



PROPOSED RESIDENTIAL
DEVELOPMENT, KINGSWAY,
BURNAGE

TRANSPORT ASSESSMENT

AUGUST 2024

PROPOSED RESIDENTIAL DEVELOPMENT, KINGSWAY, BURNAGE

TRANSPORT ASSESSMENT

TRIPLE JERSEY

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1 INTRODUCTION

1.1 OVERVIEW

- 1.1.1 Andrew Moseley Associates (AMA) have been commissioned by Triple Jersey to produce this Transport Assessment (TA) in connection with the submission of a planning application for the redevelopment of an existing retail unit at Kingsway, Burnage to provide residential development.
- 1.1.2 The site is located approximately 5km southeast of Manchester city centre, within the suburb of Withington. The site is currently occupied by a B&M retail store and associated parking facilities. The site is bound to the north by Talbot Road, to the east by Kingsway, to the south by existing commercial units and to the west by the Styal railway line. The site location is shown in **Figure 1**.
- 1.1.3 The Local Planning Authority (LPA) and Local Highway Authority (LHA) is Manchester City Council (MCC).
- 1.1.4 The purpose of this report is to review the local highway network and the accessibility of the proposed development site and to assess the impacts of the development in a local transport context.
- 1.1.5 This TA demonstrates the site is in an accessible location with good access to sustainable transport modes, in accordance with the National Planning Policy Framework (NPPF). It will also demonstrate that the vehicle trips generated as a result of the development proposals would not be material.

1.2 PRE-APPLICATION SCOPING

- 1.2.1 Pre-application scoping discussions have been undertaken with MCC to agree the scope of this TA and to seek advice on the access strategy and internal site layout. Some of the key elements that were agreed during these discussions:
- ▶ The principle of reconfiguring the access onto Talbot Road to provide two-way vehicle movements;
 - ▶ Provision of push button pedestrian crossing facilities on the Talbot Road arm of the Kingsway / Talbot Road / Grangethorpe Drive signalised junction; and
 - ▶ Provision of parking below the local standards given the highly sustainable location of the site.

1.3 REPORT STRUCTURE

1.3.1 The structure of the report is set out as follows:

- ▶ Section 2 – sets out the local and national transport planning policy against which the proposals have been assessed;
- ▶ Section 3 – describes the site location and the local highway network;
- ▶ Section 4 – reviews the existing sustainable transport infrastructure in and around the proposed development site;
- ▶ Section 5 – sets out the development proposals including the proposed access arrangements and car parking provision;
- ▶ Section 6 – details the assessment parameters used to assess the impact of the proposals;
- ▶ Section 7 – assesses the impact of the proposals on the local highway network; and
- ▶ Section 8 – provides a summary and conclusions.

2 POLICY BACKGROUND

2.1 NATIONAL POLICY

- 2.1.1 The National Planning Policy Framework (NPPF) was revised in December 2023 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous update to the NPPF in September 2023.
- 2.1.2 The Government's objectives set out in the revised NPPF are to ensure that new developments are provided in sustainable locations, where the need to travel is minimised and the use of sustainable modes can be maximised.
- 2.1.3 The preparation of this TA is consistent with national transport policy guidance set out in the NPPF which advocates the submission of such documents to support applications for new developments which generate traffic movements.
- 2.1.4 The NPPF states under the subheading 'Considering Development Proposals' 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 46; and
 - d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree (Paragraph 114).
 - ▶ 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 (Paragraph 115).
 - ▶ Within this context, applications for development should:
 - a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
 - b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
 - c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
 - d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and
 - e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations (Paragraph 116).

- 2.1.5 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 Paragraph 117).
- 2.1.6 **Section 4** of this report highlights the existing sustainable travel modes within the vicinity of the site and demonstrates that the development will be well suited to this location.
- 2.1.7 **Section 7** of this report assesses the traffic associated with the development on the surrounding road network and will identify mitigation measures where necessary to ensure that the impact of the development is not severe.

2.2 REGIONAL POLICY

- 2.2.1 Transport for the North (TfN) became England's first sub-national transport body in April 2018. As a partnership TfN encompasses 20 local transport authorities in northern England, together with Network Rail and National Highways, to plan and prioritise long-term infrastructure investment in the North.
- 2.2.2 TfNs role is to add strategic value by ensuring value by ensuring that funding and strategy decisions about transport in the North are informed by local knowledge and requirements. TfN published its latest Strategic Transport Plan (STP) in 2024 setting out proposals for the northern transport network to 2050.
- 2.2.3 TFNs core vision is to have 'a thriving, socially inclusive region. Our communities, businesses and places will all benefit from sustainable economic growth, improved health and wellbeing and access to opportunities for all. This will be achieved through a transformed, near zero-emission, integrated, safe, affordable and sustainable transport system, which will enhance connectivity, support mode shift and resilience and improve journey times for all users.'
- 2.2.4 Supporting this vision are the three Northern transport ambitions, which are:
- ▶ Transforming economic performance;
 - ▶ Rapid decarbonisation of our transport system; and
 - ▶ Enhancing social inclusion and health.

2.3 LOCAL POLICY

Greater Manchester Transport Strategy

- 2.3.1 The Greater Manchester Transport Strategy (GMTS) sets out the long-term proposals to 2040 to create a cleaner, greener, more prosperous city region through better transport connections and simpler travel. This includes the aspiration for 50% of all journeys in Greater Manchester to be made by walking, cycling and public transport by 2040.
- 2.3.2 Integration is at the heart of the strategy with an ambition to create a high-quality network for Greater Manchester that enables people to move efficiently and effortlessly between different modes of transport. Integrated land use and transport planning are recognised as key tools in realising this ambition.
- 2.3.3 Policy 4 states that new developments should be accessible by sustainable modes to reduce transport emissions and impacts on the highway network.

Manchester City Council Core Strategy

- 2.3.4 Manchester's Core Strategy was adopted in July 2012 and outlines the Council's vision for development of the city up to 2027.
- 2.3.5 Policy T1 considers sustainable transport and sets out that the Council will support proposals that, amongst other things:
- ▶ Improve choice by developing alternatives to the car;
 - ▶ Improve access to transport services and facilities in order to enable disabled people and people with mobility impairments to participate fully in public life;
 - ▶ Improve pedestrian routes and the pedestrian environment;
 - ▶ Improve and develop further Manchester's cycle network;
 - ▶ Contribute to improvements to the extent and reliability of the public transport network through safe and attractive waiting and interchange facilities, better priority, improved services and information provision;
 - ▶ Facilitate modes of transport that reduce carbon emissions e.g. by incorporating charging points for electric vehicles, subject to their appropriate design and location; and
 - ▶ Would reduce the negative impacts of road traffic, for example, congestion, air pollution and road accident casualties.
- 2.3.6 Policy T2 details that the Council will actively manage the pattern of development, ensuring that new development is well located for walking, cycling and public transport access.

Manchester Residential Quality Guidance

- 2.3.7 The Residential Quality Guidance document was published in 2017 and outlines the considerations, qualities and opportunities to help deliver high quality residential development as part of successful and sustainable neighbourhoods. In terms of transport, the Council will require developers to demonstrate how proposals:
- ▶ Facilitate and encourage walking and cycling;
 - ▶ Create clear, safe and obvious connections to the public transport network;
 - ▶ Define a clear street hierarchy; and
 - ▶ Support opportunities to improve wayfinding and orientation.

3 EXISTING CONDITIONS

3.1 SITE LOCATION

- 3.1.1 The site is located approximately 5km southeast of Manchester city centre, within the suburb of Withington. The site is currently occupied by a B&M retail store and associated parking facilities. The site is bound to the north by Talbot Road, to the east by Kingsway, to the south by existing commercial units and to the west by the Styal railway line. The site location is shown in **Figure 1**.

3.2 LOCAL HIGHWAY NETWORK

- 3.2.1 Access is achieved from both the north and the south of the site. The northern access is in-only (one way southbound between access and Talbot Road) and is taken from Talbot Road. The southern access connects with Mauldeth Road at a simple priority junction and allows two-way vehicle movements.
- 3.2.2 The access road serving the site is unadopted, and also provides access to Mauldeth Road Railway Station and an industrial use to the south. To the north of the car park access, the access road is one way, permitting southbound movements only. As such, all vehicles must exist the site via Mauldeth Road.
- 3.2.3 Talbot Road is a two-way, single carriageway road subject to a 20mph speed limit. Lit footways are provided on both sides of the carriageway. Talbot Road routes in a general northeast / southwest alignment. Immediately east of the site it connects with the A34 Kingsway and Grangethorpe Drive at a signalised crossroads. To the southwest, Talbot Road connects with Parsonage Road and Mauldeth Road at a priority crossroads with right turn facilities.
- 3.2.4 Mauldeth Road is a two-way, single carriageway road subject to a 20mph speed limit. Lit footways are provided on both sides of the carriageway. Mauldeth Road routes in a general east / west alignment, connecting with the A34 Kingsway immediately east of the site at a signalised crossroads.
- 3.2.5 To the east, Mauldeth Road continues from Kingsway to connect with Burnage Lane and Avon Road at a signalised staggered crossroads. West of the site, Mauldeth Road connects with Wilmslow Road and Mauldeth Road West at a signalised crossroads. Maldeth Road West continues west to connect with the A5103 Princess Road before continuing west into Chorlton where it connects with the A5145 Barlow Moor Road at a signalised crossroads.
- 3.2.6 The A34 Kingsway is a dual carriageway two-way road which routes in a north / south alignment immediately east of the site. The road is subject to a 40mph speed limit and is provided with lit footways on both sides of the carriageway.
- 3.2.7 The A34 is a strategic corridor which connects with the A57(M) Manchester Ring Road to the north before continuing into the heart of the city centre and connecting with Trinity Way. South of the site, the A34 connects with the M60 Manchester Outer Ring Road at junction 3 and the M56 at junction 1. The A34 continues south through the Greater Manchester suburbs to Stoke-on-Trent, Stafford, Walsall and Birmingham, ultimately connecting with the M42 at junction 4.
- 3.2.8 The site is considered to be well located for access to both local and regional highway networks.

3.3 COLLISION DATA

- 3.3.1 Personal Injury Collision (PIC) data for the local highway network has been obtained from Transport for Greater Manchester (TfGM) for the latest five-year period. The area for assessment includes Talbot Road, Mauldeth Road between its junctions with Talbot Road and Kingsway, and Kingsway between its junctions with Talbot Road and Mauldeth Road. The collision plot is included at **Appendix A** and the data is summarised in **Table 3-1**.

Table 3-1 Summary of Personal Injury Collision Data

Severity	2018*	2019	2020	2021	2022	2023*	Total
Talbot Road / Kingsway / Grangethorpe Drive							
Slight	0	0	1	2	1	0	4
Serious	0	1	0	0	0	0	1
Fatal	0	1	0	0	0	0	1
Mauldeth Road / Kingsway							
Slight	1	5	1	1	0	0	8
Serious	0	0	0	1	0	0	1
Fatal	0	0	0	0	0	0	0
Talbot Road / Mauldeth Road / Parsonage Road							
Slight	0	1	1	1	1	0	4
Serious	0	0	0	0	0	0	0
Fatal	0	0	0	0	0	0	0
Total	1	8	3	5	2	0	19

*2018 data is April – December and 2023 data is January – March.

- 3.3.2 It is noted that there are small clusters of incidents at the two signal junctions on Kingsway, however, this is to be expected given the high number of vehicles using these junctions. The majority of incidents were classified as 'slight' in severity, and where contributory factors were provided, these generally indicated that the collisions were as a result of driver / road user error rather than related to road layout.
- 3.3.3 The majority of incidents were collisions involving cars. Two incidents involved cyclists and two involved motorcycles. One incident involved a motorcycle and a pedestrian and resulted in a fatality. This incident was attributed to the motorcyclist exceeding the speed limit, travelling too fast for conditions and aggressive driving.
- 3.3.4 No incidents were recorded at the site access onto Talbot Road, or the existing access on Mauldeth Road, which demonstrates that these junctions operate safely at the current time.
- 3.3.5 It is not considered that there is a pattern to the existing collision record that would be impacted by the development proposals.

4 EXISTING SUSTAINABLE TRANSPORT PROVISION

4.1 INTRODUCTION

- 4.1.1 The Government's objectives set out in the NPPF are to ensure that new developments are provided in sustainable locations, where the need to travel is minimised and the use of sustainable modes can be maximised.
- 4.1.2 The site has an excellent level of accessibility to sustainable modes of transport, which will encourage the use of alternative modes of travel to the private car.
- 4.1.3 This section outlines the existing walking, cycling and public transport facilities within the vicinity of the site and describes the accessibility of the site in terms of its proximity to key services and destinations.

4.2 WALKING ACCESSIBILITY

- 4.2.1 Whilst superseded by the NPPF, the transport policies set out in the former PPG13 set out specific guidance related to walking:
"Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres" (Para 74)
- 4.2.2 Consideration has been given to the existing pedestrian facilities in the vicinity of the proposed development. A plan showing a 2km walking catchment from the centre of the site is attached at **Figure 2**.
- 4.2.3 This demonstrates that much of the surrounding residential area can be accessed within a reasonable walking distance of the site. A summary of those facilities that can be accessed within a 2km walk is provided in **Table 4-3**.
- 4.2.4 The surrounding highway network has an established network of interconnected footways and crossing points. Lit footways are provided along the length of the access road serving the site. To the south, adjacent to Mauldeth Road Railway Station, the footway is provided on the opposite side of the carriageway, and a marked zebra crossing is provided which offers pedestrian priority in this location.
- 4.2.5 Outside the site, dropped kerbs are provided over most local junctions. To the east of the site, controlled crossing facilities are provided at both the Talbot Road / Kingsway / Grangethorpe Drive and the Mauldeth Road / Kingsway signalised junctions. An informal pedestrian crossing point is provided over Kingsway between these two junctions, adjacent to Burnside Drive.
- 4.2.6 The site is therefore considered to be accessible on foot and is within an acceptable walking distance of key destinations in the local area.

4.3 CYCLING ACCESSIBILITY

4.3.1 Whilst superseded by the NPPF, the transport policies set out in the former PPG13 set out specific guidance related to cycling:

"Cycling also has potential to substitute for short car trips, particularly those under 5 kilometres, and to form part of a longer journey by public transport" (Para 77).

4.3.2 The plan attached at **Figure 3** shows a 5km cycling catchment from the site. The 5km cycling catchment includes the southern extents of Manchester, Chorlton, Heaton and Stockport.

4.3.3 The site is well connected to the local and strategic cycle network, as shown at **Figure 4**. Many of the roads neighbouring the site are subject to a 20mph speed limit and are therefore considered suitable for on-carriageway cycling.

4.3.4 A number of National Cycle Routes (NCR) operate within the vicinity of the site. Routes 6, 60 and 55 route in a general east / west direction to the north of the site. Routes 62 and 558 operate in a general east / west alignment to the south of the site. These routes are summarised in **Table 4-1**.

Table 4-1 National Cycle Routes in Vicinity of Site

Route No.	Route	Local Connections
6	London – Lake District	Manchester, Bury, Sheffield
55	Ironbridge – Preston	Heaton, Trafford, Bolton, Marple, Macclesfield
60	North Manchester – East Manchester	Withington, Harpurhey
62	Fleetwood – Selby	Stockport, Hadfield, Stretford, Warrington
558	Stockport – Herald Green	Cheadle

4.3.5 It is therefore considered that there is a good opportunity for future residents to cycle to and from the site.

4.4 PUBLIC TRANSPORT

4.4.1 A number of bus stops are provided close to the site on Kingsway and Mauldeth Road. Those stops within a 400m walk distance of the site are shown at **Figure 5**. The stops closest to the site on Kingsway are provided with off-carriageway bus laybys and shelter facilities. The stops closest to the site on Mauldeth Road are provided with shelters.

4.4.2 A summary of the routes serving these stops, and their frequency, is provided in **Table 4-2**.

Table 4-2 Local Bus Services

Service	Route	Mon-Fri	Saturday	Sunday
25	Stockport – Trafford Centre	30 mins	30 mins	30 mins
50	Media City – East Didsbury	12 mins	12 mins	15 mins
749	Moss Side – Burnage High School	School Service	-	-

4.4.3 The local bus stops are served by approximately six services per hour, seven days per week, providing access to key local destinations.

4.4.4 Mauldeth Road Railway Station sits adjacent to the site and can be accessed within less than one minute on foot. The station is operated by Northern Railway and provides four services per hour to destinations including Crewe, Liverpool, Manchester and Manchester Airport.

4.4.5 The Metrolink can be accessed from East Didsbury, via a 35-minute walk, 14-minute cycle or a 12-minute journey by public transport (either by rail or the number 50 bus).

4.5 ACCESSIBLE AMENITIES

4.5.1 There are a significant number of amenities located within close proximity to the site. Some of these are listed in **Table 4-3**.

Table 4-3 Accessible Amenities

Amenity	Distance	Walk Time	Cycle Time
Mauldeth Road Railway Station	140m	2 mins	1 min
Mauldeth Road Primary School	400m	4 mins	2 mins
Rainbows Nursery	350m	4 mins	2 mins
Place of Worship	250m	3 mins	1 min
Takeaway	350m	5 mins	2 mins
Hairdressers	400m	5 mins	1 min
Co-op Food	400m	5 mins	1 min
Mauldeth Pharmacy	500m	6 mins	2 mins
Mauldeth Medical Centre	650m	8 mins	2 mins
Aldi Foodstore	700m	9 mins	2 mins
Ladybarn Lane Post Office	900m	11 mins	2 mins
Kingswood Park Playground	900m	11 mins	2 mins
Sainsburys Supermarket	1.6km	19 mins	5 mins
Burnage Academy for Boys	1km	13 mins	5 mins
Levenshulme High School	1.2km	15 mins	6 mins

4.5.2 It is therefore demonstrated that the site is located with ready access to a wide range of local amenities.

4.6 SUMMARY

4.6.1 The existing pedestrian, cycle, and public transport facilities within the vicinity of the site are of a high quality and the site is within a highly sustainable location with ready access to a range of local amenities.

4.6.2 It is therefore considered that the everyday journeys undertaken by future residents can be undertaken without reliance on the private car. The site is therefore considered to be in sustainable location for travel by non-car modes, in line with local and national planning policy.

5 PROPOSED DEVELOPMENT

5.1 DEVELOPMENT PROPOSALS

- 5.1.1 The proposals comprise the redevelopment of the existing retail store to provide 115 residential dwellings. The proposed site layout is included at **Appendix B**.

5.2 ACCESS AND SERVICING ARRANGEMENTS

- 5.2.1 Access to the site will be achieved from the existing access points on Talbot Road and Mauldeth Road. The northern access onto Talbot Road will be reconfigured to enable two-way vehicle movements.
- 5.2.2 This access will measure 5.5m in width with a 4m western radius and an 8m eastern radius. Visibility splays of 2.4m by 25m can be achieved, in accordance with the posted 20mph speed limit and the guidance set out within Manual for Streets. The proposed access design is included at **Appendix C**.
- 5.2.3 A 3m shared footway / cycleway will be provided on the eastern side of the carriageway, providing access to the residential development as well as Mauldeth Road Railway Station.
- 5.2.4 No changes are proposed to the existing service road to the south of the site. Residents will be able to make use of this access road as required, however, this is outside of the site ownership boundary.
- 5.2.5 Bin stores will be provided throughout the site, within a reasonable carry distance for residents and within a compliant drag distance for refuse collection. Refuse will be collected from the main access road serving the site.
- 5.2.6 Vehicle swept path analysis for a large refuse vehicle entering and exiting the site is included at **Appendix D**.
- 5.2.7 The proposals also incorporate the provision of pedestrian crossing push-button facilities on the Talbot Road arm of the adjacent signalised junction with the A34 Kingsway, to better facilitate pedestrian movements north from the site. The drawings indicating this are included at **Appendix E**.

5.3 PARKING

- 5.3.1 The parking standards for new development in Manchester are set out in the Council's Core Strategy at Appendix B. However, no specific standards are set for residential development. Within Manchester's Residential Quality Guide, the 'comply or justify' approach is outlined, and recommended standards for residential development outside the city centre are set as 100% provision as a starting point. However, reduced on site provision may be justified on the basis of:
- ▶ Secure cycle parking in excess of 50% provision relative to apartment numbers (4 cycle spaces per car park space);
 - ▶ Identification of sufficient off-site capacity within 5 minutes' walk of the proposed development;
 - ▶ Provision of designated on-street parking;
 - ▶ Demonstrating that provision of full parking provision will unacceptably compromise the development's active frontages and relationship with the street, and evidence that alternative parking solutions cannot be viably accommodated; and

- ▶ Provision of robust research and market evidence to demonstrate that lower levels of car parking demand will be appropriate.

- 5.3.2 In total, 86 parking spaces are proposed, which equates to a ratio of 0.75 spaces per unit. Each of the three and four-bed dwellings will each be provided with an allocated parking space. The remainder of the parking spaces will be unallocated and therefore the use of these spaces will be flexible.
- 5.3.3 Consideration has been given to the Department for Communities and Local Government (DCLG) Residential Car Parking Research Report (May 2007). This report identifies that, among other things, car ownership is influenced by dwelling type, tenure and location. Households occupying rented accommodation can have up to 0.5 fewer cars than owner-occupied households in dwellings of similar size and type.
- 5.3.4 The provision of much of the parking within the site as unallocated also means that no additional visitor parking is necessary: *"whilst there are times such as evenings and weekends, when residents are likely to receive significant numbers of visitors in cars, this demand can to some degree be offset by other residents being away at the same time"*.
- 5.3.5 It is therefore considered that the proposed level of parking is sufficient to meet the needs of the site without resulting in overspill parking on the local highway network.
- 5.3.6 Cycle storage will be provided across the site, providing at least one space per unit. The houses with gardens will be provided with sheds in which they can store cycles. For houses without gardens, dedicated cycle stores are proposed adjacent to the bin stores. The apartments will be provided with dedicated shared cycle storage within each block.

6 ASSESSMENT PARAMETERS

6.1 INTRODUCTION

- 6.1.1 This section sets out the methodology and parameters used in assessing the proposed development and its potential impact on the highway network.

6.2 BASE TRAFFIC SURVEYS

- 6.2.1 Base traffic data for the A34 Kingsway / Talbot Road / Grangethorpe Drive signalised junction has been obtained from TfGM. The surveys were undertaken in 2021 and are considered appropriate to use to understand the development impacts of the proposed development.

6.3 TRAFFIC GROWTH

- 6.3.1 In order to assess the operation of the highway network in the current and future year, traffic growth rates have been derived using the Department for Transport software TEMPro. The TEMPro outputs have been factored by the National Transport Model using Middle Super Output Area (MSOA) Manchester 036, which is considered the most representative MSOA of the proposed development site.
- 6.3.2 The future assessment year of 2029 has been assessed, providing a five-year horizon in which the development is likely to be built out. The output growth factors are shown in **Table 6-1**.
- 6.3.3 The factors for an 'urban principal' road have been applied to the A34 Kingsway, and the factors for an 'urban minor' road to the Talbot Road and Grangethorpe Drive arms of the junction.

Table 6-1 Traffic Growth Factors

Period	A Road		Minor	
	AM Peak	PM Peak	AM Peak	PM Peak
2021-2024	1.0352	1.0333	1.0354	1.0336
2021-2029	1.1019	1.0993	1.1032	1.1006

- 6.3.4 Given that the above TEMPro growth rates have been applied, no specific committed development sites have been considered within this assessment.

6.4 EXISTING TRAFFIC GENERATION AND ASSIGNMENT

- 6.4.1 As noted, the site is currently operational as a B&M store. Traffic surveys were undertaken on Tuesday 6th June 2023. These surveys included observations of vehicle movements into and out of the car park. This data is summarised in **Table 6-2** below for the peak hours of 08:00-09:00 and 17:00-18:00.

Table 6-2 Existing Trips

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Trips	39	23	106	92

- 6.4.2 The existing site generates 62 two-way trips in the morning peak hour and 198 two-way trips in the evening peak hour.

6.4.3 At the current time, vehicles can arrive from the north and the south, but can only exit to the south of the site. In the AM peak, 64% of trips arrived from the north and 36% arrived from the south. In the PM peak 51% arrived from the north and 49% arrived from the south.

6.4.4 Outside of the site, the existing trips have been assigned to the local highway network based on Census Journey to Work data, which is discussed further below. The existing trips on the local network are shown graphically at **Figure 6**.

6.5 DEVELOPMENT TRAFFIC GENERATION

6.5.1 The trip generation of the proposed development has been assessed using the national TRICS trip rate database. Sites in the category '03 Residential; K Mixed Private Houses (Flats and Houses)' in England, Scotland and Wales (excluding Greater London) have been considered.

6.5.2 Only those sites in Suburban Area and Edge of Town locations have been considered, and any surveys undertaken during the Covid 19 pandemic have been excluded.

6.5.3 The full TRICS outputs are included at **Appendix F**. The peak hour trip rates and associated trips are summarised in **Table 6-3**.

Table 6-3 Trip Rates and Trips

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Trip Rates	0.102	0.316	0.291	0.147
Trips	12	36	33	17

6.5.4 The table above indicates that the proposed development could generate a total of 48 two-way trips in the morning peak hour and 50 two-way trips in the evening peak hour.

6.6 DEVELOPMENT TRAFFIC DISTRIBUTION AND ASSIGNMENT

6.6.1 The development traffic has been distributed onto the local highway network using 2011 Census Journey to Work data for MSOA Manchester 036. The resulting distribution is shown graphically in **Figure 7**, and has been applied to the proposed development trips, as shown in **Figure 8**.

6.7 RESIDUAL TRIP GENERATION

6.7.1 The residual trip generation of the site can be calculated by subtracting the existing trip generation of the site from the proposed trip generation. The results of this exercise are demonstrated graphically at **Figure 9** and are summarised in **Table 6-4**.

Table 6-4 Residual Trip Generation

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Residual Trips	-27	13	-73	-75

6.7.2 The above table indicates that the residual trip generation of the site would be -14 two-way trips in the AM peak hour and -148 two-way trips in the PM peak hour. Albeit it is acknowledged that the assignment of these trips on the local highway network will be different.

6.8 SUMMARY

6.8.1 Traffic growth on the local highway network has been accounted for using TEMPro.

- 6.8.2 The trip generation of the proposals has been quantified using the TRICS trip rate database. These trips have been assigned to the local highway network based on 2011 Census Journey to Work data.
- 6.8.3 The assessment has not taken account of the implementation of a Travel Plan at the site, which has the potential to reduce private car trips to and from the proposed development.
- 6.8.4 In summary, the trip generation and distribution methodology adopted in this TA is considered appropriate and robust.

7 FUTURE DEVELOPMENT IMPACTS

7.1 INTRODUCTION

- 7.1.1 This section of the TA provides an assessment of the transport impacts that may arise as a result of the proposed development.
- 7.1.2 Capacity modelling has been completed assuming the following scenarios for both the AM and PM peak hours:
- ▶ 2024 Base (Figure 10);
 - ▶ 2029 Do Nothing (future year base traffic) (Figure 11); and
 - ▶ 2029 Do Minimum (as above plus development traffic and inclusive of controlled crossing over Talbot Road) (Figure 11).
- 7.1.3 The A34 Kingsway / Talbot Road / Grangethorpe Drive junction has been modelled using LinSig. As requested during pre-application discussions, in the 2029 Do Minimum development scenario, a controlled pedestrian crossing on the Talbot Road arm of the junction has been incorporated.
- 7.1.4 The outputs of LinSig include the Degree of Saturation (DoS), the Mean Maximum Queue (MMQ) and the Practical Reserve Capacity (PRC). The DoS is a ratio of demand to capacity for each traffic phase, with a value of 90% indicating that an arm is at practical capacity. The PRC is calculated from the maximum percent DoS and is a measure of how much additional traffic could pass through the junction as a whole. The MMQ provides an indication of how the overall junction performance may affect adjacent junctions on the highway network and is set out in passenger car units (PCUs).

7.2 A34 KINGSWAY / TALBOT ROAD / GRANGETHORPE DRIVE

- 7.2.1 The results of the modelling exercise are summarised in **Table 7-1** and the full model outputs are included at **Appendix G**.

Table 7-1 A34 Kingsway / Talbot Road / Grangethorpe Drive Capacity Modelling Results

Scenario	Link	AM Peak		PM Peak	
		DoS	MMQ	DoS	MMQ
2024 Base	A34 Kingsway N	76.4%	12	79.7%	21
	Grangethorpe Drive	75.1%	9	70.7%	7
	A34 Kingsway S	76.3%	18	64.3%	11
	Talbot Road	63.9%	8	80.0%	9
	PRC	17.8%		12.6%	
	Total Delay (pcu/hr)	30.0		30.6	
2029 Do Nothing	A34 Kingsway N	81.7%	14	84.8%	25
	Grangethorpe Drive	79.9%	10	75.3%	8
	A34 Kingsway S	82.8%	21	68.5%	13
	Talbot Road	65.3%	8	85.4%	11
	PRC	8.7%		5.4%	
	Total Delay (pcu/hr)	35.1		35.1	
2029 Do Minimum	A34 Kingsway N	72.2%	13	82.6%	23
	Grangethorpe Drive	73.5%	9	72.2%	7
	A34 Kingsway S	77.1%	19	56.1%	10
	Talbot Road	64.1%	9	78.7%	10
	PRC	16.7%		9.0%	
	Total Delay (pcu/hr)	31.3		31.2	

- 7.2.2 The junction is shown to operate within capacity at the current time, with modest queueing experienced on the A34 Kingsway arms. The junction is expected to continue to operate well in the future, albeit with less spare capacity.
- 7.2.3 Once the development flows are considered, and the signalised crossing of Talbot Road is included, the junction is expected to operate better than the 2028 Do Nothing scenario in the AM peak. Queues on the A34 Kingsway northern arm and Grangethorpe Drive arm are expected to reduce. In the PM peak, the addition of the proposed development has a minimal impact on the operation of the junction, with a slight reduction in total delay experienced.
- 7.2.4 The proposals are therefore expected to have a beneficial impact on the operation of this junction, given that they will result in a net reduction in vehicle trips accessing the site when compared with the existing use.

7.3 SUMMARY

- 7.3.1 Overall, it is not considered that the proposed development will result in any severe impacts on the local highway network, and in fact is expected to improve the operation of the A34 Kingsway / Talbot Road / Grangethorpe Drive junction in the AM peak.

8 SUMMARY

- 8.1.1 Andrew Moseley Associates (AMA) have been commissioned by Triple Jersey to produce this Transport Assessment (TA) in connection with the submission of a planning application for the redevelopment of an existing retail unit at Kingsway, Burnage to provide residential development.
- 8.1.2 The site is located sustainably, with an excellent standard of pedestrian and cycle infrastructure providing access to nearby amenities. Regular bus services can be accessed within a short walk of the site, and Mauldeth Road Railway Station is located immediately adjacent to the site, providing regular rail services to destinations including Manchester, Manchester Airport, Crewe and Liverpool. It is therefore considered that future residents will not be reliant on the private car.
- 8.1.3 Access to the site will be achieved from the existing access points on Talbot Road and Mauldeth Road, with the Talbot Road access reconfigured to provide two-way vehicle movements. Within the site a 3m wide shared footway / cycleway will be provided on the eastern side of the carriageway. In addition, a push-button facility will be installed on the Talbot Road arm of the adjacent junction with the A34 Kingsway, to enable controlled pedestrian crossing facilities in this location.
- 8.1.4 The level of parking at the site is reflective of the highly sustainable location and the type of dwellings proposed. This has been agreed with MCC during pre-application discussions. Cycle parking is proposed across the site, with at least one space per unit provided.
- 8.1.5 The proposed redevelopment is expected to result in a net reduction in vehicle trips on the local highway network.
- 8.1.6 The impact of the development on the nearby Talbot Road / Kingsway / Grangethorpe Drive junction has been assessed using LinSig software. This demonstrates that the proposals are expected to improve the operation of this junction when compared with the 2029 base year scenario.
- 8.1.7 As such, it can be concluded that the impact of the development on the local road network will not be material, and will not lead to any severe cumulative impacts, nor adversely impact upon the existing highway safety record in accordance with the relevant tests set out in the NPPF.
- 8.1.8 Given that set out above, there are no overriding traffic and transportation reasons preventing the LHA from recognising that the proposals are acceptable nor why planning permission could not be granted.

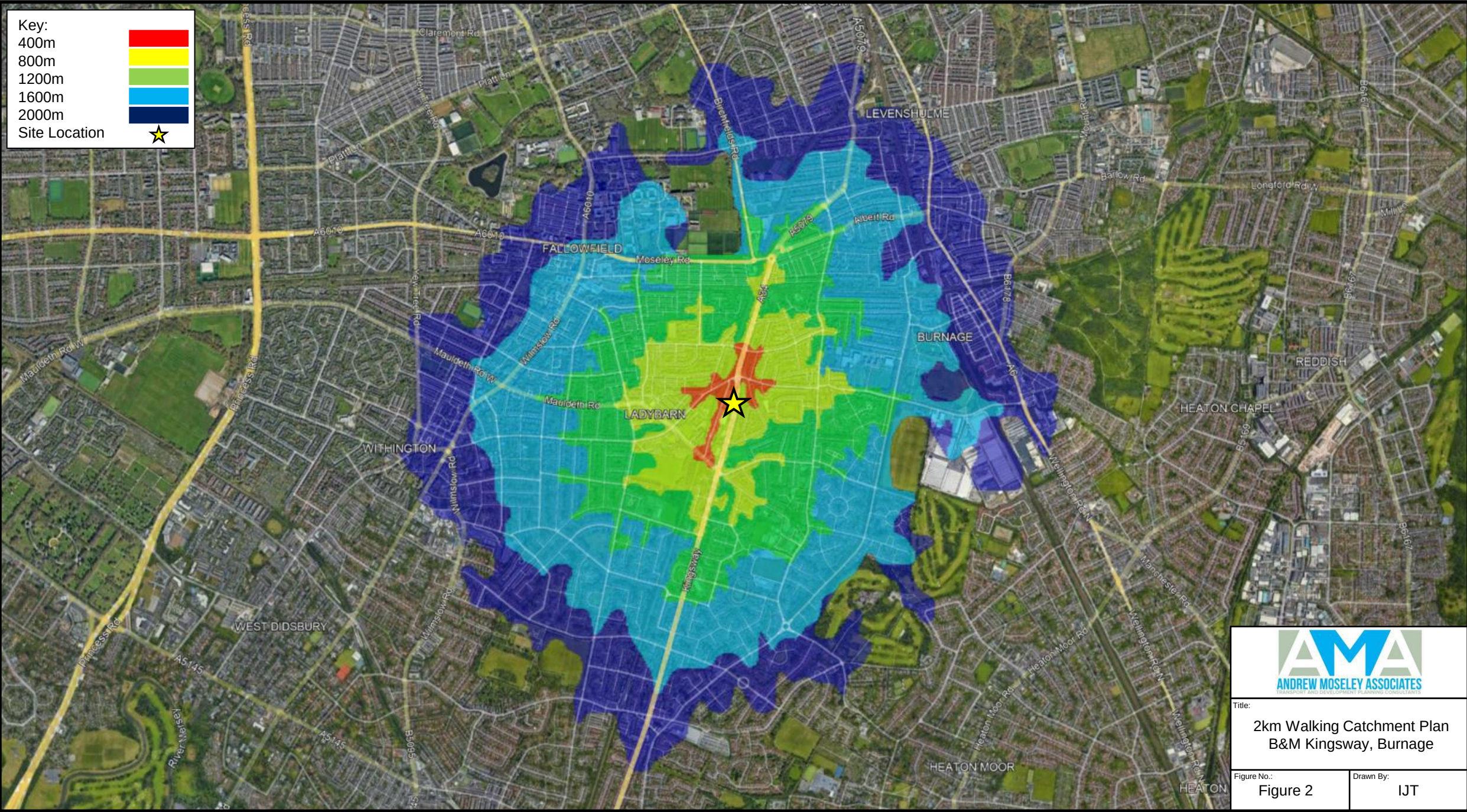
FIGURES

- Figure 1 – Site Location Plan
- Figure 2 – 2km Walking Isochrone
- Figure 3 – 5km Cycling Isochrone
- Figure 4 – Local Cycle Infrastructure
- Figure 5 – Local Bus Stops
- Figure 6 – Existing Development Trips
- Figure 7 – Proposed Development Distribution
- Figure 8 – Proposed Development Trips
- Figure 9 – Residual Trip Generation
- Figure 10 – 2024 Base Scenario
- Figure 11 – 2029 Do Nothing Scenario
- Figure 12 – 2029 Do Minimum Scenario

Key:
Site Location

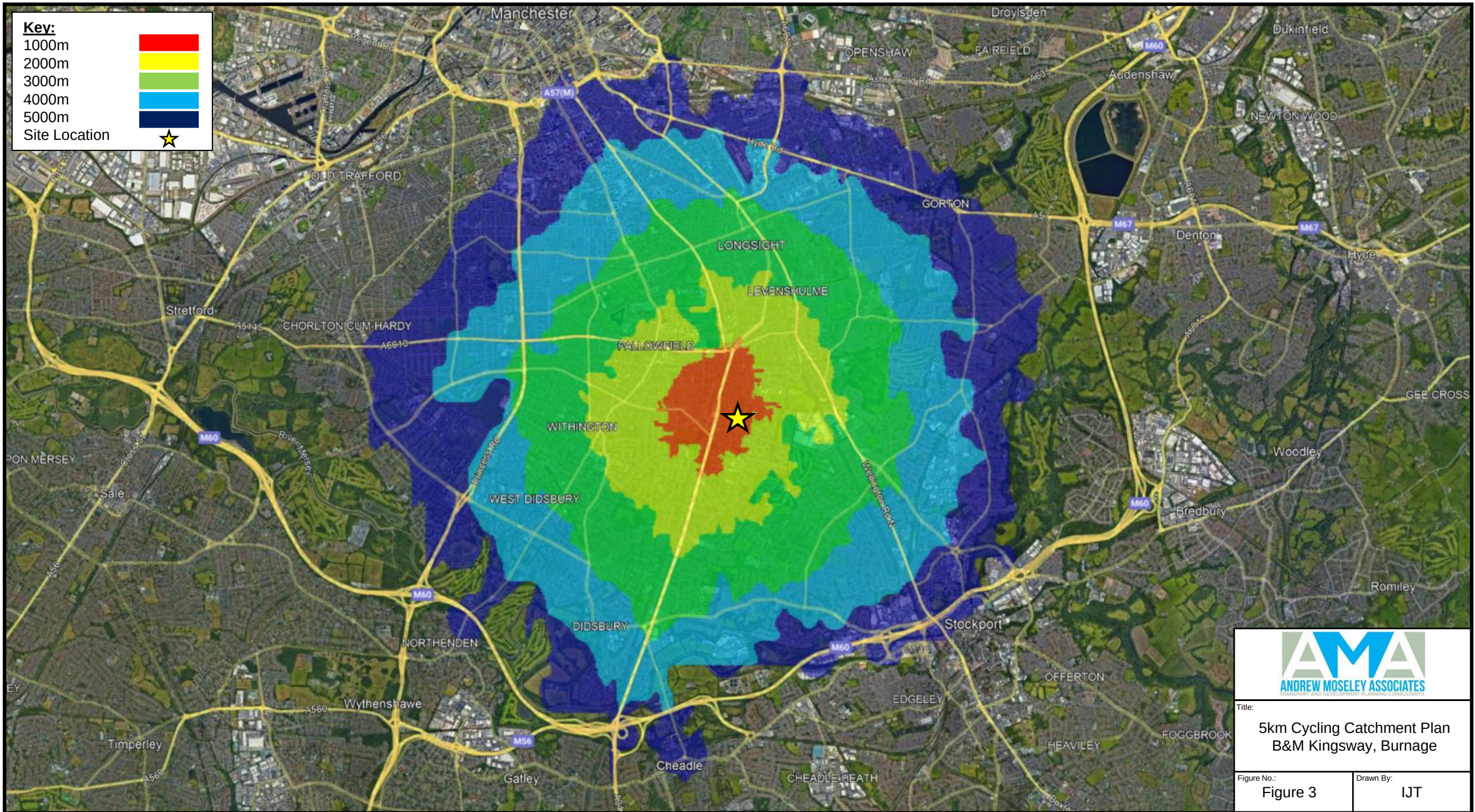


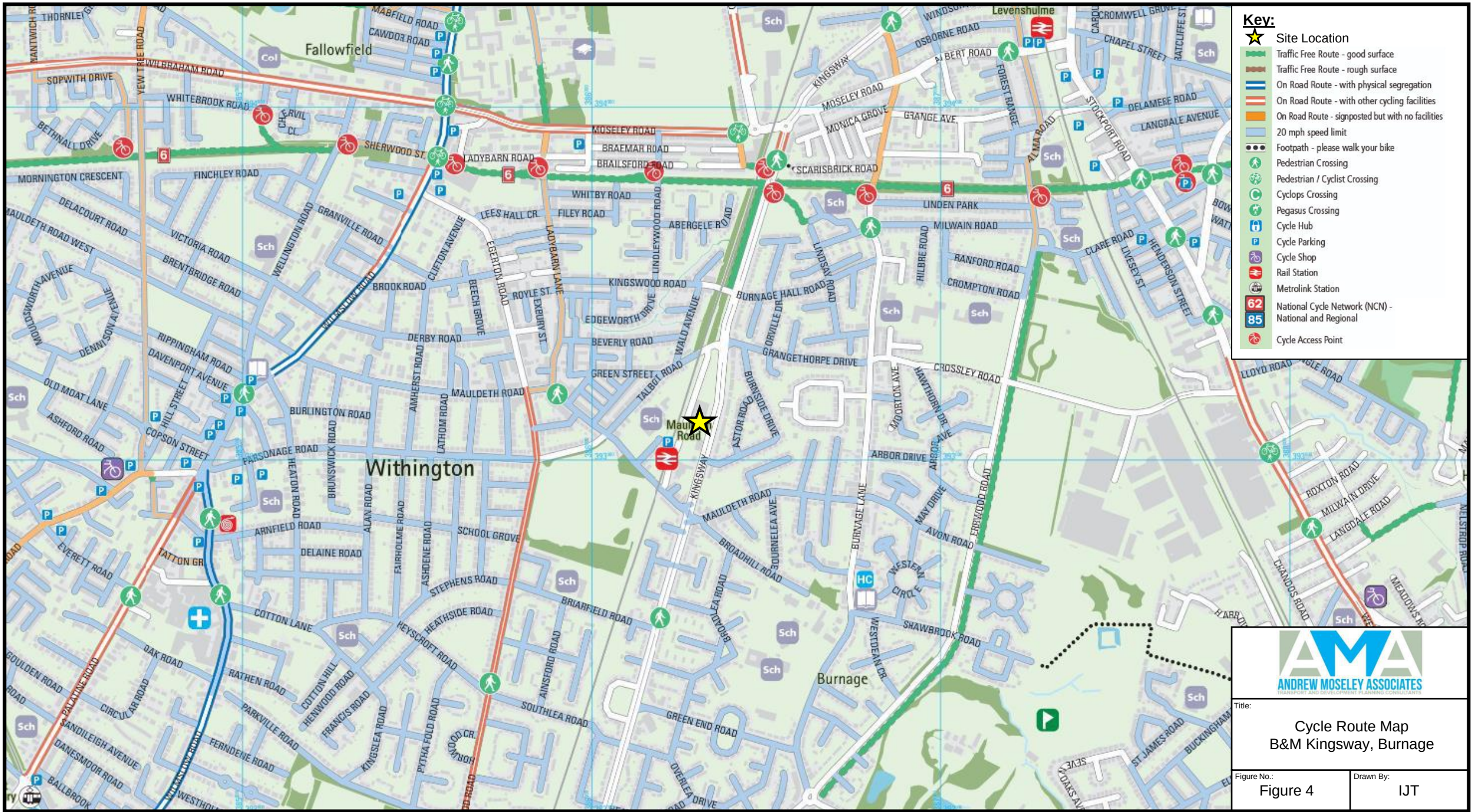
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Figure No.: Figure 1	Drawn By: IJT



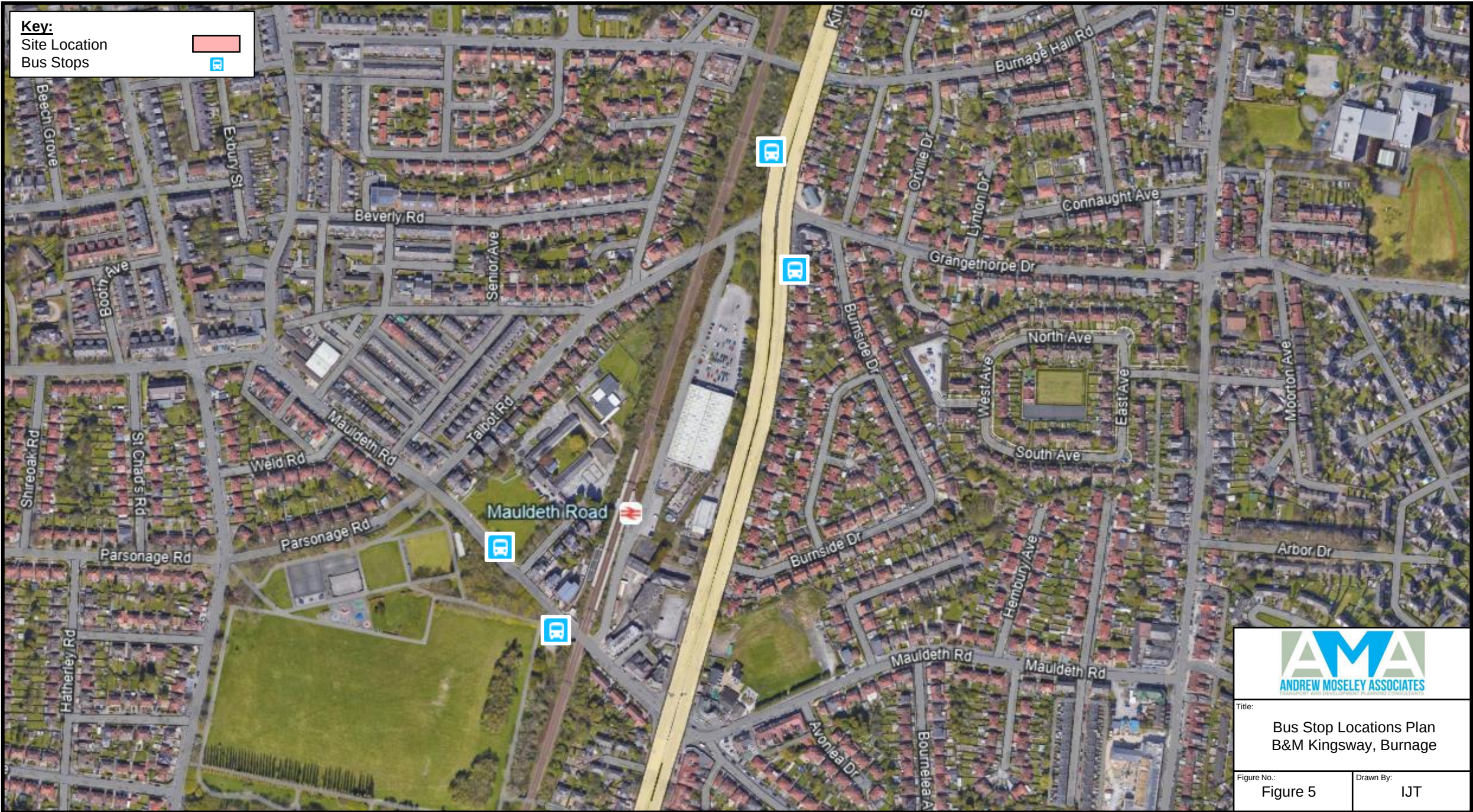
Title:
2km Walking Catchment Plan
B&M Kingsway, Burnage

Figure No.: Figure 2	Drawn By: IJT
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Key:
 Site Location
 Bus Stops



Title:
 Bus Stop Locations Plan
 B&M Kingsway, Burnage













APPENDICES

[Appendix A – Personal Injury Collision Data Plot](#)

[Appendix B – Proposed Site Layout](#)

[Appendix C – Site Access and Visibility Splays](#)

[Appendix D – Swept Path Analysis](#)

[Appendix E – Proposed Signal Junction Improvements](#)

[Appendix F – TRICS Trip Rates](#)

[Appendix G – LinSig Outputs](#)

Appendix A

PERSONAL INJURY COLLISION DATA PLOT



Appendix B

PROPOSED SITE LAYOUT

KINGSWAY, BURNAGE

Notes:

PLANNING LAYOUT LAYERS

Boundary treatments

- 1.8m High Brick wall
- 1.8m High Close boarded timber fence
- 1.2m High Metal railings

Tree/vegetation to be retained.

Root protection Zone.

Tree/vegetation to be removed.

- Gate
- Plot Bin Store
- Bike Store

N

Accommodation schedule						
Name	Floor Area Sq Ft	Beds	Storeys	Accom	No.	Total
Type 2	150	2	3	2B	54	4924
Type 3	1128	3	3	3B	6	9024
Type 4	1305	4	3	4B	12	15680
Type 5 - Apt Type 1	650	2	3	2B	12	7920
Type 5 - Apt Type 2	676	2	3	2B	4	2704
Type 5 - Apt Type 3	702	2	4	2B	2	1404
Type 5 - Apt Type 4	703	2	4	2B	20	14060
Type 5 - Apt Type 5	704	2	4	2B	3	2112
Sub Total					115	101796

REV: DESCRIPTION BY: DATE

STEN
ARCHITECTURE

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Wokingham
RG40 1PS
Tel: 01252 503880

Web: www.sten-architecture.co.uk
Twitter: @STEN_ARCH
Facebook: stenarchitecture
LinkedIn: Sten Architecture

CLIENT: TRIPLE JERSEY LIMITED

SITE: KINGSWAY
BURNAGE
TITLE: PLANNING LAYOUT

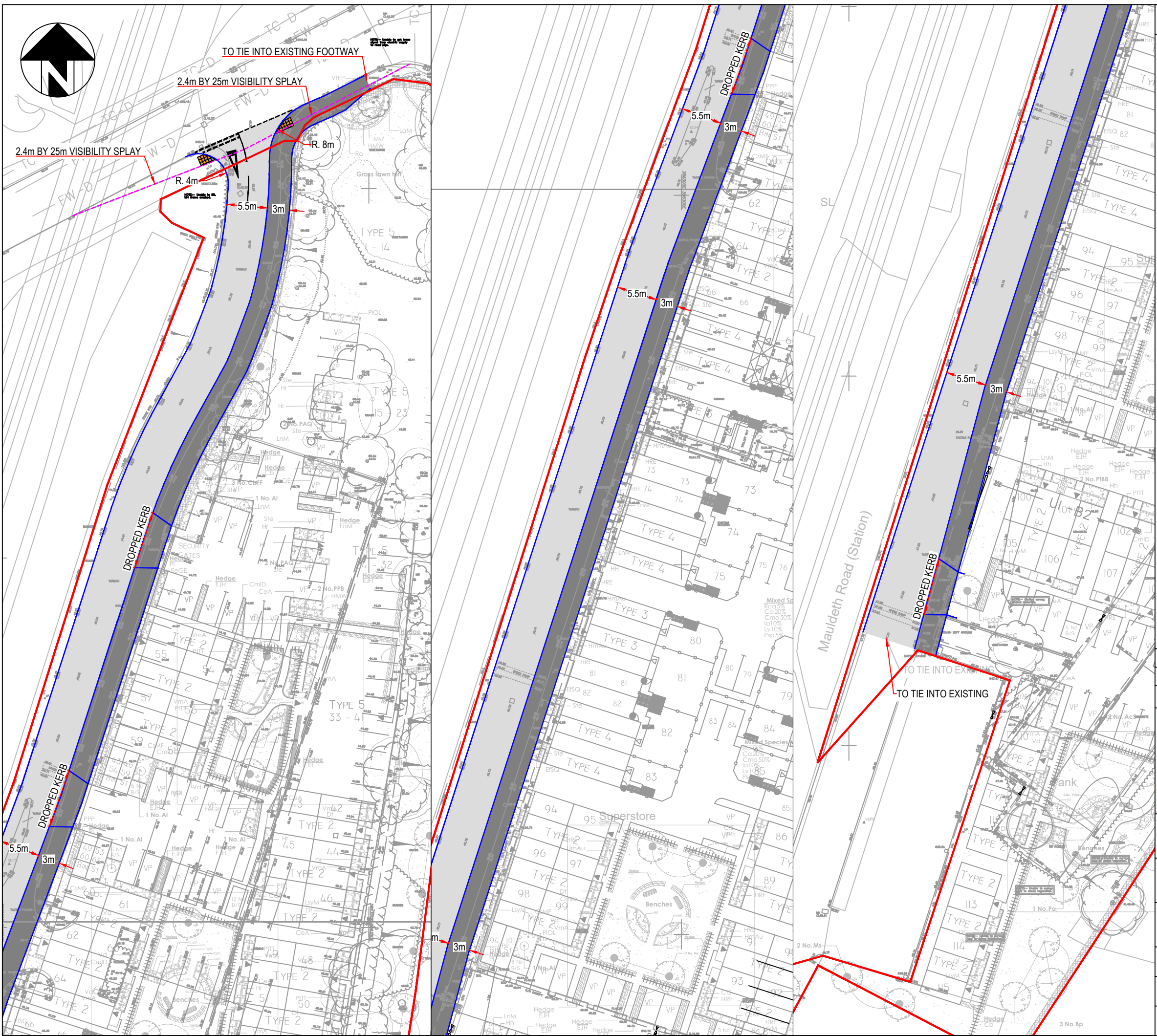
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PROJECT NO: 2305	DRAWING NO: 2425:01:PL	REVISION:	

Scaled @ 1:500
0 10m 20m 50m

PLANNING LAYOUT

Appendix C

SITE ACCESS AND VISIBILITY SPLAYS



P02	Updated Site Layout Plan	18/10/24	ECT
P01	First Issue	DD/MM/YY	-
Rev	Description	Date	By



Client.

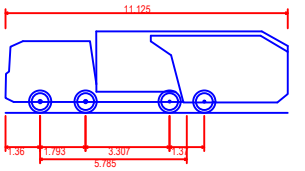
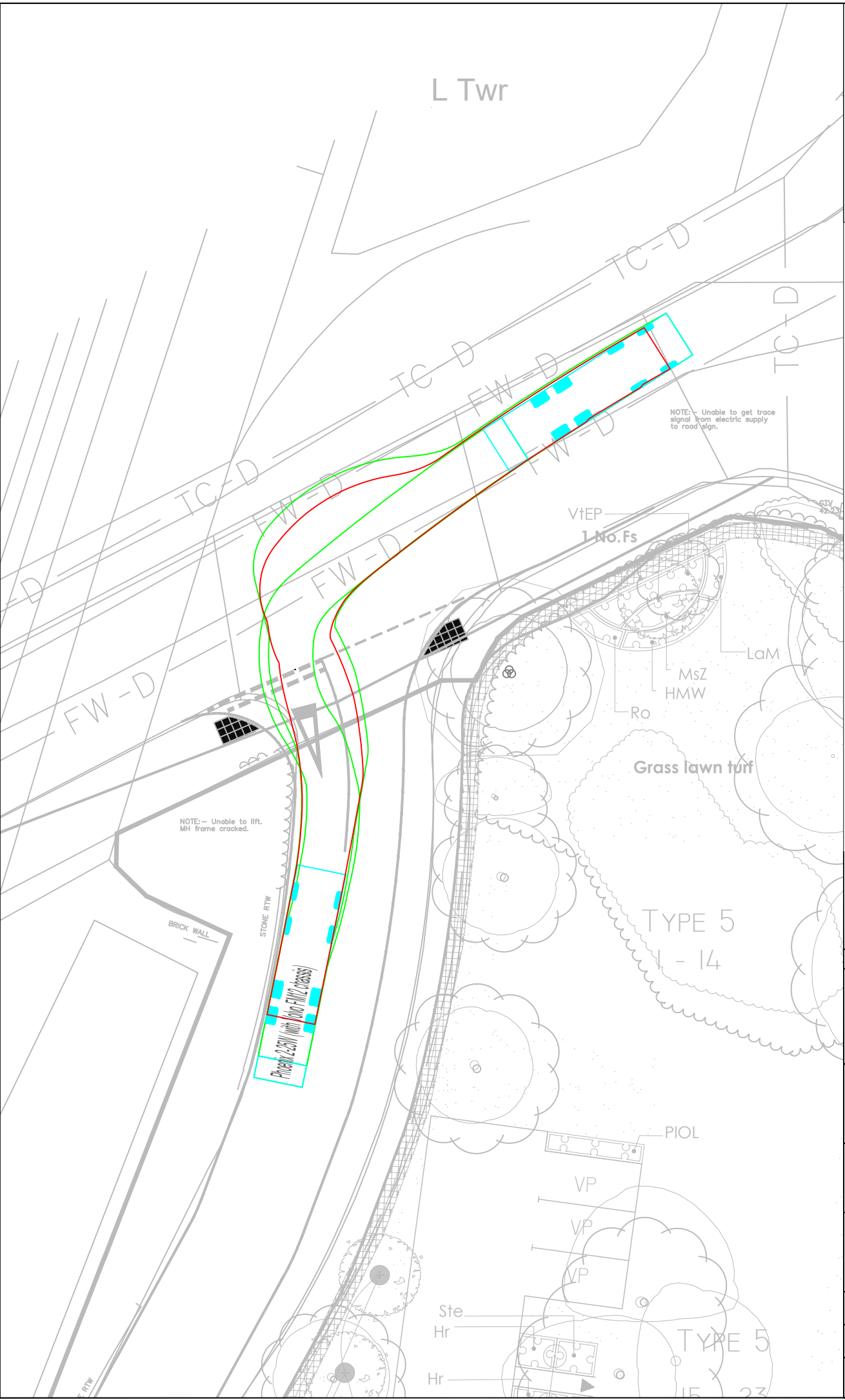
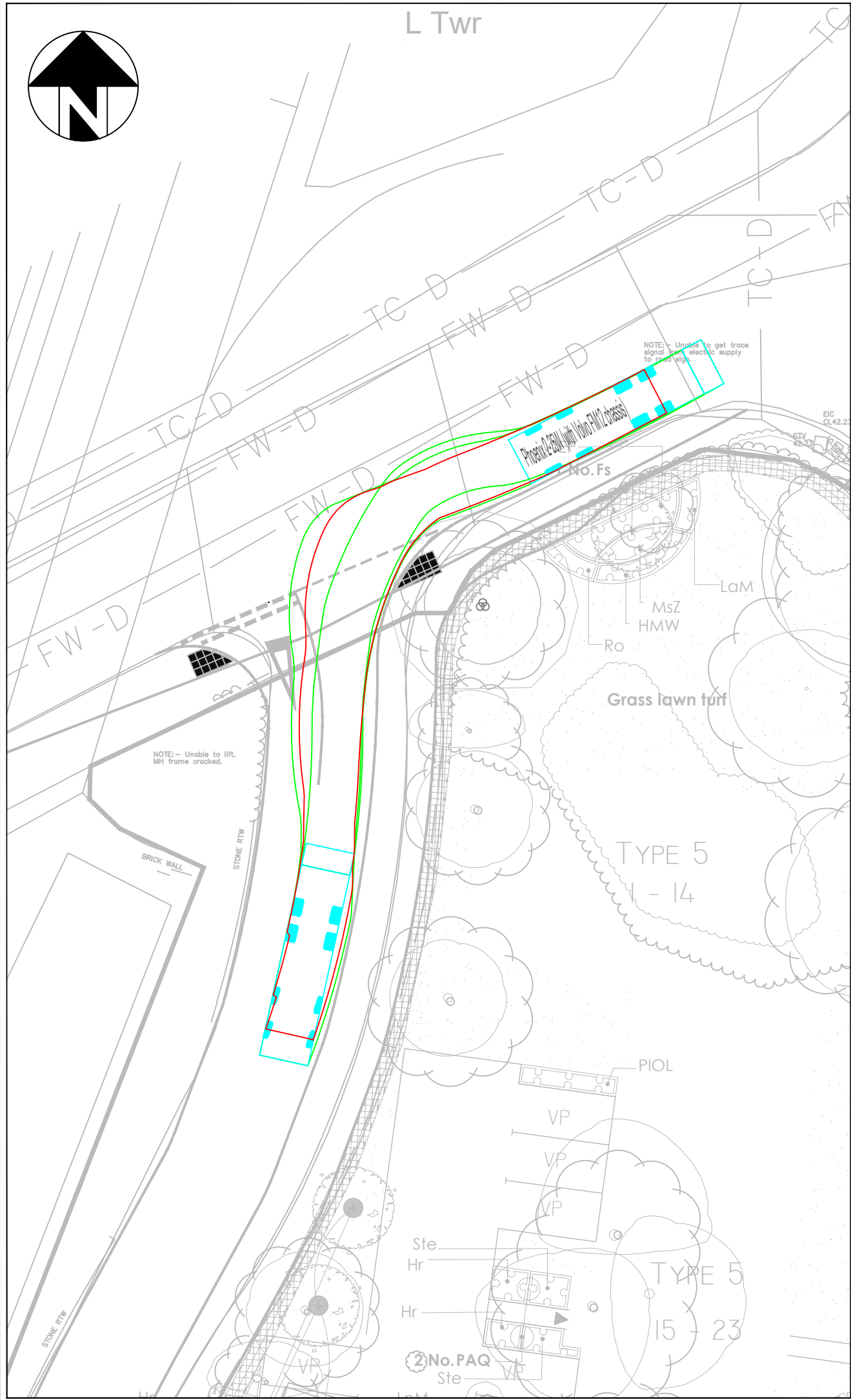
Triple Jersey Limited

Drawn By: MSF	Date. 05/10/2023	
Checked By: JF	Scale. 1:500	Paper size. A3

Drawing No.	AMA/21894/SK007	Rev.	P02
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Appendix D

SWEPT PATH ANALYSIS



Phoenix 2-25W (with Volvo FM12 chassis)
Overall Length 11.125m
Overall Width 2.530m
Overall Body Height 3.205m
Min Body Ground Clearance 0.410m
Track Width 2.500m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.250m

P01	Preliminary Issue	20.08.24	ET
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Project: B&M Kingsway, Burnage

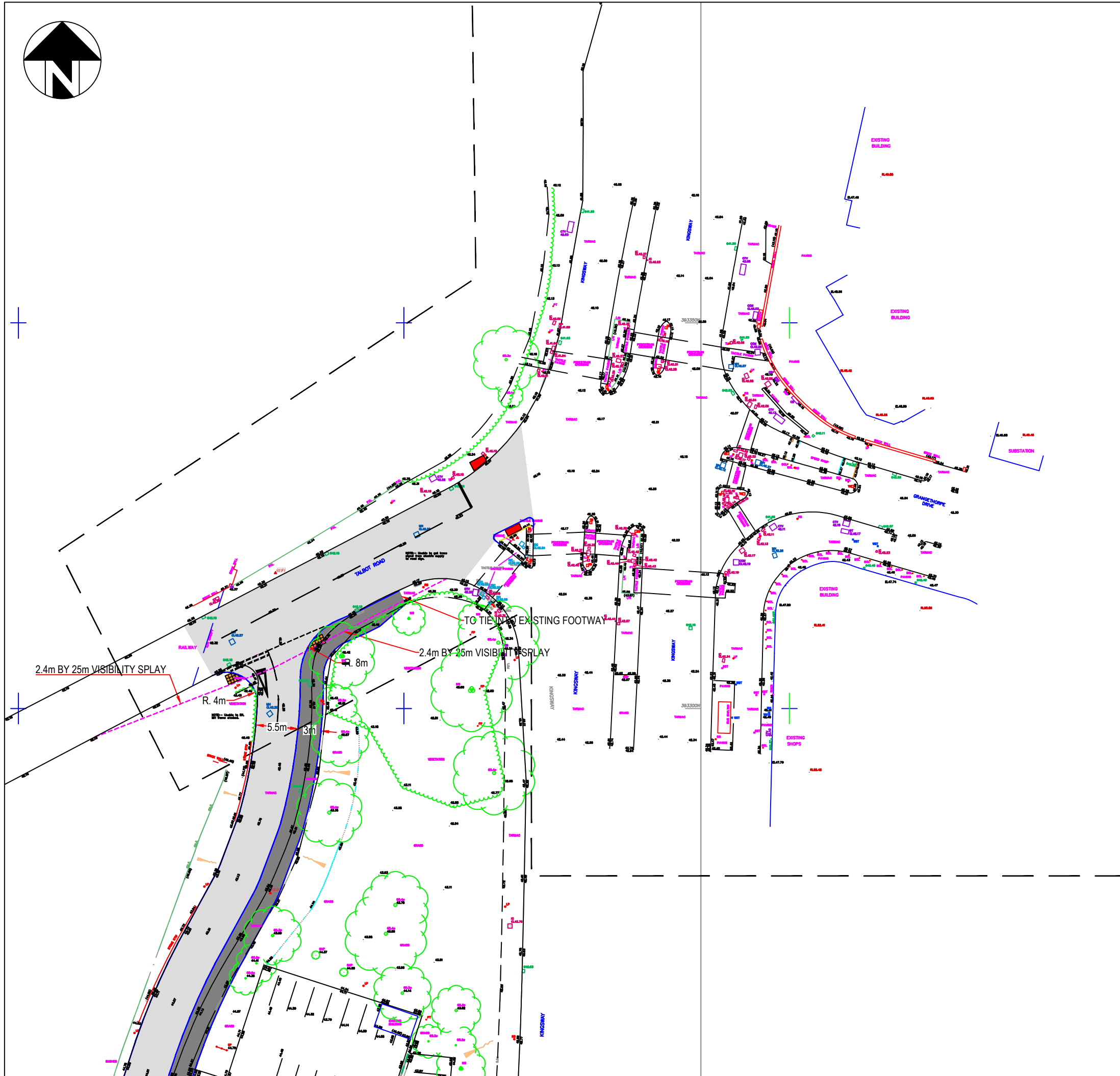
Client: Triple Jersey Limited

Drawing: Large Refuse Vehicle Swept Path Analysis Access & Egress

Drawn By: ECT	Date: 20.08.2024	
Checked: SD	Scale: 1:250	Paper: A3
Drawing No. AMA-21894-ATR-004		Rev. P01

Appendix E

PROPOSED SIGNAL JUNCTION IMPROVEMENTS



Notes

P01	First Issue	DD/MM/YY	-
Rev	Description	Date	By



Project. B&M Kingsway, Burnage

Client. Triple Jersey Limited

Drawing. Signalised Junction

Drawn By: RID	Date. 22/09/2023	
Checked By: JF	Scale. 1:500	Paper size. A3
Drawing No. AMA/21894/SK006	Rev. P01	

Appendix F

TRICS TRIP RATES

AMA - Leeds

Licence No: 710001

Calculation Reference: AUDIT-710001-230919-0932

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : K - MIXED PRIV HOUS (FLATS AND HOUSES)
 TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	ES EAST SUSSEX	1 days
	HC HAMPSHIRE	2 days
	WS WEST SUSSEX	2 days
03	SOUTH WEST	
	CW CORNWALL	1 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	2 days
05	EAST MIDLANDS	
	DY DERBY	1 days
	NG NOTTINGHAM	1 days
09	NORTH	
	FU WESTMORLAND & FURNESS	1 days
10	WALES	
	CO CONWY	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
 Actual Range: 15 to 618 (units:)
 Range Selected by User: 15 to 788 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/15 to 02/11/22

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

Selected survey days:

Monday	3 days
Tuesday	3 days
Wednesday	1 days
Thursday	5 days

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

Selected survey types:

Manual count	12 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	9

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

Selected Location Sub Categories:

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

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	4 days - Selected
Servicing vehicles Excluded	11 days - Selected

Secondary Filtering selection:

Use Class:

C3	12 days
----	---------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	4 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days

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

Population within 5 miles:

25,001 to 50,000	4 days
50,001 to 75,000	3 days
75,001 to 100,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	2 days

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

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	7 days
1.6 to 2.0	2 days

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

Travel Plan:

Yes	5 days
No	7 days

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

PTAL Rating:

No PTAL Present	12 days
-----------------	---------

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

AMA - Leeds

Licence No: 710001

LIST OF SITES relevant to selection parameters

1	CA-03-K-01	MIXED HOUSES & FLATS	CAMBRIDGESHIRE
	WEASANHAM LANE		
	WISBECH		
	FENLAND		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	100	
	Survey date: MONDAY	07/09/15	Survey Type: MANUAL
2	CA-03-K-04	MIXED HOUSES & FLATS	CAMBRIDGESHIRE
	FORDHAM ROAD		
	SOHAM		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total No of Dwellings:	65	
	Survey date: WEDNESDAY	11/07/18	Survey Type: MANUAL
3	CO-03-K-01	MIXED HOUSES & FLATS	CONWY
	LIDDELL DRIVE		
	LLANDUDNO		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	15	
	Survey date: TUESDAY	27/03/18	Survey Type: MANUAL
4	CW-03-K-01	MIXED HOUSES & FLATS	CORNWALL
	TRELOWEN DRIVE		
	PENRYN		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	89	
	Survey date: THURSDAY	28/03/19	Survey Type: MANUAL
5	DY-03-K-01	MIXED HOUSES & FLATS	DERBY
	PRIDE PARKWAY		
	DERBY		
	WILMORTON		
	Edge of Town		
	Industrial Zone		
	Total No of Dwellings:	618	
	Survey date: MONDAY	23/07/18	Survey Type: MANUAL
6	ES-03-K-01	MIXED HOUSES & FLATS	EAST SUSSEX
	LEWES ROAD		
	UCKFIELD		
	RIDGEWOOD		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	64	
	Survey date: THURSDAY	14/07/16	Survey Type: MANUAL
7	FU-03-K-01	SEMI-DETACHED & FLATS	WESTMORLAND & FURNESS
	NATLAND ROAD		
	KENDAL		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total No of Dwellings:	15	
	Survey date: TUESDAY	21/06/16	Survey Type: MANUAL

AMA - Leeds

Licence No: 710001

LIST OF SITES relevant to selection parameters (Cont.)

8	HC-03-K-02 DAIRY ROAD ANDOVER	MIXED HOUSES & FLATS	HAMPSHIRE
	Edge of Town Residential Zone Total No of Dwellings: 270 Survey date: TUESDAY 11/10/22		Survey Type: MANUAL
9	HC-03-K-07 MINLEY ROAD FARNBOROUGH BLACKWATER	MIXED HOUSES & FLATS	HAMPSHIRE
	Edge of Town Residential Zone Total No of Dwellings: 313 Survey date: THURSDAY 12/05/22		Survey Type: MANUAL
10	NG-03-K-02 CASTLE BRIDGE ROAD NOTTINGHAM	MIXED HOUSES	NOTTINGHAM
	Suburban Area (PPS6 Out of Centre) No Sub Category Total No of Dwellings: 132 Survey date: MONDAY 07/11/16		Survey Type: MANUAL
11	WS-03-K-03 LITTLEHAMPTON ROAD WORTHING WEST DURRINGTON	MIXED HOUSES & FLATS	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings: 111 Survey date: THURSDAY 12/05/16		Survey Type: MANUAL
12	WS-03-K-04 HILLS FARM LANE HORSHAM BROADBRIDGE HEATH	MIXED HOUSES & FLATS	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings: 371 Survey date: THURSDAY 28/06/18		Survey Type: MANUAL

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

MANUALLY DESELECTED SURVEYS

Site Ref	Survey Date	Reason for Deselection
BL-03-K-01	17/05/21	Undertaken during Covid 19
BO-03-K-01	15/10/20	Undertaken during Covid 19
GM-03-K-03	06/05/21	Undertaken during Covid 19

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.064	12	180	0.263	12	180	0.327
08:00 - 09:00	12	180	0.102	12	180	0.316	12	180	0.418
09:00 - 10:00	12	180	0.110	12	180	0.147	12	180	0.257
10:00 - 11:00	12	180	0.118	12	180	0.131	12	180	0.249
11:00 - 12:00	12	180	0.102	12	180	0.115	12	180	0.217
12:00 - 13:00	12	180	0.135	12	180	0.117	12	180	0.252
13:00 - 14:00	12	180	0.131	12	180	0.134	12	180	0.265
14:00 - 15:00	12	180	0.131	12	180	0.160	12	180	0.291
15:00 - 16:00	12	180	0.215	12	180	0.142	12	180	0.357
16:00 - 17:00	12	180	0.219	12	180	0.136	12	180	0.355
17:00 - 18:00	12	180	0.291	12	180	0.147	12	180	0.438
18:00 - 19:00	12	180	0.271	12	180	0.152	12	180	0.423
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.889			1.960			3.849

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

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

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Parameter summary

Trip rate parameter range selected: 15 - 618 (units:)
 Survey date range: 01/01/15 - 02/11/22
 Number of weekdays (Monday-Friday): 15
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 3
 Surveys manually removed from selection: 0

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

TAXIS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.002	12	180	0.002	12	180	0.004
08:00 - 09:00	12	180	0.003	12	180	0.004	12	180	0.007
09:00 - 10:00	12	180	0.004	12	180	0.004	12	180	0.008
10:00 - 11:00	12	180	0.004	12	180	0.003	12	180	0.007
11:00 - 12:00	12	180	0.003	12	180	0.004	12	180	0.007
12:00 - 13:00	12	180	0.004	12	180	0.004	12	180	0.008
13:00 - 14:00	12	180	0.002	12	180	0.003	12	180	0.005
14:00 - 15:00	12	180	0.006	12	180	0.004	12	180	0.010
15:00 - 16:00	12	180	0.003	12	180	0.004	12	180	0.007
16:00 - 17:00	12	180	0.002	12	180	0.002	12	180	0.004
17:00 - 18:00	12	180	0.003	12	180	0.002	12	180	0.005
18:00 - 19:00	12	180	0.005	12	180	0.005	12	180	0.010
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.041			0.041			0.082

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

OGVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.001	12	180	0.001	12	180	0.002
08:00 - 09:00	12	180	0.000	12	180	0.000	12	180	0.000
09:00 - 10:00	12	180	0.001	12	180	0.002	12	180	0.003
10:00 - 11:00	12	180	0.004	12	180	0.003	12	180	0.007
11:00 - 12:00	12	180	0.001	12	180	0.002	12	180	0.003
12:00 - 13:00	12	180	0.002	12	180	0.001	12	180	0.003
13:00 - 14:00	12	180	0.002	12	180	0.002	12	180	0.004
14:00 - 15:00	12	180	0.002	12	180	0.003	12	180	0.005
15:00 - 16:00	12	180	0.000	12	180	0.000	12	180	0.000
16:00 - 17:00	12	180	0.001	12	180	0.001	12	180	0.002
17:00 - 18:00	12	180	0.000	12	180	0.000	12	180	0.000
18:00 - 19:00	12	180	0.000	12	180	0.000	12	180	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.014			0.015			0.029

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

PSVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.000	12	180	0.000	12	180	0.000
08:00 - 09:00	12	180	0.000	12	180	0.000	12	180	0.000
09:00 - 10:00	12	180	0.000	12	180	0.000	12	180	0.000
10:00 - 11:00	12	180	0.000	12	180	0.000	12	180	0.000
11:00 - 12:00	12	180	0.000	12	180	0.000	12	180	0.000
12:00 - 13:00	12	180	0.000	12	180	0.000	12	180	0.000
13:00 - 14:00	12	180	0.000	12	180	0.000	12	180	0.000
14:00 - 15:00	12	180	0.000	12	180	0.000	12	180	0.000
15:00 - 16:00	12	180	0.000	12	180	0.000	12	180	0.000
16:00 - 17:00	12	180	0.000	12	180	0.000	12	180	0.000
17:00 - 18:00	12	180	0.000	12	180	0.000	12	180	0.000
18:00 - 19:00	12	180	0.000	12	180	0.000	12	180	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

CYCLISTS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.005	12	180	0.014	12	180	0.019
08:00 - 09:00	12	180	0.008	12	180	0.028	12	180	0.036
09:00 - 10:00	12	180	0.004	12	180	0.007	12	180	0.011
10:00 - 11:00	12	180	0.005	12	180	0.006	12	180	0.011
11:00 - 12:00	12	180	0.003	12	180	0.004	12	180	0.007
12:00 - 13:00	12	180	0.006	12	180	0.004	12	180	0.010
13:00 - 14:00	12	180	0.003	12	180	0.003	12	180	0.006
14:00 - 15:00	12	180	0.006	12	180	0.006	12	180	0.012
15:00 - 16:00	12	180	0.017	12	180	0.012	12	180	0.029
16:00 - 17:00	12	180	0.012	12	180	0.005	12	180	0.017
17:00 - 18:00	12	180	0.016	12	180	0.006	12	180	0.022
18:00 - 19:00	12	180	0.009	12	180	0.004	12	180	0.013
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.094			0.099			0.193

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

CARS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.049	12	180	0.234	12	180	0.283
08:00 - 09:00	12	180	0.087	12	180	0.294	12	180	0.381
09:00 - 10:00	12	180	0.087	12	180	0.128	12	180	0.215
10:00 - 11:00	12	180	0.092	12	180	0.100	12	180	0.192
11:00 - 12:00	12	180	0.084	12	180	0.088	12	180	0.172
12:00 - 13:00	12	180	0.106	12	180	0.095	12	180	0.201
13:00 - 14:00	12	180	0.103	12	180	0.108	12	180	0.211
14:00 - 15:00	12	180	0.110	12	180	0.135	12	180	0.245
15:00 - 16:00	12	180	0.186	12	180	0.116	12	180	0.302
16:00 - 17:00	12	180	0.190	12	180	0.113	12	180	0.303
17:00 - 18:00	12	180	0.264	12	180	0.130	12	180	0.394
18:00 - 19:00	12	180	0.252	12	180	0.139	12	180	0.391
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.610			1.680			3.290

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

LGVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.012	12	180	0.023	12	180	0.035
08:00 - 09:00	12	180	0.011	12	180	0.016	12	180	0.027
09:00 - 10:00	12	180	0.018	12	180	0.014	12	180	0.032
10:00 - 11:00	12	180	0.018	12	180	0.023	12	180	0.041
11:00 - 12:00	12	180	0.014	12	180	0.020	12	180	0.034
12:00 - 13:00	12	180	0.021	12	180	0.015	12	180	0.036
13:00 - 14:00	12	180	0.022	12	180	0.018	12	180	0.040
14:00 - 15:00	12	180	0.014	12	180	0.017	12	180	0.031
15:00 - 16:00	12	180	0.024	12	180	0.020	12	180	0.044
16:00 - 17:00	12	180	0.024	12	180	0.020	12	180	0.044
17:00 - 18:00	12	180	0.019	12	180	0.014	12	180	0.033
18:00 - 19:00	12	180	0.013	12	180	0.008	12	180	0.021
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.210			0.208			0.418

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

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

AMA - Leeds

Licence No: 710001

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)

MOTOR CYCLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	180	0.000	12	180	0.002	12	180	0.002
08:00 - 09:00	12	180	0.000	12	180	0.002	12	180	0.002
09:00 - 10:00	12	180	0.000	12	180	0.000	12	180	0.000
10:00 - 11:00	12	180	0.000	12	180	0.002	12	180	0.002
11:00 - 12:00	12	180	0.000	12	180	0.001	12	180	0.001
12:00 - 13:00	12	180	0.001	12	180	0.002	12	180	0.003
13:00 - 14:00	12	180	0.002	12	180	0.002	12	180	0.004
14:00 - 15:00	12	180	0.000	12	180	0.000	12	180	0.000
15:00 - 16:00	12	180	0.001	12	180	0.001	12	180	0.002
16:00 - 17:00	12	180	0.002	12	180	0.000	12	180	0.002
17:00 - 18:00	12	180	0.005	12	180	0.000	12	180	0.005
18:00 - 19:00	12	180	0.001	12	180	0.000	12	180	0.001
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.012			0.012			0.024

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

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

Appendix G

LINSIG OUTPUTS

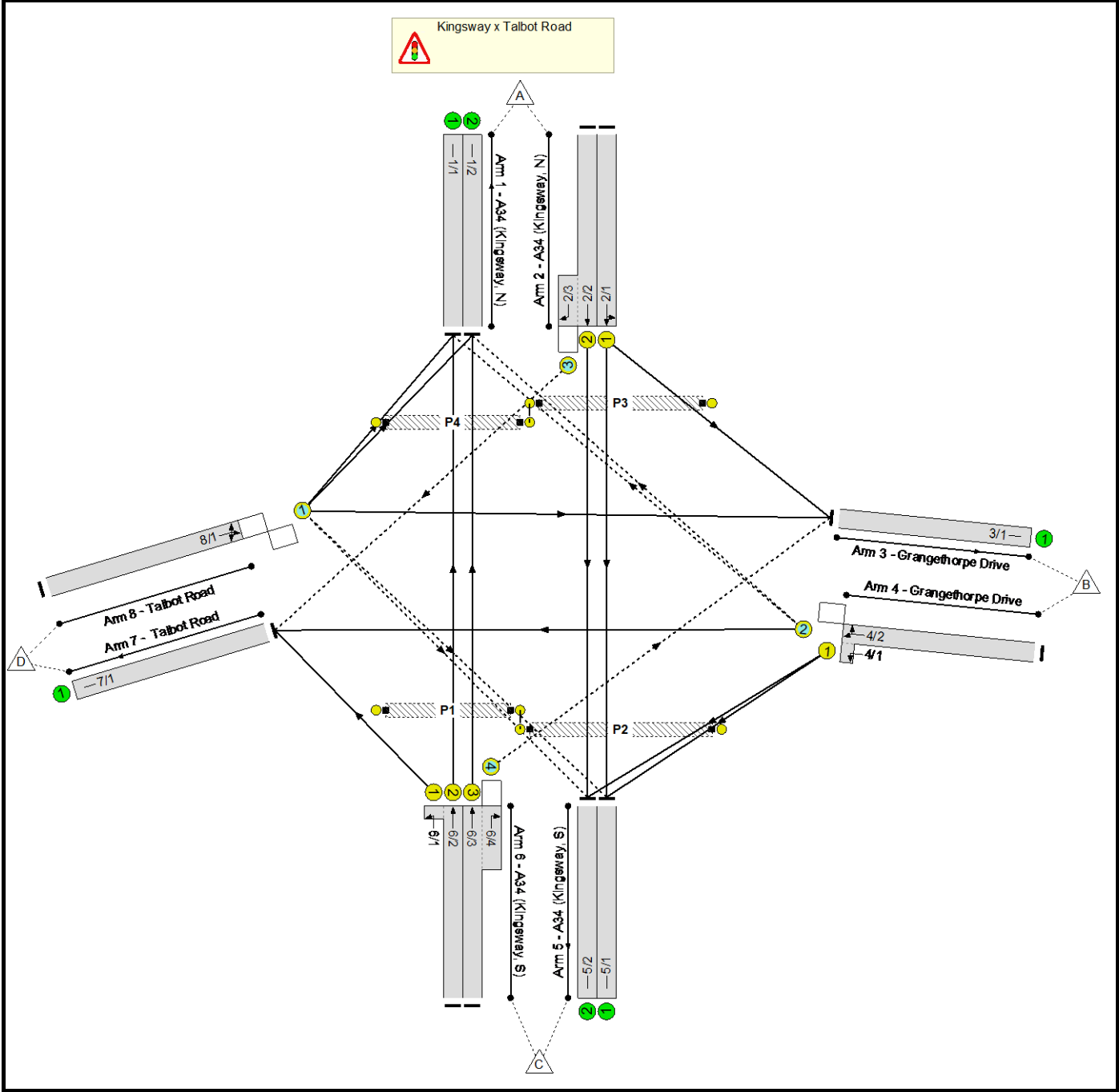
Full Input Data And Results

Full Input Data And Results

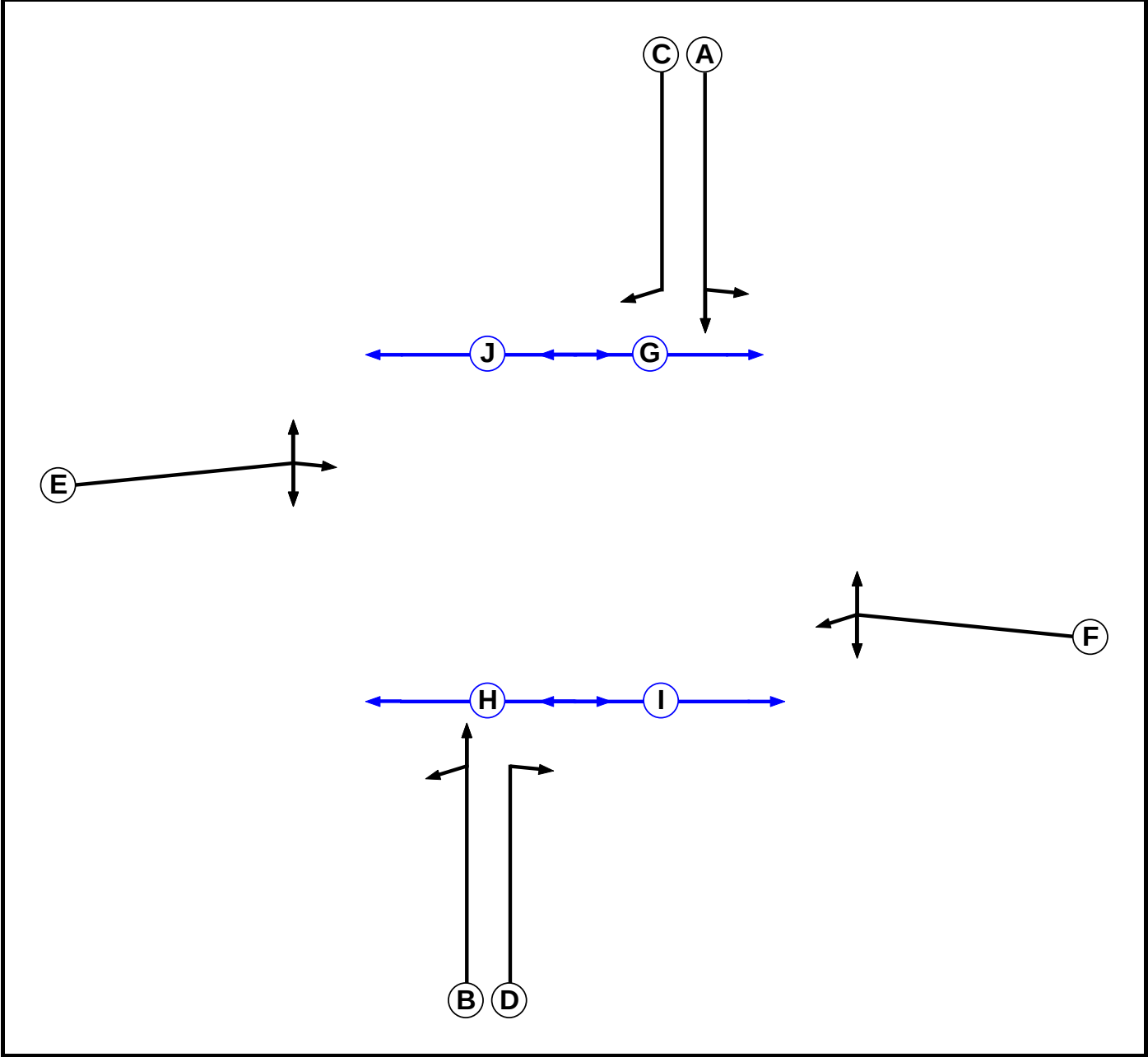
User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Kingsway, Burnage - Existing Model Stages.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Pedestrian		4	4
H	Pedestrian		4	4
I	Pedestrian		4	4
J	Pedestrian		4	0

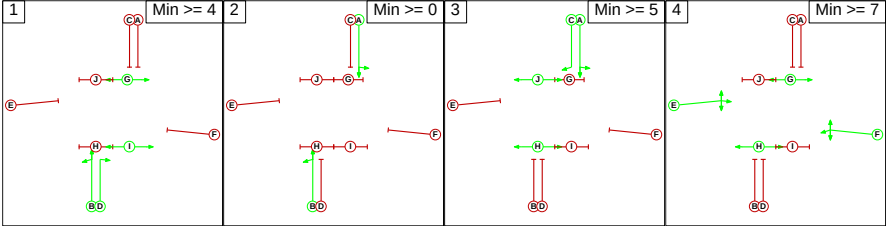
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	D	Losing	1	1
1	2	G	Losing	2	2
1	3	G	Losing	2	2
3	1	H	Losing	3	3
3	1	J	Losing	4	4
3	2	H	Losing	3	3
3	2	J	Losing	4	4
3	4	J	Losing	4	4

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		9	9	9
	2	10		9	9
	3	10	10		10
	4	10	7	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Kingsway x Talbot Road											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/3 (A34 (Kingsway, N))	7/1 (Right)	1439	0	6/2	1.09	All	2.00	-	0.50	2	2.00
				6/3	1.09	All					
				6/1	1.09	All					
4/2 (Grangethorpe Drive)	1/1 (Right)	1439	0	8/1	1.09	To 1/1 (Left) To 1/2 (Left) To 3/1 (Ahead)	2.00	2.00	0.50	2	2.00
	1/2 (Right)	1439	0	8/1	1.09	To 1/1 (Left) To 1/2 (Left) To 3/1 (Ahead)					
6/4 (A34 (Kingsway, S))	3/1 (Right)	1439	0	2/1	1.09	All	2.00	-	0.50	2	2.00
				2/2	1.09	All					
	5/1 (Right)	1439	0	4/1	1.09	All	4.00	2.00	0.50	4	2.00
				4/2	1.09	To 7/1 (Ahead)					
	5/2 (Right)	1439	0	4/1	1.09	All					
				4/2	1.09	To 7/1 (Ahead)					

Lane Input Data

Junction: Kingsway x Talbot 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 (A34 (Kingsway, N))	U		2	3	60.0	Inf	-	-	-	-	-	-
1/2 (A34 (Kingsway, N))	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1 (A34 (Kingsway, N))	U	A	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf
2/2 (A34 (Kingsway, N))	U	A	2	3	60.0	Geom	-	3.30	0.00	N	Arm 5 Ahead	Inf
2/3 (A34 (Kingsway, N))	O	C	2	3	4.0	Geom	-	3.20	0.00	N	Arm 7 Right	21.00
3/1 (Grangethorpe Drive)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Grangethorpe Drive)	U	F	2	3	1.0	Geom	-	4.00	0.00	Y	Arm 5 Left	10.00
4/2 (Grangethorpe Drive)	O	F	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf
5/1 (A34 (Kingsway, S))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (A34 (Kingsway, S))	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A34 (Kingsway, S))	U	B	2	3	1.0	Geom	-	5.00	0.00	Y	Arm 7 Left	10.00
6/2 (A34 (Kingsway, S))	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 1 Ahead	Inf
6/3 (A34 (Kingsway, S))	U	B	2	3	60.0	Geom	-	3.25	0.00	N	Arm 1 Ahead	Inf
6/4 (A34 (Kingsway, S))	O	D	2	3	5.0	Geom	-	3.20	0.00	N	Arm 3 Right	14.00
7/1 (Talbot Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Talbot Road)	O	E	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead	33.00 Inf

[illegible]

Flow Group	Start Time	End Time	Duration	Formula
1: '2024 Base AM'	08:00	09:00	01:00	
2: '2024 Base PM'	17:00	18:00	01:00	
3: '2029 Base AM'	08:00	09:00	01:00	
4: '2029 Base PM'	17:00	18:00	01:00	

Traffic Flows, Desired

Origin	Destination					
		A	B	C	D	Tot.
	A	0	60	857	129	1046
	B	90	0	46	145	281
	C	1258	77	0	21	1356
	D	84	148	38	0	270
	Tot.	1432	285	941	295	2953

Traffic Lane Flows

Lane	Scenario 1: 2024 AM
Junction: Kingsway x Talbot Road	
1/1	716
1/2	716
2/1	459
2/2 (with short)	587(In) 458(Out)
2/3 (short)	129
3/1	285
4/1 (short)	46
4/2 (with short)	281(In) 235(Out)
5/1	441
5/2	500
6/1 (short)	21
6/2 (with short)	650(In) 629(Out)
6/3 (with short)	706(In) 629(Out)
6/4 (short)	77
7/1	295
8/1	270

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.1 % 86.9 %	1916	1916
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	38.3 % 61.7 %	1828	1828
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	31.1 % 54.8 % 14.1 %	1911	1911

Scenario 2: '2024 PM' (FG2: '2024 Base PM', Plan 1: 'Existing')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	94	1312	176	1582
	B	59	0	40	125	224
	C	799	90	0	32	921
	D	79	160	27	0	266
	Tot.	937	344	1379	333	2993

Traffic Lane Flows

Lane	Scenario 2: 2024 PM
Junction: Kingsway x Talbot Road	
1/1	470
1/2	467
2/1	703
2/2 (with short)	879(In) 703(Out)
2/3 (short)	176
3/1	344
4/1 (short)	40
4/2 (with short)	224(In) 184(Out)
5/1	643
5/2	736
6/1 (short)	32
6/2 (with short)	432(In) 400(Out)
6/3 (with short)	489(In) 399(Out)
6/4 (short)	90
7/1	333
8/1	266

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.4 % 86.6 %	1915	1915
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	32.1 % 67.9 %	1846	1846
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	29.7 % 60.2 % 10.2 %	1922	1922

Full Input Data And Results

Scenario 3: '2029 Base AM' (FG3: '2029 Base AM', Plan 1: 'Existing')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	64	912	138	1114
	B	96	0	49	154	299
	C	1339	81	0	22	1442
	D	89	158	41	0	288
	Tot.	1524	303	1002	314	3143

Traffic Lane Flows

Lane	Scenario 3: 2029 Base AM
Junction: Kingsway x Talbot Road	
1/1	763
1/2	761
2/1	488
2/2 (with short)	626(In) 488(Out)
2/3 (short)	138
3/1	303
4/1 (short)	49
4/2 (with short)	299(In) 250(Out)
5/1	470
5/2	532
6/1 (short)	22
6/2 (with short)	692(In) 670(Out)
6/3 (with short)	750(In) 669(Out)
6/4 (short)	81
7/1	314
8/1	288

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.1 % 86.9 %	1916	1916
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	38.4 % 61.6 %	1828	1828
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	30.9 % 54.9 % 14.2 %	1911	1911

Full Input Data And Results

Scenario 4: '2029 Base PM' (FG4: '2029 Base PM', Plan 1: 'Existing')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	100	1396	187	1683
	B	63	0	43	133	239
	C	850	96	0	34	980
	D	84	171	29	0	284
	Tot.	997	367	1468	354	3186

Traffic Lane Flows

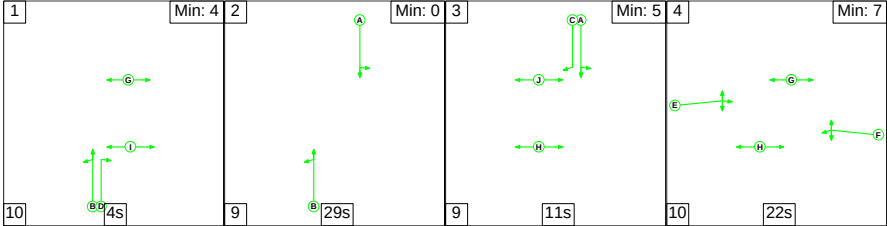
Lane	Scenario 4: 2029 Base PM
Junction: Kingsway x Talbot Road	
1/1	499
1/2	498
2/1	748
2/2 (with short)	935(In) 748(Out)
2/3 (short)	187
3/1	367
4/1 (short)	43
4/2 (with short)	239(In) 196(Out)
5/1	685
5/2	783
6/1 (short)	34
6/2 (with short)	459(In) 425(Out)
6/3 (with short)	521(In) 425(Out)
6/4 (short)	96
7/1	354
8/1	284

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.4 % 86.6 %	1915	1915
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	32.1 % 67.9 %	1846	1846
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	29.6 % 60.2 % 10.2 %	1922	1922

Scenario 1: '2024 AM' (FG1: '2024 Base AM', Plan 1: 'Existing')

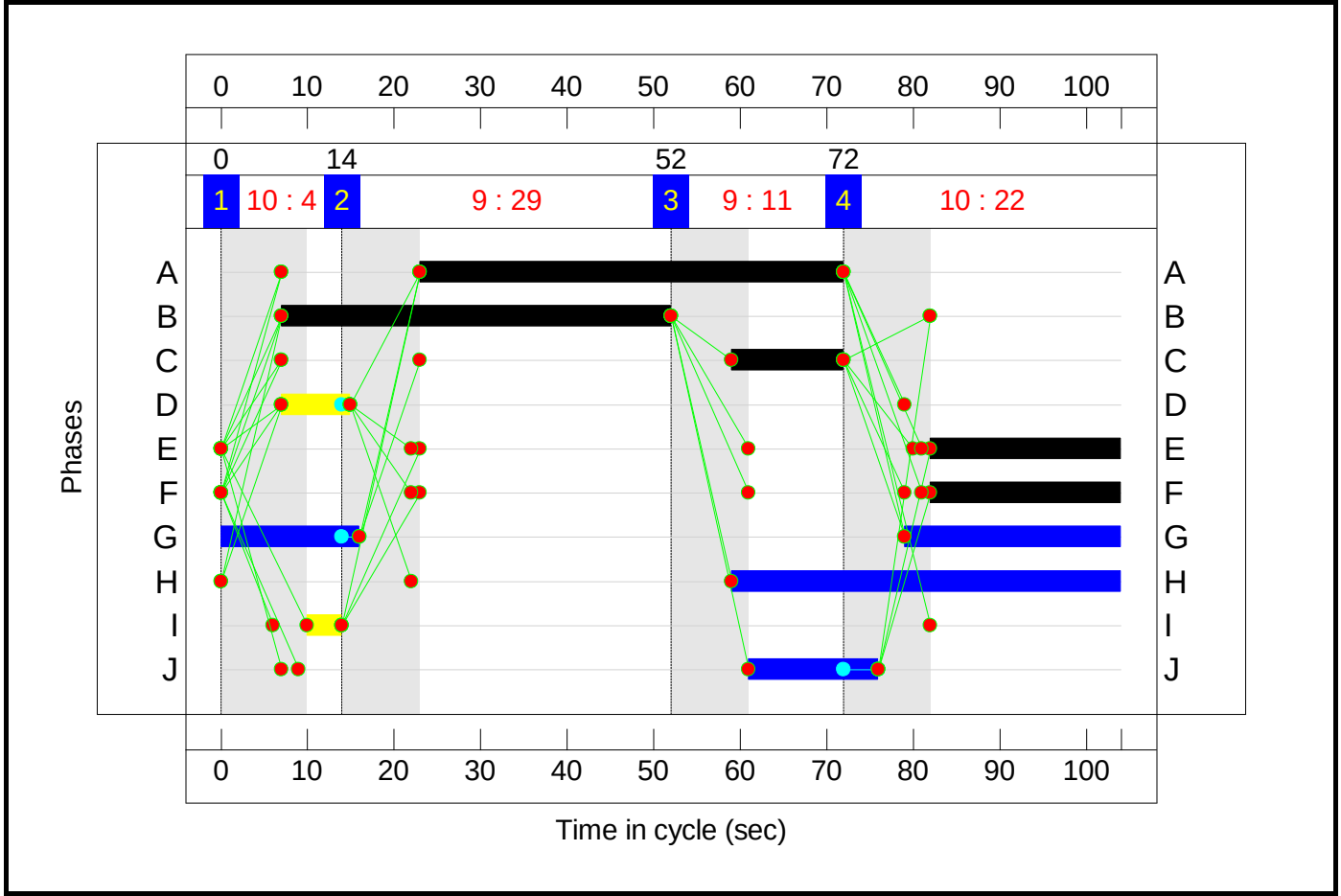
Stage Sequence Diagram

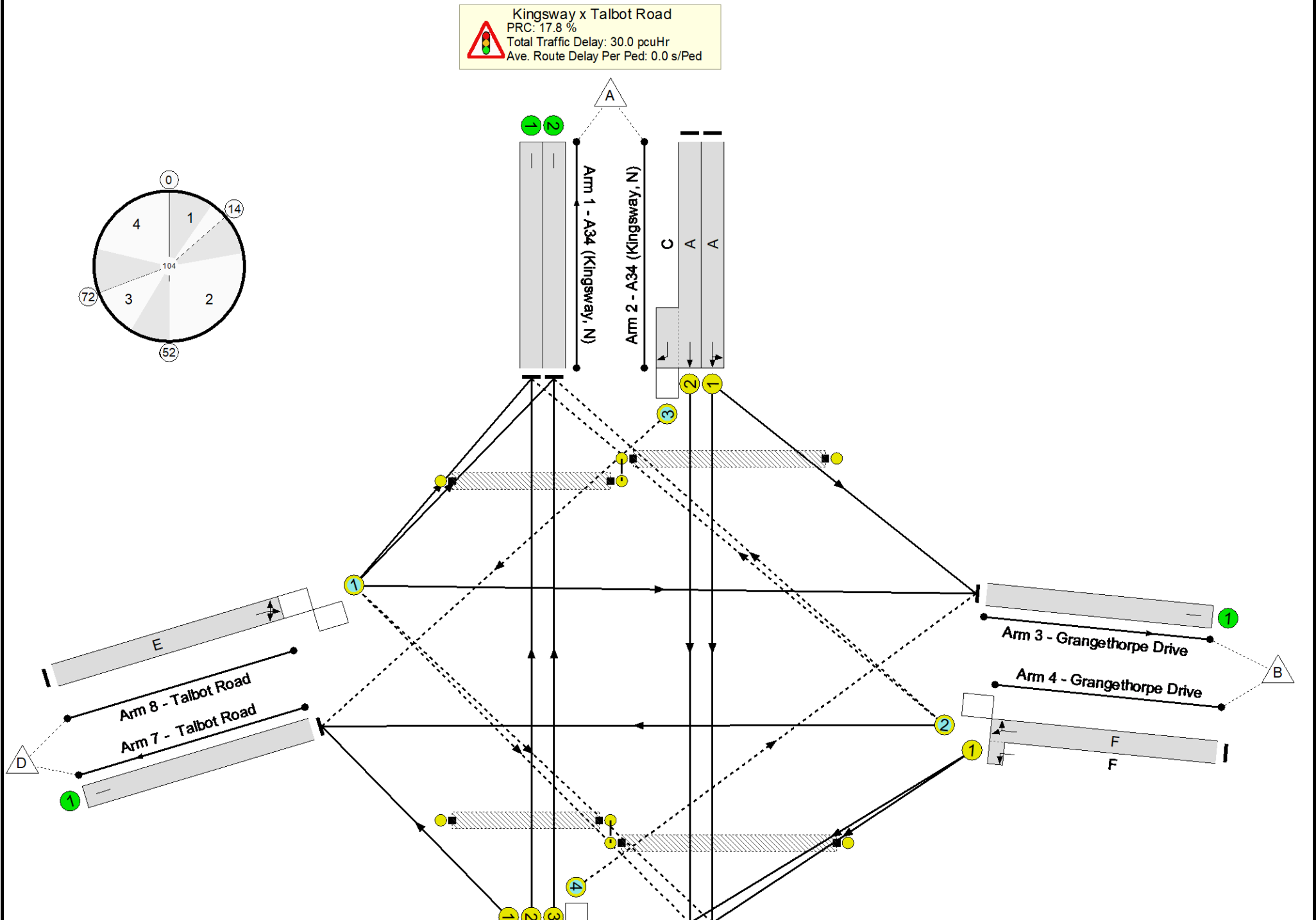


Stage Timings

Stage	1	2	3	4
Duration	4	29	11	22
Change Point	0	14	52	72

Signal Timings Diagram





Full Input Data And Results

Network Results

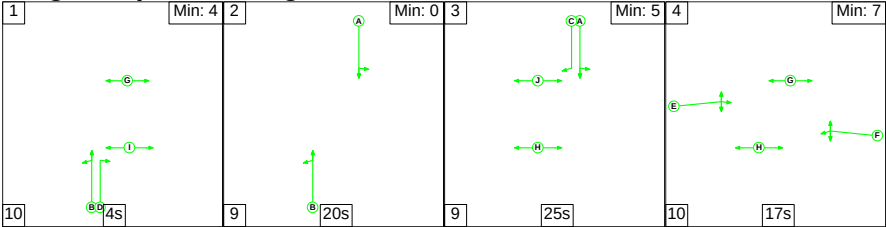
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	76.4%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	76.4%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	716	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	716	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	49	-	459	1916	921	49.8%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	49:13	-	587	2085:1937	599+169	76.4 : 76.4%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	285	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	22	-	281	1828:1752	313+61	75.1 : 75.1%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	441	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	500	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	45	-	650	1940:1839	827+28	76.0 : 76.0%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	45:8	-	706	2080:1874	825+101	76.3 : 76.3%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	295	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	22	-	270	1911	423	63.9%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	45	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	41	-	0	-	0	0.0%

Full Input Data And Results

Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	15	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	127	204	3	22.2	7.6	0.2	30.0	-	-	-	-
Kingsway x Talbot Road	-	-	127	204	3	22.2	7.6	0.2	30.0	-	-	-	-
1/1	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	459	459	-	-	-	2.4	0.5	-	2.8	22.3	9.1	0.5	9.5
2/2+2/3	587	587	0	127	2	3.8	1.6	0.0	5.4	33.4	10.6	1.6	12.2
3/1	285	285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	281	281	90	0	0	2.9	1.5	0.2	4.5	58.3	7.2	1.5	8.7
5/1	441	441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	500	500	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	650	650	-	-	-	4.4	1.6	-	6.0	33.1	15.7	1.6	17.2
6/3+6/4	706	706	0	77	0	6.0	1.6	0.0	7.5	38.5	16.4	1.6	18.0
7/1	295	295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	270	270	37	0	1	2.8	0.9	0.0	3.7	49.0	7.1	0.9	7.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 17.8 Total Delay for Signalled Lanes (pcuHr): 30.02 Cycle Time (s): 104 PRC Over All Lanes (%): 17.8 Total Delay Over All Lanes(pcuHr): 30.02													

Full Input Data And Results
Scenario 2: '2024 PM' (FG2: '2024 Base PM', Plan 1: 'Existing')

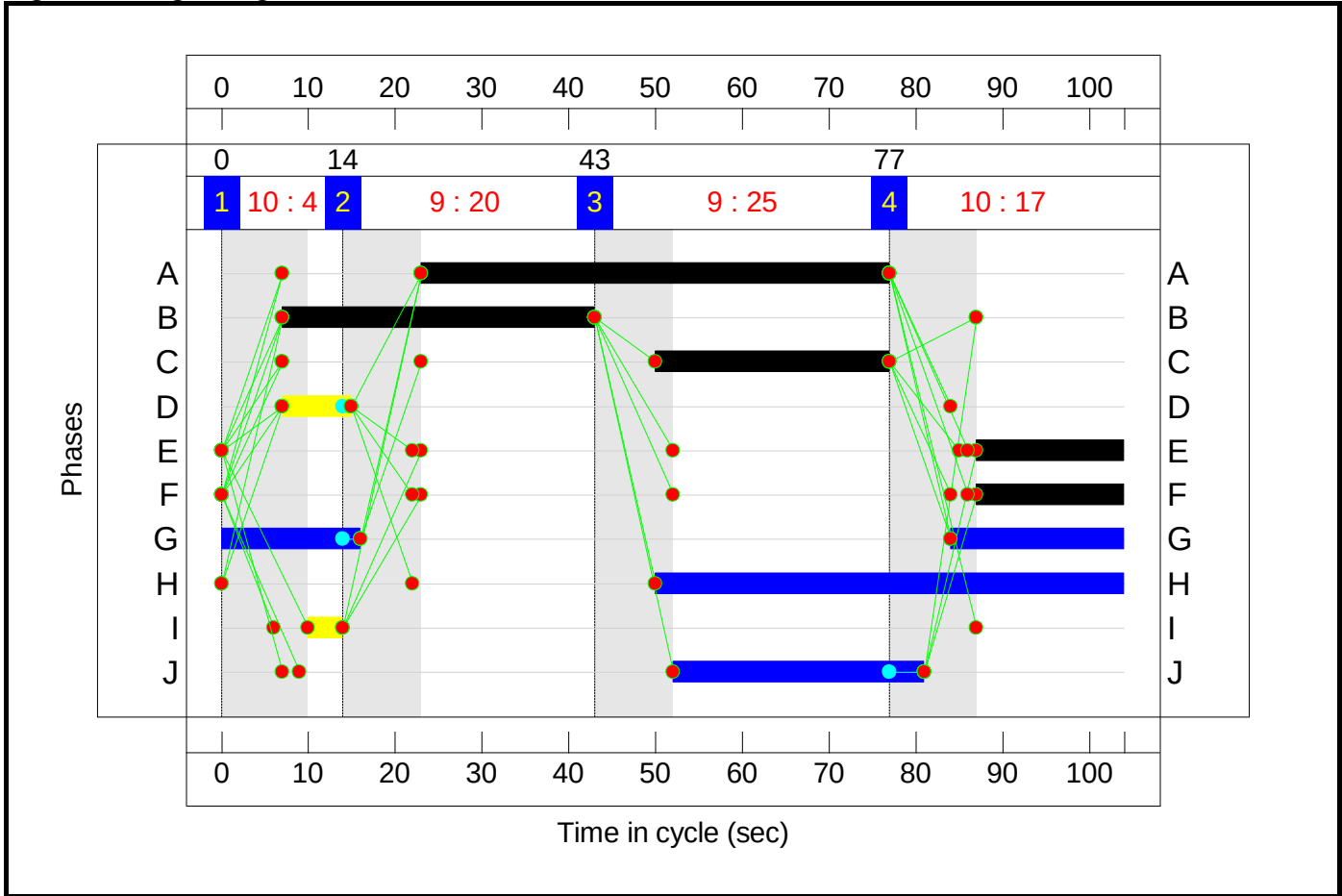
Stage Sequence Diagram



Stage Timings

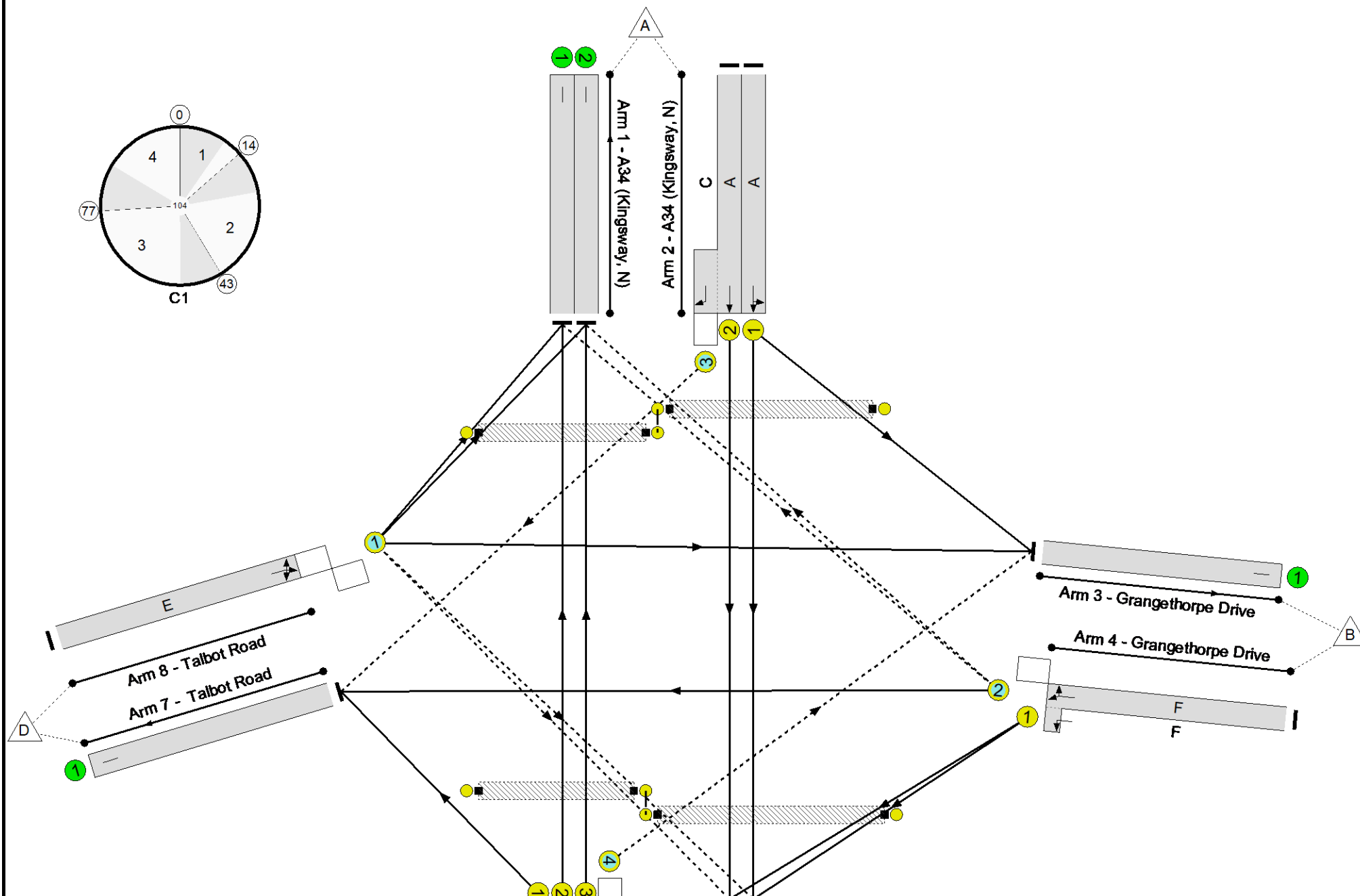
Stage	1	2	3	4
Duration	4	20	25	17
Change Point	0	14	43	77

Signal Timings Diagram



Full Input Data And Results

Kingsway x Talbot Road
 PRC: 12.6 %
 Total Traffic Delay: 30.6 pcuHr
 Ave. Route Delay Per Ped: 0.0 s/Ped



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	80.0%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	80.0%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	467	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	54	-	703	1915	1013	69.4%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	54:27	-	879	2085:1937	882+221	79.7 : 79.7%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	17	-	224	1846:1752	260+57	70.7 : 70.7%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	36	-	432	1940:1839	637+51	62.8 : 62.8%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	36:8	-	489	2080:1874	621+140	64.3 : 64.3%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	333	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	17	-	266	1922	333	80.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	54	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	36	-	0	-	0	0.0%

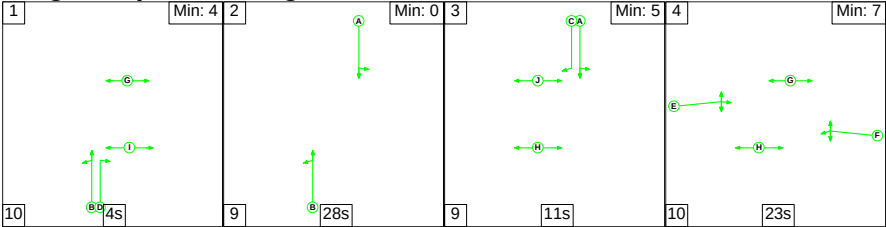
Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	29	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	59	263	31	22.5	7.9	0.2	30.6	-	-	-	-
Kingsway x Talbot Road	-	-	59	263	31	22.5	7.9	0.2	30.6	-	-	-	-
1/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	467	467	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	703	703	-	-	-	3.6	1.1	-	4.7	24.0	15.0	1.1	16.2
2/2+2/3	879	879	0	173	3	5.2	1.9	0.0	7.1	29.2	19.3	1.9	21.2
3/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	224	224	32	0	27	2.5	1.2	0.1	3.8	61.2	5.8	1.2	7.0
5/1	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	432	432	-	-	-	3.3	0.8	-	4.2	34.8	10.2	0.8	11.1
6/3+6/4	489	489	0	90	0	4.9	0.9	0.0	5.8	42.6	10.4	0.9	11.3
7/1	333	333	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	266	266	26	0	1	3.0	1.9	0.0	5.0	67.2	7.3	1.9	9.2
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 12.6 Total Delay for Signalled Lanes (pcuHr): 30.56 Cycle Time (s): 104 PRC Over All Lanes (%): 12.6 Total Delay Over All Lanes(pcuHr): 30.56													

Figure 1. The effect of the number of trials on the number of correct responses. The number of correct responses was plotted against the number of trials for each condition. The number of correct responses increased with the number of trials for all conditions. The number of correct responses was highest for the condition with the highest number of trials (10 trials) and lowest for the condition with the lowest number of trials (2 trials).

Full Input Data And Results

Scenario 3: '2029 Base AM' (FG3: '2029 Base AM', Plan 1: 'Existing')

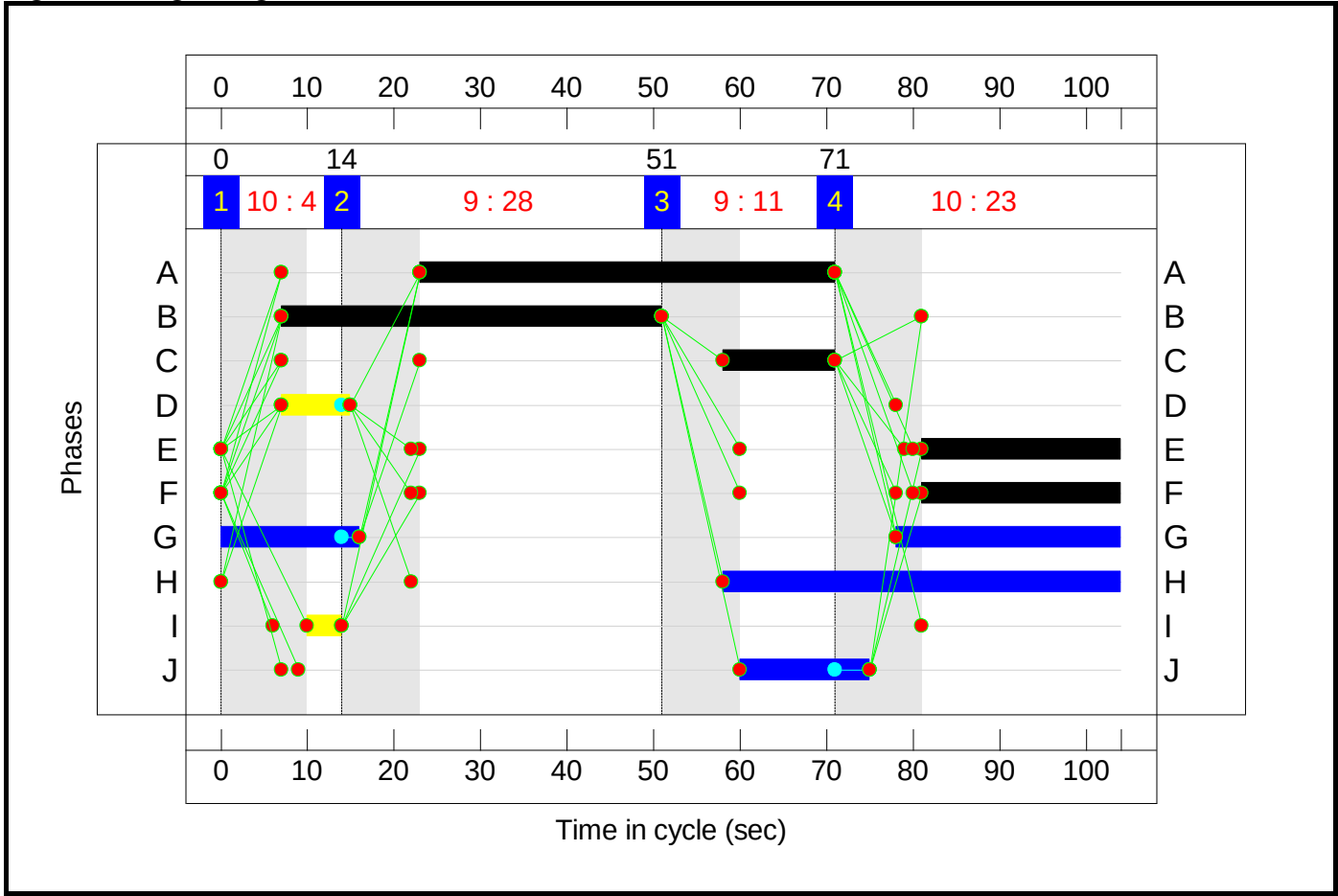
Stage Sequence Diagram



Stage Timings

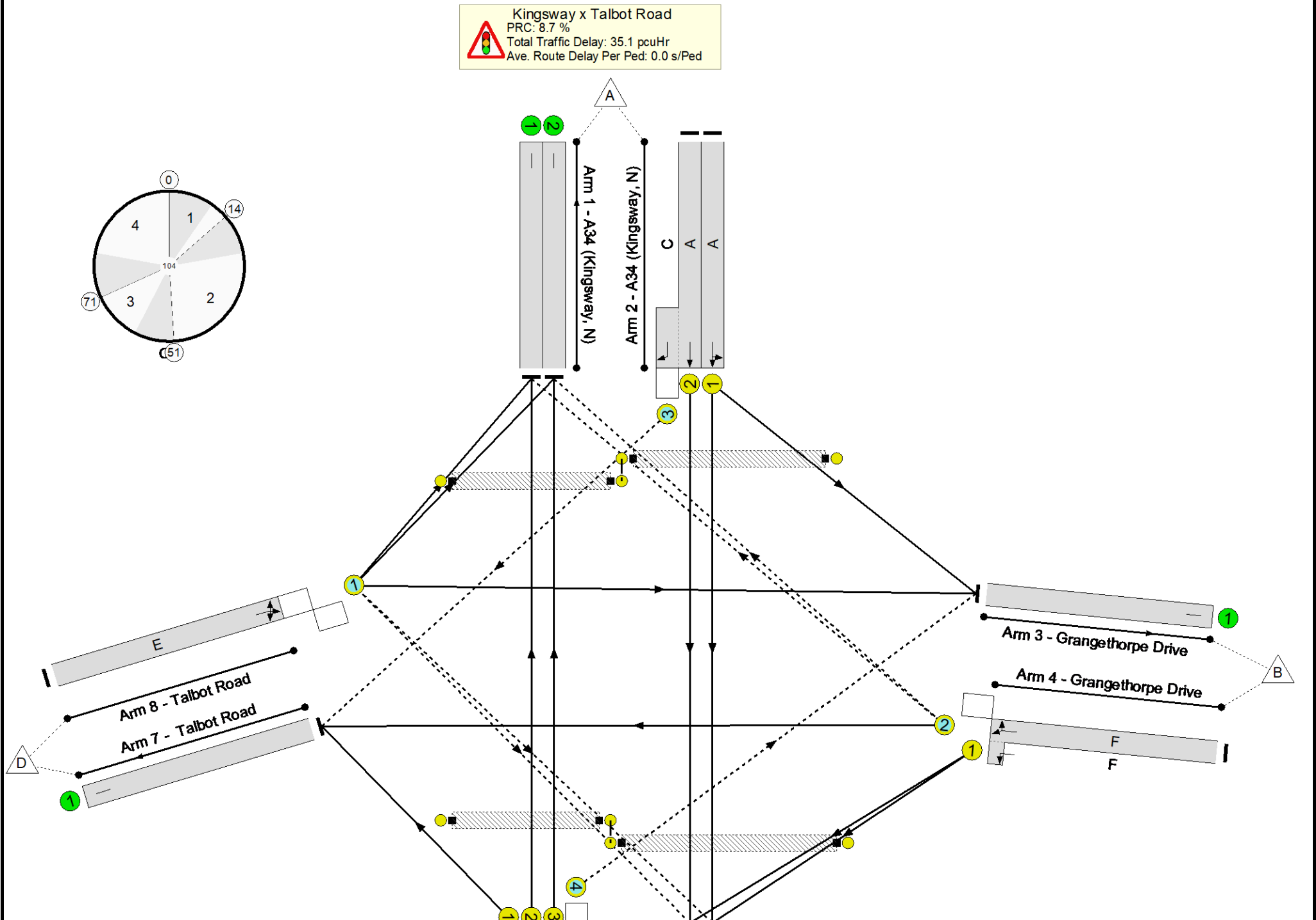
Stage	1	2	3	4
Duration	4	28	11	23
Change Point	0	14	51	71

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	82.8%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	82.8%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	763	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	761	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	48	-	488	1916	903	54.1%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	48:13	-	626	2085:1937	597+169	81.7 : 81.7%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	23	-	299	1828:1752	313+61	79.9 : 79.9%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	532	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	44	-	692	1940:1839	810+27	82.7 : 82.7%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	44:8	-	750	2080:1874	808+98	82.8 : 82.8%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	314	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	23	-	288	1911	441	65.3%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	46	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	42	-	0	-	0	0.0%

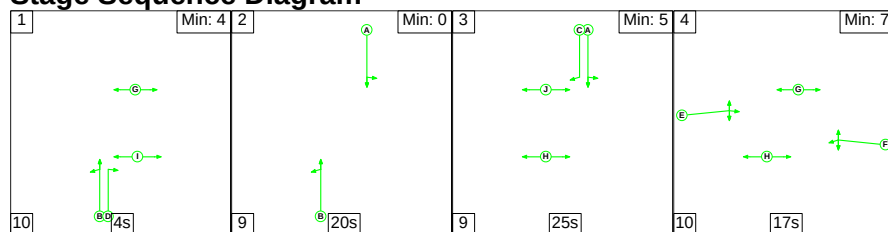
Full Input Data And Results

Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	15	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	136	216	3	24.6	10.2	0.3	35.1	-	-	-	-
Kingsway x Talbot Road	-	-	136	216	3	24.6	10.2	0.3	35.1	-	-	-	-
1/1	763	763	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	488	488	-	-	-	2.6	0.6	-	3.2	23.8	9.9	0.6	10.5
2/2+2/3	626	626	0	135	3	4.3	2.2	0.0	6.4	37.1	12.1	2.2	14.3
3/1	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	299	299	96	0	0	3.0	1.9	0.2	5.2	62.1	7.7	1.9	9.6
5/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	532	532	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	692	692	-	-	-	5.0	2.3	-	7.3	38.2	17.5	2.3	19.8
6/3+6/4	750	750	0	81	0	6.7	2.3	0.0	9.0	43.4	18.4	2.3	20.7
7/1	314	314	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	288	288	40	0	1	2.9	0.9	0.0	3.9	48.4	7.5	0.9	8.4
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 8.7 Total Delay for Signalled Lanes (pcuHr): 35.08 Cycle Time (s): 104 PRC Over All Lanes (%): 8.7 Total Delay Over All Lanes(pcuHr): 35.08													

Full Input Data And Results

Scenario 4: '2029 Base PM' (FG4: '2029 Base PM', Plan 1: 'Existing')

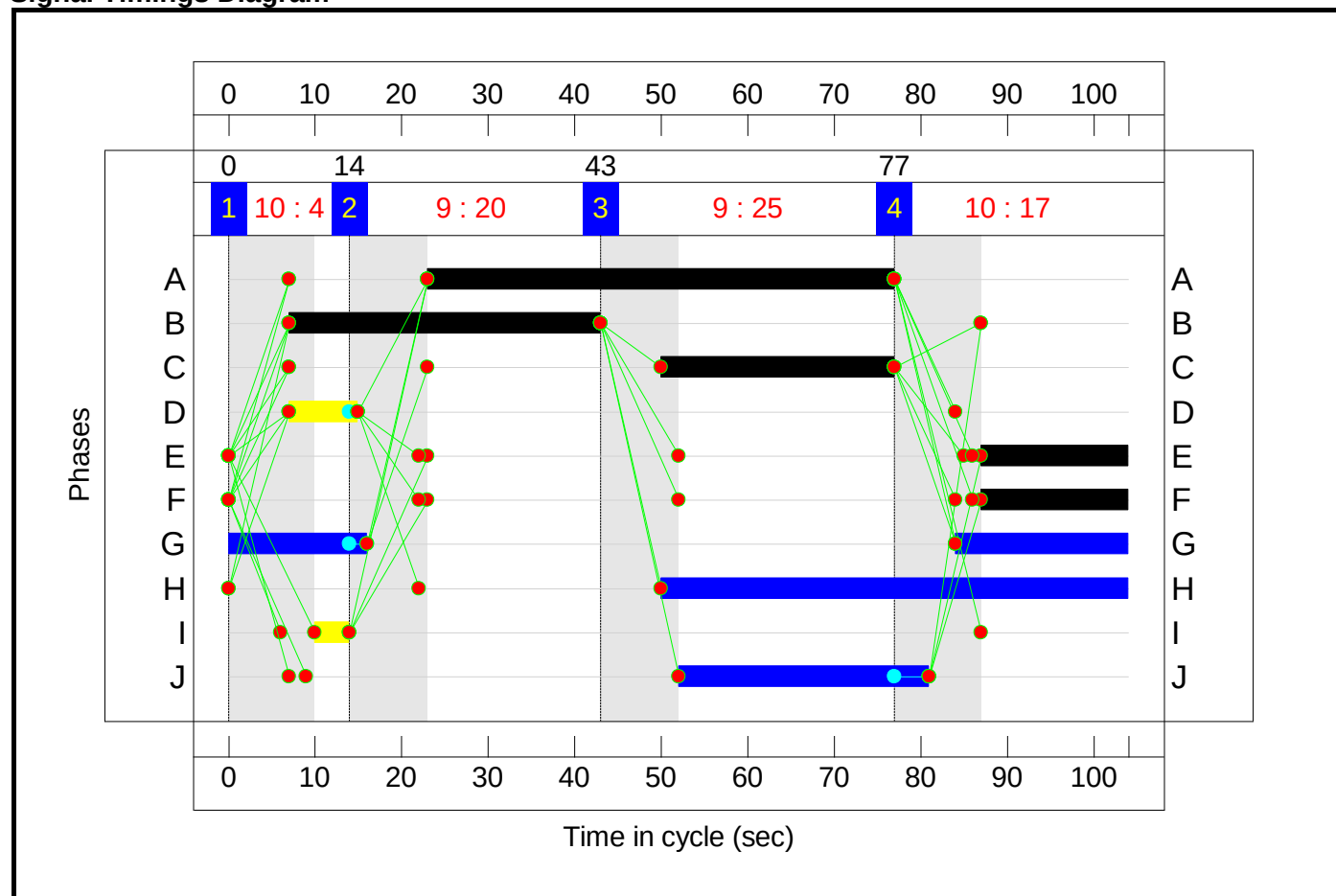
Stage Sequence Diagram



Stage Timings

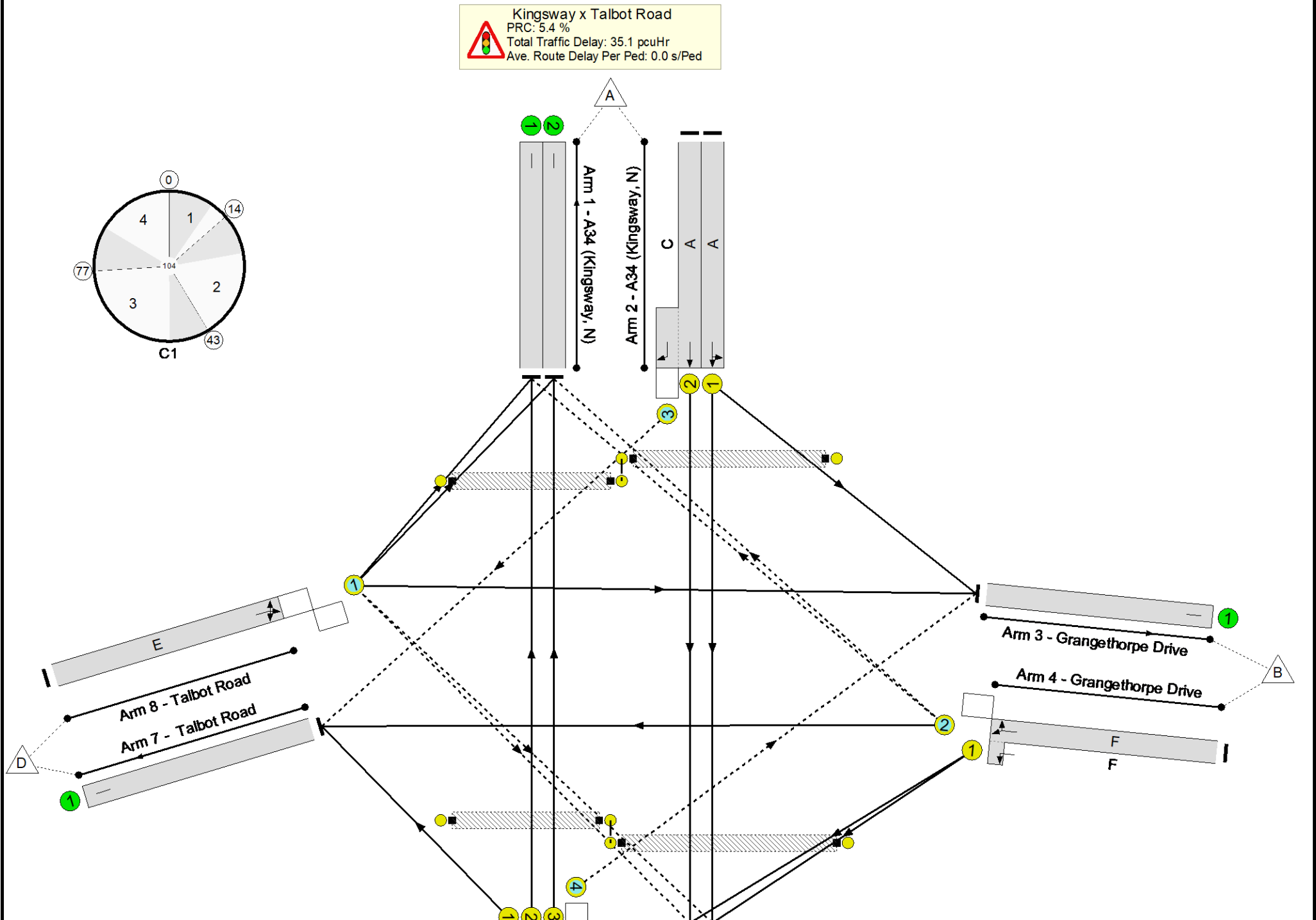
Stage	1	2	3	4
Duration	4	20	25	17
Change Point	0	14	43	77

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	85.4%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	85.4%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	499	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	54	-	748	1915	1013	73.9%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	54:27	-	935	2085:1937	882+221	84.8 : 84.8%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	367	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	17	-	239	1846:1752	260+57	75.3 : 75.3%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	36	-	459	1940:1839	637+51	66.8 : 66.8%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	36:8	-	521	2080:1874	621+140	68.5 : 68.5%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	17	-	284	1922	333	85.4%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	54	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	36	-	0	-	0	0.0%

Full Input Data And Results

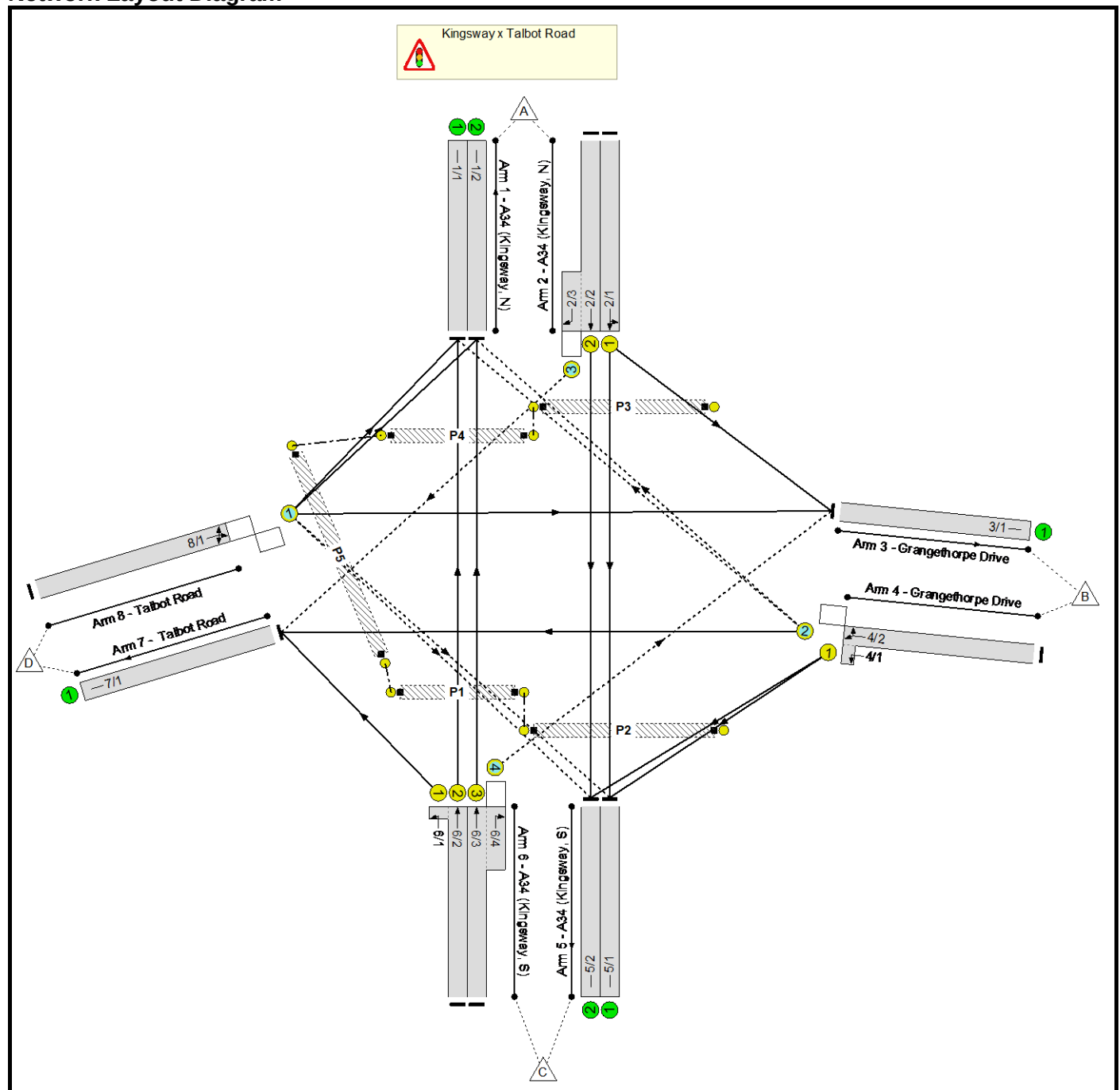
Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	29	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	48	279	48	24.6	10.3	0.2	35.1	-	-	-	-
Kingsway x Talbot Road	-	-	48	279	48	24.6	10.3	0.2	35.1	-	-	-	-
1/1	499	499	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	498	498	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	748	748	-	-	-	3.9	1.4	-	5.3	25.7	16.6	1.4	18.0
2/2+2/3	935	935	0	183	4	5.7	2.7	0.0	8.4	32.5	21.9	2.7	24.6
3/1	367	367	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	239	239	19	0	44	2.7	1.5	0.1	4.3	64.9	6.3	1.5	7.8
5/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	459	459	-	-	-	3.6	1.0	-	4.6	36.1	11.0	1.0	12.0
6/3+6/4	521	521	0	96	0	5.4	1.1	0.0	6.4	44.5	11.5	1.1	12.5
7/1	354	354	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	284	284	28	0	1	3.3	2.6	0.0	6.0	75.6	7.9	2.6	10.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 5.4 Total Delay for Signalled Lanes (pcuHr): 35.09 Cycle Time (s): 104 PRC Over All Lanes (%): 5.4 Total Delay Over All Lanes(pcuHr): 35.09													

Full Input Data And Results
Full Input Data And Results

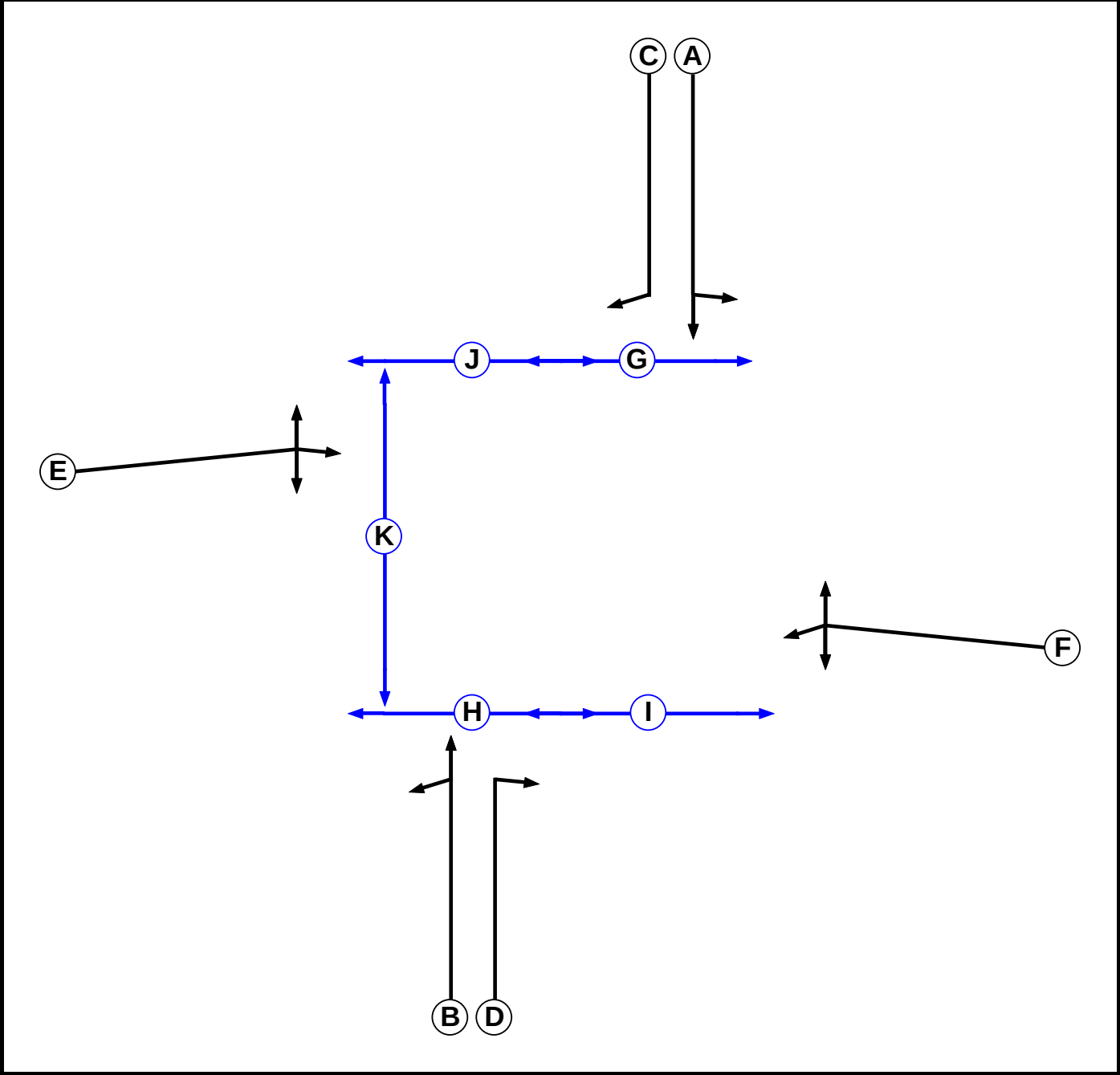
User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Kingsway, Burnage - Proposed Model Stages.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Pedestrian		4	4
H	Pedestrian		4	4
I	Pedestrian		4	4
J	Pedestrian		4	0
K	Pedestrian		4	4

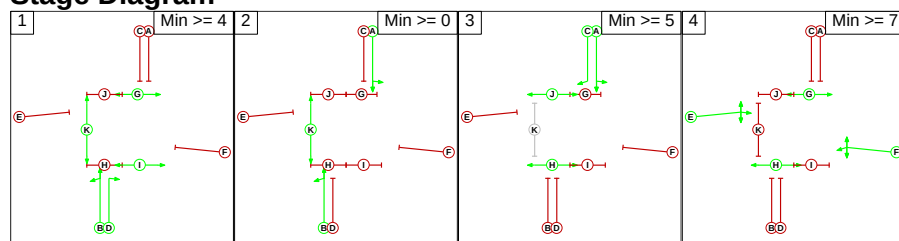
Phase Intergreens Matrix

Phase Interaction Matrix												
Terminating Phase	Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K
	A		-	-	7	9	9	7	-	10	-	-
	B	-		7	-	9	9	-	7	-	9	-
	C	-	10		-	8	7	7	-	-	-	-
	D	8	-	-		7	7	-	7	-	-	-
	E	7	7	7	7		-	-	-	10	7	5
	F	7	7	7	7	-		-	-	6	9	8
	G	7	-	7	-	-	-		-	-	-	-
	H	-	7	-	7	-	-	-		-	-	-
	I	9	-	-	-	9	9	-	-		-	-
	J	-	6	-	-	6	6	-	-	-		-
	K	-	-	-	-	9	9	-	-	-	-	

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	D	Losing	1	1
1	2	G	Losing	2	2
1	3	G	Losing	2	2
3	1	H	Losing	3	3
3	1	J	Losing	4	4
3	2	H	Losing	3	3
3	2	J	Losing	4	4
3	4	J	Losing	4	4

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		9	9	9
	2	10		9	9
	3	10	10		10
	4	10	8	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Kingsway x Talbot Road											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/3 (A34 (Kingsway, N))	7/1 (Right)	1439	0	6/2	1.09	All	2.00	-	0.50	2	2.00
				6/3	1.09	All					
4/2 (Grangethorpe Drive)	1/1 (Right)	1439	0	8/1	1.09	To 1/1 (Left) To 1/2 (Left) To 3/1 (Ahead)	2.00	2.00	0.50	2	2.00
	1/2 (Right)	1439	0	8/1	1.09	To 1/1 (Left) To 1/2 (Left) To 3/1 (Ahead)					
6/4 (A34 (Kingsway, S))	3/1 (Right)	1439	0	2/1	1.09	All	2.00	-	0.50	2	2.00
				2/2	1.09	All					
8/1 (Talbot Road)	5/1 (Right)	1439	0	4/1	1.09	All	4.00	2.00	0.50	4	2.00
				4/2	1.09	To 7/1 (Ahead)					
				4/1	1.09	All					
	5/2 (Right)	1439	0	4/2	1.09	To 7/1 (Ahead)					

Lane Input Data

Junction: Kingsway x Talbot 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 (A34 (Kingsway, N))	U		2	3	60.0	Inf	-	-	-	-	-	-
1/2 (A34 (Kingsway, N))	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1 (A34 (Kingsway, N))	U	A	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf
2/2 (A34 (Kingsway, N))	U	A	2	3	60.0	Geom	-	3.30	0.00	N	Arm 5 Ahead	Inf
2/3 (A34 (Kingsway, N))	O	C	2	3	4.7	Geom	-	3.20	0.00	N	Arm 7 Right	21.00
3/1 (Grangethorpe Drive)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Grangethorpe Drive)	U	F	2	3	1.0	Geom	-	4.00	0.00	Y	Arm 5 Left	10.00
4/2 (Grangethorpe Drive)	O	F	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf
5/1 (A34 (Kingsway, S))	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (A34 (Kingsway, S))	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A34 (Kingsway, S))	U	B	2	3	1.0	Geom	-	5.00	0.00	Y	Arm 7 Left	10.00
6/2 (A34 (Kingsway, S))	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 1 Ahead	Inf
6/3 (A34 (Kingsway, S))	U	B	2	3	60.0	Geom	-	3.25	0.00	N	Arm 1 Ahead	Inf
6/4 (A34 (Kingsway, S))	O	D	2	3	5.0	Geom	-	3.20	0.00	N	Arm 3 Right	14.00
7/1 (Talbot Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Talbot Road)	O	E	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead	33.00 Inf

[illegible]

Flow Group	Start Time	End Time	Duration	Formula
1: '2029 Base + Dev AM'	08:00	09:00	01:00	
2: '2029 Base + Dev PM'	17:00	18:00	01:00	

Traffic Flows, Desired

Origin	Destination					
		A	B	C	D	Tot.
	A	0	64	912	121	1097
	B	96	0	49	152	297
	C	1329	80	0	22	1431
	D	105	160	41	0	306
	Tot.	1530	304	1002	295	3131

Lane	Scenario 1: 2029 Base + Dev AM
Junction: Kingsway x Talbot Road	
1/1	766
1/2	764
2/1	488
2/2 (with short)	609(In) 488(Out)
2/3 (short)	121
3/1	304
4/1 (short)	49
4/2 (with short)	297(In) 248(Out)
5/1	470
5/2	532
6/1 (short)	22
6/2 (with short)	687(In) 665(Out)
6/3 (with short)	744(In) 664(Out)
6/4 (short)	80
7/1	295
8/1	306

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.1 % 86.9 %	1916	1916
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	38.7 % 61.3 %	1827	1827
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	34.3 % 52.3 % 13.4 %	1910	1910

Full Input Data And Results

Scenario 2: '2029 Base + Dev PM' (FG2: '2029 Base + Dev PM', Plan 1: 'Proposed')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	100	1396	155	1651
	B	63	0	43	129	235
	C	811	91	0	34	936
	D	91	171	29	0	291
	Tot.	965	362	1468	318	3113

Traffic Lane Flows

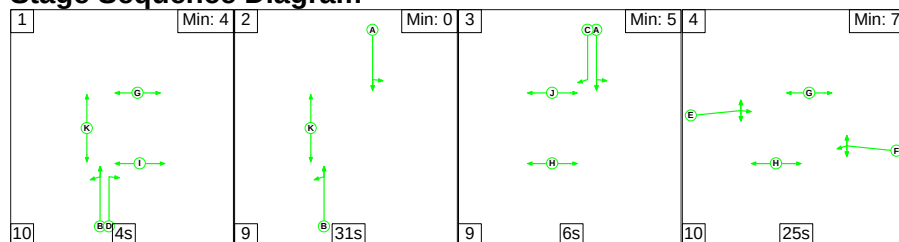
Lane	Scenario 2: 2029 Base + Dev PM
Junction: Kingsway x Talbot Road	
1/1	484
1/2	481
2/1	748
2/2 (with short)	903(In) 748(Out)
2/3 (short)	155
3/1	362
4/1 (short)	43
4/2 (with short)	235(In) 192(Out)
5/1	685
5/2	783
6/1 (short)	34
6/2 (with short)	440(In) 406(Out)
6/3 (with short)	496(In) 405(Out)
6/4 (short)	91
7/1	318
8/1	291

Lane Saturation Flows

Junction: Kingsway x Talbot Road								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A34 (Kingsway, N) Lane 1)	Infinite Saturation Flow						Inf	Inf
1/2 (A34 (Kingsway, N) Lane 2)	Infinite Saturation Flow						Inf	Inf
2/1 (A34 (Kingsway, N))	3.30	0.00	Y	Arm 3 Left Arm 5 Ahead	13.00 Inf	13.4 % 86.6 %	1915	1915
2/2 (A34 (Kingsway, N))	3.30	0.00	N	Arm 5 Ahead	Inf	100.0 %	2085	2085
2/3 (A34 (Kingsway, N))	3.20	0.00	N	Arm 7 Right	21.00	100.0 %	1937	1937
3/1 (Grangethorpe Drive Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (Grangethorpe Drive)	4.00	0.00	Y	Arm 5 Left	10.00	100.0 %	1752	1752
4/2 (Grangethorpe Drive)	3.30	0.00	Y	Arm 1 Right Arm 7 Ahead	9.00 Inf	32.8 % 67.2 %	1844	1844
5/1 (A34 (Kingsway, S) Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (A34 (Kingsway, S) Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A34 (Kingsway, S))	5.00	0.00	Y	Arm 7 Left	10.00	100.0 %	1839	1839
6/2 (A34 (Kingsway, S))	3.25	0.00	Y	Arm 1 Ahead	Inf	100.0 %	1940	1940
6/3 (A34 (Kingsway, S))	3.25	0.00	N	Arm 1 Ahead	Inf	100.0 %	2080	2080
6/4 (A34 (Kingsway, S))	3.20	0.00	N	Arm 3 Right	14.00	100.0 %	1874	1874
7/1 (Talbot Road Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Talbot Road)	3.60	0.00	Y	Arm 1 Left Arm 3 Ahead Arm 5 Right	33.00 Inf 11.00	31.3 % 58.8 % 10.0 %	1922	1922

Scenario 1: '2029 Base + Dev AM' (FG1: '2029 Base + Dev AM', Plan 1: 'Proposed')

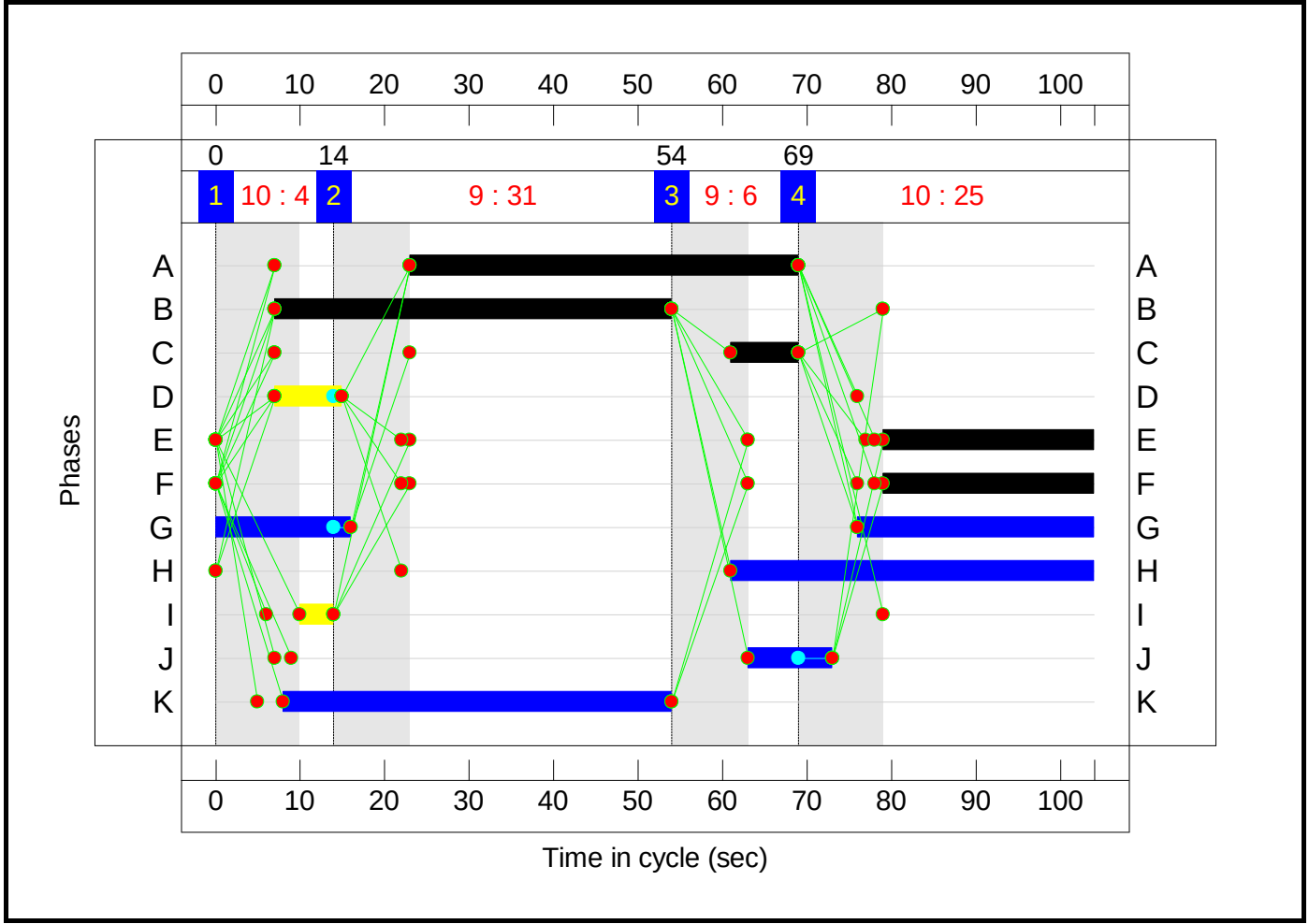
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	31	6	25
Change Point	0	14	54	69

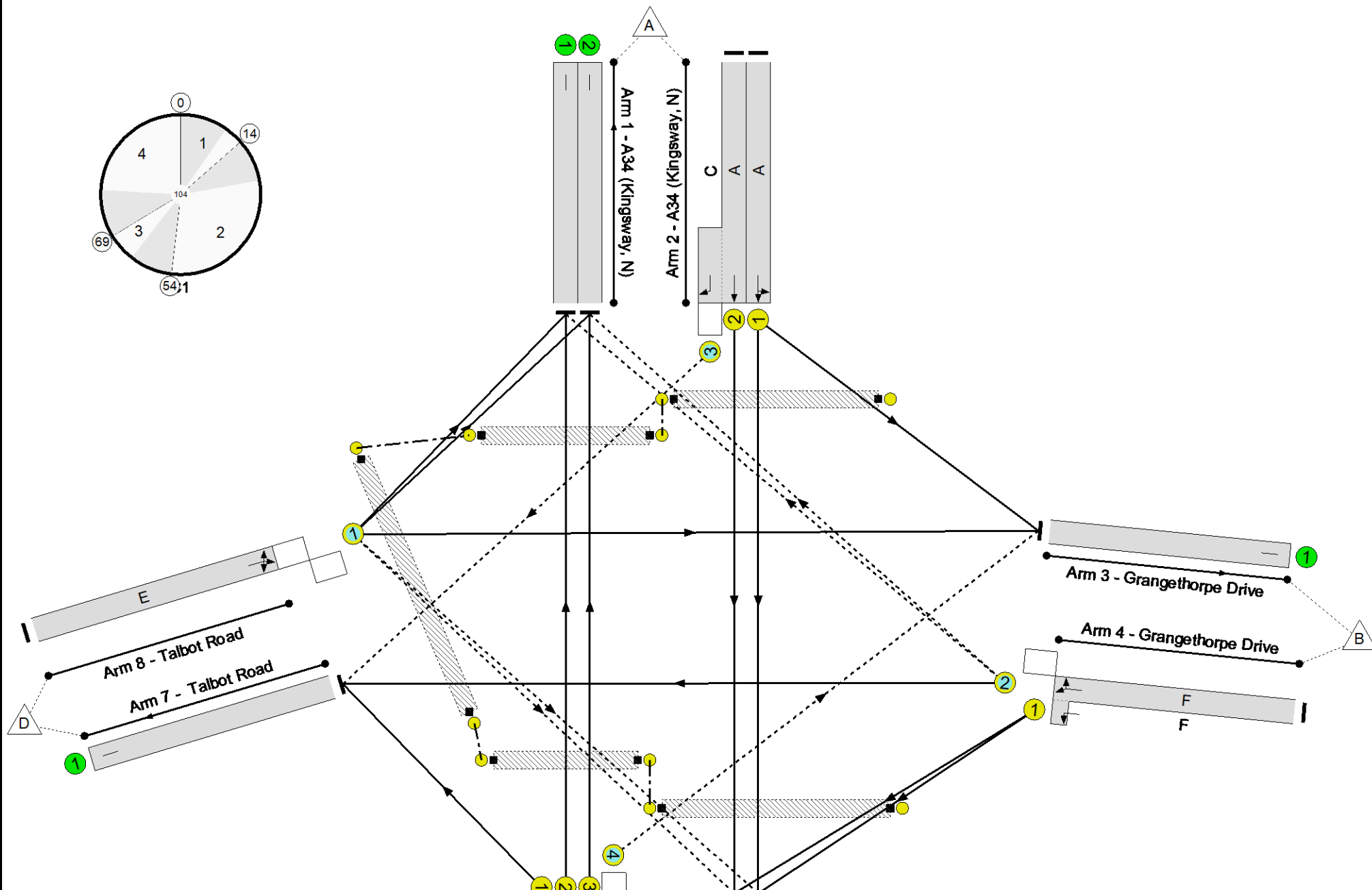
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Kingsway x Talbot Road
 PRC: 16.7 %
 Total Traffic Delay: 31.3 pcuHr
 Ave. Route Delay Per Ped: 0.0 s/Ped



Full Input Data And Results

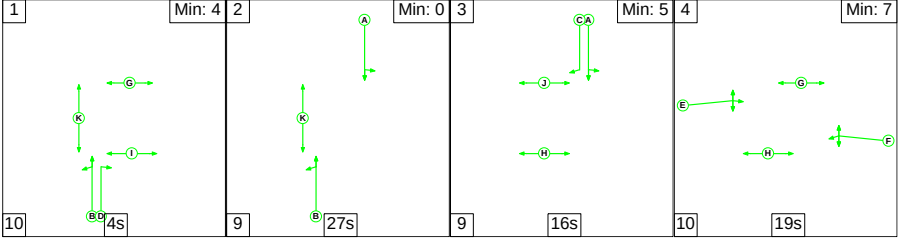
Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	77.1%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	77.1%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	46	-	488	1916	866	56.4%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	46:8	-	609	2085:1937	676+168	72.2 : 72.2%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	25	-	297	1827:1752	338+67	73.5 : 73.5%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	532	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	47	-	687	1940:1839	864+29	77.0 : 77.0%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	47:8	-	744	2080:1874	861+104	77.1 : 77.1%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	295	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	25	-	306	1910	478	64.1%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	43	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	44	-	0	-	0	0.0%

Full Input Data And Results

Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	10	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	K		1	46	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	136	199	3	23.6	7.5	0.3	31.3	-	-	-	-
Kingsway x Talbot Road	-	-	136	199	3	23.6	7.5	0.3	31.3	-	-	-	-
1/1	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	488	488	-	-	-	2.8	0.6	-	3.5	25.7	10.3	0.6	10.9
2/2+2/3	609	609	0	119	2	4.4	1.3	0.0	5.7	33.4	11.9	1.3	13.1
3/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	297	297	96	0	0	2.9	1.4	0.2	4.4	53.9	7.4	1.4	8.7
5/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	532	532	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	687	687	-	-	-	4.5	1.6	-	6.1	32.1	16.4	1.6	18.0
6/3+6/4	744	744	0	80	0	6.1	1.7	0.0	7.7	37.4	17.2	1.7	18.8
7/1	295	295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	306	306	40	0	1	3.0	0.9	0.0	3.9	45.7	7.8	0.9	8.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 16.7 Total Delay for Signalled Lanes (pcuHr): 31.31 Cycle Time (s): 104 PRC Over All Lanes (%): 16.7 Total Delay Over All Lanes(pcuHr): 31.31													

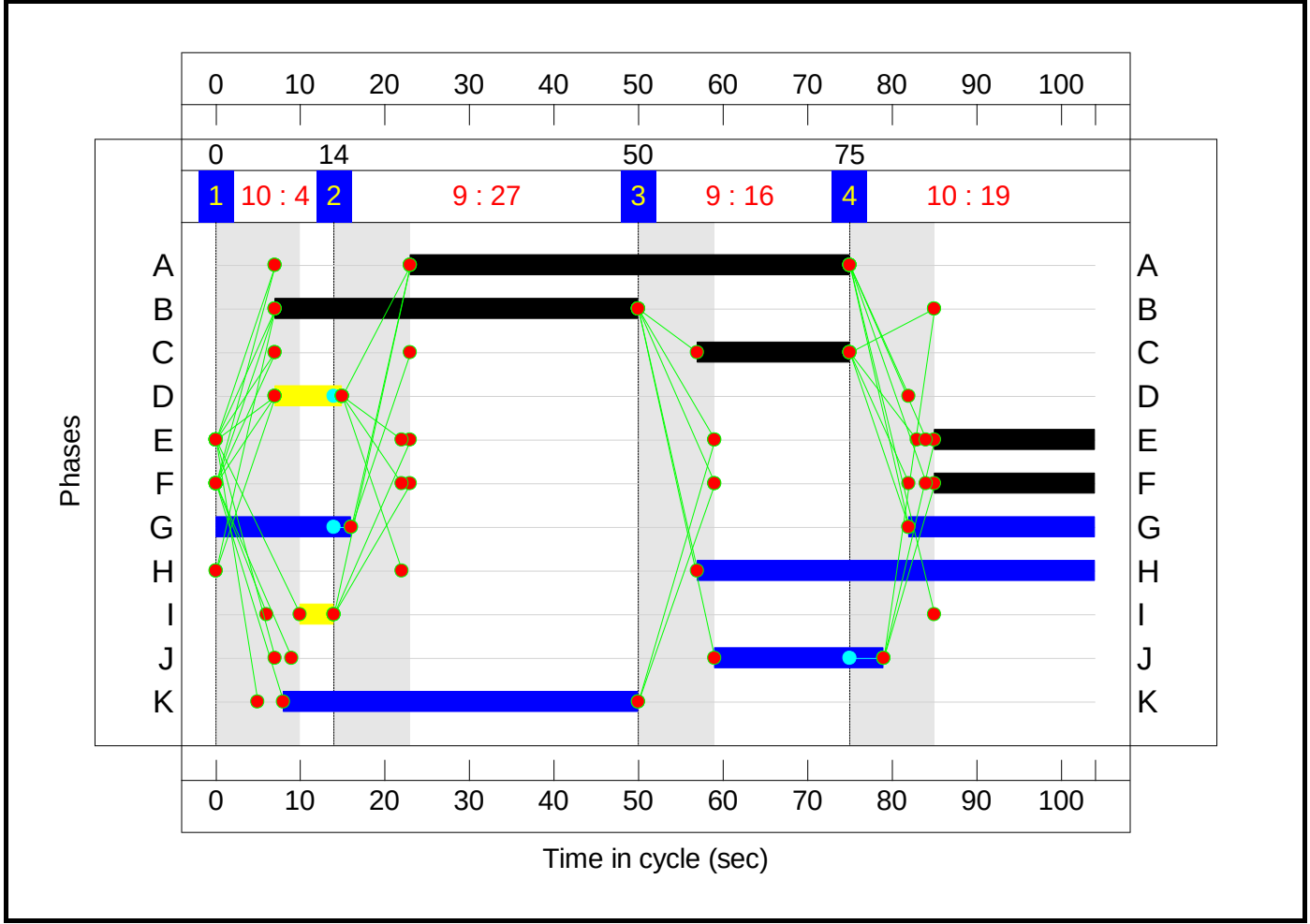
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	4	27	16	19
Change Point	0	14	50	75

Signal Timings Diagram

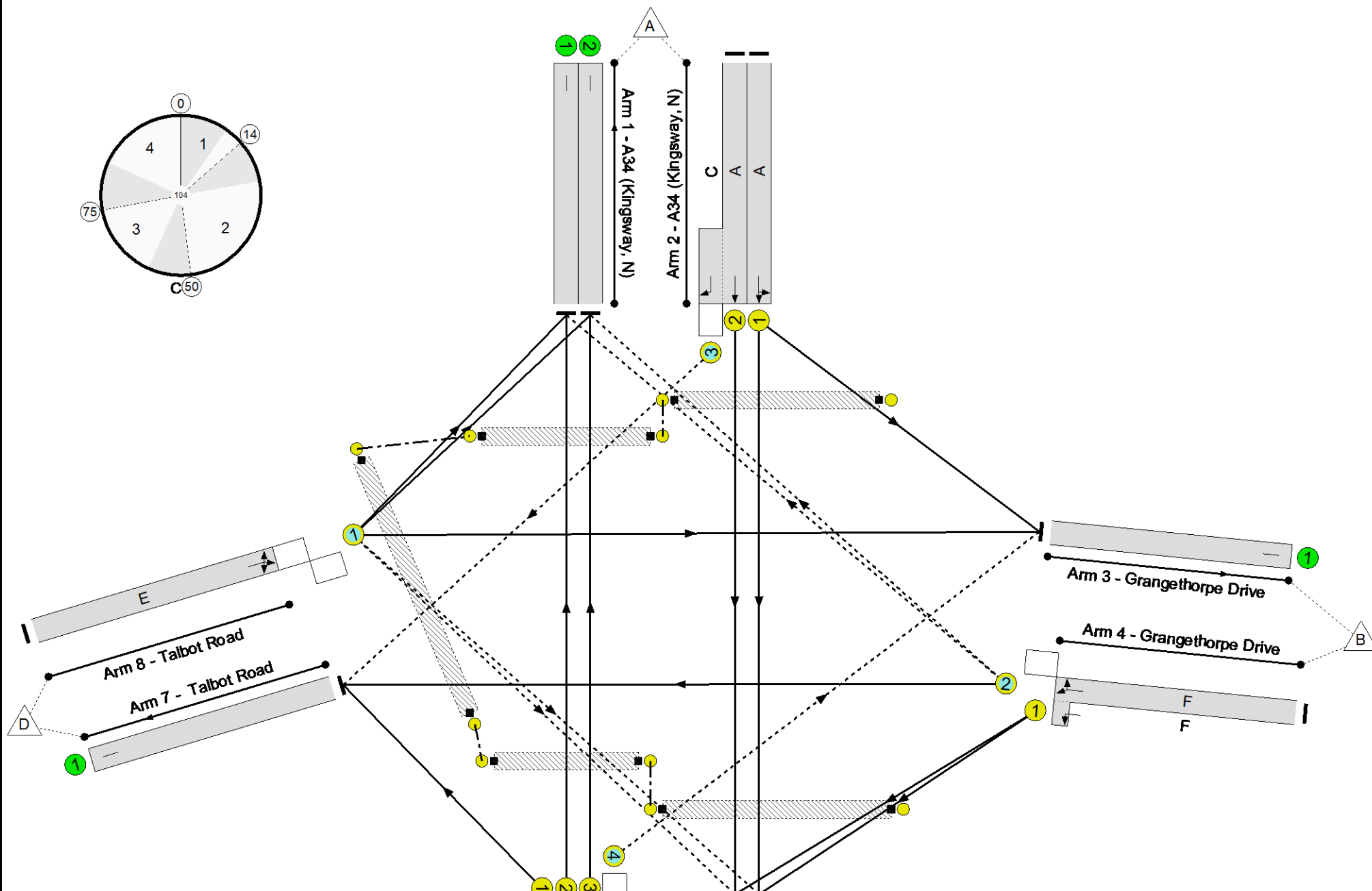


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results

Kingsway x Talbot Road
 PRC: 9.0 %
 Total Traffic Delay: 31.2 pcuHr
 Ave. Route Delay Per Ped: 0.0 s/Ped



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	82.6%
Kingsway x Talbot Road	-	-	N/A	-	-		-	-	-	-	-	-	82.6%
1/1	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%
1/2	A34 (Kingsway, N)	U	N/A	N/A	-		-	-	-	481	Inf	Inf	0.0%
2/1	A34 (Kingsway, N) Left Ahead	U	N/A	N/A	A		1	52	-	748	1915	976	76.6%
2/2+2/3	A34 (Kingsway, N) Ahead Right	U+O	N/A	N/A	A C		1	52:18	-	903	2085:1937	906+188	82.6 : 82.6%
3/1	Grangethorpe Drive	U	N/A	N/A	-		-	-	-	362	Inf	Inf	0.0%
4/2+4/1	Grangethorpe Drive Right Left Ahead	O+U	N/A	N/A	F		1	19	-	235	1844:1752	266+60	72.2 : 72.2%
5/1	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
5/2	A34 (Kingsway, S)	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
6/2+6/1	A34 (Kingsway, S) Ahead Left	U	N/A	N/A	B		1	43	-	440	1940:1839	754+63	53.8 : 53.8%
6/3+6/4	A34 (Kingsway, S) Ahead Right	U+O	N/A	N/A	B D		1	43:8	-	496	2080:1874	733+162	55.2 : 56.1%
7/1	Talbot Road	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
8/1	Talbot Road Left Ahead Right	O	N/A	N/A	E		1	19	-	291	1922	370	78.7%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	H		1	47	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	4	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	38	-	0	-	0	0.0%

Full Input Data And Results

Ped Link: P4	Unnamed Ped Link	-	N/A	-	J		1	20	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	K		1	42	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	69	243	26	22.9	8.2	0.2	31.2	-	-	-	-
Kingsway x Talbot Road	-	-	69	243	26	22.9	8.2	0.2	31.2	-	-	-	-
1/1	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
1/2	481	481	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	748	748	-	-	-	4.3	1.6	-	5.9	28.3	17.2	1.6	18.9
2/2+2/3	903	903	0	152	3	5.9	2.3	0.0	8.2	32.8	20.6	2.3	22.9
3/1	362	362	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2+4/1	235	235	41	0	22	2.5	1.3	0.2	3.9	60.2	6.0	1.3	7.2
5/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	440	440	-	-	-	2.7	0.6	-	3.3	27.1	9.3	0.6	9.9
6/3+6/4	496	496	0	91	0	4.2	0.6	0.0	4.8	35.0	9.3	0.6	10.0
7/1	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	291	291	28	0	1	3.2	1.8	0.0	5.0	62.3	7.9	1.8	9.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P5	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 PRC for Signalled Lanes (%): 9.0 Total Delay for Signalled Lanes (pcuHr): 31.22 Cycle Time (s): 104 PRC Over All Lanes (%): 9.0 Total Delay Over All Lanes(pcuHr): 31.22													



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