
	Manchester City Council	Electronic	16 Nov 2022
Tom Pritchard	Vectos	Electronic	16 Nov 2022
G Kidd	Meraki Alliance Ltd	Electronic	16 Nov 2022

Contents

1	Introduction	3
1.1	<i>General</i>	3
1.2	<i>Documents Forming the Brief</i>	3
1.3	<i>Collision Traffic and Speed Data</i>	3
1.4	<i>Details of Site Visit</i>	4
1.5	<i>RSA Team and Format</i>	4
1.6	<i>Departures or Relaxations from Standards</i>	5
1.7	<i>Issues Raised at Previous RSA.</i>	5
1.8	<i>Information Not Provided at this RSA Stage 1</i>	5
1.9	<i>Items Outside the Scope of the RSA</i>	5
2	Items Raised at Stage 1 Road Safety Audit	6
2.1	<i>RSA Problems 1</i>	6
3	Audit Team Statement	10
	Appendix 1 – Audited Documents and Drawings	11
	Appendix 2 – Problem Location Plan	12

1 Introduction

1.1 General

This report has been prepared in response to a request to undertake a Stage 1 Road Safety Audit (i.e., carried out prior to detailed design), by Tom Pritchard of Vectos on behalf of Manchester City Council. The scheme submitted for Audit is the proposed access improvements Atlas Business Park, Simonsway, Wythenshawe. Simonsway is subject to 30mph and is street lit.

The works included within this Road Safety Audit are:

- Ghost island priority junction
- Footways and
- Road markings.

Overseeing Organisation

Manchester City Council

Client

Project Building Solutions

Designers

Vectos

The audit comprised an examination of documents forming the verbal Audit Brief and an examination of the site.

1.2 Documents Forming the Brief

The documents were made available to the Road Safety Audit Team by Tom Pritchard of Vectos on behalf of Manchester City Council. The total documents forming the Audit Brief are listed in Appendix 1:

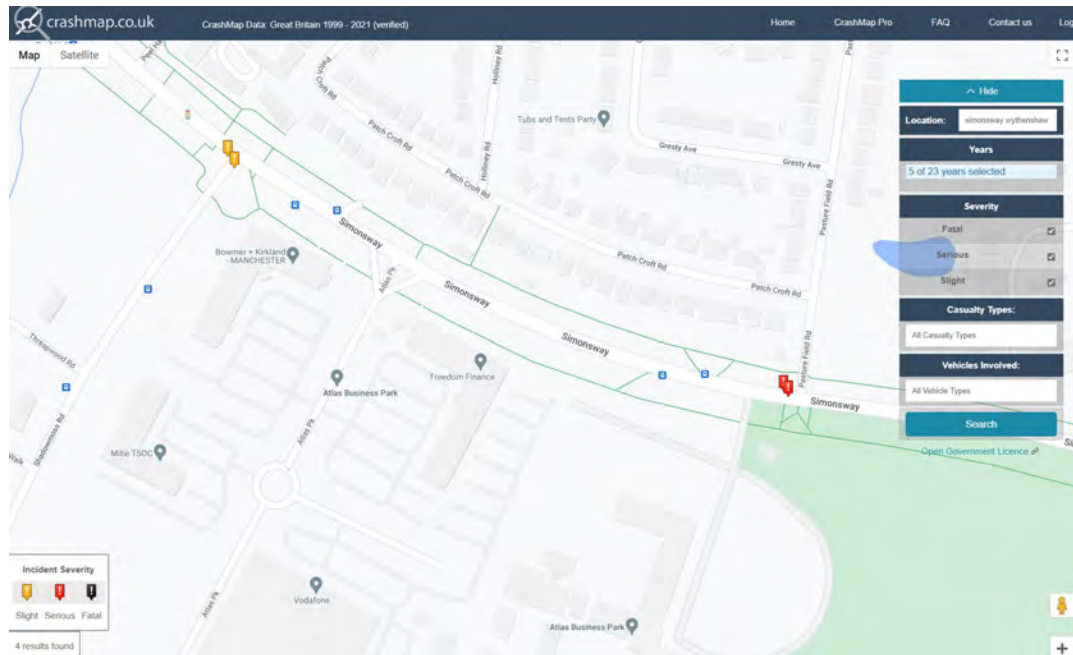
Generally, the Brief comprised:

- o Verbal Brief.
- o Drawing VN211880-D102.

1.3 Collision Traffic and Speed Data

Collision data was not available as part of the Brief. Therefore, the Audit Team examined the most recent 5 years (2017-2021) data held on the “Crashmap” website. Examination of the data shows that there have been four personal injury collisions on the Simonsway close to the proposed junction improvement works.

Two slights in severity at the signal junction with Shadowmoss Road to the west and two serious in severity at Pasture Field Road priority junction. One of the serious collisions involved a cyclist.



Traffic count data was not available.

Speed data was not available.

1.4 Details of Site Visit

A site inspection was undertaken on Tuesday 16 November 2022 between 13:30 and 14:15. The Audit Team spent 45 minutes on site understanding the proposed works and their interaction with the local road network.

During the site visit it was raining.

1.5 RSA Team and Format

It was considered that the information provided was sufficient for the purpose of carrying out the Road Safety Audit Stage 1 requested.

The Road Safety Audit Team membership approved was:

JONATHAN BIRKETT IENG MICE FIHE
Holder of Certificate of Competency
Road Safety Audit Team Leader

G KIDD BSc (HONS) MIHE
Road Safety Audit Team Member

The Road Safety Audit comprised an examination of the documents and drawings supplied to the Road Safety Audit Team (referenced in Appendix 1 of this report). No member of the Road Safety Audit Team has had any previous input to the design of the scheme.

The Terms of Reference are as described in the National Highways Design Manual for Roads and Bridges document GG119 'Road Safety Audit'. The scheme has been examined and this report compiled only with regard to safety implications to road users of the scheme as presented. It has not been verified for compliance with any other Standards or criteria. However, in order to clearly explain a safety problem or the recommendation to resolve a problem, the Audit Team may on occasion have referred to a design standard for information only. However, any audit comments should not be construed as implying that a technical audit has been undertaken in any respect.

Furthermore, any recommendations included within this report should not be regarded as being prescriptive design solution to the problem raised. They are intended only to indicate a proportionate and viable means of eliminating or mitigating the identified problem, as stipulated in GG119, and in no way imply that a formal design process has been undertaken. There may be alternative methods of addressing a problem which should be equally acceptable in achieving the desired elimination or mitigation and these should be considered when responding to this report.

It is the Project Sponsor's responsibility to ensure that all problems raised by the Road Safety Audit Team are given due consideration.

In the event of a collision and any resulting legal action, Meraki Alliance Ltd would have to defend its actions on the basis that it took such care, as in all circumstances was reasonably required, to ensure that the highway was not dangerous to road users. It is important therefore that recommendations contained in the report are acted upon wherever possible.

1.6 Departures or Relaxations from Standards

No departures from standard have been provided to the RSA Team.

1.7 Issues Raised at Previous RSA.

There have been no other RSA's undertaken.

1.8 Information Not Provided at this RSA Stage 1

All information required has been provided.

1.9 Items Outside the Scope of the RSA

No items were identified outside the scope of the RSA.

2 Items Raised at Stage 1 Road Safety Audit

This section details the findings of this Stage 1 Road Safety Audit. All locations of identified problems are illustrated on the plans included at **Appendix 2**.

2.1 RSA Problems 1

PROBLEM		1-1
Location:	Ghost island junction.	
Summary:	All dimensions and sizes of the new junction are not provided, the provision of substandard junction layouts can lead to an increased risk of shunts, loss of control and lane change collisions.	
Examination of the drawings does not fully allow the Audit Team to understand what standards have been used to design the ghost island junction. Turning Lengths, Taper lengths and Deceleration Lengths, are not dimensioned.		
Providing priority junctions that do not comply with the relevant standards can result in an increased risk of shunt, lane change and loss of control type collisions.		
RECOMMENDATION		
Ensure that the new junction fully comply with the relevant design standards.		

PROBLEM		1-2
Location:	Junction	
Summary:	Details of vehicle tracked movements are not provided on the drawings. Inappropriate carriageway widths and turning radii can result in increased vehicle collisions as well as pedestrian-vehicle collisions.	
Details of the swept paths of vehicles have not been provided at the junction. Inappropriate carriageway widths and junction radii can result in vehicles failing to safely negotiate the new junction arrangements and will increase the risk of vehicle collisions.		
RECOMMENDATION		
Provide swept path movements at the new junction.		

PROBLEM		1-3
Location:	Junction	

Summary:	Obstructed visibility splays will increase the risk of drivers failing to give way.
Details of visibility splays have not been provided on the drawings. There will be localised widening of Simonsway to provide the additional width needed to provide a ghost island right turn facility at this location. There is a sign and trees to the east that when widened will affect visibility for vehicles turning out of the new access junction. Obstructed visibility splays will increase the risk of drivers failing to give way.	
RECOMMENDATION	
Provide details of the visibility splays and ensure that nothing is within the splays that can obstruct visibility.	

PROBLEM		1-4
Location:	Simonsway.	
Summary:	Overtaking vehicles will increase the risk of side swipe/head on type collisions.	
The Audit Team were concerned that the introduction of a central right turn lane could result in drivers entering the hatched area to pass vehicles slowing to turn into the development. Overtaking vehicles will increase the risk of side swipe/head on type collisions.		
RECOMMENDATION		
It is recommended that central islands with suitable signing are introduced either side of the ghost island right turn facility within the hatching to protect right turn vehicles.		

PROBLEM		1-5
Location:	Simonsway/site access/Pasture Field Road.	
Summary:	A lack of suitable cycle and pedestrian facilities will increase the risk of vulnerable road user/vehicle collisions.	
It is proposed to construct a new ghost island junction covering both the new site access and Pasture Field Road. The Audit Team had a number of concerns.		

1. Widening of the road exposes pedestrians and cyclists to greater crossing widths and therefore greater risk of being struck. 2. The existing facilities across Simonsway will be within the ghost island right turn for Pasture Field Road, leading to a risk of vehicles strikes. 3. There is a segregated facility running along the southern side of Simonsway which bisects the proposed access road into the development and the drawings do not show how this will be accommodated safely within the new design. 4. There is a bus stop on the northern side of Simonsway and as such the designers need to consider safe ways to cross the road
RECOMMENDATION
It is recommended that the existing crossing points of Simonsway are moved to more suitable locations where in conjunction with Problem 1-4 central islands are created to provide safe crossing points. Carefully consider how the existing segregated facility of the site access can be accommodated safely at the new access. The designers need to consider bringing this crossing up to current standards.

PROBLEM		1-6
Location:	Ghost island junction.	
Summary:	Inappropriate drainage may lead to ponding water resulting in loss of control type collisions.	
To construct the new junction there will be significant widening needed on the southern side of Simonsway, the drawings do not show any drainage. Ponding water can result in an increased risk of loss of control type collisions and at certain times of year standing water will freeze resulting in ice, vehicles manoeuvring in the turning could lose control, resulting in an increased risk of collisions as well as pedestrians slipping and falling.		
RECOMMENDATION		
Provide appropriate drainage at all locations where changes to the road layout is proposed.		

PROBLEM		1-7
Location:	Simonsway and access	
Summary:	Inappropriate levels of lighting can lead to an increased collision risk.	
To construct the new junction there will be significant widening needed on the southern side of Simonsway this will affect all the lighting within this area. The scheme will include widening and increase both the night-time usage and the number of vehicles/NMUs using the proposed road network once constructed.		

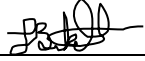
This may result in the junction and crossing points being in shadow leading to possible conflicts during the hours of darkness.

RECOMMENDATION

Ensure that suitable lighting provision is provided

**END OF PROBLEMS IDENTIFIED AND RECOMMENDATIONS PRESENTED IN THIS
STAGE 1 ROAD SAFETY AUDIT**

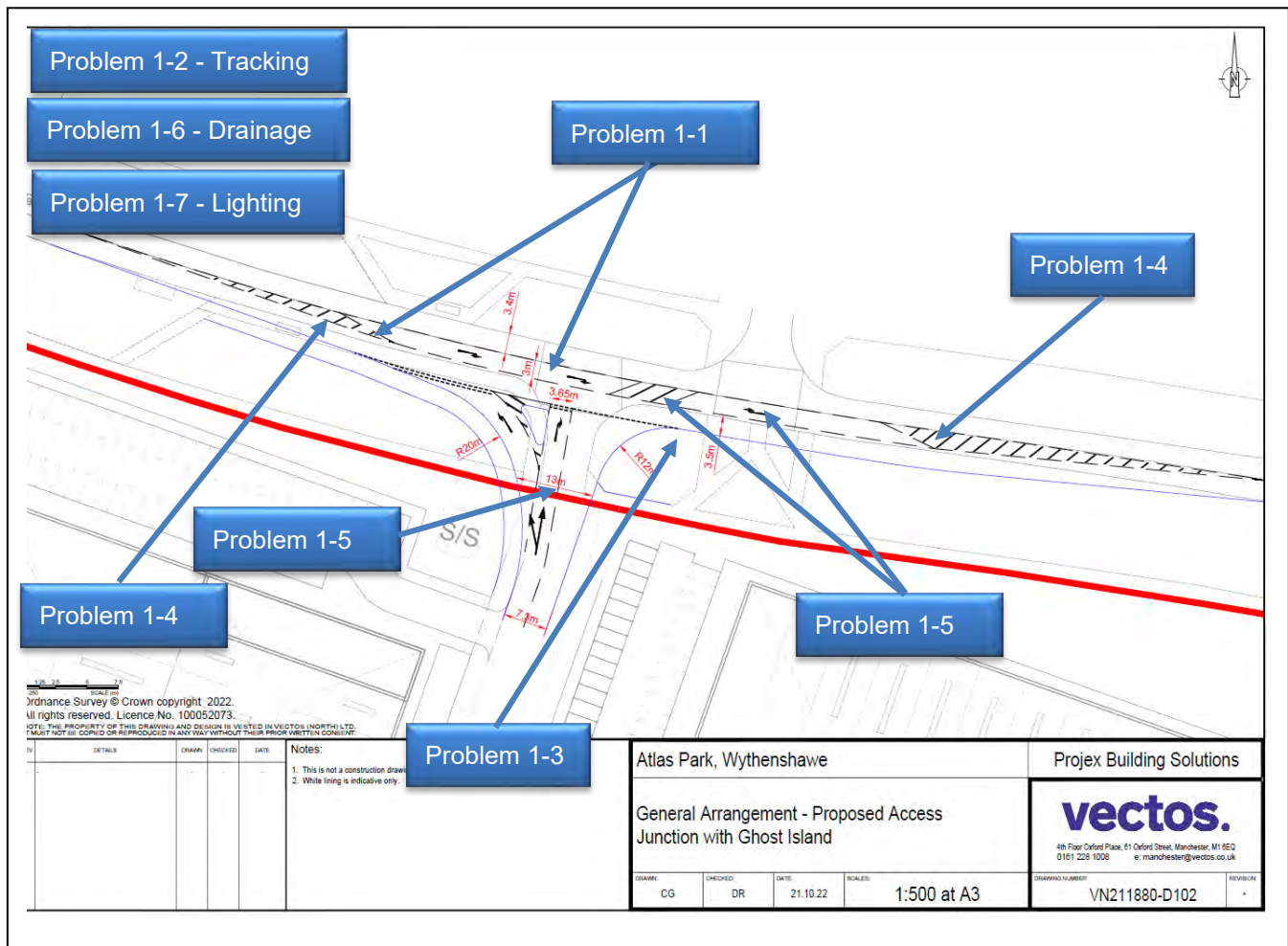
3 Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with GG119	
ROAD SAFETY AUDIT TEAM LEADER	
NAME:	JONATHAN BIRKETT
SIGNED:	
POSITION:	DIRECTOR
ORGANISATION	MERAKI ALLIANCE LTD
DATE:	16 NOVEMBER 2022
ROAD SAFETY AUDIT TEAM MEMBER	
NAME:	GILLIAN KIDD
SIGNED:	
POSITION:	AUDIT TEAM MEMBER
ORGANISATION	MERAKI ALLIANCE LTD
DATE:	16 NOVEMBER 2022

Appendix 1 – Audited Documents and Drawings

Drawing VN211880-D102

Appendix 2 – Problem Location Plan



Road Safety Audit Designers Response Report

1 Project Summary

Report Title	Proposed Access Improvements: Atlas Business Park, Wythenshawe
Date	01/12/22
Document Reference and Revision:	VN211880-RSA1
Prepared by:	Daniel Reid
On behalf of:	Vectos (North) Ltd
AUTHORISATION SHEET	
Project:	Atlas Business Park, Wythenshawe
Report Title	Designers Response Report
PREPARED BY	
Name:	Daniel Reid
Signed:	
Organisation:	Vectos (North) Ltd
Date:	01.12.22

2 Introduction

GENERAL DETAILS:				
Highway scheme name and road number:		Atlas Park, Wythenshawe		
Date:	01.12.22			
Type of scheme:	Proposed Access Junction			
RSA Stage:	☒ Stage 1	☐ Stage 2	☐ Stage 3	☐ Stage 4
	Interim			
Road Safety Audit Reference:		MAL/ABPW RSA1REV0		
Designers Response prepared by:		Daniel Reid		
Design organisation details:		Vectos (North) Ltd		

3 Key Personnel

Overseeing Organisation:	Manchester City Council
RSA Team:	Maraki Alliance
Design Organisation:	Vectos (North) Ltd

4 Road Safety Audit Decision Log

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
1.1	Ensure that the new junction fully comply with the relevant design standards.	Accepted. The geometry of the junction has been designed using DMRB CD123 and the Traffic Sign Manual Chapter 5. Turning lengths, taper lengths and deceleration lengths are in line with the guidance for the current road speed. (See drawing No. VN211880-D102-A).		
1.2	Provide Swept Path Movements at the new junction.	Accepted. Swept path analysis at the junction has been completed using a 16.5m max legal articulated vehicle (see drawing No. VN211880-TR106).		
1.3	Provide details of the visibility splays and ensure that nothing is within the splays that can obstruct visibility.	Accepted. 2.4m x 90m Visibility Splay's, in accordance with DMRB CD109 for 30mph road speed, have been completed at the junction (see drawing No. VN211880-TR103/TR103.1)		
1.4	It is recommended that central islands with suitable signing are introduced either side of the ghost island right turn facility within the hatching to protect right turn vehicles.	Accepted. Central Islands now included to protect right turning traffic into the site. 'Keep Left/Keep Right' Visaboll traffic bollards have also been included on the central islands (see drawing No. VN211880-D102-A).		

1.5	It is recommended that the existing crossing points of Simonsway are moved to more suitable locations where in conjunction with problem 1-4 central islands are created to provide safe crossing points.	Accepted. Proposed crossing facility have been incorporated with the central island to provide safety to pedestrians and cyclists crossing in a north/south direction. The existing crossing facility is to be stopped up.		
1.6	Provide appropriate drainage at all locations where changes to the road layout is proposed.	Accepted. Drainage will be further investigated during the detailed design phase.		
1.7	Ensure that suitable lighting provision is provided.	Accepted. Full lighting assessment will be completed during the detailed design phase.		

5 Design Organisation and Overseeing Organisation Statements

On behalf of the Design Organisation I certify that: The RSA actions identified in response to the road safety audit problems in the road safety audit have been discussed and agreed with the Overseeing Organisation.	
Name	Daniel Reid
Signed	
Position	Engineer
Organisation	Vectos (North) Ltd
Date	01.12.22

On behalf of the Overseeing Organisation I certify that: The RSA actions identified in response to the road safety audit problems in the road safety audit have been discussed and agreed with the design organisation; and The agreed RSA actions will be progressed.	
Name	
Signed	
Position	
Organisation	
Date	

Appendix H

TRICS 7.9.3

Trip Rate Param Gross floor area

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE

Calculation Factor: 100 sqm

Count Type: TOTAL VEHICLES

Time Range			ARRIVALS				DEPARTURES		TOTALS	
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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		3	24514		3	24514		3	24514	0.085
06:00-07:00		3	24514		3	24514		3	24514	0.181
07:00-08:00		4	27668		4	27668		4	27668	0.579
08:00-09:00		4	27668		4	27668		4	27668	0.988
09:00-10:00		4	27668		4	27668		4	27668	0.761
10:00-11:00		4	27668		4	27668		4	27668	0.676
11:00-12:00		4	27668		4	27668		4	27668	0.678
12:00-13:00		4	27668		4	27668		4	27668	0.754
13:00-14:00		4	27668		4	27668		4	27668	0.69
14:00-15:00		4	27668		4	27668		4	27668	0.741
15:00-16:00		4	27668		4	27668		4	27668	0.599
16:00-17:00		4	27668		4	27668		4	27668	0.888
17:00-18:00		4	27668		4	27668		4	27668	0.888
18:00-19:00		4	27668		4	27668		4	27668	0.372
19:00-20:00		3	24514		3	24514		3	24514	0.246
20:00-21:00		3	24514		3	24514		3	24514	0.087
21:00-22:00										
22:00-23:00										
23:00-24:00										
Daily Trip Rates:			4.622			4.591			9.213	

TRICS 7.9.3

Trip Rate Parameter: Gross floor area

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

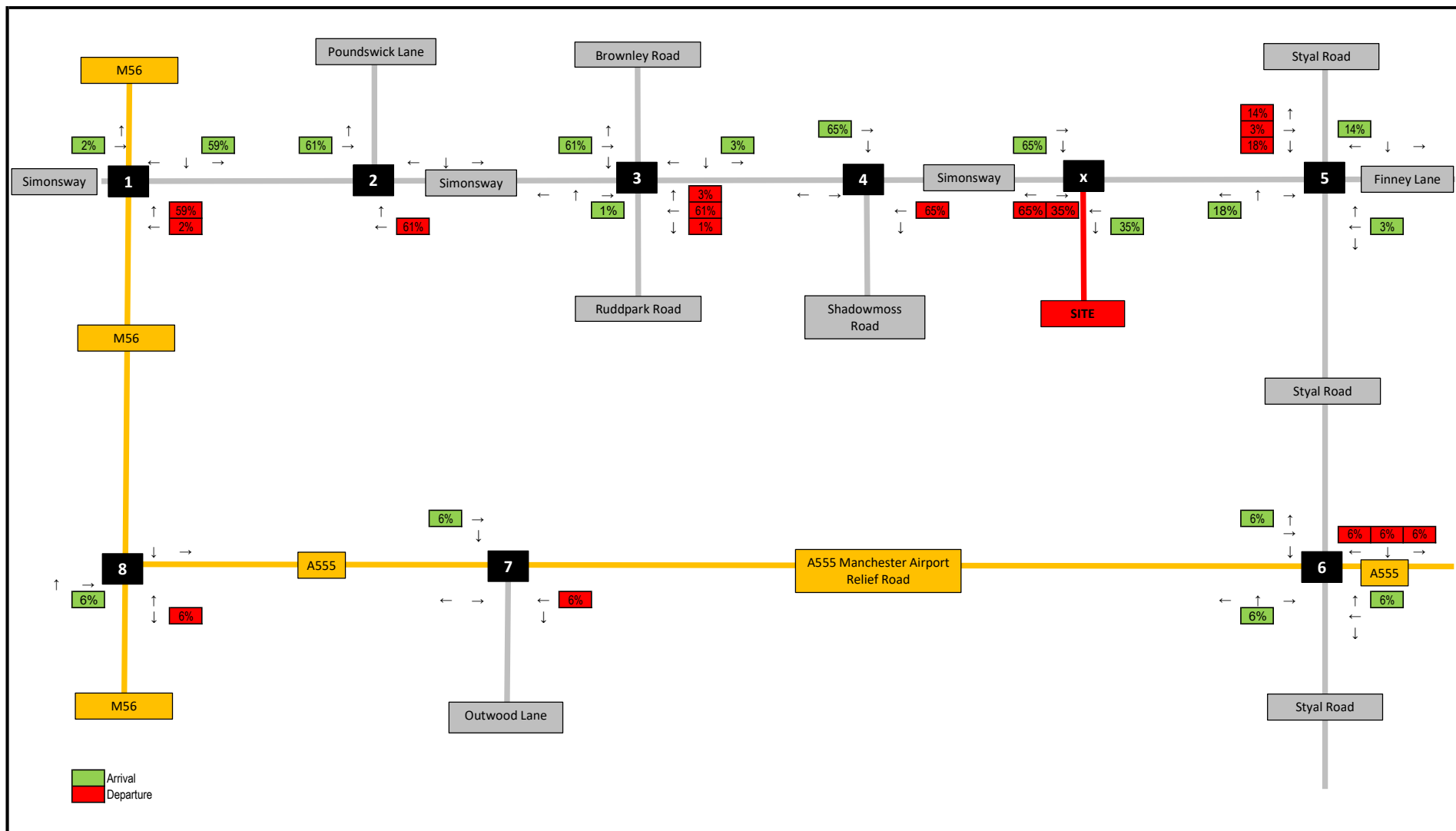
Calculation Factor: 100 sqm

Estimated TRIP rate value per 38211 SQM shown in Estimated column

Count Type: TOTAL VEHICLES

Time Range	No. Days	ARRIVALS				DEPARTURES				TOTALS	
		Ave. GFA	Trip Rate	Trip Rate	Days	GFA	Trip Rate	Trip Rate	Days	GFA	Trip Rate
00:00-00:30											
00:30-01:00											
01:00-01:30											
01:30-02:00											
02:00-02:30											
02:30-03:00											
03:00-03:30											
03:30-04:00											
04:00-04:30											
04:30-05:00											
05:00-05:30		1 3500	0.057	21.835	1 3500	0	0	1 3500	0.057		
05:30-06:00		1 3500	0.171	65.505	1 3500	0.029	10.917	1 3500	0.2		
06:00-06:30		1 3500	0.086	32.752	1 3500	0.086	32.752	1 3500	0.172		
06:30-07:00		1 3500	0.114	43.67	1 3500	0.029	10.917	1 3500	0.143		
07:00-07:30		4 7891	0.098	37.527	4 7891	0.073	27.843	4 7891	0.171		
07:30-08:00		4 7891	0.13	49.633	4 7891	0.048	18.158	4 7891	0.178		
08:00-08:30		4 7891	0.07	26.632	4 7891	0.057	21.79	4 7891	0.127		
08:30-09:00		4 7891	0.057	21.79	4 7891	0.032	12.105	4 7891	0.089		
09:00-09:30		4 7891	0.067	25.422	4 7891	0.038	14.527	4 7891	0.105		
09:30-10:00		4 7891	0.105	39.948	4 7891	0.073	27.843	4 7891	0.178		
10:00-10:30		4 7891	0.07	26.632	4 7891	0.073	27.843	4 7891	0.143		
10:30-11:00		4 7891	0.105	39.948	4 7891	0.06	23	4 7891	0.165		
11:00-11:30		4 7891	0.057	21.79	4 7891	0.07	26.632	4 7891	0.127		
11:30-12:00		4 7891	0.076	29.053	4 7891	0.101	38.738	4 7891	0.177		
12:00-12:30		4 7891	0.041	15.737	4 7891	0.054	20.579	4 7891	0.095		
12:30-13:00		4 7891	0.076	29.053	4 7891	0.051	19.369	4 7891	0.127		
13:00-13:30		4 7891	0.079	30.264	4 7891	0.06	23	4 7891	0.139		
13:30-14:00		4 7891	0.086	32.685	4 7891	0.133	50.843	4 7891	0.219		
14:00-14:30		4 7891	0.063	24.211	4 7891	0.117	44.79	4 7891	0.18		
14:30-15:00		4 7891	0.067	25.422	4 7891	0.089	33.895	4 7891	0.156		
15:00-15:30		4 7891	0.07	26.632	4 7891	0.158	60.527	4 7891	0.228		
15:30-16:00		4 7891	0.025	9.684	4 7891	0.067	25.422	4 7891	0.092		
16:00-16:30		4 7891	0.051	19.369	4 7891	0.098	37.527	4 7891	0.149		
16:30-17:00		4 7891	0.029	10.895	4 7891	0.057	21.79	4 7891	0.086		
17:00-17:30		4 7891	0.041	15.737	4 7891	0.076	29.053	4 7891	0.117		
17:30-18:00		4 7891	0.01	3.632	4 7891	0.025	9.684	4 7891	0.035		
18:00-18:30		4 7891	0.022	8.474	4 7891	0.041	15.737	4 7891	0.063		
18:30-19:00		4 7891	0.013	4.842	4 7891	0.016	6.053	4 7891	0.029		
19:00-19:30		1 3500	0	0	1 3500	0.029	10.917	1 3500	0.029		
19:30-20:00		1 3500	0	0	1 3500	0	0	1 3500	0		
20:00-20:30		1 3500	0	0	1 3500	0	0	1 3500	0		
20:30-21:00		1 3500	0	0	1 3500	0	0	1 3500	0		
21:00-21:30											
21:30-22:00											
22:00-22:30											
22:30-23:00											
23:00-23:30											
23:30-24:00											
Daily Trip Rates:			1.936			1.84					3.776

Appendix I



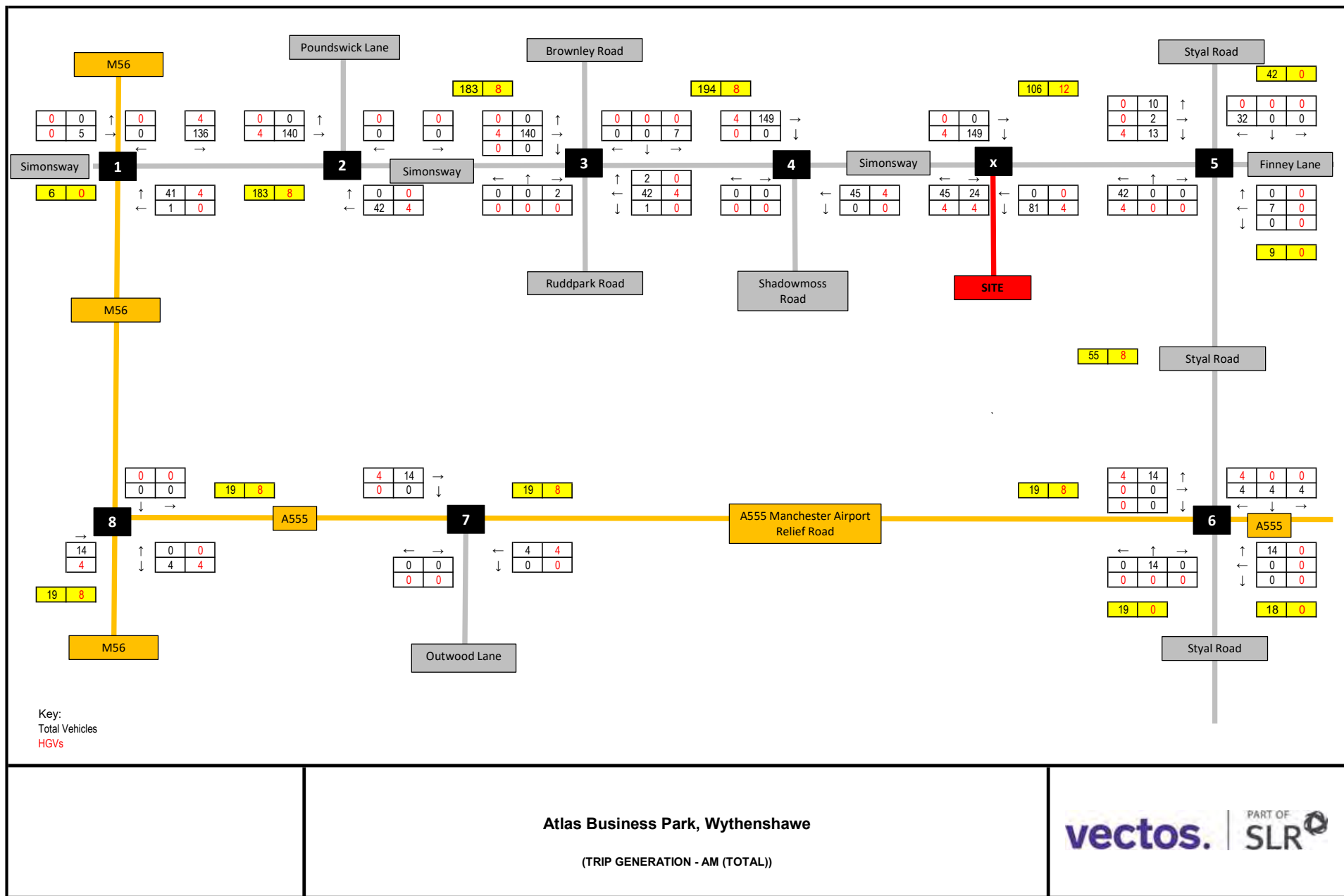
Atlas Business Park, Wythenshawe

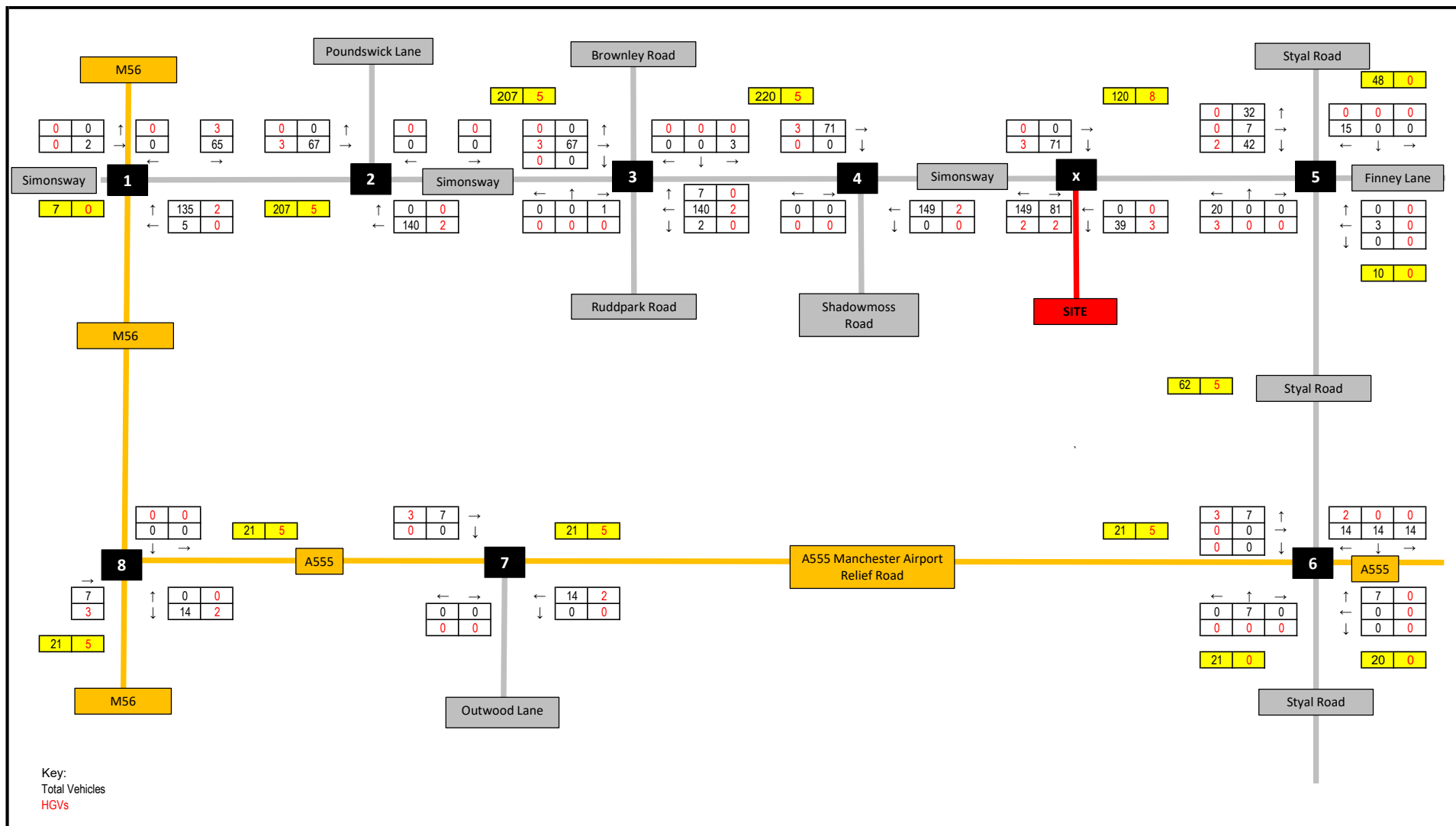
(STAFF DISTRIBUTION)

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Appendix J

Appendix K





Atlas Business Park, Wythenshawe

(TRIP GENERATION - PM (TOTAL))

Appendix L

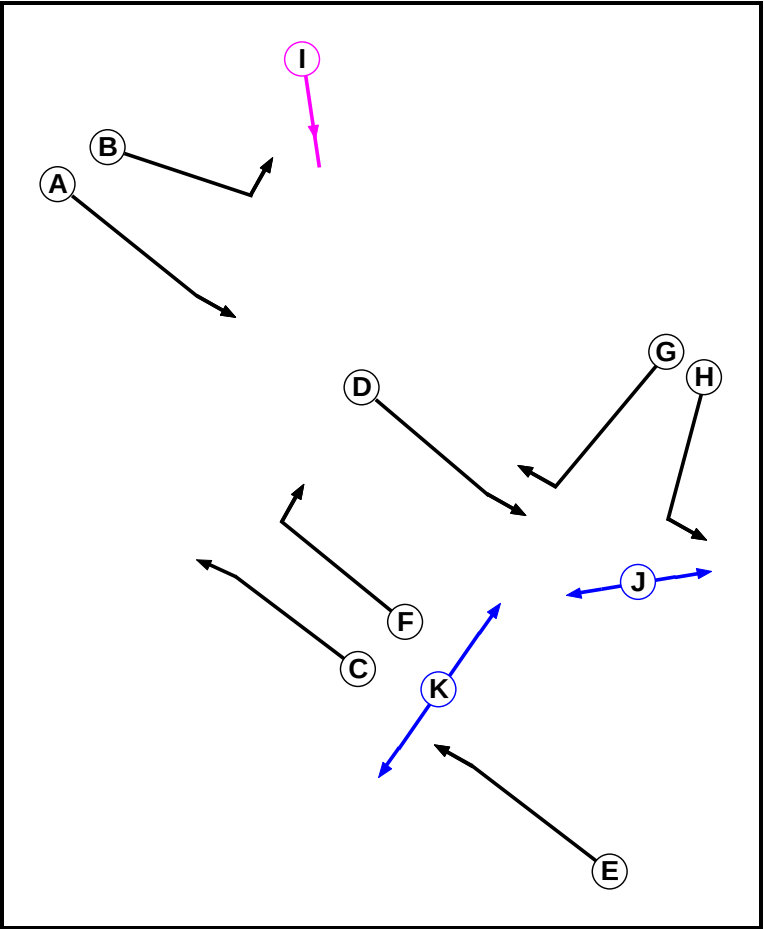
Basic Results Summary

Basic Results Summary

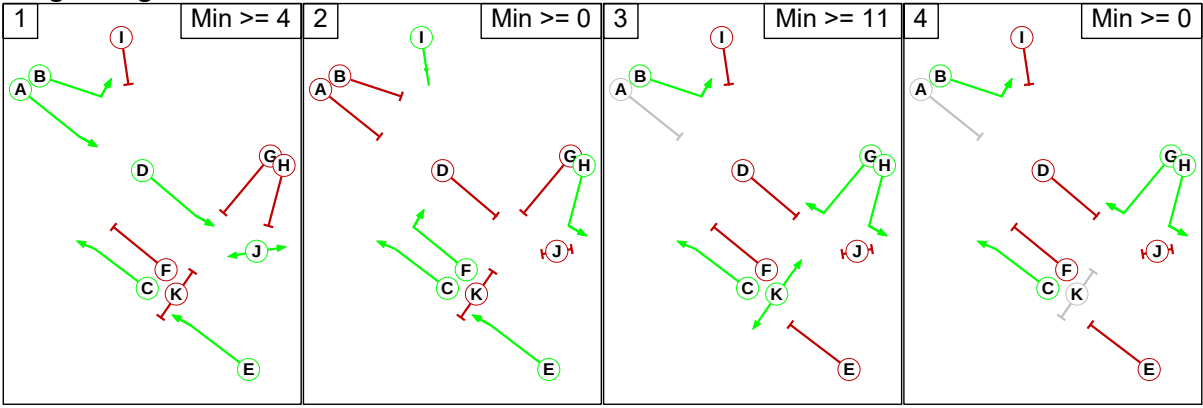
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	
Additional detail:	
File name:	J1 Simonsway M56 v1.lsg3x
Author:	
Company:	Vectos
Address:	61 Oxford Road, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Basic Results Summary

Phase Intergreens Matrix

Terminating Phase	Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K
	A		-	-	-	-	7	-	-	7	-	-
	B	-		-	-	-	7	-	-	7	-	-
	C	-	-		-	-	-	-	-	-	-	-
	D	-	-	-		-	-	6	9	-	-	8
	E	-	-	-	-		-	6	-	-	-	5
	F	7	8	-	-	-		-	-	-	-	-
	G	-	-	-	7	7	-		-	-	-	-
	H	-	-	-	7	-	-	-		-	7	-
	I	5	5	-	-	-	-	-	-		-	-
	J	-	-	-	-	-	-	-	8	-		-
	K	-	-	-	8	9	-	-	-	-	-	

Lane Input Data

Junction: Simonsway / M65 Off Slips												
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 (Simonsway (West) EB)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	32.50
1/2 (Simonsway (West) EB)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Ahead	Inf
1/3 (Simonsway (West) EB)	U	A	2	3	8.0	Geom	-	3.50	0.00	N	Arm 2 Ahead	Inf
2/1 (Simonsway (Internal) EB)	U	D	2	3	9.6	Geom	-	3.50	0.00	Y	Arm 8 Ahead	Inf
2/2 (Simonsway (Internal) EB)	U	D	2	3	9.6	Geom	-	3.60	0.00	N	Arm 8 Ahead	Inf
3/1 (M56 Off Slip SB)	U	H	2	3	60.0	Geom	-	4.20	0.00	Y	Arm 8 Left	55.00
3/2 (M56 Off Slip SB)	U	G	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 5 Right	25.00
4/1 (Simonsway (West) WB)	U	E	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 5 Ahead	Inf
4/2 (Simonsway (West) WB)	U	E	2	3	15.0	Geom	-	3.60	0.00	Y	Arm 5 Ahead	Inf
5/1 (Simonsway (Internal) WB)	U	C	2	3	8.7	Geom	-	3.40	0.00	Y	Arm 6 Ahead	Inf

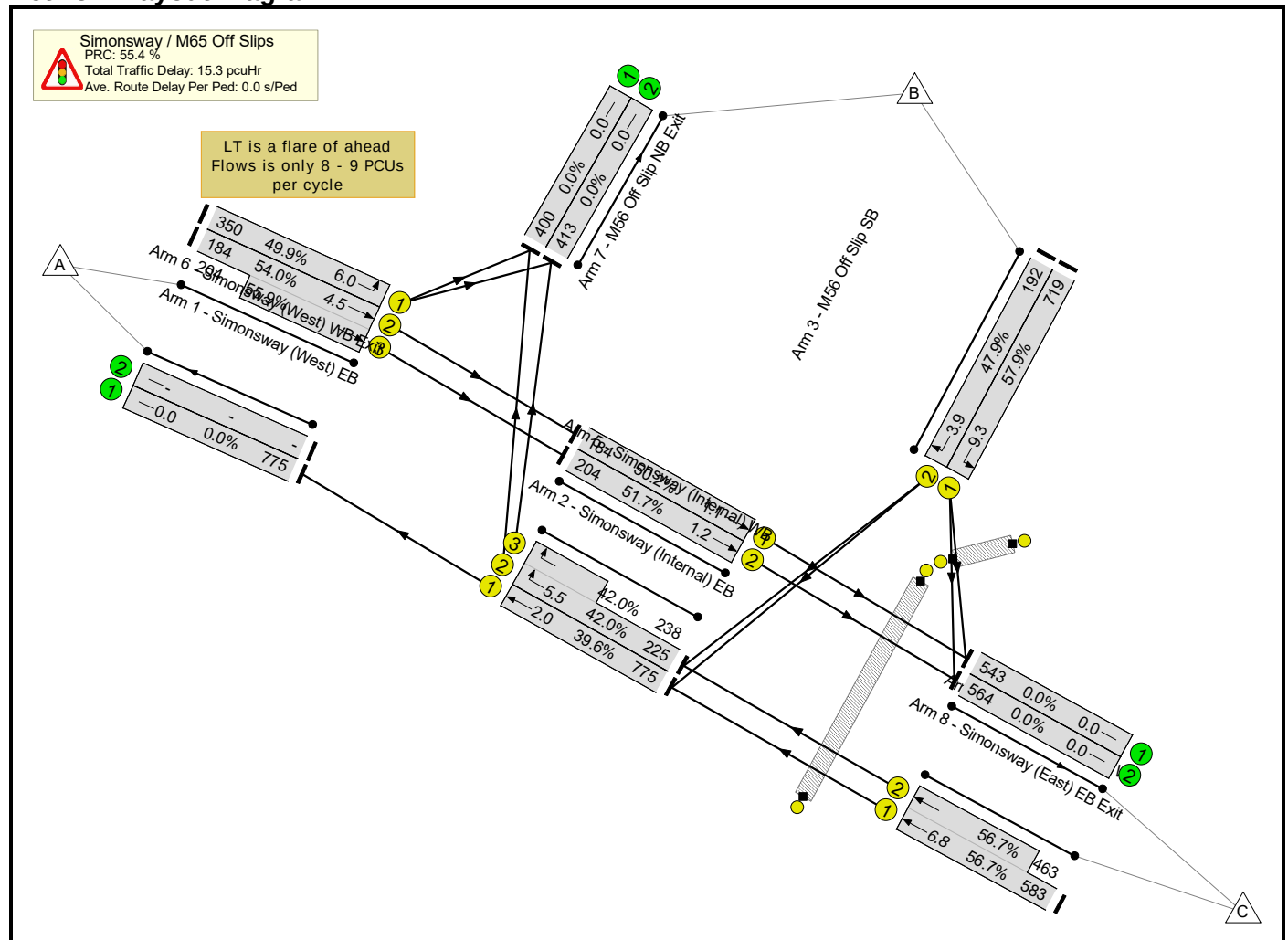
Basic Results Summary

5/2 (Simonsway Internal) WB)	U	F	2	3	9.0	Geom	-	3.50	0.00	Y	Arm 7 Right	25.00
5/3 (Simonsway Internal) WB)	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 7 Right	20.00
6/1 (Simonsway West) WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Simonsway West) WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (M56 Off Slip NB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2 (M56 Off Slip NB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Simonsway East) EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Simonsway East) EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

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

Network Layout Diagram

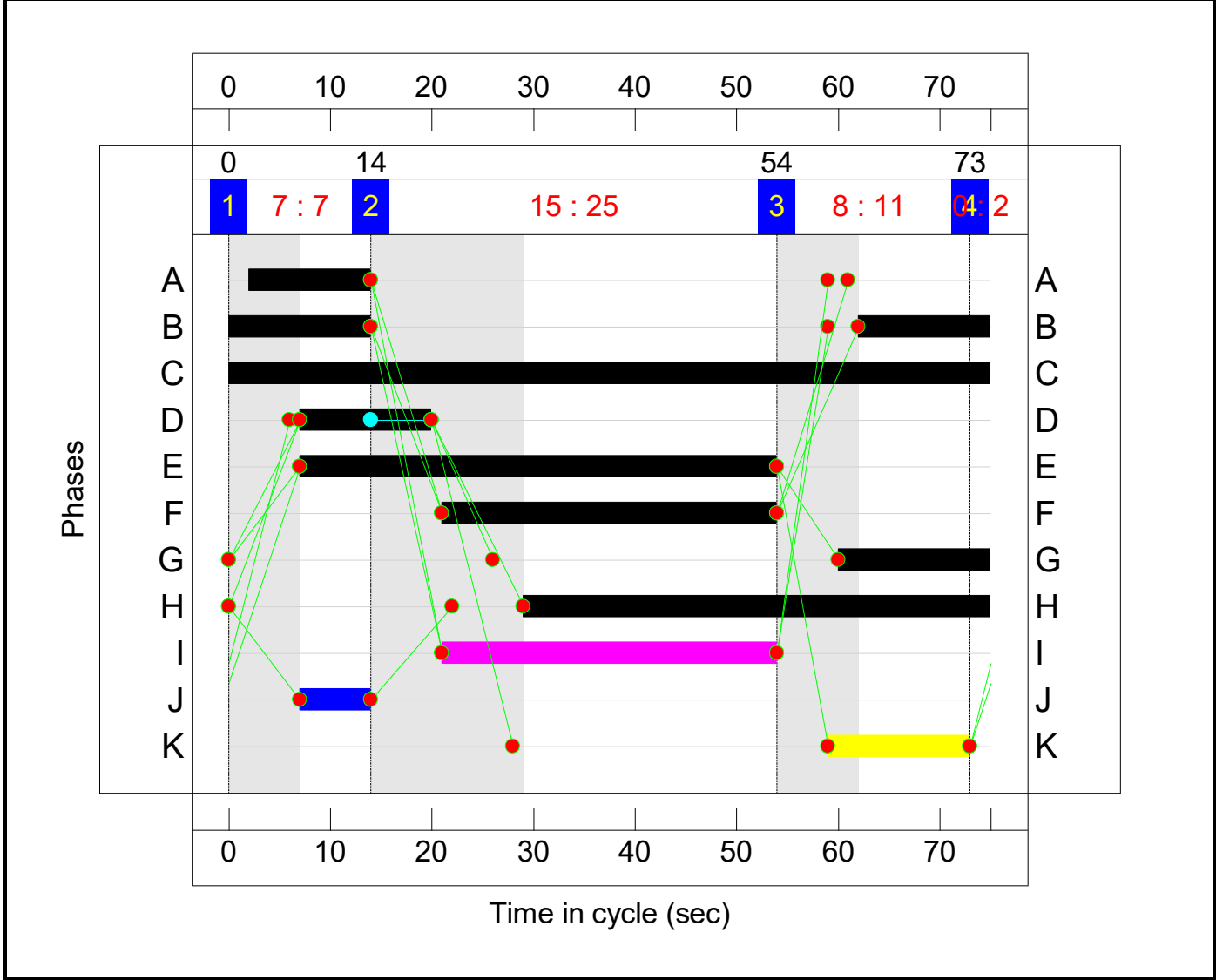


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	350	388	738
	B	192	0	719	911
	C	583	463	0	1046
	Tot.	775	813	1107	2695

Signal Timings Diagram



Basic Results Summary

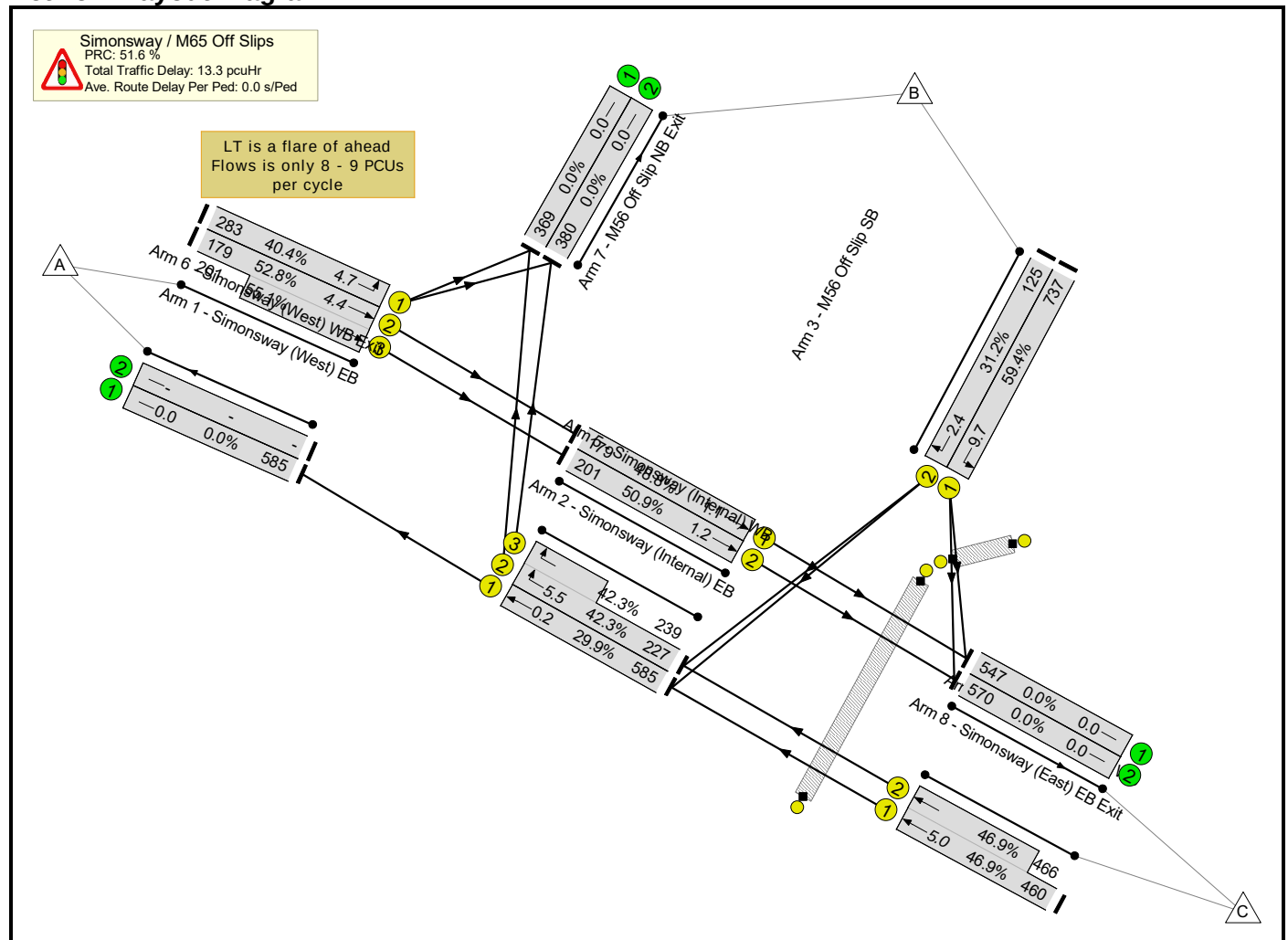
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	57.9%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	57.9%	-	-
1/1	Simonsway (West) EB Left	U	B	27	350	1878	701	49.9%	23.2	6.0
1/2+1/3	Simonsway (West) EB Ahead	U	A	12	388	1965:2105	341+365	54.0 : 55.9%	34.0	4.5
2/1	Simonsway (Internal) EB Ahead	U	D	13	184	1965	367	50.2%	10.4	1.1
2/2	Simonsway (Internal) EB Ahead	U	D	13	204	2115	395	51.7%	10.0	1.2
3/1	M56 Off Slip SB Left	U	H	46	719	1981	1241	57.9%	11.6	9.3
3/2	M56 Off Slip SB Right	U	G	15	192	1877	400	47.9%	34.5	3.9
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	1046	1975:1975	1028+817	56.7 : 56.7%	8.9	6.8
5/1	Simonsway (Internal) WB Ahead	U	C	75	775	1955	1955	39.6%	1.5	2.0
5/2+5/3	Simonsway (Internal) WB Right	U	F	33	463	1854:1958	536+567	42.0 : 42.0%	9.2	5.5
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	7	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		55.4	Total Delay for Signalled Lanes (pcuHr):		15.28	
				PRC Over All Lanes (%):		55.4	Total Delay Over All Lanes(pcuHr):		15.28	

Basic Results Summary

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

Network Layout Diagram

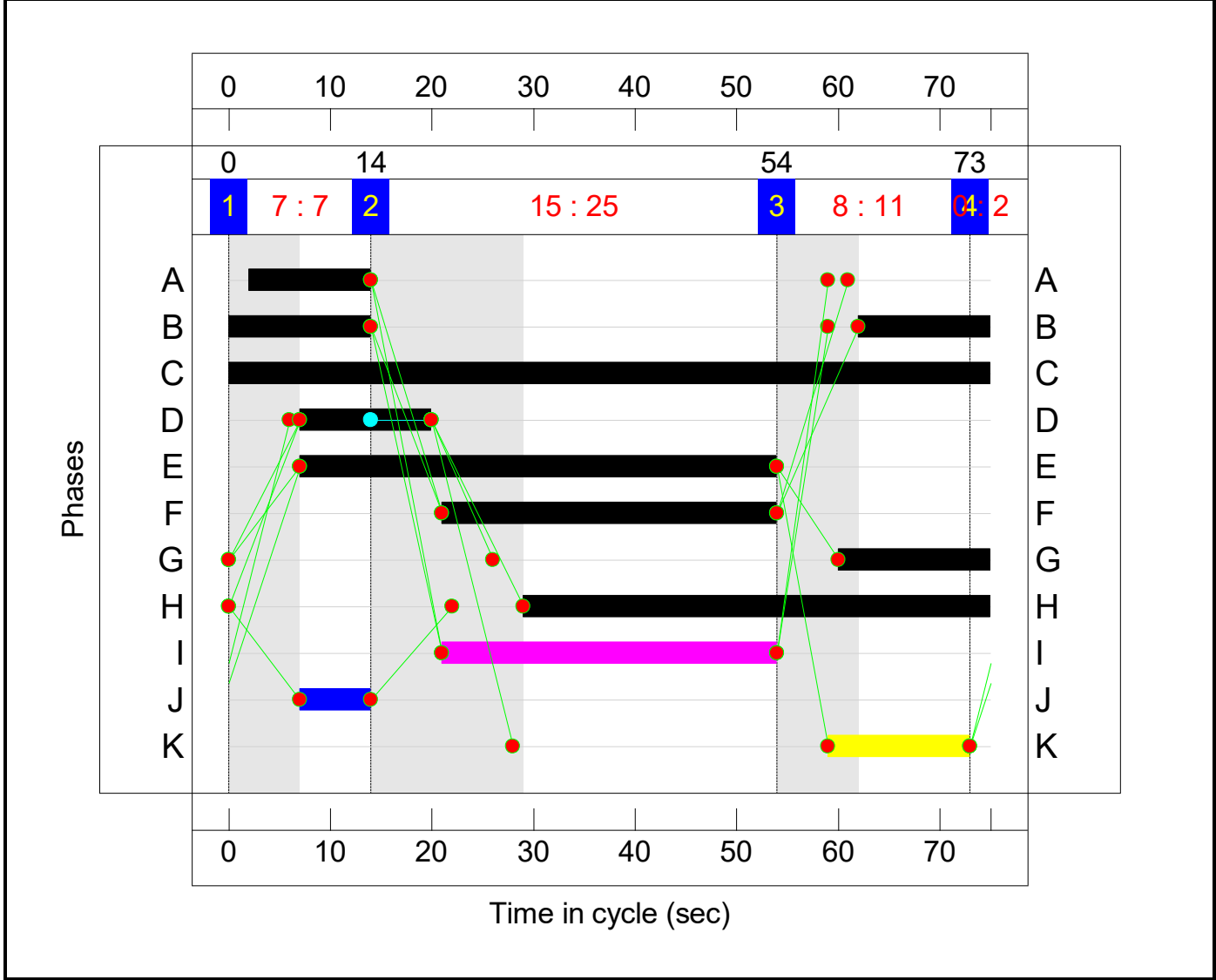


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	283	380	663
	B	125	0	737	862
	C	460	466	0	926
	Tot.	585	749	1117	2451

Signal Timings Diagram



Basic Results Summary

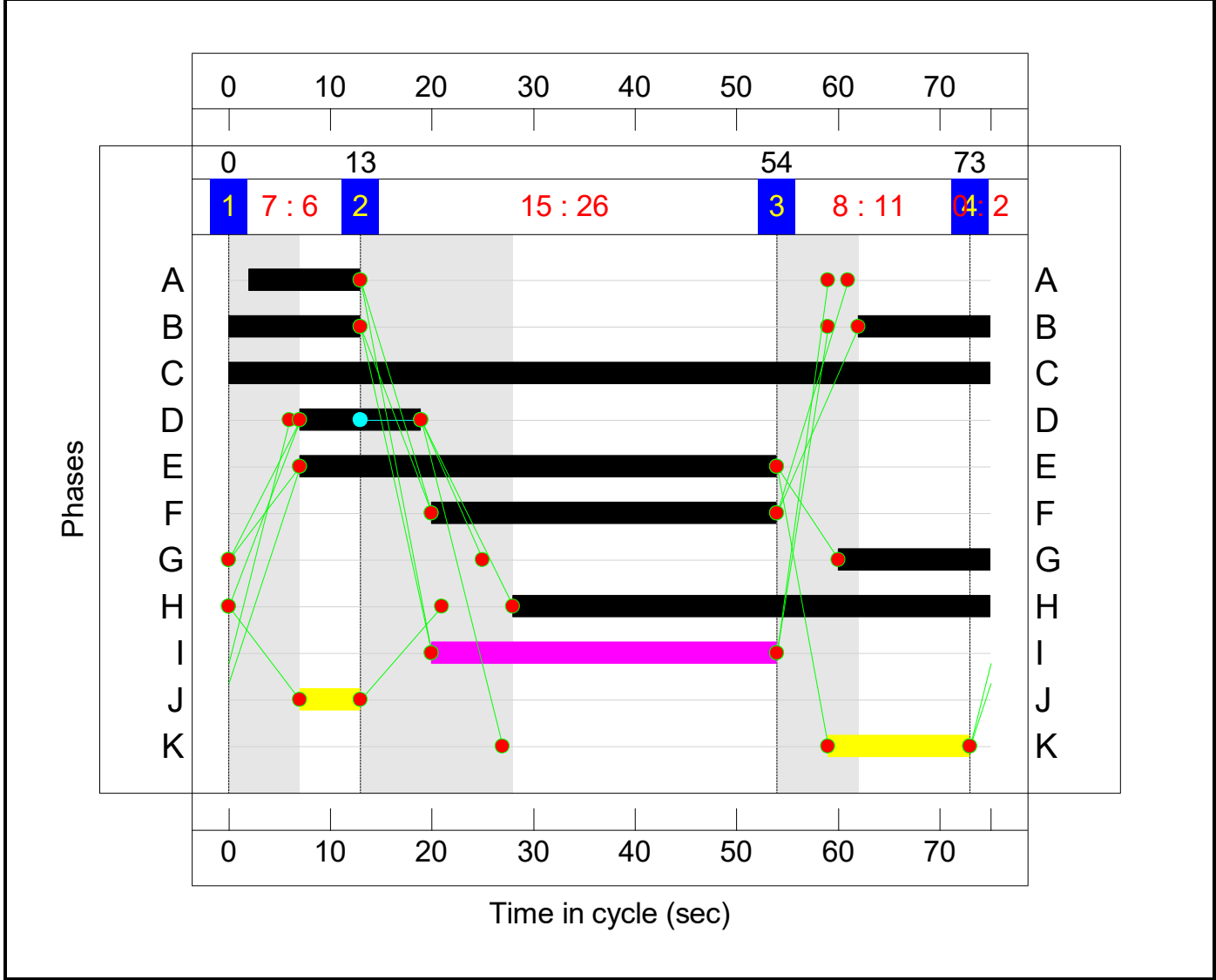
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	59.4%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	59.4%	-	-
1/1	Simonsway (West) EB Left	U	B	27	283	1878	701	40.4%	21.6	4.7
1/2+1/3	Simonsway (West) EB Ahead	U	A	12	380	1965:2105	339+365	52.8 : 55.1%	33.8	4.4
2/1	Simonsway (Internal) EB Ahead	U	D	13	179	1965	367	48.8%	10.1	1.1
2/2	Simonsway (Internal) EB Ahead	U	D	13	201	2115	395	50.9%	9.8	1.2
3/1	M56 Off Slip SB Left	U	H	46	737	1981	1241	59.4%	11.9	9.7
3/2	M56 Off Slip SB Right	U	G	15	125	1877	400	31.2%	31.4	2.4
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	926	1975:1975	981+994	46.9 : 46.9%	8.1	5.0
5/1	Simonsway (Internal) WB Ahead	U	C	75	585	1955	1955	29.9%	1.3	0.2
5/2+5/3	Simonsway (Internal) WB Right	U	F	33	466	1854:1958	537+565	42.3 : 42.3%	9.2	5.5
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	7	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		51.6	Total Delay for Signalled Lanes (pcuHr):		13.33	
				PRC Over All Lanes (%):		51.6	Total Delay Over All Lanes(pcuHr):		13.33	

Network Layout Diagram

Origin	Destination				
		A	B	C	Tot.
	A	0	350	393	743
	B	192	0	863	1055
	C	584	512	0	1096
	Tot.	776	862	1256	2894

Signal Timings Diagram



Basic Results Summary

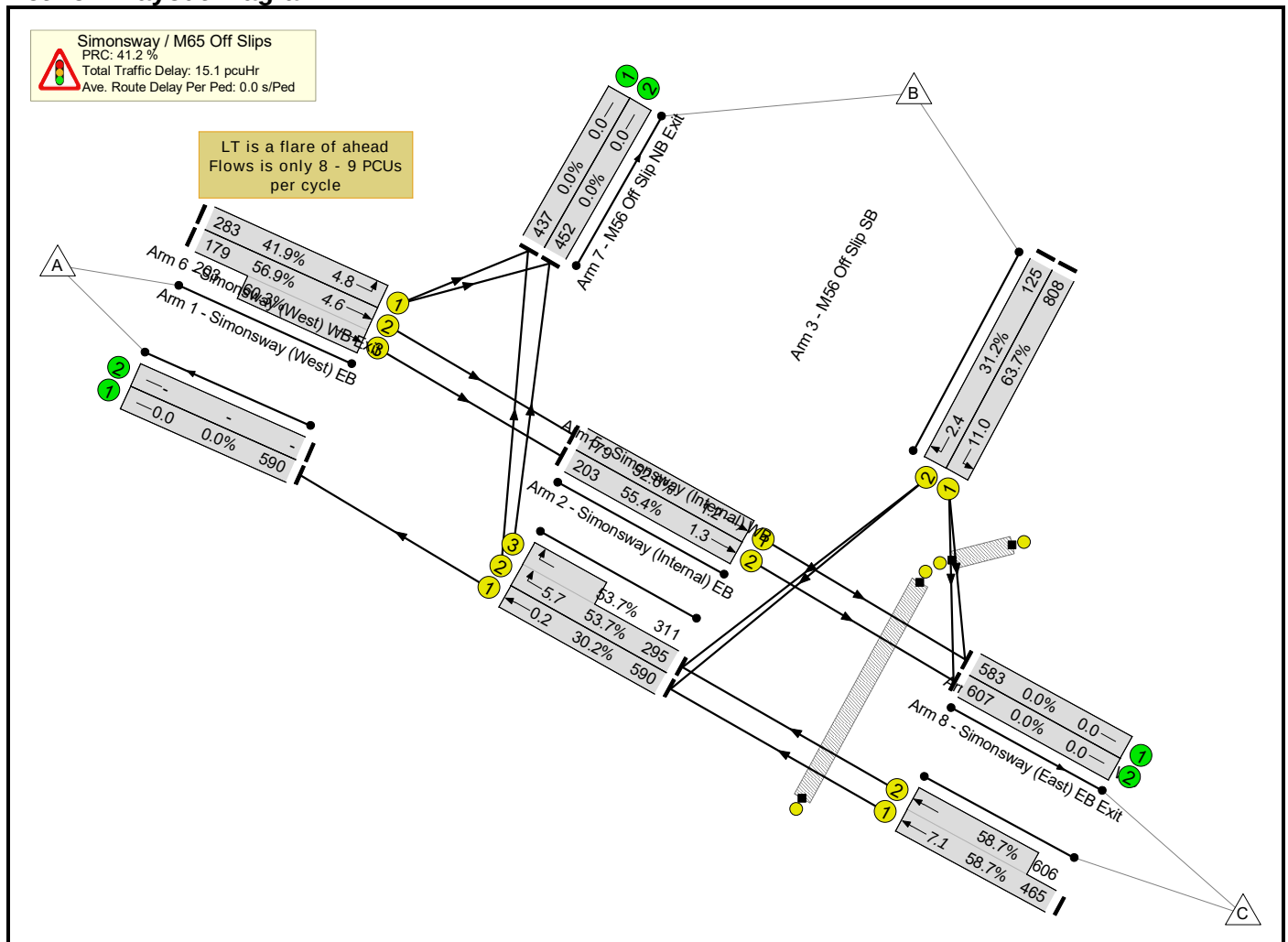
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	68.1%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	68.1%	-	-
1/1	Simonsway (West) EB Left	U	B	26	350	1878	676	51.8%	24.4	6.2
1/2+1/3	Simonsway (West) EB Ahead	U	A	11	393	1965:2105	314+337	58.8 : 61.8%	36.2	4.7
2/1	Simonsway (Internal) EB Ahead	U	D	12	185	1965	341	54.3%	12.1	1.2
2/2	Simonsway (Internal) EB Ahead	U	D	12	208	2115	367	56.7%	11.9	1.3
3/1	M56 Off Slip SB Left	U	H	47	863	1981	1268	68.1%	13.0	12.3
3/2	M56 Off Slip SB Right	U	G	15	192	1877	400	47.9%	34.5	3.9
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	1096	1975:1975	1015+890	57.6 : 57.6%	9.0	6.8
5/1	Simonsway (Internal) WB Ahead	U	C	75	776	1955	1955	39.7%	1.5	2.0
5/2+5/3	Simonsway (Internal) WB Right	U	F	34	512	1854:1958	549+579	45.4 : 45.4%	8.7	5.5
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	6	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		32.2	Total Delay for Signalled Lanes (pcuHr):			16.90
				PRC Over All Lanes (%):		32.2	Total Delay Over All Lanes(pcuHr):			16.90

Basic Results Summary

Scenario 4: '2030 Base NG with Dev PM' (FG4: '2030 Base with Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

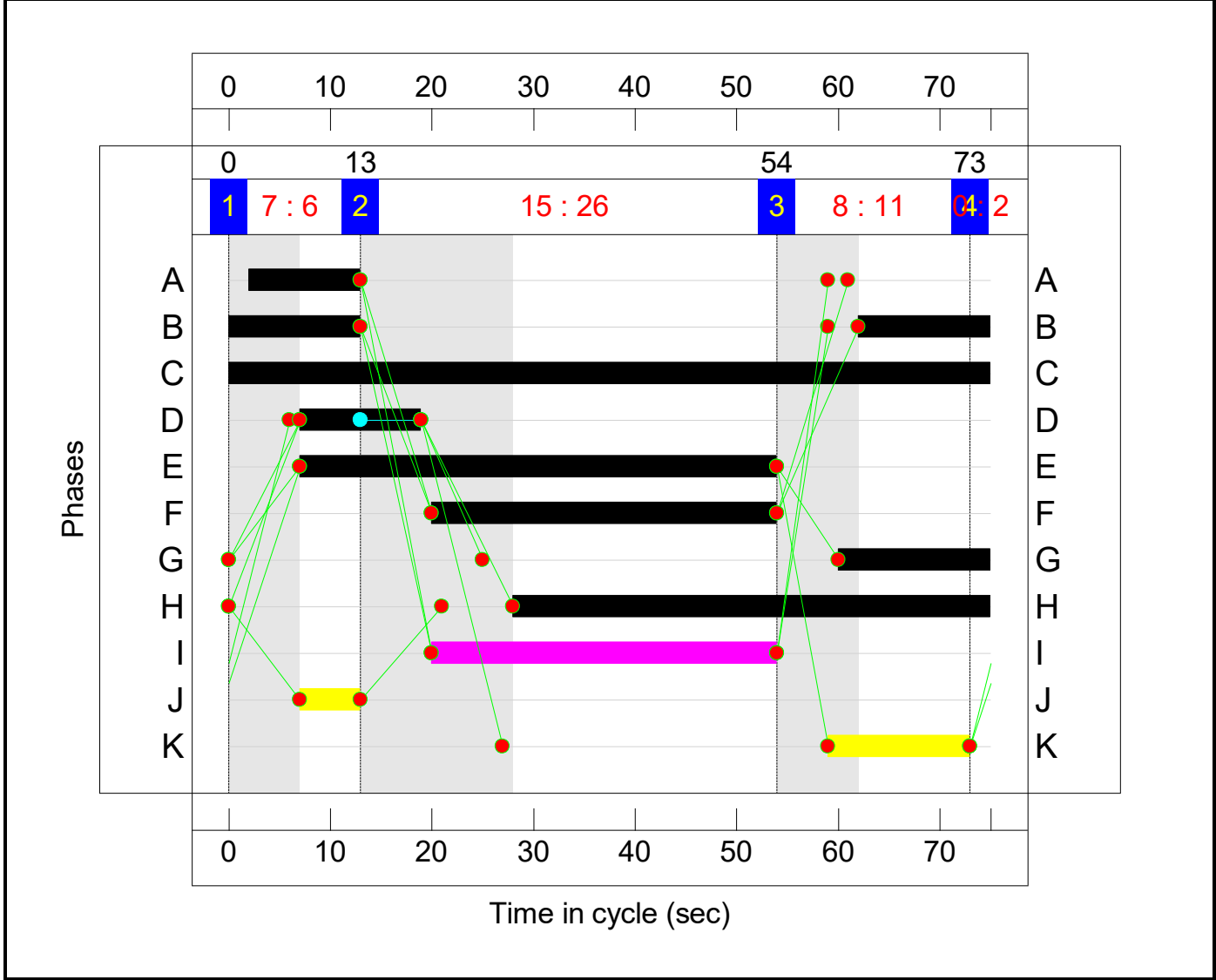


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	283	382	665
	B	125	0	808	933
	C	465	606	0	1071
	Tot.	590	889	1190	2669

Signal Timings Diagram



Basic Results Summary

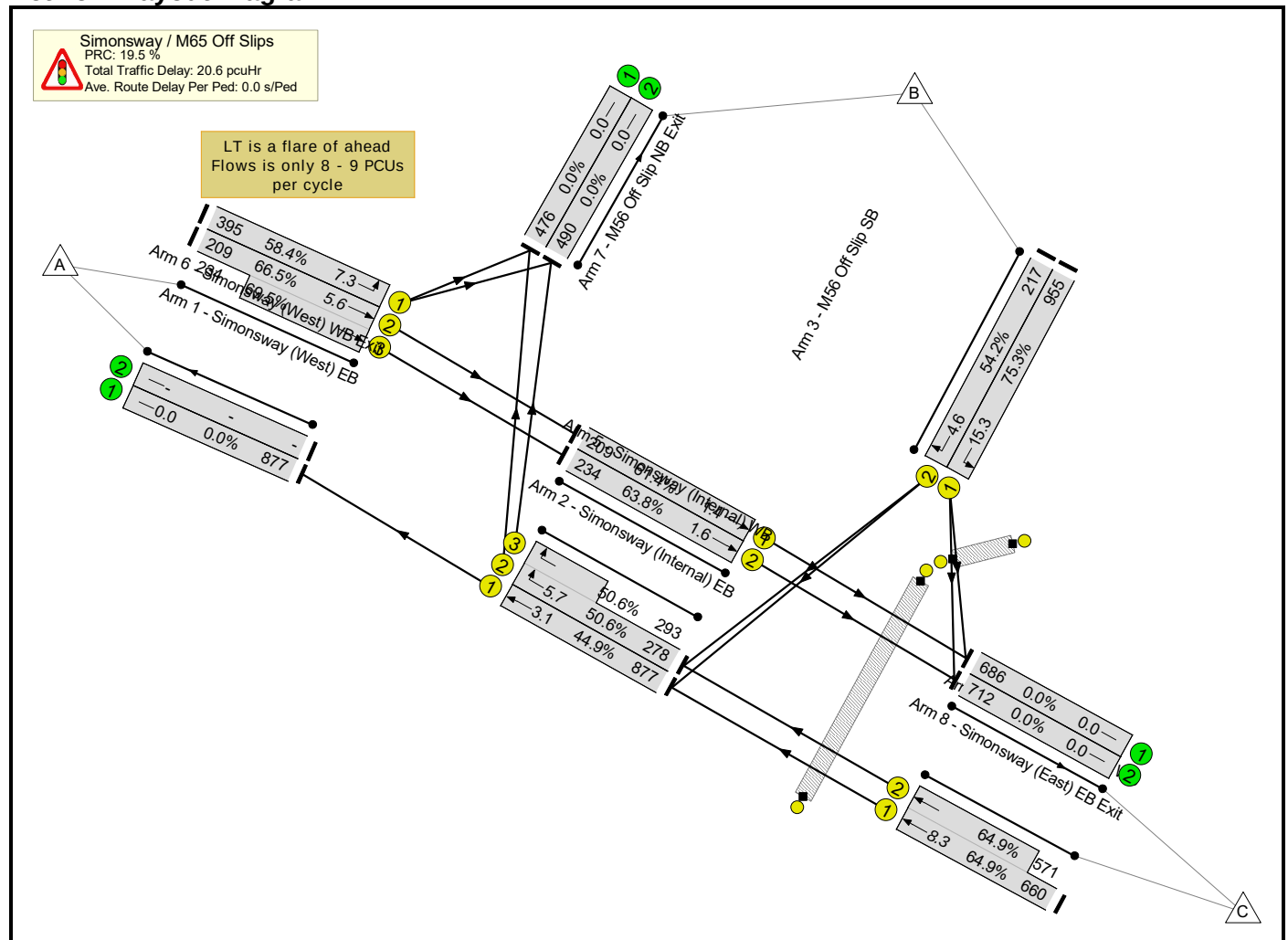
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	63.7%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	63.7%	-	-
1/1	Simonsway (West) EB Left	U	B	26	283	1878	676	41.9%	22.7	4.8
1/2+1/3	Simonsway (West) EB Ahead	U	A	11	382	1965:2105	314+337	56.9 : 60.3%	35.9	4.6
2/1	Simonsway (Internal) EB Ahead	U	D	12	179	1965	341	52.6%	11.7	1.2
2/2	Simonsway (Internal) EB Ahead	U	D	12	203	2115	367	55.4%	11.6	1.3
3/1	M56 Off Slip SB Left	U	H	47	808	1981	1268	63.7%	12.1	11.0
3/2	M56 Off Slip SB Right	U	G	15	125	1877	400	31.2%	31.4	2.4
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	1071	1975:1975	793+1033	58.7 : 58.7%	9.1	7.1
5/1	Simonsway (Internal) WB Ahead	U	C	75	590	1955	1955	30.2%	1.3	0.2
5/2+5/3	Simonsway (Internal) WB Right	U	F	34	606	1854:1958	549+579	53.7 : 53.7%	9.1	5.7
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	6	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		41.2	Total Delay for Signalled Lanes (pcuHr):			15.09
				PRC Over All Lanes (%):		41.2	Total Delay Over All Lanes(pcuHr):			15.09

Basic Results Summary

Scenario 5: '2032 Base With Dev AM' (FG5: '2032 Base with Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

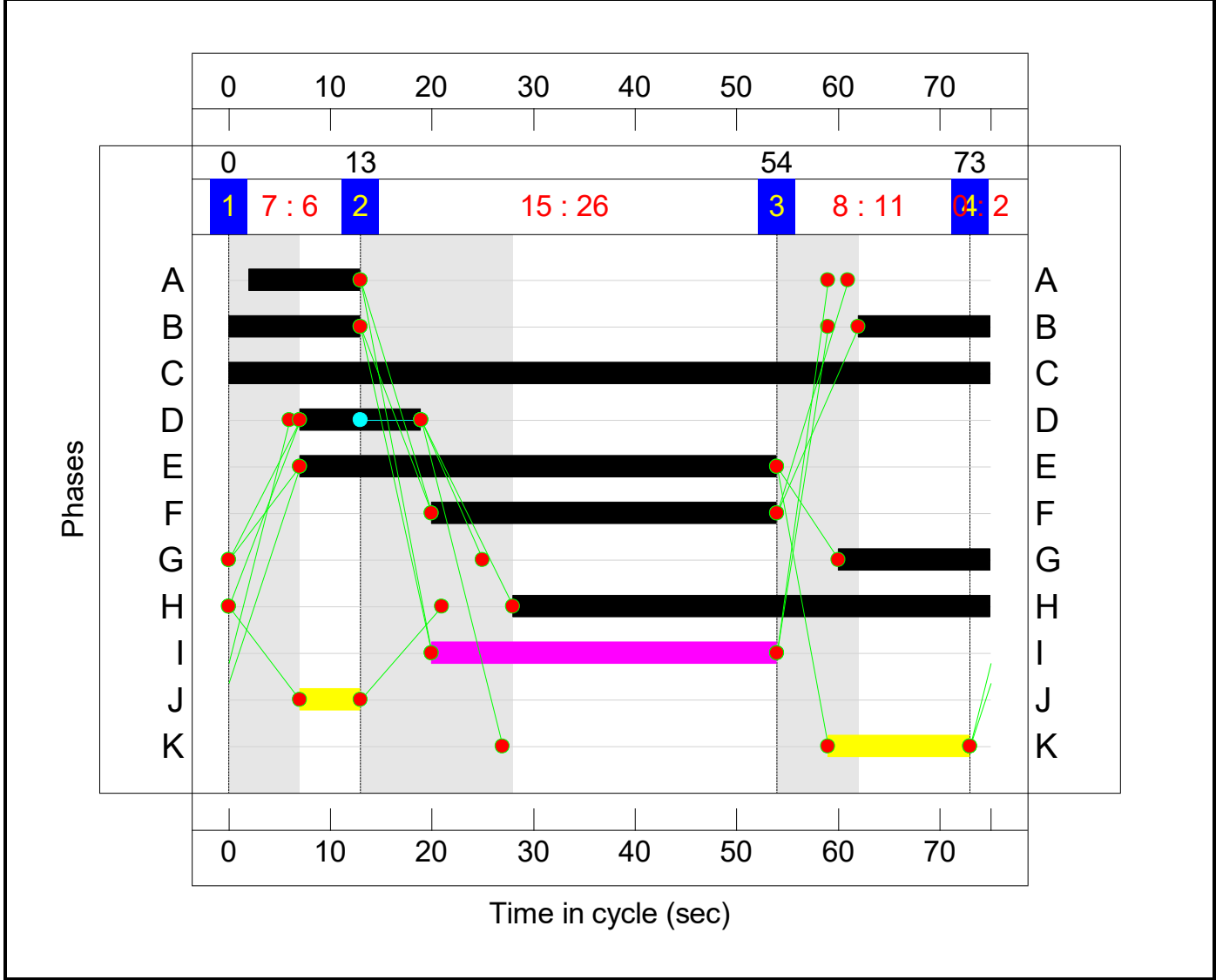


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	395	443	838
	B	217	0	955	1172
	C	660	571	0	1231
	Tot.	877	966	1398	3241

Signal Timings Diagram



Basic Results Summary

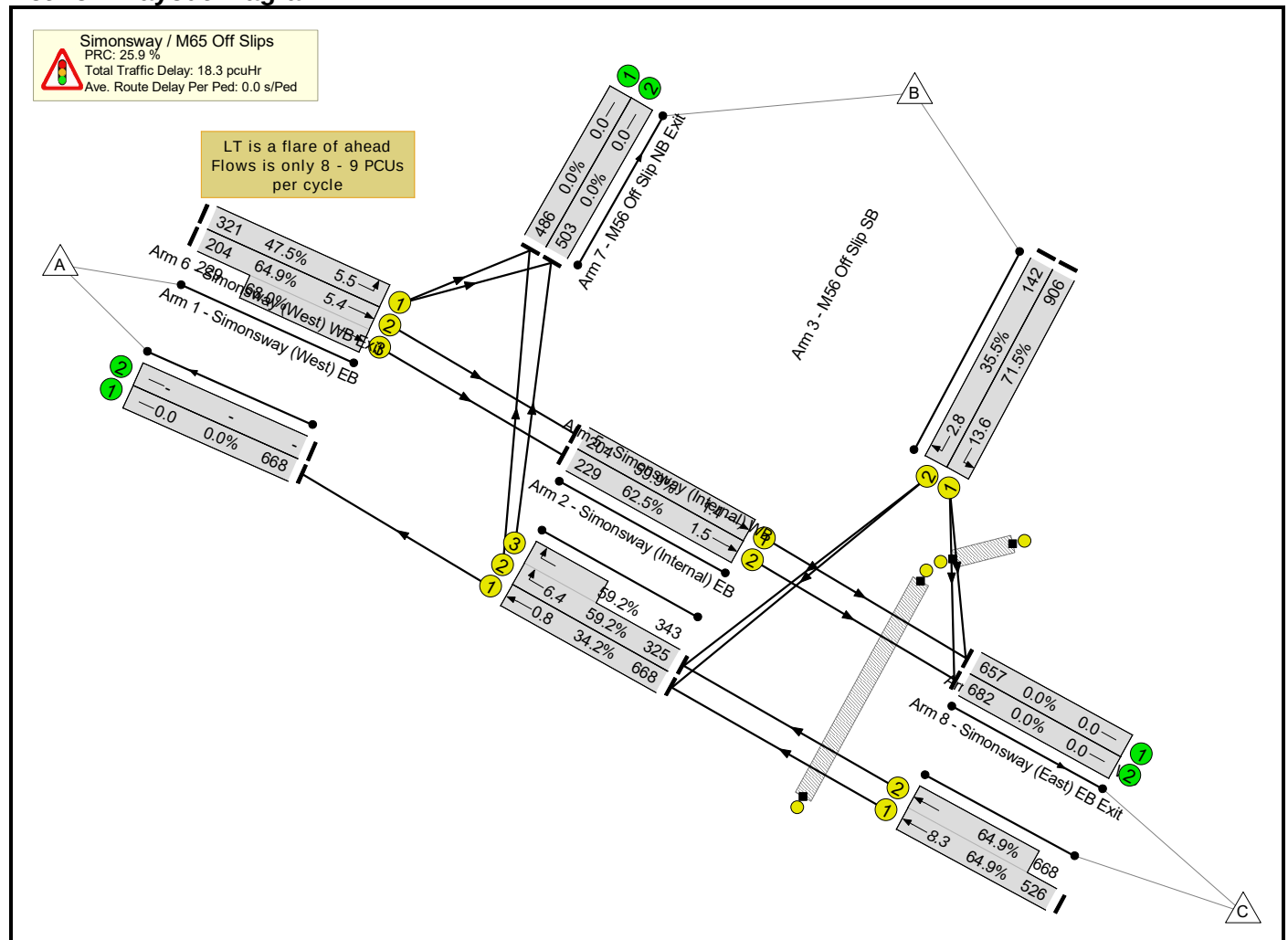
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	75.3%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	75.3%	-	-
1/1	Simonsway (West) EB Left	U	B	26	395	1878	676	58.4%	25.8	7.3
1/2+1/3	Simonsway (West) EB Ahead	U	A	11	443	1965:2105	314+337	66.5 : 69.5%	38.3	5.6
2/1	Simonsway (Internal) EB Ahead	U	D	12	209	1965	341	61.4%	14.3	1.4
2/2	Simonsway (Internal) EB Ahead	U	D	12	234	2115	367	63.8%	14.2	1.6
3/1	M56 Off Slip SB Left	U	H	47	955	1981	1268	75.3%	15.1	15.3
3/2	M56 Off Slip SB Right	U	G	15	217	1877	400	54.2%	36.0	4.6
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	1231	1975:1975	1016+879	64.9 : 64.9%	9.8	8.3
5/1	Simonsway (Internal) WB Ahead	U	C	75	877	1955	1955	44.9%	1.7	3.1
5/2+5/3	Simonsway (Internal) WB Right	U	F	34	571	1854:1958	549+579	50.6 : 50.6%	8.9	5.7
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	6	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1		PRC for Signalled Lanes (%):		19.5		Total Delay for Signalled Lanes (pcuHr):		20.63		
		PRC Over All Lanes (%):		19.5		Total Delay Over All Lanes(pcuHr):		20.63		

Basic Results Summary

Scenario 6: '2032 Base With Dev PM' (FG6: '2032 Base with Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

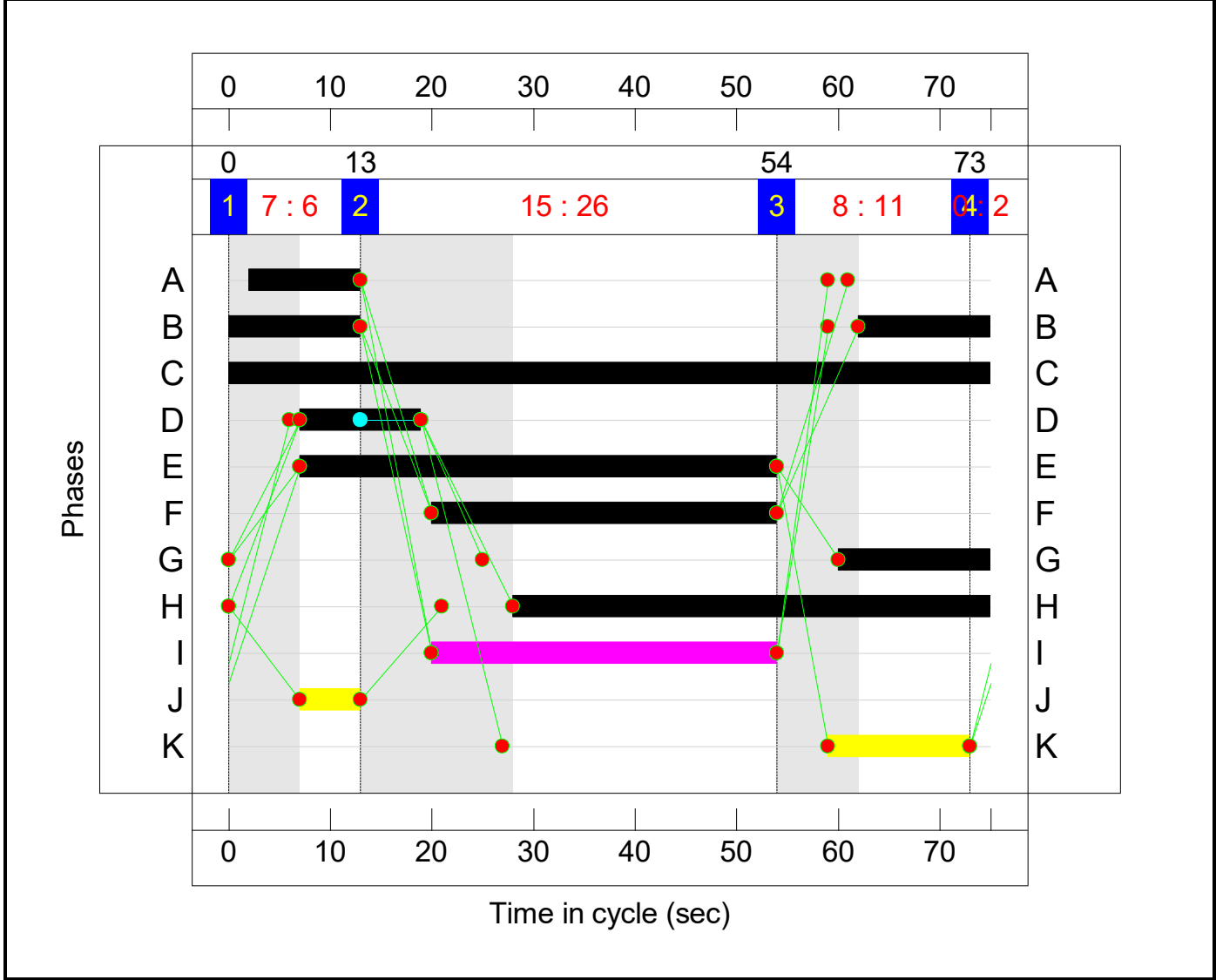


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	321	433	754
	B	142	0	906	1048
	C	526	668	0	1194
	Tot.	668	989	1339	2996

Signal Timings Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	71.5%	-	-
Simonsway / M65 Off Slips	-	-	-	-	-	-	-	71.5%	-	-
1/1	Simonsway (West) EB Left	U	B	26	321	1878	676	47.5%	23.6	5.5
1/2+1/3	Simonsway (West) EB Ahead	U	A	11	433	1965:2105	314+337	64.9 : 68.0%	37.8	5.4
2/1	Simonsway (Internal) EB Ahead	U	D	12	204	1965	341	59.9%	13.8	1.4
2/2	Simonsway (Internal) EB Ahead	U	D	12	229	2115	367	62.5%	13.7	1.5
3/1	M56 Off Slip SB Left	U	H	47	906	1981	1268	71.5%	13.9	13.6
3/2	M56 Off Slip SB Right	U	G	15	142	1877	400	35.5%	32.1	2.8
4/1+4/2	Simonsway (West) WB Ahead	U	E	47	1194	1975:1975	811+1029	64.9 : 64.9%	9.8	8.3
5/1	Simonsway (Internal) WB Ahead	U	C	75	668	1955	1955	34.2%	1.4	0.8
5/2+5/3	Simonsway (Internal) WB Right	U	F	34	668	1854:1958	549+579	59.2 : 59.2%	9.5	6.4
Ped Link: P1	Pedestrians across M56 Off Slip Left Turn	-	J	6	0	-	0	0.0%	-	-
Ped Link: P2	Pedestrians across Simonsway E/B and W/B	-	K	14	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		25.9	Total Delay for Signalled Lanes (pcuHr):		18.34	
				PRC Over All Lanes (%):		25.9	Total Delay Over All Lanes(pcuHr):		18.34	

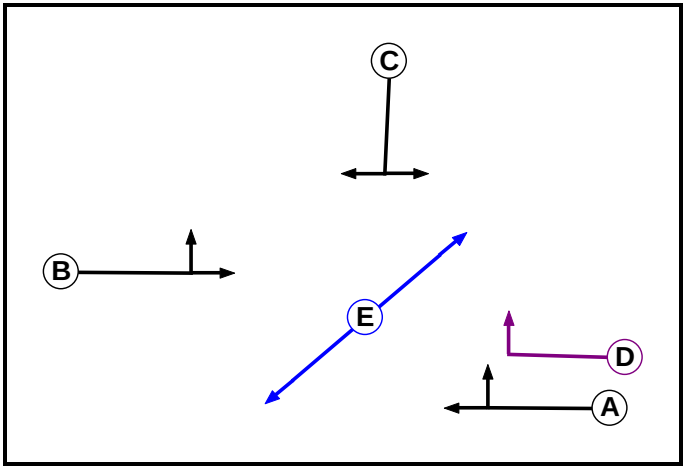
Basic Results Summary

Basic Results Summary

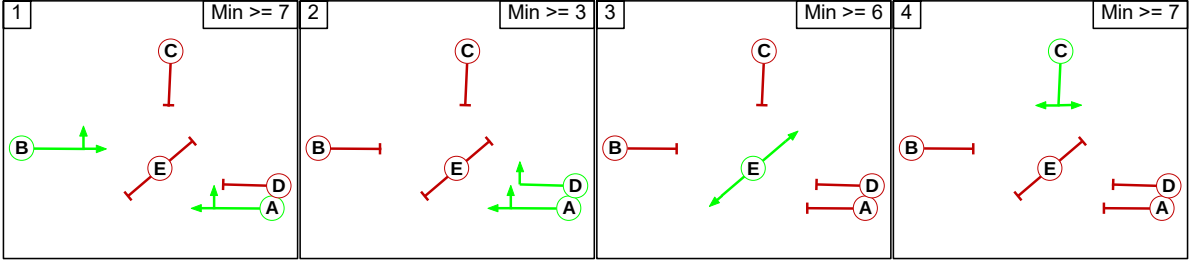
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	
Additional detail:	
File name:	J2 Poundswick Lane v1.lsg3x
Author:	
Company:	Vectos
Address:	61 OxfordStreet, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Basic Results Summary

Phase Intergreens Matrix

Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		-	5	-	8
	B	-		6	7	8
	C	6	6		6	8
	D	-	5	5		8
	E	9	9	6	9	

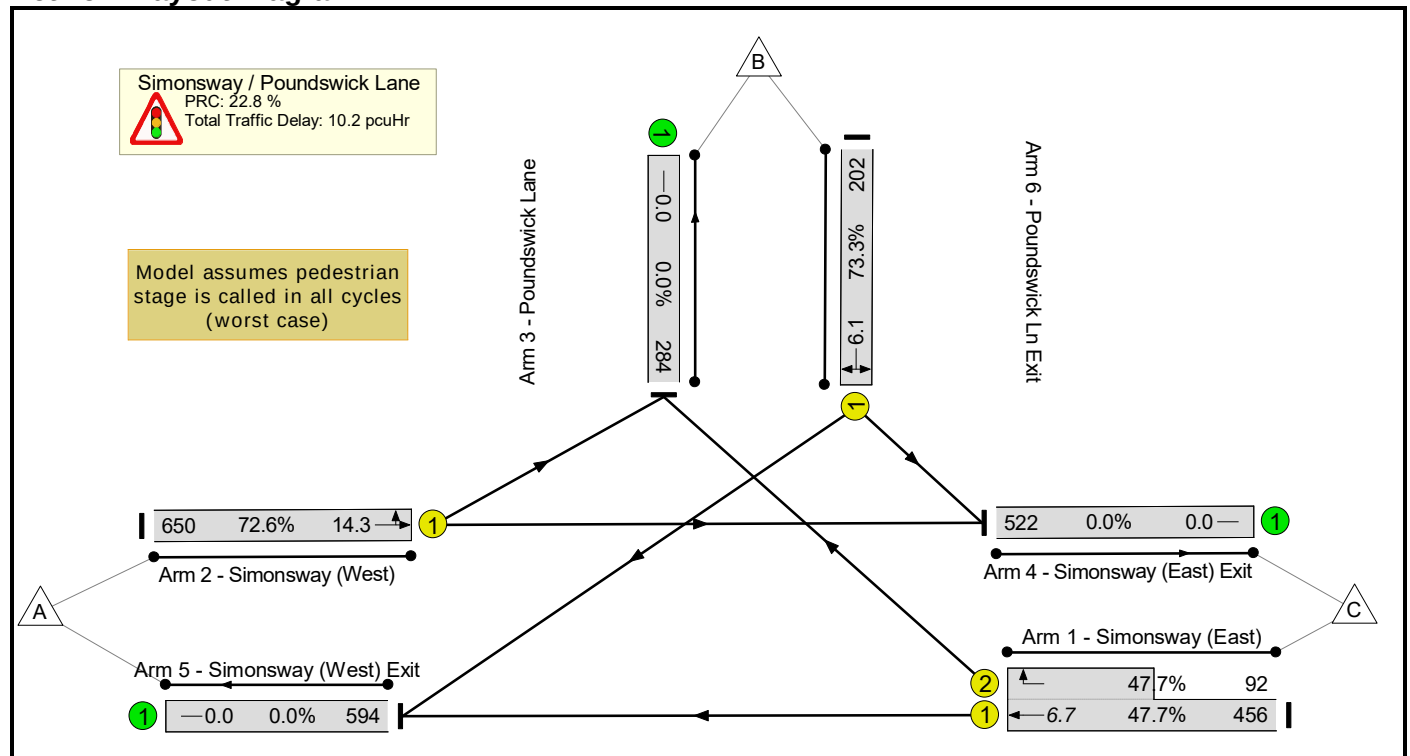
Lane Input Data

Junction: Simonsway / Poundswick Lane												
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 (Simonsway (East))	U	A	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 5 Ahead	Inf
1/2 (Simonsway (East))	U	A D	2	3	7.0	Geom	-	2.90	0.00	Y	Arm 6 Right	16.00
2/1 (Simonsway (West))	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Ahead	Inf
											Arm 6 Left	18.00
3/1 (Poundswick Lane)	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Left	16.00
											Arm 5 Right	20.00
4/1 (Simonsway (East) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Simonsway (West) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Poundswick Ln Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

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

Network Layout Diagram

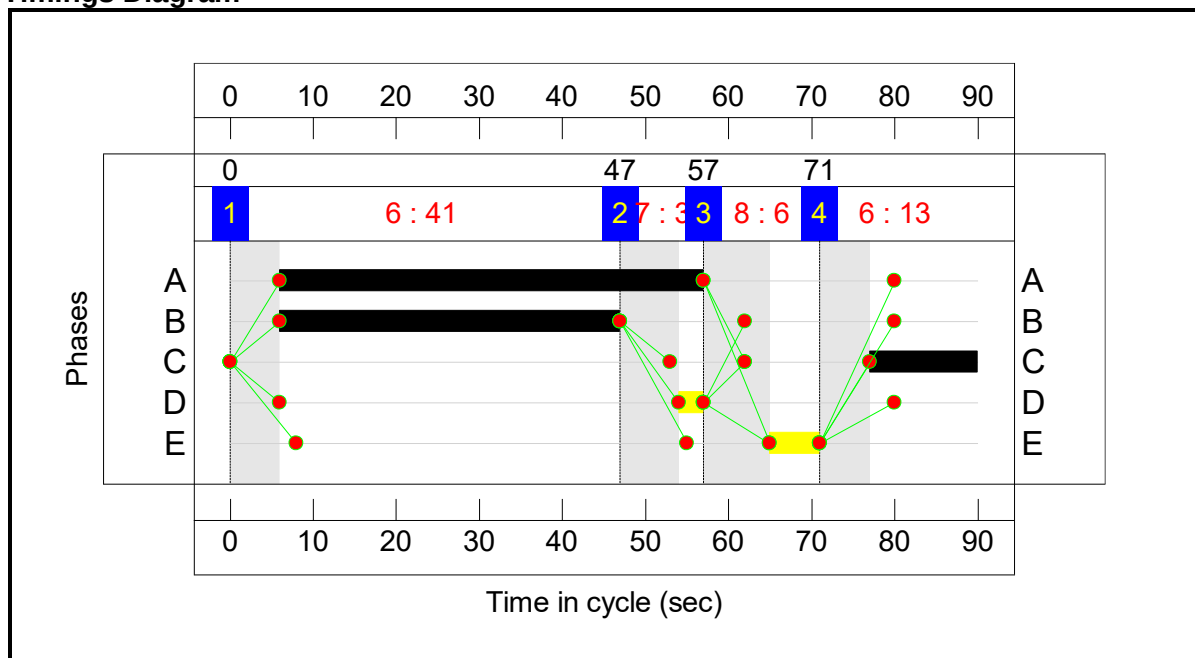


Traffic Flows, Actual

Actual Flow :

	Destination				
	A	B	C	Tot.	
Origin	A	0	192	458	650
	B	138	0	64	202
	C	456	92	0	548
	Tot.	594	284	522	1400

Signal Timings Diagram



Basic Results Summary

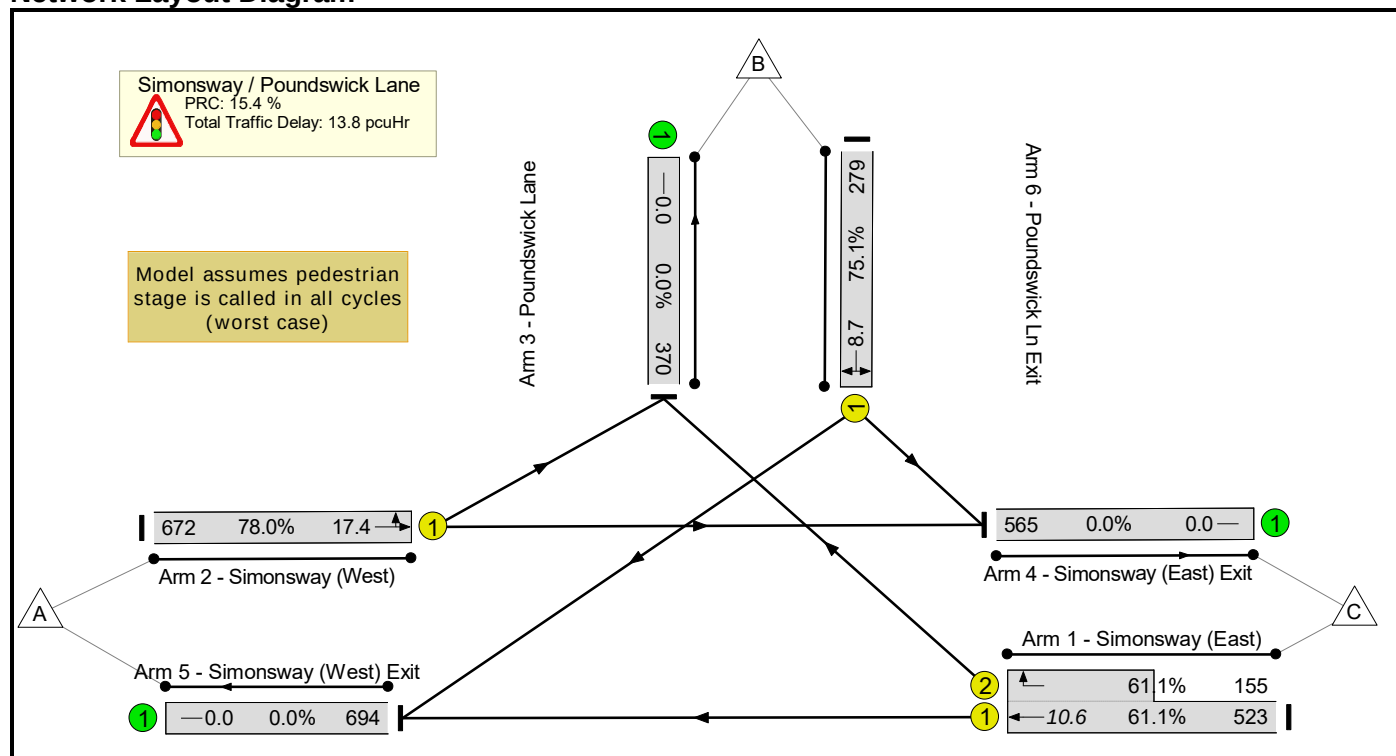
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	73.3%	-	-
Simonsway / Poundswick Lane	-	-	-	-	-	-	-	73.3%	-	-
1/1+1/2	Simonsway (East) Ahead Right	U	A	51	548	1905:1742	956+193	47.7 : 47.7%	13.2	6.7
2/1	Simonsway (West) Ahead Left	U	B	41	650	1918	895	72.6%	26.6	14.3
3/1	Poundswick Lane Left Right	U	C	13	202	1772	276	73.3%	59.8	6.1
C1			PRC for Signalled Lanes (%):			22.8	Total Delay for Signalled Lanes (pcuHr):			10.17
			PRC Over All Lanes (%):			22.8	Total Delay Over All Lanes(pcuHr):			10.17

Basic Results Summary

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

Network Layout Diagram

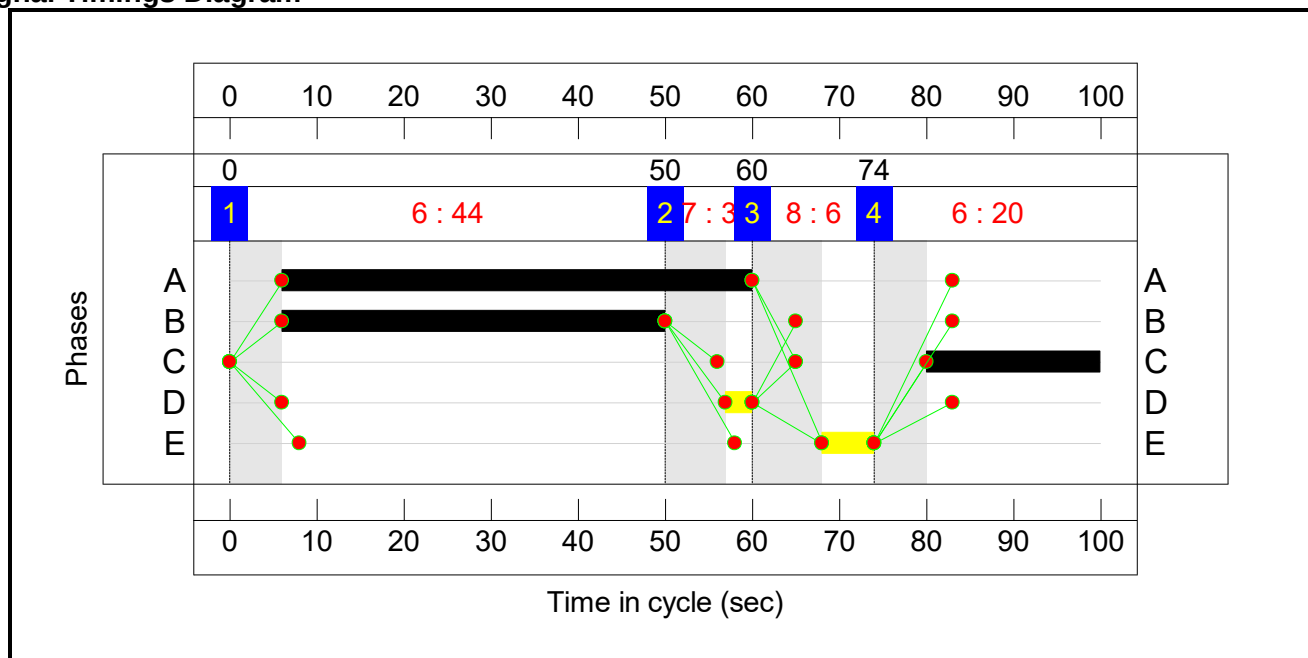


Traffic Flows, Actual

Actual Flow :

	Destination				
	A	B	C	Tot.	
Origin	A	0	215	457	672
	B	171	0	108	279
	C	523	155	0	678
	Tot.	694	370	565	1629

Signal Timings Diagram



Basic Results Summary

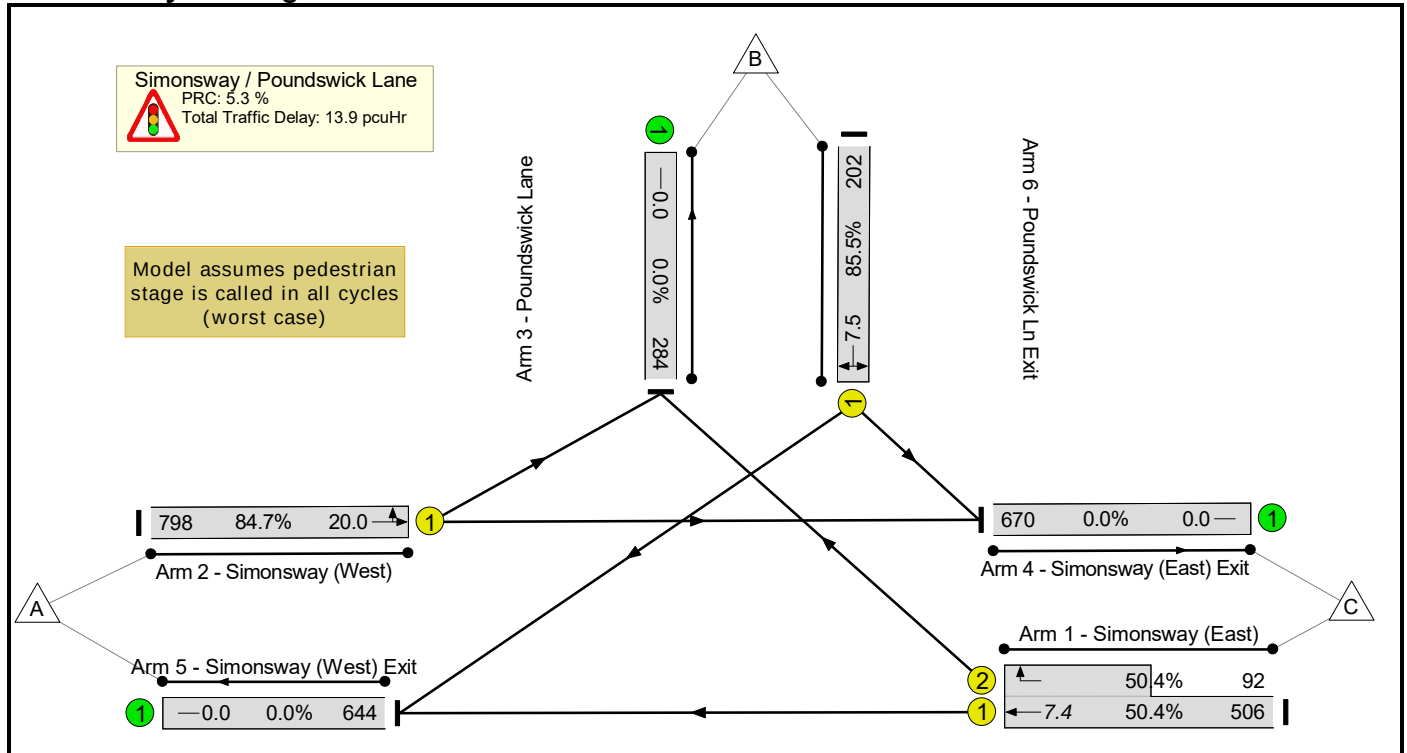
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	78.0%	-	-
Simonsway / Poundswick Lane	-	-	-	-	-	-	-	78.0%	-	-
1/1+1/2	Simonsway (East) Ahead Right	U	A	54	678	1905:1742	856+254	61.1 : 61.1%	17.7	10.6
2/1	Simonsway (West) Ahead Left	U	B	44	672	1914	861	78.0%	32.6	17.4
3/1	Poundswick Lane Left Right	U	C	20	279	1769	371	75.1%	55.9	8.7
C1			PRC for Signalled Lanes (%):			15.4	Total Delay for Signalled Lanes (pcuHr):			13.76
			PRC Over All Lanes (%):			15.4	Total Delay Over All Lanes(pcuHr):			13.76

Basic Results Summary

Scenario 3: '2030 Base NG With Dev AM' (FG3: '2030 Base With Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

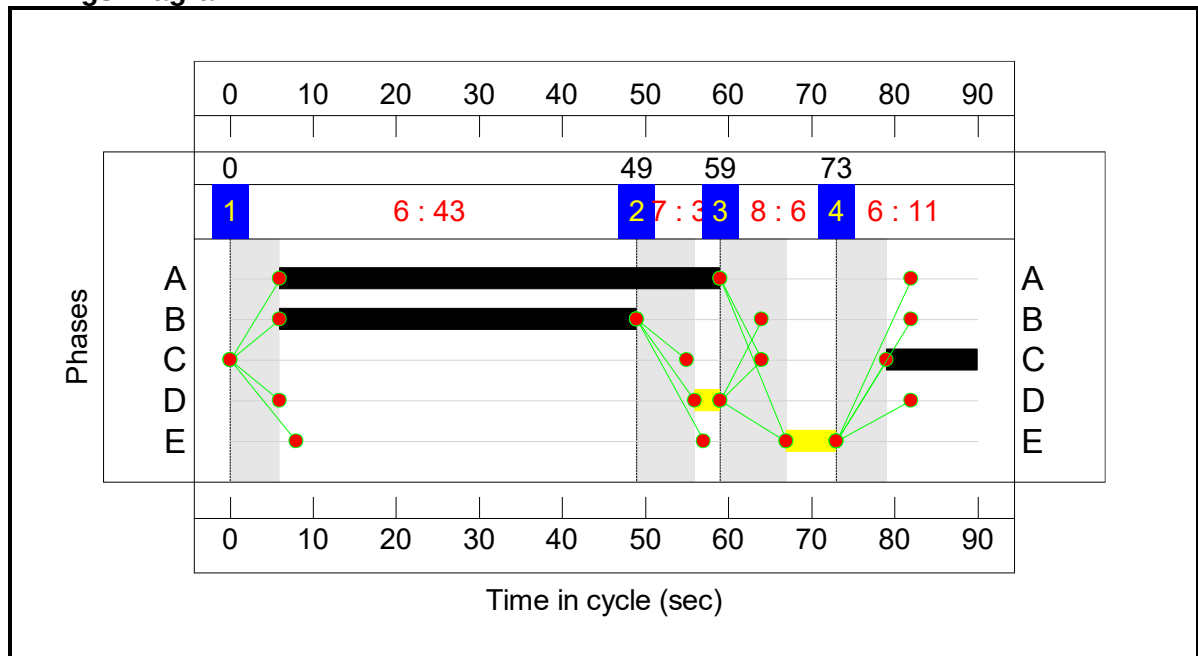


Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	192	606	798
	B	138	0	64	202
	C	506	92	0	598
	Tot.	644	284	670	1598

Signal Timings Diagram



Basic Results Summary

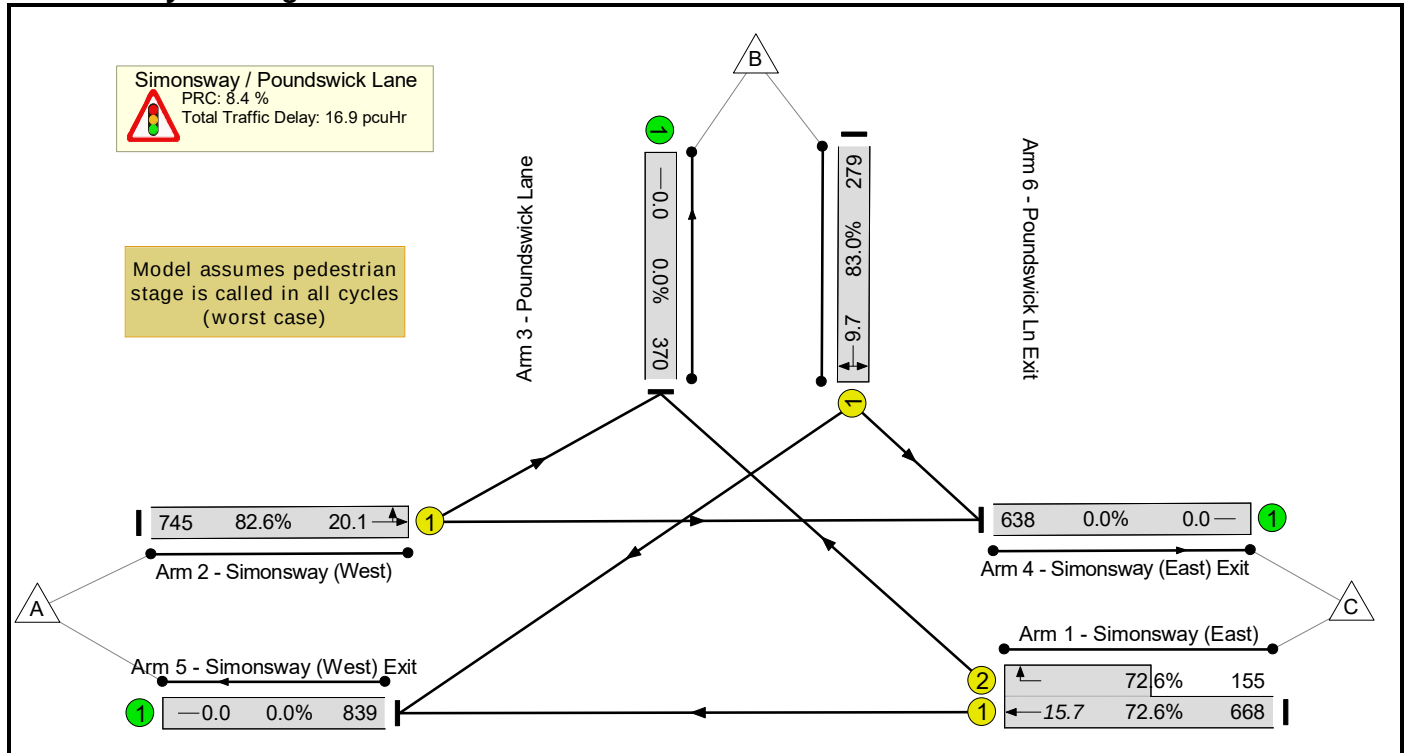
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	85.5%	-	-
Simonsway / Poundswick Lane	-	-	-	-	-	-	-	85.5%	-	-
1/1+1/2	Simonsway (East) Ahead Right	U	A	53	598	1905:1742	1004+183	50.4 : 50.4%	12.5	7.4
2/1	Simonsway (West) Ahead Left	U	B	43	798	1926	942	84.7%	32.2	20.0
3/1	Poundswick Lane Left Right	U	C	11	202	1772	236	85.5%	83.8	7.5
C1			PRC for Signalled Lanes (%):			5.3	Total Delay for Signalled Lanes (pcuHr):			13.91
			PRC Over All Lanes (%):			5.3	Total Delay Over All Lanes(pcuHr):			13.91

Basic Results Summary

Scenario 4: '2030 Base NG With Dev PM' (FG4: '2030 Base With Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

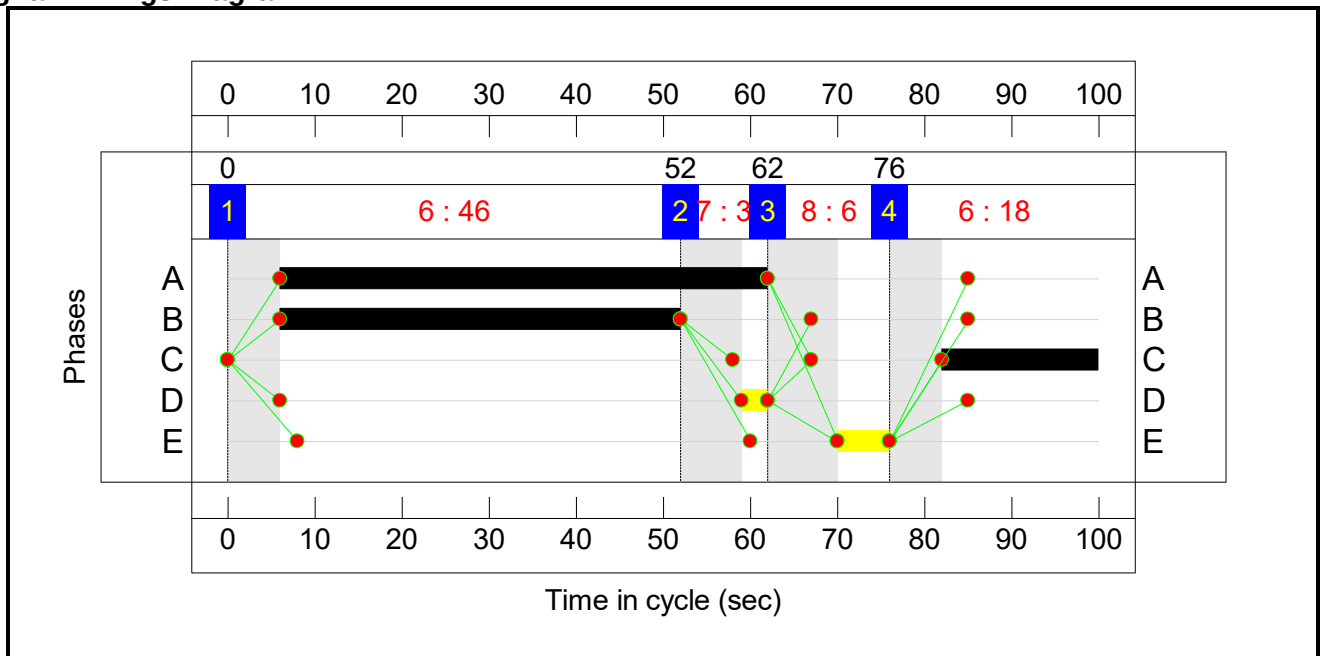


Traffic Flows, Actual

Actual Flow :

	Destination				
	A	B	C	Tot.	
Origin	A	0	215	530	745
	B	171	0	108	279
	C	668	155	0	823
	Tot.	839	370	638	1847

Signal Timings Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	83.0%	-	-
Simonsway / Poundswick Lane	-	-	-	-	-	-	-	83.0%	-	-
1/1+1/2	Simonsway (East) Ahead Right	U	A	56	823	1905:1742	921+214	72.6 : 72.6%	20.0	15.7
2/1	Simonsway (West) Ahead Left	U	B	46	745	1919	902	82.6%	34.1	20.1
3/1	Poundswick Lane Left Right	U	C	18	279	1769	336	83.0%	68.2	9.7
C1			PRC for Signalled Lanes (%):			8.4	Total Delay for Signalled Lanes (pcuHr):			16.91
			PRC Over All Lanes (%):			8.4	Total Delay Over All Lanes(pcuHr):			16.91

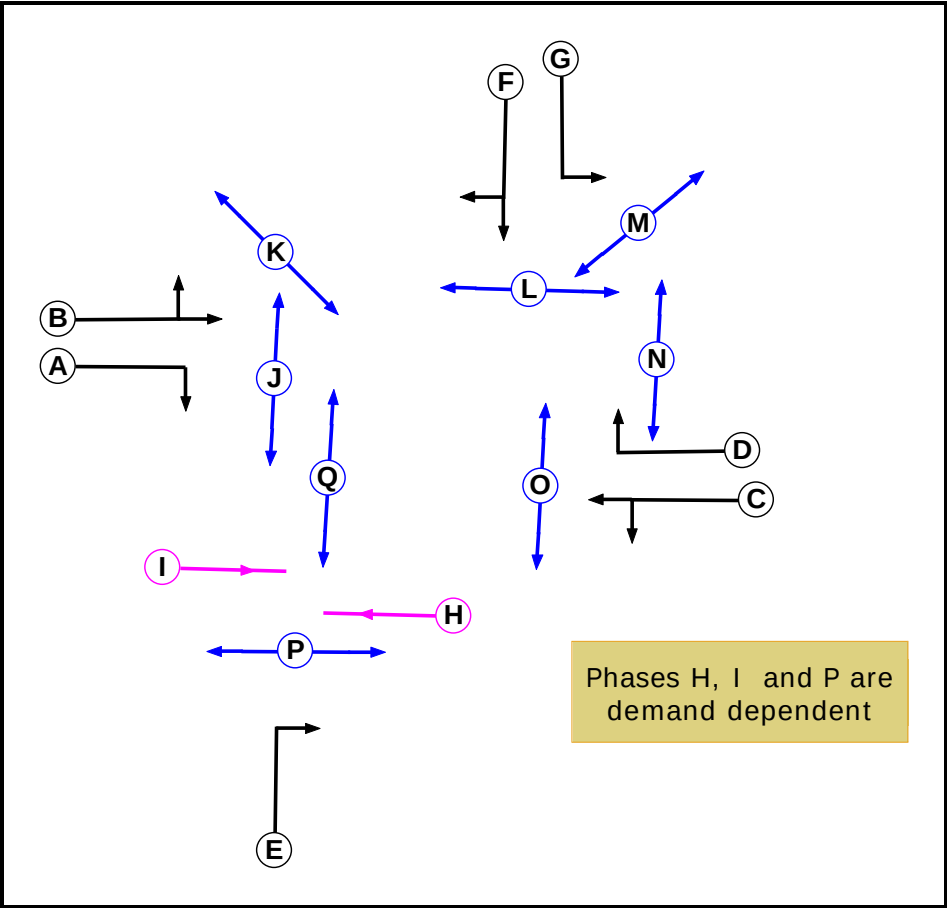
Basic Results Summary

Basic Results Summary

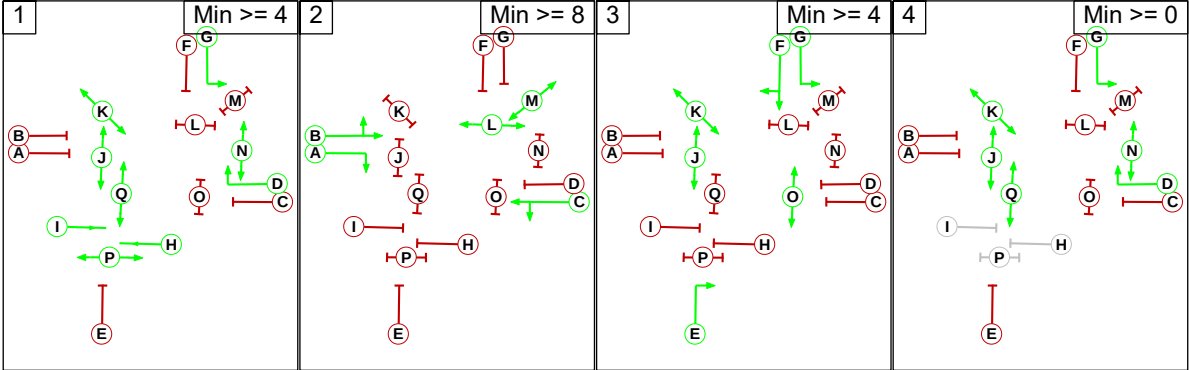
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	
Additional detail:	
File name:	J3 Simonsway Brownley v1.lsg3x
Author:	
Company:	Vectos
Address:	61 Oxford Road, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Basic Results Summary

Basic Results Summary

Phase Intergreens Matrix

	Starting Phase																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Terminating Phase	A	-	-	5	7	6	10	11	8	5	-	-	-	10	-	14	-
	B	-	-	5	5	-	-	-	-	-	6	-	-	-	-	-	-
	C	-	-	-	7	5	-	8	5	-	-	-	-	-	5	10	10
	D	5	9	-	5	7	-	-	-	-	-	11	-	-	5	-	-
	E	9	11	6	8	-	-	5	5	-	-	11	-	16	-	6	9
	F	7	-	8	5	-	-	9	6	-	-	5	-	-	-	11	12
	G	5	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
	H	8	-	8	-	10	10	-	-	-	-	-	-	-	-	-	-
	I	10	-	10	-	10	10	-	-	-	-	-	-	-	-	-	-
	J	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	K	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	5	5	7	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
	N	5	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-
	O	-	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-
	P	4	-	4	-	10	10	-	-	-	-	-	-	-	-	-	-
	Q	-	-	5	-	5	5	-	-	-	-	-	-	-	-	-	-

Lane Input Data

Junction: Simonsway / Brownley 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 (Simonsway (East))	U	C	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	20.00
1/2 (Simonsway (East))	O	D	2	3	9.0	Geom	-	3.35	0.00	Y	Arm 6 Right	30.00
2/1 (Ruddpark Road)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	20.00
											Arm 6 Ahead	Inf
2/2 (Ruddpark Road)	O	E	2	3	10.0	Geom	-	3.40	0.00	Y	Arm 7 Right	20.00
3/1 (Simonsway (West))	U	B	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 6 Left	40.00
											Arm 7 Ahead	Inf
3/2 (Simonsway (West))	O	A	2	3	11.0	Geom	-	3.30	0.00	Y	Arm 8 Right	30.00

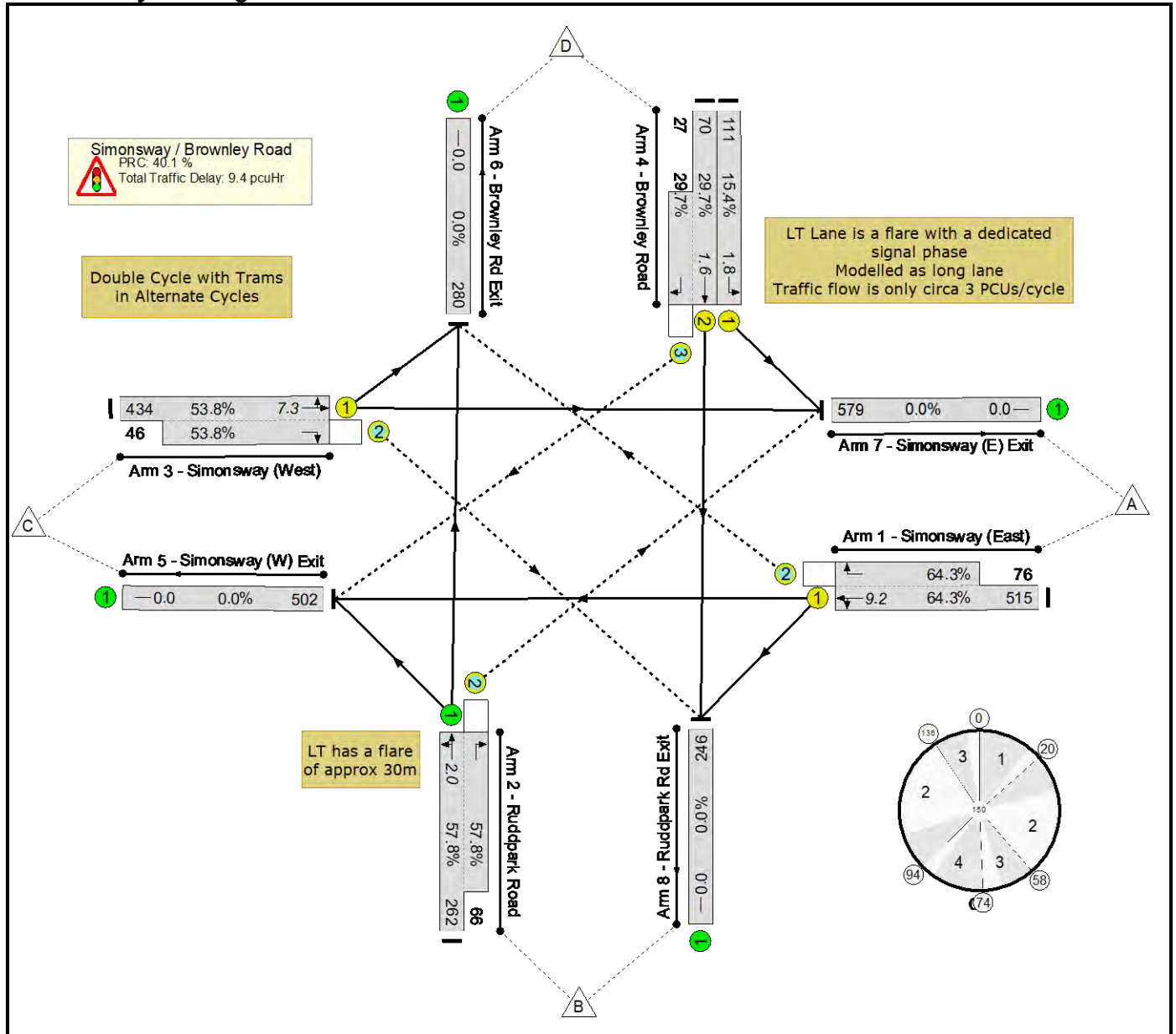
Basic Results Summary

4/1 (Brownley Road)	U	G	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	40.00
4/2 (Brownley Road)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 8 Ahead	Inf
4/3 (Brownley Road)	O	F	2	3	7.0	Geom	-	3.50	0.00	Y	Arm 5 Right	25.00
5/1 (Simonsway (W) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Brownley Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Simonsway (E) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Ruddpark Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

Scenario 1: '2022 Base AM' (FG1: '2022 Base AM', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



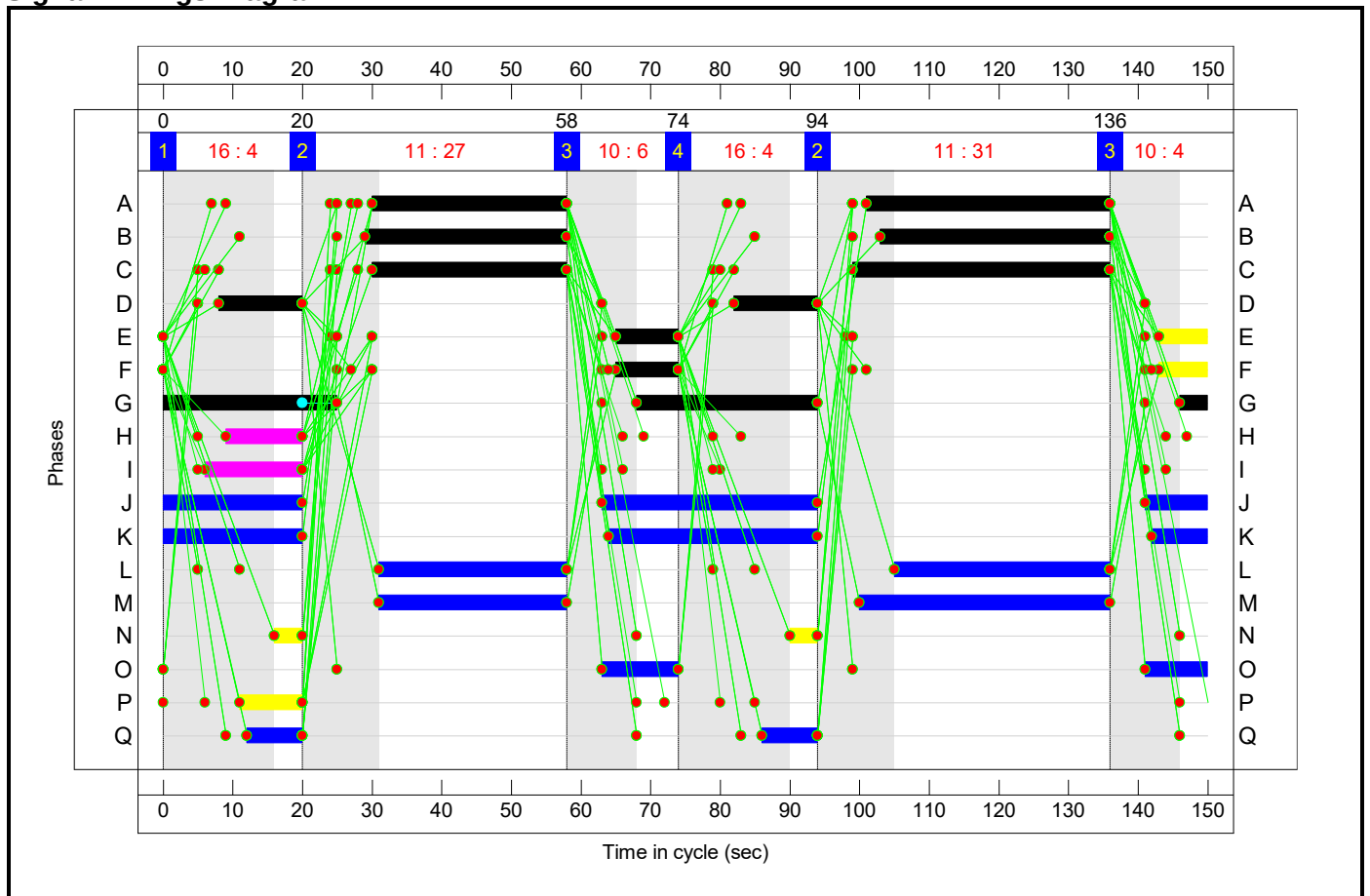
Traffic Flows, Actual

Actual Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	130	385	76	591
	B	66	0	90	172	328
	C	402	46	0	32	480
	D	111	70	27	0	208
	Tot.	579	246	502	280	1607

Basic Results Summary

Signal Timings Diagram



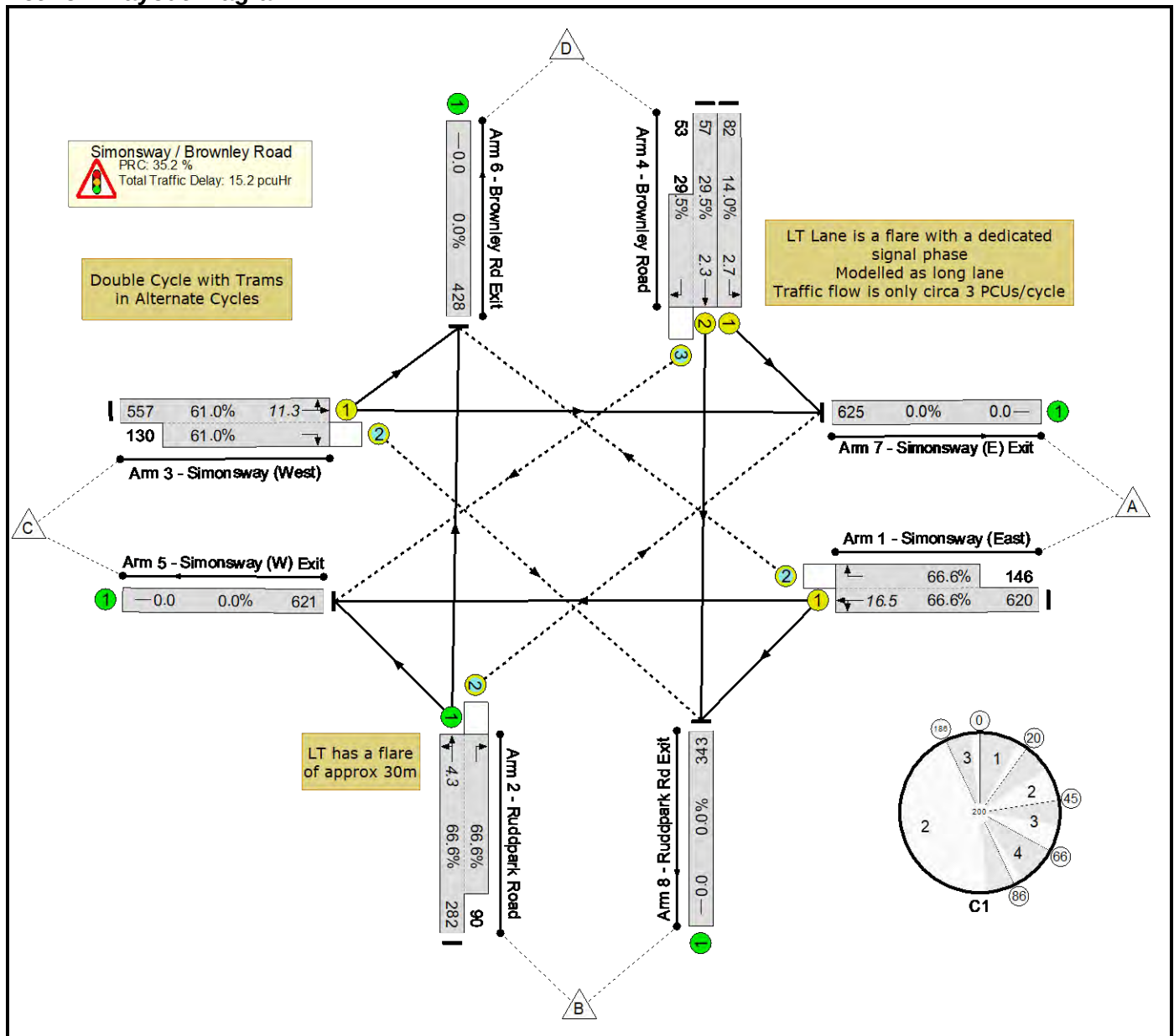
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	64.3%	-	-
Simonsway / Brownley Road	-	-	-	-	-	-	-	64.3%	-	-
1/1+1/2	Simonsway (East) Ahead Right Left	U+O	C D	65:24	591	1938:1857	801+118	64.3 : 64.3%	22.5	9.2
2/1+2/2	Ruddpark Road Left Ahead Right	U+O	- E	-	328	1916:1819	453+114	57.8 : 57.8%	14.7	2.0
3/1+3/2	Simonsway (West) Left Ahead Right	U+O	B A	62:63	480	1940:1852	807+86	53.8 : 53.8%	20.9	7.3
4/1	Brownley Road Left	U	G	55	111	1894	720	15.4%	18.4	1.8
4/2+4/3	Brownley Road Right Ahead	U+O	F	16	97	1965:1854	236+91	29.7 : 29.7%	37.9	1.6
C1				PRC for Signalled Lanes (%):		40.1	Total Delay for Signalled Lanes (pcuHr):		8.08	
				PRC Over All Lanes (%):		40.1	Total Delay Over All Lanes(pcuHr):		9.42	

Basic Results Summary

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

Network Layout Diagram



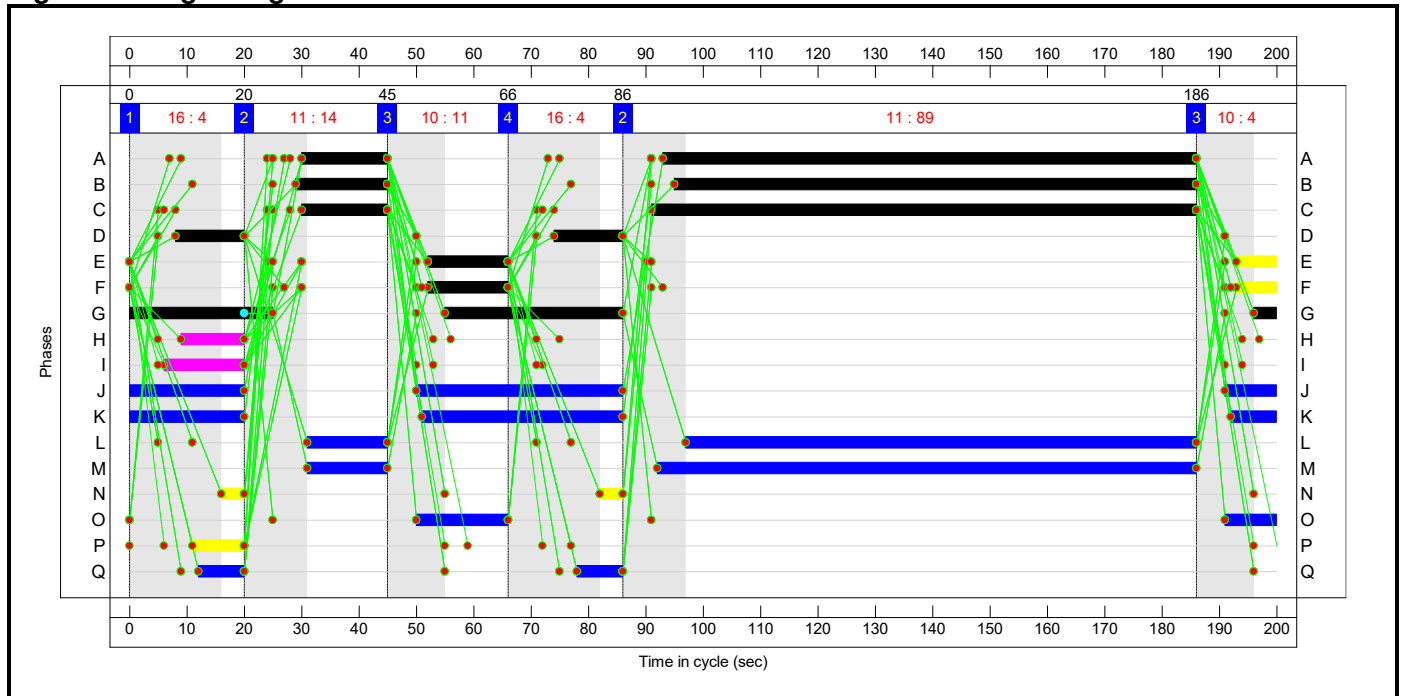
Traffic Flows, Actual

Actual Flow :

		Destination				
Origin	A	0	156	464	146	766
	B	90	0	104	178	372
	C	453	130	0	104	687
	D	82	57	53	0	192
	Tot.	625	343	621	428	2017

Basic Results Summary

Signal Timings Diagram



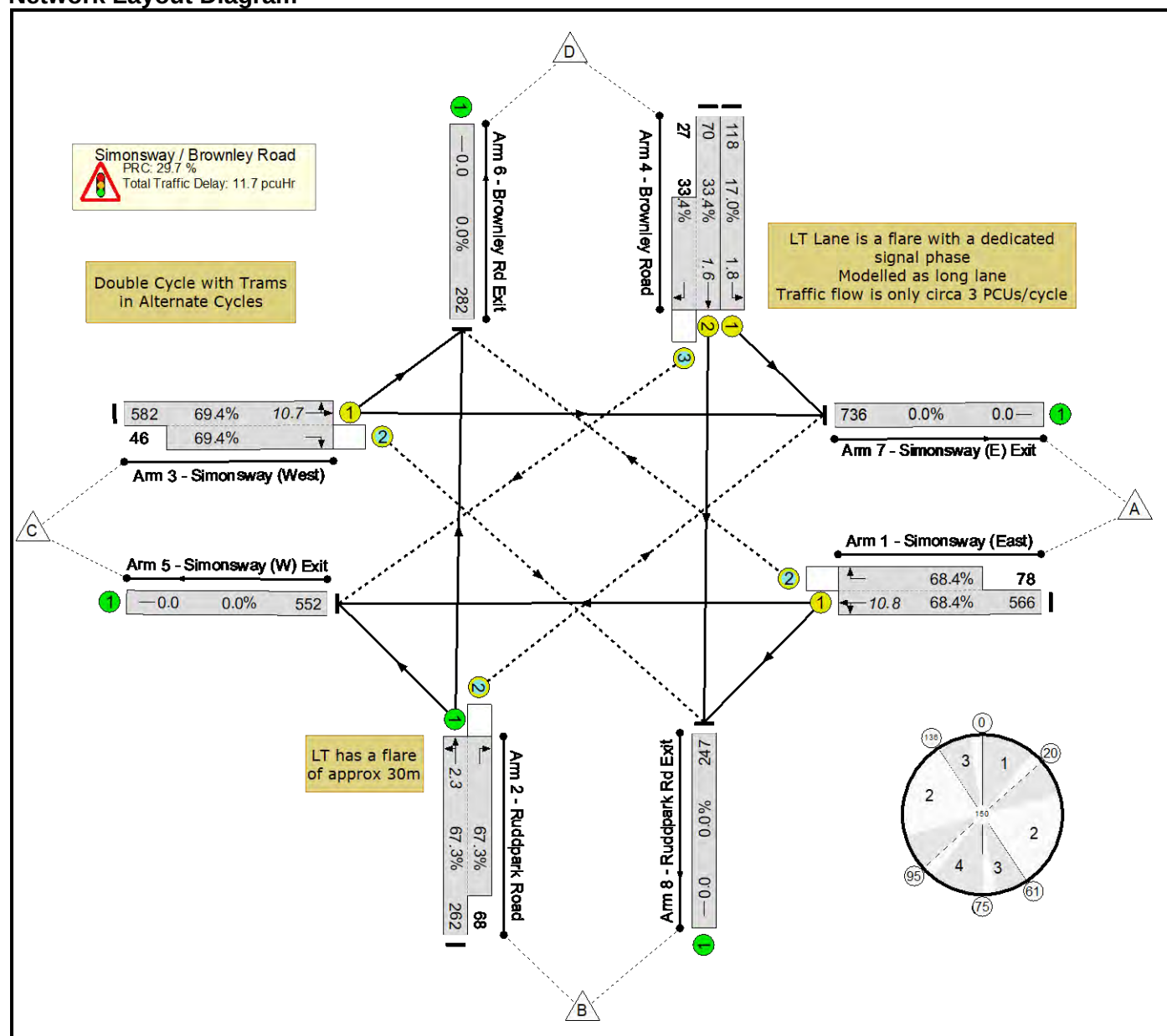
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	66.6%	-	-
Simonsway / Brownley Road	-	-	-	-	-	-	-	66.6%	-	-
1/1+1/2	Simonsway (East) Ahead Right Left	U+O	C D	110:24	766	1938:1857	932+219	66.6 : 66.6%	27.8	16.5
2/1+2/2	Ruddpark Road Left Ahead Right	U+O	- E	-	372	1912:1819	424+135	66.6 : 66.6%	26.5	4.3
3/1+3/2	Simonsway (West) Left Ahead Right	U+O	B A	107:108	687	1931:1852	913+213	61.0 : 61.0%	21.2	11.3
4/1	Brownley Road Left	U	G	60	82	1894	587	14.0%	36.8	2.7
4/2+4/3	Brownley Road Right Ahead	U+O	F	21	110	1965:1854	193+179	29.5 : 29.5%	54.9	2.3
C1				PRC for Signalled Lanes (%):		35.2	Total Delay for Signalled Lanes (pcuHr):		12.47	
				PRC Over All Lanes (%):		35.2	Total Delay Over All Lanes(pcuHr):		15.21	

Basic Results Summary

Scenario 3: '2030 Base NG With Dev AM' (FG3: '2030 Base With Dev AM', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



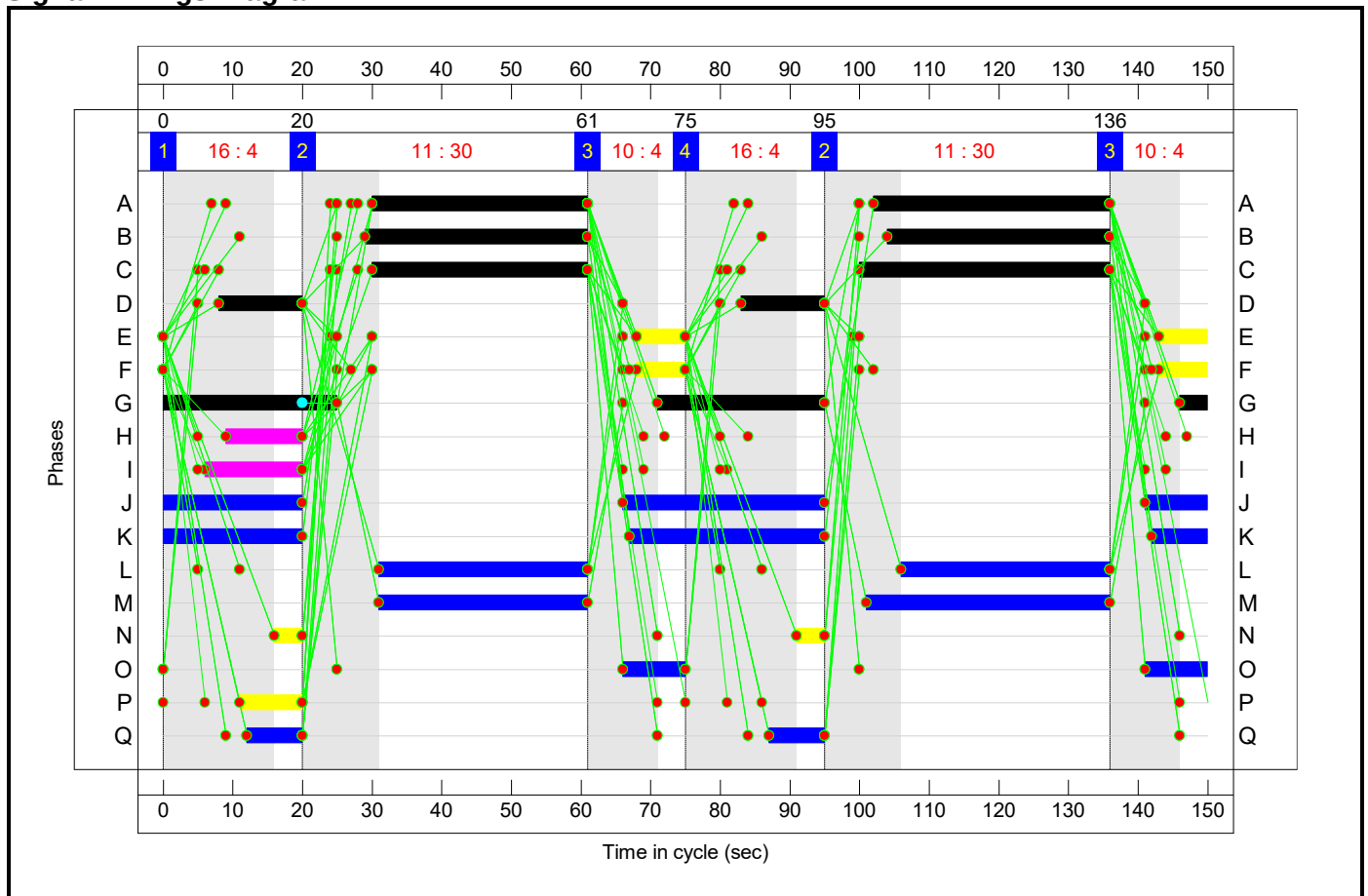
Traffic Flows, Actual

Actual Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	131	435	78	644
	B	68	0	90	172	330
	C	550	46	0	32	628
	D	118	70	27	0	215
	Tot.	736	247	552	282	1817

Basic Results Summary

Signal Timings Diagram



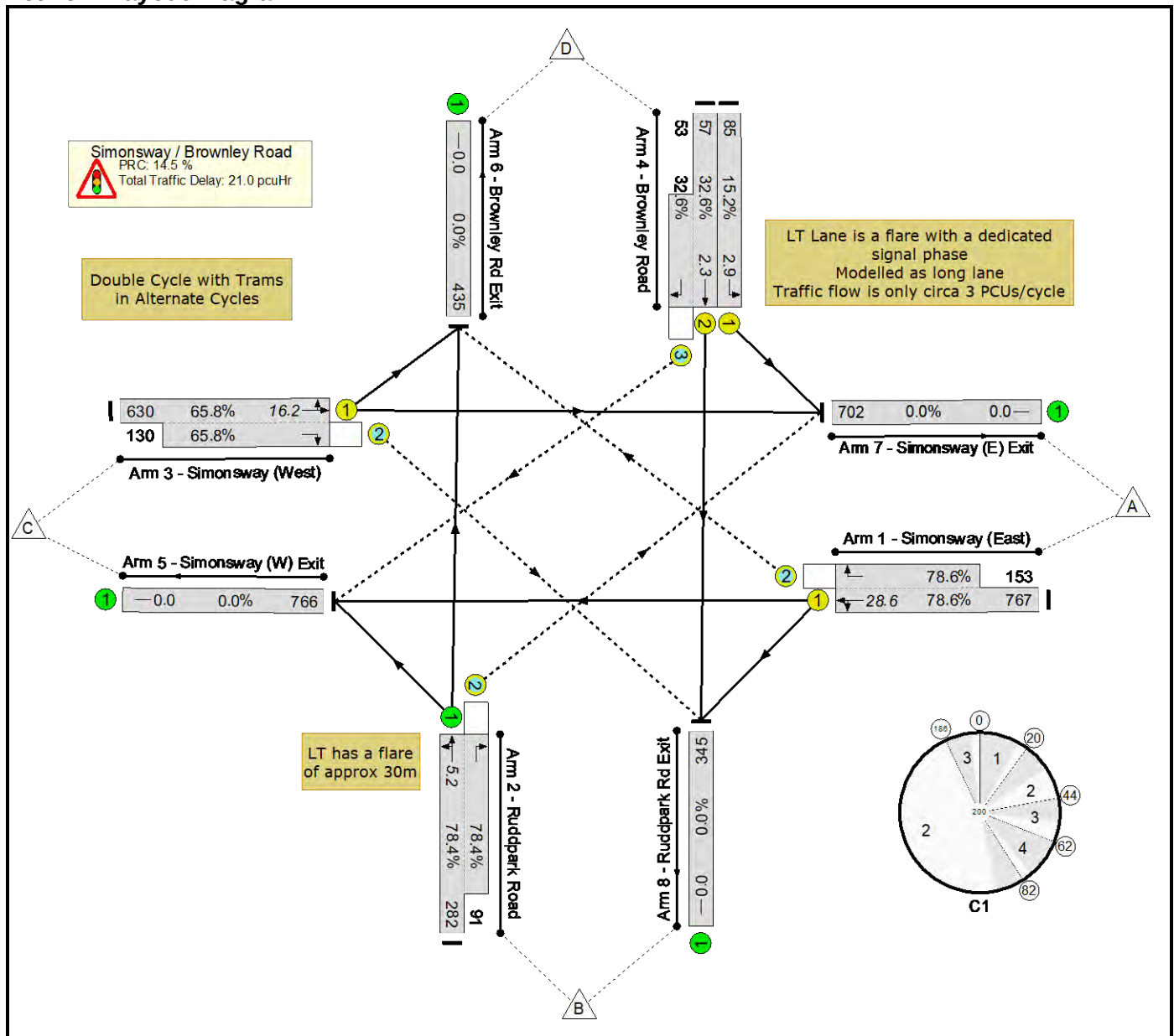
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	69.4%	-	-
Simonsway / Brownley Road	-	-	-	-	-	-	-	69.4%	-	-
1/1+1/2	Simonsway (East) Ahead Right Left	U+O	C D	67:24	644	1941:1857	828+114	68.4 : 68.4%	22.9	10.8
2/1+2/2	Ruddpark Road Left Ahead Right	U+O	- E	-	330	1916:1819	389+101	67.3 : 67.3%	18.7	2.3
3/1+3/2	Simonsway (West) Left Ahead Right	U+O	B A	64:65	628	1941:1852	839+66	69.4 : 69.4%	23.7	10.7
4/1	Brownley Road Left	U	G	53	118	1894	694	17.0%	19.2	1.8
4/2+4/3	Brownley Road Right Ahead	U+O	F	14	97	1965:1854	210+81	33.4 : 33.4%	40.3	1.6
C1				PRC for Signalled Lanes (%):		29.7	Total Delay for Signalled Lanes (pcuHr):		9.95	
				PRC Over All Lanes (%):		29.7	Total Delay Over All Lanes(pcuHr):		11.67	

Basic Results Summary

Scenario 4: '2030 Base NG With Dev PM' (FG4: '2030 Base With Dev PM', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



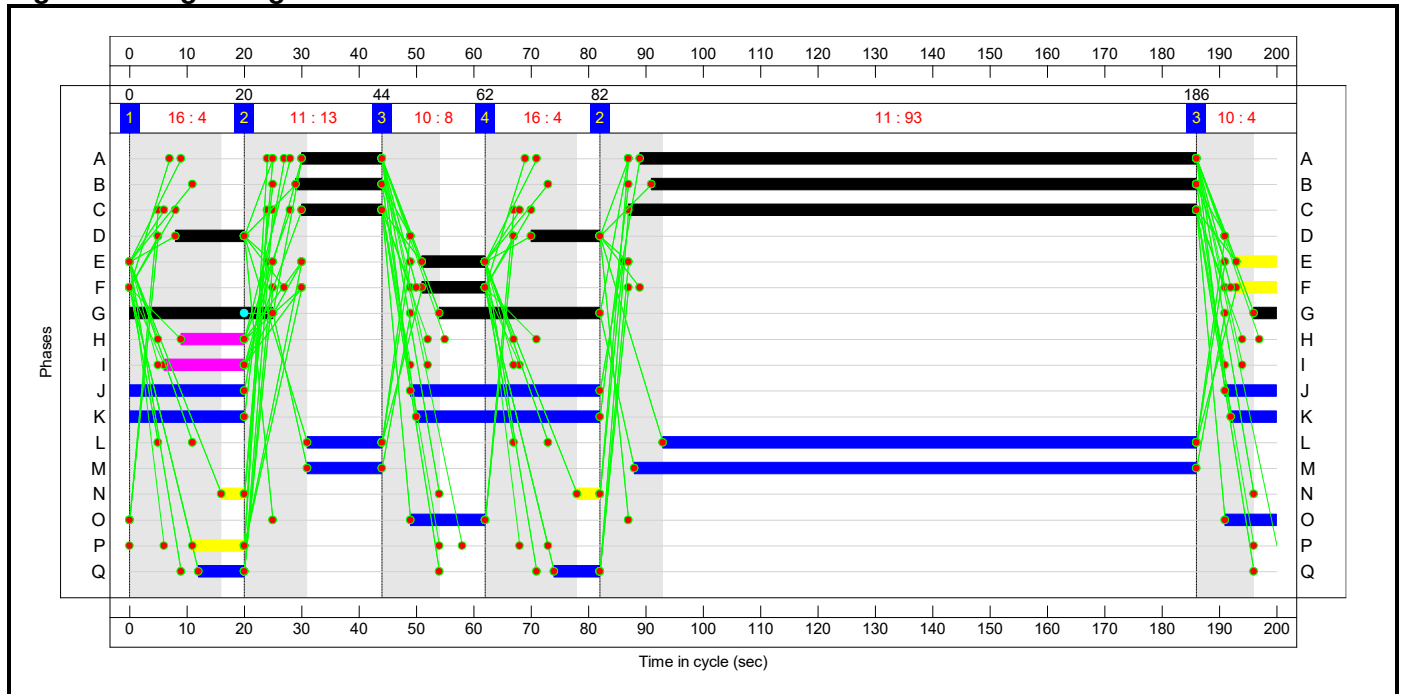
Traffic Flows, Actual

Actual Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	158	609	153	920
	B	91	0	104	178	373
	C	526	130	0	104	760
	D	85	57	53	0	195
	Tot.	702	345	766	435	2248

Basic Results Summary

Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	78.6%	-	-
Simonsway / Brownley Road	-	-	-	-	-	-	-	78.6%	-	-
1/1+1/2	Simonsway (East) Ahead Right Left	U+O	C D	113:24	920	1945:1857	976+195	78.6 : 78.6%	36.2	28.6
2/1+2/2	Ruddpark Road Left Ahead Right	U+O	- E	-	373	1912:1819	360+116	78.4 : 78.4%	35.0	5.2
3/1+3/2	Simonsway (West) Left Ahead Right	U+O	B A	110:111	760	1933:1852	957+197	65.8 : 65.8%	25.5	16.2
4/1	Brownley Road Left	U	G	57	85	1894	559	15.2%	39.3	2.9
4/2+4/3	Brownley Road Right Ahead	U+O	F	18	110	1965:1854	175+163	32.6 : 32.6%	58.3	2.3
C1				PRC for Signalled Lanes (%):		14.5	Total Delay for Signalled Lanes (pcuHr):		17.33	
				PRC Over All Lanes (%):		14.5	Total Delay Over All Lanes(pcuHr):		20.95	

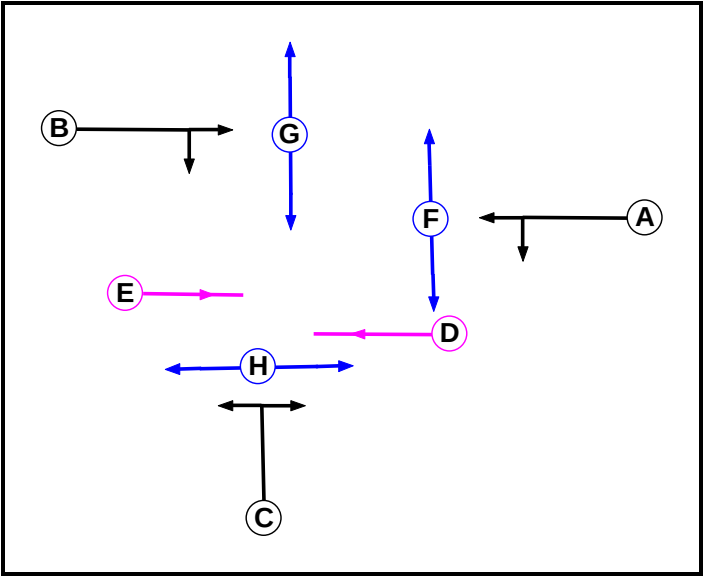
Basic Results Summary

Basic Results Summary

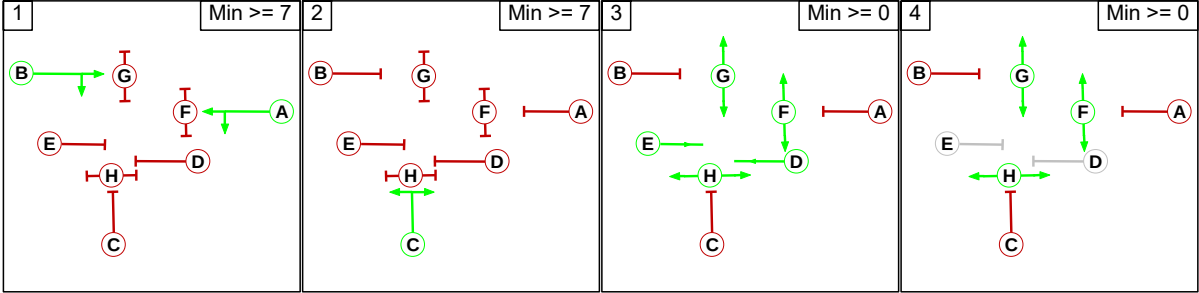
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	
Model Assumptions:	Pedestrian & Tram stage called intermittently. Removed from staging and modelled via (negative) bonus green
Additional detail:	
File name:	J4 Shadowmoss Road v2 Bonus Green RB.lsg3x
Author:	
Company:	Vectos
Address:	61 OxfordStreet, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Basic Results Summary

Phase Intergreens Matrix

Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
	A	-	5	5	5	5	9	11
	B	-	5	7	6	9	5	14
	C	8	8	5	5	13	12	5
	D	13	13	17	-	-	-	-
	E	14	14	13	-	-	-	-
	F	7	7	5	-	-	-	-
	G	6	6	4	-	-	-	-
	H	3	3	6	-	-	-	-

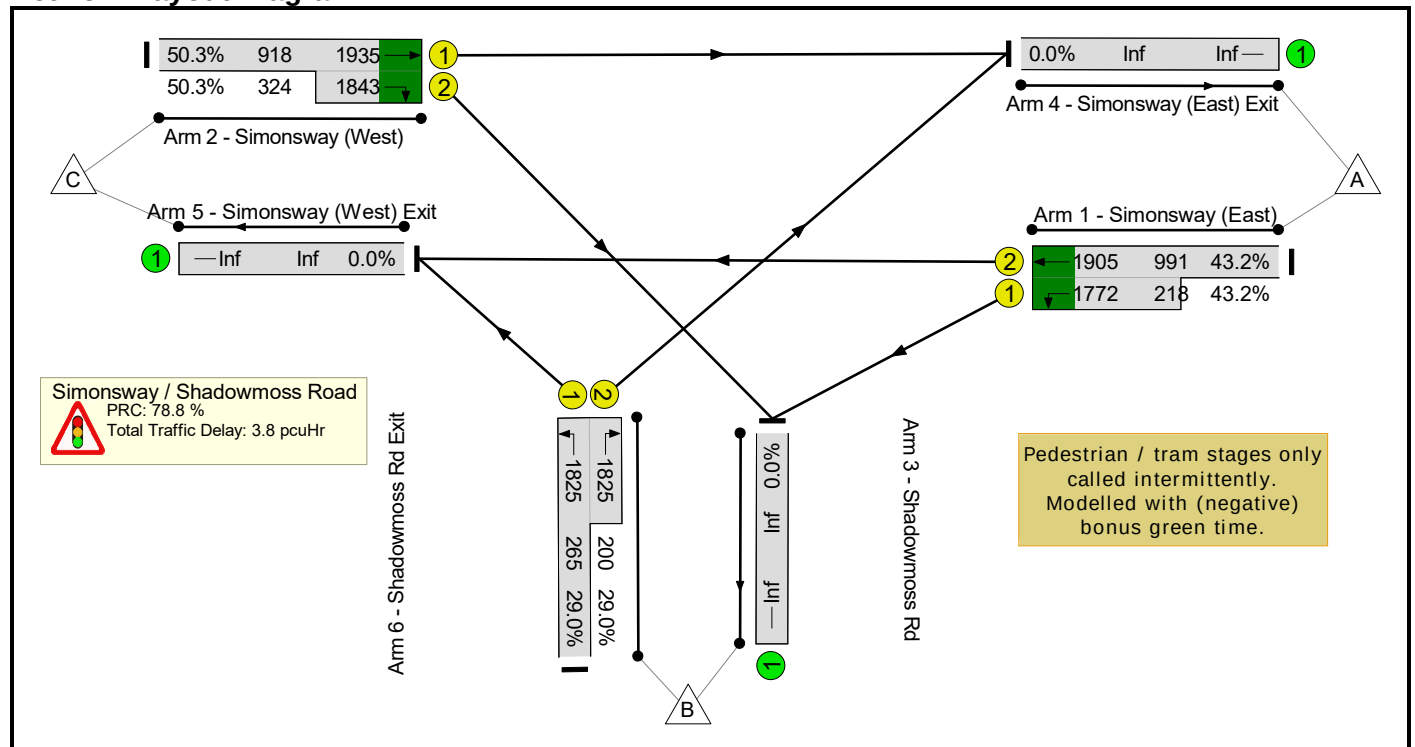
Lane Input Data

Junction: Simonsway / Shadowmoss 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 (Simonsway (East))	U	A	2	3	7.0	Geom	-	2.90	0.00	Y	Arm 6 Left	20.00
1/2 (Simonsway (East))	U	A	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 5 Ahead	Inf
2/1 (Simonsway (West))	U	B	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Ahead	Inf
2/2 (Simonsway (West))	U	B	2	3	5.0	Geom	-	3.20	0.00	Y	Arm 6 Right	30.00
3/1 (Shadowmoss Rd)	U	C	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 5 Left	25.00
3/2 (Shadowmoss Rd)	U	C	2	3	5.0	Geom	-	3.20	0.00	Y	Arm 4 Right	25.00
4/1 (Simonsway (East) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Simonsway (West) Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Shadowmoss Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

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

Network Layout Diagram



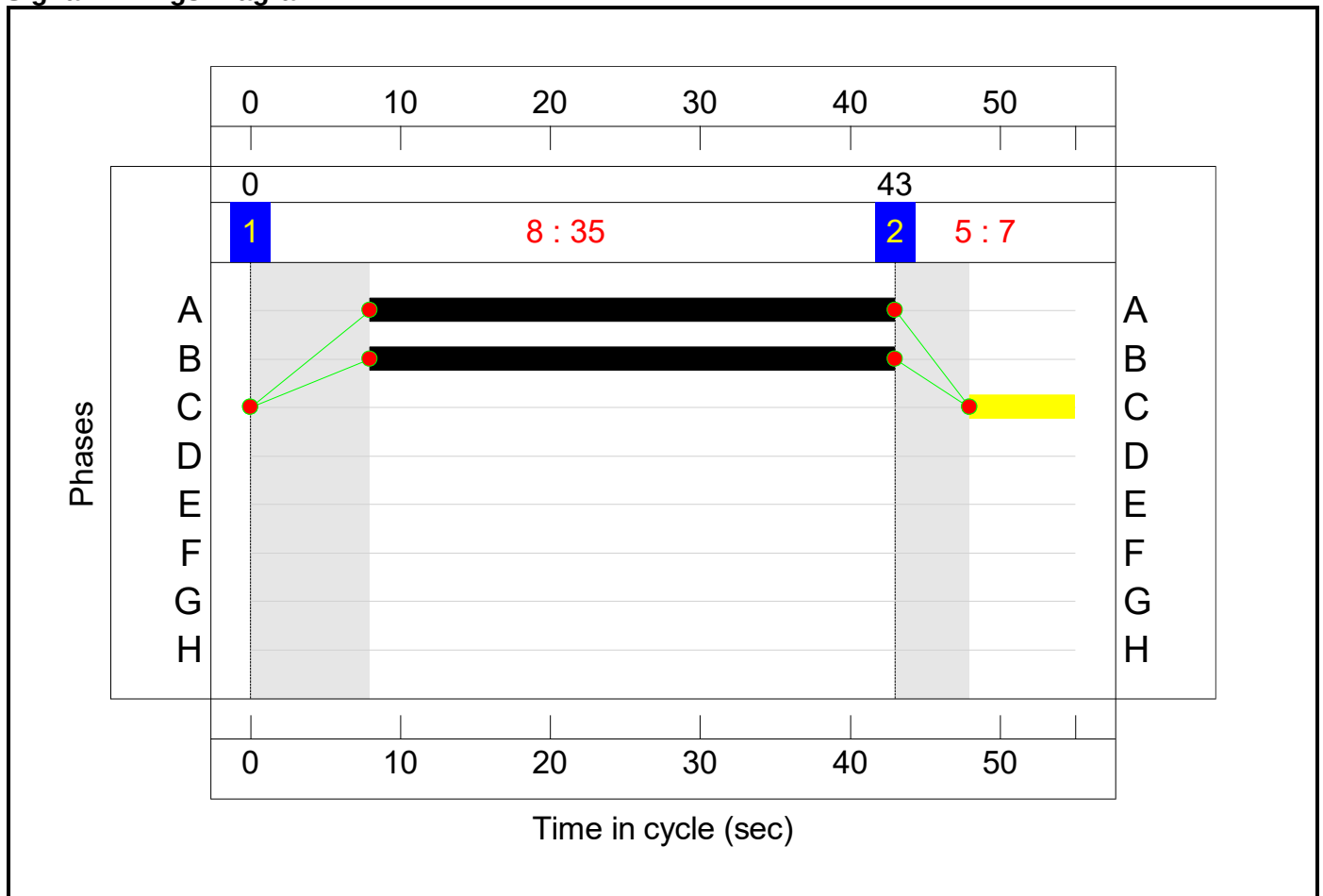
Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	94	428	522
	B	58	0	77	135
	C	462	163	0	625
	Tot.	520	257	505	1282

Basic Results Summary

Signal Timings Diagram



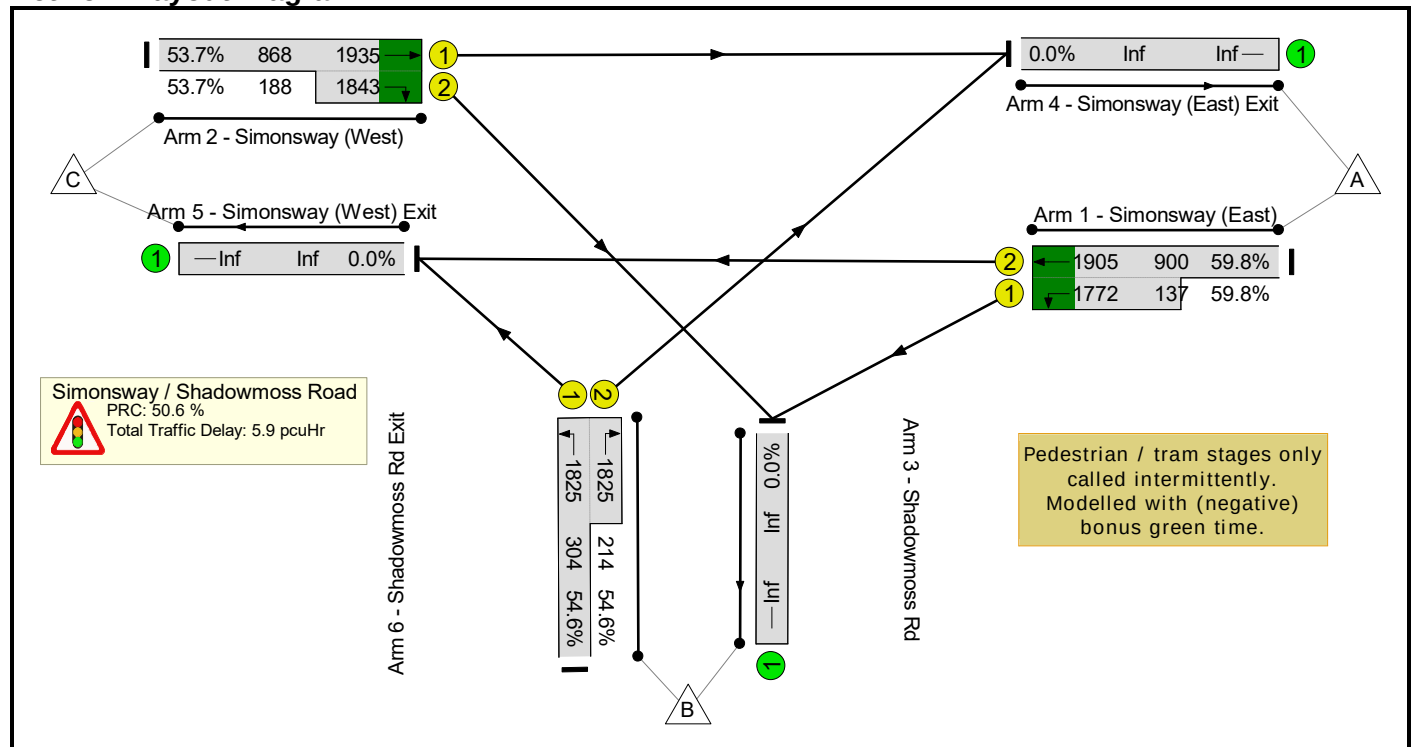
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	50.3%	-	-
Simonsway / Shadowmoss Road	-	-	-	-	-	-	-	50.3%	-	-
1/2+1/1	Simonsway (East) Ahead Left	U	A	35	522	1905:1772	991+218	43.2 : 43.2%	8.6	3.8
2/1+2/2	Simonsway (West) Ahead Right	U	B	35	625	1935:1843	918+324	50.3 : 50.3%	9.0	4.4
3/1+3/2	Shadowmoss Rd Right Left	U	C	7	135	1825:1825	265+200	29.0 : 29.0%	26.3	1.3
C1				PRC for Signalled Lanes (%):		78.8	Total Delay for Signalled Lanes (pcuHr):		3.80	
				PRC Over All Lanes (%):		78.8	Total Delay Over All Lanes(pcuHr):		3.80	

Basic Results Summary

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

Network Layout Diagram



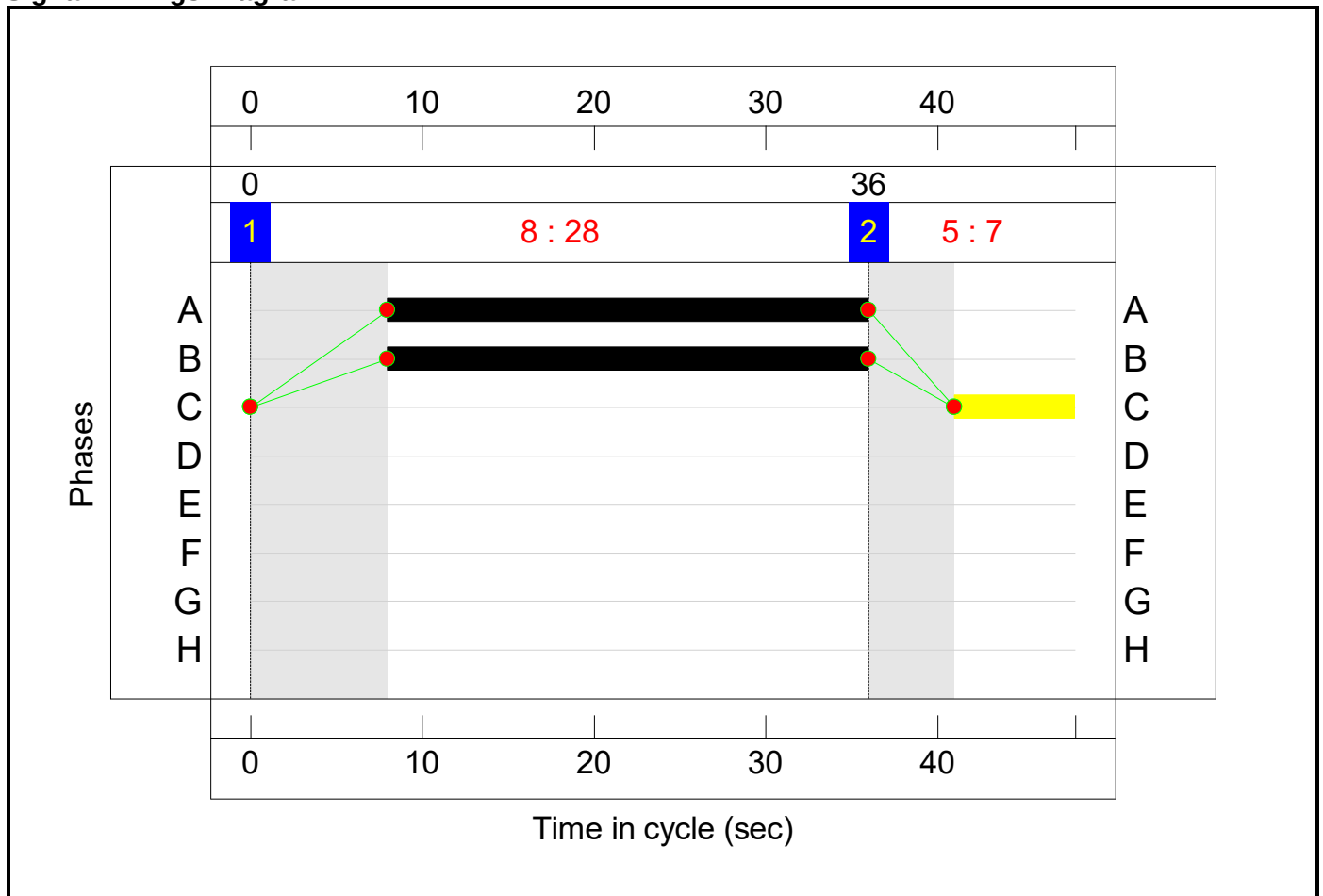
Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	82	538	620
	B	117	0	166	283
	C	466	101	0	567
	Tot.	583	183	704	1470

Basic Results Summary

Signal Timings Diagram



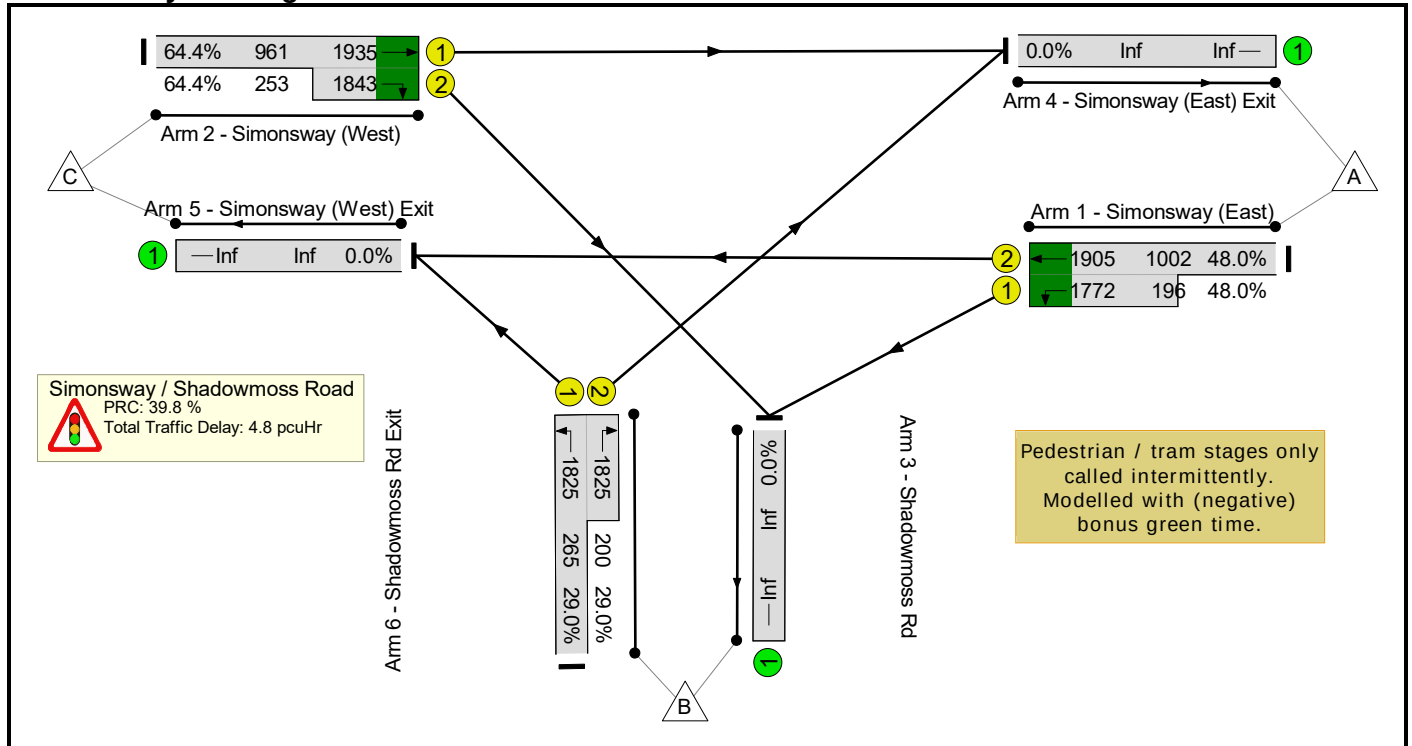
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	59.8%	-	-
Simonsway / Shadowmoss Road	-	-	-	-	-	-	-	59.8%	-	-
1/2+1/1	Simonsway (East) Ahead Left	U	A	28	620	1905:1772	900+137	59.8 : 59.8%	12.4	5.7
2/1+2/2	Simonsway (West) Ahead Right	U	B	28	567	1935:1843	868+188	53.7 : 53.7%	11.3	4.6
3/1+3/2	Shadowmoss Rd Right Left	U	C	7	283	1825:1825	304+214	54.6 : 54.6%	25.7	2.6
C1				PRC for Signalled Lanes (%):		50.6	Total Delay for Signalled Lanes (pcuHr):		5.94	
				PRC Over All Lanes (%):		50.6	Total Delay Over All Lanes(pcuHr):		5.94	

Basic Results Summary

Scenario 3: '2030 Base NG With Dev AM' (FG3: '2030 Base With Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



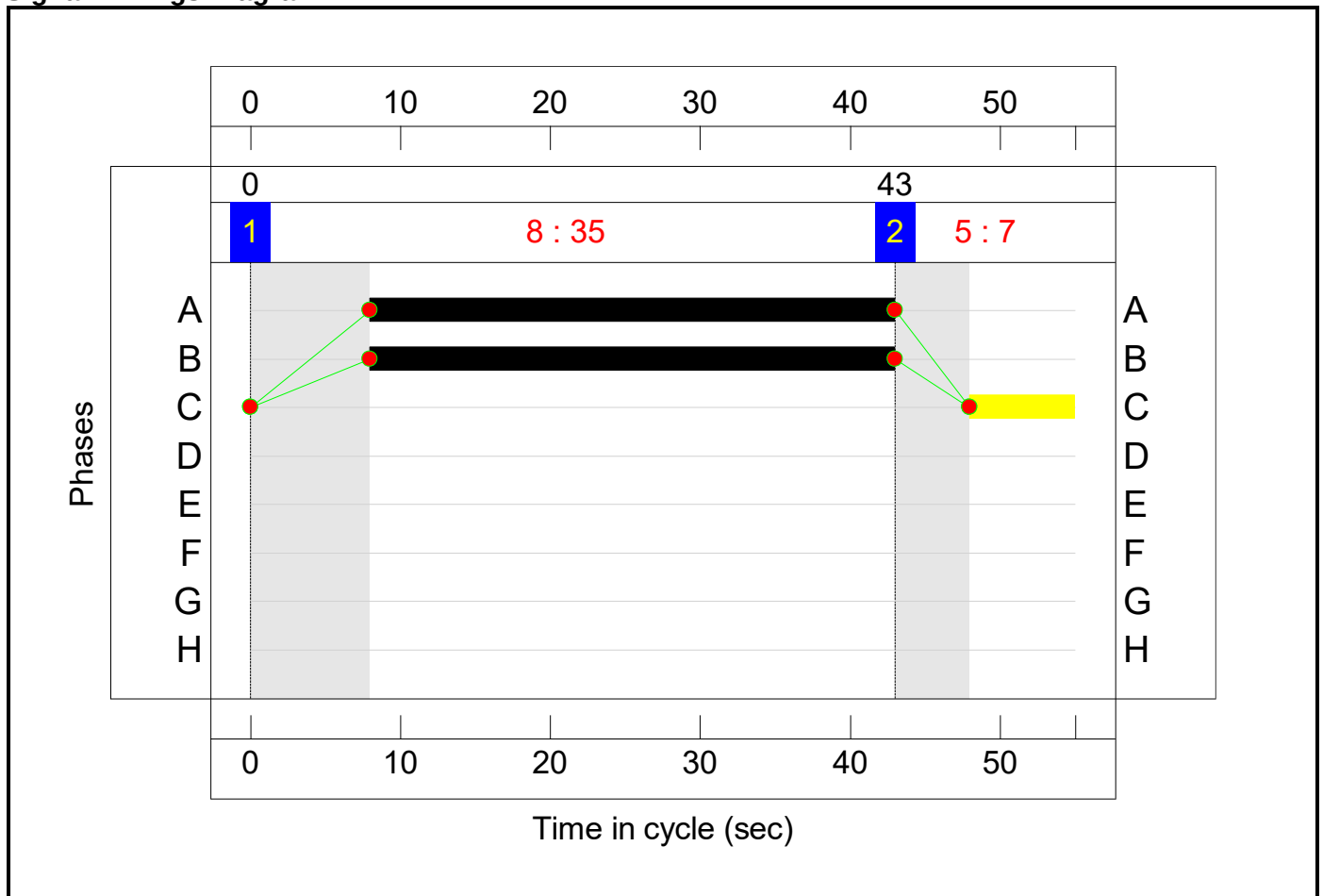
Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	94	481	575
	B	58	0	77	135
	C	619	163	0	782
	Tot.	677	257	558	1492

Basic Results Summary

Signal Timings Diagram



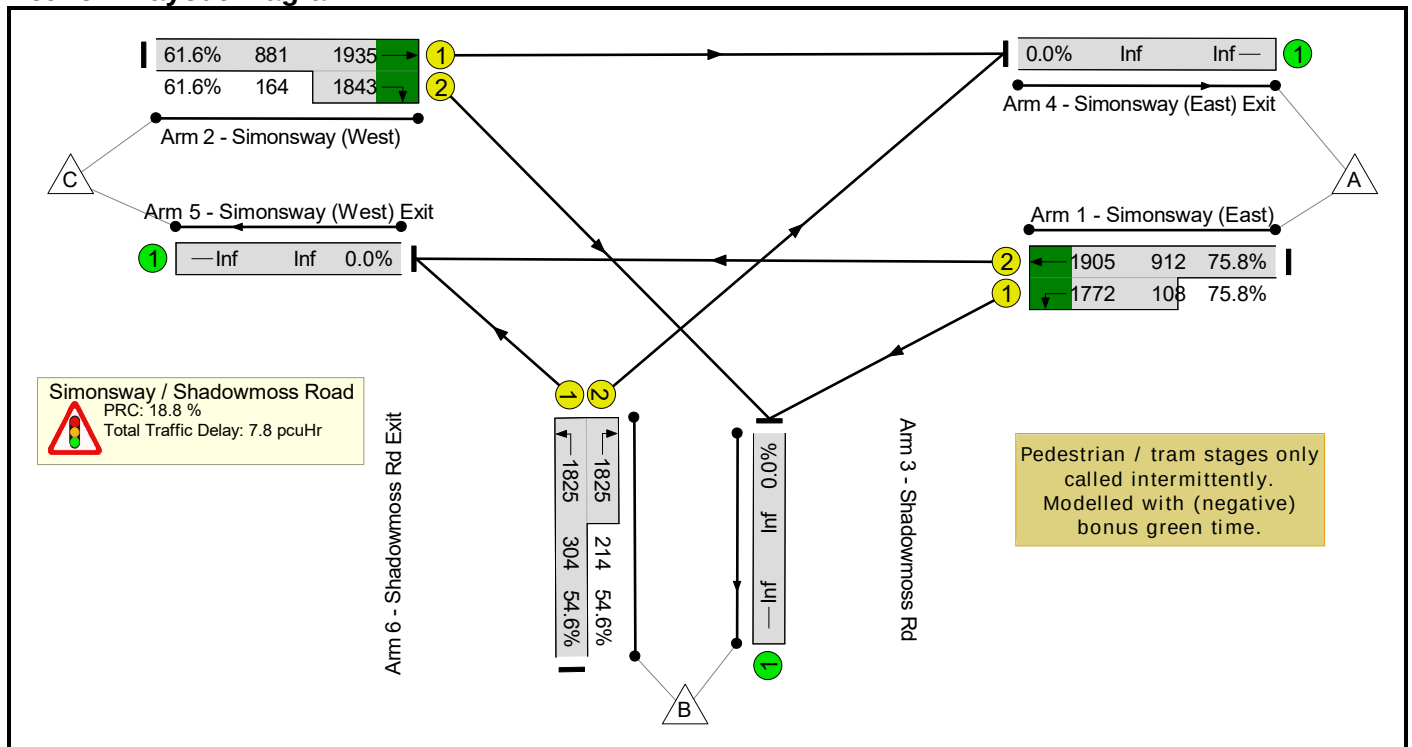
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	64.4%	-	-
Simonsway / Shadowmoss Road	-	-	-	-	-	-	-	64.4%	-	-
1/2+1/1	Simonsway (East) Ahead Left	U	A	35	575	1905:1772	1002+196	48.0 : 48.0%	9.1	4.5
2/1+2/2	Simonsway (West) Ahead Right	U	B	35	782	1935:1843	961+253	64.4 : 64.4%	10.9	7.2
3/1+3/2	Shadowmoss Rd Right Left	U	C	7	135	1825:1825	265+200	29.0 : 29.0%	26.3	1.3
C1				PRC for Signalled Lanes (%):		39.8	Total Delay for Signalled Lanes (pcuHr):		4.81	
				PRC Over All Lanes (%):		39.8	Total Delay Over All Lanes(pcuHr):		4.81	

Basic Results Summary

Scenario 4: '2030 Base NG With Dev PM' (FG4: '2030 Base With Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



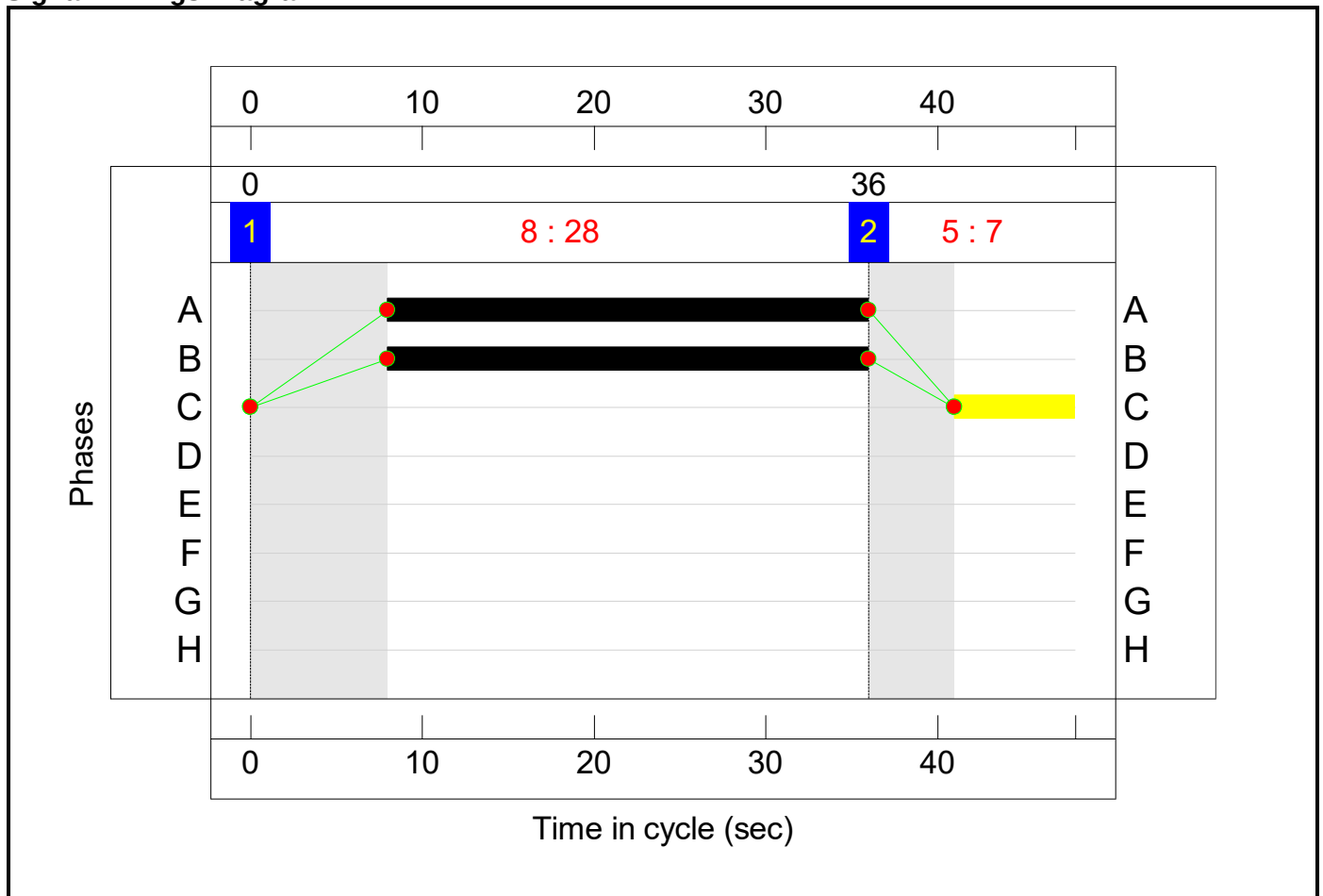
Traffic Flows, Actual

Actual Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	82	691	773
	B	117	0	166	283
	C	543	101	0	644
	Tot.	660	183	857	1700

Basic Results Summary

Signal Timings Diagram



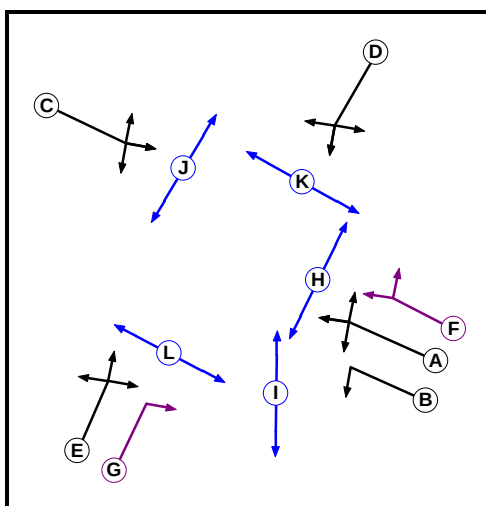
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	75.8%	-	-
Simonsway / Shadowmoss Road	-	-	-	-	-	-	-	75.8%	-	-
1/2+1/1	Simonsway (East) Ahead Left	U	A	28	773	1905:1772	912+108	75.8 : 75.8%	16.3	8.8
2/1+2/2	Simonsway (West) Ahead Right	U	B	28	644	1935:1843	881+164	61.6 : 61.6%	12.5	5.8
3/1+3/2	Shadowmoss Rd Right Left	U	C	7	283	1825:1825	304+214	54.6 : 54.6%	25.7	2.6
C1				PRC for Signalled Lanes (%):		18.8	Total Delay for Signalled Lanes (pcuHr):		7.76	
				PRC Over All Lanes (%):		18.8	Total Delay Over All Lanes(pcuHr):		7.76	

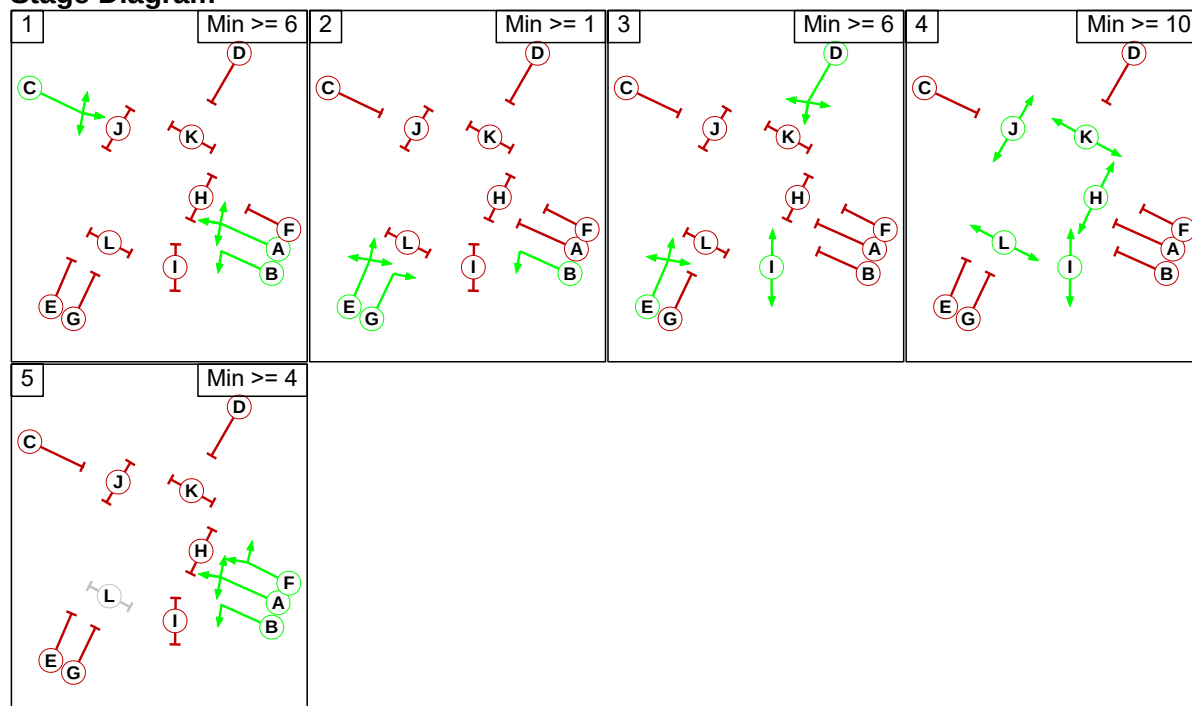
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	Simonsway / Styal Lane
Model Assumptions:	Junction includes pedestrian 'all-red' stage. Removed from staging and modelled via (negative) bonus green time
Additional detail:	
File name:	J5 Simonsway Styal Road v2 - Bonus Green 2 RB.lsg3x
Author:	
Company:	Vectos
Address:	61 Oxford St, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Phase Intergreens Matrix

Terminating Phase	Starting Phase												
		A	B	C	D	E	F	G	H	I	J	K	L
	A		-	-	7	7	-	7	5	-	11	11	-
	B	-		-	4	-	-	-	-	5	-	-	-
	C	-	-		7	7	5	7	11	-	5	9	11
	D	7	8	7		-	7	5	8	-	12	5	11
	E	8	-	7	-		8	-	12	-	9	10	6
	F	-	-	4	7	7		7	5	-	-	11	-
	G	8	-	7	4	-	8		12	-	-	-	6
	H	6	-	7	7	7	6	7		-	-	-	-
	I	-	5	-	-	-	-	-	-		-	-	-
	J	6	-	6	7	7	-	-	-	-		-	-
	K	6	-	6	6	6	6	-	-	-	-		-
	L	-	-	6	6	7	-	7	-	-	-	-	

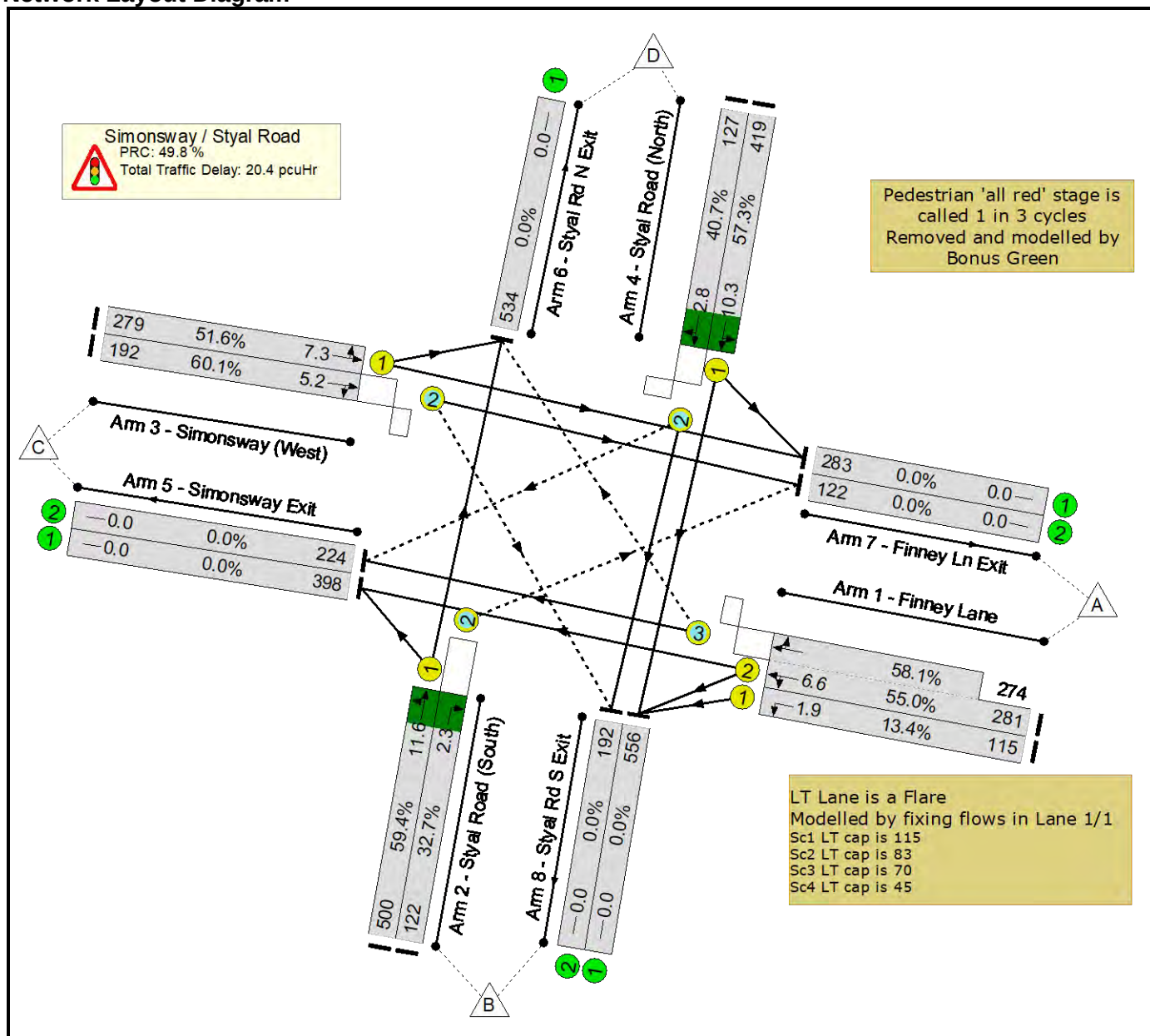
Lane Input Data

Junction: Simonsway / Styal 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 (Finney Lane)	U	B	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 8 Left	25.00
1/2 (Finney Lane)	U	A	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	Inf
1/3 (Finney Lane)	O	A F	2	3	15.0	Geom	-	3.10	0.00	N	Arm 5 Ahead	Inf
											Arm 6 Right	26.00
2/1 (Styal Road (South))	U	E	2	3	60.0	Geom	-	2.80	0.00	Y	Arm 5 Left	20.00
2/2 (Styal Road (South))	O	E G	2	3	60.0	Geom	-	2.80	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	26.00
3/1 (Simonsway (West))	U	C	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 6 Left	18.00
											Arm 7 Ahead	Inf
3/2 (Simonsway (West))	O	C	2	3	60.0	Geom	-	3.10	0.00	N	Arm 7 Ahead	Inf
											Arm 8 Right	26.00
4/1 (Styal Road	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 7 Left	20.00

Basic Results JL

(North))											Arm 8 Ahead	Inf
4/2 (Styal Road (North))	O	D	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Right	26.00
											Arm 8 Ahead	Inf
5/1 (Simonsway Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Simonsway Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Styal Rd N Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Finney Ln Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2 (Finney Ln Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Styal Rd S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Styal Rd S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Network Layout Diagram

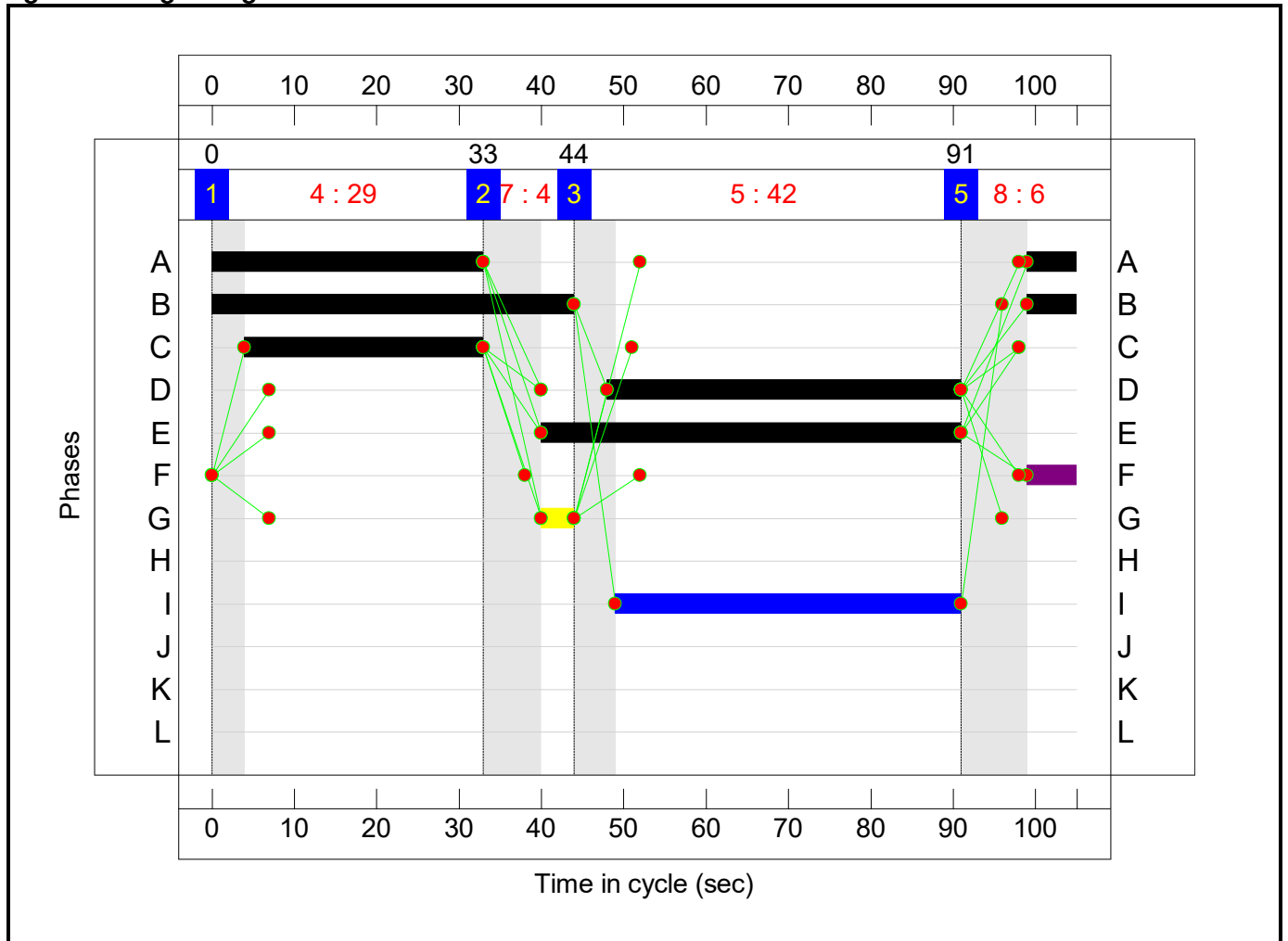


Traffic Flows, Desired

Desired Flow :

		Destination				
Origin	A	0	196	297	177	670
	B	122	0	198	302	622
	C	224	192	0	55	471
	D	59	360	127	0	546
	Tot.	405	748	622	534	2309

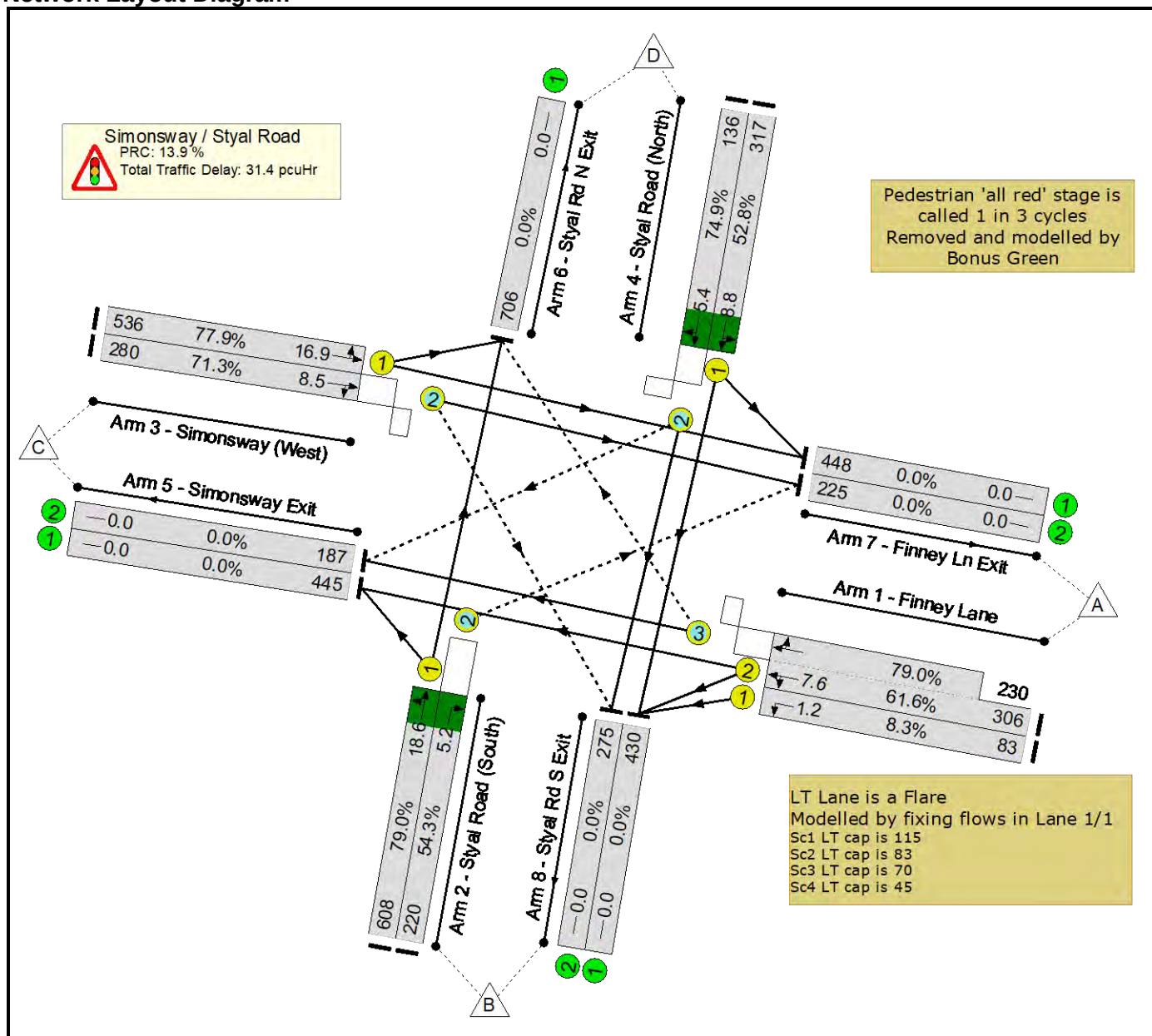
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	60.1%	-	-
Simonsway / Styal Road	-	-	-	-	-	-	-	60.1%	-	-
1/1	Finney Lane Left	U	B	50	115	1769	859	13.4%	17.3	1.9
1/2+1/3	Finney Lane Ahead Right Left	U+O	A	39	555	1925:1991	511+472	55.0 : 58.1%	29.6	6.6
2/1	Styal Road (South) Left Ahead	U	E	51	500	1840	841	59.4%	26.5	11.6
2/2	Styal Road (South) Right	O	E	51	122	1792	373	32.7%	26.0	2.3
3/1	Simonsway (West) Left Ahead	U	C	29	279	1894	541	51.6%	38.3	7.3
3/2	Simonsway (West) Ahead Right	O	C	29	192	1952	320	60.1%	48.6	5.2
4/1	Styal Road (North) Left Ahead	U	D	43	419	1920	731	57.3%	31.5	10.3
4/2	Styal Road (North) Right Ahead	O	D	43	127	1967	312	40.7%	43.0	2.8
C1				PRC for Signalled Lanes (%):		49.8	Total Delay for Signalled Lanes (pcuHr):		20.40	
				PRC Over All Lanes (%):		49.8	Total Delay Over All Lanes(pcuHr):		20.40	

Network Layout Diagram

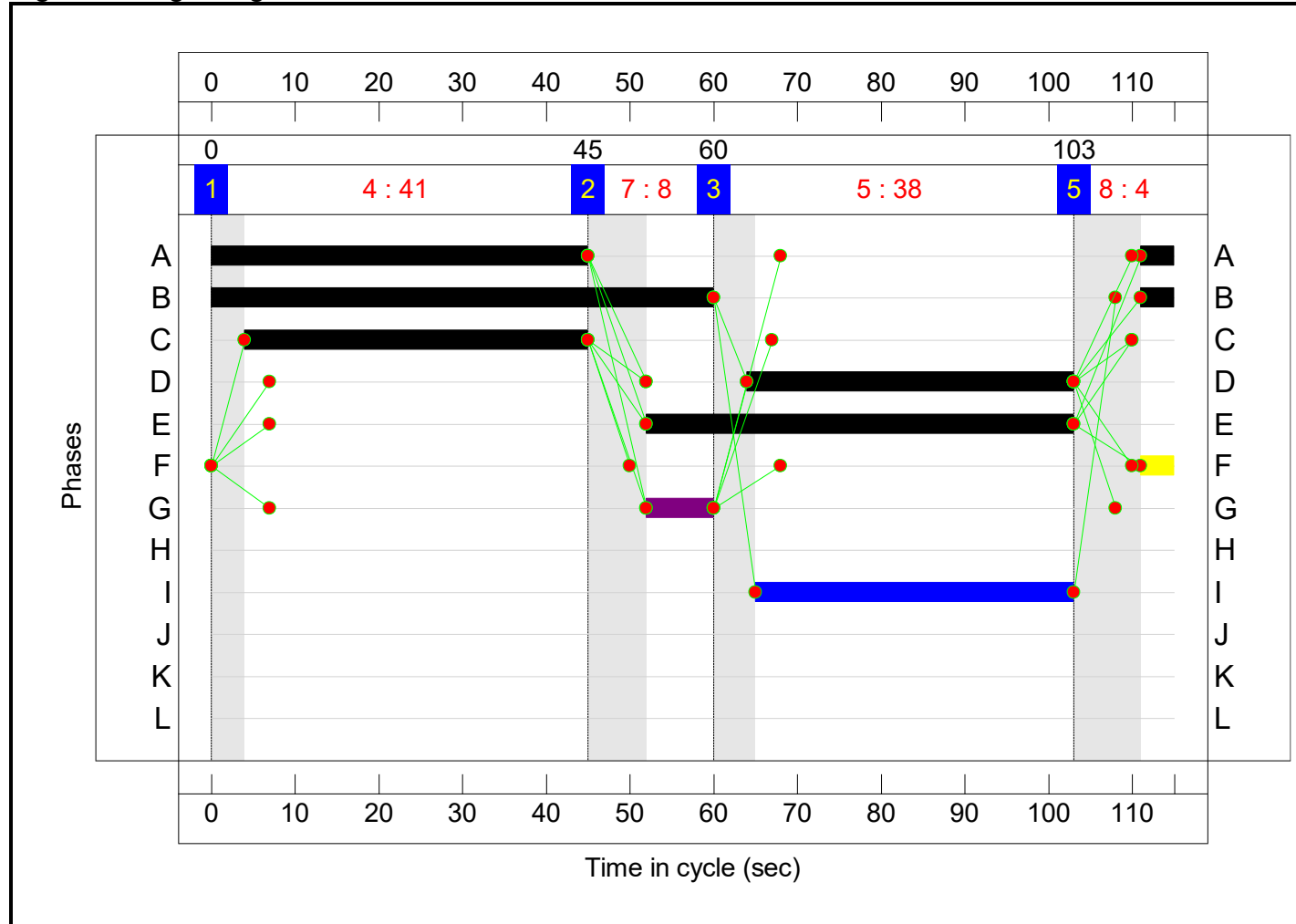


Traffic Flows, Desired

Desired Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	163	277	179	619
	B	220	0	219	389	828
	C	403	275	0	138	816
	D	50	267	136	0	453
	Tot.	673	705	632	706	2716

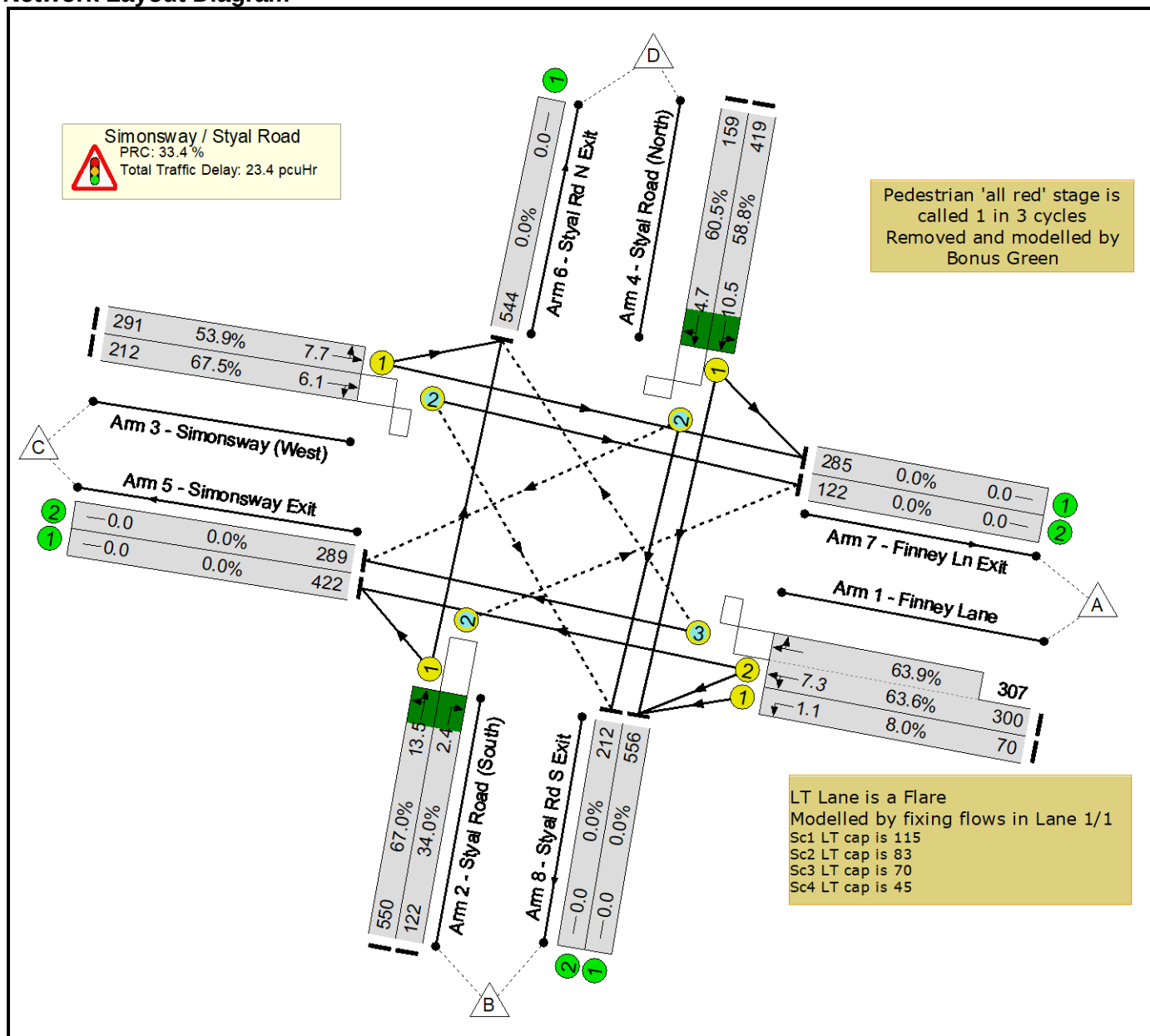
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	79.0%	-	-
Simonsway / Styal Road	-	-	-	-	-	-	-	79.0%	-	-
1/1	Finney Lane Left	U	B	64	83	1769	1000	8.3%	13.4	1.2
1/2+1/3	Finney Lane Ahead Right Left	U+O	A	49	536	1925:1976	497+291	61.6 : 79.0%	33.8	7.6
2/1	Styal Road (South) Left Ahead	U	E	51	608	1845	770	79.0%	40.0	18.6
2/2	Styal Road (South) Right	O	E	51	220	1792	405	54.3%	34.2	5.2
3/1	Simonsway (West) Left Ahead	U	C	41	536	1885	688	77.9%	43.9	16.9
3/2	Simonsway (West) Ahead Right	O	C	41	280	1954	393	71.3%	50.7	8.5
4/1	Styal Road (North) Left Ahead	U	D	39	317	1917	600	52.8%	38.8	8.8
4/2	Styal Road (North) Right Ahead	O	D	39	136	1967	182	74.9%	88.3	5.4
C1				PRC for Signalled Lanes (%):		13.9	Total Delay for Signalled Lanes (pcuHr):		31.43	
				PRC Over All Lanes (%):		13.9	Total Delay Over All Lanes(pcuHr):		31.43	

Network Layout Diagram

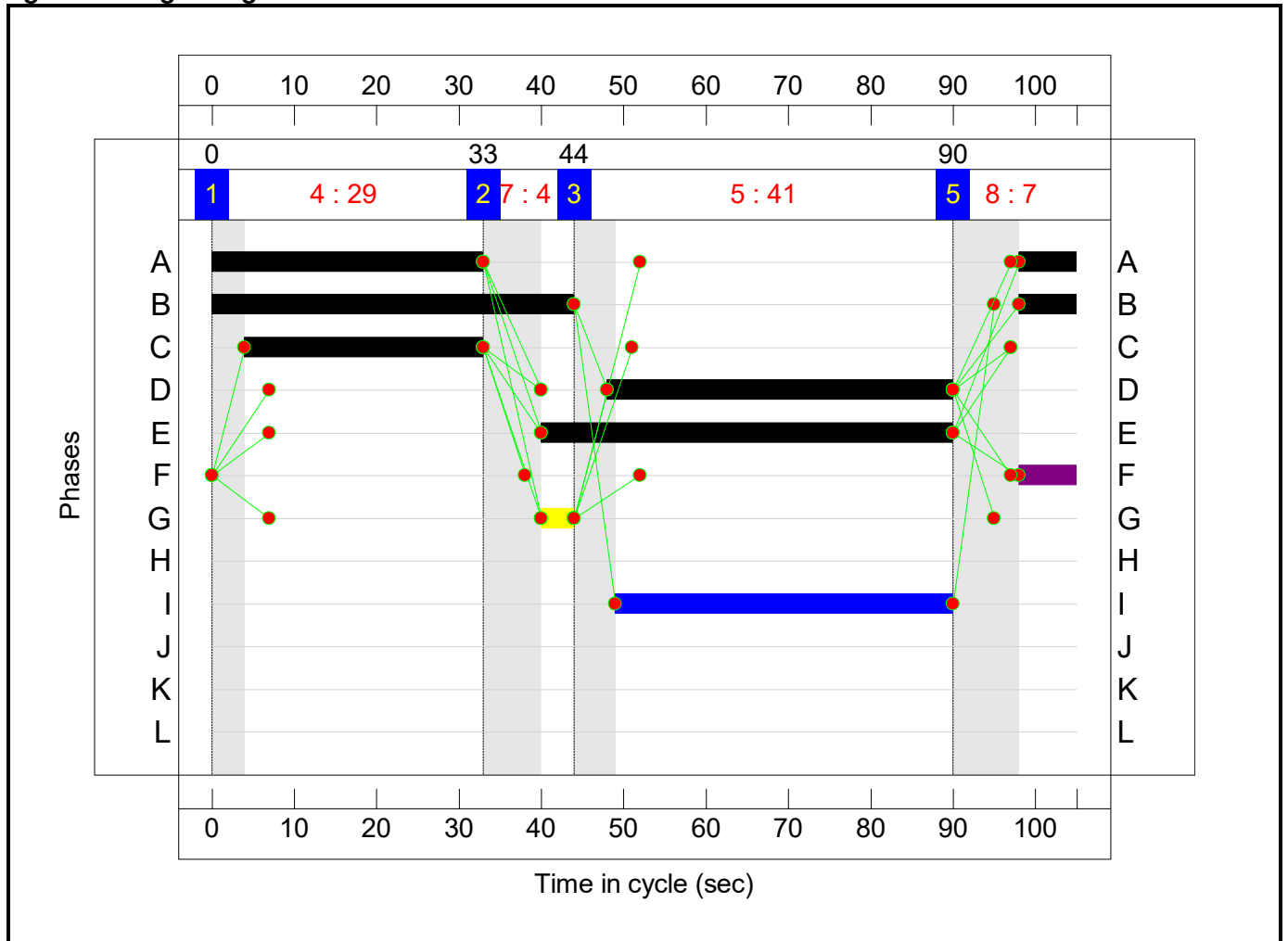


Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	196	304	177	677
	B	122	0	248	302	672
	C	226	212	0	65	503
	D	59	360	159	0	578
	Tot.	407	768	711	544	2430

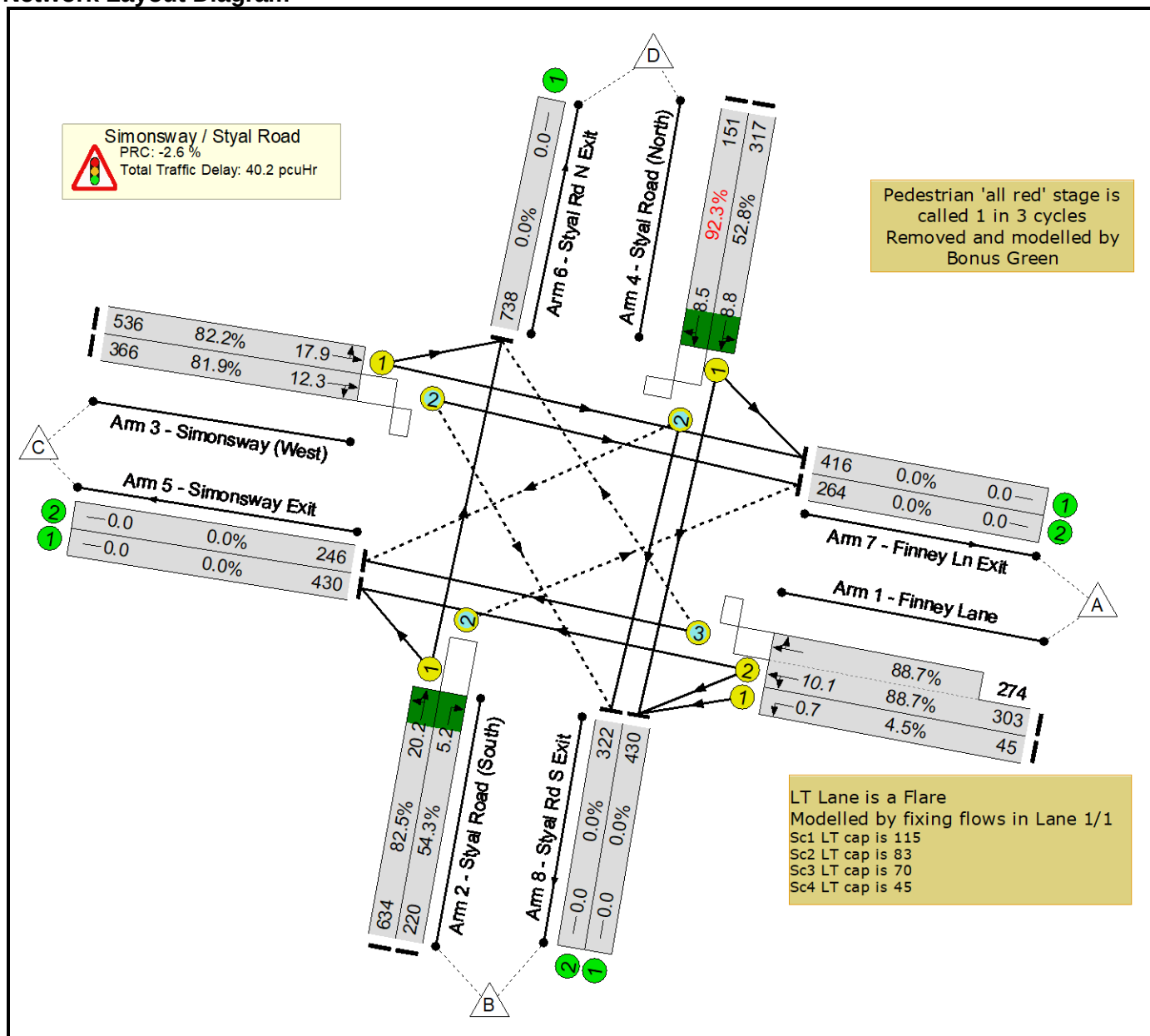
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	67.5%	-	-
Simonsway / Styal Road	-	-	-	-	-	-	-	67.5%	-	-
1/1	Finney Lane Left	U	B	51	70	1769	876	8.0%	16.2	1.1
1/2+1/3	Finney Lane Ahead Right Left	U+O	A	40	607	1925:1999	471+481	63.6 : 63.9%	30.1	7.3
2/1	Styal Road (South) Left Ahead	U	E	50	550	1833	820	67.0%	29.5	13.5
2/2	Styal Road (South) Right	O	E	50	122	1792	359	34.0%	27.1	2.4
3/1	Simonsway (West) Left Ahead	U	C	29	291	1890	540	53.9%	38.9	7.7
3/2	Simonsway (West) Ahead Right	O	C	29	212	1952	314	67.5%	53.1	6.1
4/1	Styal Road (North) Left Ahead	U	D	42	419	1920	713	58.8%	32.6	10.5
4/2	Styal Road (North) Right Ahead	O	D	42	159	1967	263	60.5%	56.6	4.7
C1				PRC for Signalled Lanes (%):		33.4	Total Delay for Signalled Lanes (pcuHr):		23.38	
				PRC Over All Lanes (%):		33.4	Total Delay Over All Lanes(pcuHr):		23.38	

Network Layout Diagram

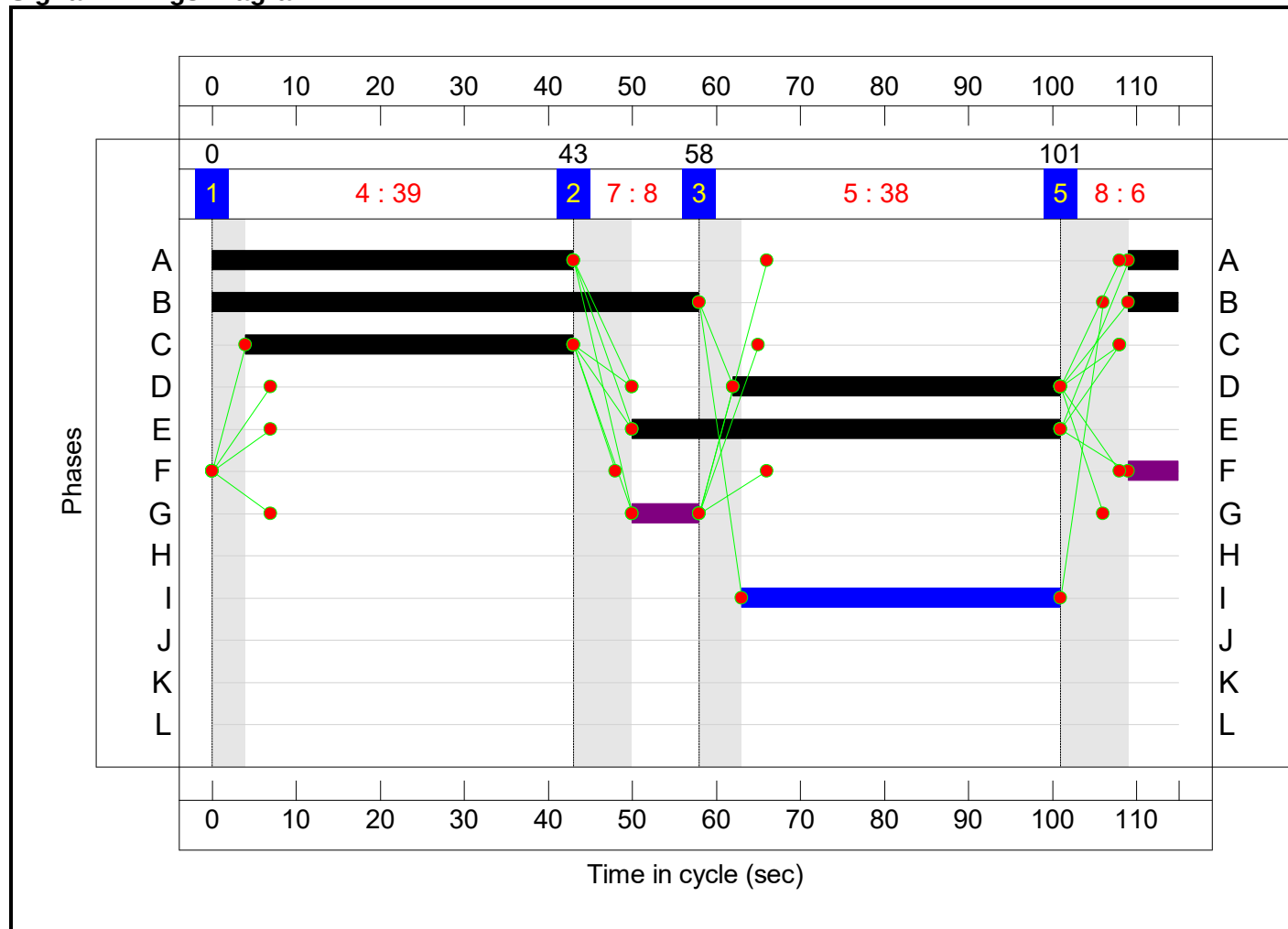


Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	163	280	179	622
	B	220	0	245	389	854
	C	410	322	0	170	902
	D	50	267	151	0	468
	Tot.	680	752	676	738	2846

Signal Timings Diagram



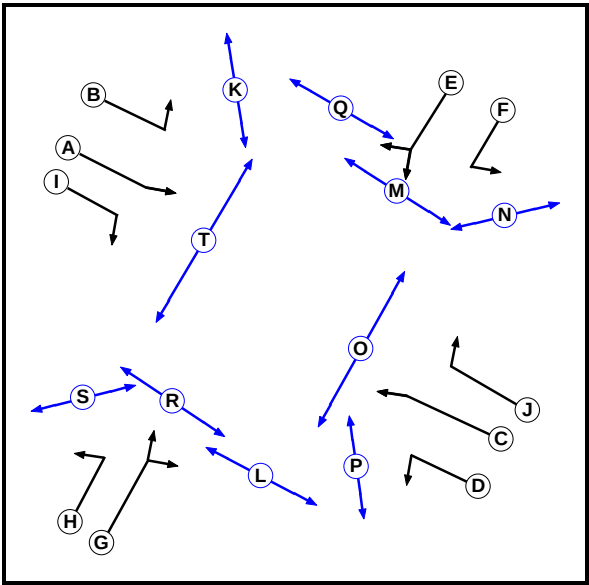
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	92.3%	-	-
Simonsway / Styal Road	-	-	-	-	-	-	-	92.3%	-	-
1/1	Finney Lane Left	U	B	64	45	1769	1000	4.5%	13.1	0.7
1/2+1/3	Finney Lane Ahead Right Left	U+O	A	49	577	1925:1990	341+309	88.7 : 88.7%	48.7	10.1
2/1	Styal Road (South) Left Ahead	U	E	51	634	1842	769	82.5%	42.7	20.2
2/2	Styal Road (South) Right	O	E	51	220	1792	405	54.3%	34.2	5.2
3/1	Simonsway (West) Left Ahead	U	C	39	536	1875	652	82.2%	49.2	17.9
3/2	Simonsway (West) Ahead Right	O	C	39	366	1965	447	81.9%	57.3	12.3
4/1	Styal Road (North) Left Ahead	U	D	39	317	1917	600	52.8%	38.8	8.8
4/2	Styal Road (North) Right Ahead	O	D	39	151	1967	164	92.3%	143.5	8.5
C1				PRC for Signalled Lanes (%):		-2.6	Total Delay for Signalled Lanes (pcuHr):		40.17	
				PRC Over All Lanes (%):		-2.6	Total Delay Over All Lanes(pcuHr):		40.17	

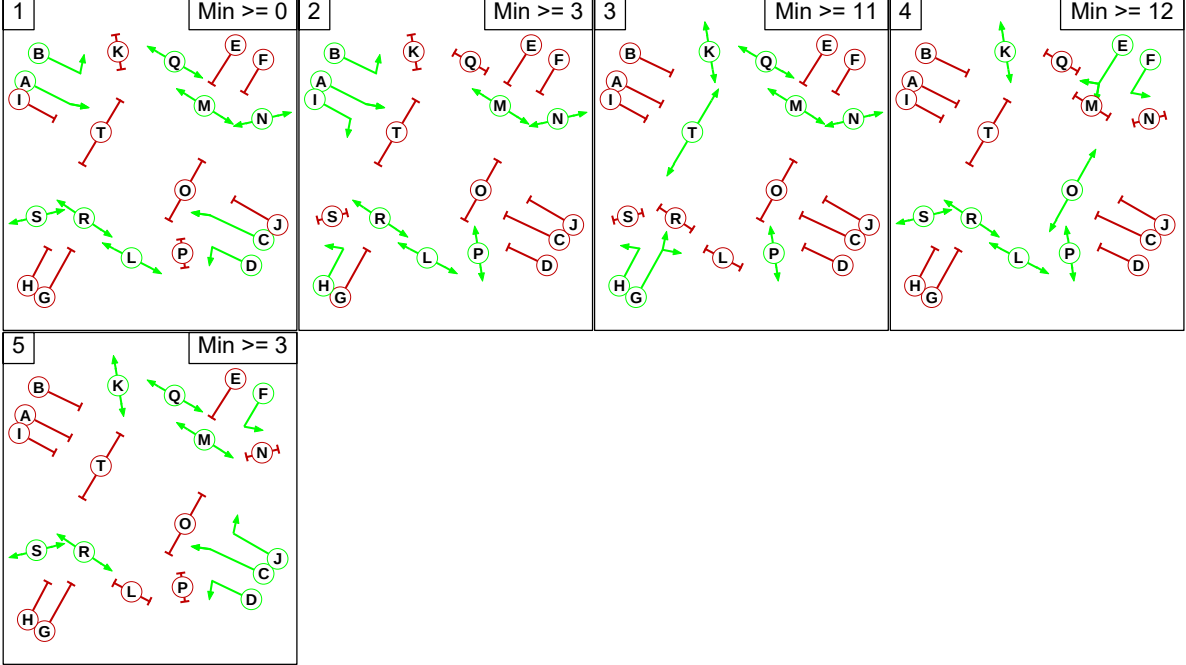
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	A555 / Styal Lane
Additional detail:	
File name:	J6 A555 Styal Road v2 - sat flows.lsg3x
Author:	
Company:	Vectos
Address:	61 Oxford St, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Phase Intergreens Matrix

	Starting Phase																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Terminating Phase	A	-	-	-	8	10	6	-	-	6	-	-	-	-	11	-	-	-	-	7
	B	-	-	-	-	-	4	-	-	4	7	-	-	-	-	-	-	-	-	-
	C	-	-	-	6	-	8	10	6	-	-	-	-	-	7	-	-	-	-	11
	D	-	-	-	5	-	-	-	5	-	-	-	-	-	-	7	-	-	-	-
	E	7	-	9	11	-	7	11	8	8	-	-	7	-	-	-	12	-	-	13
	F	5	-	-	-	-	5	-	-	-	-	-	-	7	-	-	-	-	-	-
	G	9	11	7	-	9	-	-	8	7	-	12	-	-	11	-	-	7	-	-
	H	-	-	5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	7	-
	I	-	-	7	10	6	-	6	-	5	-	-	-	-	-	-	11	-	-	5
	J	7	10	-	6	-	6	-	5	-	11	-	-	5	-	-	-	-	-	-
	K	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L	-	-	-	-	-	5	-	5	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	6	-	7	-	-	6	-	5	-	-	-	-	-	-	-	-	-	-	-
	P	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	S	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
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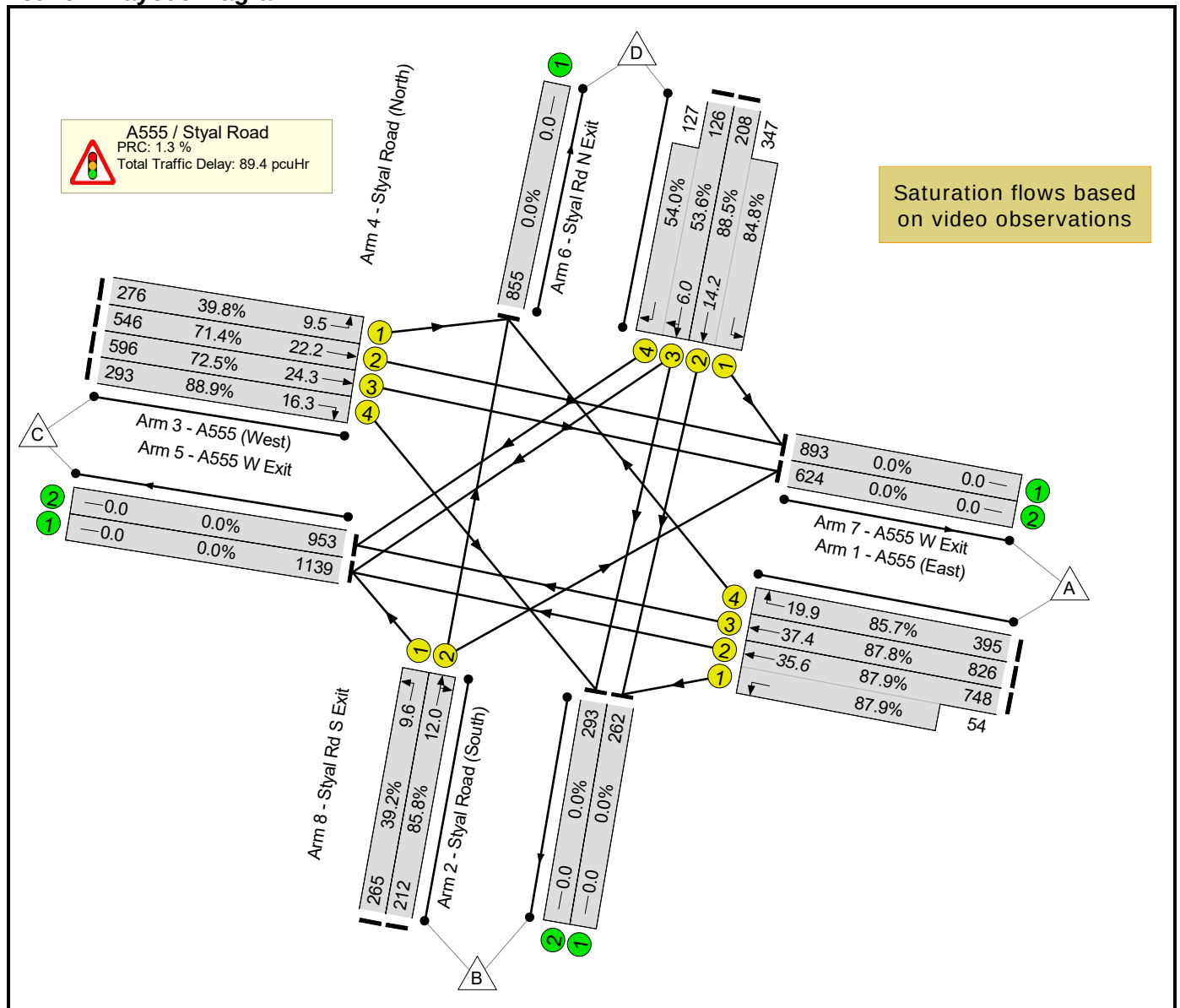
Lane Input Data

Junction: A555 / Styal 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 (A555 (East))	U	D	2	3	11.3	Geom	-	2.60	0.00	N	Arm 8 Left	35.00
1/2 (A555 (East))	U	C	2	3	60.0	User	2040	-	-	-	-	-
1/3 (A555 (East))	U	C	2	3	60.0	User	2160	-	-	-	-	-
1/4 (A555 (East))	U	J	2	3	60.0	User	2088	-	-	-	-	-
2/1 (Styal Road (South))	U	H	2	3	60.0	User	2120	-	-	-	-	-
2/2 (Styal Road (South))	U	G	2	3	60.0	User	2120	-	-	-	-	-
3/1 (A555 (West))	U	B	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 6 Left	30.00

Basic Results JL

3/2 (A555 (West))	U	A	2	3	60.0	User	2010	-	-	-	-	-
3/3 (A555 (West))	U	A	2	3	60.0	User	2160	-	-	-	-	-
3/4 (A555 (West))	U	I	2	3	60.0	User	1990	-	-	-	-	-
4/1 (Styal Road (North))	U	F	2	3	20.9	User	2060	-	-	-	-	-
4/2 (Styal Road (North))	U	E	2	3	60.0	User	2016	-	-	-	-	-
4/3 (Styal Road (North))	U	E	2	3	60.0	User	2016	-	-	-	-	-
4/4 (Styal Road (North))	U	E	2	3	14.8	User	2016	-	-	-	-	-
5/1 (A555 W Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (A555 W Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Styal Rd N Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A555 W Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2 (A555 W Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Styal Rd S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Styal Rd S Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Network Layout Diagram

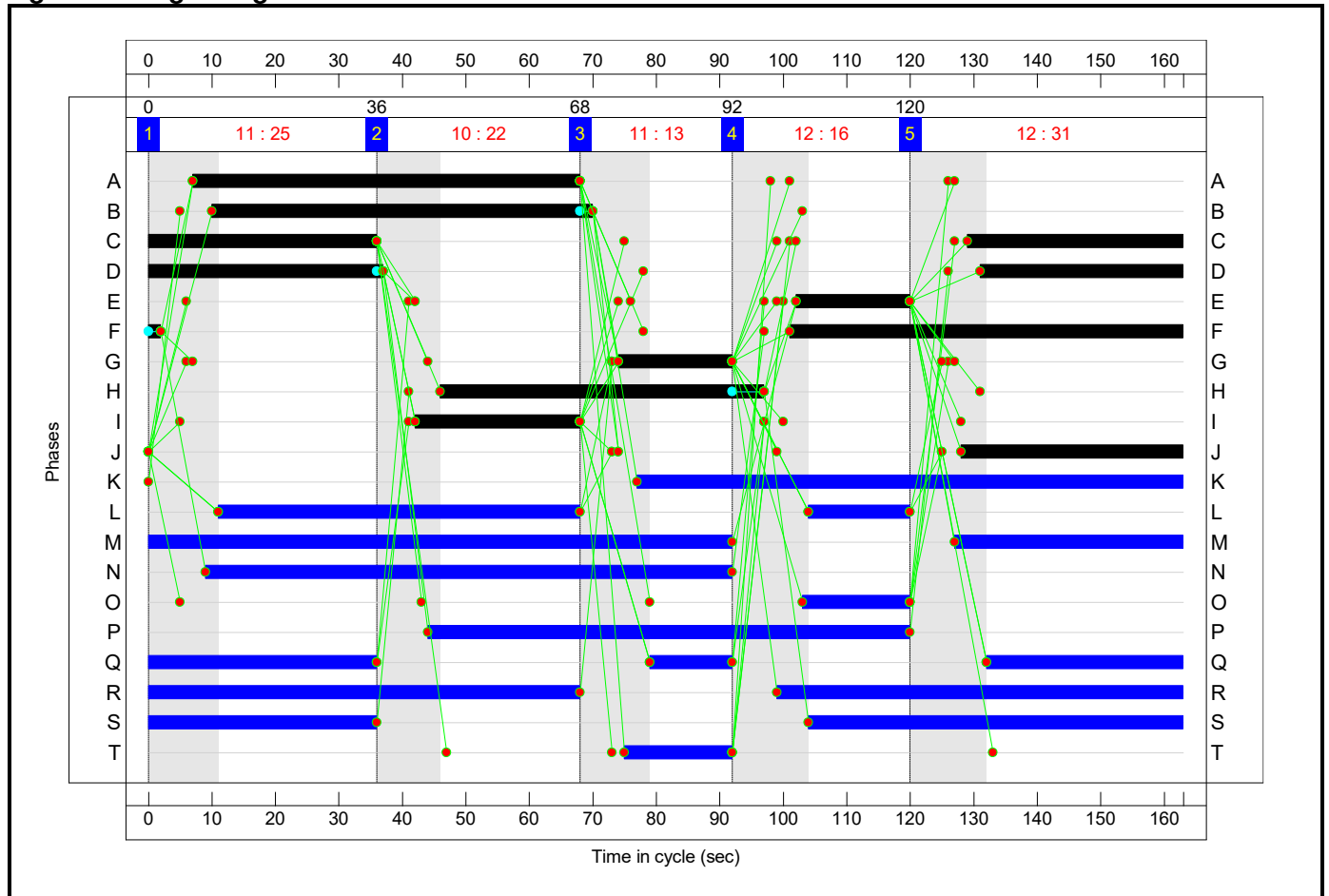


Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	54	1574	395	2023
	B	28	0	265	184	477
	C	1142	293	0	276	1711
	D	347	208	253	0	808
	Tot.	1517	555	2092	855	5019

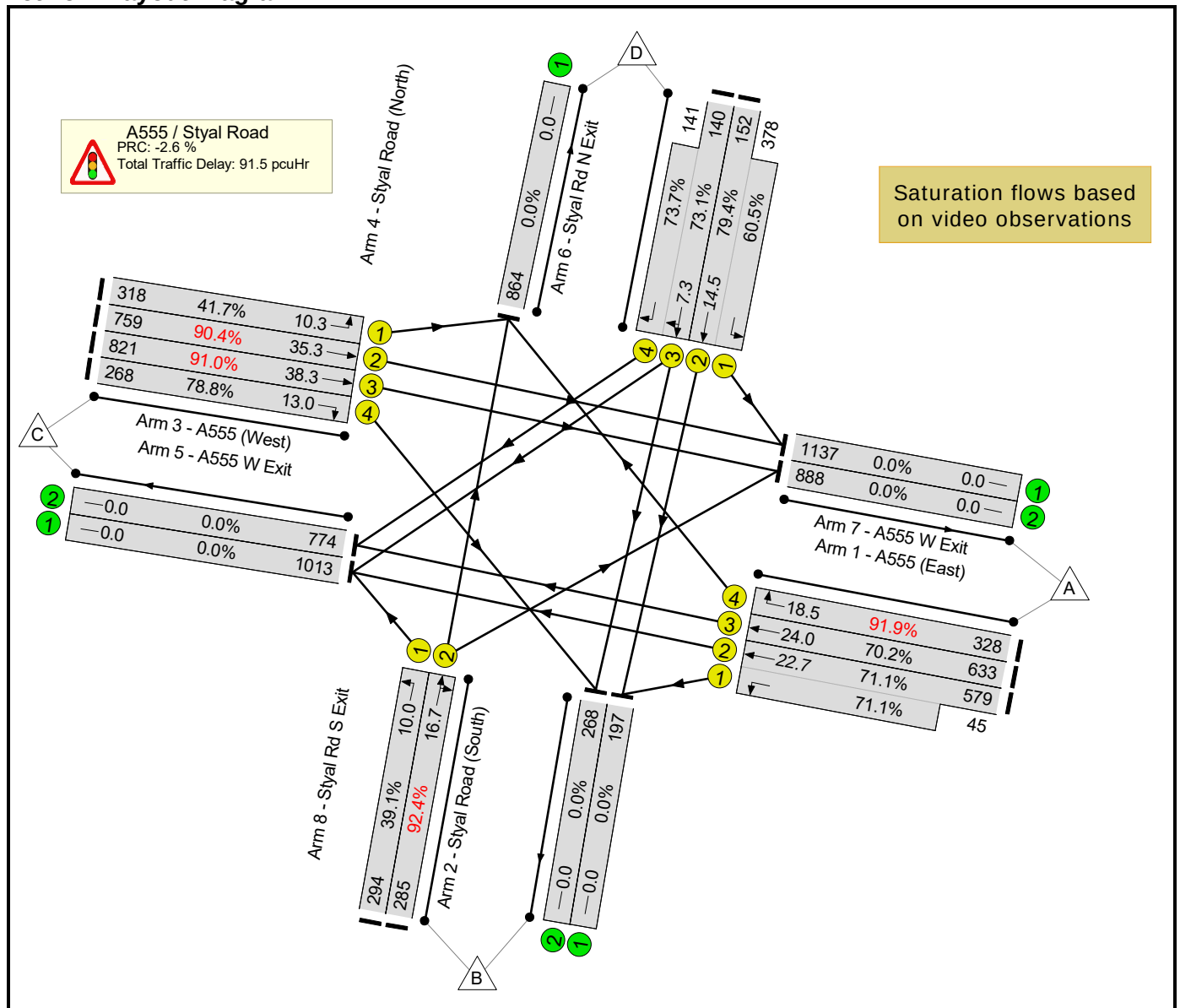
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
Network	-	-	-	-	-	-	-	88.9%	-	-	
A555 / Styal Road	-	-	-	-	-	-	-	88.9%	-	-	
1/2+1/1	A555 (East) Ahead Left	U	C D	70:69	802	2040:1932	851+61	87.9 : 87.9%	56.6	35.6	
1/3	A555 (East) Ahead	U	C	70	826	2160	941	87.8%	56.8	37.4	
1/4	A555 (East) Right	U	J	35	395	2088	461	85.7%	86.1	19.9	
2/1	Styal Road (South) Left	U	H	51	265	2120	676	39.2%	47.6	9.6	
2/2	Styal Road (South) Ahead Right	U	G	18	212	2120	247	85.8%	115.3	12.0	
3/1	A555 (West) Left	U	B	60	276	1852	693	39.8%	41.8	9.5	
3/2	A555 (West) Ahead	U	A	61	546	2010	765	71.4%	51.1	22.2	
3/3	A555 (West) Ahead	U	A	61	596	2160	822	72.5%	51.1	24.3	
3/4	A555 (West) Right	U	I	26	293	1990	330	88.9%	108.0	16.3	
4/2+4/1	Styal Road (North) Left Ahead	U	E F	18:64	555	2016:2060	235+409	88.5 : 84.8%	67.7	14.2	
4/3+4/4	Styal Road (North) Right Ahead	U	E	18	253	2016:2016	235+235	53.6 : 54.0%	76.1	6.0	
C1				PRC for Signalled Lanes (%):		1.3	Total Delay for Signalled Lanes (pcuHr):				89.38
				PRC Over All Lanes (%):		1.3	Total Delay Over All Lanes(pcuHr):				89.38

Network Layout Diagram

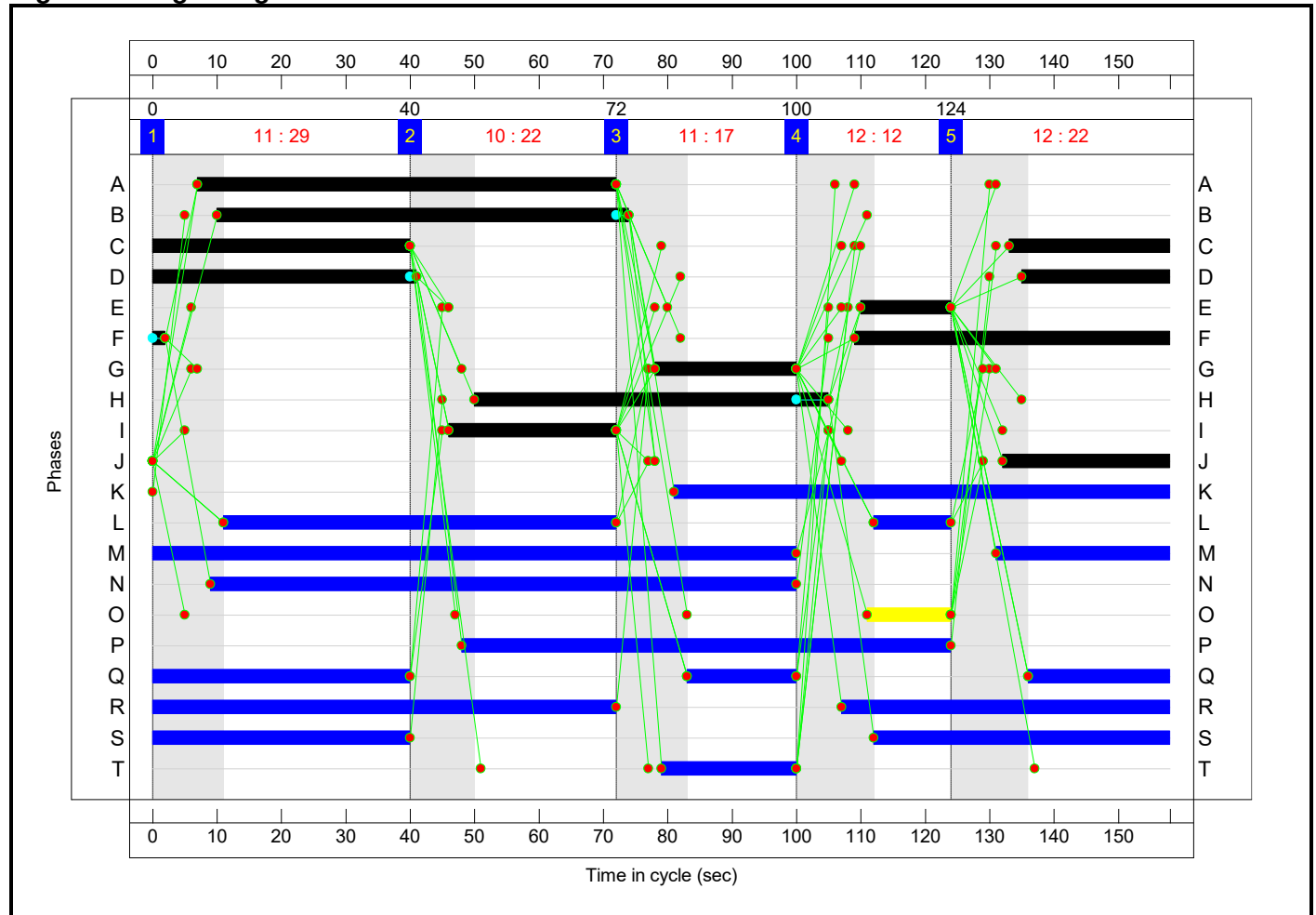


Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	45	1212	328	1585
	B	67	0	294	218	579
	C	1580	268	0	318	2166
	D	378	152	281	0	811
	Tot.	2025	465	1787	864	5141

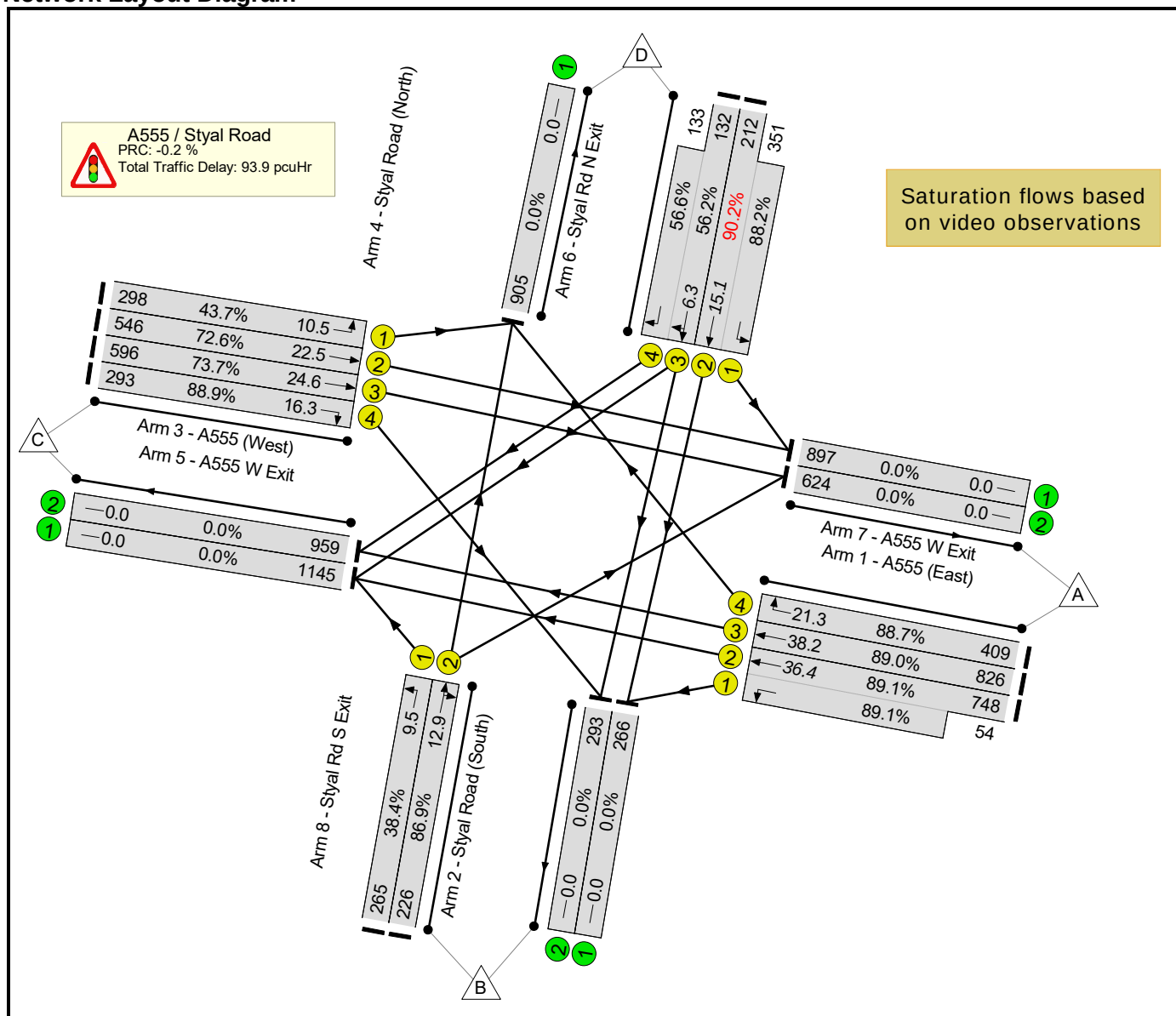
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	92.4%	-	-
A555 / Styal Road	-	-	-	-	-	-	-	92.4%	-	-
1/2+1/1	A555 (East) Ahead Left	U	C D	65:64	624	2040:1932	815+63	71.1 : 71.1%	44.2	22.7
1/3	A555 (East) Ahead	U	C	65	633	2160	902	70.2%	44.5	24.0
1/4	A555 (East) Right	U	J	26	328	2088	357	91.9%	112.4	18.5
2/1	Styal Road (South) Left	U	H	55	294	2120	751	39.1%	42.2	10.0
2/2	Styal Road (South) Ahead Right	U	G	22	285	2120	309	92.4%	122.2	16.7
3/1	A555 (West) Left	U	B	64	318	1852	762	41.7%	37.1	10.3
3/2	A555 (West) Ahead	U	A	65	759	2010	840	90.4%	63.2	35.3
3/3	A555 (West) Ahead	U	A	65	821	2160	902	91.0%	63.1	38.3
3/4	A555 (West) Right	U	I	26	268	1990	340	78.8%	86.6	13.0
4/2+4/1	Styal Road (North) Left Ahead	U	E F	14:51	530	2016:2060	191+625	79.4 : 60.5%	57.4	14.5
4/3+4/4	Styal Road (North) Right Ahead	U	E	14	281	2016:2016	191+191	73.1 : 73.7%	86.8	7.3
C1				PRC for Signalled Lanes (%):		-2.6	Total Delay for Signalled Lanes (pcuHr):		91.52	
				PRC Over All Lanes (%):		-2.6	Total Delay Over All Lanes(pcuHr):		91.52	

Network Layout Diagram

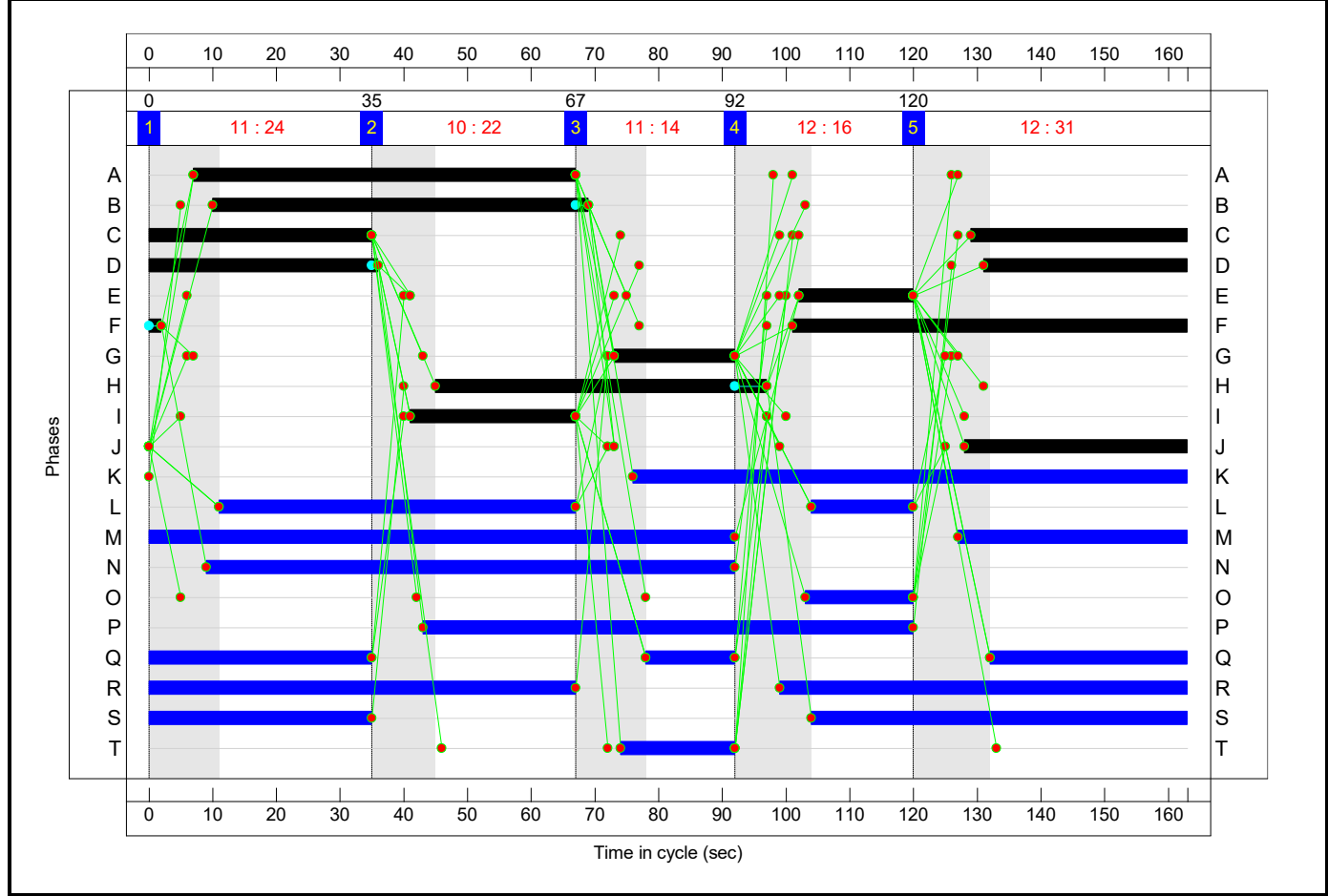


Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	54	1574	409	2037
	B	28	0	265	198	491
	C	1142	293	0	298	1733
	D	351	212	265	0	828
	Tot.	1521	559	2104	905	5089

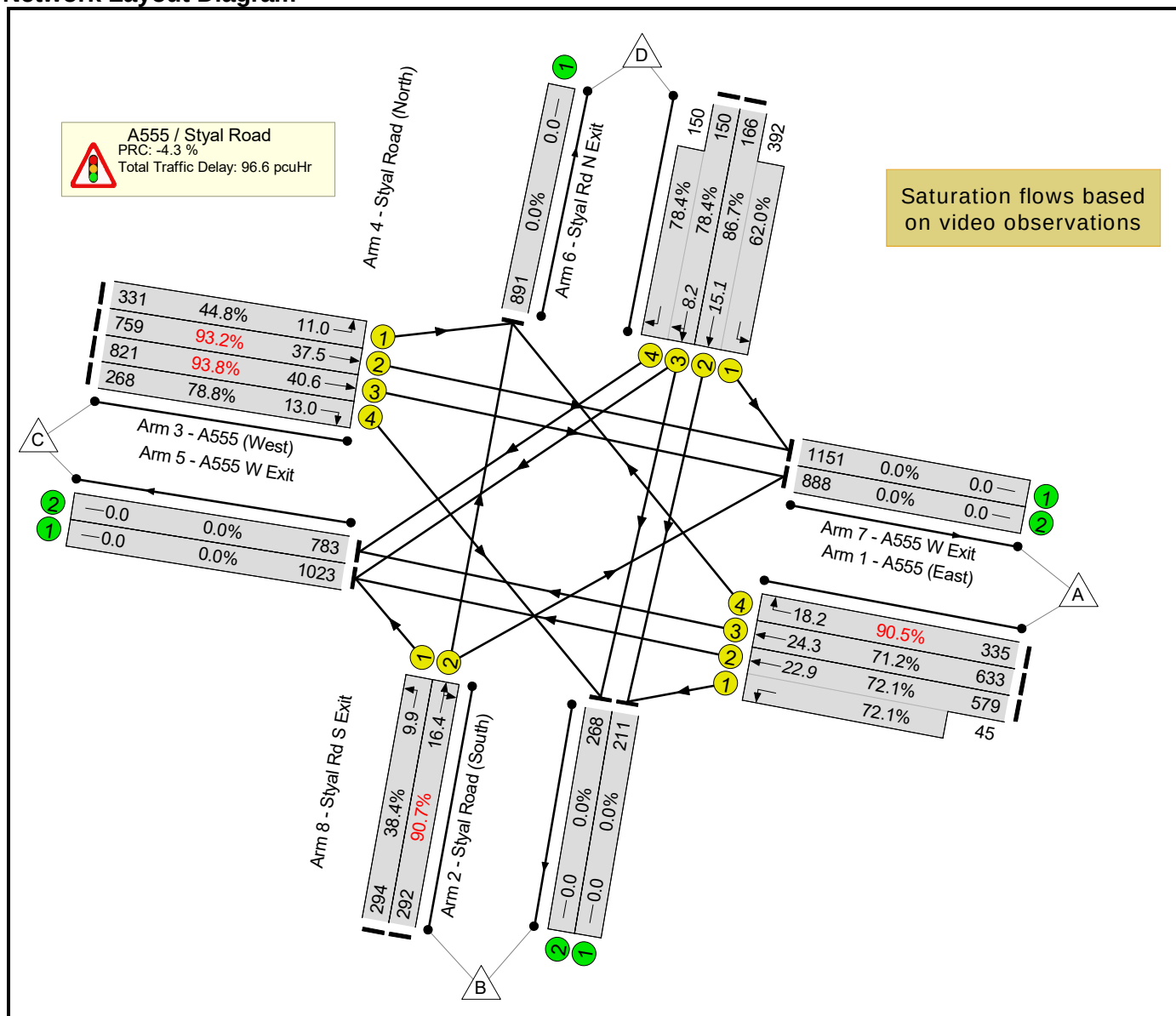
Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	90.2%	-	-
A555 / Styal Road	-	-	-	-	-	-	-	90.2%	-	-
1/2+1/1	A555 (East) Ahead Left	U	C D	69:68	802	2040:1932	839+61	89.1 : 89.1%	59.2	36.4
1/3	A555 (East) Ahead	U	C	69	826	2160	928	89.0%	59.4	38.2
1/4	A555 (East) Right	U	J	35	409	2088	461	88.7%	92.0	21.3
2/1	Styal Road (South) Left	U	H	52	265	2120	689	38.4%	46.7	9.5
2/2	Styal Road (South) Ahead Right	U	G	19	226	2120	260	86.9%	115.4	12.9
3/1	A555 (West) Left	U	B	59	298	1852	682	43.7%	43.5	10.5
3/2	A555 (West) Ahead	U	A	60	546	2010	752	72.6%	52.4	22.5
3/3	A555 (West) Ahead	U	A	60	596	2160	808	73.7%	52.4	24.6
3/4	A555 (West) Right	U	I	26	293	1990	330	88.9%	108.0	16.3
4/2+4/1	Styal Road (North) Left Ahead	U	E F	18:64	563	2016:2060	235+398	90.2 : 88.2%	72.2	15.1
4/3+4/4	Styal Road (North) Right Ahead	U	E	18	265	2016:2016	235+235	56.2 : 56.6%	76.8	6.3
C1				PRC for Signalled Lanes (%):		-0.2	Total Delay for Signalled Lanes (pcuHr):		93.93	
				PRC Over All Lanes (%):		-0.2	Total Delay Over All Lanes(pcuHr):		93.93	

Network Layout Diagram

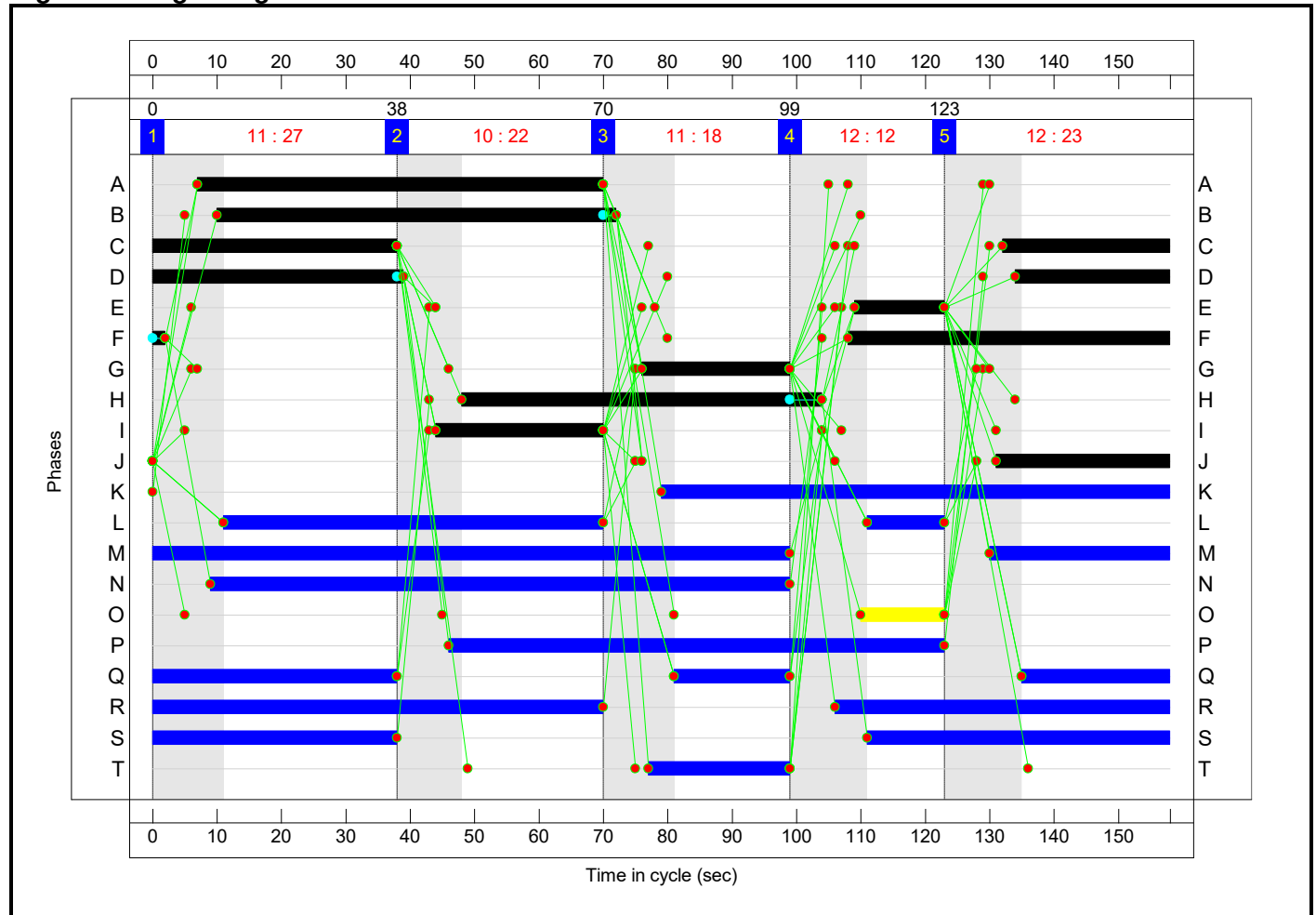


Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	45	1212	335	1592
	B	67	0	294	225	586
	C	1580	268	0	331	2179
	D	392	166	300	0	858
	Tot.	2039	479	1806	891	5215

Signal Timings Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	93.8%	-	-
A555 / Styal Road	-	-	-	-	-	-	-	93.8%	-	-
1/2+1/1	A555 (East) Ahead Left	U	C D	64:63	624	2040:1932	803+62	72.1 : 72.1%	45.4	22.9
1/3	A555 (East) Ahead	U	C	64	633	2160	889	71.2%	45.7	24.3
1/4	A555 (East) Right	U	J	27	335	2088	370	90.5%	105.7	18.2
2/1	Styal Road (South) Left	U	H	56	294	2120	765	38.4%	41.3	9.9
2/2	Styal Road (South) Ahead Right	U	G	23	292	2120	322	90.7%	113.6	16.4
3/1	A555 (West) Left	U	B	62	331	1852	738	44.8%	39.2	11.0
3/2	A555 (West) Ahead	U	A	63	759	2010	814	93.2%	72.0	37.5
3/3	A555 (West) Ahead	U	A	63	821	2160	875	93.8%	72.3	40.6
3/4	A555 (West) Right	U	I	26	268	1990	340	78.8%	86.6	13.0
4/2+4/1	Styal Road (North) Left Ahead	U	E F	14:52	558	2016:2060	191+632	86.7 : 62.0%	58.0	15.1
4/3+4/4	Styal Road (North) Right Ahead	U	E	14	300	2016:2016	191+191	78.4 : 78.4%	90.8	8.2
C1				PRC for Signalled Lanes (%):		-4.3	Total Delay for Signalled Lanes (pcuHr):		96.58	
				PRC Over All Lanes (%):		-4.3	Total Delay Over All Lanes(pcuHr):		96.58	

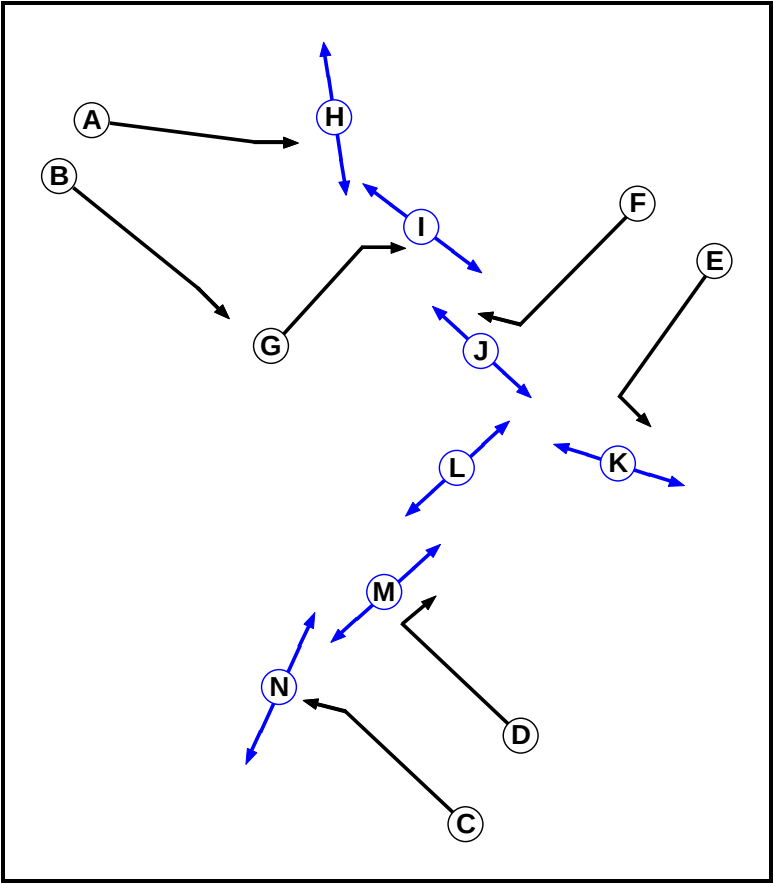
Basic Results Summary

Basic Results Summary

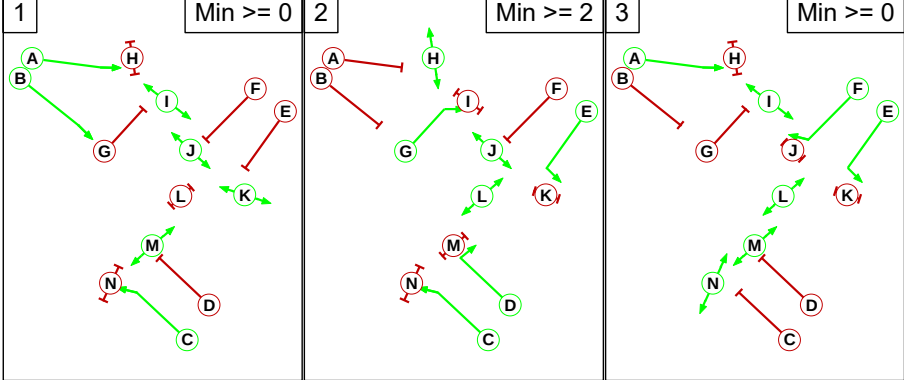
User and Project Details

Project:	Atlas Business Park
Title:	
Location:	
Additional detail:	
File name:	J7 A555 Outwood Ln v1.lsg3x
Author:	
Company:	Vectos
Address:	61 Oxford Road, Manchester, M1 6EQ

Phase Diagram



Stage Diagram



Basic Results Summary

Phase Intergreens Matrix

Terminating Phase	Starting Phase													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	A	-	-	-	-	-	7	7	-	-	-	-	-	-
	B	-	-	6	8	6	-	-	-	-	-	9	-	-
	C	-	-	-	-	5	-	-	-	-	-	-	-	6
	D	-	8	-	-	6	-	-	-	-	-	-	5	-
	E	-	6	-	-	-	-	-	-	-	6	-	-	-
	F	-	6	9	6	-	-	-	-	5	-	-	-	-
	G	7	-	-	-	-	-	-	5	-	-	-	-	-
	H	7	-	-	-	-	-	-	-	-	-	-	-	-
	I	-	-	-	-	-	5	-	-	-	-	-	-	-
	J	-	-	-	-	7	-	-	-	-	-	-	-	-
	K	-	-	-	-	6	-	-	-	-	-	-	-	-
	L	-	6	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	5	-	-	-	-	-	-	-	-	-
	N	-	-	7	-	-	-	-	-	-	-	-	-	-

Lane Input Data

Junction: A555 / Outwood Lane												
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 (A555 Outwood Ln (West) EB)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
1/2 (A555 Outwood Ln (West) EB)	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	Inf
2/1 (Ringway Rd (East) WB)	U	E	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	30.00
2/2 (Ringway Rd (East) WB)	U	F	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 8 Ahead	25.00
2/3 (Ringway Rd (East) WB)	U	F	2	3	16.5	Geom	-	3.60	0.00	N	Arm 8 Ahead	25.00
3/1 (Outwood Ln (South) EB)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 8 Ahead	Inf
3/2 (Outwood Ln (South) EB)	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
3/3 (Outwood Ln (South) EB)	U	D	2	3	7.4	Geom	-	3.60	0.00	Y	Arm 5 Right	17.50

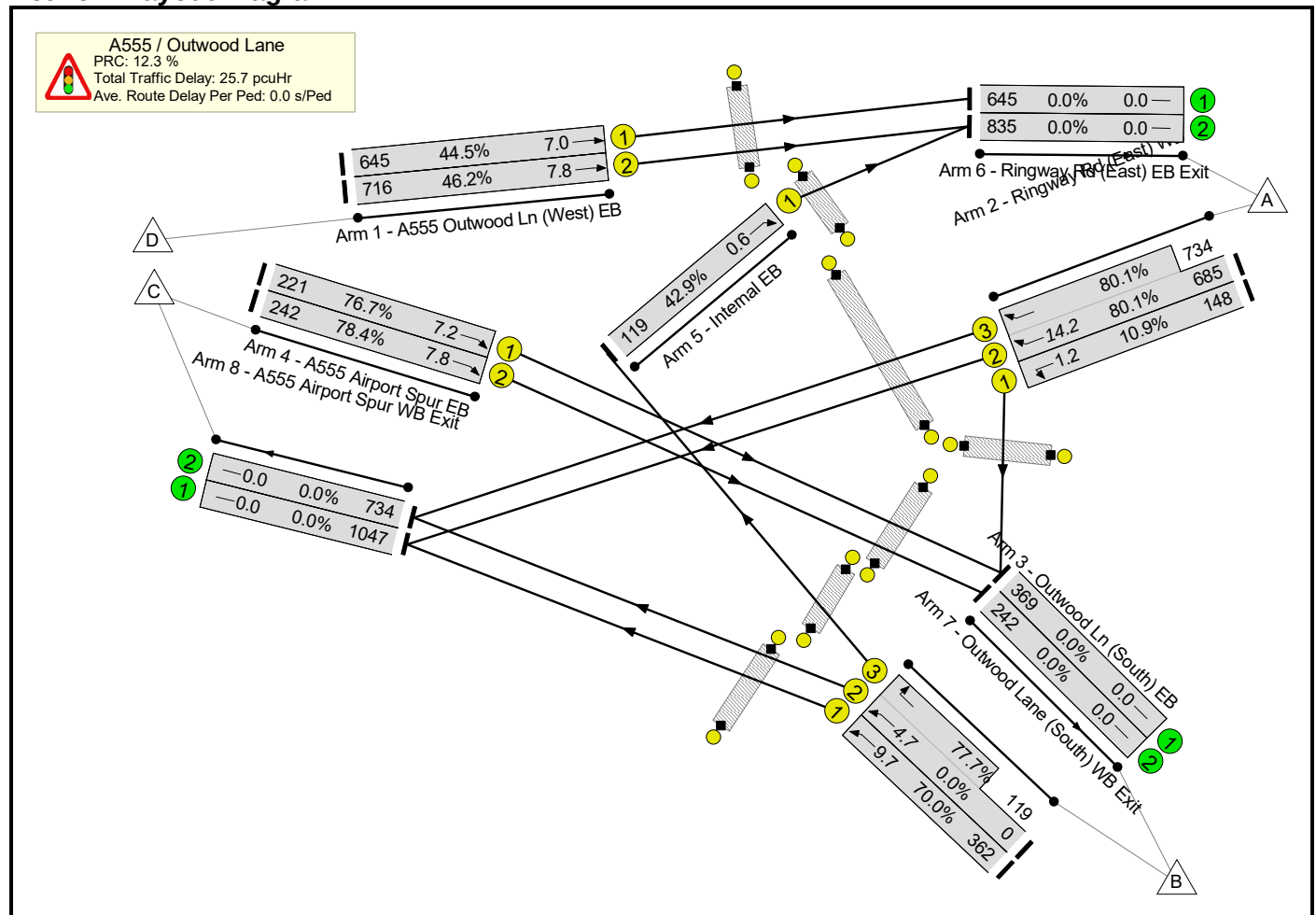
Basic Results Summary

4/1 (A555 Airport Spur EB)	U	B	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 7 Ahead	Inf
4/2 (A555 Airport Spur EB)	U	B	2	3	60.0	Geom	-	3.40	0.00	N	Arm 7 Ahead	Inf
5/1 (Internal EB)	U	G	2	3	3.0	Geom	-	5.00	0.00	Y	Arm 6 Ahead	35.00
6/1 (Ringway Rd (East) EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Ringway Rd (East) EB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Outwood Lane (South) WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2 (Outwood Lane (South) WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A555 Airport Spur WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A555 Airport Spur WB Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

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

Network Layout Diagram

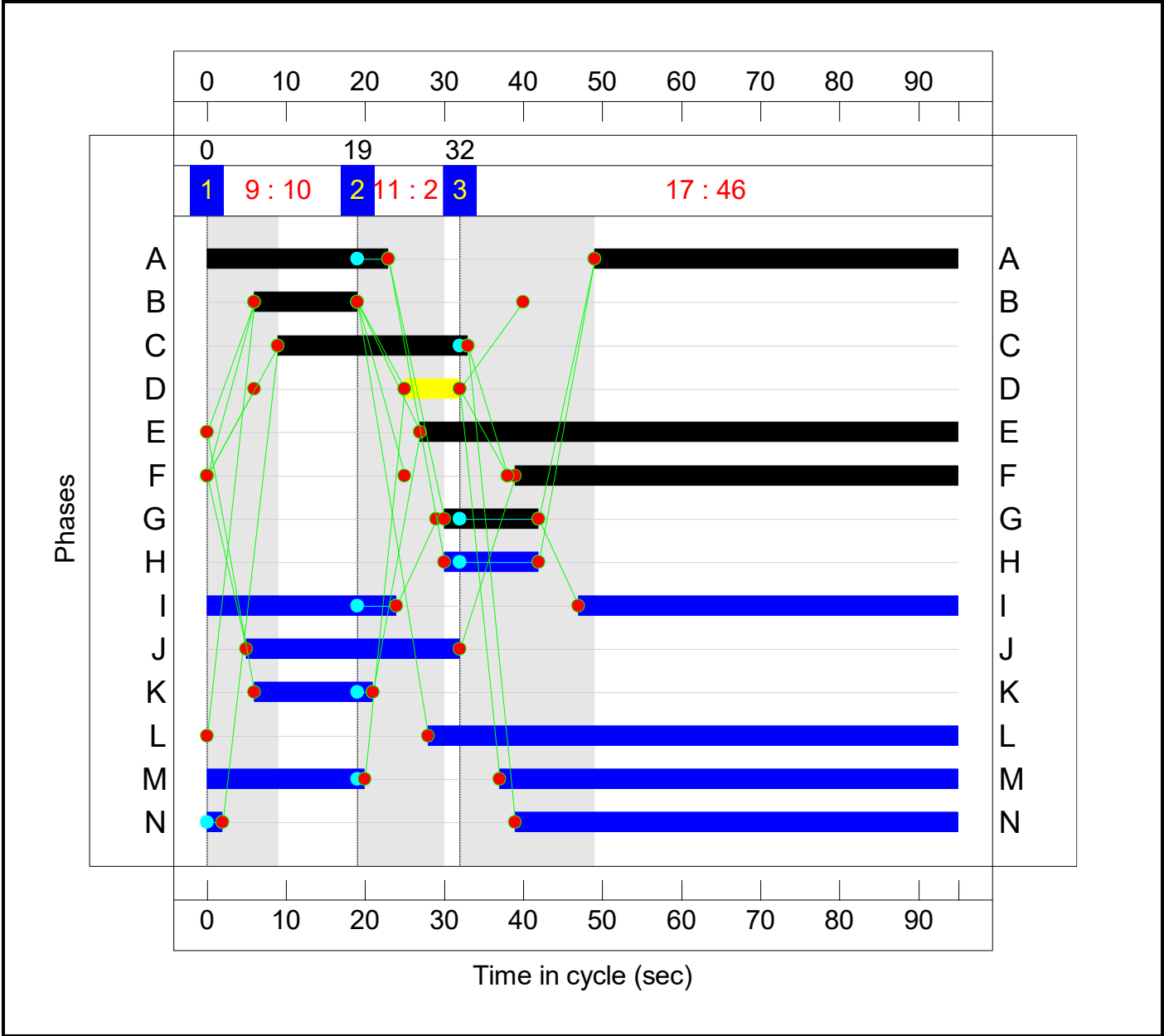


Traffic Flows, Actual

Actual Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	148	1419	0	1567
	B	119	0	362	0	481
	C	0	463	0	0	463
	D	1361	0	0	0	1361
	Tot.	1480	611	1781	0	3872

Signal Timings Diagram



Basic Results Summary

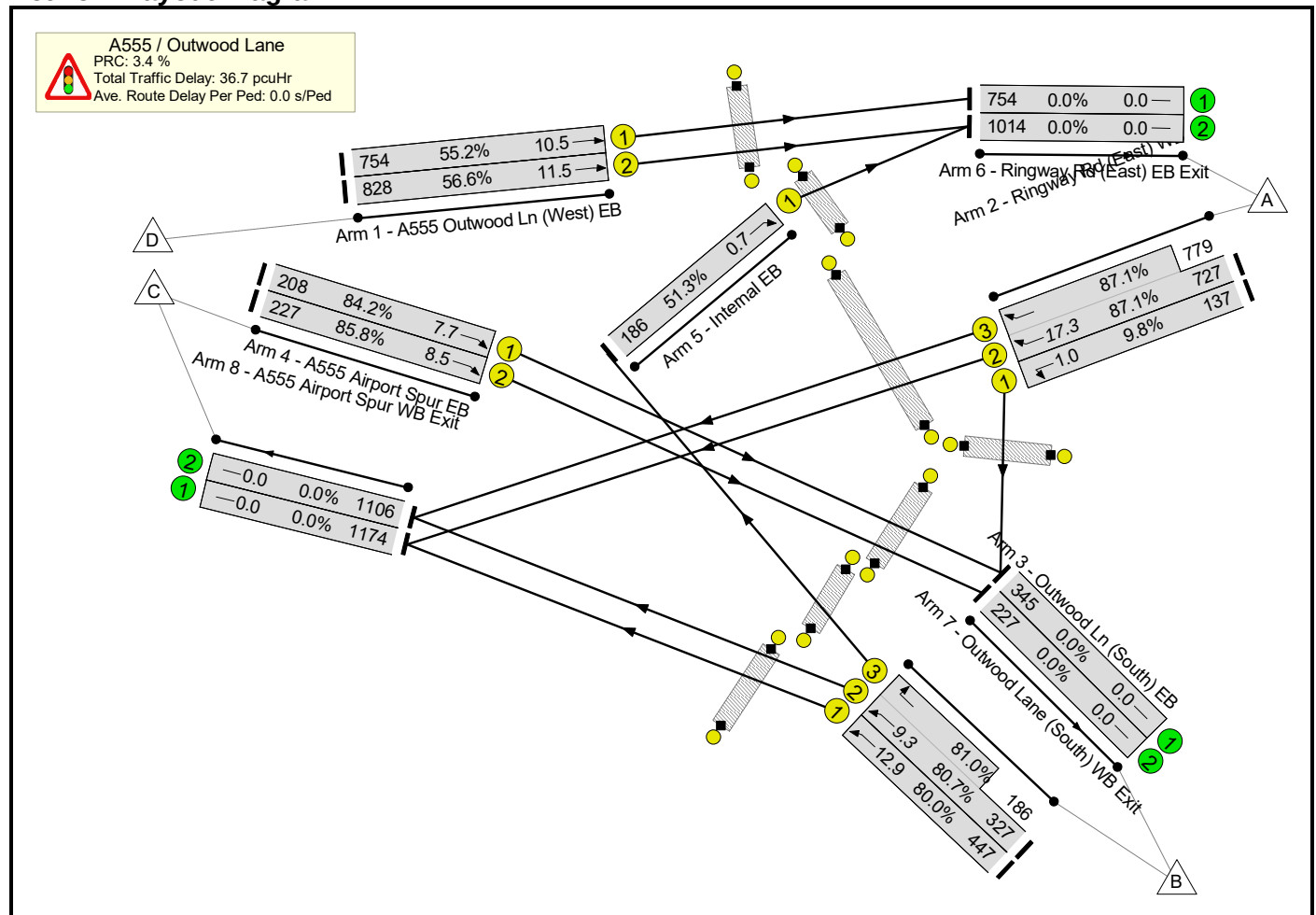
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	80.1%	-	-
A555 / Outwood Lane	-	-	-	-	-	-	-	80.1%	-	-
1/1	A555 Outwood Ln (West) EB Ahead	U	A	69	645	1965	1448	44.5%	7.1	7.0
1/2	A555 Outwood Ln (West) EB Ahead	U	A	69	716	2105	1551	46.2%	7.1	7.8
2/1	Ringway Rd (East) WB Left	U	E	68	148	1871	1359	10.9%	5.4	1.2
2/2+2/3	Ringway Rd (East) WB Ahead	U	F	56	1419	1863:1995	855+916	80.1 : 80.1%	17.1	14.2
3/1	Outwood Ln (South) EB Ahead	U	C	24	362	1965	517	70.0%	43.1	9.7
3/2+3/3	Outwood Ln (South) EB Right Ahead	U	C D	24:7	119	2105:1819	0+153	0.0 : 77.7%	90.8	4.7
4/1	A555 Airport Spur EB Ahead	U	B	13	221	1955	288	76.7%	64.6	7.2
4/2	A555 Airport Spur EB Ahead	U	B	13	242	2095	309	78.4%	64.7	7.8
5/1	Internal EB Ahead	U	G	12	119	2028	278	42.9%	11.6	0.6
Ped Link: P1	Unnamed Ped Link	-	H	12	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	I	72	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	J	27	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	K	15	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	L	67	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	M	78	0	-	0	0.0%	-	-
Ped Link: P7	Unnamed Ped Link	-	N	58	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		12.3	Total Delay for Signalled Lanes (pcuHr):		25.68	
				PRC Over All Lanes (%):		12.3	Total Delay Over All Lanes (pcuHr):		25.68	

Basic Results Summary

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

Network Layout Diagram

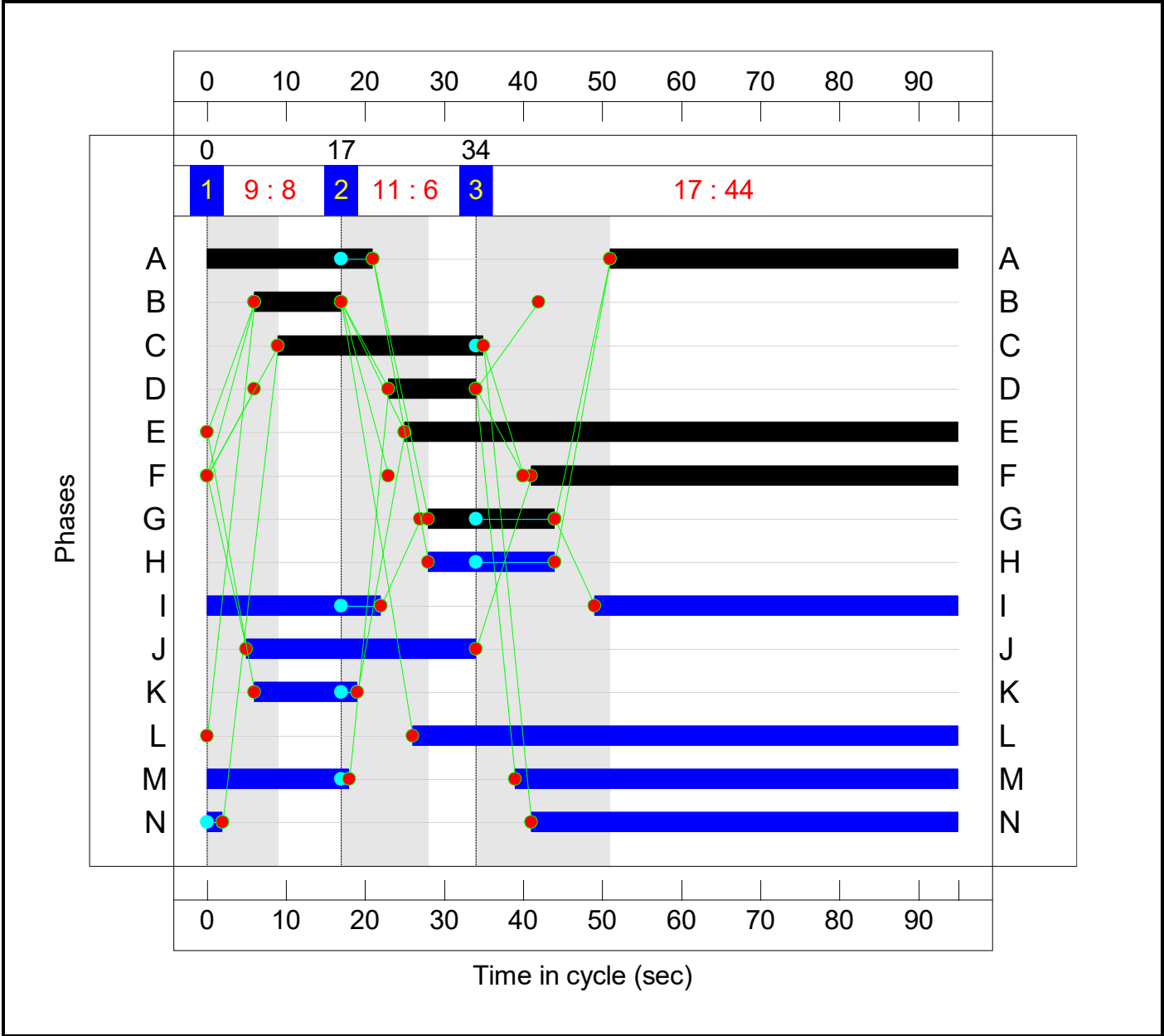


Traffic Flows, Actual

Actual Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	137	1506	0	1643
	B	186	0	774	0	960
	C	0	435	0	0	435
	D	1582	0	0	0	1582
	Tot.	1768	572	2280	0	4620

Signal Timings Diagram



Basic Results Summary

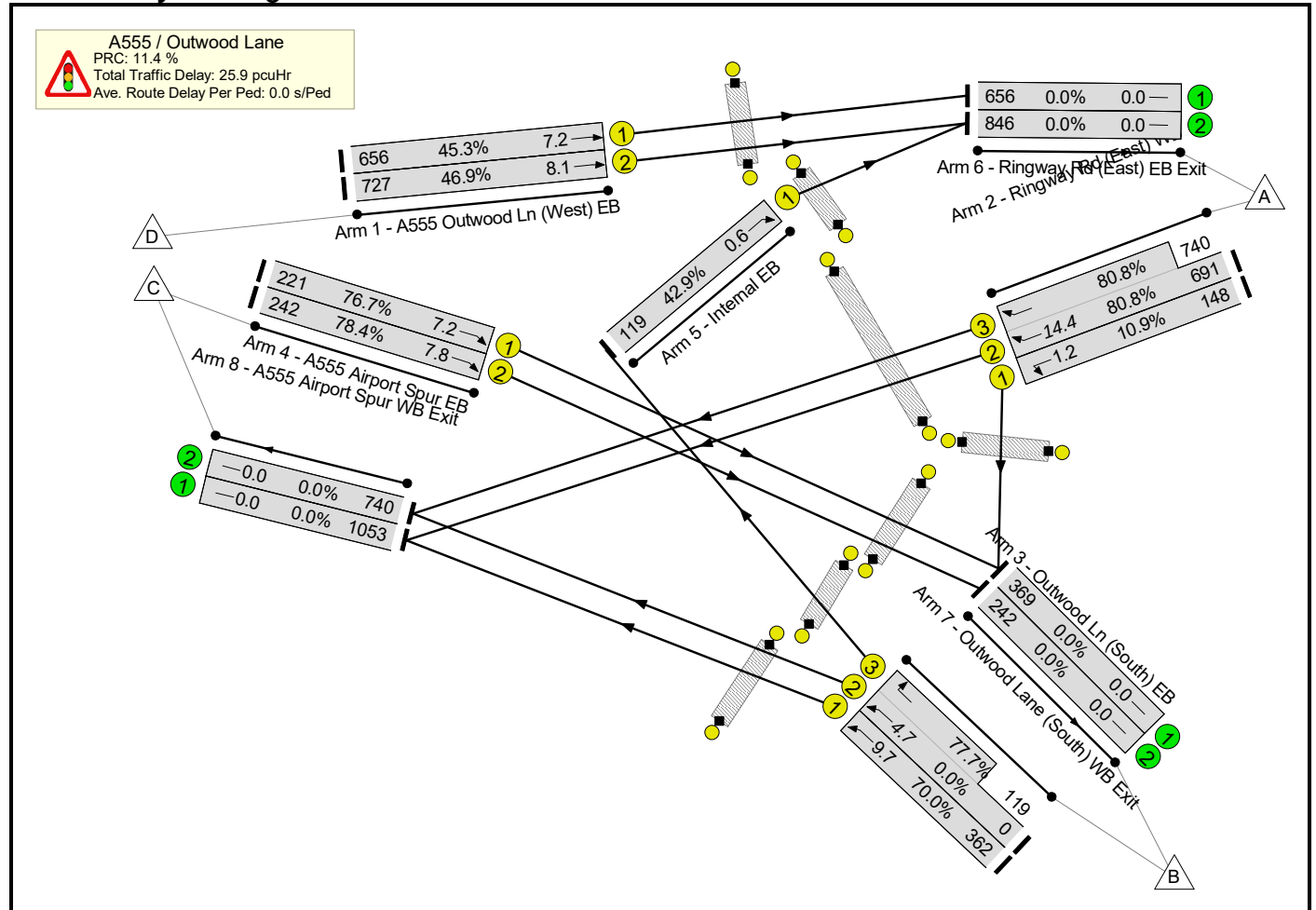
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	87.1%	-	-
A555 / Outwood Lane	-	-	-	-	-	-	-	87.1%	-	-
1/1	A555 Outwood Ln (West) EB Ahead	U	A	65	754	1965	1365	55.2%	10.1	10.5
1/2	A555 Outwood Ln (West) EB Ahead	U	A	65	828	2105	1462	56.6%	10.1	11.5
2/1	Ringway Rd (East) WB Left	U	E	70	137	1871	1398	9.8%	4.7	1.0
2/2+2/3	Ringway Rd (East) WB Ahead	U	F	54	1506	1863:1995	835+895	87.1 : 87.1%	21.6	17.3
3/1	Outwood Ln (South) EB Ahead	U	C	26	447	1965	558	80.0%	47.1	12.9
3/2+3/3	Outwood Ln (South) EB Right Ahead	U	C D	26:11	513	2105:1819	405+230	80.7 : 81.0%	47.3	9.3
4/1	A555 Airport Spur EB Ahead	U	B	11	208	1955	247	84.2%	81.8	7.7
4/2	A555 Airport Spur EB Ahead	U	B	11	227	2095	265	85.8%	82.6	8.5
5/1	Internal EB Ahead	U	G	16	186	2028	363	51.3%	10.3	0.7
Ped Link: P1	Unnamed Ped Link	-	H	16	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	I	68	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	J	29	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	K	13	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	L	69	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	M	74	0	-	0	0.0%	-	-
Ped Link: P7	Unnamed Ped Link	-	N	56	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		3.4	Total Delay for Signalled Lanes (pcuHr):		36.73	
				PRC Over All Lanes (%):		3.4	Total Delay Over All Lanes (pcuHr):		36.73	

Basic Results Summary

Scenario 3: '2030 Base NG with Dev AM' (FG3: '2030 Base with Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

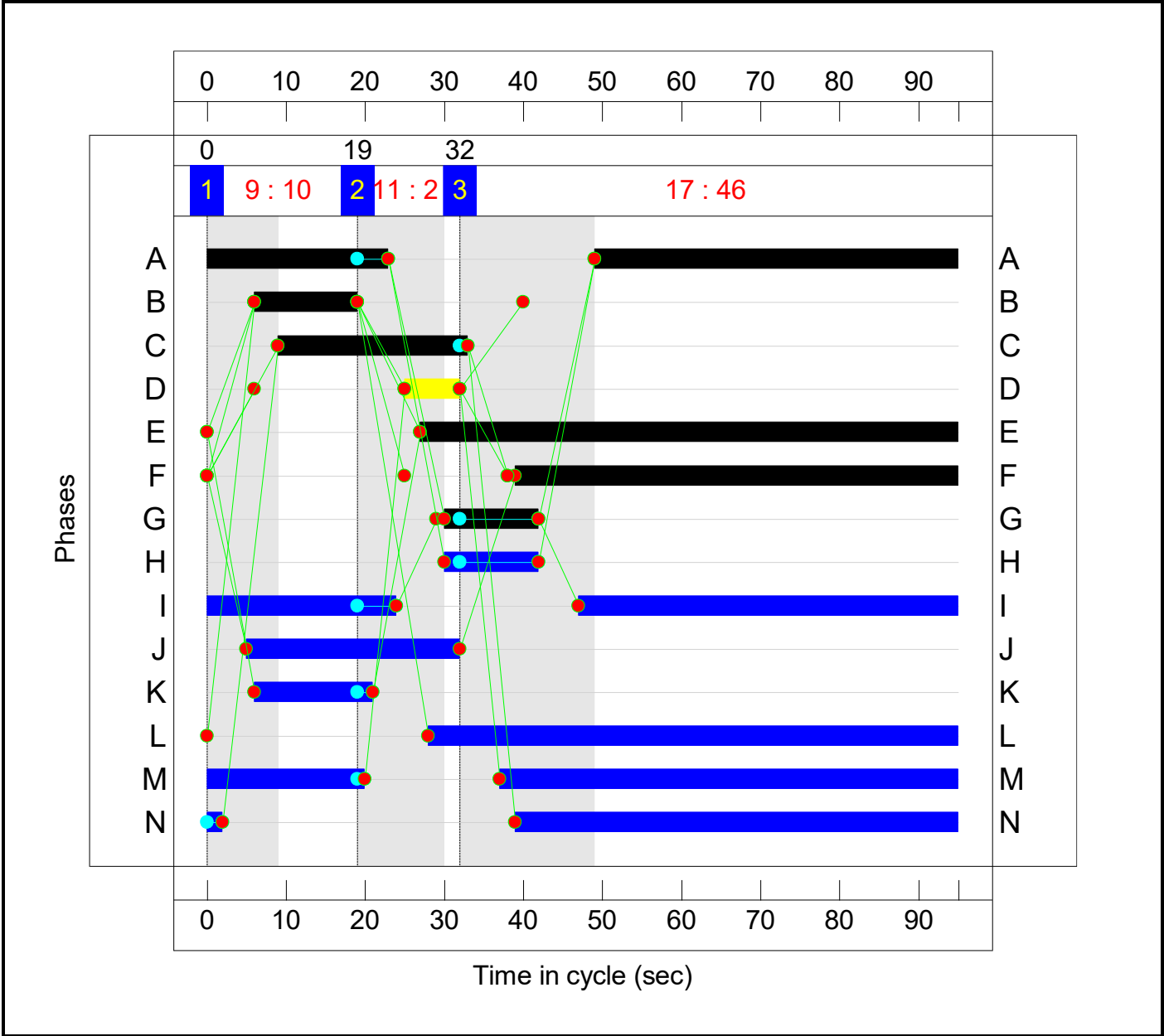


Traffic Flows, Actual

Actual Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	148	1431	0	1579
	B	119	0	362	0	481
	C	0	463	0	0	463
	D	1383	0	0	0	1383
	Tot.	1502	611	1793	0	3906

Signal Timings Diagram



Basic Results Summary

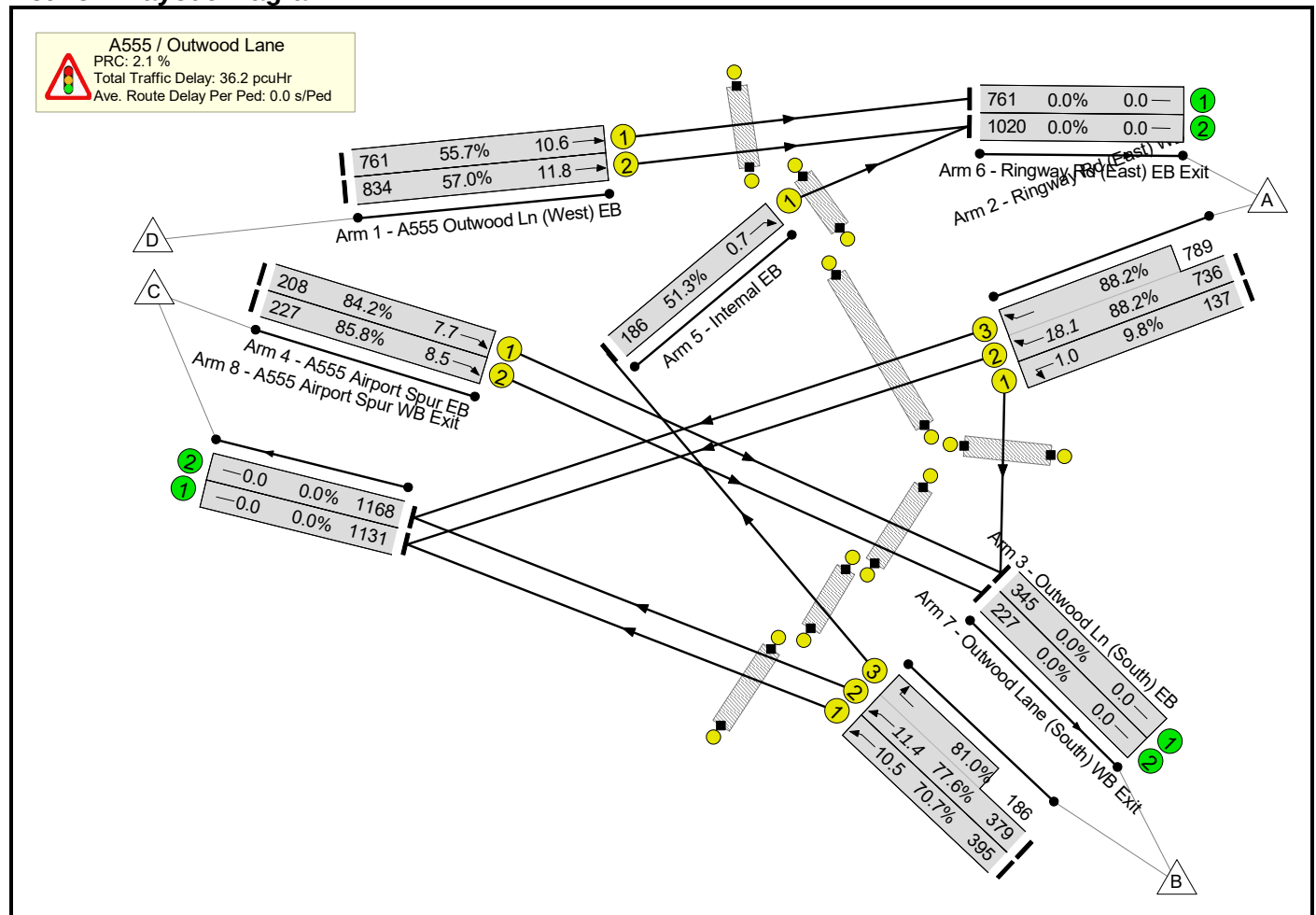
Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	80.8%	-	-
A555 / Outwood Lane	-	-	-	-	-	-	-	80.8%	-	-
1/1	A555 Outwood Ln (West) EB Ahead	U	A	69	656	1965	1448	45.3%	7.2	7.2
1/2	A555 Outwood Ln (West) EB Ahead	U	A	69	727	2105	1551	46.9%	7.2	8.1
2/1	Ringway Rd (East) WB Left	U	E	68	148	1871	1359	10.9%	5.4	1.2
2/2+2/3	Ringway Rd (East) WB Ahead	U	F	56	1431	1863:1995	855+916	80.8 : 80.8%	17.3	14.4
3/1	Outwood Ln (South) EB Ahead	U	C	24	362	1965	517	70.0%	43.1	9.7
3/2+3/3	Outwood Ln (South) EB Right Ahead	U	C D	24:7	119	2105:1819	0+153	0.0 : 77.7%	90.8	4.7
4/1	A555 Airport Spur EB Ahead	U	B	13	221	1955	288	76.7%	64.6	7.2
4/2	A555 Airport Spur EB Ahead	U	B	13	242	2095	309	78.4%	64.7	7.8
5/1	Internal EB Ahead	U	G	12	119	2028	278	42.9%	11.6	0.6
Ped Link: P1	Unnamed Ped Link	-	H	12	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	I	72	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	J	27	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	K	15	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	L	67	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	M	78	0	-	0	0.0%	-	-
Ped Link: P7	Unnamed Ped Link	-	N	58	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		11.4	Total Delay for Signalled Lanes (pcuHr):		25.90	
				PRC Over All Lanes (%):		11.4	Total Delay Over All Lanes (pcuHr):		25.90	

Basic Results Summary

Scenario 4: '2030 Base NG with Dev PM' (FG4: '2030 Base with Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram

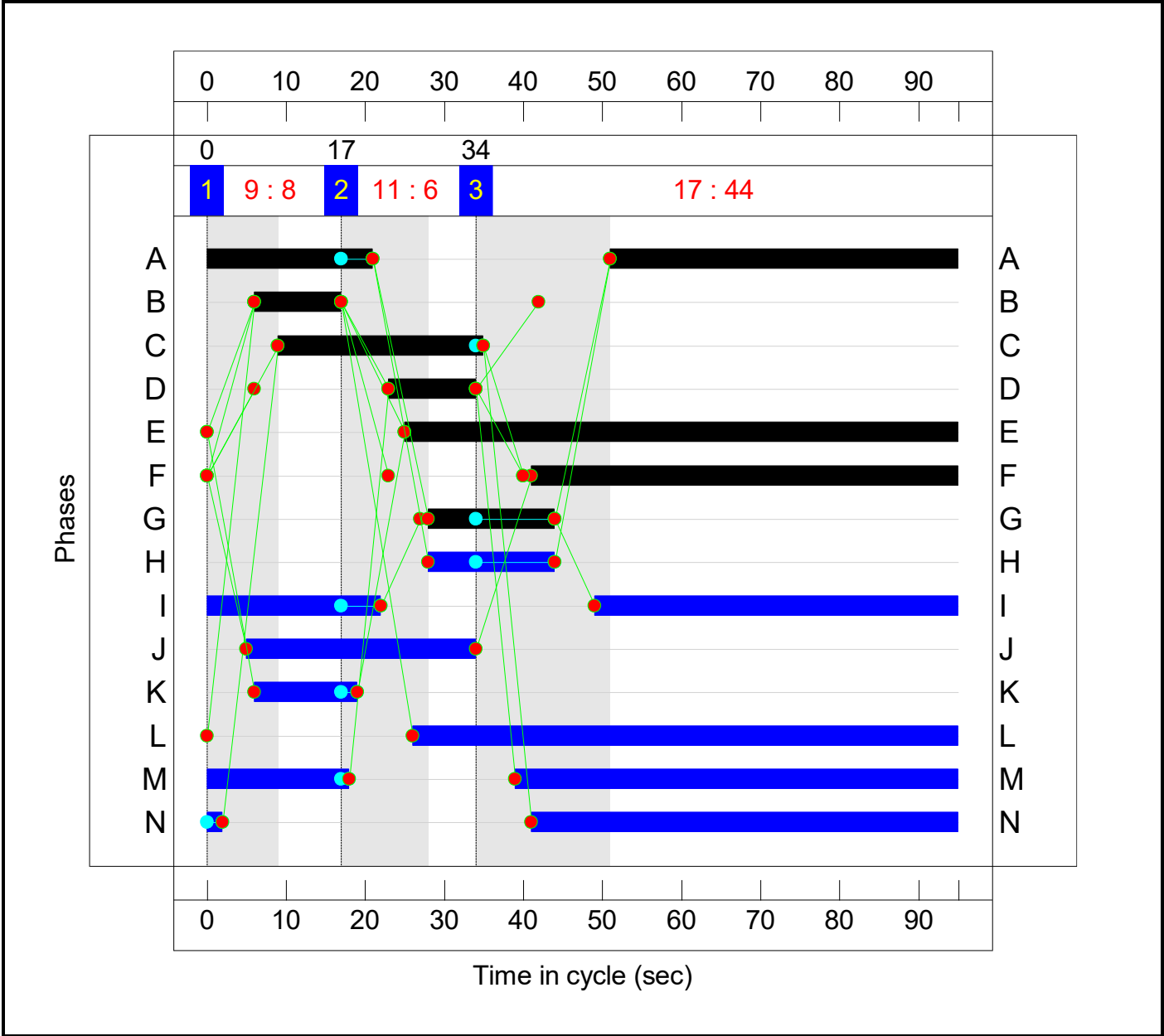


Traffic Flows, Actual

Actual Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	137	1525	0	1662
	B	186	0	774	0	960
	C	0	435	0	0	435
	D	1595	0	0	0	1595
	Tot.	1781	572	2299	0	4652

Signal Timings Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-	-	-	-	-	88.2%	-	-
A555 / Outwood Lane	-	-	-	-	-	-	-	88.2%	-	-
1/1	A555 Outwood Ln (West) EB Ahead	U	A	65	761	1965	1365	55.7%	10.2	10.6
1/2	A555 Outwood Ln (West) EB Ahead	U	A	65	834	2105	1462	57.0%	10.2	11.8
2/1	Ringway Rd (East) WB Left	U	E	70	137	1871	1398	9.8%	4.7	1.0
2/2+2/3	Ringway Rd (East) WB Ahead	U	F	54	1525	1863:1995	835+895	88.2 : 88.2%	22.4	18.1
3/1	Outwood Ln (South) EB Ahead	U	C	26	395	1965	558	70.7%	41.3	10.5
3/2+3/3	Outwood Ln (South) EB Right Ahead	U	C D	26:11	565	2105:1819	488+230	77.6 : 81.0%	44.7	11.4
4/1	A555 Airport Spur EB Ahead	U	B	11	208	1955	247	84.2%	81.8	7.7
4/2	A555 Airport Spur EB Ahead	U	B	11	227	2095	265	85.8%	82.6	8.5
5/1	Internal EB Ahead	U	G	16	186	2028	363	51.3%	10.3	0.7
Ped Link: P1	Unnamed Ped Link	-	H	16	0	-	0	0.0%	-	-
Ped Link: P2	Unnamed Ped Link	-	I	68	0	-	0	0.0%	-	-
Ped Link: P3	Unnamed Ped Link	-	J	29	0	-	0	0.0%	-	-
Ped Link: P4	Unnamed Ped Link	-	K	13	0	-	0	0.0%	-	-
Ped Link: P5	Unnamed Ped Link	-	L	69	0	-	0	0.0%	-	-
Ped Link: P6	Unnamed Ped Link	-	M	74	0	-	0	0.0%	-	-
Ped Link: P7	Unnamed Ped Link	-	N	56	0	-	0	0.0%	-	-
C1				PRC for Signalled Lanes (%):		2.1	Total Delay for Signalled Lanes (pcuHr):		36.21	
				PRC Over All Lanes (%):		2.1	Total Delay Over All Lanes (pcuHr):		36.21	

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