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## **Appendix A6.2 Traffic Impact Assessment**

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## Table of Contents

<b>1.</b>	<b>INTRODUCTION.....</b>	<b>4</b>
1.1	Overview.....	4
1.2	DART+ West Project.....	4
1.3	Transport Modelling Process Overview.....	6
1.1.1	Strategic Modelling.....	7
1.4	Study Methodology.....	7
1.5	Pre-Application Consultation.....	8
1.6	Structure of Report.....	8
<b>2.</b>	<b>PLANNING AND POLICY OBJECTIVES.....</b>	<b>9</b>
2.1	Introduction.....	9
2.1.1	Background.....	9
2.2	National Planning Policy.....	9
2.2.1	Project Ireland 2040, National Planning Framework (February 2018).....	9
2.3	Regional Policy.....	10
2.3.1	Transport Strategy for the Greater Dublin Area 2016-2036, NTA (April 2016).....	10
2.3.2	Draft Transport Strategy for the GDA 2022-2042, NTA (2022).....	10
2.3.3	Eastern and Midland Regional Spatial and Economic Strategy 2019 – 2031.....	11
2.4	Local Planning Policy.....	12
2.4.1	Fingal County Development Plan 2017-2023.....	12
2.4.2	Draft Fingal County Development Plan 2023-2029.....	12
2.4.3	Dublin City Development Plan 2016 – 2022.....	13
2.4.4	Draft Dublin City Development Plan 2022 - 2028.....	13
2.4.5	Kildare County Development Plan 2017 – 2023.....	14
2.4.6	Meath County Development Plan 2021-2027.....	14
2.4.7	Additional considered policies.....	15
2.5	Design of proposed project.....	15
2.5.1	Design Manual for Urban Road and Streets (March 2013).....	15
2.5.2	National Cycle Manual.....	16
2.5.3	NTA Permeability Best Practice Guide.....	16
2.6	Summary.....	16
<b>3.</b>	<b>RECEIVING ENVIRONMENT.....</b>	<b>17</b>
3.1	Introduction.....	17
3.2	Site Location.....	17
3.3	Description of Receiving Environment along the Proposed Project.....	17
3.3.1	Zone A – Connolly Station to Glasnevin (Glasnevin Junction) on GSWR Line – Phoenix Park Tunnel and Cabra Compound.....	19
3.3.2	Zone D – Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus).....	23
3.4	Baseline Vehicular Traffic Flows.....	26
3.5	Existing Walking and Cycling.....	28
3.5.1	Dublin City Centre Area.....	31
3.5.2	North West Dublin Area.....	32
3.5.3	Kildare Area.....	33

3.6	Public Transport .....	34
3.6.1	Bus .....	34
3.6.2	Rail .....	37
3.6.3	Park and Ride .....	41
3.7	Personal Injury Accident Data Review .....	42
<b>4.</b>	<b>PROPOSED DEVELOPMENT .....</b>	<b>44</b>
4.1	Introduction .....	44
4.2	Scheme Proposals - Overview .....	44
4.2.1	City Centre Enhancements.....	44
4.2.2	Clonsilla Junction to Maynooth Depot.....	46
4.3	Project Description in Each Zone.....	47
4.3.1	Zone A – Connolly Station to Glasnevin (Glasnevin Junction) on GSWR line .....	47
4.3.2	Zone B - Spencer Dock Station to Glasnevin Junction .....	48
4.3.3	Zone C - Glasnevin Junction to Clonsilla Junction.....	49
4.3.4	Zone D – Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus).....	52
4.3.5	Zone E – Clonsilla Station (Clonsilla Junction) to Maynooth Station .....	53
4.3.6	Zone F – Maynooth Station to Maynooth Depot.....	54
<b>5.</b>	<b>CONSTRUCTION .....</b>	<b>59</b>
5.1	Introduction .....	59
5.2	Construction Programme.....	59
5.3	Construction Compounds .....	60
5.4	Construction Hours .....	61
5.5	Construction Trips .....	61
5.6	Construction Routing.....	63
5.7	Construction Impact .....	64
5.8	Construction Management and Mitigation.....	72
<b>6.</b>	<b>INITIAL TRANSPORT IMPACT ASSESSMENT .....</b>	<b>73</b>
6.1	Introduction .....	73
6.2	Strategic Modelling.....	73
6.3	Local Area Modelling .....	75
6.3.1	Peak Hours .....	77
6.3.2	Assessment Scenarios.....	77
6.3.3	Operational Impact on Traffic.....	78
6.4	Threshold Analysis .....	83
6.5	Public Transport Impacts.....	94
6.6	Pedestrian and Cycle Impacts.....	94
6.7	Car Based Impacts - Parking.....	94
6.8	Summary .....	95
<b>7.</b>	<b>DETAILED TRANSPORT NETWORK ASSESSMENT .....</b>	<b>96</b>
7.1	Introduction .....	96
7.2	Junctions Models .....	96
7.3	Junctions Modelling Results .....	96
7.3.1	Ashtown Road / Rathbourne Avenue (Junction 2).....	96

7.3.2	Navan Road / Ashtown Road (Junction 3).....	97
7.3.3	Blanchardstown Road / Clonsilla Road / Diswellstown Road (Junction 10).....	97
7.3.4	Diswellstown Road / School Access (Junction 11).....	98
7.3.5	Diswellstown Road / Bothar Bhaile an Phoirtearaigh (Junction 14).....	99
7.3.6	Clonsilla Road / Shelerin Road (Junction 15).....	100
7.3.7	Clonsilla Road / Clonsilla Link Road (Junction 16).....	100
7.3.8	R121 Larch Grove / R121 Clonsilla Road (Junction 16).....	101
7.3.9	Unnamed Road (Barberstown) (Junction 20).....	101
7.4	Conclusion.....	101
7.5	Public Transport User Impacts.....	102
<b>8.</b>	<b>MITIGATION .....</b>	<b>103</b>
8.1	Introduction.....	103
8.2	Construction Traffic Management Plan.....	103
8.3	Construction Routing.....	104
8.4	Construction and Operational Parking.....	104
8.5	Mobility Management Plan.....	104
<b>9.</b>	<b>SUMMARY AND CONCLUSION .....</b>	<b>106</b>
9.1	Summary.....	106
9.2	Conclusion.....	108

<b>APPENDIX A</b>	<b>ALAM Report</b>
<b>APPENDIX B</b>	<b>BLAM Report</b>
<b>APPENDIX C</b>	<b>Baseline Traffic Flows</b>
<b>APPENDIX D</b>	<b>Bus Routes Affected by Works</b>
<b>APPENDIX E</b>	<b>Construction Table</b>
<b>APPENDIX F</b>	<b>Junction Modelling Data and Results</b>

# 1. INTRODUCTION

## 1.1 Overview

This report describes the Traffic Impact Assessment (TIA) of DART+ West project. The TIA was developed based on East Regional Model (ERM) and two Local Area Models for Ashtown (A-LAM – Ashtown Local Area Model) and Blanchardstown (B-LAM – Blanchardstown Local Area Model) for the DART+ West project. Details of the Ashtown model development is described in 'Ashtown Local Area Model Development Report' and the Blanchardstown model development is described in the 'Blanchardstown Local Area Model Development Report'.

## 1.2 DART+ West Project

DART+ West will introduce electrified, high-capacity trains at increased frequency for all stations between Maynooth / M3 Parkway and Connolly / Spencer Dock stations on the Maynooth and M3 Parkway commuter rail lines in Dublin. The length of this project is approximately 40 kilometres. For the remainder of this report DART+ West is referred to the proposed project.

The scope of the proposed project includes the following infrastructural works:

- Electrification and re-signalling of the Maynooth and M3 Parkway lines (approximately 40km in length).
- Capacity enhancements at Connolly Station (to include modifications to junctions and the station) to facilitate increased train and passenger numbers.
- Construction of a new Spencer Dock Station, which will better serve the north Docklands area and improve interchange with the Luas and support sustainability mobility.
- Closure of six level crossings (Ashtown, Coolmine, Porterstown, Clonsilla, Barberstown and Blakestown) and provision of replacement access infrastructure (road bridges and / or pedestrian and cycle bridges, as required). There is no replacement access infrastructure proposed at Blakestown level crossing.
- Construction of a new DART depot facility west of Maynooth to facilitate the maintenance and parking (stabling) of trains.
- Interventions at existing bridges along the rail line where there is insufficient clearances for the overhead electrification equipment. (Interventions may include track lowering, bridge modifications and/ or a combination of both).
- Construction of substations, electrical buildings, and all other civil and ancillary works as necessary to accommodate the project.

Figure 1-1 shows the extent of the proposed project.

Delivery of the proposed project will support the existing communities along the railway and support future sustainable development in the area. The frequency and quality of service will provide a viable transport alternative to communities along the route.

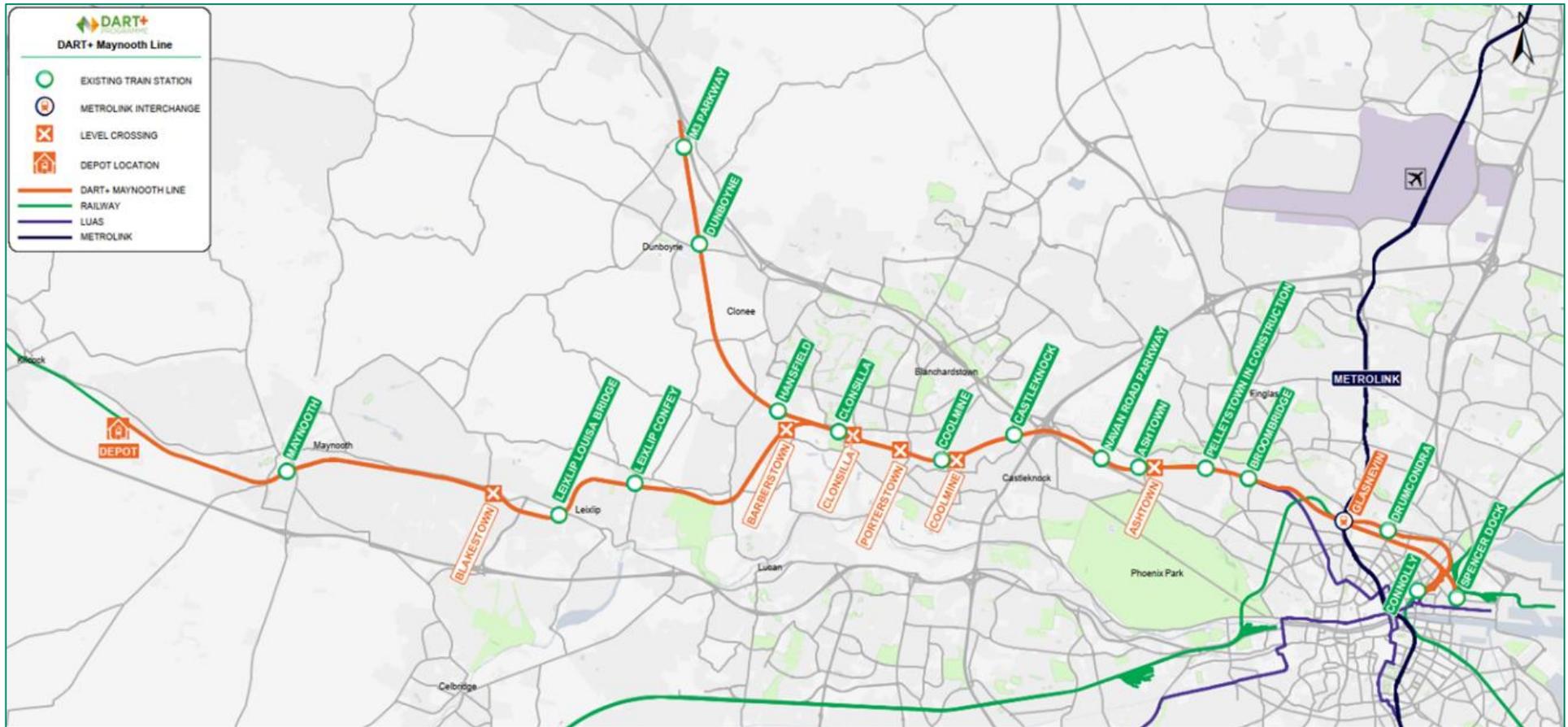
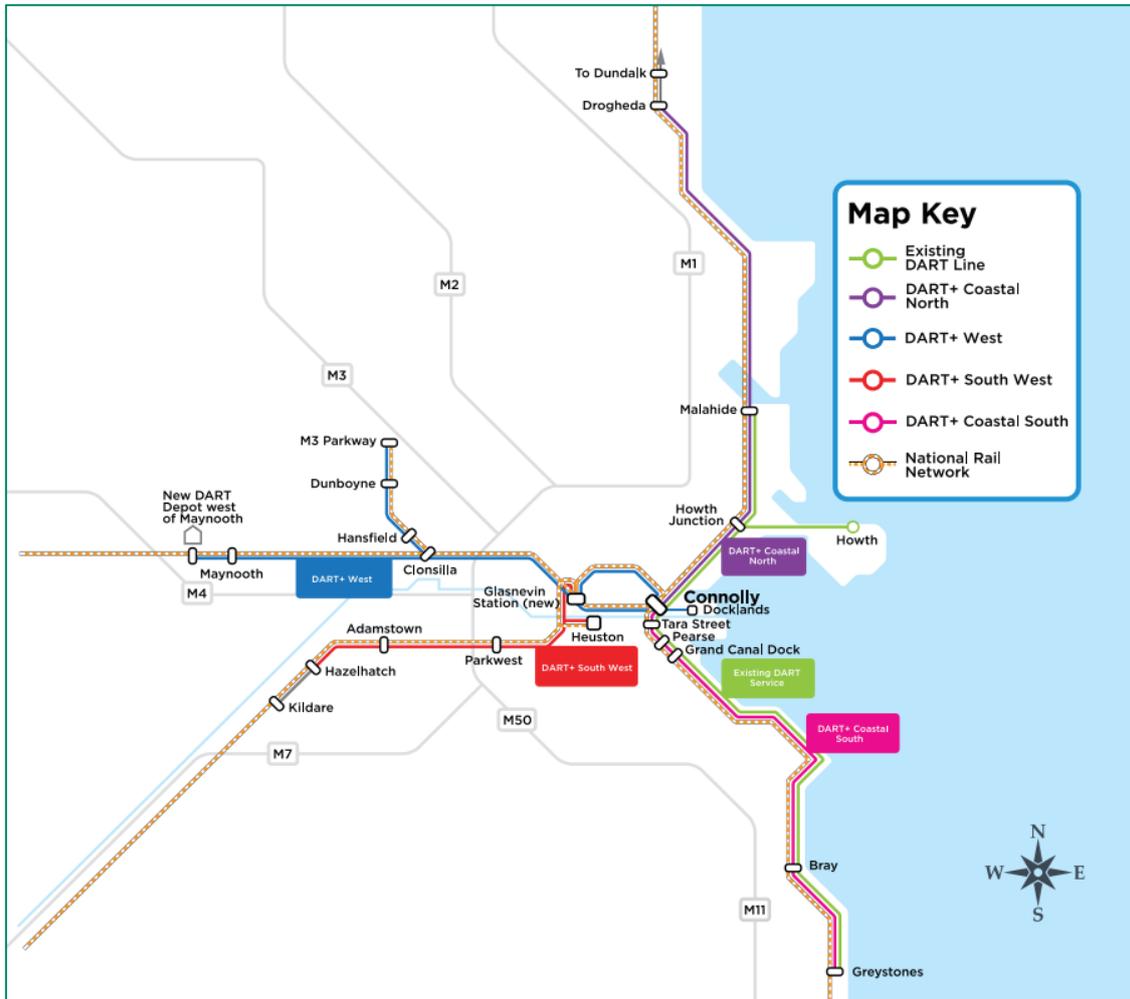


Figure 1-1 Proposed Project Extent

DART+ is an overall programme of works comprised of five separate projects. DART+ will modernise and improve the existing rail network in the Dublin area. It will provide a sustainable, electrified, fast, reliable, and user-friendly rail system, increasing train frequencies and customer carrying capacity. DART+ Programme scope for years 2018-2027 is included in Figure 1-2.



**Figure 1-2 DART+ Programme Scope 2018-2027**

DART+ Programme comprises the following improvement projects across the four main rail corridors:

- DART+ West - Maynooth and M3 Parkway to the City Centre (Proposed project).
- DART+ South West – Hazelhatch & Celbridge to the City Centre.
- DART+ Coastal North – Drogheda to the City Centre.
- DART+ Coastal South – Greystones to the City Centre.
- DART+ Fleet – purchase of new train fleet to increase train services.

### 1.3 Transport Modelling Process Overview

This report describes the traffic impacts of the proposed project, and this chapter describes the overall modelling approach adopted for its assessment.

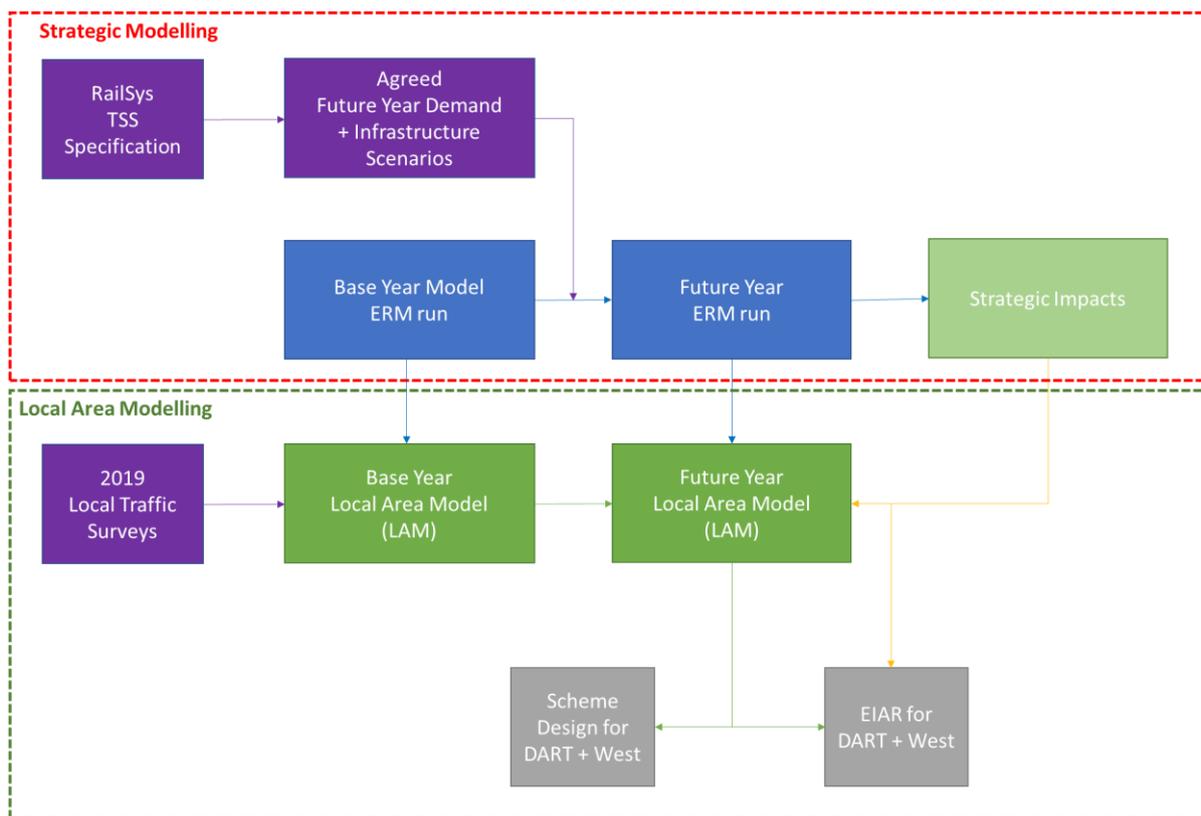
### 1.1.1 Strategic Modelling

The design team developed a railway operation model in RailSys for DART+ Programme for the base year reflecting the current railway infrastructure and train service specification and for the Design Year incorporating enhanced infrastructure and an associated Train Service Specification.

The National Transport Authority's (NTA) Regional Modelling System (RMS) has also been used by the team to assess wider impacts of all individual improvement projects and entire DART+ Programme. RMS comprises the National Demand Forecasting Model, five large scale, complex multi-modal regional transport models and a suite of appraisal modules covering the entire national transport network of Ireland. East Regional Transport Model (ERM) was used for this project as it concentrates on Dublin and covers the entire Greater Dublin Area (GDA).

Outputs from the RailSys modelling were used as inputs into the ERM in the form of Train Service Specifications (TSS). The RailSys modelling and ERM model runs were undertaken centrally for the entire DART+ Programme to ensure consistency between the individual DART+ improvements projects. The outputs of the ERM were used as inputs into the Local Area Model (LAM).

Figure 1-3 shows the process of developing the traffic models for the proposed project and the interactions between LAM with the NTA ERM and RailSys models.



**Figure 1-3 Overview of the DART+ Modelling Process**

## 1.4 Study Methodology

To determine the baseline and future scenarios for the proposed development, thereby allowing an assessment of its impact to be undertaken, transport modelling was undertaken. The assessment included the analysis of baseline conditions, potential impacts associated with the construction and operation of the proposed development, appropriate mitigations, and monitoring, and identifying residual effects.

Due to the travel restrictions posed by Covid-19 lockdowns from March 2020, there was no possibility to conduct surveys which were not impacted by travel restrictions and disruption. This impacted on traffic levels and patterns. This assessment is therefore based on 2019 traffic survey information supported by LAMs, developed specifically for this project and NTA's ERM.

## 1.5 Pre-Application Consultation

This TIA has been prepared alongside an ongoing consultation process, to allow mitigation measures to be incorporated into the project design and to minimise adverse effects.

A pre-application meeting was held with Iarnród Eireann, IDOM and Meath County Council (MCC) on the 25<sup>th</sup> of March 2021, outlining the latest design developments for the proposed project. This included the proposed locations of temporary compounds during the construction of the proposed project, as well as the scope and methodology. Discussions with all local authorities including Dublin City Council (DCC), Fingal County Council (FCC), Kildare County Council (KCC), and MCC was undertaken as the proposed development progressed.

## 1.6 Structure of Report

The remainder of this TIA is structured as follows:

- Section 2 provides an overview of relevant national, regional, and local transport policies and objectives.
- Section 3 provides details of site location, existing use, and surrounding area.
- Section 4 provides details of the proposed project including in terms of the anticipated programme.
- Section 5 sets out the detail relating to construction and the assessment of trips relating to this phase.
- Section 6 provides detail on the initial transport impact assessment.
- Section 7 sets out the detail transport network assessment.
- Section 8 provides detail on the mitigation to be implemented at construction phase.
- Section 9 sets out the summary to the report.

## 2. PLANNING AND POLICY OBJECTIVES

### 2.1 Introduction

A summary of the key transport policies and guidance relating to the site and development proposal is set out below.

#### 2.1.1 Background

The DART+ Programme is considered pivotal in the delivery of planning and transportation policy objectives at national, regional, and local level. The proposed project has been recently rebranded from DART Expansion Programme. Therefore, where previous policy documents referred to 'DART Expansion', these should be interpreted as DART+ Programme as they are one and the same.

### 2.2 National Planning Policy

#### 2.2.1 Project Ireland 2040, National Planning Framework (February 2018)

The Project Ireland 2040 report was published in February 2018 and supports the National Planning Framework (NPF). The NPF is the Government's high-level strategic plan for shaping the future growth and development on a national scale up to 2040. Project 2040 is a long-term overarching strategy document which aligns investment decisions with a clearly defined development strategy and ten National Strategic Outcomes (NSO) these include:

- NSO 1: Compact Growth.
- NSO 2: Enhance Regional Accessibility.
- NSO 3: Strengthened Rural Economies and Communities.
- NSO 4: Sustainable Mobility.
- NSO 5: A Strong Economy supported by Enterprise, Innovation, and Skills.
- NSO 6: High-quality International Connectivity.
- NSO 7: Enhanced Amenity and Heritage.
- NSO 8: Transition to a Low Carbon and Climate Resilient Society.
- NSO 9: Sustainable Management of Water, Waste, and other Environmental Resources.
- NSO 10: Access to quality Childcare, Education, and Health Services.

The NPF and the ten NSOs are to provide a blueprint design for the public and investment in order to promote opportunities and infrastructure across the nation. The document sets out aims/ objectives for each region in order to promote and enhance opportunities. The key NSOs related to this development proposal include:

- NSO 1: Compact Growth – The proposed project supports this key policy as it promotes the delivery of integrated transport network within the wider regeneration of urban areas as part of residential development in existing built-up areas.
- NSO 4: Sustainable Mobility – The proposed project supports this key policy as it promotes sustainable mobility through improvement to the public transport services and reducing congestion. The policy highlights the aims in inverting in key infrastructure developments related to transport such as the DART Expansion.
- NSO 8: Transition to a Low Carbon and Climate Resilient Society – The proposed project supports this key policy as it promotes moving away from carbon intensive propulsion systems towards Low Carbon solutions which includes the electrification of transport fleets.

Within the Dublin City and Metropolitan area, the document highlights the critical importance of sustaining continued performance in promoting the development of strategic infrastructure and supporting development in line within the continuous growth of the area. This is highlighted as part of the Metropolitan Area Strategic

Plan (MASP) which includes reference to the proposed development and how it aims to enhance access and capacity within the area.

Some of the key future growth enablers related to this scheme include:

- Delivering the key rail project set out in the Transport Strategy for the GDA including Metro Link, DART expansion and the Luas green link to Metro Link.
- Improving access to Dublin Airport, to include improved public transport access, connections from the road network from the west and north and in the longer-term consideration of heavy rail access to facilitate direct service from the national rail network in the context of potential future electrification.
- Delivery of the metropolitan cycle network set out in the GDA Cycle Network Plan inclusive of key commuter routes and urban greenways through the provision of better links to existing routes.

## 2.3 Regional Policy

### 2.3.1 Transport Strategy for the Greater Dublin Area 2016-2036, NTA (April 2016)

The NTA published the Transport Strategy for the GDA report in April 2016. The Strategy adopted is a government policy to cater for the future needs of the GDA and in order to enable people to move efficiently around the Dublin region.

The document sets out short, medium, and long-term plans for rail, bus, cycling, walking and roads. It proposes transport provisions necessary to 'contribute to the economic, social and cultural progress of the GDA by providing for the efficient, effective and sustainable movement of people and goods'.

Within the Transport Strategy for the GDA, it was proposed to expand the urban cycle network in the Metropolitan Area to over 1,485 kilometres in length and will provide over 1,300 kilometres of new connections between towns in the rural areas of the GDA. As part of the Strategy, it is intended to implement this network in full, delivering safe, high quality cycle facilities, which will be designed and constructed in accordance with the principles set out in the National Cycle Manual. To complement the proposed development there is a strategy in place to invest in the cycle network. It is intended to provide sufficient on-street public cycle parking at key destinations such as bus and rail stations, schools, colleges, hospitals, and large workplaces, particularly in urban areas.

### 2.3.2 Draft Transport Strategy for the GDA 2022-2042, NTA (2022)

The Draft Transport Strategy for the GDA 2022-2042 supersedes the previous NTA strategy, which was published in 2016. The strategy adopted by NTA must be reviewed every six years. Based on the 2016 plan, this updated strategy sets out the framework for investment in transport infrastructure and services over the next two decades up to 2042.

The overall aim of the Transport Strategy is "to provide a sustainable, accessible and effective transport system for the GDA which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports economic growth."

The 2022 document continues to reiterate the importance of setting out short, medium, and long-term plans for transport based on national policies on sustainability as set out in climate action and low carbon legislation, and in climate action plans, as well as highlighting the potential impacts of the on-going Covid-19 pandemic, beyond just the short-term impact. It should be noted, the document acknowledges the Proposed project as part of its forthcoming schemes.

The document recognises the Climate Action and Low Carbon development (Amendment) Act 2021 which stresses the need to reduce emissions by 51% by 2030 and setting path towards a zero net-emission scenario

by 2050. Chapter 3 of the document states *“The transport sector is committed to meeting those targets in full. For transport, there are three main actions required, namely:*

- Reducing the demand for travel.
- Increasing use of public transport, walking, and cycling and reduction in trips by car.
- Conversion of the transport fleet to zero emission vehicles.

The proposed project will support the three actions highlighted by the Climate Action Act making transport connections easier, quicker, more efficient, and sustainable through the electrification of the DART line in order to transition to a low carbon and climate resilient society.

The document supports a number of phases related to the proposed project that will be developed over the Strategy lifetime. The works to be carried out for the proposed project programme which are mentioned in the strategy and summarised as follows:

- The electrification of the line from the city centre to Maynooth.
- Enhancements at Connolly station.
- Construction of a new DART depot west of Maynooth Station.
- Integration of a combined metro link / rail DART station to be developed at Glasnevin.
- Closure of level crossings.
- Relocation of Docklands Station to integrate with Luas.
- New grade-separated pedestrian, cycle and vehicle crossings as required.

### **2.3.3 Eastern and Midland Regional Spatial and Economic Strategy 2019 – 2031**

The Eastern and Midland Regional Spatial and Economic Strategy (RSES) was designed to implement the Project Ireland 2040 aims at a regional level. The document considers all aspects highlighted by the NSOs including transport in the overall wellbeing of the citizens.

As part of the Growth Strategy for the region, the proposed project is set to improve the strategic connections across the following areas of the region, thus highlighting the importance of provision in enabling infrastructure for growth across the region.

- Eastern Corridor: Dublin- Belfast Economic Corridor to Rosslare Europort – The RSES supports a feasibility study for high-speed rail between Dublin and Belfast and enhanced rail services on the south-eastern line to include the extension of DART services to Drogheda. Drogheda was identified through Project Ireland 2040 to benefit from the proposed DART expansion to enhance the existing heavy rail service. It is proposed that the existing McBride Rail Station will continue to be the main transport hub for Drogheda, but access to the station would be improved. Improvements are part of the Drogheda Joint Urban Area Plan (UAP).
- Strategic Connection to the Northern and Western Region – Planned upgrades to the M/N4 motorway, enhanced rail services on the Dublin-Sligo line including DART to Maynooth and increased recreational use of the Royal Canal as part of a Dublin to Westport Greenway, will improve northwest connectivity.
- Strategic Connection to the Southern Region – The RSES supports a feasibility study for the provision of high-speed rail link between Dublin and Limerick/Junction Cork and enhanced rail services including the extension of DART to Celbridge/ Hazelhatch in North Kildare.

## 2.4 Local Planning Policy

### 2.4.1 Fingal County Development Plan 2017-2023

The Fingal Development Plan (FDP) 2017-2023 policy was prepared by FCC in accordance with the requirements of the Planning and Development Act 2000 and published in February 2017. This document was designed to serve for a period of six years, concluding in March 2023.

The aim of the FDP is to promote and support sustainable long-term development of Fingal as an integrated network in supporting and contributing to the economic development of the county and the Dublin City region, promoting, and improving the wellbeing of its residents, incorporating sustainable development including climate change mitigation and adaptation.

As part of the Strategic Policy main aims, policy 15 promotes the delivery of the proposed project which states – ‘Seek the development of a high quality public transport system throughout the Country and linking to adjoining counties, including the development of the indicative route for New Metro North and Light Rail Corridor, improvements to railway infrastructure including the DART Expansion Programme, Quality Bus Corridors (QBCs) and Bus Rapid Transit (BRT) systems, together with enhanced facilities for walking and cycling’.

Within the document, the following objectives are highlighted which link to the proposed project:

- Actively promote and support the early development of the indicative route for new Metro North linking Swords with Dublin Airport and Dublin City Centre (Objective SWORDS 5).
- Support National and Regional transport policies as they apply to Fingal. In particular, the Council support the Government’s commitment to the proposed new Metro North and DART expansion included in Building on Recovery; Infrastructure and Capital Investment 2016-2021. The Council also supports the implementation of sustainable transport solutions. (Objective MT01).
- Support Iarnród Éireann and the NTA in implementing the DART Expansion Programme, including the extension of the DART Line to Balbriggan, the design and planning for the expansion of DART services to Maynooth, and the redesign of the DART Underground. (Objective MT30).

The general objectives highlighted within the document which link into the transport strategy improvements include:

- Facilitate, encourage, and promote high quality interchange facilities at public transport modes throughout the Country (Objective MT28).
- Design and implement measures, having regard to potential environmental impacts, to mitigate the increased congestion on the local road network caused by more frequent closures of the existing level crossings on the Maynooth Line. Ensure that well in advance of any such measures being taken, extensive direct consultation is undertaken with local communities and residents who would be directly impacted by any such measures. (Objective MT31).

### 2.4.2 Draft Fingal County Development Plan 2023-2029

This is a Draft Development Plan that will follow on from the 2017-2023 FCC Development Plan. The Draft Plan sets out the spatial framework to guide future development within the County with a focus on the places we live, the places we work, the places we visit and the places we do business and how we interact and move between these places while protecting our environment.

The Draft Plan recognises that there is an over reliance on private cars throughout the County and the need to reduce transport emissions. One of the key strategic objectives of this Plan is to strengthen the integration of land-use and transport planning with a priority focus on increased provision of walking, cycling and public transport infrastructure. This Plan promotes an integrated and sustainable transport network that is inclusive and accessible for all.

As part of the Strategic Policy main aims, policy 18 promotes the delivery of the proposed project which states – “Support the delivery of key sustainable transport projects including MetroLink, BusConnects, DART+ and LUAS expansion programme so as to provide an integrated public transport network with efficient interchange between transport modes to serve needs of the County and the mid-east region in collaboration with the NTA, TII and Iarnród Éireann and other relevant stakeholders.

Within the document, the following objectives are highlighted which link to the proposed project:

- Support NTA and other stakeholders in implementing the NTA Strategy including MetroLink, BusConnects, DART +, LUAS and the GDA Cycle Network (Objective CMO23).
- Ensure that appropriate measures are put in place to mitigate the impacts of level crossing closures on the Maynooth rail line including protection measures for public transport and increased priority for cycling and walking (Objective CMO24).
- Work with the NTA, TII and other relevant national transport agencies to optimise accessibility to public transport, increase catchment and maximise permeability through the creation of high-quality walking and cycling routes linking to public transport stops. (Objective CMO28).
- Prioritise new road developments that facilitate improvements in the overall efficiency of the transportation network including through the provision of new bridge crossings or new cycling and walking infrastructure (Objective CMP30).

#### **2.4.3 Dublin City Development Plan 2016 – 2022**

This document provides an integrated, coherent spatial framework to ensure Dublin city is developed in an inclusive way which improves the quality of life for its citizens, whilst also being a more attractive place to visit and work.

It is the core strategy of this development plan to achieve the vision in a manner that is consistent with the guidance, strategies, and policies at national and regional level. DCC policy on public transport will be implemented in collaboration with the NTA's 'Transport Strategy for the Greater Dublin Area 2016–2035'. The main aim of this policy for DCC is to support the provision of Metro North and South, and the DART expansion programme including DART underground Movement and Transport. Other key public transport elements of this strategy include:

- To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies, and stakeholders.
- To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.

#### **2.4.4 Draft Dublin City Development Plan 2022 - 2028**

The Draft document is a renewed plan which sets out how the city will develop to meet the needs of all residents, workers, and visitors. The document seeks to promote ease of movement within and around the city, it also aims to play a key role in:

- Safeguarding the environment.
- Adapting to the impacts of climate change.

This promotes the integration of land use and transportation and improves public transport and active travel infrastructure such as walking and cycling. Furthermore, it focuses on the creation of a more compact city where development is closely aligned and integrated within the public transport infrastructure. Whilst also, supporting minimising the need to travel, shifting to sustainable modes and encouraging behavioural change.

Chapter 8, on Sustainable Movement and Transport highlights the challenges faced by Dublin:

- Addressing climate change – promoting sustainable mobility in cutting its emissions by at least 51% by 2030 through significant mode shift to active travel and public transport.
- Promoting effective integration of land use and transportation - minimising the need to travel and ensuring that development takes place where active travel can successfully be promoted and there is access to high quality public transport networks.
- Connectivity and mobility – promoting integration and connectivity between travel modes and facilitating mode shift across the region.

The Scheme proposes to alleviate these challenges by promoting more sustainable mobility, improving access links to high quality public transport network, and promoting better integration with other modes of transport within the city. This is further supported by policies:

- SMT1 – Modal Shift and Compact Growth - promote modal shift from private car use towards increased use of more sustainable forms of transport such as active mobility and public transport.
- SMT2 – Decarbonising Transport - facilitate the rollout of alternative low emission fuel infrastructure.
- SMT3 – Integrated Transport Network - support and promote the sustainability principles set out in National and Regional documents to ensure the creation of an integrated transport network that services the needs of communities and businesses of Dublin City and the region.
- SMT20 – Key Sustainable Transport Projects – support the delivery of key sustainable transport projects including Metrolink, Bus Connects, DART+ and LUAS expansion programme so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region.
- STM21 – The Rail Network and Freight Transport - to work with Iarnród Éireann, the NTA, TII and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit, and promoting sustainable transport and improved connectivity.

The above policies of DCC fall in line with the objective to transition towards more sustainable travel modes (SMT01) and improve the connectivity within the city, which falls in line with the proposed project improvements.

#### **2.4.5 Kildare County Development Plan 2017 – 2023**

The Core Strategy of this document aims to facilitate a more consolidated compact urban form, maintenance and improvement of a sustainable economic base, and the creation of sustainable and integrated communities, together with the balancing of our natural and built environment with sustainable and appropriate development.

The document outlines recognition that Kildare is part of the GDA which provides a framework for the planning and delivery of transport infrastructure and services. The document supports the proposed DART+ West development through the following policies:

- ‘To support the delivery of the NTAs Greater Dublin Area Transport Strategy (2016-2035) in Kildare’.
- ‘To investigate, in co-operation with Iarnród Éireann, the provision of new railway stations in the county and the upgrading/relocation of existing stations, to rectify existing constraints in the network’.
- ‘To promote and support the electrification and upgrading including twin tracking of the Maynooth rail line’.

#### **2.4.6 Meath County Development Plan 2021-2027**

The Meath CDP recognises that the Transport Strategy for the GDA provides a framework for the planning and delivery of transport infrastructure and services.

The document supports the proposed development through the following policies:

- ‘Support the continued development of Maynooth, co-ordinated with the delivery of strategic infrastructure including pedestrian and cycle linkages within the town and to the Royal Canal

Greenway, DART expansion and road linkages form part of the Maynooth Outer Orbital Route in a manner which supports future development and population growth and builds on synergies with Maynooth University promoting a knowledge-based economy' (ED Objective 10 based on RPO 4.33 as part of the RSES promoting the delivery of strategic infrastructure).

- 'The RSES supports delivery of the rail projects set out in Table 8.2, subject to the outcome of appropriate environmental assessment and planning process' (RPO 8.8 which support the extension of the Dunboyne/M3 Parkway line to Navan and the DART expansion provision of services to Drogheda, Maynooth and M3 Parkway on the Maynooth/ Sligo Line (supported through policy MOV7)).
- To facilitate the provision of a train station at Bettystown (in addition to the existing station at Laytown) as part of the DART expansion works to Drogheda through the planned electrification of the Northern rail line by Iarnród Éireann (Objective MOV 6).

#### 2.4.7 Additional considered policies

- Draft Kildare County Development Plan 2023-2039.
- North Lotts and Grand Canal Dock SDZ Planning Scheme 2014.
- Ashtown-Pelletstown Local Area Plan 2014.
- Kellystown Local Area Plan 2021.
- Draft Kellystown Local Area Plan 2020-2026.
- Barnhill Local Area Plan 2018.
- Draft Barnhill Local Area Plan 2019-2025.
- Maynooth Local Area Plan 2013-2019.
- Kilcock Local Area Plan 2015-2021.
- Leixlip Local Area Plan 2020-2023.

## 2.5 Design of proposed project

The proposed project and the mitigation identified as being required within the impact assessment has been designed in accordance with the following documents.

#### 2.5.1 Design Manual for Urban Road and Streets (March 2013)

The Design Manual for Urban Roads and Streets (DMURS) was published in March 2013 by the Department of Transport. The document was produced in order to supplement the following documents:

- Traffic Management Guidelines (2003).
- Smarter Travel (2009).
- Guidelines for Planning Authorities on Sustainable Residential development in Urban Areas (2009).
- National Cycle Manual (2011).
- Draft Planning Guidelines; Local Area Plans (2012).

The aim of this document is to set out well-designed streets at the heart of sustainable communities. The manual recognises the importance of walking and cycling in improving health and well-being and in providing better links to wider communities. The document also recognises the importance of alignment of spatial planning and transport policy to contain suburban sprawl, linking employment to transport and encouraging modal shift to more sustainable modes of travel.

To support these objectives, street layouts in cities, towns and villages will be interconnected to encourage walking and cycling and offer easy access to public transport. Compact, denser, more interconnected layouts, particularly where they are served by good quality bus or rail services, will help to consolidate cities, towns and villages making them viable for reliable public transport.

### 2.5.2 National Cycle Manual

The National Cycle Manual published by the NTA in 2011 is based on the idea of promoting five principles of sustainable safety. The aim of the document is to promote more mainstream and standardised designs for cycle facilities across the nation.

The five principles of Sustainable Safety include:

- Functionality.
- Homogeneity.
- Legibility.
- Forgiveness.
- Self-Awareness.

Within Chapter 5 of the document cycle parking facilities are highlighted as having heavy influence on the decision to travel by bicycle. Absence of such facilities has been shown to undermine the investment in the overall network infrastructure. Cycle parking is considered as an integral part of any cycle network, but it can also precede any dedicated cycle infrastructure, in order to address the cycle parking needs at the outset.

### 2.5.3 NTA Permeability Best Practice Guide

The NTA aim to encourage and promote the use of more sustainable modes of transport and to ensure that transport considerations are fully addressed as part of land use planning. Walking and cycling are key sustainable travel modes. These modes of transport can substantially meet the mobility needs of people in carrying out their daily activities if they are properly facilitated by land use planning.

The NTA aims to fund transport infrastructure measures which facilitate and promote walking, cycling and public transport. It also aims to address the existing gaps within the transport network, especially where demand for walking and cycling in towns and cities is not being met by the transport network.

## 2.6 Summary

This TIA was prepared in accordance with the above policies and guidance, by identifying any potential traffic and transport-related impacts as a result of the proposed project and any mitigation which may be necessary to support the proposed project to prevent any adverse impacts.

### 3. RECEIVING ENVIRONMENT

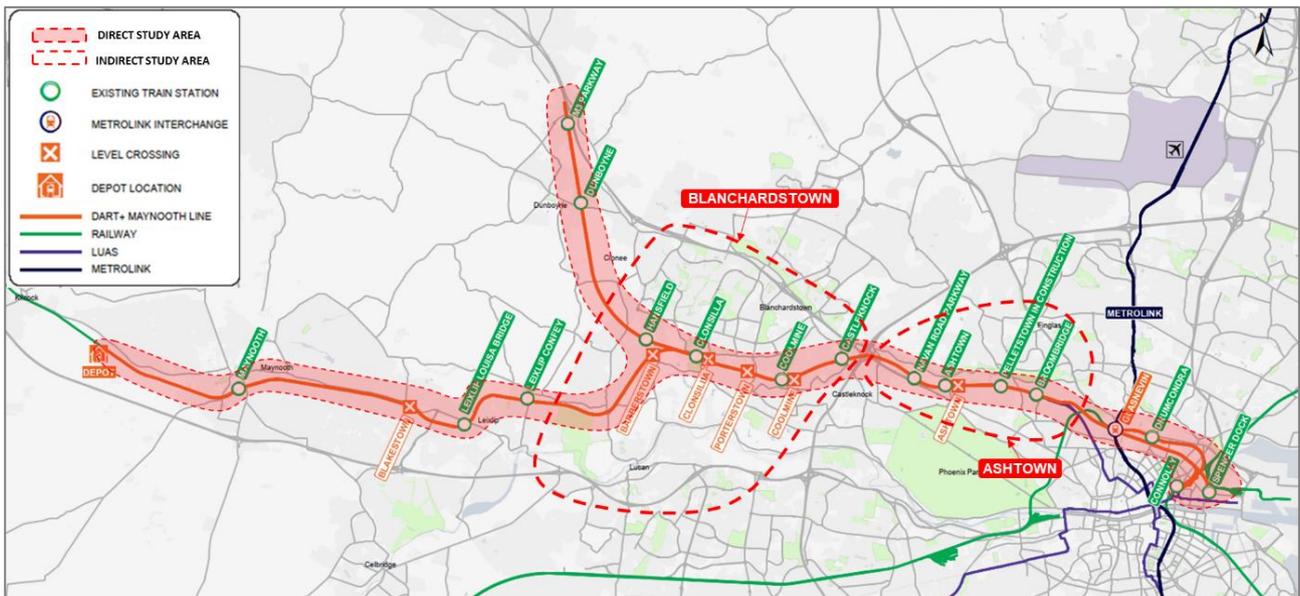
#### 3.1 Introduction

In this section, descriptions of both infrastructural provision and usage of that infrastructure by each mode for the baseline scenarios is presented in detail along the corridor of the proposed project. This report therefore includes reference to the following modes:

- General Traffic (cars, taxis, LGVs, HGVs).
- Pedestrians and Cyclists.
- Buses.
- Rail.

#### 3.2 Site Location

The proposed project is located across the counties of Dublin, Kildare, and Meath. As illustrated in Figure 3-1 below, the proposed project starts in Dublin city centre and travels along the royal canal to the Blanchardstown area where it splits with one arm going to Leixlip and Maynooth in Kildare and the other arm going to Dunboyne in Meath. The scoping stage of the assessment determined this an appropriate study area.



**Figure 3-1 Study Area**

The direct and indirect impacts of the Proposed project have been considered with reference to the following study area extents:

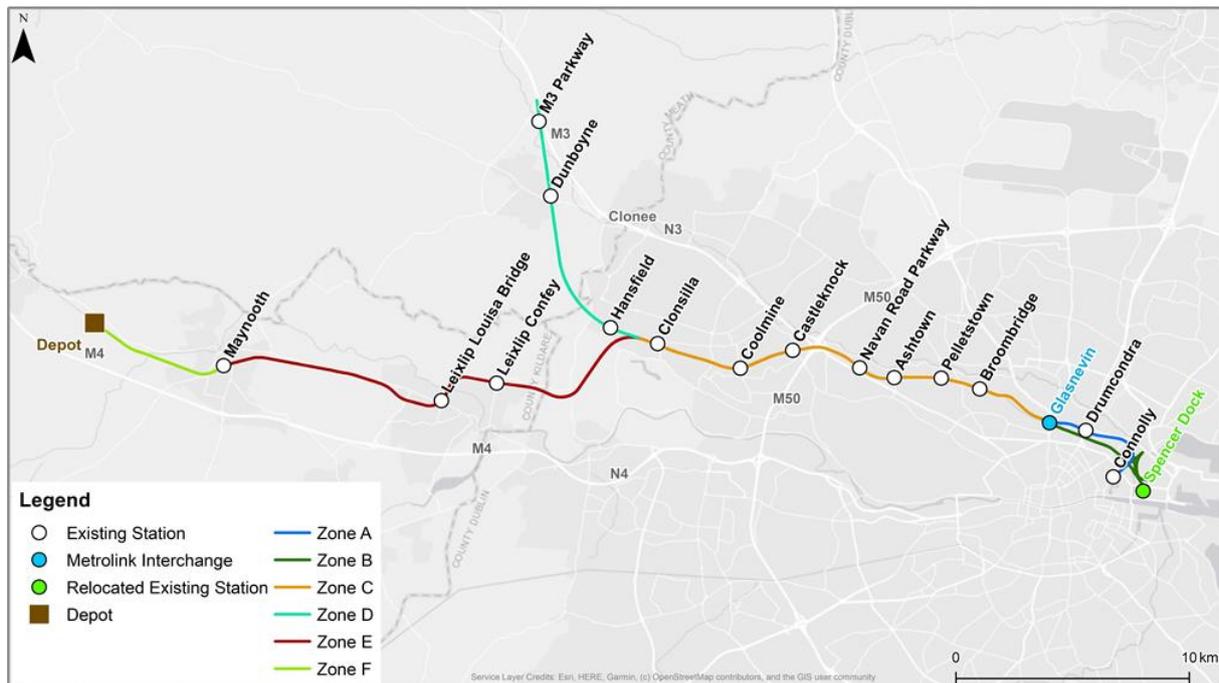
- Direct Study Area - immediate vicinity of the alignment of the Proposed project.
- Indirect Study Area - wider study areas around Blanchardstown and Ashtown due to proposed level crossing closures.

#### 3.3 Description of Receiving Environment along the Proposed Project

The rail line subject to electrification as part of the DART+ West Project is approximately 40 kilometres in length from its start at Dublin City Centre to the M3 Parkway in Co. Meath and to the proposed depot to the

west of Maynooth in Co. Kildare. The highway network follows the rail line in various forms from minor local roads to national strategic roads such as the M3 and M4. The roads which, for the main part, are in the immediate vicinity of the proposed development are single carriageway roads providing facilities for pedestrians, cyclists, and buses.

There are a number of vehicular crossings along the length of the railway line which are generally provided in the form of bridges. There are also a number of 'at grade' crossings at Ashtown, Coolmine, Porterstown, Clonsilla, Barberstown, and Blakestown, which are to be closed as part of the proposed project. These closures will impact on vehicular, pedestrian and cycle flow on the surrounding network. The location of the 'at grade' crossings which would be impacted upon by the proposed development with the section breakdown are shown in Figure 3-2 and are described below.



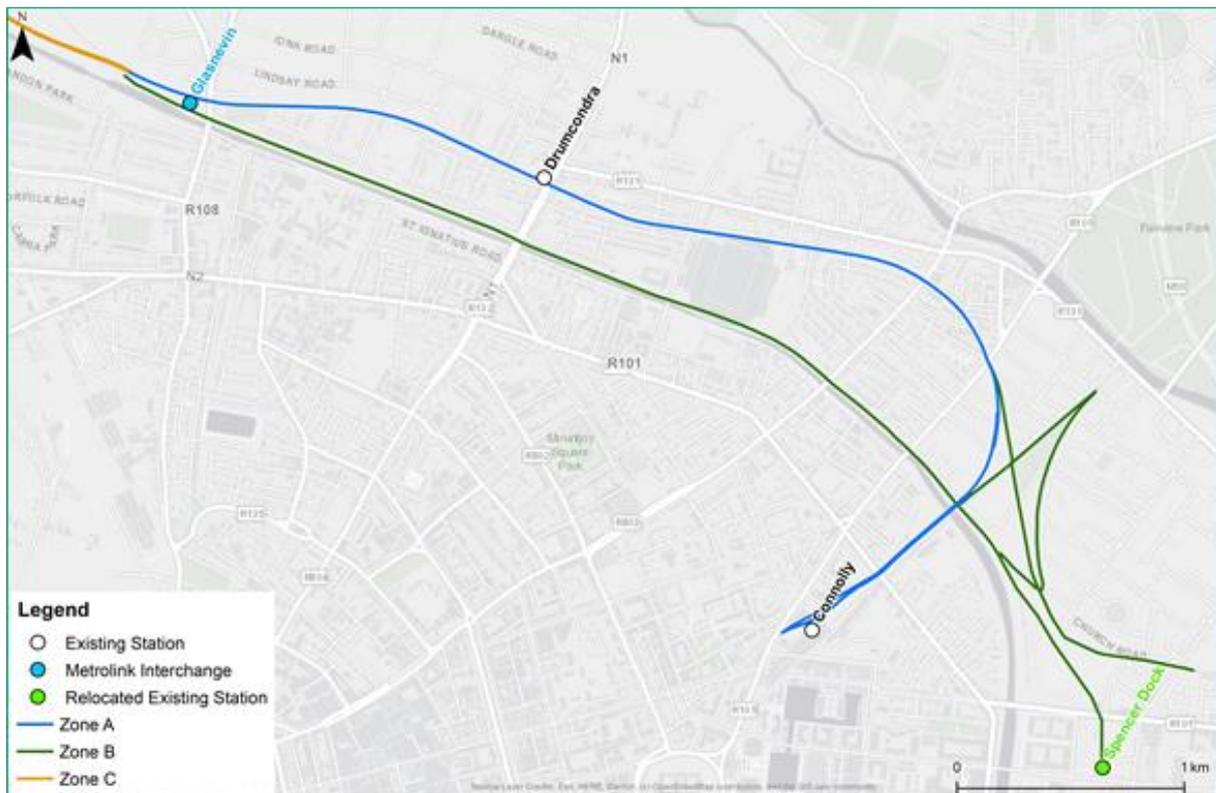
**Figure 3-2 Extent of Development**

As shown on Figure 3-2 the existing line links Maynooth and M3 Parkway with Connolly and Docklands stations in Dublin City Centre. The rail services are currently split between the two stations, trains originating in M3 Parkway terminate at Docklands Station and trains originating along the Maynooth spur terminate at Dublin Connolly or Bray. The Spencer Dock Luas station is found within short walking distance of the Docklands Station.

Given the length of the proposed development, it has been divided into six zones to aid in setting out the works taking place, the time periods when the works will take place and thus aid in identifying the location of impacts. The six zones are set out below and are considered in detail in the following section.

- Zone A - Connolly Station to Glasnevin (Glasnevin Junction) on Great Southern and Western Railway (GSWR) Line – Phoenix Park Tunnel and Cabra Compound.
- Zone B - Spencer Dock Station to Phibsborough/ Glasnevin (Glasnevin Junction) on Midland Great Western Railway (MGWR) Line.
- Zone C - Phibsborough/ Glasnevin (Glasnevin Junction) to Clonsilla Station (Clonsilla Junction).
- Zone D - Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus).
- Zone E - Clonsilla Station (Clonsilla Junction) to Maynooth Station.
- Zone F - Maynooth Station to Maynooth Depot.

### 3.3.1 Zone A – Connolly Station to Glasnevin (Glasnevin Junction) on GSWR Line – Phoenix Park Tunnel and Cabra Compound



**Figure 3-3 Zones A and B of the Development**

The existing line links Maynooth and M3 Parkway with Connolly and Docklands stations in Dublin City Centre. The rail services are currently split between the two stations, where trains originating on the M3 Parkway branch line terminate at Docklands station and trains originating along the Maynooth rail line terminate at Dublin Connolly or Bray. The proposed Spencer Dock LUAS Station is located within short walking distance of the existing Docklands Station.

Due to the positioning of Connolly Station, the surrounding area is urban in nature with wide, well-lit footways provided along with signalised crossings at intermittent locations. Amiens Road (R105) runs in a broad north to south direction along the western boundary of the station and provides access to several other roads within the city centre. Access to the M50 motorway (Dublin Tunnel (Toll)) is provided some 1.75 kilometres north-east of the station and is accessible from the East Wall Road (R131). This provides a vehicular route out of the city centre to the edge of Dublin avoiding congested areas. Several bus stops are provided along Amiens Road as well as bus lane to encourage trips by more sustainable modes and connecting with the rail services available at the station. Several local roads are located around the station however to the north the Seville Place (R101) connects with the Amiens Road at a signalised crossroads, The Five Lamps junction. Seville Place is part of the North Circular orbital route around Dublin City and provides a vehicular connection with the Docklands railway station.

Seville Place between the stations is more residential in nature than Amiens Road, while being a key route for vehicular traffic within the city. Well-lit footways are provided along with cycle lanes and on-street parking laybys. Several pedestrian signal crossing facilities are provided along the street.

There are several other local streets (Sherriff Street and Mayor Street) that are closed to through traffic but are available as cycling and walking routes.

In Zone A the rail line between Connolly and Drumcondra is elevated above street level, and the crossings with local roads are provided in the form of rail bridges. Zone A also contains the Drumcondra train station.

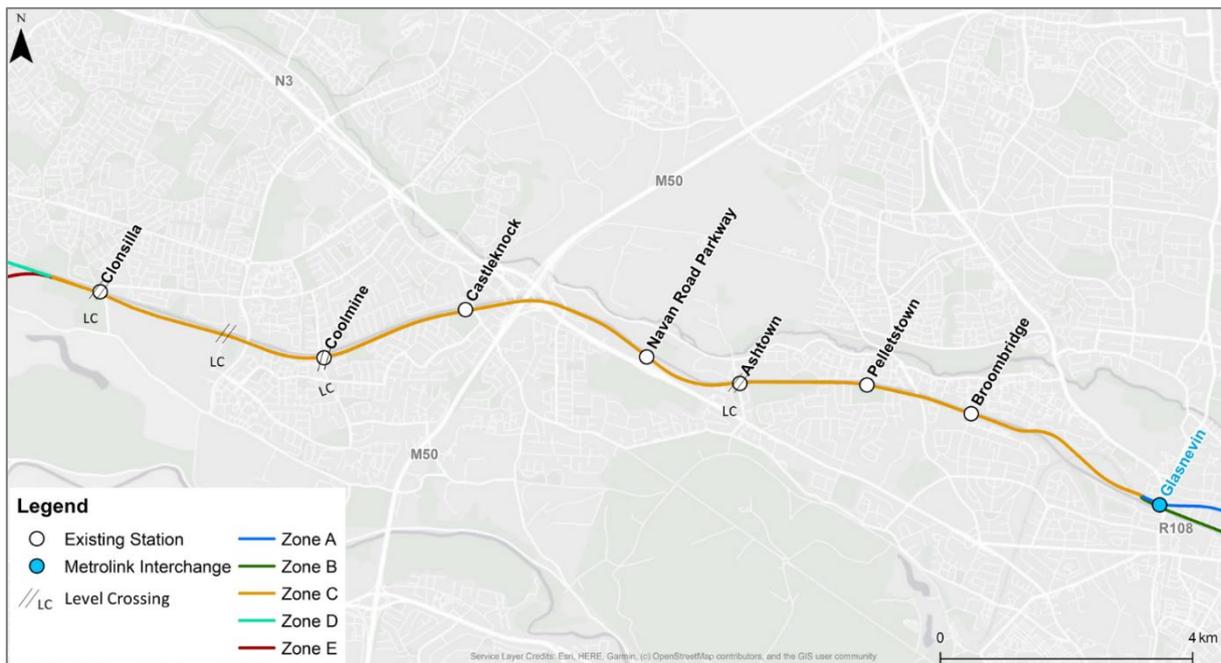
This station provides access to bus services which connects with the north of Dublin, including the Dublin Airport and with the city centre and the south of Dublin. The station offers great opportunities for interchange with other public transport services, if required. As the route of the line continues west towards Glasnevin Junction with only limited street crossings, including a footbridge at Claude Road 400m to the west of Drumcondra Station.

**Zone B - Spencer Dock Station to Phibsborough/ Glasnevin (Glasnevin Junction) on MGWR Line.**

The proposed Spencer Dock station is located 250 metres southeast of Docklands Station. The area around the proposed station is currently in the process of being developed and therefore is already busy with pedestrians and cyclists. The proposed station, as well as the existing Connolly Station, will provide access to an area of Dublin which is being regenerated to accommodate significant areas of residential, office and retail spaces. The existing rail line which serves Docklands Station travels north and to the east of Connolly Station and follows the Royal Canal up to Glasnevin junction, south of Croke Park stadium. Similarly, to Zone A, through this area the line generally travels between residential areas but in cutting, under the roads, therefore does not impact on pedestrians, cyclists, and vehicles. There are 5 existing bridges across the rail line in this zone to provide community connectivity.

The **Royal Canal Way** is a pedestrian route that follows the towpath of the Royal Canal parallel to the railway line throughout Zone B. This route is being upgraded and widened for shared use with cyclists, with the aim of linking from Spencer Dock in the Dublin Docklands to Maynooth where it will join the existing shared greenway that extends westwards across the country towards Mullingar and Athlone. In Zone B the Royal Canal Way is on the southern bank of the Royal Canal from Sherriff Street westwards to Binn’s Bridge on Drumcondra Road. It the switches to the north bank from there to Glasnevin Junction.

**Zone C – Phibsborough/ Glasnevin (Glasnevin Junction) to Clonsilla Station (Clonsilla Junction)**



**Figure 3-4 Zone C of the Development**

In Zone C there are four existing level crossings located at Ashtown, Coolmine, Porterstown and Clonsilla, Figure 3-4 provides an overview of their existing condition.



**Figure 3-5 Existing Conditions of Level Crossings in Zone C**

At Glasnevin Junctions the two railway lines GSWR and MGWR join together, and then the rail continues westwards to the south of Glasnevin cemetery, where it then crosses over the Phoenix Park Tunnel spur rail line and the Royal Canal to the southern side. From here westwards the railway line remains on the southern side of the Royal Canal. It reaches the first station in Zone C, at Broombridge which is followed by the new Pelletstown Station (opened in 2021). There is little impact on the existing road or rail network in the vicinity of these stations as the roads pass over the railway on bridges.

The **Royal Canal Way** continues on the northern bank of the canal westwards from Glasnevin Junction to Castleknock Road Bridge where it switches to the southern side as far as Porterstown Road. The route then recrosses to the northern side of the canal and continues to Clonsilla. Along this section there are connections to the existing roads at each of the bridges and level crossings.

Broombridge station offers interchange with LUAS Green Line connecting Broombridge with Bride's Glen on the south side of Dublin via Dublin City Centre at O'Connell Street / Parnell Street, St Stephen's Green, Dundrum, Sandyford, Carrickmines, and Cherrywood, where it terminates at Bride's Glen Stop

Continuing west, the rail line reaches Ashtown station, where there is the first level crossing on Ashtown Road. Ashtown Road is a single carriageway which runs in a north to south direction, connecting with River Road (R102) to the north and Navan Road (R147) to the south. The posted speed limit is 50kph and footways, which are lit, are provided along the eastern side of the carriageway to the south of the crossing whilst footways are provided on both sides to the north. Access is provided to a number of residential areas as well as Ashtown Stables and Ashtown station. The closure of the existing barriers at this crossing requires all modes of transport to wait for the train to pass and for the barriers to be lifted. The footbridge provided as part of the station to cross the rail line is only for rail passengers as it requires a valid pass to enter the station.

The rail line continues west and follows the Royal Canal and the alignment of Navan Road parallel to the south. It crosses under Dunsink Lane, under the N3/M50 Junction 6, over the M50 mainline carriageway and under Old Navan Road and Castleknock Road.

The road network which follows and crosses the rail line at Navan Road and Castleknock stations is unimpeded by rail line due to the provision of bridges.

The next interaction with the road network is the next level crossing at Coolmine, which links Coolmine Road to the north with Carpenterstown Road to the south. The crossing itself is very narrow and provides limited space for pedestrians and cyclists to cross the rail line on either side of the road. There is no footpath immediately north of the crossing on the west side of the road, where Coolmine Road crosses over the Royal Canal. There is a pedestrian bridge provided to cross the Royal Canal on the east side of Coolmine Road, which is a single carriageway with footpaths provided on both sides. Standard street lighting is provided, and the speed limit is posted as 50kph. On the northern side of the canal a shared footway / cycleway is provided westwards from Coolmine Road over a short distance to link into nearby residential areas. Coolmine Road provides access to residential areas before connecting with Clonsilla Road approximately 630 metres north of the crossing.

Coolmine Road runs south from the crossing connecting with Diswellstown Road which is the main distributor road in the area and provides segregated cycle tracks and footpaths on both sides of the road. Two other roundabouts located between these points provide access to the residential areas. Lit footways are provided along the carriageway with uncontrolled crossing points provided in the form of dropped kerbs with tactile paving and central refuges at crossing locations. The posted speed limit is 50kph.

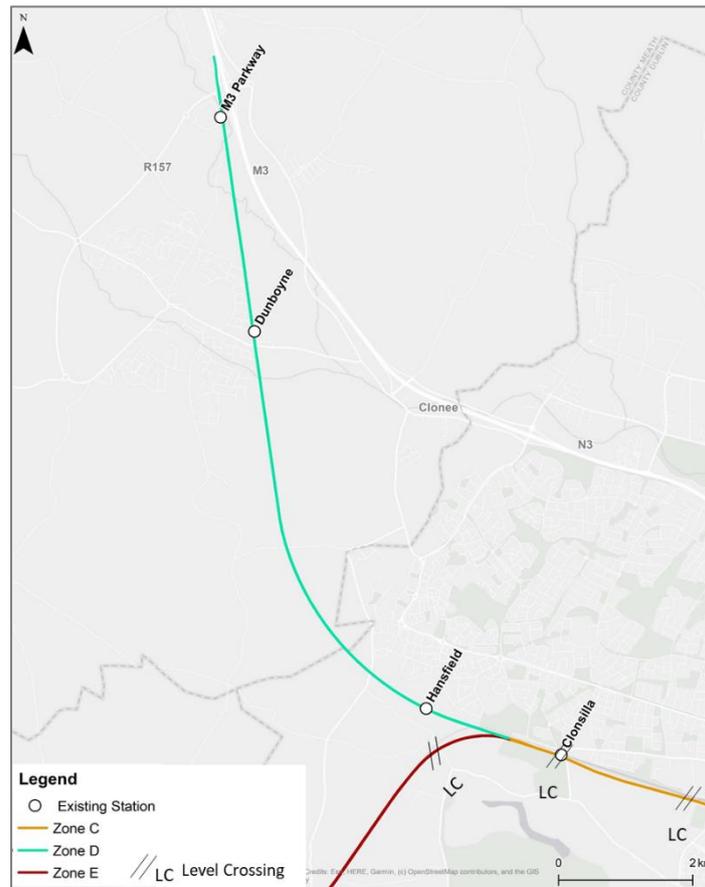
The rail line continues west from Coolmine and crosses under Diswellstown Road, which is the main distributor road in the area and provides segregated cycle tracks and footways on both sides of the road. The road is lit and has a posted speed limit of 50kph. The rail line continues 0.2 km westwards where the next level crossing is provided at Porterstown Road. Unlike the other level crossings which are predominately located within residential / more urban areas, the crossing on Porterstown Road is located on the urban fringes and therefore is not subject to the high traffic flows of the other crossings. Although it is not subject to high traffic flows, Porterstown Road does provide a route for those living in Clonsilla to access the Scoil Choilm Community National School and St Mochta's Football Club therefore reducing the need to travel along the wider network.

Porterstown Road is a narrow single carriageway with a footway provided along the western side of the carriageway. The footway is however only lit in the vicinity of the crossing and is, due to land constraints, not provided in accordance with standards in terms of width. Where Porterstown Road crosses the Royal Canal immediately north of the 'at grade' crossing, no footway is provided and therefore at this point pedestrians would be required to use the carriageway. To the north of the crossing, footway provision is provided in accordance with standards, however there are occasions where narrowing occurs due to land constraints. To the north some 365 metres from the crossing, Porterstown Road links with Clonsilla Road (R121) which provides connections to the wider road network and is more urban in nature.

From Porterstown the rail line continues 1.2 km westwards where it crosses Clonsilla Road at Clonsilla Station. Clonsilla Road is a single carriageway road with a posted speed limit of 50kph. A bridge over the Royal Canal, although just wide enough for two vehicles to pass, is located immediately to the north of the crossing. Due to the kinked alignment large vehicles utilise the full carriageway width. There is a footbridge over the canal on the western side of the road bridge. Footways are provided along the western side of the carriageway on the northern and southern side of the crossing which are lit. There are however locations where utility infrastructure and signs are placed in the centre of the footway making it difficult for those with pushchairs or in wheelchairs. Dropped kerbs and tactile paving is provided where pedestrians are required to cross.

Open green space is located to the south of the Clonsilla level crossing with the area to the north predominately residential.

### 3.3.2 Zone D – Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus)



**Figure 3-6 Zone D of the Development**

To the west of Clonsilla station, the rail line splits at Navan Junction with the southern divide continuing southwest towards Maynooth and the northern divide heading north-west towards the M3 Parkway in Co. Meath.

The northern spur provides a station at Hansfield and continues northwest where to the west of Ongar where it moves from County Dublin to County Meath. West of Hansfield Station the area is largely rural. Where the rail line intercepts with the road network there are bridges provided. The rail line serves the town of Dunboyne and M3 Parkway station. This is the terminus point on the rail line and for the proposed DART+ West Project. The M3 Parkway station acts as a Park and Ride station and is situated adjacent to the M3 / R157 grade separated junction. The site acts to intercept road traffic travelling from the northwest into Dublin. It assists in reducing vehicular trips into the city centre, by encouraging the use of the train line.

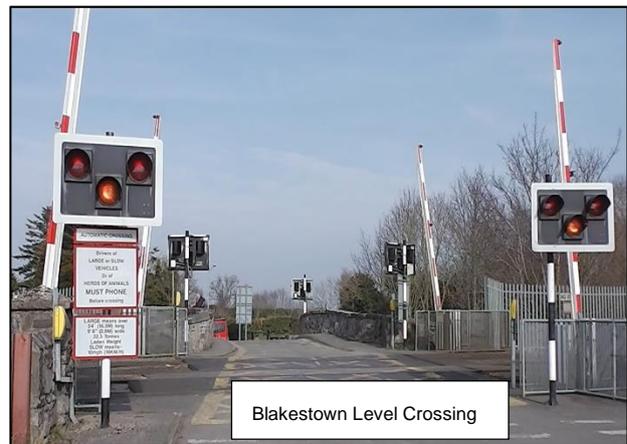
**Zone E – Clonsilla Station (Clonsilla Junction) to Maynooth Station**



**Figure 3-7 Zone E of the Development**

The rail line that continues to Maynooth travels through a more rural area crossing from within County Dublin into County Kildare. An ‘at grade’ crossing is provided at Barberstown Lane which is located some 225 metres north of the junction with the R121 which itself provides a link to the Clonsilla Road. Barberstown Lane is a single carriageway however its width is such that it would be difficult for two large vehicles to pass without utilising the verge. The posted speed limit is 50 kph. No footways are provided nor lighting. To the north, Barberstown Lane connects with the R149 which connects to the wider road network including the M3 and N4/M4.

As the line continues southwest from Barberstown and through to the stations at Leixlip Confey and Leixlip Louisa Bridge, crossings of the line continue. These are in the form of bridges and generally of sufficient size to cater for all traffic types and other road users (it should be noted, Cope Bridge is served by a single lane carriageway with signals on either sides of the bridge). No community severance as a result of the rail network or impact on the rail line itself occurs. It should be noted that there is a significant employment population located in the immediate vicinity of the Leixlip Louisa Bridge station due to a number of large employers including Intel.



**Figure 3-8 Existing conditions of Level Crossings in Zone E**

The rail line that continues to Maynooth travels through a more rural area, crossing from County Dublin into County Kildare. A level crossing is provided at Barberstown Lane which is located some 225 metres north of the junction with the R121, which provides a link to the Clonsilla Road. Barberstown Lane is a narrow single

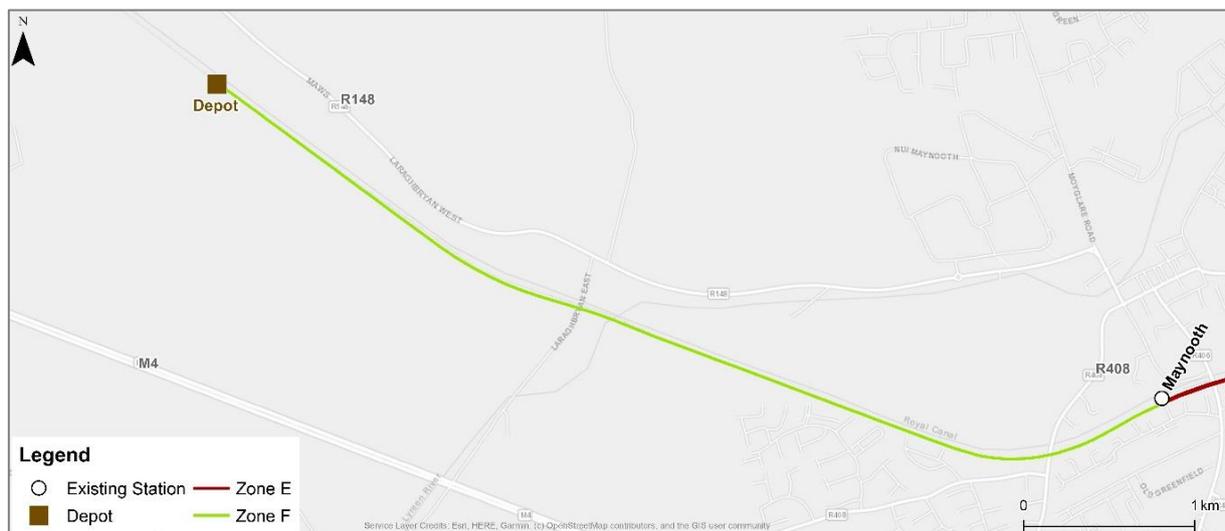
carriageway such that it would be difficult for two large vehicles to pass without utilising the verge. The posted speed limit is 50 kph. No footways are provided nor lighting. To the north, Barberstown Lane connects with the R149 which connects to the wider road network including the M3 and N4/M4.

As the line continues southwest from Barberstown and through to the stations at Leixlip Confey and Leixlip Louisa Bridge, there are several road crossings of the line with bridges and are generally of sufficient width to cater for all traffic types and other road users. However, Cope Bridge at Leixlip Confey Station is only wide enough for a single traffic lane and is controlled by traffic signals on either side of the bridge for shuttle operation in alternate directions.

The existing level crossing at Barberstown will be closed to ensure efficient operation of the rail line. A second level crossing in Zone E is provided on a rural lane, south of the Deey Bridge in Blakestown, some 100 metres south-east of the R148 / L1014 priority junction, midway between Leixlip Louisa Station and Maynooth Station. The lane which crosses the rail line is single track, unlit and has no pedestrian facilities. The lane provides access to a small number of properties.

As the rail line reaches Maynooth, the area surrounding the surrounding area becomes more urban and the rail line passes under a number of bridges within the town.

### Zone F – Maynooth Station to Maynooth Depot



**Figure 3-9 Zone F of the Development**

The proposed new depot will be located to the west of Maynooth on undeveloped land located to the south of the Royal Canal and the R148 which connects Maynooth with Kilcock. The proposed development ends at the depot west of Maynooth.

The road network linking Maynooth with the new depot located on land to the west of the town is primarily of a rural nature. The rail track is running along the southern side of the Royal Canal, while the Royal Canal Greenway runs along the northern side of the Royal Canal. Access to the Royal Canal Greenway is provided off local roads at three locations. Access to Maynooth station is provided from the Straffan Road (R406). This is provided in the form of two priority junctions with ghost right turn lanes, yellow boxes, and stop lines to aid vehicles entering and exiting the car park and the station. The Straffan Road is lit with footways and cycle lanes provided on both sides of the carriageway. To the south, the R406 Straffan Road connects with the M4 Motorway whilst to the north, it provides access to Maynooth town centre and the R148 which runs in a broad east to west direction through the town connecting with Kilcock in the west and Leixlip in the east.

West of Straffan Road the rail line crosses under the Parson Street (R408) and under the L5041 south of Jackson's Bridge. The L5041 connects with the R148 at a priority junction to the north of the Royal Canal. A

footway is provided along the southern side of the R148 and around the radius of the corner of the junction with the L5041 before discontinuing southwards on the western side of the local road.

### 3.4 Baseline Vehicular Traffic Flows

To understand the level of existing traffic on the road network within the study area during the AM and PM peak hours of 08:00-09:00 and 17:00-18:00, a review of the baseline data has been undertaken for the year 2019. A combination of survey data and models was used to inform the baseline assessment. The Model Development Reports are included in Appendix A and B to this TIA.

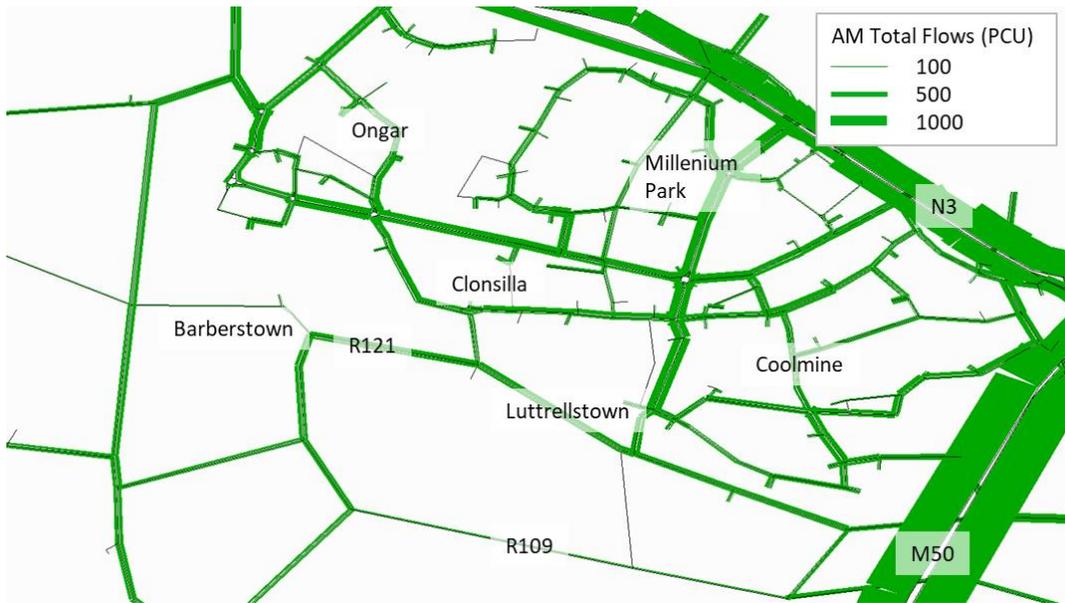
Figure 3-10 and Figure 3-11 illustrate the modelled AM and PM peak hours baseline 2019 traffic flows in the Ashtown area, while Figure 3-12 and Figure 3-13 illustrate the modelled AM and PM peak hours baseline 2019 traffic flows.



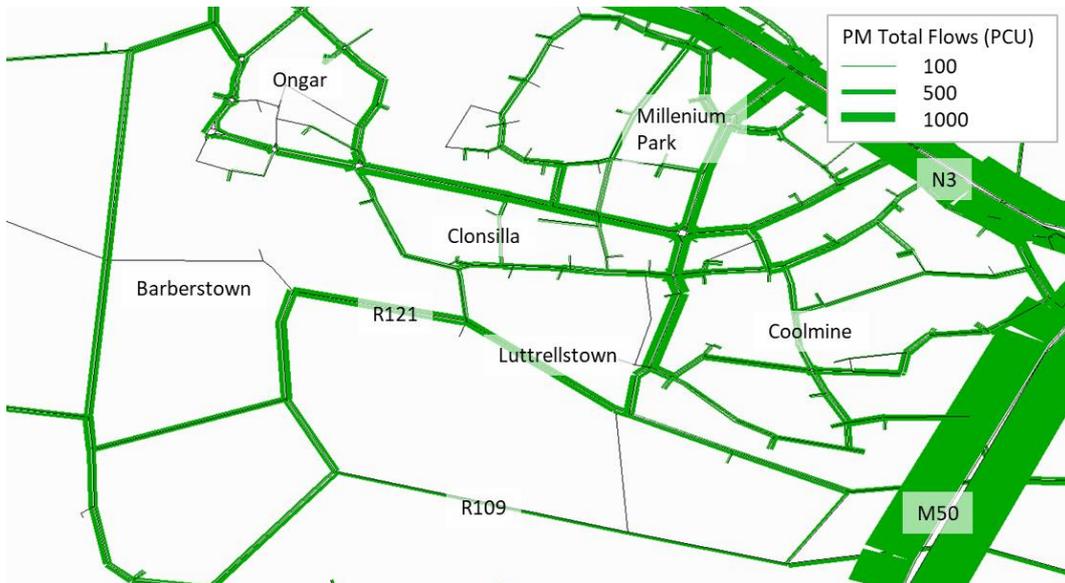
**Figure 3-10 Ashtown Area 2019 AM Peak Model – Total Traffic Flow**



**Figure 3-11 Ashtown Area 2019 PM Peak Model – Total Traffic Flow**



**Figure 3-12 Blanchardstown Area 2019 AM Peak Model – Total Traffic Flow**



**Figure 3-13 Blanchardstown Area 2019 PM Peak Model – Total Traffic Flow**

The baseline traffic flows at the junctions and links along the proposed project are set out in in Appendix C.

It should be noted that 2019 traffic flows or earlier were utilised where possible due to being the last representative time for traffic flows prior to the Covid 19 pandemic. During the pandemic car traffic was shown to reduce by up to 75%, bus journeys by nearly 90% and the used of rail and Luas by more than 96%. The flows therefore set out in in Appendix C are considered representative of the normal traffic flows at the junctions within the study area.

It is important to understand the baseline traffic flows along the length of the rail line being developed to ensure that the impact of changes to the line can be identified and where necessary mitigation implemented.

It should be noted that although traffic is the first mode of transport discussed within this chapter, it is not the most important with considerable emphasis being placed on the use of more sustainable modes such as walking, cycling and the public transport network to reduce the reliance on the private vehicle and the impact on climate change.

### 3.5 Existing Walking and Cycling

Access to the proposed development by foot and cycle is an important factor when ensuring that residents living in the vicinity choose to take the train for the main part of their journey rather than choosing the private vehicle due to its convenience. Excellent walking and cycling facilities encourage the use of a linked sustainable mode trip and therefore to identify the level of existing facilities for walking and cycling, a review has been carried out along the length of the proposed development. This also includes the identification of the level of pedestrian and cyclist who are currently accessing the stations along the length of the proposed development.

There are a number of existing pedestrian and cyclist facilities located within the vicinity of the Proposed Development which links to the wider network and will encourage travel by foot and cycle. Large sections of the rail line are highly accessible by walking and cycling through an extensive network therefore encouraging trips to be made by modes other than the private car, therefore increasing patronage of the service. It should be noted that the rail line for its most part follows closely the Royal Canal and the Royal Canal Greenway. The towpaths are currently at different stages of completion between Dublin and Maynooth, however west of Maynooth the Royal Canal extends for 130 km and is linking Maynooth to Cloondara in Co. Longford.

Pedestrian facilities are generally provided alongside the carriageways crossing the rail line and along carriageways which lead to the 'at grade' crossings with the exception of those provided at Barberstown and Blakestown. No pedestrian facilities are provided at Jackson's bridge and poor pedestrian facilities are provided on the approaches to Clonsilla level crossing and no pedestrian facilities are provided at both Coolmine and Clonsilla crossings, where pedestrians are required to cross alongside of vehicles on a narrow road. Detail relating to the provision most likely to be impacted by the proposed development, at the level crossing, is described within the highway section above. Further to this, the path alongside the Royal Canal can continue to be utilised to access the stations provided along the length of the Maynooth line and parts of the M3 Parkway line.

Pedestrian and Cyclists counts undertaken between November 2015 and February 2020 are set out in Table 3-1 below.

**Table 3-1 Existing Pedestrian and Cycle Counts Along the Proposed Development**

Zone	Location	Survey Date	Mode Type	Direction	AM Peak	PM Peak
A/B	Sherriff St Upper Bridge	17/11/2015	Cycle	Westbound	44	21
				Eastbound	31	41
				Overall	75	62
A/B	Newcomen Bridge	17/11/2015	Cycle	Northbound	93	402
				Southbound	810	68
				Overall	903	470
A/B	Summerhill Parade Bridge	17/11/2015	Cycle	Northbound	35	56
				Southbound	124	17
				Overall	159	73
A/B	Russell St Bridge	17/11/2015	Cycle	Northbound	18	69
				Southbound	95	15
				Overall	113	84
A/B	Binn's Bridge Drumcondra Road Lower	06/02/2020	Cycle	Northbound	95	270
				Southbound	303	114
				Overall	398	384

Zone	Location	Survey Date	Mode Type	Direction	AM Peak	PM Peak
A/B	Cross Guns Bridge R108	26/11/2019	Cycle	Northbound	118	142
				Southbound	123	30
				Overall	241	172
C	New Bridge, Ratoath Road	05/02/2019	Cycle	Northbound	4	3
				Southbound	6	3
				Overall	10	6
C	Ashtown Level Crossing	05/02/2019	Pedestrian	Northbound	76	188
				Southbound	327	78
				Overall	403	266
			Cycle	Northbound	30	17
				Southbound	28	25
				Overall	58	42
C	Coolmine Road Level Crossing	05/02/2019	Pedestrian (3-hour count)	Northbound	395	255
				Southbound	103	81
				Overall	498	336
			Cycle	Northbound	7	3
				Southbound	5	7
				Overall	12	10
C	Diswellstown Road Bridge	05/02/2019	Pedestrian	Northbound	34	13
				Southbound	117	15
				Overall	151	28
			Cycle	Northbound	14	19
				Southbound	45	10
				Overall	59	29
C	Porterstown Road Level Crossing	2018	Pedestrian (3-hour count)	Northbound	5	149
				Southbound	123	24
				Overall	128	173
			Cycle (3-hour count)	Northbound	1	41
				Southbound	37	13
				Overall	38	54
C	Clonsilla Road Level Crossing	2018 05/02/2019	Pedestrian (3-hour count)	Northbound	23	441
				Southbound	15	15
				Overall	38	456
			Cycle	Northbound	0	3
				Southbound	3	0
				Overall	3	3
D	R149 Bridge at Hansfield	05/02/2019	Cycle	Northbound	0	0
				Southbound	0	0
				Overall	0	0
D	L2222 Stirling Road Bridge	05/02/2019	Cycle	Westbound	0	2
				Eastbound	1	1
				Overall	1	3

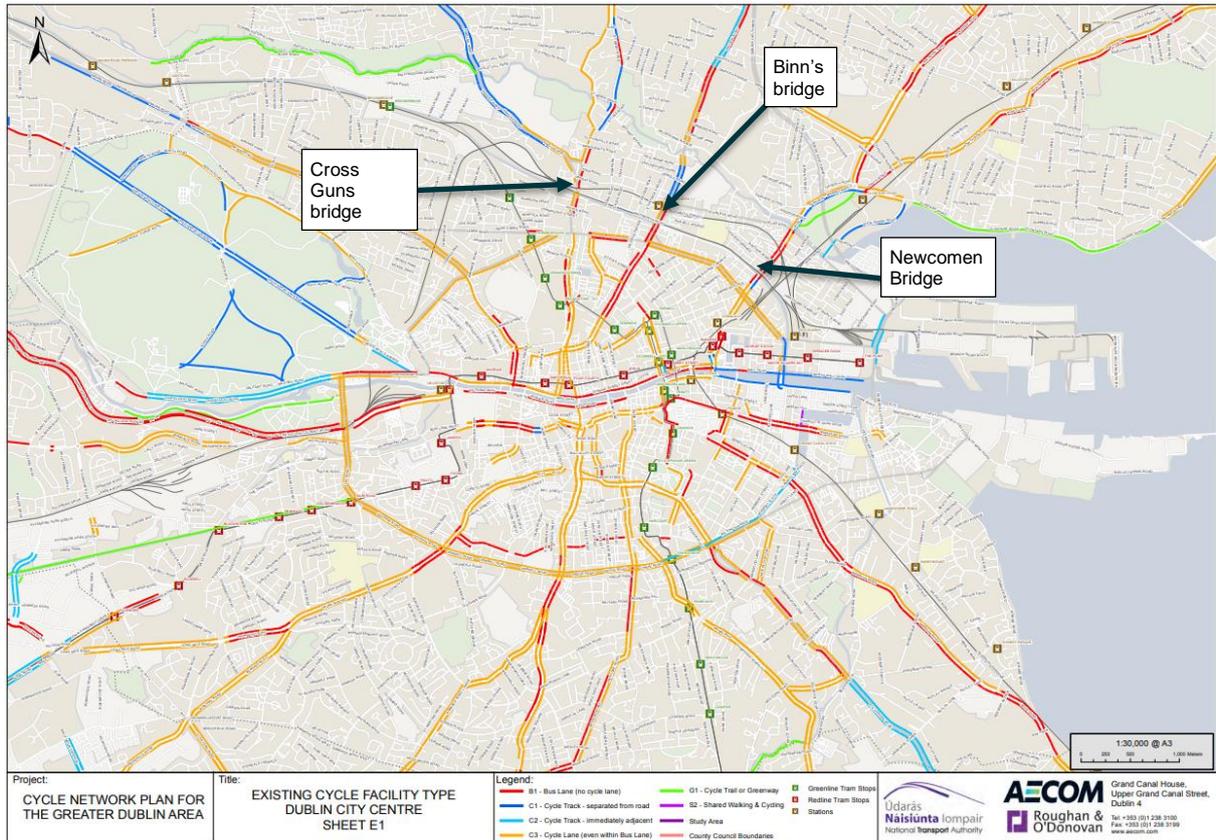
Zone	Location	Survey Date	Mode Type	Direction	AM Peak	PM Peak
E	Barberstown Level Crossing	05/02/2019	Pedestrian	Northbound	0	0
				Southbound	0	0
				Overall	0	0
			Cycle	Northbound	1	0
				Southbound	1	1
				Overall	2	1
E	Collins Bridge (B3005)	05/02/2019	Cycle	Northbound	0	0
				Southbound	0	0
				Overall	0	0
E	Blakestown Level Crossing	05/02/2019	Pedestrian	Northbound	0	0
				Southbound	0	2
				Overall	0	2
			Cycle	Northbound	1	0
				Southbound	0	1
				Overall	1	1

The results from counts illustrate that the busiest locations, in terms of cycle activity are bridges in Zones A and B, which is to be expected given that these Zones are located within more urban areas and therefore have a greater population surrounding them than those Zones to the west where the surrounding area is more rural in nature. The level of cyclists at level crossings is highest at Ashtown and drops significantly on all other locations, west of the M50. There is very low activity at both Barberstown and Blakestown level crossings, which reflects the rural nature of both these sites and the low density of development in their vicinity. In relation to pedestrian counts at each of the level crossings, both Barberstown and Blakestown show very low level of usage, which is to be expected.

The GDA Cycle network plan from the NTA was used to identify existing cycle routes that are in the vicinity of the DART+ West rail line. The GDA Cycle network plan shows all existing cycle routes across the following areas:

- Dublin City Council (DCC).
- Fingal County Council (FCC).
- Meath County Council (MCC).
- Kildare County Council (KCC).
- South Dublin County Council (SDCC).
- Dun Laoghaire Rathdown County Council (DLRCC).
- Wicklow County Council (WCC).

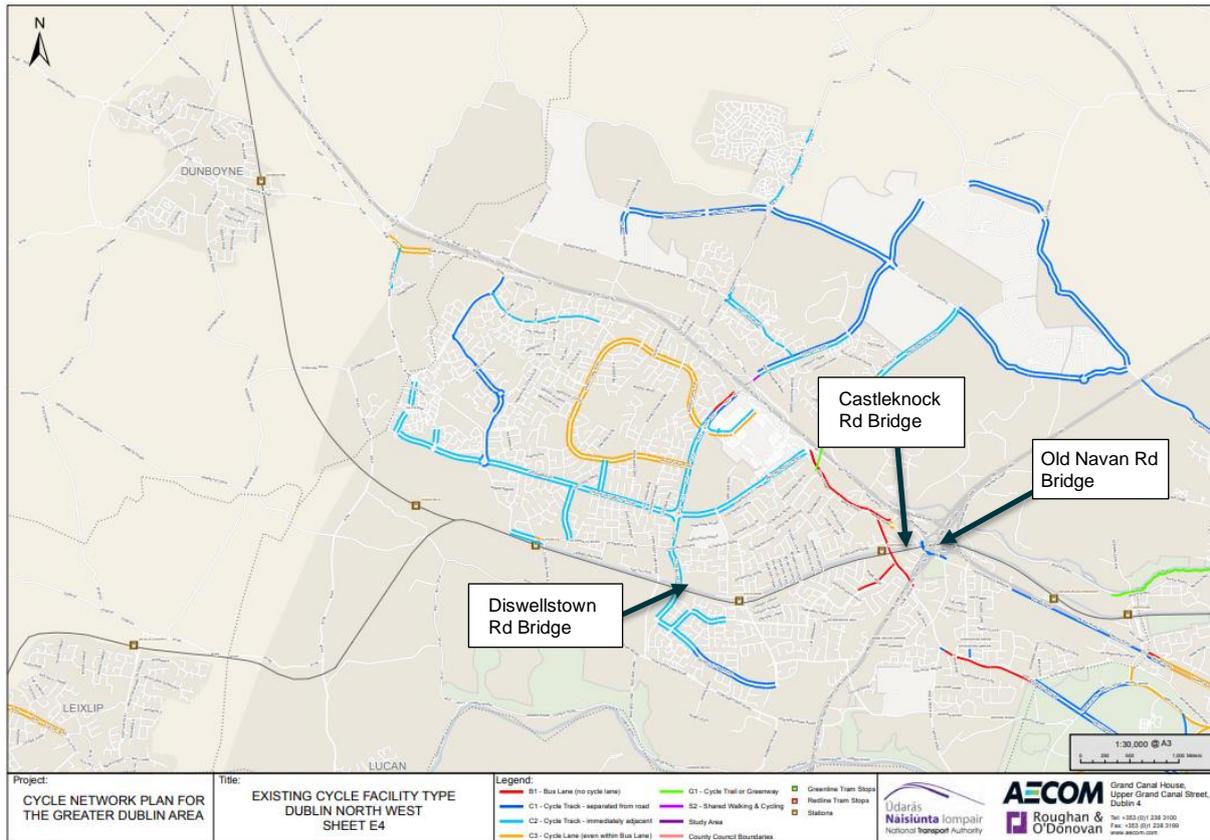
**3.5.1 Dublin City Centre Area**



**Figure 3-14 Existing Cycle Facility Provision in Dublin City Centre**

Figure 3-14 shows that the Western rail line is crossed by cycle routes at three locations, Newcomen Bridge, Binn’s Bridge and Cross Guns Bridge. The existing cycle network connects with three rail stations at Docklands, Drumcondra, and Connolly.

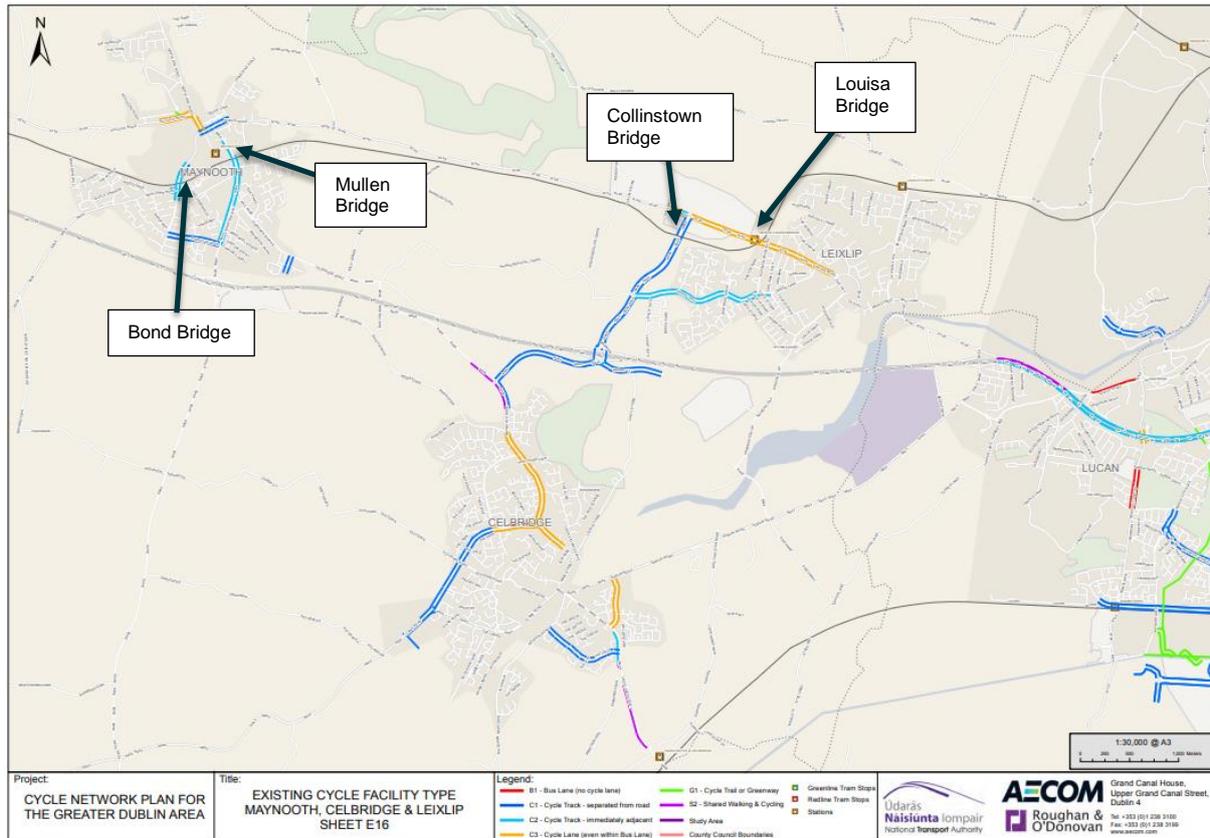
**3.5.2 North West Dublin Area**



**Figure 3-15 Existing Cycle Facility Provision in Dublin North West**

Figure 3-15 shows that the western rail line is crossed by a cycle route at three locations, the Old Navan Rd Bridge, the Castleknock Rd Bridge, and the Diswellstown Rd Bridge. The existing cycle network connects with two rail stations, the Castleknock Station, and the Navan Rd Parkway Station.

### 3.5.3 Kildare Area



**Figure 3-16 Existing Cycle Facility Provision in Kildare**

Figure 3-16 shows that the DART+ West line is crossed by a cycle route at four locations, Louisa Bridge, Collinstown Bridge, Mullen Bridge, and Bond Bridge. The existing cycle network connects with two DART stations, Leixlip DART Station, and Maynooth DART Station.

There are no cycle routes that will be affected by the closure of the level crossings; however, some routes may be affected by bridge modification works.

Below in Table 3-2 is a description of greenway and footways which run alongside the Royal Canal and within the vicinity of the railway line and stations.

**Table 3-2 Canal Greenways and Footpaths in the Vicinity of the Rail Line**

Zone	Station	Footways/ Greenways/ Cycleways
A/B	Connolly	<ul style="list-style-type: none"> <li>No greenways are currently located within the vicinity of the station however the new Clontarf to Connolly greenway is currently under construction.</li> <li>The Royal Canal footway commences to the west of Newcomen Bridge along the south bank of the canal opposite the railway line. The footway continues to run west passing under Clarke’s Bridge, Clonliffe Bridge and Binn’s Bridge.</li> <li>From Binn’s Bridge the footway runs on both sides on the canal along the bank, to the west of the bridge until Cross Guns Bridge, from which point the footway turns into a road continues along the northern bank of the canal continuing west.</li> </ul>
	Docklands	
C	Drumcondra	
	Broombridge	<ul style="list-style-type: none"> <li>A footway along the northern bank of the Canal runs within the vicinity of Broombridge station and continues to run west under Broombridge, R805 Ratoath Road to Reilly Bridge.</li> </ul>
	Pelletstown	<ul style="list-style-type: none"> <li>A footway from Pelletstown station links to the Ashington Park and through the park, located to the south of the railway station.</li> </ul>

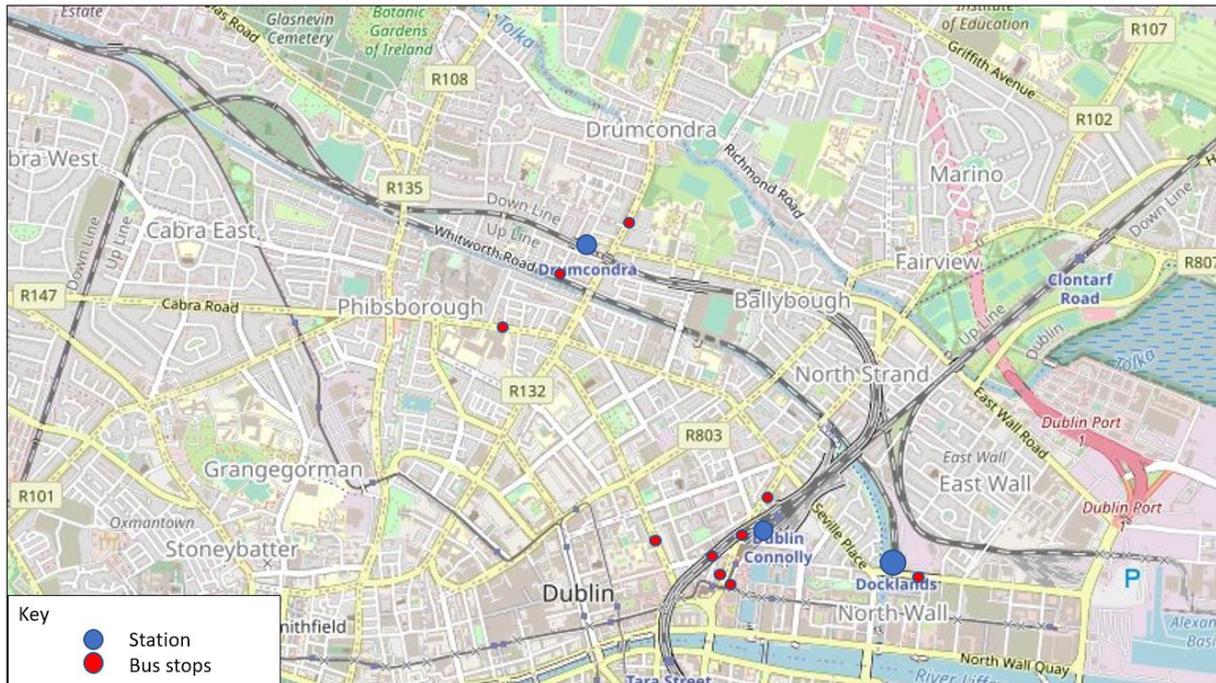
Zone	Station	Footways/ Greenways/ Cycleways
		<ul style="list-style-type: none"> <li>A track runs along the northern extent of the canal bank from Reilly Bridge in the east to the eastern extents of Crescent Park from which point it connects to a footway which continues to run west along the northern bank of the canal all the way to Ashtown Road,</li> </ul>
	Ashtown	<ul style="list-style-type: none"> <li>A footway from Ashtown station links to Marin Savage Park and through the park, located to the east of the railway station.</li> <li>A cycleway commences to the west of the Ashtown crossing along the Royal Canal Way along the southern banks and continues to run west towards Navan Road Parkway.</li> </ul>
	Navan Road Parkway	<ul style="list-style-type: none"> <li>A cycleway runs along the Royal Canal Way along the southern bank of the canal from Ashtown crossing in the east to Old Navan Road in the west.</li> </ul>
	Castleknock	<ul style="list-style-type: none"> <li>A footway runs along the northern and southern banks of the Royal Canal Way to the east of Castleknock Road.</li> <li>A footway from Castleknock station links to Laurel Lodge Green Park and through the park, located to the south of the railway station.</li> </ul>
	Coolmine	<ul style="list-style-type: none"> <li>A footway runs adjacent to the railway line along the southern banks of the Royal Canal Way to the east and west of Coolmine railway station, continuing further west past Diswellstown Road up to Porterstown Bridge.</li> </ul>
	Clonsilla	<ul style="list-style-type: none"> <li>No footways, greenways or cycleways are located within the vicinity of the railway station</li> </ul>
D	Hansfield	<ul style="list-style-type: none"> <li>No footways, greenways or cycleways are located within the vicinity of the railway station</li> </ul>
	Dunboyne	<ul style="list-style-type: none"> <li>A cycleway runs along Station Road near to entrance point to the station</li> </ul>
	M3 Parkway	<ul style="list-style-type: none"> <li>No footways, greenways or cycleways are located within the vicinity of the railway station</li> </ul>
E	Leixlip Confey	<ul style="list-style-type: none"> <li>A footway commences from the west of the L3005 St Catherine's Park bridge along the northern bank of the Royal Canal Way and continues to run west to Leixlip Confey and further west towards Leixlip (Louisa Bridge) station.</li> </ul>
	Leixlip Louisa Bridge	<ul style="list-style-type: none"> <li>Access to the Leixlip (Louisa Bridge) station via the entrance on the eastern side of the bridge</li> <li>A track commences to east of Louisa bridge (opposite Leixlip (Louisa Bridge) station) which continues to run further north, the track joins with a footway along the Royal Canal and continues to run east along the canal to Leixlip (Confey) Station and runs under Cope Bridge.</li> </ul>
	Maynooth	<ul style="list-style-type: none"> <li>Footway bridge to the west of the Maynooth station crossing the canal and joining with Royal Canal Greenway.</li> <li>Mullen footbridge to the west of R406 Mullen Bridge over the Royal Canal</li> <li>A footway along the royal canal on the northern bank connects to a cycleway which runs from Mullen Bridge in the west. The footway commences south of Carton Park in the west, passes under Pike Bridge, Deey Bridge, R449 Collinstown Bridge and Louisa continues further east on the west bank of the Canal opposite Leixlip (Louisa Bridge) station.</li> </ul>

### 3.6 Public Transport

#### 3.6.1 Bus

There are a vast number of bus services located within reasonable walking distance of the 'at grade' crossings, at the stations, and provided within the study area. These include the 66-service operated by Dublin Bus which runs between Dublin City Centre and Maynooth and the 39 service which links the city centre with Ongar. Both services operate on 30-minute frequency seven days a week. These services connect with the DART services provided along the Maynooth line.

Where the study area covers Dublin city centre and the area surrounding Connolly Railway Station, the number of services available extends significantly. There are approximately 50 bus stops within a 20-minute walk of the station served by routes extending across Ireland. Further bus services will be available from the station at Spencer Dock. Some of the stops located within the vicinity of the stations is shown on Figure 3-17.



**Figure 3-17 Bus stops in the Vicinity of Railway Stations**

As the construction of the proposed development will impact on the bridges along the proposed development, those services which could be impacted upon by the development have been identified and are set out in Table 3-3.

**Table 3-3 Existing Bus Services Crossing the Rail Line**

Zone	Structure ID	Road Bridge	Number of Current Bus Routes
A/B	OBO228	Sheriff Street Bridge	20
	OBD227	Strand – Connolly steel railway bridge	17
	OBD226	Newcomen Bridge - N Strand Rd	17
	OBD225	Clarke’s Bridge - Summerhill Parade	1
	OBD223	Binn’s Bridge - Drumcondra Rd Lower	34
	OBD222	Cross Guns Bridge - Prospect Rd	12
C	OBG5	Adjacent to Broombridge Bridge	1
	OBG11	Adjacent to Castleknock Bridge	1
	OBG11C	Diswellstown Road Bridge (Dr Troy Bridge)	1
D	OBCN286	Barnhill Rd Bridge - R149	1
	OBCN290A	Summerhill Road - L2228	3
D	OBG14	Cope Rail Bridge - R149 (Leixlip Confey)	1
	OBG16	Louisa Bridge	4
	OBG16A	Collinstown Bridge - R449	3
	OBG19	Mullen Bridge - Straffan Rd (Maynooth)	10
F	OBG21	Bond Bridge - Parson Street (Maynooth)	1

This illustrates that for the majority of bridges which cross the rail line, only a small number of bus services could be impacted on during construction or following the opening of the proposed development.

The highest number of bus routes are at Binn's Bridge on Drumcondra Road Lower, where 34 bus routes are passing across this bridge over the rail line. Overall, a high number of bus routes are observed within zones A & B, with much lower numbers in other zones, with the exception of Maynooth, where 10 bus routes are passing over the rail line on Straffan Road. As seen in Table 3-4 below, there is only one current and one future bus route that will be affected by the closure of the level crossings, the 239 GoAhead and L52 Bus Connects respectively, both relating to the proposed closing of Clonsilla level crossing.

**Table 3-4 Existing and Future Bus Routes Affected by the Closure of Level Crossings**

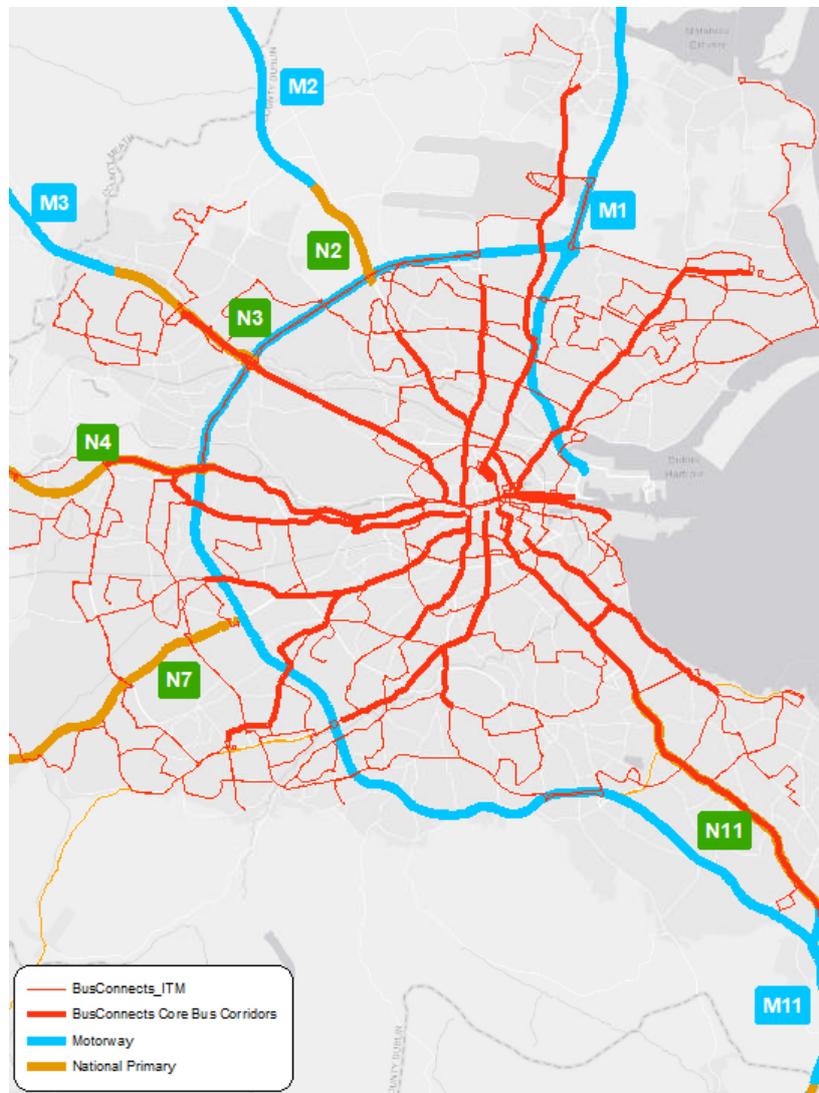
Zone	Level Crossings to Be Closed	Current Affected Bus Routes	Future Affected Bus Routes
C	Ashtown level crossing	No Routes	No Routes
C	Coolmine level crossing	No Routes	No Routes
C	Porterstown level crossing	No Routes	No Routes
C	Clonsilla level crossing	239 GoAhead	L52 Bus Connects
E	Barberstown level crossing	No Routes	No Routes
E	Blakestown level crossing	No Routes	No Routes

A review of the existing and future bus routes affected by the bridge modification works has been identified and set out in Table 3-5 below.

**Table 3-5 Existing and Future Bus Routes Affected by Bridge Modification Works**

Zone	ID	Road Bridges Affected by Construction	Number of Current Affected Bus Routes	Number of Future Affected Bus Routes	Time Period Bus Route is Affected
A/B	OBO228	Sheriff Street Bridge	20	19	80 weeks Total road closure and traffic diverted along an alternative route during the period of the construction
A/B	OBD227	Strand – Connolly steel railway bridge	17	15	No road related construction impact (3 weeks bus route affected)
A/B	OBD226	Newcomen Bridge - N Strand Rd	17	15	No road related construction impact
A/B	OBD225	Clarke's Bridge - Summerhill Parade	1	1	No road related construction impact
A/B	OBD224	Clonliffe Bridge - Jones' Rd	0	0	No road related construction impact
A/B	OBD223	Binn's Bridge - Drumcondra Rd Lower	34	32	No road related construction impact
A/B	OBD222	Cross Guns Bridge	12	9	No road related construction impact
C	OBG5	Adjacent to Broombridge Bridge	1	2	15 weeks of total road closure and 19 weeks of partial road closure with one open lane
C	OBG9	Old Navan Road rail bridge	0	0	9 weeks of total road closure and 25 weeks of partial road closure with one open lane
C	OBG11	Adjacent to Castleknock Bridge	1	2	15 weeks of total road closure and 19 weeks of partial road closure with one open lane.
E	OBG14	Cope Rail Bridge - R149	1	1	15 weeks of total road closure and 19 weeks of partial road closure with one open lane.
E	OBG16	Louisa Bridge	4	4	9 weeks of total road closure and 25 weeks of partial road closure with one open lane.

The future bus routes column in Table 3-6 refers to the Bus Connects plan that is due to replace the current Dublin Bus network. There are 16 core, high frequency bus routes proposed for Dublin shown in Figure 3-18 below. Many of these routes cross the DART+ West rail line. It can be seen from Table 3-4 above that only one future bus route, the L25 BusConnects, will be affected by the level crossing closures. However, a number of routes may be affected by construction works taking place at the bridges listed in Table 3-5 above. A full list of all current and future bus routes affected by bridge modification works can be found in Appendix D.



**Figure 3-18 Proposed High Frequency Bus Connects Plan**

### 3.6.2 Rail

The existing rail line within the extents of the proposed development consists of links between Connolly / Spencer Dock stations in Dublin City centre with Maynooth, in County Kildare and M3 Parkway, in County Meath. The M3 Parkway station is the branch line terminus, whilst Maynooth is located on the mainline. There are 16 stations located along the length of the proposed development with connections to the Luas Red line from Connolly station and Luas Green line from the Broombridge station. This ensures that the proposed development enables patrons to be able to make journeys to locations outside of the study area without the use of the private car.

Each of the stations along the line have been reviewed in terms of the facilities which they provide for passengers along with parking provision for both cars and cycles. The results of the review are set out in Table 3-6 below.

**Table 3-6 Station Review Summary**

Zone	Station	Bus Stop	Bus Service	Facilities	Rail frequency (ave. workday)	Car Parking Provision	Cycle Parking Provision
A/B	Connolly	Stop 135121 (circa. 150m) Stop 497 (circa. 150m) Stop 1500 (circa. 150m) Stop 620 (circa. 150m) Stop 1171 (circa 400m)	14, 15, 27, 27A, 27B, 27X, 29A, 31/a, 115, 120, 120B, 120F, 120F, 126, 126A, 126D, 126T, 126X, 130, 132, 133, 42,43, 53, 151, 6, H1, H2, H3, H9, 33, 41, 41B, 41C, 41D	Located in Dublin city centre Credit card facilities, ATMs, Toilets, Wi-Fi, Refreshments, and shops  Ticket vending machines and smart card enabled  Ramps and lifts provided Staffed: Monday to Saturday – 0515-0030 Sunday – 0700-0030 Booking Office: Monday to Saturday – 0630-1900 Sunday – 0830-1900	337 Trains/day	On Street Parking	120 spaces
	Docklands	Stop 6251 (circa. 150m)	151	Located 10 min walk from Dublin city centre Ticket vending machines and smart card enabled Unmanned	12	None on site	None on site
	Drumcondra	Stop 47 (circa. 150m) Stop 15 (circa.350m)	1, 11, 13, 16, 33, 41, 41B, 41C, 41D, 44, 40, 40B, 40D, 103, 109X, 111X	Ticket vending machine and smart card enabled Step free access, lifts provided to both platforms Booking Office: Monday to Sunday – 0700-2330 Public Holidays – 0900-2100	97	None on site	None on site
C	Broombridge	Stop 826 (circa. 250m)	40E, 120	Ticket vending machine and smart card enabled (Leap cards) Step free access	50	None on site	None on site
	Pelletstown	Stop 4538 (circa. 300m)	120	Ticket vending machine and smart card enabled (Leap cards) Step free access	48	None on site	Available
	Ashtown	Stop 276 (circa. 150m) Stop 1666 (circa. 450m)	120, 37, 38, 38A, 38B, 39, 39A, 39X, 70, 70D, 109, 109B	Ticket vending machine and smart card enabled Step free access, ramps provided to platforms Booking Office: Monday to Friday – 0630-1600	48	None on site	Available
	Navan Road Parkway	Stop 7166 (circa. 50m)	38, 38A, 38B, 39, 39A, 70	Ticket vending machine and smart card enabled Step free access with lifts to platforms	48	103 spaces	15 spaces
	Castleknock	Stop 1687 (circa. 200m) Stop 1675 (circa.350m)	38, 70D, 37	Ticket vending machine and smart card enabled Step free access Staffed: Monday to Saturday – 0600-2330 Booking Office: Monday to Friday – 0630-1300	48	None on site	Available
	Coolmine	Stop 4825 (circa. 300m)	37	Ticket vending machine and smart card enabled Step free access	48	196 spaces	19 spaces

Zone	Station	Bus Stop	Bus Service	Facilities	Rail frequency (ave. workday)	Car Parking Provision	Cycle Parking Provision
				Staffed: Monday to Friday – 0630-1030 Wednesday & Thursday – 1530-1830			
	Clonsilla	Stop 1890 (circa. 150m)	39, 239	Ticket vending machine and smart card enabled Step free access with ramps and lifts Booking office: Monday to Friday – 0600-1400	59	None on site	19 spaces
D	Hansfield	Stop 7159 (circa. 650m)	39, 39A, 139	Ticket vending machine and smart card enabled Step free access with ramps and lifts Booking office: Monday to Friday – 0630-1500	21	None on site 60 spaces on roadside	30 spaces
	Dunboyne	Stop 3331 (circa. 50m)	70, 70D, 105, 270	Ticket vending machine and smart card enabled Step free access Staffed: Monday to Friday – 0600-1430	1	300 spaces 20 disabled spaces	30 spaces
	M3 Parkway	No bus stop within the walking vicinity of the station	No service	Located at the M3 Parkway junction Ticket vending machines and smart card enabled Step free access across station Staffed: Monday to Friday – 0600-1430 Saturday – 0700-1700 Sunday – 0930-1700	21	1200 spaces	30 spaces
D	Leixlip Confey	Stop 3993 (circa. 400m)	66A, 66X, 139	Located to the north of the town adjacent to the canal Free Wi-Fi Ticket vending machines and smart card enabled Step free access across station Ramp provided to platform serving city centre Booking office available: Monday to Friday – 0600-1300	37	29 spaces 1 disabled space	6 spaces
	Leixlip Louisa Bridge	Stop 3989 (circa. 50m)	66, 66X, 139	Located five minutes from Intel. CCTV, ticket vending machines and smart card enabled. Ramp and lift access to platforms	41	309 spaces 3 disabled spaces 2 EV spaces	16 spaces
	Maynooth	Stop 135461 (circa. 300m) Stop 3917 (circa. 300m) Stop 6089 (circa. 400m)	22, 23, 115, 706, 66, 66E, 66X, 67	Located five minutes from town centre. Free Wi-Fi Ticket vending machines and smart card enabled Step free access to platforms	58	222 spaces 5 disabled spaces	15 spaces

Zone	Station	Bus Stop	Bus Service	Facilities	Rail frequency (ave. weekday)	Car Parking Provision	Cycle Parking Provision
				Booking office available: Monday to Saturday – 0600-2315 Sunday and Public Holidays – 1000-2200			

The M3 Parkway station is the branch line terminus, whilst Maynooth is located on the mainline. There are 16 stations located along the length of the proposed development with connections to the Luas Red line from Connolly station and Luas Green line from the Broombridge station. This ensures that the proposed development enables patrons to be able to make journeys to locations outside of the study area without the use of the private car.

Trains operate approximately every 12 minutes between Dublin city centre and Maynooth with journeys taking approximately 40 minutes from Connolly station. There are some direct trains between Docklands station and M3 Parkway, where at least two trains per hour operate in the peak periods. In the off-peak there is a shuttle service between Clonsilla, and M3 Parkway and passengers are required to change to Maynooth-Connolly services. Journey time for the shuttle service between Clonsilla and M3 Parkway is approximately 13 minutes. Journey time between Clonsilla and Dublin Connolly is approximately 30 minutes.

There are a number of stations which provide no car or cycle parking for patrons. These are the Docklands, Drumcondra, Broombridge stations where the passengers using these services are expected to utilise other modes such as bus / Luas and foot to travel to and from the stations. Larger car parks are provided at stations located near the western end of the proposed development. These are Navan Road Parkway, Coolmine, Dunboyne, M3 Parkway, Leixlip Louisa Bridge and Maynooth station which are anticipated to capture those travelling from outside of the study area and reduce the number of vehicles making the journey into Dublin city centre.

The train services provide a good level of service between Maynooth and the Dublin city centre encouraging trips to be made by an alternative mode to the private car.

As the proposed development will result in the closure of the existing 'at grade' level crossings reference has been made to the data available from the Iarnród Éireann CCTV Analysis from 22<sup>nd</sup> March 2019. Table 3-7 and Table 3-8 set out number of trains passing the crossings along the route during the AM and PM peak hours of 08:00-09:00 and 17:00-18:00, the number of closures during the peaks, the total time close and the average closure.

**Table 3-7 AM Railway Stats for the Level Crossings – 08:00 – 09:00**

Level Crossing	No. Trains Passing	No. Closures	Total Closure Time	Average Time per Closure
Ashtown	13	6	00:36:42	00:06:07
Coolmine	12	9	00:41:35	00:04:37
Porterstown	12	7	00:32:46	00:04:41
Clonsilla	12	7	00:30:58	00:04:25
Barberstown	9	6	00:26:03	00:04:21
Blakestown	7	5	00:23:48	00:04:46

**Table 3-8 PM Railway Stats for the Level Crossings – 17:00 – 18:00**

Level Crossing	No. Trains Passing	No. Closures	Total Closure Time	Average Time per Closure
Ashtown	11	6	00:36:32	00:06:05
Coolmine	11	7	00:34:14	00:04:53
Porterstown	10	6	00:19:57	00:03:20
Clonsilla	10	4	00:26:30	00:06:38
Barberstown	7	6	00:20:37	00:03:26
Blakestown	7	6	00:21:54	00:03:39

These illustrate that over the course of an hour the crossings are already closed for significant periods of time with those closest to Dublin City Centre closed for over 30 minutes per hour. This has a significant impact on travel for all modes at these locations, including increased journey times on the highway network resulting in localised congestion.

As the proposed project is set to increase the number of trains up to 30 per hour, it is evident that the above stated level crossings will not be able to work efficiently alongside the proposed changes and therefore operate as crossing points for pedestrians, cyclists, and motorists.

As part of the proposed project, the above level crossings between the City Centre and Maynooth will be permanently closed. To sustain a sufficient level of service and access along the road network at the specified locations various improvements and changes have been proposed, details of those can be found in chapter 4 of this report.

### 3.6.3 Park and Ride

There are a number of stations which provide no car or cycle parking for patrons. These are at the Docklands, Drumcondra and Broombridge stations where the passengers using these services are expected to utilise other modes such as bus / LUAS and foot to travel to and from the stations. At Broombridge LUAS stop there are limited car and cycle parking facilities that also serve the adjoining railway station. Car parks are provided at seven of the sixteen stations located near the western end of the proposed development. These are Navan Road Parkway, Coolmine, Dunboyne, M3 Parkway, Leixlip Louisa Bridge and Maynooth stations. Detail relating to the parking utilisation levels is set out in Section 6.7 which discuss the potential construction impact.

Although all car parks at stations can be defined as Park and Rides, there are two large Park and Ride sites, which enhance the ability for users of the rail line to travel from wider areas and use the rail line rather drive to their end location. There are currently two Park and Rides along the length of the line at M3 Parkway and Navan Road. A total of 1,200 spaces are provided at M3 Parkway and 102 parking spaces at Navan Road. The NTA 'Park and Ride Strategy: Greater Dublin Area', April 2021 document suggests that there could be an expansion in the number of spaces at Navan Road to provide a total of 400 spaces and this will be provided in parallel to the Dart+ West Programme.

A further Park and Ride is being considered as part of the DART+ Programme as set out within the NTA Park and Ride Strategy: Greater Dublin Area document. For the DART+ West line, the locations being considered are Collinstown and the Maynooth depot. The proposal could see up 1,000 spaces provided, with 500 in the initial phase. The provision of Park and Ride facilities along the line would enable those travelling from outside of the Greater Dublin Area to travel by a more sustainable mode of transport upon reaching the outskirts of the city whilst also reducing the number of vehicles travelling within the Greater Dublin Area and alleviating congestion.

### 3.7 Personal Injury Accident Data Review

This section provides a review of the accident data obtained from the RSA website. The data provided on the RSA website is only available between the 2005- and 2016-year period and therefore the five-year period between 2011 and 2016 has been reviewed. This represents the most recently available five-year data. The data for the years identified was obtained using the options on the website.

Table 3-9 below sets out the number of accidents at each of the 'at grade' crossings or in the immediate vicinity by classification of their severity, i.e., minor, serious, and fatal. Most of the accidents were minor, and there were no fatal accidents at any of the 'at grade' crossings between 2011 and 2016. The junctions with the highest number of accidents were Prospect Road Bridge and Binn's Bridge.

**Table 3-9 Road Safety**

Zone	Level / Bridge Crossing	Accident Severity			Total
		Minor	Serious	Fatal	
A	Drumcondra Station	7	0	0	7
A	Prospect Road Bridge	7	1	0	8
B	Newcomen Bridge	3	0	0	3
B	Clonliffe Bridge	0	0	0	0
B	Binn's Bridge	7	1	0	8
C	Broombridge Bridge	2	0	0	2
C	Ashtown Crossing	0	0	0	0
C	R102 Road	0	0	0	0
C	N3 Road	3	0	0	3
C	M50 Roundabout / Navan Road	3	0	0	3
C	Old Navan Road	0	0	0	0
C	Castleknock Bridge	3	0	0	3
C	Coolmine Crossing	0	0	0	0
C	Porterstown Crossing	0	0	0	0
D	Barnhill Bridge	0	0	0	0
D	Dunboyne Bridge	3	0	0	3
E	Barberstown Crossing	0	0	0	0
E	Collins Bridge	1	0	0	1
E	Cope Rail Bridge	2	0	0	2
E	Louisa Bridge	0	0	0	0
E	Blakestown Crossing (Deey Bridge)	1	0	0	0
E	Pike Bridge	0	0	0	0
F	Jacksons Bridge	0	0	0	0

From the data available for the 'at grade' crossing and immediate vicinity, no highway safety issues were identified at these locations.

In addition to the information available from the RSA website, data on incidents has been provided by Iarnród Éireann at level crossings that are proposed to be closed / amended as part of the DART+ West Project. The data provided is summarised in Table 3-10 below.

**Table 3-10 Level Crossing Safety**

Zone	Level / Bridge Crossing	Number of Incidents	Type of Incidence	Pattern
C	Ashtown Crossing	3	Cyclist near miss (1) Vehicle collision with barrier/drives online (2)	None. Incidents have had little impact on the service through Ashtown between 2015 and 2020. Therefore, the benefit of removing the crossing, due to the disruption in traffic, in terms of incidents will be minimal to those using the crossing and the services.
C	Coolmine Crossing	21	Vehicle collision with barrier/drives online (9) Weather (2) Pedestrian near miss (2) Trespass (5) Pedestrian interference (2) Other (1)	At this location, the majority of incidents, between 2015 and 2020, involved vehicles colliding with the barriers, or crossing through when then should have stopped. This suggests that there is a lack of adherence to the signals or an issue with visibility of the signals. Removal of this crossing would improve the flow of trains through Coolmine, therefore resulting in an improved service.
C	Porterstown Crossing	43	Cyclist near miss (1) Vehicle collision with barrier/drives online (5) Pedestrian near miss (3) Trespass (18) Pedestrian interference (15) Other (1)	A significant number of incidents have occurred at Porterstown, with the majority involving pedestrians, with trespass and interference in the operation of the barriers and crossing being the type of incident which occurred the most frequently.  This route provides a key pedestrian desire line between the St Mochta's Football Club and the Scoll Choim Community National School located to the south of the railway line with the residential areas to the north. The closures as a result of these incidents are likely to have a significant impact on the operation of the services along this section of the line therefore there is significant benefit to the operation of the service in relation to the closure of this crossing not just in making it safe but reducing the ability for pedestrians to access the line and interfere with the barriers.
C	Clonsilla Crossing	1	Trespass (1)	None. Incidents have had little impact on the service through Clonsilla between 2015 and 2020. Therefore, the benefit of removing the crossing due to the disruption in traffic, in terms of incidents will be minimal to those using the crossing and the services.
E	Barberstown Crossing	6	Vehicle collision with barrier/drives online (5) Barrier issues (1)	At this location, the majority of incidents, between 2015 and 2020, involved vehicles colliding with the barriers, or crossing through when then should have stopped. This suggests that there is a lack of adherence to the signals or an issue with visibility of the signals. Removal of this crossing would improve the flow of trains through Barberstown, therefore resulting in an improved service.
E	Blakestown Crossing (Deey Bridge)	3	Cyclist near miss (1) Vehicle collision with barrier/drives online (1) Trespass (1)	None. Incidents have had little impact on the service through Blakestown between 2015 and 2020. Therefore, the benefit of removing the crossing due to the disruption in traffic, in terms of incidents will be minimal to those using the crossing and the services.

The number of incidents which has occurred at those locations where the level crossings will be closed and replaced with an alternative facility will see a minimal to significant beneficial impact on both safety of those crossing and the trains on the line as well as reducing the impact on delays to services created by incidents. These closures will also improve the ability for traffic to move around the local highway network, especially at Porterstown, where the barriers are closed as a result of predominately pedestrian issues.

## 4. PROPOSED DEVELOPMENT

### 4.1 Introduction

This section provides a description of the proposed development including information about scheme need, design evolution and parameters adopted.

### 4.2 Scheme Proposals - Overview

The proposed development is looking to modernise and optimise the existing railway line between Connolly and Spencer Dock with Maynooth and M3 Parkway through the electrification and re-signalling of the entire route along the 13 stations. The proposed improvements are set to increase the capacity of the line from 4,500 passenger per hour (per direction, data 2019) to 13,750 passengers per hour (per each direction) by 2025.

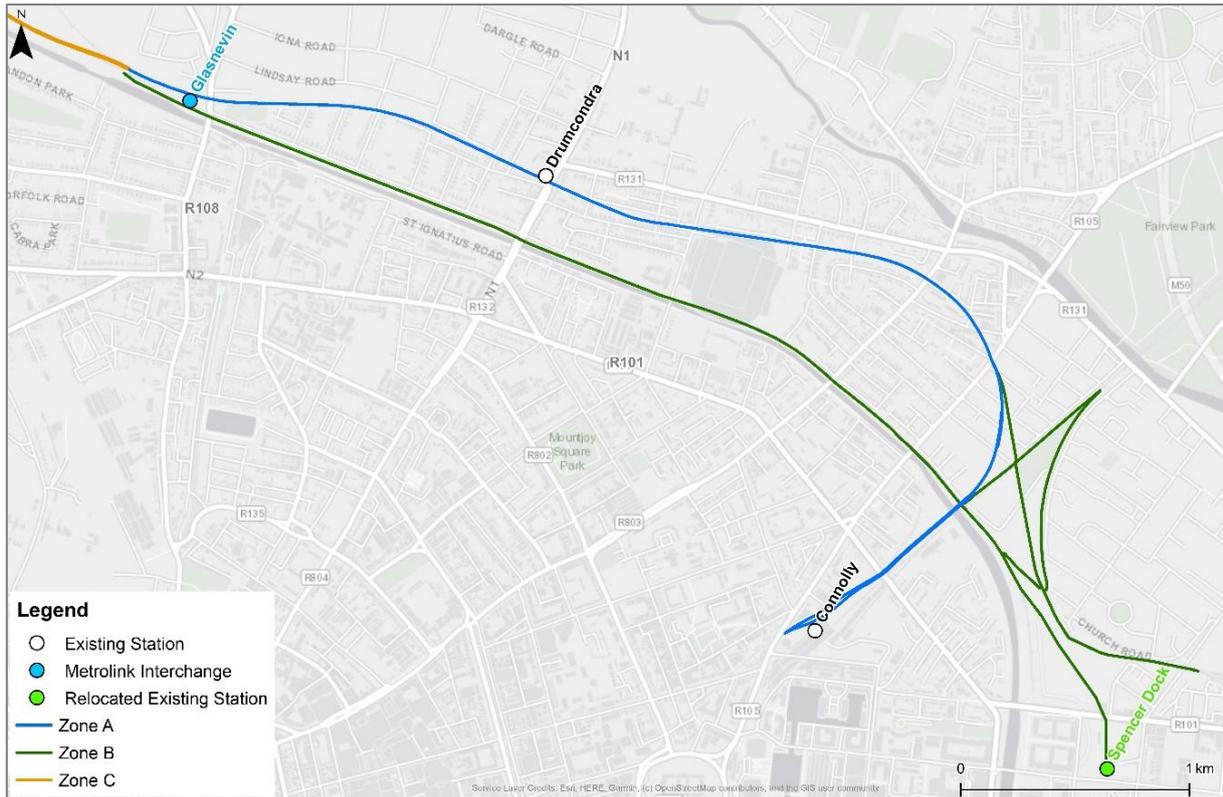
The key infrastructural elements of the DART+ West project includes:

- Electrification and re-signalling of the Maynooth and M3 Parkway lines (approximately 40km in length).
- Capacity enhancements at Connolly Station (to include modifications to junctions and the station) to facilitate increased train and passenger numbers.
- Construction of a new Spencer Dock Station, which will better serve the north Docklands area and improve interchange with the Luas and support sustainability mobility.
- Closure of six level crossings (Ashtown, Coolmine, Porterstown, Clonsilla, Barberstown and Blakestown) and provision of replacement access infrastructure (road bridges and / or pedestrian and cycle bridges, as required). There is no replacement access infrastructure proposed at Blakestown level crossing.
- Construction of a new DART depot facility west of Maynooth to facilitate the maintenance and parking (stabling) of trains.
- Interventions at existing bridges along the rail line where there is insufficient clearances for the overhead electrification equipment. (Interventions may include track lowering, bridge modifications and/ or a combination of both).
- Construction of substations, electrical buildings, and all other civil and ancillary works as necessary to accommodate the project.

The proposed development of the DART+ West is set to be split over six zones. For the purpose of describing the project, general linear works, that are applicable to the existing rail network are described with the route then divided into sections, describing the project in an east west direction in the following sections, as follows:

#### 4.2.1 City Centre Enhancements

- Zone A – Connolly Station to Glasnevin (Glasnevin Junction) on Great Southern and Western Railway (GSWR) Line – Phoenix Park Tunnel and Cabra Compound.
- Zone B – Spencer Dock Station to Phibsborough/ Glasnevin (Glasnevin Junction) on Midland Great Western Railway (MGWR) Line.



**Figure 4-1 Zone A and B of the Development**

Zone A extends westwards from Dublin City Centre at Connolly Station to Phibsborough / Glasnevin (Glasnevin Junction) on the GSWR railway line.

Zone B extends westwards along the MGWR line from the proposed Spencer Dock Station to Phibsborough/ Glasnevin (Glasnevin Junction).

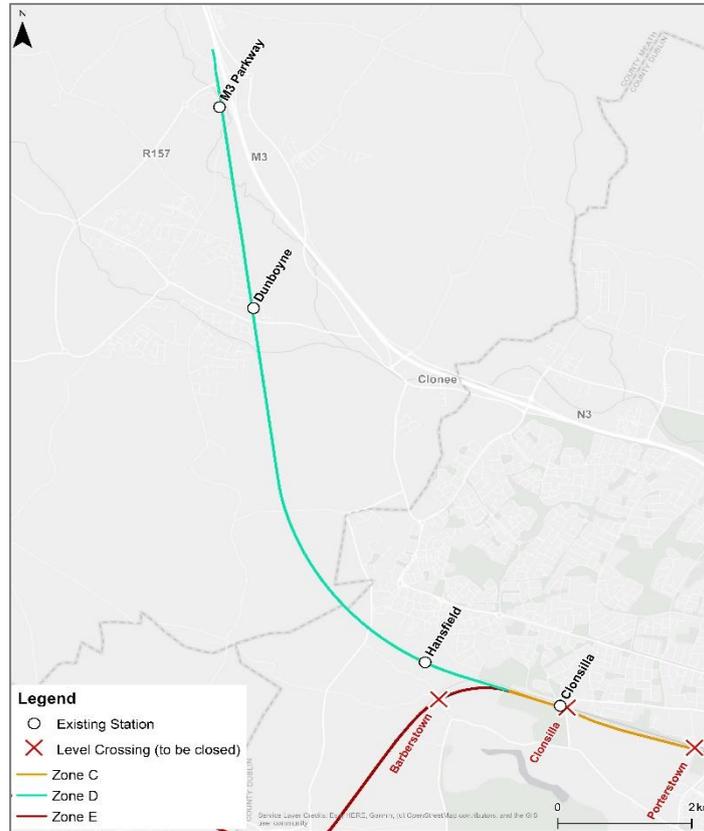
**Zone C - Phibsborough/ Glasnevin (Glasnevin Junction) to Clonsilla Station (Clonsilla Junction)**



**Figure 4-2 Zone C of the Development**

Zone C continues along the MGWR line from Phibsborough/ Glasnevin (Glasnevin Junction) to Clonsilla Station (Clonsilla Junction).

**Zone D - Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus)**

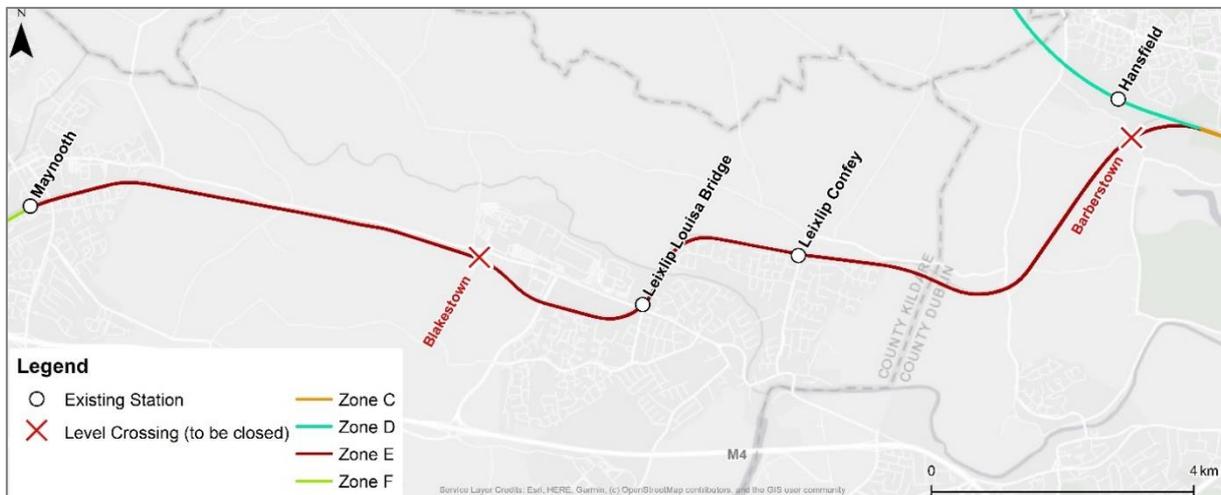


**Figure 4-3 Zone D of the Development**

Zone D continues from Clonsilla Station (Clonsilla Junction) to M3 Parkway Station.

**4.2.2 Clonsilla Junction to Maynooth Depot**

- Zone E – Clonsilla Station (Clonsilla Junction) to Maynooth Station.
- Zone F – Maynooth Station to Maynooth Depot.

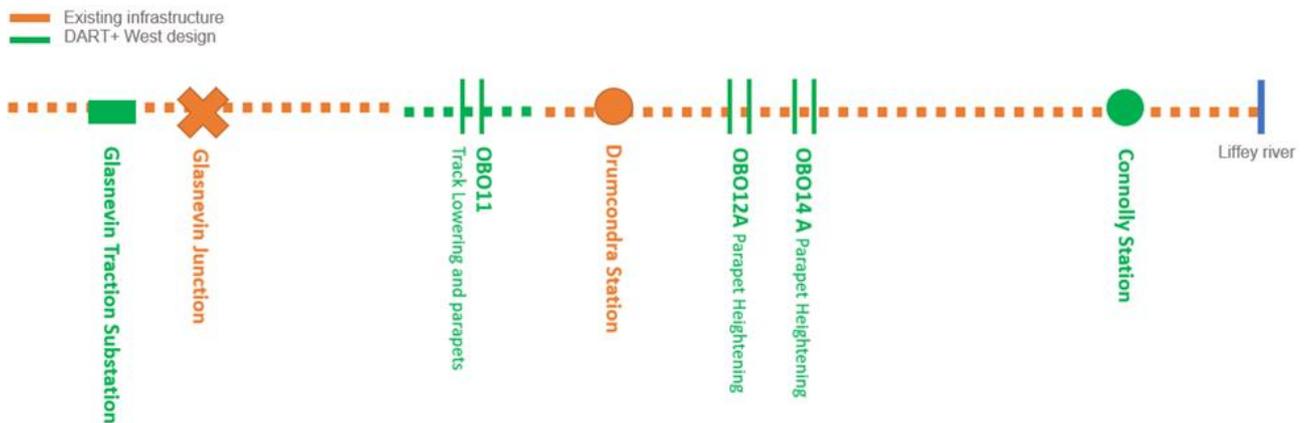


**Figure 4-4 Zone E of the Development**



- Parapet heightening in OBO12 footbridge.
- Track lowering and parapets heightening below OBO11.
- Construction of a new traction substation at Glasnevin.
- SET installation.

Note no infrastructure works required between the Loop Line Bridge and Connolly Station.



**Figure 4-7 Scheme of the DART+ West interventions in Zone A**

Connolly Station is one of the main railway stations in Dublin and the focal point for the Iarnród Éireann network. Due to the number of trains converging on the station the management and movement of trains into a limited number of platforms is complex. Also, the rail capacity is constrained and requires upgrade to meet future passenger demands.

This project is seeking to modify and upgrade track layouts at Connolly Station, within the existing railway viaduct boundary, to improve the efficiency and increase the capacity. The proposed upgrades include:

- Track reconfiguration immediately to the north of Connolly Station.
- Platform upgrades and any other station improvement to facilitate increased passenger throughput.

With regards to Connolly Station a new entrance extending to Preston Street will be required to facilitate the additional passenger capacities. This will include extensive redevelopment and refurbishment of Connolly Station vaults. An additional 70 cycle parking spaces will be provided at the station in addition to the 138 existing spaces.

In addition, track lowering, and parapet heightening will take place along the length of line in this zone to assist in accommodating the additional rail capacity provided by the development.

A new substation will be provided at Glasnevin with access provided from the road which bounds the site to the west.

#### 4.3.2 Zone B - Spencer Dock Station to Glasnevin Junction

Works in Zone B around Spencer Dock Area include:

- New Spencer Dock Station.
- OBD228 Sheriff Street Bridge Reconstruction.
- Access ramp into Docklands' compound.
- New slab track configuration at Spencer Dock-Docklands-East Wall area.
- Track lowering and structural intervention at OBO36 Ossory Road Bridge.
- Parapet heightening at OBO36 Ossory Road Bridge.
- General track lowering along the MGWR line.
- SET installation.



**Figure 4-8 Scheme of the DART+ West interventions in Zone B**

In Zone B, a new station at Spencer Dock will be constructed with the station's platforms aligned to the 2014 North Lotts and Grand Canal Dock Planning Scheme gridlines. The platforms need to be pushed south to ensure that an acceptable track alignment is achieved on the immediate approach to the station.

The only feasible way to move the platforms southwards is by lowering the top of the rail level so the tracks can pass under Sheriff Street Upper overbridge and the main station's entrance with sufficient structural and Overhead Line Equipment (OHLE) clearance. Changes to the vertical and horizontal existing track alignment are required to connect Spencer Dock Station platforms and the GSWR & MGWR lines. In addition, 120 cycle parking spaces will be provided.

Next to the station, an access ramp will be erected in the proposed permanent compound in Docklands, which will grant access to that compound. This section will also include constructing one power sub-station and auxiliary electrical, signalling and telecommunication buildings in the vicinity of Spencer Dock and Connolly. The traction substation will be positioned northeast of the existing Docklands Station and car park, near the railway junction.

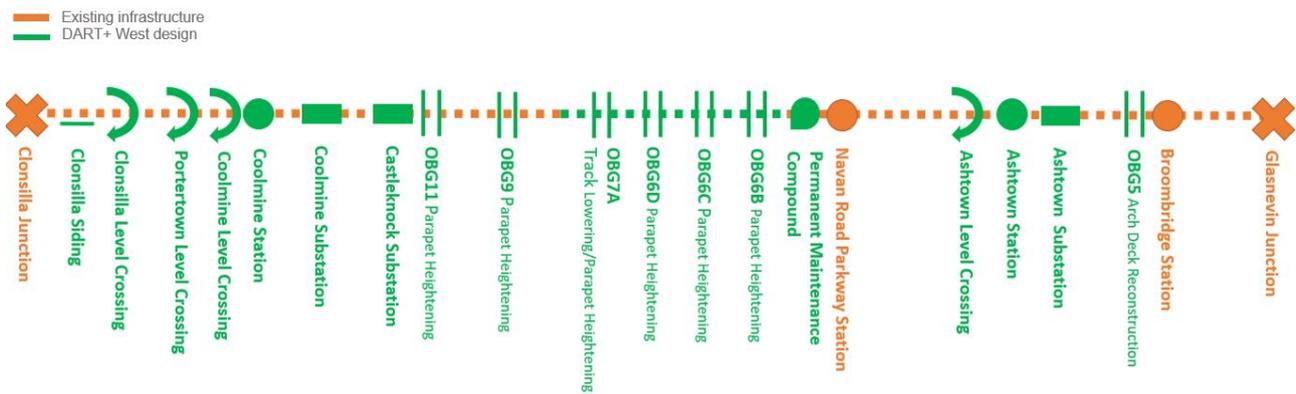
As the line continues west through the zone from the station, lowering will be required along with parapet heightening.

#### 4.3.3 Zone C - Glasnevin Junction to Clonsilla Junction

Works in this section will include:

- OBG4A, OBG6B, OBG6C, OBG11A, OBG11C, OBG12 and OBG12C Parapet heightening.
- OBG6D, OBG6C and OBG7A track lowering.
- OBG5 and OBG11 Arch deck reconstruction.
- OBG9 flat deck bridge modification.
- Ashtown, Coolmine and Castleknock substations.
- Level crossing closures in Porterstown, Clonsilla, Ashtown and Coolmine.
- Ashtown and Coolmine stations.
- Navan road compound.
- Clonsilla siding.

- SET installation.



**Figure 4-9 Scheme of the DART+ West interventions in Zone C**

In the Ashtown area, the existing Ashtown level crossing will be closed and replaced with a new pedestrian footbridge, with lifts to provide impaired mobility access between platforms at Ashtown station. Road replacement infrastructure consisting of an underpass is proposed to provide access to vehicular and non-vehicular road users. In addition, a traction substation is proposed at Ashtown station. An access route from the substation will be established to connect to Martin Savage Park.

Ashtown level crossing (grade crossing on Ashtown Road single carriageway, subject to high traffic flows) will be realigned along the route of Mill Lane. The existing Ashtown Road will become a cul-de-sac on both the northern and southern side of the rail line.

On the southern side, road users (pedestrians, cyclists, and vehicles) wishing to access Ashtown Station will be provided with an upgraded roadway via a junction off the realigned access to Martin Savage Park. A mini roundabout will be provided on the western side of the station to facilitate vehicle turn around. A set down area will be provided to allow vehicles and coaches to drop passengers without impeding the roadway.

On the northern side, a mini roundabout is to be provided to allow vehicles that entered Rathbourne Village to safely turn back north and drop passengers at the northern side of the rail line. The residential property on the northern bank of the canal is to be accessed off the mini roundabout. The mini roundabout and adjacent areas will be finished in the same material as the existing Rathbourne Village public realm palette of materials. Additional cycle spaces will be provided at the station with 36 spaces.

After Navan Road Parkway Station, parapet heightening, and track lowering will occur to assist in enabling the electrification of the railway to occur without impacting on other modes using structures crossing the rail line.

Two new substations, one just opposite of Castleknock Station and another in proximity (to the east) to Coolmine station are to be constructed.

Coolmine level crossing (grade crossing on Coolmine Road, subject to high traffic flows) on the northern side of the level crossing, the Coolmine Road will become a cul-de-sac. A mini roundabout will be provided to allow vehicles to turn back, with an arm off the roundabout providing access to Sheepmoor Lane. A set down area will be provided immediately north of the mini roundabout to allow vehicles to stop and drop of passengers without impeding general traffic. The area between the mini roundabout and canal bridge will be paved and be provided as a pedestrian area with occasional vehicular access required for maintenance of the bridges, Royal Canal, and rail line.

On the southern side, following completion of the works the Carpenterstown Road will become a cul-de-sac. The level crossing will be gated to secure the rail line from unauthorised access while allowing maintenance access to the rail line. The layout of the existing train station car park is to be altered to accommodate the new

shared pedestrian and cyclist overbridge. It is anticipated that the access and egress to the car park will operate its existing regime.

Traffic analysis has been undertaken by ROD as part of the design work for these proposals to identify the junctions that will require upgrading to cater for increased traffic into the future, these include:

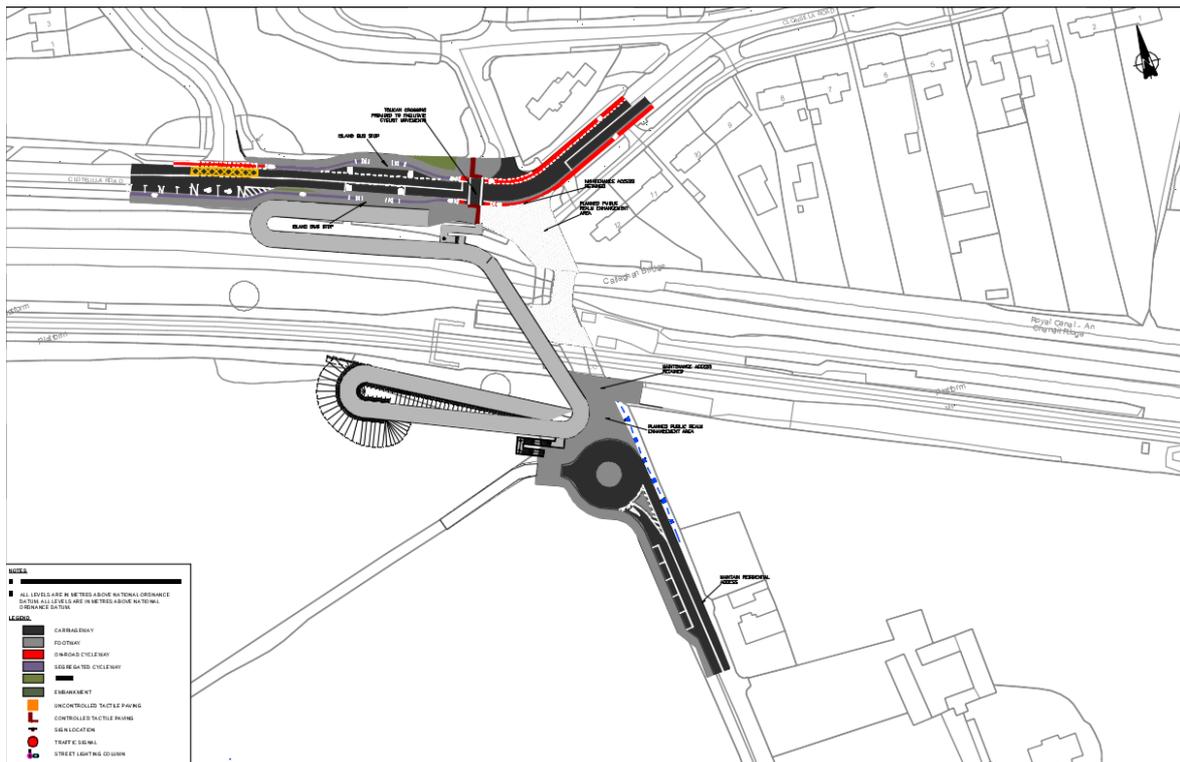
- Diswellstown Road junction - Upgrade existing four-arm signalised Diswellstown junction and the link road between the junction and the existing roundabout the east Facilities for pedestrians and cyclists will be provided.
- Coolmine Road junction - Junction form to change from a roundabout to a four-arm signalised junction with pedestrian, cyclist and bus facilities provided.
- Porterstown Road Junction - Upgrade the northern and eastern arms of the existing signalised three arm junction along with provision for facilities for pedestrians and cyclists.
- Castleknock Road Junction - Upgrade existing signalised four-armed junction and approach road with pedestrian and cycle facilities.

Porterstown Road level crossing (grade crossing on Porterstown Road, subject to low traffic flows) On the northern side of the level crossing, following completion of the works the Porterstown Road will become a cul-de-sac. A mini roundabout will be provided to allow vehicles to turn back north. On the western side of the roundabout, an arm will be provided to allow access to the Old Schoolhouse lands which is subject to a ABP SHD proposal. On the eastern side of the roundabout, the existing access to a private residence will be altered and new access provided off the roundabout. A new 1.8-metre-wide footway will be provided along the eastern side of the roadway and uncontrolled crossing provided on the southern side of The Village housing estate.

On the southern side of the level crossing, following completion of the works the Porterstown Road will become a no through route. The area immediately south of the level crossing, around the entrance to the overbridge steps and ramp to the overbridge will be paved.

The proposed works at Clonsilla involve the construction of a new cycle/foot bridge over Clonsilla level crossing to facilitate access over the railway and canal. The provision of the new bridge will facilitate the closure of the level crossing but would require diversion of traffic to surrounding crossings of the railway. No improvements to the surrounding road network are proposed. Localised reconfiguration of the carriageway in the vicinity of the level crossing will be required to facilitate the proposed overbridge and provide adequate turning facilities for vehicles. On the northern side of the level crossing, the proposed overbridge approach ramps are positioned over the existing footway along L3015 Hansfield Road at the location of an existing bus stop and to the south of the Royal Canal Greenway. Off road cycle tracks are currently provided to the east and west of the bus stop, with cyclist transferred onto the road through the junction and past the bus stop. To provide a buffer between the overbridge parapet and stopping buses, the off-road segregated cycle track and footpath will be extended across Clonsilla Road and join the existing cycle track further west. An island bus stop, in accordance with NTA guidance, will be provided. The existing bus stop on the north side of the road will also become an island bus stop. The pedestrian crossing will be upgraded to a Toucan Crossing to facilitate cyclist movements at the junction. The existing tow path is to be realigned and a shared ramp provided from the tow path to the footpath on the north side of the canal bridge.

On the southern side, a mini roundabout and drop off spaces will be provided to facilitate passenger drop offs at the station and vehicle turn around. The entrance to Beech Park Allotments will be altered to accommodate the revised carriageway layout. The proposed layout is illustrated in Figure 4-10.

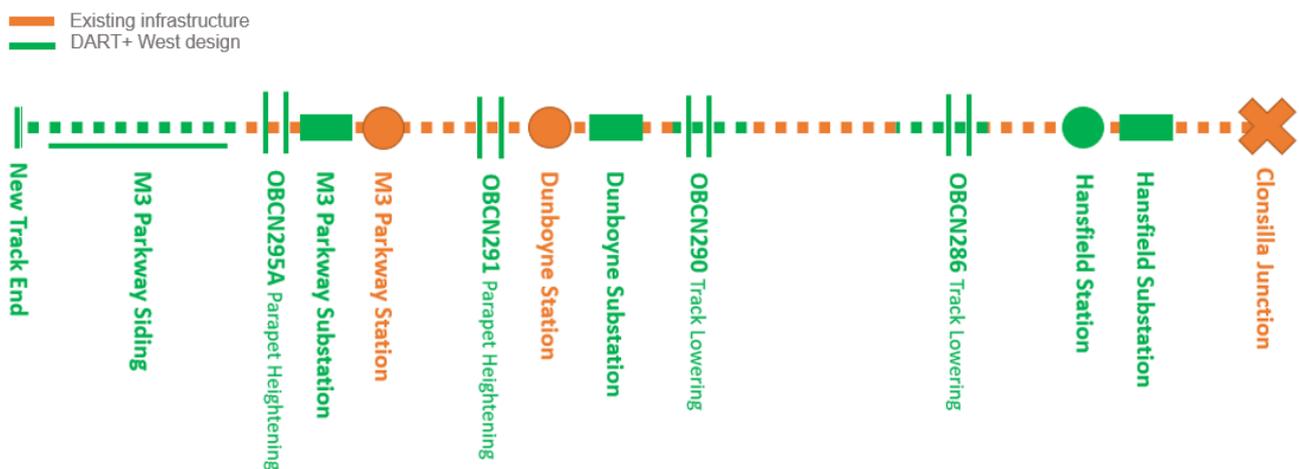


**Figure 4-10 Clonsilla Level Crossing Proposed Layout**

**4.3.4 Zone D – Clonsilla Station (Clonsilla Junction) to M3 Parkway Station (M3 Parkway Terminus)**

Works in this section will include:

- Substations at Hansfield, Dunboyne and M3 Parkway.
- Track lowering and parapet heightening.
- Sidings at M3 Parkway.



**Figure 4-11 Scheme of the DART+ West Interventions in Zone D**

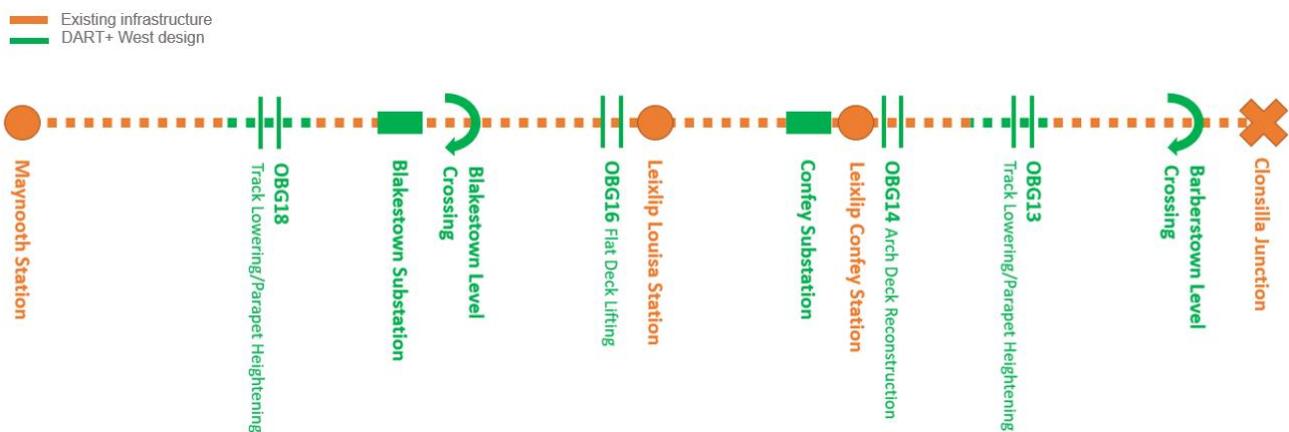
Zone D will include the construction of a power sub-station in vicinity of Hansfield station. The station will be modified with the aim of improving the connection between platforms by means of a new pedestrian bridge. It will be necessary to create a pedestrian and vehicular access route from the substation to Barberstown Lane North. A new three metre wide and 175-metre-long access road is needed for the substation access and will connect to an existing road and later into Barberstown Lane North.

New substations are proposed to be built in the vicinities of both Dunboyne Station and M3 Parkway Station. The substation at Dunboyne Station will be accessed via the main access to the train station from the L2228. Two parking spaces will be provided for servicing the substation. The substation at M3 Parkway Station will be accessed through the existing access in the station and parking area, but a separate connection will be needed for providing the substation with parking spaces. The only clash in this area is with a bike locker which could be moved. The existing bus stop has been maintained and bike lockers, but the access quality will not be as good as it is now, as there is limited space for walkways.

#### 4.3.5 Zone E – Clonsilla Station (Clonsilla Junction) to Maynooth Station

Works in this section will include:

- Changes to the level crossings at Barberstown and Blakestown.
- Track lowering, parapet heightening and bridge reconstruction.
- Substations at Leixlip Confeiy and Blakestown.

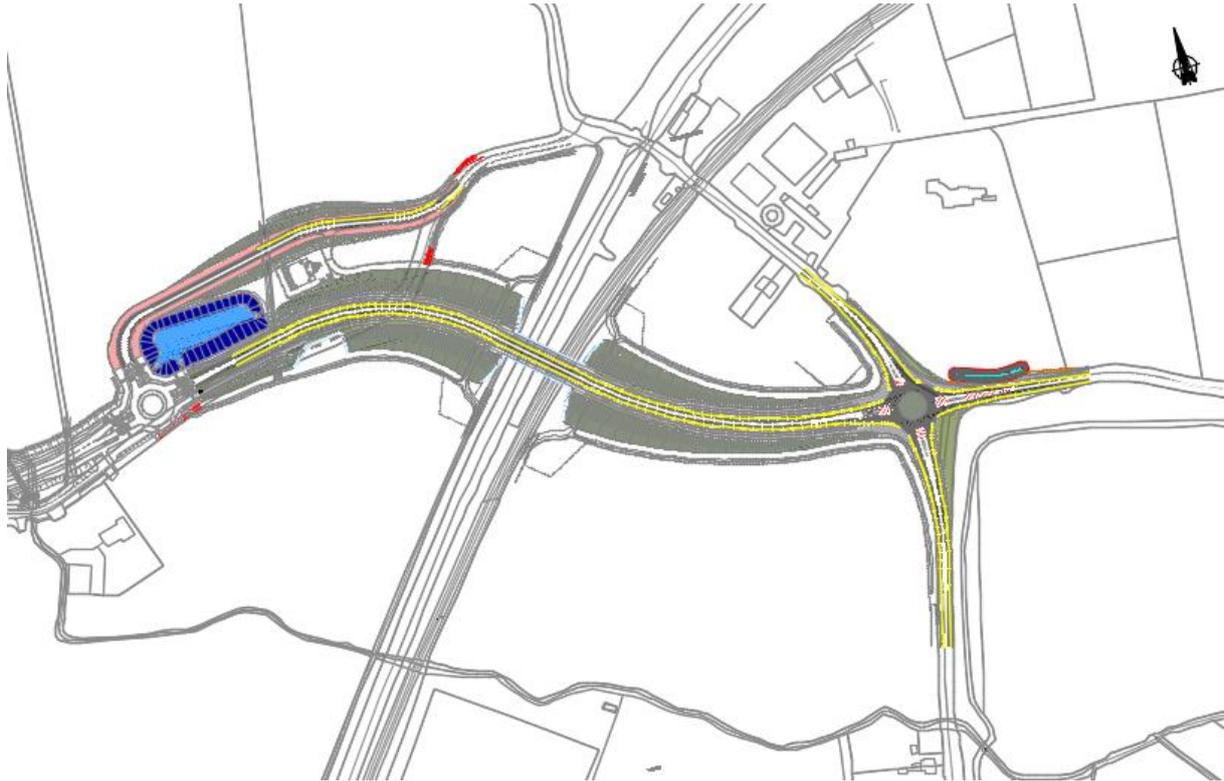


**Figure 4-12 Scheme of the DART+ West interventions in Zone E**

The existing Barberstown level crossing will be permanently closed. A vehicular and pedestrian bridge is proposed south of the existing Barberstown level crossing to transit over the railway line and the Royal Canal. It will connect with the Ongar Road Distributor Road proposed as part of the Barnhill Local Area Plan 2017 - 2023.

Barberstown level crossing is approximately 1.2 kilometres from Clonsilla Station. The Dublin to Maynooth railway line crosses Milestown Road, which is a local road linking the R121 Kellystown Road and R149 Barnhill Road. The crossing is immediately adjacent to the Royal Canal, which is spanned by Pakenham Bridge, a protected structure. The crossing, currently under CCTV control, is situated in a rural setting and is lightly trafficked. Although lightly trafficked, closure of the crossing to vehicular traffic would result in a detour of approximately eight kilometres.

The proposed works at Barberstown Level Crossing include the construction of a new road bridge with pedestrian and cycle facilities which crosses the Dublin to Sligo railway and the Royal canal approximately 200 metres west of the existing level crossing. The proposals include for the construction of approach roads on raised embankment which tie into the proposed Barnhill to Ongar Road scheme to the north and to the existing road network south of the railway as shown on Figure 4-13.



**Figure 4-13 Barberstown level Crossing Proposed Layout**

Parapet heightening, track lowering and changes to two bridge structures will occur along the line to assist in enabling the electrification of the railway to occur without impacting on other modes using structures crossing the rail line.

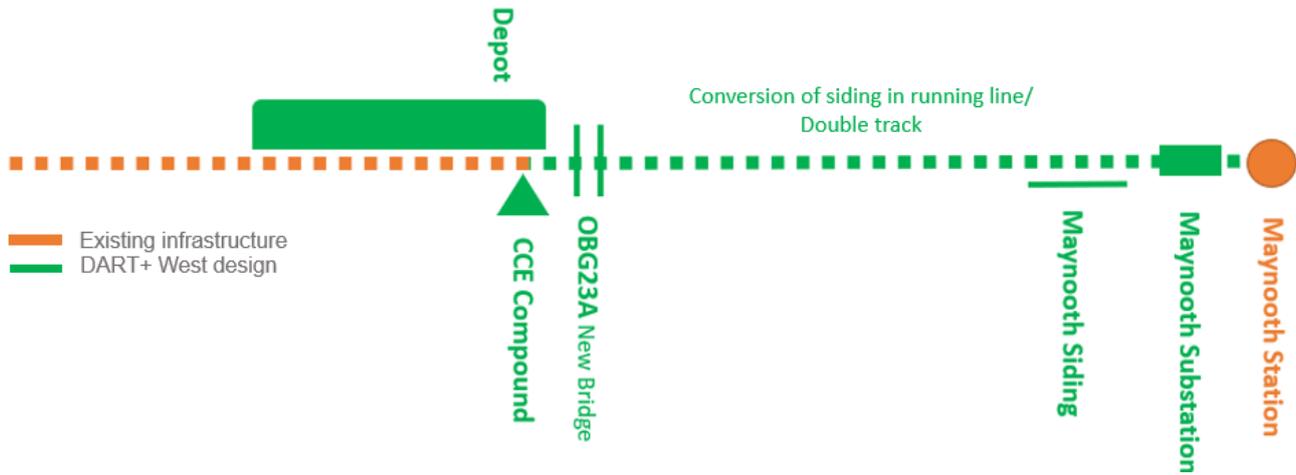
The substation at Leixlip Confey will be provided within the existing parking area with replacement parking, 19 spaces, provided to the west of the substation resulting in no net loss of spaces.

At Blakestown, it will be necessary to create access to the substation from the existing road. The access road will be three metres wide in average and will have a length of 22 metres. Besides the substation access road, four parking spaces will have to be provided inside the substation boundary.

#### **4.3.6 Zone F – Maynooth Station to Maynooth Depot**

Works in this section include:

- Modifications to the Maynooth Station.
- Construction of the new Maynooth Substation.
- Modifications to the existing siding at Maynooth Station.
- Track doubling from Maynooth Station to the new Depot.
- Construction of the new structures.
- Construction of the new Depot Access Road.
- Construction of the new Depot.
- SET installation.
- Railway Fencing installation.



**Figure 4-14 Scheme of the DART+ West interventions in Zone F**

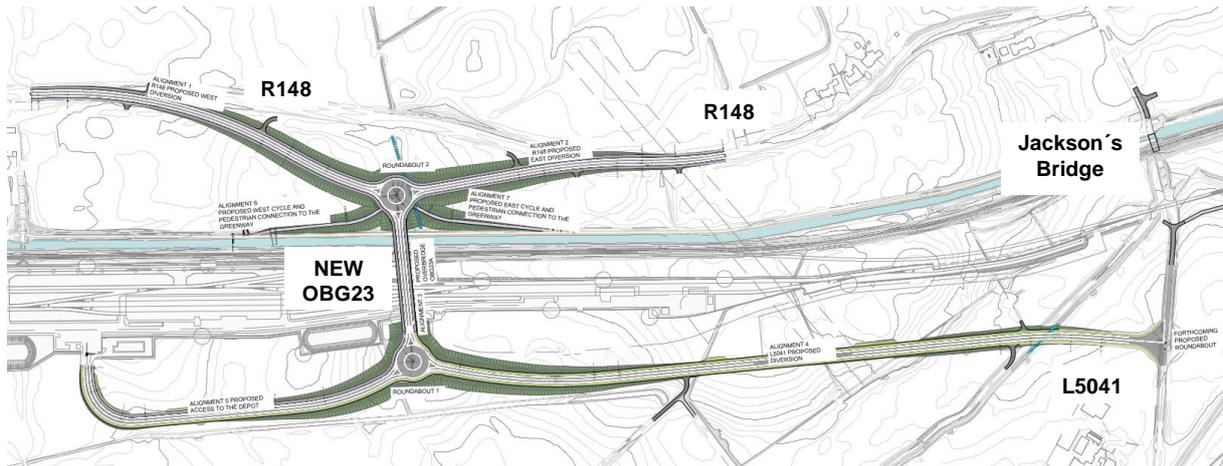
The rail line to the west of Maynooth Station will be increased to a twin-track for trains travelling from the station to the new Depot reducing the impact of these trains on the other passenger services occurring over the course of the day.

This zone includes the construction of approximately 1,500 m of new alignment offline of Jackson's Bridge from Maynooth (i.e., to the south), avoiding the clearance issue at the bridge and avoiding direct negative impacts to Jackson's Bridge, a protected structure. Due to the new track alignment, it is proposed that the L5041 local road is diverted through the new OBG23A that also serves as access to the Depot. The construction of new structures across Lyreen River (UBG 22C and UBG 22A) are also proposed, which allows a crossing over a stream and a pedestrian and cycle underpass. Finally, the project requires the construction of a new maintenance Depot connected to the Maynooth railway line between Kilcock and Maynooth. The Depot will be used as a stabling location for the trains and for maintenance.

Maynooth Substation is proposed with the car parking area of Maynooth station at the south of the railway, opposite the canal and near R406. This location clashes with an existing footbridge that compensates for the unevenness between the road bridge in the R406 and the access road. The access road to the station will have to be modified entirely at the substation location and the footway.

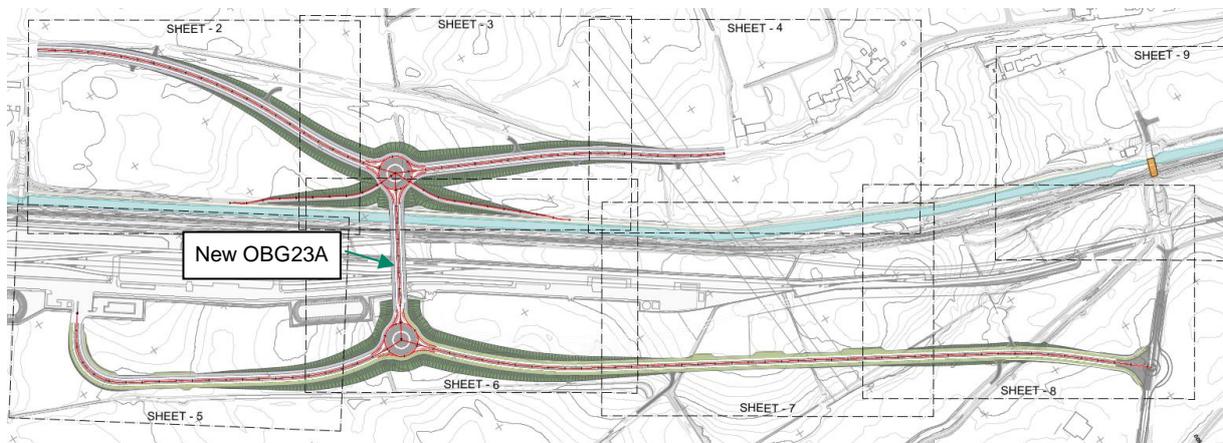
The existing road access will be displaced towards the south, while the pedestrian ramp will be reconstructed and diverted behind the substation, granting people with impaired mobility access to the station. 9 parking areas will be impacted, as 3 of them will be reserved for ESB staff. No disability spot is impacted. The pedestrian walkway will be rerouted around the substation to maintain access to the existing footbridge.

A new bridge, OBG23A, will be constructed to access the Depot crossing the Royal Canal from the R148 Kilcock Road. This new OBG23A provides separate road access to the Depot and connects to the existing road network.



**Figure 4-15 General view of OBG23A**

The L5041 local road extends from the L5042 local road at its southern end to the R148 Maynooth-Kilcock road at the north, crossing the existing M4 motorway and bridging over the Royal Canal and rail line at Jackson Bridge (OBG23) at its northern end. The proposed realignment of the existing tracks south of Jackson Bridge will sever the L5041 south of Jackson Bridge. Keeping the existing road along its current alignment would require raising the road on embankment to over ten metres to cross the rail line, which would require modification to Jackson's Bridge, which is a protected structure. The proposal to divert the L5041 approximately 850 metres to the west and use the new OBG23A bridge to cross over the tracks and canal and connect to the R148 Road removes the impact on Jackson's Bridge and reduces the road embankments within the flood plain.



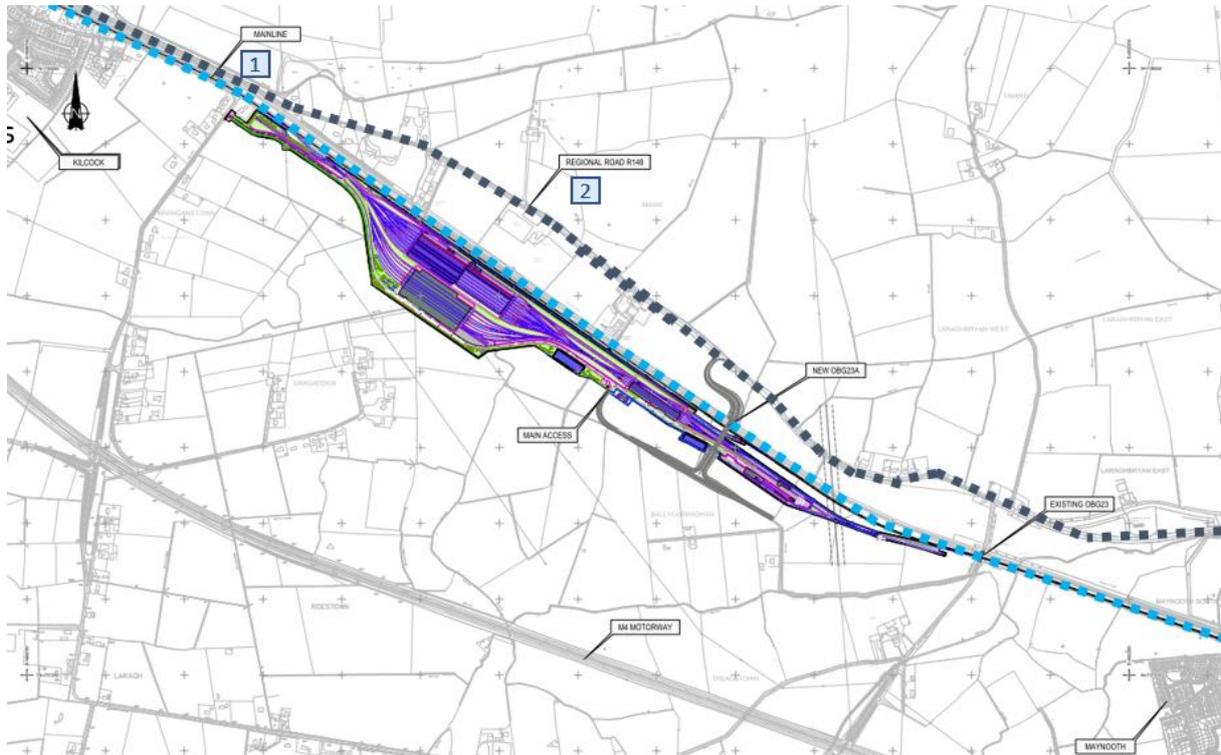
**Figure 4-16 L5041 Diversion (MAY-MDC-HRW-SC07-DR-Z-0001)**

The L5041 diversion starts with a "T" junction and runs towards the west until you reach the southern roundabout with an 8 m section of the carriageway (0.5 m hard shoulder on each side and two 3.5 m lanes) and 4m wide grass verges on both sides of the road. The severed section of the L5041 north of the junction will provide local access to lands. This roundabout also provides access to the depot to the west and the new OBG23A crossing to the north over the tracks and the Royal Canal to connect to the R148 road.

The Depot road access (also 8 m wide cross-section) provides pedestrian and cyclist facilities (2 m wide cycle track and 2 m wide footpath) on the north lane to facilitate mobility management (VRUs travelling to work) to the new depot. At the south lane, a 4 m wide grass verge is provided. For the new bridge section, a 2 m wide cycle track and 2 m wide footpath should be provided at both sides.

At the north side of the bridge, a new roundabout tie in the L5041 with the R148 which must be diverted at both sides of the roundabout. Pedestrian and cyclist facilities (2 m wide cycle track and 2 m wide footpath) are provided on both sides of this R148 road diversion.

In addition, access for pedestrians and cyclists is provided to the Greenway north of the Royal Canal from the roundabout.

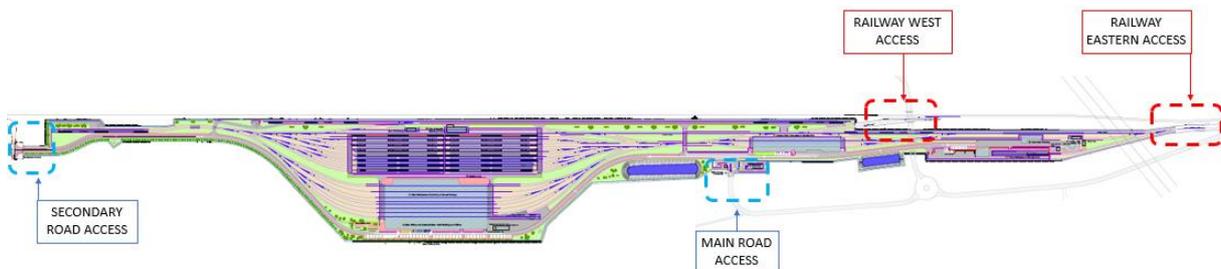


**Figure 4-17 Depot location**

The Depot track layout configuration is influenced by the internal distribution of the Depot facilities and the connections to the mainline. The main line design approach currently consists of doubling the existing line on the current track alignment. The railway track between Kilcock and Maynooth is primarily straight at the Depot site (2.2 kilometres along the Depot) with curves at both ends. Hence the Depot connections to the mainline are fitted to the track alignment of the mainline.

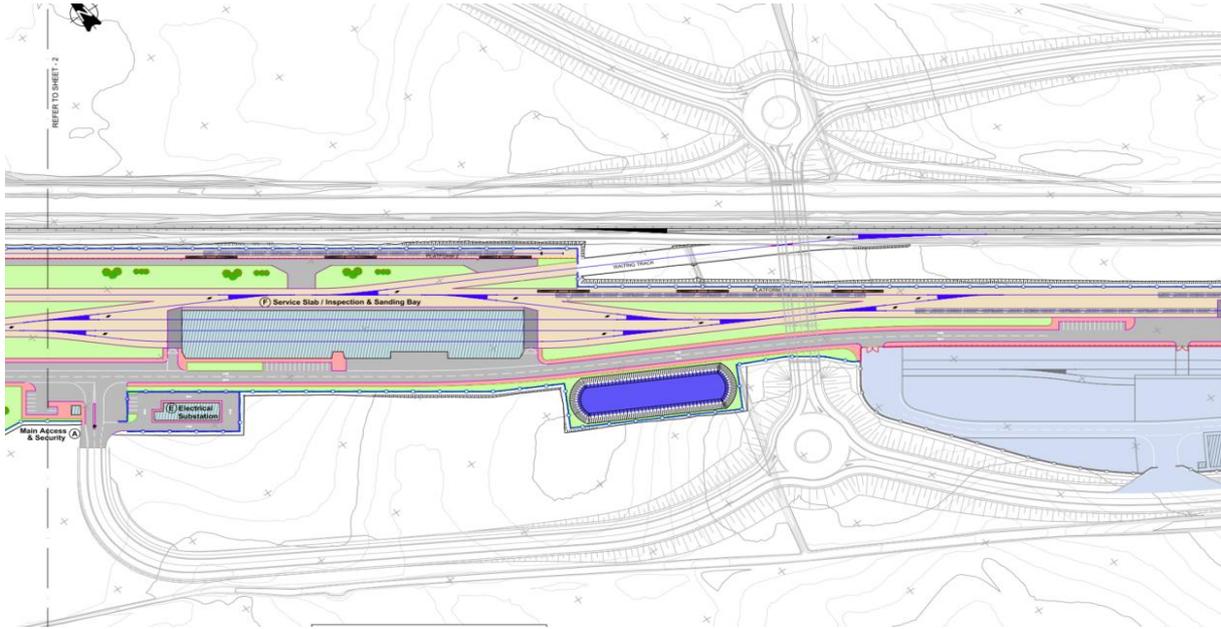
The train access to the Depot has been coordinated with the Permanent Way and the Signalling teams to connect with the mainline properly. From the Permanent Way point of view, the most relevant change is the doubling track until the west access of the Depot, and for the Signalling, the inclusion of the signalling infrastructure and the trap points.

Figure 4-18 below provides an overview of the two connections to the mainline and the road access.



**Figure 4-18 Connections to mainline and road access**

The Depot is accessed only through the approved site entrance to maintain site security. The main road access to the Depot is from R148 (connecting traffic to Maynooth and Kilcock interchanges). This connection requires constructing of a new bridge to cross the Royal Canal and the mainline for the Depot access to the road network located south of the mainline.



**Figure 4-19 Main road access through the new bridge.**

## 5. CONSTRUCTION

### 5.1 Introduction

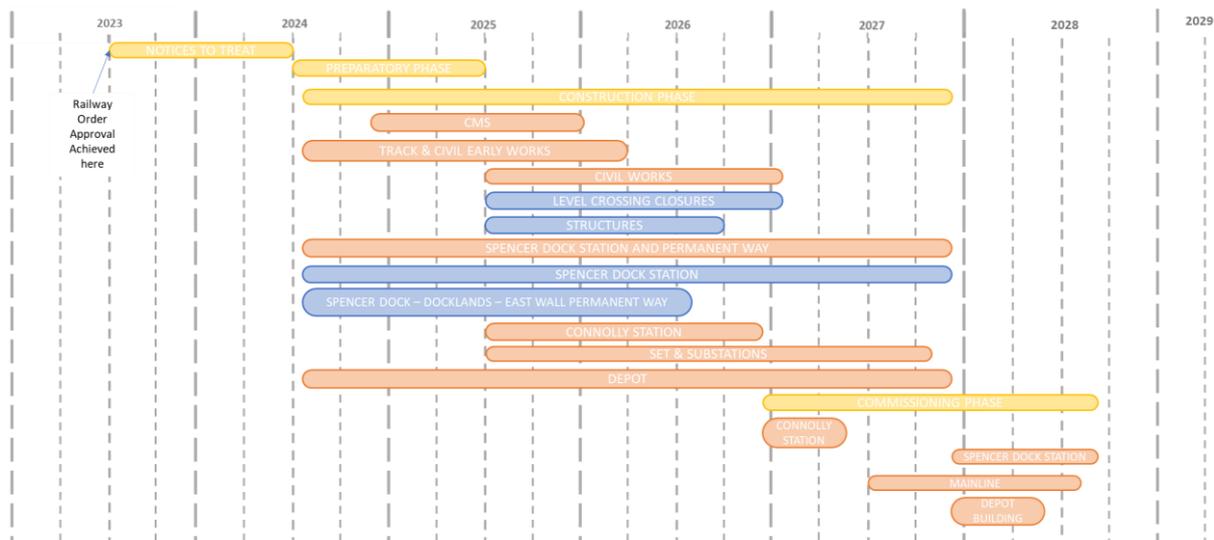
This section provides details on the construction proposals for the development for which significant additional detail is provided within Chapter 5 of the EIAR.

### 5.2 Construction Programme

Construction phase and enabling works of the proposed development will take place over approximately 47 months. The construction programme has been developed considering efficiency of works and to reduce the potential for environmental impacts. The approximate duration of the main activities are as follows:

- Spencer Dock 39 months.
- Connolly Station 18 months.
- Signalling, Electrification, Telecommunications (SET) 32 months.
- Civil and Building Works 29 months.
- Depot 39 months.

The high-level indicative construction programme is set out in Figure 5-1 below identifying the key construction phases and likely construction years.



**Figure 5-1 Key Construction Phases and Likely Construction Years**

Using the indicative construction programme, the construction works to take place in each zone has been identified. To accommodate the upgrade to the rail line, a number of proposed works are required along the length of the line which could impact upon pedestrians, cyclists, public transport users, and vehicles during the construction period as well as the enhancements proposed for the operation period of the development. The proposed improvements are set out in Table 5-1 below along with the longevity of their construction, when this would occur, compounds required, and the traffic management proposed.

**Table 5-1 Proposed Construction Summary by Zone**

Zone	Proposals	Time Period	Length of Works	Compounds
A	Modifications to Connolly Station, including new passenger access on Preston Street Parapet heightening and track lowering Substation at Glasnevin	2024 – 2026	1 week to 72 weeks (18 months)	6 compounds across the Zone
B	Spencer Dock Station Reconstruction of Sheriff Street Bridge Access ramp to Dockland's compound Track lowering and structural intervention	2024 – 2026	1 week to 161 weeks (39 months)	6 compounds across the Zone
C	Parapet heightening and track lowering along the line Modifications to bridges Provision of substations at Ashtown, Coolmine and Castleknock Permanent closure of the level crossings at Porterstown, Clonsilla, Ashtown and Coolmine with replacement bridges for pedestrians and cyclists, with lifts provided to assist the mobility impaired. Improvements to Ashtown and Coolmine stations	2024 – 2027	6 weeks to 156 weeks	17 compounds across the Zone
D	Substations at Hansfield, Dunboyne and M3 Parkway Track lowering and parapet heightening New sidings at M3 Parkway	2024 – 2026	2 weeks to 64 weeks	7 compounds across the Zone
E	Closure of Barberstown and Blakestown level crossings with replacement bridges provided for pedestrian and cyclist use Track lowering, parapet heightening and bridge reconstruction Substations at Leixlip Confey and Blakestown	2024 – 2027	15 weeks to 85 weeks	10 compounds across the Zone
F	Modifications to Maynooth station and siding New Depot and access road L5041 road diversion Improvements to rail line New bridge structures	2024 – 2026	1 week to 120 weeks	7 compounds across the Zone

### 5.3 Construction Compounds

To enable the proposed development to be constructed a total of 55 compounds would be required along the length of the line, of which, one would act as a main storage compound from which the remaining compounds would be served with material, goods, and staff. Of the remaining 54 compounds, 14 are classified as main compounds and 40 are classified as satellite compounds. The construction compounds are generally located adjacent to the site of individual elements of infrastructure constructed, for example, at the depot or where major bridge or station works are required.

Construction compounds will only be in place during the construction phase of the project and only whilst the work for which they are being used is conducted therefore their need is only for the duration of works in that area and not the full duration of construction. The function of the construction compounds is related to the construction works. The location of the proposed compounds is set out in Table 5-2.

**Table 5-2 Compound Locations**

Function	Location
Multi-Disciplinary	Docklands, Castleknock, Blakestown, Millfarm, Depot, Dunboyne, M3 Parkway

Function	Location
Stations	Connolly, Spencer Dock (2), Ashtown and Coolmine
SET	Cabra Road, Spencer Dock, Reilly (2), Navan Road Parkway, M3 Parkway, Blakestown, Millfarm, Barberstown and Depot
Permanent Way	Connolly, Glasnevin (2), Spencer Dock (2), Clonsilla, Collins Bridge, Dunboyne, Pike Bridge, Barnhill Bridge, M3 Parkway, Millfarm and Depot
Structures	Broom Bridge, Old Navan Road Bridge (2), Castleknock, Cope Bridge, Leixlip (Louisa Bridge) (2), Millfarm and at four new bridge locations
Level Crossings	Ashtown, Coolmine, Porterstown, Clonsilla and Barberstown
Substations	Glasnevin, Spencer Dock, Ashtown, Castleknock, Coolmine, Dunboyne, M3 Parkway, Leixlip, Blakestown, Confey, Maynooth and Hansfield

## 5.4 Construction Hours

The hours of construction are dependent on the type of work and the location with the works being carried out in the centre of Dublin taking place during the day whilst construction and improvements of bridges, track lowering and the closure and reprovision of crossings along the network would be carried out overnight or at weekends to reduce both the impact on those using the rail network and those using the highway, pedestrian, cyclist, and bus networks. It is proposed to limit the impact on all users as best as possible to ensure that all networks continue to operate as best as possible with traffic management in place to assist in directing all trip types.

The construction hours proposed at each of the locations where works is required are set out in the table included in Appendix E. This table also highlights the impacts of the proposed works on the road network, pedestrians, cyclists, and public transport.

The general working hours for each of the periods set out are:

- Monday to Friday: 12 hours. From 07:00 to 19:00.
- Saturday: 6 hours. From 07:00 to 13:00.
- Sunday/Bank Holidays: none except where agreed in advance with the local authority and CIÉ or as part of a possession/closure.

Night-time & weekend possessions (note hours indicate times when track is physically closed to allow for the works, but there will be additional time for mobilisation/demobilisation activities outside of the hours listed below):

- Night-time track possession (weekdays): 4-hours. From 01:00 to 05:00.
- Night-time track possession (Saturday nights): 6-hours. From 01:00 to 07:00.
- Full weekend track possession: 52 hours. Saturday 01:00 to Monday 05:00.
- Bank holiday weekend track possession: 76 hours. Saturday 01:00 to Tuesday 05:00.
- Total closure: 24 hours per day for a specified duration.

## 5.5 Construction Trips

In order to identify the number of trips which would be generated by the proposed development during the construction phase, information provided by IDOM, the designers, has been reviewed to identify the number of HGV and worker trips which would be generated by each compound at their peak use. It should be noted that within the assessment taken forward in this report only those trips which would occur in the Weekday AM and PM peak hours during the peak construction phase for that location have been included. These are set out in Table 5-3.

**Table 5-3 Construction Vehicle Trips**

Zone	Compound Code	Compound	Working Hours	Peak Duration of Works	Peak Hour Two-Way Vehicular Trips		
					HGV	LGV	Total
A	CC-PW-S1-10300-B	Connolly Permanent Way	Day time	1 week	23	2	25
A	CC-STA-S1-7800-B	Connolly Station	Day time	1 week	2	6	8
A	CC-PW-S3-33340-B	Glasnevin Permanent Way	Weekend	1 week	0	0	0
A	CC-SET-S3-00000-B	Cabra Road SET	Night-time	26 weeks	0	0	0
B	CC-STA-S4-40230-B	Spencer Dock Station	Day time	32 weeks	25	7	32
B	CC-PW-S2A-20750-B	Spencer Dock Permanent Way	Day time	26 weeks	9	8	17
C	CC-STR-S5-51480-B	OBG5 Structures	Weekend	1 week	0	0	0
C	CC-SET-S5-51530-B	Reilly's SET	Night-time	36 weeks	0	0	0
C	CC-SET-S5-52180-B	Reilly's Complementary SET	Night-time	36 weeks	0	0	0
C	CC-SUB-S5-53600	Ashtown Substation	Day time	2 weeks	4	2	6
C	CC-STA-S5-53660-B	Ashtown Station	Night-time	2 weeks	0	0	0
C	CC-SET-S5-54750-B	Navan Road SET	Night-time	36 weeks	0	0	0
C	CC-STR-S5-56060-B	OBG9 Structures	Day time	4 weeks	3	1	4
C	CC-STR-S5-56130-B	OBG9 Structures	Day time	4 weeks	2	1	2
C	CC-STR-S5-56460-B	Castleknock Structures	Weekend	1 week	0	0	0
C	CC-SUB-S5-56500	Castleknock Substation	Day time	2 weeks	3	2	5
C	CC-SUB-S5-57550	Coolmine Substation	Day time	2 weeks	5	2	7
C	CC-STA-S5-57900-B	Coolmine Station	Night-time	2 weeks	0	0	0
C	CC-PW-S5-59970-B	Clonsilla Permanent Way	Weekend	2 weeks	0	0	0
C	CC-LC-S5-53820-B	Ashtown Level Crossing	Day time	8 weeks	36	3	39
C	CC-LC-S5-58670-B	Coolmine Level Crossing	Day time	12 weeks	2	3	5
C	CC-LC-S5-58800-B	Porterstown Level Crossing	Day time	12 weeks	2	3	5
C	CC-LC-S5-60150-B	Clonsilla Level Crossing	Day time	12 weeks	2	2	4
D	CC-SUB-S8-101070	Hansfield Substation	Day time	2 weeks	3	2	5
D	CC-PW-S8-101660	OBCN286 Permanent Way	Day time	1 week	10	4	14
D	CC-PW-S8-104970-B	Dunboyne Permanent Way	Weekend	1 week	0	0	0
D	CC-SUB-S8-105060	Dunboyne Substation	Night-time	2 weeks	0	0	0
D	CC-PW-S8-106950-B	M3 Parkway Permanent Way	Day time	4 weeks	14	4	17
D	CC-SET-S8-106950-B	M3 Parkway SET	Night-time	52 weeks	0	0	0
D	CC-SUB-S8-106950	M3 Parkway Substation	Day time	2 weeks	3	2	5
E	CC-LC-S6-71100-B	Barberstown Level Crossing	Night-time	48 weeks	0	0	0
E	CC-SET-S6-70700-B	Barberstown SET	Night-time	44 weeks	0	0	0

Zone	Compound Code	Compound	Working Hours	Peak Duration of Works	Peak Hour Two-Way Vehicular Trips		
					HGV	LGV	Total
E	CC-PW-S6-72830-B	OBG13 Permanent Way	Weekend	1 week	0	0	0
E	CC-SUB-S6-74680	Leixlip Substation	Day time	2 weeks	4	2	6
E	CC-STR-S6-74660	Leixlip Structures	Weekend	1 week	0	0	0
E	CC-STR-S6-76470-B	Leixlip (Louisa) STR	Day time	4 weeks	3	2	5
E	CC-STR-S6-76540-B	Leixlip (Louisa) STR	Day time	4 weeks	2	0	2
E	CC-SUB-S6-78180-B	Blakestown Substation	Day time	2 weeks	3	2	5
E	CC-SET-S6-78200-B	Blakestown SET	Night-time	44 weeks	0	0	0
E	CC-PW-S6-79950-B	OBG18 Permanent Way	Weekend	1 week	0	0	0
F	CC-SUB-S6-82236	Maynooth Substation	Day time	2 weeks	5	2	7
F	CC-STR-S7-91880-B	Millfarm Structures	Night-time	4 weeks	0	0	0
F	CC-PW-S7-92340-B	Millfarm Permanent Way	Weekend	16 weeks	0	0	0
F	CC-SET-S7-92180-B	Millfarm SET	Night-time	35 weeks	0	0	0
F	CC-STR-S7-92850-U	OBG23A Structures	Day time	12 weeks	3	4	7
F	CC-STR-S7-92900-B	OBG23A Structures	Day time	16 weeks	51	2	52
F	CC-DEP-S7-93060-D	Depot Permanent Way	Day time	36 weeks	2	8	10
F	CC-DEP-S7-UP-93370-U	Depot SET	Day time	36 weeks	51	4	55

This illustrates that the level of trips generated by each of the compound would unlikely exceed more than one additional vehicle per minute on the network. It also shows that for a number of the compound locations, trips will be generated for a very short time on a weekday or trips occur on a weekend or at night outside of the peak road network periods, therefore reducing the impact on the road network. Where higher levels of trips are identified these are sufficiently spaced across the study area such that they should interact and will be managed such that they are limited to hours outside of the road network peak hours. Furthermore, it should be noted that not all of the trips identified in the table above would occur at the same time, rather they would be spread across the construction phase of the development further limiting the impact.

The peak hour trips identified in the table above have been distributed across the network as discussed in the following section.

## 5.6 Construction Routing

To limit the impact of the construction of the proposed development on the highway and sustainable transport networks, routing to compounds has been identified. Primarily, construction vehicles will make use of the main highway network with limited use of any residential roads unless there is an absolute requirement to do so. Where there is a requirement to use a residential road, vehicular trips will be managed to certain periods of the day and will be managed to ensure that they occur only when absolutely necessary due to the location of a station. Vehicles will therefore access using the M50, N3 and N4. A CTMP will be in place to ensure that monitor and manage construction traffic and act as part of the mitigation to reduce the impact across the entire area.

## 5.7 Construction Impact

The assessment undertaken assumes that a number of construction impacts would occur at the same time therefore representing a robust case in terms of impact. It is considered due to the length of programme the staggering of construction works it would mean that not all works are undertaken at once.

Although this is unlikely to be the case, the works have been assessed as occurring at the same time to identify the most robust case. The impacts are therefore considered likely to be less than identified in the assessment. Undertaking a robust assessment where construction is concerned ensures that any mitigation requirements are not underestimated. On this basis, worst case construction scenarios have been taken forward within the assessments.

The construction works range from those that are located outside of the railway boundary (thus, having no impact or minimal impact on train operations) to those that will require a temporary closure of a section normally during night-time track possession works or full weekend possession works to limit the impact on rail services.

It should be noted that as part of the determining the impact of the construction phase on the road network, only the closure of Sheriff Street Bridge for an 18-month period has been considered. The closures at Broombridge, Castleknock, Cope Bridge, Louisa Bridge and Navan Road have not been considered within this part of the assessment due to the short time period for which they are closed.

The impact on the road network during the weekday AM and PM weekday peak hours in the are set out in Table 5-4. It should be noted that where there is a 0% change in traffic flows between the Do Nothing (No Construction) and Do Something (With Construction) scenarios, these have not been included in the table.

**Table 5-4 Construction Impact - AM and PM Weekday**

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
B	Newcomen Rail Bridge – Strand Road (L18)	Northbound	407	420	3%	1148	1169	2%
		Southbound	1172	1193	2%	661	674	2%
		Overall	1579	1613	2%	1809	1843	2%
B	Seville Place (L20)	Northbound	477	678	42%	524	706	35%
		Southbound	509	674	32%	479	443	-8%
		Overall	986	1352	37%	1003	1148	14%
B	Guide Street (L21)	Northbound	731	678	-7%	710	702	-1%
		Southbound	651	670	3%	481	443	-8%
		Overall	1382	1348	-2%	1191	1144	-4%
B	Mayor Street (L22)	Eastbound	72	85	19%	20	22	8%
		Westbound	190	199	5%	193	212	10%
		Overall	261	284	9%	214	234	10%
B	Guide Street (L23)	Northbound	790	738	-7%	648	646	0%
		Southbound	889	888	0%	718	710	-1%
		Overall	1679	1626	-3%	1366	1355	-1%
B	North Wall Quay West (L24)	Eastbound	387	379	-2%	645	580	-10%
		Westbound	372	332	-11%	328	336	2%
		Overall	759	711	-6%	973	916	-6%
B	Samuel Beckett Bridge (L25)	Northbound	800	738	-8%	669	649	-3%
		Southbound	775	769	-1%	632	609	-4%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
		Overall	1575	1507	-4%	1300	1259	-3%
B	North Wall Quay East (L26)	Eastbound	376	383	2%	633	560	-12%
		Westbound	330	307	-7%	218	240	10%
		Overall	706	690	-2%	851	800	-6%
B	Sheriff Street Upper between 2168 and 2314 (L27)	Eastbound	159	172	8%	75	95	28%
		Westbound	55	75	35%	154	165	7%
		Overall	214	247	15%	228	260	14%
B	Sheriff Street Upper between 2314 and 2584 (L28)	Eastbound	99	111	13%	213	233	10%
		Westbound	92	112	21%	204	215	6%
		Overall	191	223	17%	417	449	8%
B	Sheriff Street Upper between 2584 and 2323 (L29)	Eastbound	89	106	19%	212	237	12%
		Westbound	125	149	19%	232	248	7%
		Overall	214	255	19%	444	485	9%
B	E Wall Rd between 2323 and 2254 (L30)	Northbound	1001	962	-4%	1288	1233	-4%
		Southbound	958	921	-4%	663	634	-4%
		Overall	1959	1883	-4%	1951	1866	-4%
B	E Wall Rd between 2251 and 2338 (L31)	Northbound	859	820	-5%	1202	1146	-5%
		Southbound	1123	1087	-3%	681	653	-4%
		Overall	1982	1907	-4%	1883	1799	-4%
B	M50 Port Tunnel (L32)	Northbound	786	751	-4%	1194	1142	-4%
		Southbound	891	853	-4%	693	663	-4%
		Overall	1677	1604	-4%	1886	1805	-4%
B	E Wall Rd between 2323 and 2253 (L33)	Northbound	841	785	-7%	483	443	-8%
		Southbound	920	868	-6%	1132	1056	-7%
		Overall	1761	1653	-6%	1616	1499	-7%
B	E Wall Rd between 2253 and 2104 (L34)	Northbound	944	888	-6%	619	578	-7%
		Southbound	920	868	-6%	920	1056	15%
		Overall	1864	1756	-6%	1539	1634	6%
B	E Link Toll Bridge (L35)	Northbound	969	969	0%	443	447	1%
		Southbound	641	645	1%	708	708	0%
		Overall	1609	1613	0%	1151	1155	0%
B	New Wapping St between 2168 and 2164 (L36)	Northbound	357	342	-4%	126	119	-6%
		Southbound	55	54	-1%	47	38	-19%
		Overall	412	397	-4%	173	157	-10%
B	N Wall Quay between 2164 and 2392 (L37)	Eastbound	322	258	-20%	286	244	-15%
		Westbound	429	371	-14%	657	572	-13%
		Overall	750	629	-16%	943	815	-14%
B	Seville Place between 2233 and 2239 (L38)	Northbound	836	840	0%	541	541	0%
		Southbound	540	540	0%	758	762	1%
		Overall	1376	1380	0%	1299	1303	0%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Navan Road / Ashtown Road (J1)	Ashtown Road	306	452	48%	536	730	36%
		Navan Road East	963	976	1%	994	997	0%
		Ashtown Gate Road	524	524	0%	282	282	0%
		Navan Road West	1034	1034	0%	1134	1134	0%
		Overall	2827	2986	6%	2946	3143	7%
C	Ashtown Road / Rathbourne Avenue (J2)	Ashtown Road North	151	174	15%	211	234	11%
		Rathbourne Avenue	149	211	42%	340	281	-17%
		Ashtown Road South	128	151	18%	69	92	33%
		Overall	428	536	25%	620	607	-2%
C	River Road / Ashtown Road (J3)	Dunsink Lane	77	77	0%	100	100	0%
		R102 River Road East	408	408	0%	514	514	0%
		Ashtown Road	87	110	26%	28	51	82%
		R102 River Road West	516	539	4%	163	186	14%
		Overall	1088	1134	4%	805	851	6%
C	R806 Castleknock Road / Roselawn Road (J4)	R806 Castleknock Road North	444	446	0%	1014	1016	0%
		R806 Castleknock Road South	837	839	0%	417	419	0%
		Roselawn Road	127	127	0%	224	224	0%
		Overall	1408	1412	0%	1655	1659	0%
C	R806 Castleknock Road / Park Lodge (J5)	R806 Castleknock Road North	370	374	1%	925	931	1%
		R806 Castleknock Road South	856	860	0%	630	632	0%
		Park Lodge	521	523	0%	235	237	1%
		Overall	1747	1757	1%	1790	1800	1%
C	Clonsilla Road / Coolmine Road (J6)	Clonsilla Road East	412	412	0%	542	542	0%
		Coolmine Road	341	343	1%	346	348	1%
		Clonsilla Road West	745	747	0%	535	537	0%
		Overall	1498	1502	0%	1422	1426	0%
C	Coolmine Road / Dellwood Road (J7)	Coolmine Road North	248	250	1%	373	375	1%
		Dellwood Road	194	194	0%	474	474	0%
		Coolmine Road South	313	315	1%	91	93	2%
		Overall	755	759	1%	938	942	0%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Carpenterstown Road / Carpenterstown Park / Riverwood Distributor Road (J8)	Carpenterstown Road North	166	172	4%	326	337	3%
		Carpenterstown Park East	371	373	1%	442	444	0%
		Carpenterstown Road South	461	465	1%	258	259	0%
		Riverwood Distributor Road	301	306	2%	244	247	1%
		Overall	1299	1316	1%	1270	1287	1%
C	Carpenterstown Road / Diswellstown Road (J9)	Carpenterstown Road North	546	547	0%	501	505	1%
		Carpenters Road East	384	384	0%	249	249	0%
		Diswellstown Road	321	325	1%	252	253	0%
		Access Road	211	211	0%	191	191	0%
		Overall	1463	1468	0%	1193	1198	0%
C	Blanchardstown Road / Clonsilla Road / Diswellstown Road (J10)	Blanchardstown Road South	837	853	2%	708	714	1%
		Clonsilla Road East	296	298	1%	679	681	0%
		Diswellstown Road	912	918	1%	583	599	3%
		Clonsilla Road West	757	759	0%	238	240	1%
		Overall	2802	2828	1%	2208	2234	1%
C	Diswellstown Road / School Access (J11)	Diswellstown Road North	818	834	2%	859	865	1%
		Diswellstown Road East	515	519	1%	415	424	2%
		Unnamed Road	611	612	0%	367	370	1%
		School Access	132	133	1%	35	39	11%
		Overall	2076	2098	1%	1676	1698	1%
C	Riverwood Distributor Road / Diswellstown Road / Fernleigh Drive (J12)	Riverwood Distributor Road	244	247	1%	302	307	2%
		Diswellstown Road South	228	229	0%	93	97	4%
		Fernleigh Drive	147	147	0%	131	131	0%
		Diswellstown Road North	326	335	3%	548	552	1%
		Overall	946	959	1%	1074	1087	1%
C	Clonsilla Road / Shelerin Road (J15)	Shelerin Road	120	120	0%	19	19	0%
		Clonsilla Road East	330	332	1%	289	291	1%
		Clonsilla Road West	647	649	0%	274	276	1%
		Overall	1097	1101	0%	582	586	1%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Clonsilla Road / Clonsilla Link Road (J16)	Clonsilla Link Road	11	11	0%	0	0	0%
		Clonsilla Road East	284	286	1%	263	265	1%
		Clonsilla Road West	612	614	0%	267	269	1%
		Overall	907	911	0%	531	535	1%
C	R121 Larch Grove / R121 Clonsilla Road (J17)	Access	0	0	0%	0	0	0%
		R121 Larch Grove	242	244	1%	118	120	2%
		R121 Clonsilla Road	29	29	0%	126	126	0%
		Unnamed Road	536	538	0%	239	241	1%
		Overall	807	811	0%	484	488	1%
C	R121 / Porterstown Road (J18)	R121 North	49	51	4%	153	157	3%
		Porterstown Road	695	699	1%	181	183	1%
		Unnamed Road	7	7	0%	5	5	0%
		R121 West	297	297	0%	549	549	0%
		Overall	1048	1054	1%	888	894	1%
E	Unnamed Road (Barberstown) (J20)	Unnamed Road East	55	57	4%	35	39	11%
		Unnamed Road South	27	31	15%	30	32	7%
		Unnamed Road West	18	18	0%	72	72	0%
		Overall	100	106	6%	137	143	4%
E	R149 Leixlip Confey (L10)	Northbound	175	182	4%	528	532	1%
		Southbound	314	318	1%	439	446	1%
		Overall	489	500	2%	967	977	1%
E	Luisa Bridge (L9)	Eastbound	219	221	1%	664	666	0%
		Westbound	706	708	0%	174	176	1%
		Overall	925	929	0%	838	842	0%
E	R148 Leixlip (L7)	Eastbound	1024	1028	0%	249	253	2%
		Westbound	707	709	0%	877	884	1%
		Overall	1731	1737	0%	1126	1136	1%
E	R148 East (L6)	Eastbound	609	611	0%	220	222	1%
		Westbound	308	310	1%	848	850	0%
		Overall	917	921	0%	1068	1072	0%
E	R148 West (L5)	Eastbound	522	524	0%	287	289	1%
		Westbound	426	428	0%	709	711	0%
		Overall	948	952	0%	996	1000	0%
F	R148 (L1)	Eastbound	382	448	17%	87	139	60%
		Westbound	114	166	46%	448	514	15%
		Overall	496	614	24%	535	653	22%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
F	Jackson's Bridge (L2)	Northbound	223	229	3%	49	51	4%
		Southbound	94	96	2%	261	267	2%
		Overall	316	324	3%	310	318	3%

The results set out above illustrate that during the construction phase, the Proposed project will result in a significant adverse change in some locations with others expected to experience a minimal change or a reduction in flows.

The results of the distribution of construction traffic onto the network assessed shows that the area surrounding the Spencer Dock station would see several reductions in traffic along links with some increases identified. Traffic in this area is not only impacted upon by the traffic associated with construction occurring along routes but by the 18-month closure of the Sherriff Street Bridge. This closure has been assessed within the modelling undertaken and therefore the redistribution of all traffic has been considered.

The results illustrate that in many places there is a reduction in traffic on the links assessed due to traffic finding alternative routes, travelling at other times, or travelling by other modes. Some of the locations where a percentage increase is shown can seem to be significant however when the results are reviewed in terms of numerical change, results show that this is only, for example, a 20-vehicle change. This is not considered to be significant in terms of numerical change and therefore where increases in percentage are set out for the area surrounding Spencer Dock station it is not considered necessary to undertake any mitigation other than the implementation of the CTMP, a Mobility Management Plan for workers and traffic management procedures.

Furthermore, the construction traffic although assessed to occur on the road network in the AM and PM peaks would be managed such that it does not occur at this time further reducing the impact of the construction.

Construction traffic at most of the other locations is adverse but minimal and will occur for a relatively short period of time. There are closures to five of the bridges along the line, Broombridge, Castleknock, Cope, Navan Road and Louisa Bridge. The maximum length of closure at the first three bridges will occur for a period of 15 weeks with partial reopening for a period of nine weeks. The remaining two bridges are proposed to be closed for a maximum period of nine weeks with a partial reopening occurring for a maximum 25-week period. Following these periods, each of the bridges will be fully reopen to all traffic.

The full closure periods are short-term, with the partial reopening limiting the impact of construction at these points. The closures will also occur such that only one of the five bridges along the route is closed at any one time ensuring that traffic is able to move freely along the routes utilising alternative crossing points as well as making use of the wider, alternative routes such as the motorway. Due to the short period of time for which these bridges are to be closed these have not been considered within the assessment however the construction traffic associated with the work has been. This illustrates a minimal change in the level of traffic on the network in the vicinity of each of the compounds. The works in these areas will however be managed through the implementation of a CTMP, which will include restrictions on routing and travel times including ensuring that construction traffic avoids the AM and PM peak hours reducing the impact of construction.

Significant changes in traffic flows during construction are expected to occur on the links in the immediate vicinity of the new Depot in Maynooth and at Ashtown. These are however temporary changes and represent the greatest change which would occur over the construction of the proposed development, as peak construction numbers for each location were assumed. It is unlikely that the peak construction at each site would occur at the same time and therefore the impact across the network would be less than that set out in the table above.

The impact of construction vehicles on the network does represent a short-term adverse impact which would be mitigated and for the duration of construction before returning to normal levels once the construction is complete.

In order to provide a number of the compounds over the construction period, there will be a temporary loss of car parking at locations along the length of the line. Furthermore, due to land requirements to cater for new roads, bridges, and station improvements some spaces will be lost on a permanent basis. Table 5-5 below sets out the number of spaces lost on a temporary or permanent basis as a result of construction.

**Table 5-5 Parking Loss Due to Construction**

Location	Temporary		Permanent		Notes	Justification
	Public	Private	Public	Private		
Connolly Station, Station Compound	0	16	0	0	15+1 (disabled) - courtyard Iarnród Éireann Head Office's parking	Station compound temporarily using the area
Docklands Station SET Compound	8	0	0	0	3 (station parking) + 5 (coach/bus).	SET compound temporarily using the area. The bus parking facility was due to close permanently therefore no impact on buses. Slight impact on station parking reduction however given its location in the city centre travel by alternative modes is possible.
Docklands Station PW Compound	45	0	0	0	45 (coach/bus)	Pway compound temporarily using the area. The bus parking facility is due to close permanently therefore no impact.
Broombridge Station STR Compound	6	0	0	0	6 (coach/bus)	Structure OBG5 compound temporarily using the area. The bus parking facility is due to close permanently therefore no impact.
Ashtown Bridge Level Crossing	0	0	23	135	135 (Gowan Retail Motors/Burke Brothers) + equivalent of 23 spaces illegal used on street	Construction of new level crossing and road connections / junctions. Discussions are on-going separately with Gowan Retail Motors / Burke Brothers regarding the loss of parking at their site.
OBG9-Old Navan Bridge STR Compound	0	10	0	0	Private parking relating to the 12 <sup>th</sup> Local Boutique Hotel and Café Bistro.	Structure OBG9 compound temporarily using the area.
Coolmine Station STA Compound	20	0	0	0	Parking for the station	Station compound temporarily using the area. These spaces will be reverted back as soon as possible.
Leixlip Confey Station (road junction)	0	0	15	0	Provided along the road which accesses the Station	Construction of new road connections / junctions.

Location	Temporary		Permanent		Notes	Justification
	Public	Private	Public	Private		
Louisa Bridge Station STR Compound	7	0	0	0	Station Road parking	Structure OBG16 compound temporarily using the area.
Louisa Bridge Station STR Compound (West of Station)	15	0	0	0	IE Pay and Display car park	Structure OBG16 compound temporarily using the area.
Maynooth Station SUB Compound	22	0	0	0	Station parking	Substation compound temporarily using the area.
Maynooth Substation	0	0	10	0	Station parking	Construction of a new substation.
Dunboyne PW Compound	160	0	0	0	Station parking	Pway compound temporarily using the area.
Dunboyne Sub Compound	20	0	0	0	Station parking	Substation compound temporarily using the area.
Dunboyne Substation	4	0	0	0	Station parking	Construction of new substation.
Dunboyne Station Parking	0	0	7	0	Five standard bays along with 2 disabled which will be re-provided	New route into the car park.
M3 Parkway PW Compound	134	0	0	0	M3 Parkway car park	Pway compound temporarily using the area.
M3 Parkway SET Compound	174	0	0	0	M3 Parkway car park	SET compound temporarily using the area.
M3 Parkway SUB Compound	16	0	0	0	M3 Parkway car park	Substation compound temporarily using the area.
M3 Parkway PSP and SEB	0	0	20	0	M3 Parkway car park	Construction of new technical buildings.

Source: IDOM

In order to determine if the temporary loss of parking at Coolmine, M3 Parkway and Dunboyne for the use by compound would impact on the users of the car parks, a survey of the number of spaces used at location was undertaken during the morning peak in November 2021. The results of the survey are set out in Table 5-6 below. In addition to the survey carried out data for pre-Covid times has been provided by Iarnród Éireann for the car park at Coolmine and this is also included in the table below.

**Table 5-6 Station Parking Survey Results**

Station	Existing			During Construction	
	Number of Spaces	Number of Spaces Occupied During AM Peak	Number of Spaces Remaining Available	Number of Spaces Lost	Number of Spaces Remaining Available
Coolmine (November 21)	196	26	170	20	150
Coolmine (pre-Covid)	196	136	60	20	40
M3 Parkway	1200	265	935	344	591
Dunboyne	300	70	230	191	39

The results set out in the table above illustrate that generally the three car parks are underutilised with a number of spaces remaining available for use. Once the spaces lost is taken in account and assuming the same levels of use as identified during the survey, the above table illustrates that there is still a significant number of spaces remaining at each car park.

To ensure that impact on parking does exceed that set out and remains the case throughout the construction period, Iarnród Éireann will continue to monitor the level of parking at all station car parks, as part of its annual car park surveys, such that should any capacity issues or trends that arise can be identified early. If and when additional car parking capacity is required, Iarnród Éireann, working in collaboration with the National Transport Authority's Park and Ride Office, will implement a separate and site-specific car park project. Car parking spaces will be lost at M3 Parkway, Coolmine and Dunboyne for a short period during the construction programme, as construction compounds are proposed in these facilities.

The contractor will minimise the construction compound footprint throughout the construction programme and return the maximum number of car spaces back to public use.

## **5.8 Construction Management and Mitigation**

The impact of the construction phase will need to be monitored and managed across the lifecycle of construction to ensure that all modes include those using the rail are impacted upon as least as possible. To assist in this a number of measures can be implemented including routing, hours of work, compound locations and traffic management, such as diversions and traffic signals to manage the highway network. In addition to this, a Construction Traffic Management Plan and a Construction Worker Travel Plan can be implemented by the contractor to ensure that staff and the works have as little an impact on the surrounding area as possible. Further detail relating to this and the mitigation for the operation period is set out in Chapter 8.

## 6. INITIAL TRANSPORT IMPACT ASSESSMENT

### 6.1 Introduction

This chapter of the report presents a transport network assessment considering the impacts of the proposed project in the opening year and future year forecast scenarios.

The assessment of the proposed project has been undertaken utilising the NTA's ERM and two local area models developed for this scheme, namely Ashtown LAM (ALAM) and Blanchardstown LAM (BLAM). The development of the Local Area Models has been described in the respective Model Development Reports for Ashtown and Blanchardstown, which are included in Appendix A and B.

The following future forecast years have been developed:

- 2028 Scheme Opening.
- 2043 Future Forecast Year.

In both the ERM and LAMs the Do Minimum road network contains any planned road improvements that will be in place by 2028 and 2043 respectively. The Do Minimum model has then been amended appropriately to reflect the proposed Do Something scenario. The road network has been updated to reflect the proposed amendments arising from the proposed closing of the level crossings and other proposals such as the depot. The demand in LAMs has been updated to reflect changes in mode share brought about by the proposed project, taken from ERM outputs.

This section of the report describes the overall modelling approach adopted in the DART+ West project.

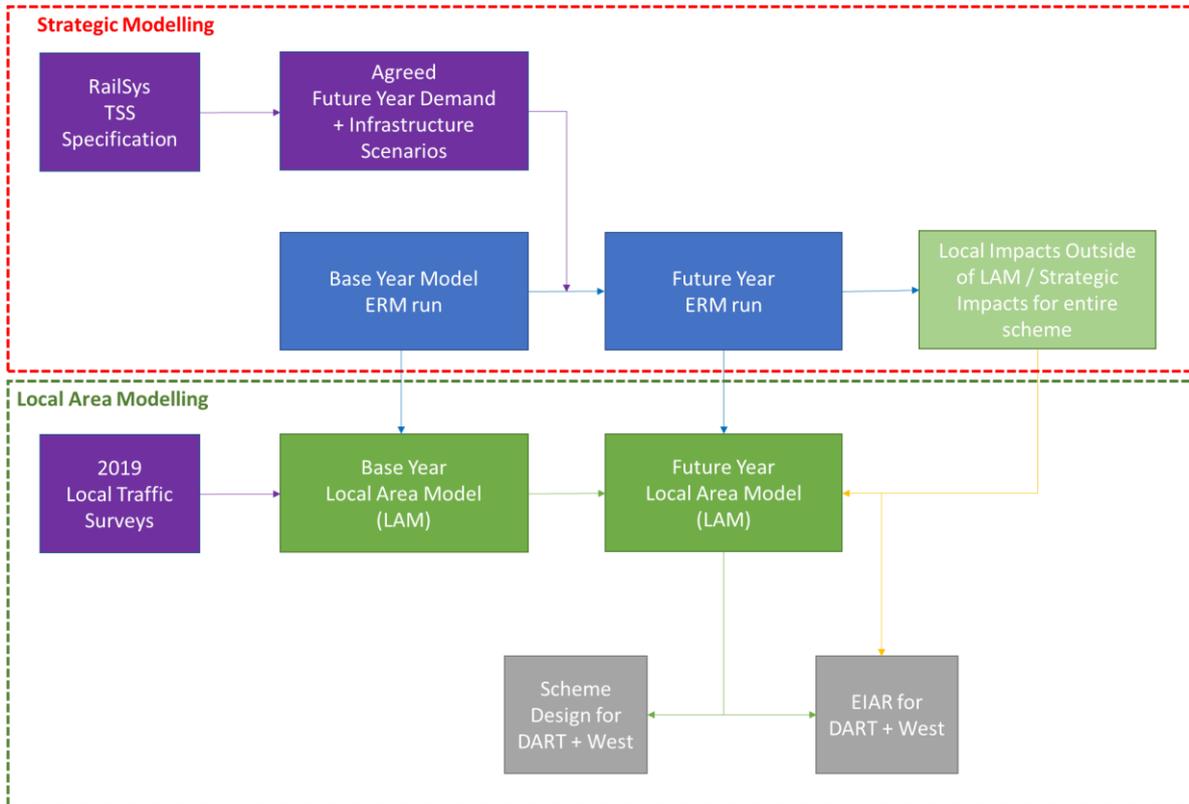
### 6.2 Strategic Modelling

The design team developed a railway operation model in RailSys for DART+ Programme for the base year reflecting the current railway infrastructure and train service specification and for the Design year incorporating enhanced infrastructure and an associated Train Service Specification.

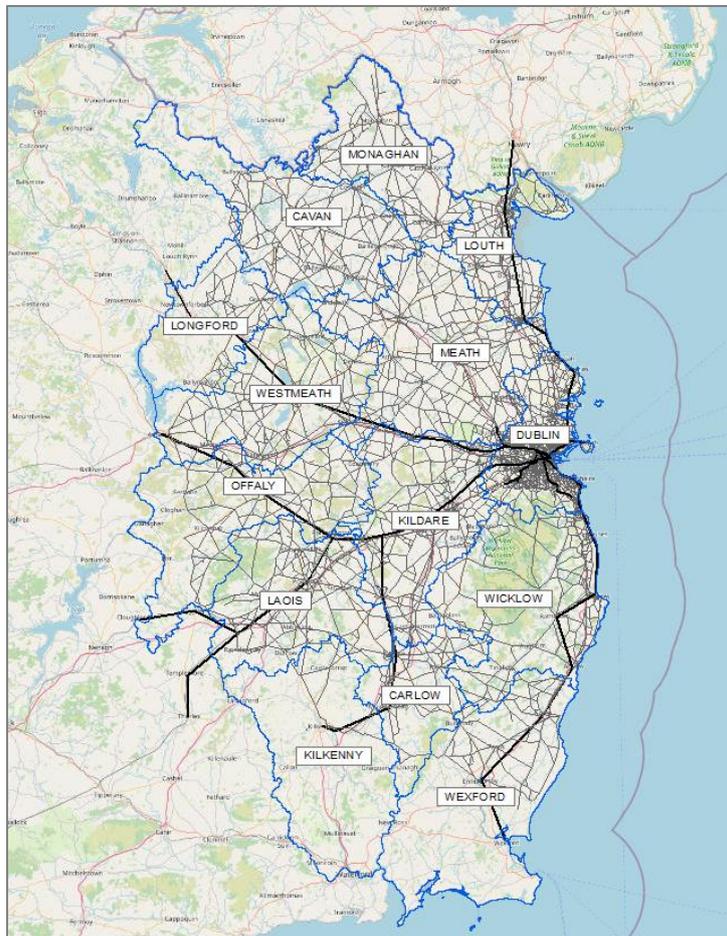
National Transport Authority's Regional Modelling System (RMS) has also been used by the team to assess wider impacts of all individual improvement projects and entire DART+ Programme. RMS comprises the National Demand Forecasting Model, five large scale, complex multi-modal regional transport models and a suite of appraisal modules covering the entire national transport network of Ireland. East Regional Model (ERM) was used for this project as it concentrates on Dublin and covers the entire GDA.

Outputs from the RailSys modelling were used as inputs into the ERM in the form of Train Service Specifications (TSS). The RailSys modelling and ERM model runs were undertaken centrally for the entire DART+ Programme to ensure consistency between the individual DART+ improvements projects. The outputs of the ERM were used as inputs into the LAMs. Traffic Impact has been assessed using the three models, ERM and two LAMs. ERM was used to assess traffic impact outside of the LAMs. The LAMs have been constructed to provide greater accuracy and robustness for areas where level crossings are proposed to be closed in an urban environment.

Figure 6-1 shows the process of developing the traffic models for the DART+ West project and the interactions between LAM, the NTA ERM and RailSys models.

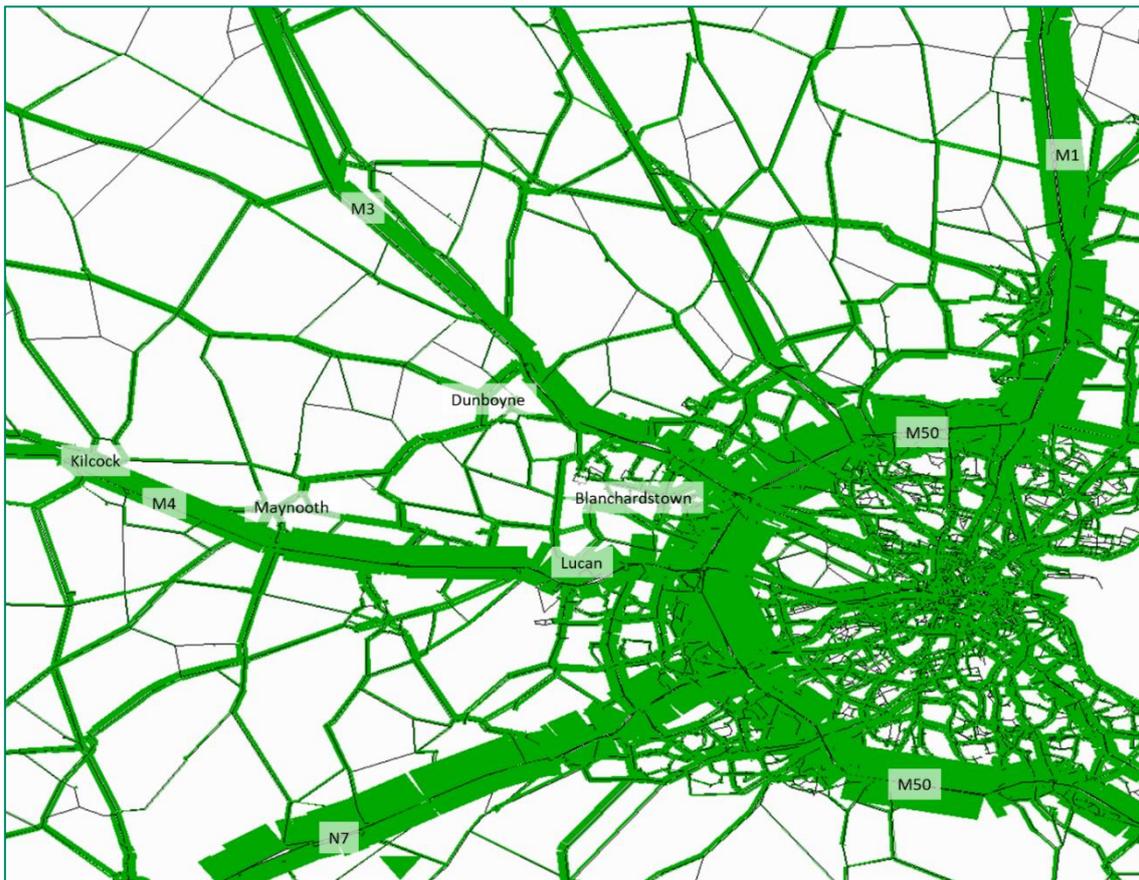


**Figure 6-1 Transport Modelling Methodology**



**Figure 6-2 The Future Year Extent of East Regional Model (ERM)**

Figure 6-3 illustrates the 2016 Base Year East Regional Model.



**Figure 6-3 2016 Base Year Morning Peak East Regional Model**

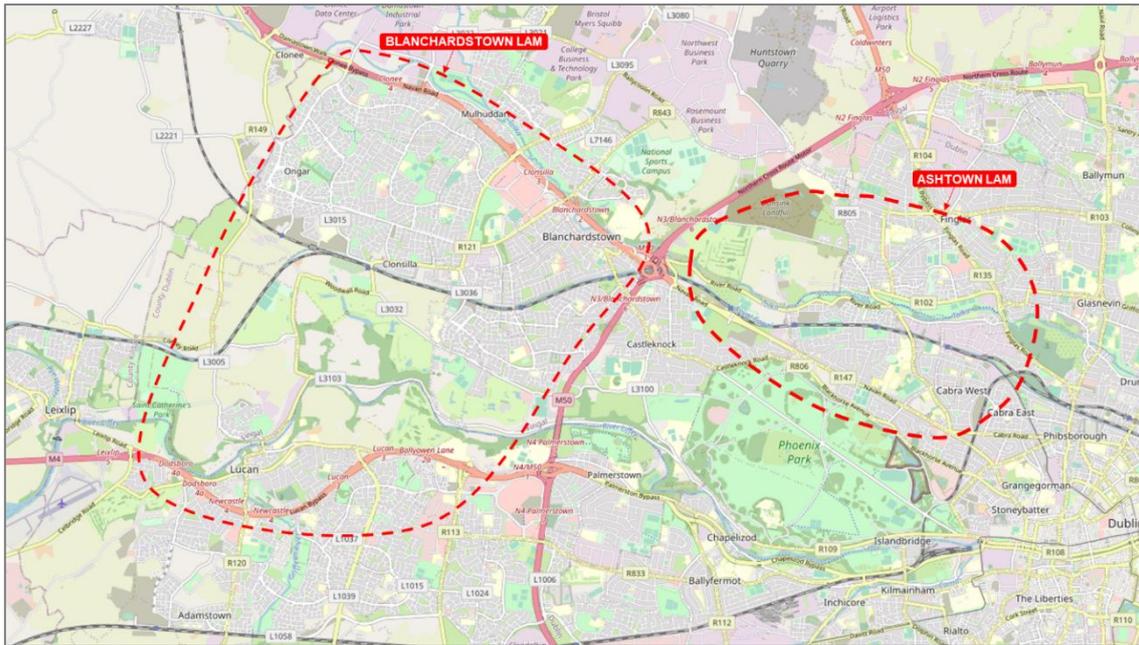
The width of the bands represents the volume of traffic on individual links within models.

### 6.3 Local Area Modelling

The basis for both of the Local Area Models was the 2016 NTA East Regional Model (ERM). The ALAM and BLAM were cordoned out of the ERM, refined and calibrated/validated using the 2019 traffic survey data, for details refer to the Ashtown and Blanchardstown Model Development Reports.

Future year traffic growth projections for the LAMs were based on the NTA 2028 and 2043 ERM runs with and without the proposed project. The base and future ERM model runs were used to develop growth factors, which were then applied to the 2019 LAMs to generate future demand. The resulting future year LAMs were then used to inform the impact of the DART+ West in the Ashtown and Blanchardstown areas. Traffic impact outside of the LAM areas was assessed using the ERM.

Figure 6-4 shows the extent of the Local Area Models. The extent of the local area model was determined by the number of local road network interventions associated with the proposed development and traffic flows using the level crossings.



**Figure 6-4 Local Area Models Extent**

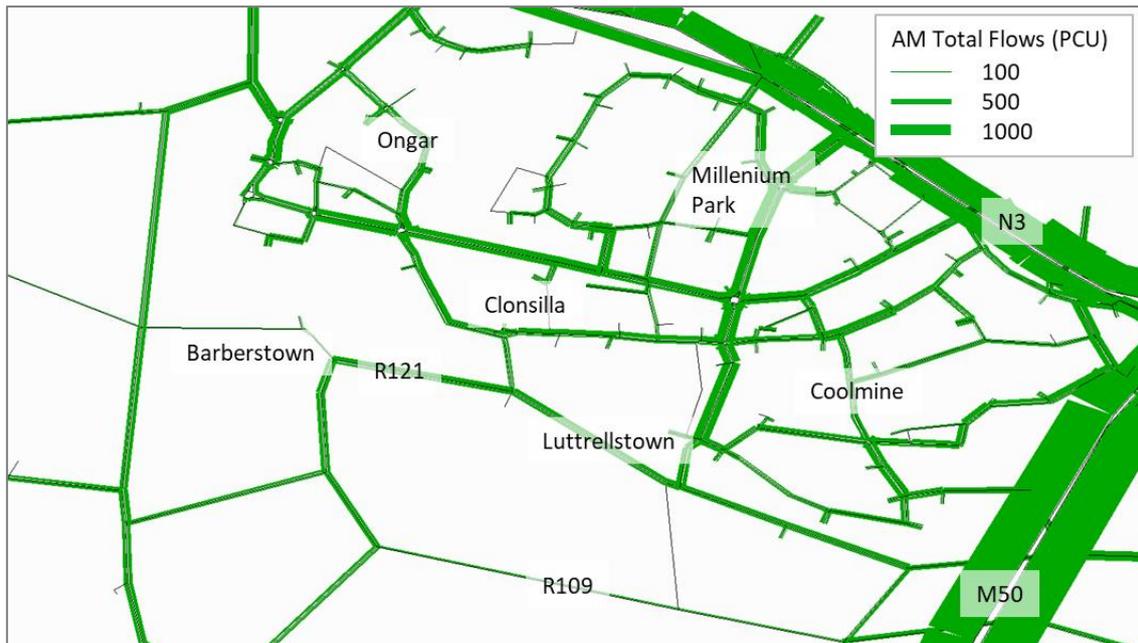
The Local Area Model of Blanchardstown, which will be referred to as BLAM, is bounded by the M3 (as far as Junction 4a Clonee East) to the north and the M4 (as far as Junction 7 Maynooth) to the south. The western extent is bounded by Clonee, Ongar and boundary between County Dublin and County Kildare while the eastern extent is just west to the M50.

The Local Area Model of Ashtown, which will be referred to as ALAM is bounded by Castleknock Road and Phoenix Park to the south, just east of the M50 to the west, Finglas west to the north and Cabra and Kildare Rail line to the east.

Figure 6-5 illustrates the 2019 Base Year Ashtown Local Area Model, while Figure 6-6 illustrates the 2019 Base Year Blanchardstown Local Area Model.



**Figure 6-5 2019 Base Year Morning Peak Ashtown Local Area Model**



**Figure 6-6 2019 Base Year Morning Peak Blanchardstown Local Area Model**

Figures above show traffic flow levels within the Local Area Models within the morning peak hour. The width of the bands represents the volume of traffic on individual links within models.

### 6.3.1 Peak Hours

The hours used in the assessment are as follows;

- AM peak – 08:00 hours to 09:00 hours.
- PM peak – 17:00 hours to 18:00 hours.

The peak hours for use in the assessment have been derived from the modes as being the local road network AM and PM peak hours.

### 6.3.2 Assessment Scenarios

Baseline conditions - The year being assessed in terms of traffic is 2019 due to the limitations relating to the COVID 19 pandemic, the information will be supported by NTA's Base Year ERM model (2016) where 2019 data is not available, however for all other purposes the baseline year of assessment is 2020.

Determination of forecast year traffic conditions, using future year traffic models for:

- Scenario without DART+ West, this is also referred to as the Do Minimum scenario.
- Scenario with DART+ West during both its construction and operational phases, this is also referred to as the Do Something scenario.

Assessment of the traffic impact for operational year of opening which is 2028 and a +15-horizon operational year, which is 2043. Understanding the impact of the scheme on:

- The users of the DART+ West scheme.
- Active transport modes, such as pedestrians and cyclists, using industry standard assessment techniques and survey data.
- General traffic management and operational issues on both local and strategic levels.

### 6.3.3 Operational Impact on Traffic

An assessment of the level of change in traffic flows associated with the proposed development has been undertaken along the entire length of the scheme.

The modelling statistics, which reports on the average conditions across the entire modelled area was extracted from ERM and LAMs to assess the proportional change in each model. Model statistics are presented below.

Table 6-1 and Table 6-2 set out the impact of the proposed development on the whole network in the Do Minimum and Do Something scenarios on queuing, travel time, travel distance and average speed in the ERM Model for the years 2028 and 2043 respectively.

**Table 6-1 Operational Impact 2028 – AM and PM Peak Hour**

Indicator	AM Peak			PM Peak		
	Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
Queuing (pcu hour)	20,670	20,701	0.1%	20,557	20,601	0.2%
Travel Time (pcu hour)	98,845	98,864	0.0%	93,914	93,953	0.0%
Travel Distance (pcu kilometre)	3,443,902	3,440,533	-0.1%	3,288,489	3,286,013	-0.1%
Average Speed (kph)	35	35	0.0%	35	35	0.0%

**Table 6-2 Operational Impact 2043 – AM and PM Peak Hour**

Indicator	AM Peak			PM Peak		
	Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
Queuing (pcu hour)	27,424	27,510	0.3%	25,785	25,747	-0.1%
Travel Time (pcu hour)	120,058	120,371	0.3%	111,027	110,925	-0.1%
Travel Distance (pcu kilometre)	3,838,400	3,834,667	-0.1%	3,611,607	3,609,578	-0.1%
Average Speed (kph)	32	32	-0.3%	33	33	0.0%

The network wide statistics from ERM indicate that the impact of the development in terms of Queuing, Travel Time, Travel Distance and Average Speed across the entire model area would be minimal, which given the extent of the model it is to be expected.

Table 6-3 and Table 6-4 set out the impact of the proposed development on the whole network in the Do Minimum and Do Something scenario on queuing, travel time, travel distance and average speed in both Local Area Models.

**Table 6-3 Operational Impact 2043 – AM and PM Peak Hour Ashtown LAM**

Indicator	AM Peak			PM Peak		
	Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
Total Demand	15,985	15,899	-0.5%	15,074	14,863	-1.4%
Queuing (pcu hour)	661	655	-0.8%	629	564	-10.4%
Travel Time (pcu hour)	2,194	2,169	-1.1%	2,226	2,109	-5.3%
Travel Distance (pcu kilometre)	45,185	45,270	0.2%	43,298	42,603	-1.6%
Average Speed (kph)	21	21	1.5%	20	20	3.6%

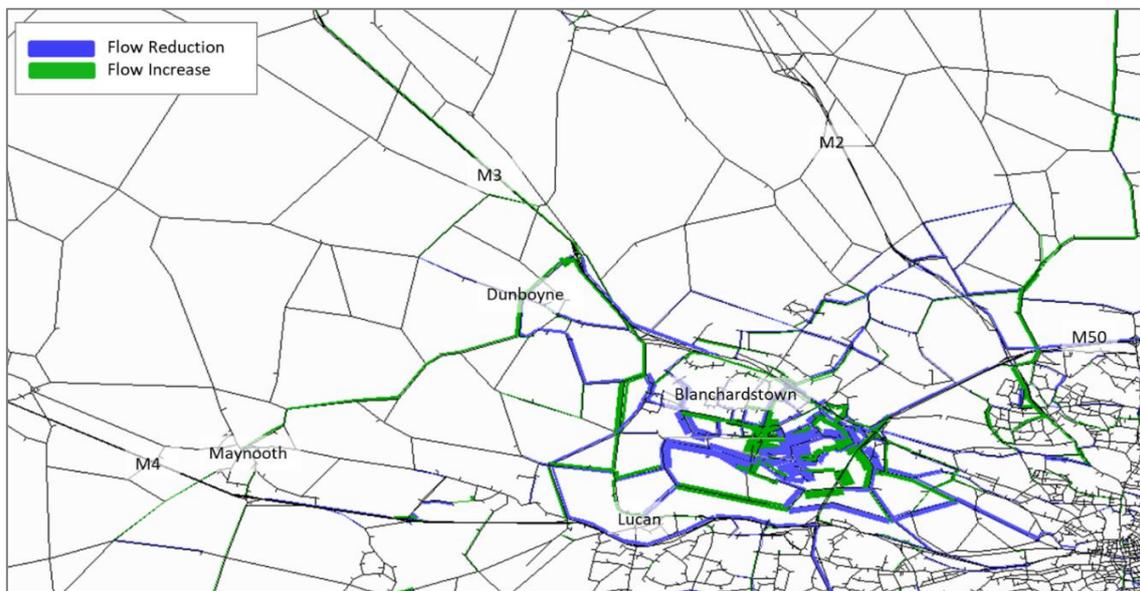
**Table 6-4 Operational Impact 2043 – AM and PM Peak Hour Blanchardstown LAM**

Indicator	AM Peak			PM Peak		
	Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
Total Demand	48,761	48,359	-0.8%	44,768	44,679	-0.2%
Queuing (pcu hour)	2,034	2,106	3.5%	1,455	1,403	-3.6%
Travel Time (pcu hour)	8,916	8,631	-3.2%	7,326	7,330	0.0%
Travel Distance (pcu kilometre)	334,105	333,050	-0.3%	315,619	314,973	-0.2%
Average Speed (kph)	38	39	2.9%	43	43	-0.2%

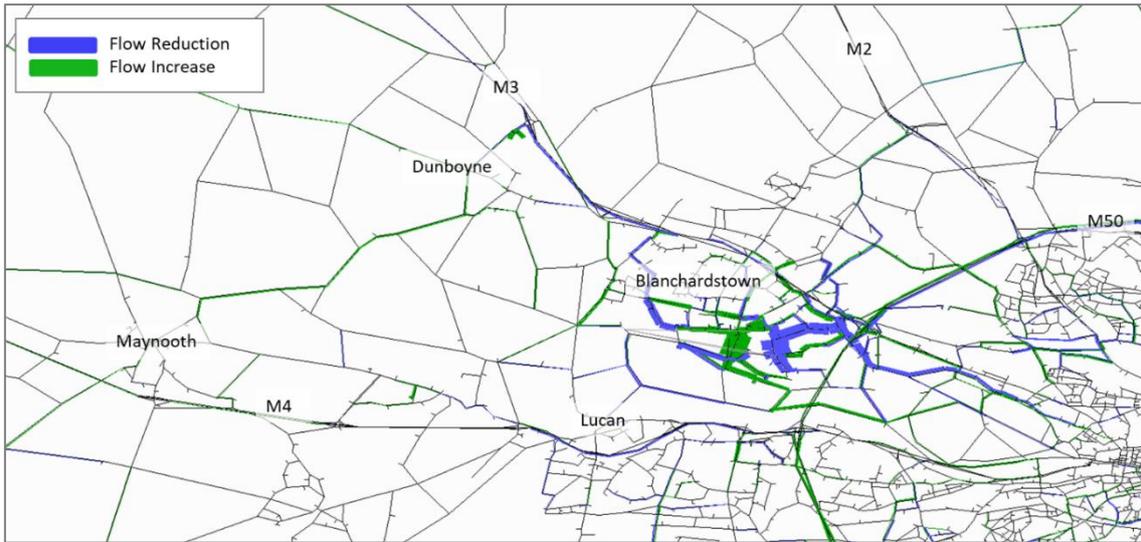
The network wide statistics from the Ashtown LAM indicate that the impact of the development across the modelled area would be positive in terms of queuing, (reduction of -10% in the PM peak), travel time and average speed. Most of the benefits are coming from the removal of the delay from the level crossing. Travel distance is increasing in the AM peak and decreasing in the PM peak, which might be caused by reduced delay at the Ashtown underpass which attracts traffic from nearby crossings. Overall total demand is decreasing by 0.5% in the morning peak and 1.4% in the evening peak representing a beneficial impact.

The network wide statistics from Blanchardstown LAM indicate that the impact of the development across the modelled area would be positive in terms of travel time, travel distance and average speed. The level crossings closures and increase in frequency and capacity along the rail line the total vehicular demand is reducing by 0.8% in the morning peak and by 0.2% in the evening peak, therefore representing a beneficial impact.

The redistribution of traffic as a result of the changes to the road network during the operation phase of the proposed development are illustrated on Figure 6-7 and Figure 6-8 in the ERM Model between Ashtown and Maynooth, on Figure 6-9 and Figure 6-10 for Ashtown area for AM and PM peak hours respectively and on Figure 6-11 and Figure 6-12 for Blanchardstown area.

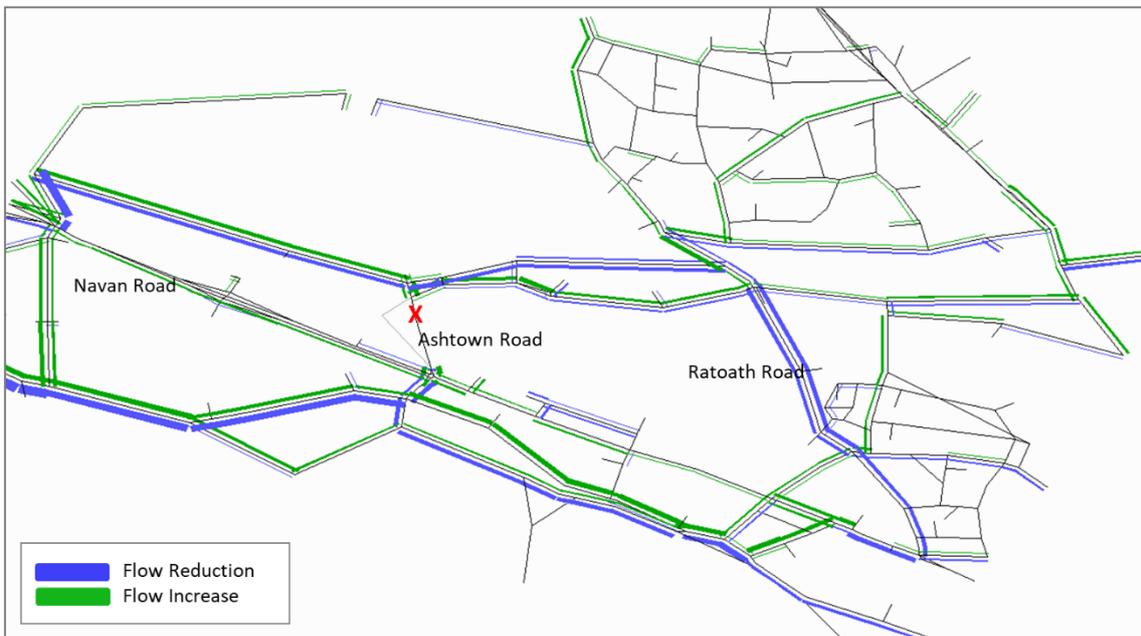


**Figure 6-7 ERM Do Something and Do Minimum 2028 AM peak Flow Difference Plot**

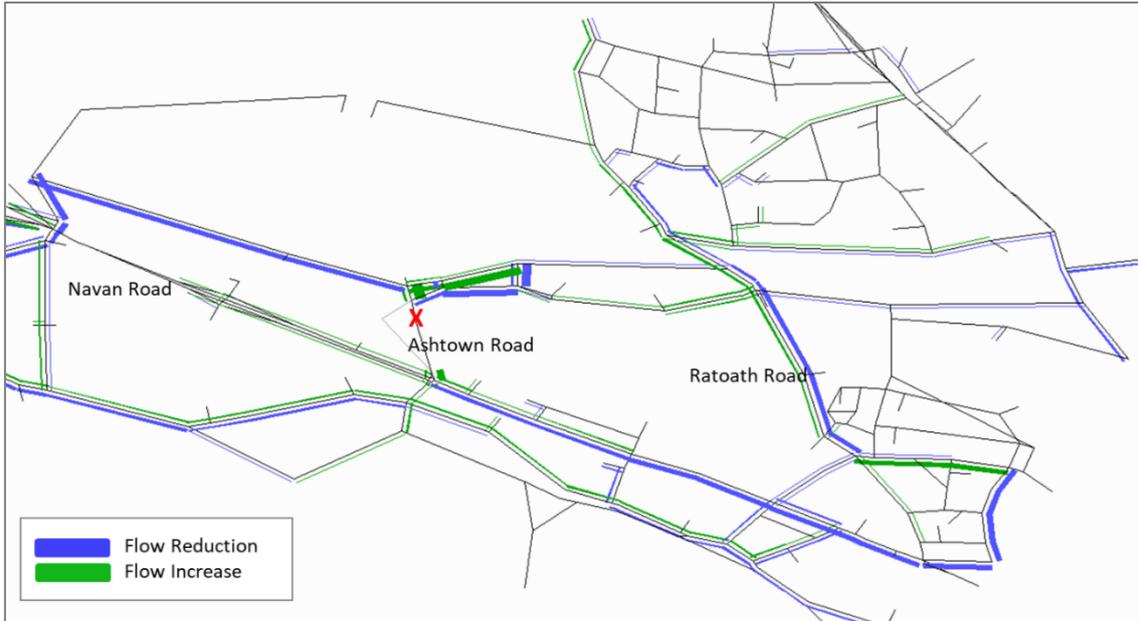


**Figure 6-8 ERM Do Something and Do Minimum 2028 PM peak Flow Difference Plot**

The flow difference thresholds are only exceeded within Blanchardstown and Ashtown areas due to rail level crossing closures. Blue in Figure 6-7 indicate flow reduction and green indicates flow increase.

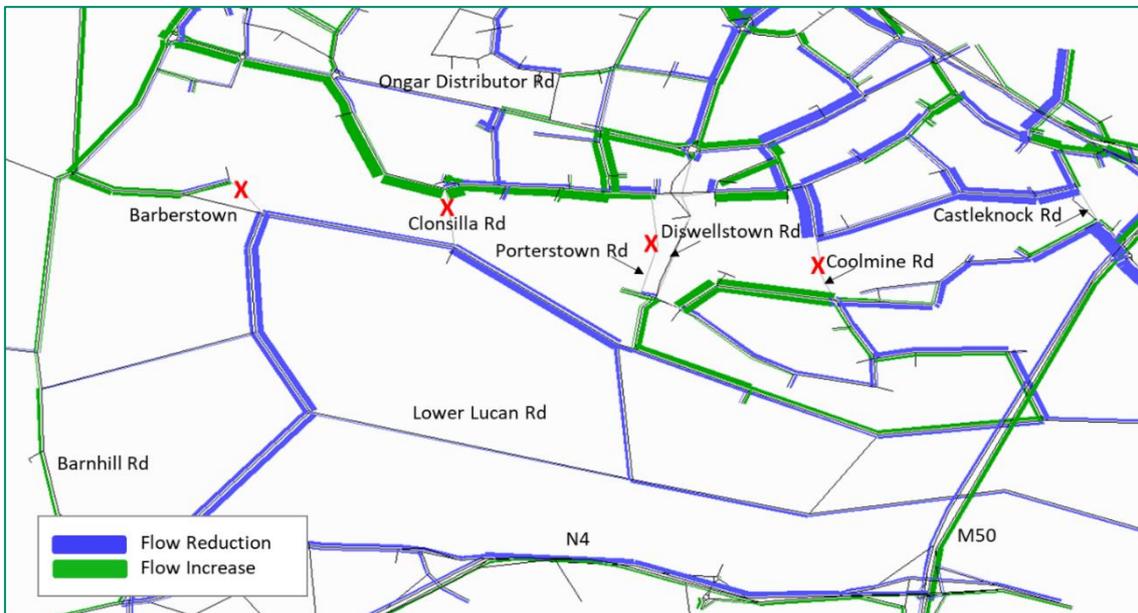


**Figure 6-9 Difference Plot 2043 AM Peak Ashtown LAM**

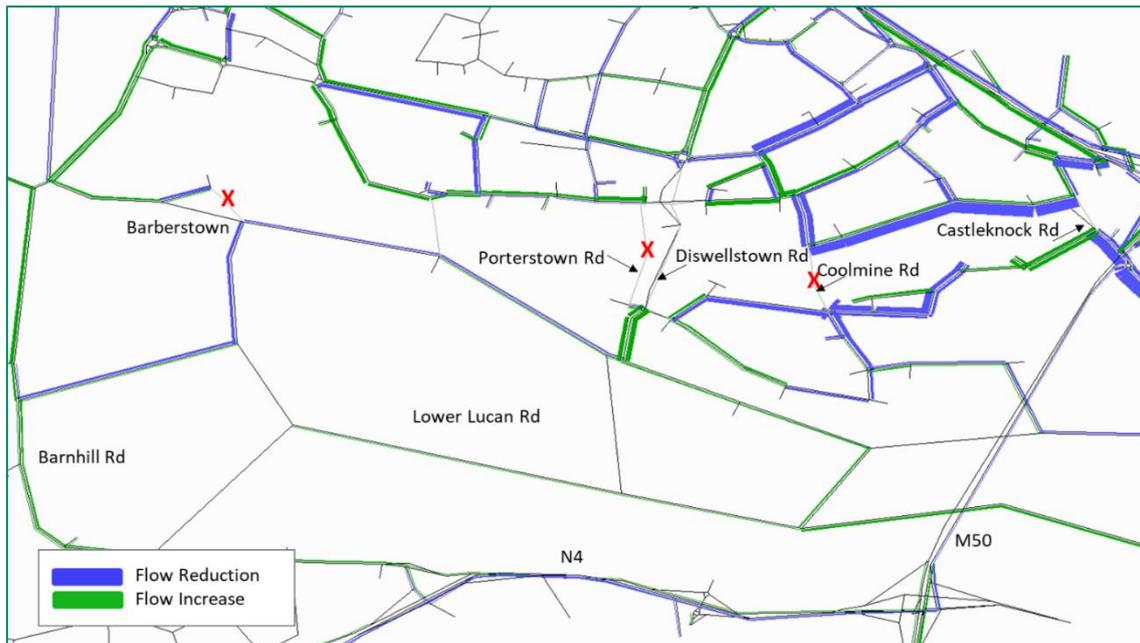


**Figure 6-10 Difference Plot 2043 PM Peak Ashtown LAM**

The Ashtown Road in Figure 6-9 and Figure 6-10 above due to the software limitations does not show any change in traffic due to the geometric layout of the link changes between the two analysed scenarios, however the traffic flow increases on this link as follows: with the level crossing closed in the Do Something scenario, the underpass provided at Ashtown Road attracts 36% more traffic in the AM peak and 26% in the PM peak hours than in the Do Minimum (without the Proposed Development). This leads to proportional reduction at Dunsink Lane and Ratoath Road in both peak hours. Detailed breakdown of flows on impacted junctions is presented later in this chapter.



**Figure 6-11 Difference Plot - 2043 AM Peak Blanchardstown LAM**



**Figure 6-12 Difference Plot - 2043 PM Peak Blanchardstown LAM**

Clonsilla Road, Porterstown Road and Coolmine Road in the Do Something scenario are closed therefore no traffic is shown in Figures above on those links. The traffic flows on Barberstown new bridge, Diswellstown Road and Castleknock Road in the Figures above due to the software limitations does not show any change in traffic due to the changes in geometric layout of the link between the two analysed scenarios, however the traffic flow increases on those link as follows: Barberstown crossing two-way traffic flow increases by 122% in the morning peak (to a total of 239 PCUs) and 28% in the evening peak (to a total of 191 PCUs). Diswellstown crossing two-way traffic flow increases by 22% and 17% in the morning and evening peak hours respectively. Traffic flow on Castleknock Road decreases by 25% and 9% during morning and evening peak hours respectively. Detailed breakdown of flows is presented below.

In summary the impact of the proposed development during the operational phase on routing of vehicular trips would occur at and in the vicinity of the areas where bridge and road interventions are taking place and where changes are proposed to the 'at grade' crossings.

It is proposed as part of the operational phase, the Depot will generate approximately 81 two-way staff trips associated with 72 arrivals and nine departures to and from the Depot in the AM peak period of 0700-1000 and 72 two-way staff trips associated with 14 arrivals and 58 departures to and from the Depot in the PM peak period of 1600-1900, on an average working weekday.

On average working weekday during the operational phase, the peak trip movements associated with the Depot are due to occur between 0700-0800 in the AM and 1600-1700 in the PM. The greatest number of two-way movements occurs in these hours due to shift patterns identified. During the standard road network peak hours of 0800-0900 and 1700-1800 hours, two-way staff trips of 14 and 6 would be anticipated to be generated. The impact in the road network peak hours is therefore considered to be minimal with the greatest impact occurring in the hours before the standard peak hours.

The level of trips identified are person trips and therefore at worst it would assume that all trips would be made by single occupied vehicle however in reality a few trips would be made using more sustainable modes such as walking, cycling, public transport and car sharing therefore reducing the impact of the Depot on the highway network further.

## 6.4 Threshold Analysis

In order to establish the impact of the proposed development on the road network within its vicinity, a percentage change assessment has been undertaken with the results set out in Table 6-5 and Table 6-6. This has been carried out for the entire length of the scheme, for both assessment years. From this information, consideration of the need for further assessment of the junctions within the study area will be undertaken.

**Table 6-5 Operational Impact 2028 – Traffic Flow Change**

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
A	R108 North of Whitworth Road (L13)	Northbound	572	572	0%	598	600	0%
		Southbound	1044	1048	0%	1039	1042	0%
		Overall	1617	1620	0%	1636	1641	0%
A	Drumcondra Stop (L15)	Northbound	856	857	0%	733	731	0%
		Southbound	845	848	0%	834	832	0%
		Overall	1701	1704	0%	1566	1564	0%
B	R108 South of Whitworth Road (L12)	Northbound	495	493	0%	499	501	1%
		Southbound	685	702	3%	754	762	1%
		Overall	1179	1195	1%	1253	1263	1%
B	Binn's Bridge South of Whitworth Road (L14)	Northbound	972	971	0%	998	999	0%
		Southbound	1291	1291	0%	978	978	0%
		Overall	2263	2262	0%	1975	1977	0%
B	Clonliffe Rail Bridge (L16)	Northbound	248	241	-3%	446	446	0%
		Southbound	400	402	1%	198	207	4%
		Overall	649	643	-1%	644	653	1%
B	Clark's Rail Bridge (L17)	Northbound	537	526	-2%	1094	1091	0%
		Southbound	1548	1555	0%	926	933	1%
		Overall	2048	2081	0%	2020	2023	0%
B	Newcomen Rail Bridge – Strand Road (L18)	Northbound	407	397	-2%	1148	1148	0%
		Southbound	1172	1179	1%	661	674	2%
		Overall	1579	1576	0%	1809	1821	1%
B	Sheriff Street (L19)	Eastbound	304	318	5%	531	533	0%
		Westbound	245	248	1%	347	358	3%
		Overall	549	556	3%	878	891	1%
B	Seville Place (L20)	Northbound	477	476	0%	524	506	-3%
		Southbound	509	520	2%	479	455	-5%
		Overall	986	997	1%	1003	961	-4%
B	Guide Street (L21)	Northbound	731	726	-1%	710	710	0%
		Southbound	651	650	0%	481	484	1%
		Overall	1382	1376	0%	1191	1194	0%
B	Mayor Street (L22)	Eastbound	72	65	-9%	20	20	0%
		Westbound	190	192	1%	193	187	-3%
		Overall	261	257	-2%	214	207	-3%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
B	Guide Street (L23)	Northbound	790	778	-2%	648	649	0%
		Southbound	889	889	0%	718	716	0%
		Overall	1679	1667	-1%	1366	1364	0%
B	North Wall Quay West (L24)	Eastbound	387	374	-3%	645	649	1%
		Westbound	372	398	6%	328	348	6%
		Overall	759	770	1%	973	997	2%
B	Samuel Beckett Bridge (L25)	Northbound	800	787	-2%	669	666	0%
		Southbound	775	775	0%	632	632	0%
		Overall	1575	1562	-1%	1300	1298	0%
B	North Wall Quay East (L26)	Eastbound	376	363	-4%	633	637	1%
		Westbound	330	353	7%	218	241	10%
		Overall	706	716	1%	815	878	3%
C	Navan Road / Ashtown Road	Ashtown Road	306	441	44%	536	716	34%
		Navan Road East	963	976	1	994	997	0%
		Ashtown Gate Road	524	446	-15%	282	280	-1%
		Navan Road West	1034	853	-8%	1134	1163	3%
		Overall	2827	2716	0%	2946	3156	7%
C	Ashtown Road / Rathbourne Avenue	Ashtown Road North	151	225	49%	211	442	109%
		Rathbourne Avenue	149	211	42%	340	281	-17%
		Ashtown Road South	128	264	107%	69	88	28%
		Overall	428	700	64%	620	812	31%
C	River Road / Ashtown Road	Dunsinea Lane	77	90	17%	100	106	5%
		R102 River Road East	408	282	-31%	514	633	23%
		Ashtown Road	87	128	47%	28	56	101%
		R102 River Road West	516	564	9%	163	152	-6%
		Overall	1088	1064	-2%	805	947	18%
C	R806 Castleknock Road / Roselawn Road	R806 Castleknock Road North	444	434	-2%	1014	926	-9%
		R806 Castleknock Road South	837	793	-5%	417	405	-3%
		Roselawn Road	127	69	-46%	224	10	-96%
		Overall	1408	1296	-8%	1655	1341	-19%
C	R806 Castleknock Road / Park Lodge	R806 Castleknock Road North	370	519	40%	925	1019	10%
		R806 Castleknock Road South	856	778	-9%	630	624	-1%
		Park Lodge	521	549	5%	235	308	31%
		Overall	1747	1845	6%	1790	1951	9%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Clonsilla Road / Coolmine Road	Clonsilla Road East	412	391	-5%	542	461	-15%
		Coolmine Road	341	138	-59%	346	365	5%
		Clonsilla Road West	745	879	18%	535	629	18%
		Overall	1498	1409	-6%	1422	1454	2%
C	Coolmine Road / Delwood Road	Coolmine Road North	248	225	-9%	373	347	-7%
		Delwood Road	194	138	-29%	474	365	-23%
		Coolmine Road South	313	0	-100%	91	0	-100%
		Overall	755	364	-52%	938	711	-24%
C	Carpenterstown Road / Carpenterstown Park / Riverwood Distributor Road	Carpenterstown Road North	166	0	-100%	326	0	-100%
		Carpenterstown Park East	371	341	-8%	442	490	11%
		Carpenterstown Road South	461	474	3%	258	190	-27%
		Riverwood Distributor Road	301	330	10%	244	230	-6%
		Overall	1299	1146	-12%	1270	909	-28%
C	Carpenterstown Road / Diswellstown Road	Carpenterstown Road North	546	477	-13%	501	433	-14%
		Carpenters Road East	384	426	11%	249	216	-13%
		Diswellstown Road	321	397	-8%	252	244	-3%
		Access Road	211	209	-1%	209	189	-1%
		Overall	1463	1409	-4%	1193	1081	-9%
C	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Blanchardstown Road South	837	723	-14%	708	738	4%
		Clonsilla Road East	296	417	41%	679	728	7%
		Diswellstown Road	912	1238	36%	583	704	21%
		Clonsilla Road West	757	759	0%	238	332	39%
		Overall	2802	3138	12%	2208	2502	13%
C	Diswellstown Road / School Access	Diswellstown Road North	818	919	12%	859	1064	24%
		Diswellstown Road East	515	813	58%	415	395	-5%
		Unnamed Road	611	657	8%	367	505	38%
		School Access	132	135	2%	35	37	5%
		Overall	2076	2524	22%	1676	2001	19%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Riverwood Distributor Road / Diswellstown Road / Fernleigh Drive	Riverwood Distributor Road	244	50	-80%	302	18	-94%
		Diswellstown Road South	228	270	18%	93	102	9%
		Fernleigh Drive	147	142	-4%	131	129	-2%
		Diswellstown Road North	326	417	28%	548	640	17%
		Overall	946	879	-7%	1074	889	-17%
C	Bothar Bhaile an Phoirtearaigh / Rugged Lane	Bothar Bhaile an Phoirtearaigh East	695	608	-12%	181	190	5%
		Rugged Lane	0	20		0	0	0%
		Bothar Bhaile an Phoirtearaigh West	332	323	-3%	573	572	0%
		Overall	1027	952	-7%	753	763	1%
C	Diswellstown Road / Bothar Bhaile an Phoirtearaigh	Diswellstown Road	652	670	3%	502	617	23%
		Bothar Bhaile an Phoirtearaigh East	546	491	-10%	143	176	23%
		Bothar Bhaile an Phoirtearaigh West	332	339	2%	573	571	0%
		Overall	1531	1500	-2%	1219	1366	12%
C	Clonsilla Road / Shelerin Road	Shelerin Road	120	260	117%	19	15	-23%
		Clonsilla Road East	330	327	-1%	289	319	10%
		Clonsilla Road West	647	666	3%	274	326	19%
		Overall	1097	1253	14%	582	659	13%
C	Clonsilla Road / Clonsilla Link Road	Clonsilla Link Road	11	4	-67%	0	0	0%
		Clonsilla Road East	284	433	52%	263	278	6%
		Clonsilla Road West	612	635	4%	267	309	16%
		Overall	907	1072	18%	531	587	11%
C	R121 Larch Grove / R121 Clonsilla Road	Access	0	0	0%	0	0	0%
		R121 Larch Grove	242	481	99%	118	241	103%
		R121 Clonsilla Road	29	0	-100%	126	0	-100%
		Unnamed Road	536	543	1%	239	225	-6%
		Overall	807	1024	27%	484	466	-4%
C		R121 North	49	0	-100%	153	0	-100%
		Porterstown Road	695	613	-12%	181	191	6%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
	R121 / Porterstown Road	Unnamed Road	7	6	-21%	5	6	3%
		R121 West	297	322	9%	549	577	5%
		Overall	1048	941	-10%	888	773	-13%
E	R121 / Barberstown	Barberstown Lane	53	86	61%	80	130	63%
		R121 East	629	603	-4%	193	194	1%
		R121 South	258	252	-2%	489	466	-5%
		Overall	940	941	0%	761	790	4%
E	Unnamed Road (Barberstown)	Unnamed Road East	55	55	-1%	35	34	-3%
		Unnamed Road South	27	74	178%	30	34	13%
		Unnamed Road West	18	52	190%	72	126	74%
		Overall	100	181	81%	137	193	41%
E	Pike Bridge (L4)	Northbound	309	314	2%	82	81	-1%
		Southbound	104	104	1%	289	303	5%
		Overall	413	418	1%	370	384	4%
E	R148 West (L5)	Eastbound	522	527	1%	287	287	0%
		Westbound	426	423	-1%	709	709	0%
		Overall	948	950	0%	996	995	0%
E	R148 East (L6)	Eastbound	609	618	1%	220	210	-4%
		Westbound	308	305	-1%	848	854	1%
		Overall	917	923	1%	1068	1064	0%
E	R148 Leixlip (L7)	Eastbound	1024	1024	0%	249	243	-2%
		Westbound	707	691	-2%	877	875	0%
		Overall	1731	1715	-1%	1126	1118	-1%
E	R148 Luisa Bridge (L9)	Eastbound	219	218	0%	664	666	0%
		Westbound	706	700	-1%	174	184	6%
		Overall	925	918	-1%	838	850	1%
E	R148 Leixlip Confey (L10)	Northbound	175	176	0%	528	531	1%
		Southbound	314	311	-1%	439	435	-1%
		Overall	489	487	-1%	967	966	0%
E	R148 Collins Rail Bridge (L11)	Northbound	198	206	4%	615	624	1%
		Southbound	456	510	12%	296	286	-3%
		Overall	653	716	10%	910	910	0%
F	R148 (L1)	Eastbound	382	380	0%	87	87	0%
		Westbound	114	113	-1%	448	446	0%
		Overall	496	493	-1%	535	533	0%
F	Jackson's Bridge (L2)	Northbound	223	226	2%	49	49	0%
		Southbound	94	93	0%	261	270	3%
		Overall	316	319	1%	310	318	3%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
F	R148 (L3)	Eastbound	573	574	0%	115	116	0%
		Westbound	175	174	-1%	689	696	1%
		Overall	748	748	0%	804	812	-1%

This table illustrates the percentage change in all vehicle flows at junctions across the study area in the 2028 Do Nothing and Do Something scenarios and highlights the variable changes which occur with some significant increases and decreases occurring on approaches and at junctions. This illustrates that the changes to the road network proposed as part of the development will result in changes across the network with increases in traffic at locations where vehicles are re-routing however there are also beneficial changes at other locations.

**Table 6-6 Operational Impact 2043 – Traffic Flow Change**

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
A	R108 North of Whitworth Road (L13)	Northbound	561	565	1%	594	596	0%
		Southbound	995	1004	1%	1034	1039	0%
		Overall	1556	1569	1%	1628	1635	0%
A	Drumcondra Stop (L15)	Northbound	865	860	-1%	732	731	0%
		Southbound	863	863	0%	841	845	0%
		Overall	1728	1723	0%	1573	1576	0%
B	R108 South of Whitworth Road (L12)	Northbound	500	509	2%	477	480	1%
		Southbound	560	578	3%	761	773	2%
		Overall	1059	1087	3%	1239	1254	1%
B	Binn's Bridge South of Whitworth Road (L14)	Northbound	987	1000	1%	1020	1021	0%
		Southbound	1286	1286	0%	978	980	0%
		Overall	2273	2286	1%	1998	2001	0%
B	Clonliffe Rail Bridge (L16)	Northbound	275	287	4%	494	488	-1%
		Southbound	393	398	1%	212	222	5%
		Overall	669	685	2%	706	710	1%
B	Clark's Rail Bridge (L17)	Northbound	631	621	-1%	1138	1139	0%
		Southbound	1521	1527	0%	919	912	-1%
		Overall	2151	2149	0%	2057	2051	0%
B	Newcomen Rail Bridge – Strand Road (L18)	Northbound	378	372	-1%	1175	1165	-1%
		Southbound	1198	1107	-8%	677	727	7%
		Overall	1576	1480	-6%	1853	1892	2%
B	Sheriff Street (L19)	Eastbound	307	308	0%	555	557	0%
		Westbound	247	243	-2%	363	360	-1%
		Overall	555	551	-1%	918	917	0%
B	Seville Place (L20)	Northbound	465	453	-3%	575	561	-2%
		Southbound	517	505	-2%	535	527	-1%
		Overall	982	958	-2%	1110	1089	-2%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
B	Guide Street (L21)	Northbound	733	732	0%	714	714	0%
		Southbound	660	661	0%	482	483	0%
		Overall	1393	1393	0%	1196	1197	0%
B	Mayor Street (L22)	Eastbound	69	70	2%	22	21	0%
		Westbound	191	192	1%	207	209	0%
		Overall	260	262	1%	229	229	0%
B	Guide Street (L23)	Northbound	789	786	0%	650	650	0%
		Southbound	893	892	0%	725	728	0%
		Overall	682	678	0%	1374	1378	0%
B	North Wall Quay West (L24)	Eastbound	454	450	-1%	669	670	0%
		Westbound	397	421	6%	345	376	9%
		Overall	851	870	2%	1014	1046	3%
B	Samuel Beckett Bridge (L25)	Northbound	797	793	0%	679	672	-1%
		Southbound	780	781	0%	636	640	1%
		Overall	1577	1574	0%	1315	1312	0%
B	North Wall Quay East (L26)	Eastbound	443	439	-1%	650	648	0%
		Westbound	358	383	7%	234	265	13%
		Overall	800	822	3%	884	914	3%
C	Navan Road / Ashtown Road (J1)	Ashtown Road	392	449	27%	555	693	25%
		Navan Road East	920	1119	22%	1024	982	-4%
		Ashtown Gate Road	479	404	-16%	261	295	13%
		Navan Road West	998	1026	3%	1106	1135	3%
		Overall	2789	3048	9%	2946	3105	5%
C	Ashtown Road / Rathbourne Avenue (J2)	Ashtown Road North	191	274	44%	214	433	103%
		Rathbourne Avenue	199	219	10%	354	281	-21%
		Ashtown Road South	169	277	64%	93	124	33%
		Overall	559	769	38%	661	838	27%
C	River Road / Ashtown Road (J3)	Dunsinea Lane	110	124	12%	124	128	3%
		R102 River Road East	369	258	-30%	490	563	15%
		Ashtown Road	109	155	42%	37	70	87%
		R102 River Road West	506	587	16%	194	192	-1%
		Overall	1094	1123	3%	846	952	13%
C	R806 Castleknock Road / Roselawn Road (J4)	R806 Castleknock Road North	230	283	23%	1012	968	-4%
		R806 Castleknock Road South	934	743	-20%	402	422	5%
		Roselawn Road	175	21	-88%	228	7	-97%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
		Overall	1338	1047	-22%	1642	1397	-15%
C	R806 Castleknock Road / Park Lodge (J5)	R806 Castleknock Road North	249	320	28%	947	977	3%
		R806 Castleknock Road South	894	619	-31%	657	558	-15%
		Park Lodge	668	703	5%	250	347	39%
		Overall	1811	1642	-9%	1854	1882	2%
C	Clonsilla Road / Coolmine Road (J6)	Clonsilla Road East	324	314	-3%	515	614	0%
		Coolmine Road	475	234	-51%	425	312	-27%
		Clonsilla Road West	945	958	1%	521	666	28%
		Overall	1743	1506	-14%	1460	1492	2%
C	Coolmine Road / Delwood Road (J7)	Coolmine Road North	513	432	-16%	352	306	-13%
		Delwood Road	318	234	-26%	553	312	-44%
		Coolmine Road South	257	0	-100%	90	0	-100%
		Overall	1088	667	-39%	995	618	-38%
C	Carpenterstown Road / Carpenterstown Park / Riverwood Distributor Road (J8)	Carpenterstown Road North	240	0	-100%	369	0	-100%
		Carpenterstown Park East	467	359	-23%	503	479	-5%
		Carpenterstown Road South	629	639	2%	273	216	-21%
		Riverwood Distributor Road	464	554	19%	227	217	-4%
		Overall	1800	1552	-14%	1372	912	-34%
C	Carpenterstown Road / Diswellstown Road (J9)	Carpenterstown Road North	495	483	-2%	535	442	-17%
		Carpenters Road East	491	544	11%	251	266	6%
		Diswellstown Road	486	380	-22%	260	252	-3%
		Access Road	229	224	-2%	202	199	-2%
		Overall	1701	1630	-4%	1248	1160	-7%
C	Blanchardstown Road / Clonsilla Road / Diswellstown Road (J10)	Blanchardstown Road South	991	854	-14%	732	711	-3%
		Clonsilla Road East	267	481	80%	751	780	4%
		Diswellstown Road	893	1114	25%	712	794	12%
		Clonsilla Road West	848	731	-14%	250	3684	53%
		Overall	2998	3181	6%	2446	2668	9%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
C	Diswellstown Road / School Access (J11)	Diswellstown Road North	1044	1243	19%	904	1091	21%
		Diswellstown Road East	587	783	33%	486	457	-6%
		Unnamed Road	570	575	1%	442	555	25%
		School Access	132	139	6%	33	39	19%
		Overall	2333	2740	17%	1866	2142	15%
C	Riverwood Distributor Road / Diswellstown Road / Fernleigh Drive (J12)	Riverwood Distributor Road	385	39	-90%	369	16	-96%
		Diswellstown Road South	168	190	13%	98	109	11%
		Fernleigh Drive	152	144	-6%	137	135	-2%
		Diswellstown Road North	578	645	12%	604	645	12%
		Overall	1284	1017	-21%	1208	939	-22%
C	Bothar Bhaile an Phoirtearaigh / Rugged Lane (J13)	Bothar Bhaile an Phoirtearaigh East	668	558	-17%	202	205	2%
		Rugged Lane	227	219	-4%	0	0	0%
		Bothar Bhaile an Phoirtearaigh West	509	447	-12%	627	603	-4%
		Overall	1405	1224	-13%	829	808	-3%
C	Diswellstown Road / Bothar Bhaile an Phoirtearaigh (J14)	Diswellstown Road	683	775	13%	523	626	20%
		Bothar Bhaile an Phoirtearaigh East	226	156	-31%	192	220	15%
		Bothar Bhaile an Phoirtearaigh West	608	598	-2%	627	603	-4%
		Overall	1517	1529	1%	1342	1449	8%
C	Clonsilla Road / Shelerin Road (J15)	Shelerin Road	160	333	108%	21	22	4%
		Clonsilla Road East	236	336	42%	389	368	-5%
		Clonsilla Road West	760	743	-2%	310	379	22%
		Overall	1156	1413	22%	720	769	7%
C	Clonsilla Road / Clonsilla Link Road (J16)	Clonsilla Link Road	48	4	-92%	0	0	0%
		Clonsilla Road East	274	464	70%	343	315	-8%
		Clonsilla Road West	783	700	-11%	313	370	18%
		Overall	1105	1168	6%	656	685	4%
C	R121 Larch Grove / R121	Access	0	0	0%	0	0	0%
		R121 Larch Grove	239	504	111%	211	280	33%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
	Clonsilla Road (J17)	R121 Clonsilla Road	119	0	-100%	131	0	-100%
		Unnamed Road	608	612	1%	267	285	7%
		Overall	966	1117	16%	609	565	-7%
C	R121 / Porterstown Road (J18)	R121 North	68	0	-100%	142	0	-100%
		Porterstown Road	745	582	-22%	202	205	2%
		Unnamed Road	16	9	-46%	6	6	0%
		R121 West	480	444	-8%	625	607	-3%
		Overall	1310	1034	-21%	974	818	-16%
E	R121 / Barberstown (J19)	Barberstown Lane	82	131	60%	109	148	35%
		R121 East	633	574	-9%	215	208	-3%
		R121 South	414	326	-21%	535	481	-10%
		Overall	1128	1032	-9%	859	837	-3%
E	Unnamed Road (Barberstown) (J20)	Unnamed Road East	59	57	-3%	37	37	0%
		Unnamed Road South	26	108	319%	39	43	10%
		Unnamed Road West	46	100	114%	102	144	41%
		Overall	131	264	102%	178	223	26%
E	Pike Bridge (L4)	Northbound	357	354	-1%	101	103	2%
		Southbound	91	69	-24%	391	411	5%
		Overall	448	423	-6%	492	514	4%
E	R148 West (L5)	Eastbound	658	682	4%	393	393	0%
		Westbound	513	491	-4%	779	783	1%
		Overall	1171	1173	0%	1172	1176	0%
E	R148 East (L6)	Eastbound	760	793	4%	236	227	-4%
		Westbound	347	317	-9%	912	924	1%
		Overall	1107	1109	0%	1148	1151	0%
E	R148 Leixlip (L7)	Eastbound	1094	1103	1%	230	199	-14%
		Westbound	759	727	-4%	912	916	0%
		Overall	1853	1829	-1%	1143	1114	-2%
E	R148 Luisa Bridge (L9)	Eastbound	244	252	3%	762	756	-1%
		Westbound	701	691	-1%	208	247	19%
		Overall	945	943	0%	971	1003	0%
E	R148 Leixlip Confey (L10)	Northbound	185	174	-6%	605	617	2%
		Southbound	389	325	-16%	443	446	1%
		Overall	574	499	-13%	1047	1062	1%
E	R148 Collins Rail Bridge (L11)	Northbound	363	246	-32%	613	610	0%
		Southbound	335	410	22%	303	301	-1%
		Overall	698	656	-6%	916	911	-1%

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			Do Minimum	Do Something	% Change	Do Minimum	Do Something	% Change
F	R148 (L1)	Eastbound	402	409	2%	82	83	1%
		Westbound	145	145	0%	445	448	1%
		Overall	547	554	1%	527	531	1%
F	Jackson's Bridge (L2)	Northbound	287	302	5%	55	54	-2%
		Southbound	131	130	-1%	305	320	5%
		Overall	418	431	3%	360	374	4%
F	R148 (L3)	Eastbound	646	668	3%	109	111	1%
		Westbound	234	232	-1%	722	742	3%
		Overall	880	900	2%	832	853	3%

This table illustrates the percentage change in all vehicle flows at junctions across the study area in the 2043 Do Nothing and Do Something scenarios and highlights that generally there is a beneficial change in traffic flows either on an approach or across the junction as whole especially when compared back with the 2028 flows. This illustrates that as time passes the provision of the proposed development will continue to have a beneficial impact and further reduce traffic flows at the junctions within the vicinity of the proposed development.

Based on the information contained in Table 6-5 and Table 6-6 above, it is considered necessary to undertake junction capacity assessments for several junctions. The results set out in Table 6-5 and Table 6-6 are summarised in Table 6-7 which also highlights the junctions which will be assessed and for which scenario. There are identified from the red highlighted cells in Table 6-7. Where a cell is highlighted green, no junction capacity assessment is considered necessary.

**Table 6-7 Junction Assessment Summary**

Zone	Junction	Opening Year (2028)		Future Year (2043)	
		AM Peak	PM Peak	AM Peak	PM Peak
C	(Junction 1) River Road / Ashtown Road	0%	7%	9%	5%
C	(Junction 2) Ashtown Road / Rathbourne Avenue	64%	31%	38%	27%
C	(Junction 3) Navan Road / Ashtown Road	-2%	18%	3%	13%
C	(Junction 4) R806 Castleknock Road / Roselawn Road	-8%	-19%	-22%	-15%
C	(Junction 5) R806 Castleknock Road / Park Lodge	6%	9%	-9%	2%
C	(Junction 6) Clonsilla Road / Coolmine Road	-6%	2%	-14%	2%
C	(Junction 7) Coolmine Road / Delwood Road	-52%	-24%	-39%	-38%
C	(Junction 8) Carpenterstown Road / Carpenterstown Park / Riverwood Distributor Road	-12%	-28%	-14%	-34%
C	(Junction 9) Carpenterstown Road / Diswellstown Road	-4%	-9%	-4%	-7%
C	(Junction 10) Blanchardstown Road / Clonsilla Road / Diswellstown Road	12%	13%	6%	9%
C	(Junction 11) Diswellstown Road / School Access	22%	19%	17%	15%
C	(Junction 12) Riverwood Distributor Road / Diswellstown Road / Fernleigh Drive	-7%	-17%	-21%	-22%
C	(Junction 13) Bothar Bhaile an Phoirtearaigh / Rugged Lane	-7%	1%	-13%	-3%
C	(Junction 14) Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-2%	12%	1%	8%

Zone	Junction	Opening Year (2028)		Future Year (2043)	
		AM Peak	PM Peak	AM Peak	PM Peak
C	(Junction 15) Clonsilla Road / Shelerin Road	14%	13%	22%	7%
C	(Junction 16) Clonsilla Road / Clonsilla Link Road	18%	11%	6%	4%
C	(Junction 17) R121 Larch Grove / R121 Clonsilla Road	27%	-4%	16%	-7%
C	(Junction 18) R121 / Porterstown Road	-10%	-13%	-21%	-16%
E	(Junction 19) R121 / Barberstown	0%	4%	-9%	-3%
E	(Junction 20) Unnamed Road (Barberstown)	81%	41%	102%	26%

The results summarised in Table 6-7 illustrate that the proposed development result in a beneficial impact on the network at number of the junctions in the study area. The results also illustrate that where there is an increase in traffic in the opening year that by the future year the level of traffic at the junctions has, generally, decreased resulting in a reduction in impact. Those junctions where a change is highlighted in red in the table will be assessed using junction modelling software to determine if the junctions are and will continue to operate within their operating thresholds or if mitigation is required.

## 6.5 Public Transport Impacts

The effect on bus and rail passengers as a result of the proposed project is discussed in more detail in Chapter 7 of this TIA.

## 6.6 Pedestrian and Cycle Impacts

New pedestrian and cycle routes will be introduced at the former 'at grade' crossing locations enhancing infrastructure for non-motorised users wishing to travel north south over the rail line without waiting for trains to pass or undertaking movements across rail lines whilst waiting improving safety. All new facilities will feature minimum footway widths of two metres, and three metres where shared with cyclists.

During construction it may be necessary to divert some of the existing routes at the 'at grade' crossings however this will be for a limited period of time and suitable alternative routes are proposed.

Whilst the proposed project may introduce delay for pedestrians and cyclists crossing the rail line during construction for a limited period of time, the enhanced infrastructure provided as part of the scheme adequately mitigates any likely effects.

When operational, the improved facilities for pedestrian and cycle access to the stations should encourage greater numbers of trips by those modes rather than users of the railway line using a car to access the proposed project. The level of cycle parking provided at each of the station will be monitored and managed over the course of the proposed projects lifetime such that where the level of spaces is shown to be close to capacity, additional spaces will be provided to encourage further use of sustainable modes rather than recourse to the private car.

## 6.7 Car Based Impacts - Parking

A number of the stations have little, or no parking and it is not proposed at this point to provide additional parking over the course of the proposed project's lifetime. Where parking is provided, the results of the surveys undertaken illustrate that there is available capacity to cater for an increase in car-based trips.

Furthermore, as part of the NTA's future Park and Ride schemes, a new Park and Ride is proposed along the DART+ West line to cater for the increase in users travelling from locations not within walking or cycling distance of the proposed location in Maynooth. The NTA document which includes reference to the parking at M3 Parkway and Dunboyne suggests that the level of parking provision provided at present is sufficient for the existing and future needs of the Proposed Development.

Despite this, parking use at the stations will be monitored to ensure that where there are issues, greater promotion of alternative modes of transport for access to the stations is made or the promotion of nearby stations which provide parking, and it is shown to be underutilised. Additional parking could be provided where possible however this should only be provided once all other potential options have been explored.

## 6.8 Summary

This section has provided an initial review of the likely transport impacts of the proposed project. Where a 10% or more increase in trips on a junction arm is anticipated a junction capacity assessment has been undertaken. Locations which are considered to be sensitive have been assessed where there is a 5% increase on any one arm.

The proposed project may result in increased delay to public transport users and therefore this is considered in further detail using the junction capacity assessments in the next section.

The likely impacts on pedestrians and cyclists as a result of the proposed project are considered to be negligible with significantly enhanced infrastructure provided when compared to the existing arrangement.

## 7. DETAILED TRANSPORT NETWORK ASSESSMENT

### 7.1 Introduction

This section of the report sets out the results of the junction capacity assessments undertaken at the locations identified for assessment in the previous chapter. Consideration is also given to impacts on public transport users.

### 7.2 Junctions Models

In order to assess the traffic impact of the proposed project on junctions local to the site, it has been necessary to build individual junction capacity assessment models for each of the locations identified in Table 6-7 as requiring assessing in terms of capacity. The junction capacity assessments have been undertaken using nationally recognised modelling software Junctions 9 for priority junctions and roundabouts and LinSig for signalised junctions.

The following sections discuss the outcome of the capacity assessments undertaken for the junctions in the scenarios set out in Table 6-7. Acronyms used within this section are as follows:

- RFC            Ratio of Flow to Capacity (for priority junctions).
- DoS            Degree of Saturation (for signalised junctions).
- Q                Queue length (vehicles).

It is generally accepted that RFC values of 0.85 or less and Degrees of Saturation values of 90% or less are indicators that a junction is operating within capacity. Although a junction would be said to be operating at capacity at values of 1 or 100%, the use of 0.85 and 90% allow for a margin of error and daily fluctuations in traffic flows which can be as high as +/-10%. Junctions are therefore only identified as operating over capacity if these values are exceeded.

### 7.3 Junctions Modelling Results

The results of the junction modelling are set out in the following paragraphs for the junctions and respective scenarios identified in Table 6-7 as being necessary to model. The results are set out by assessment scenario in the following sections with capacity assessment results provided in full in Appendix F.

#### 7.3.1 Ashtown Road / Rathbourne Avenue (Junction 2)

Based on the results of the percentage change assessment, a junction capacity assessment for the Ashtown Road / Rathbourne Avenue junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-1.

**Table 7-1            Ashtown Road / Rathbourne Avenue**

Approach	2028 Do Nothing				2028 Do Something				2043 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Ashtown Road North	0.12	0.1	0.16	0.2	0.18	0.2	0.34	0.5	0.15	0.2	0.17	0.2	0.22	0.3	0.33	0.5
Rathbourne Avenue	0.14	0.2	0.33	0.5	0.21	0.3	0.31	0.5	0.19	0.2	0.34	0.5	0.22	0.3	0.31	0.5

Approach	2028 Do Nothing				2028 Do Something				2043 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Ashtown Road South	0.10	0.1	0.05	0.1	0.21	0.3	0.07	0.1	0.14	0.2	0.07	0.1	0.22	0.3	0.10	0.1
Development Access	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

The results illustrate that the junction operates with significant spare capacity in all scenarios and therefore no improvements are considered necessary as a result of the proposed development.

### 7.3.2 Navan Road / Ashtown Road (Junction 3)

Based on the results of the percentage change assessment, a junction capacity assessment for the Navan Road / Ashtown Road junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-2.

**Table 7-2 Navan Road / Ashtown Road**

Approach	2028 Do Nothing				2028 Do Something				2043 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Ashtown Road	0.50	1.0	0.87	6.2	0.68	2.1	1.15	102.0	0.65	1.8	0.87	6.0	0.78	3.5	1.08	61.0
R147 Navan Road East	0.64	2.0	0.76	3.2	0.73	3.1	0.77	3.4	0.76	3.9	0.79	4.0	0.79	4.5	0.76	3.2
Ashtown Gate Road	0.60	1.5	0.31	0.5	0.56	1.3	0.30	0.5	0.58	1.4	0.29	0.4	0.55	1.2	0.30	0.5
R147 Navan Road West	0.60	1.5	0.62	1.6	0.59	1.5	0.63	1.7	0.61	1.7	0.61	1.6	0.62	1.7	0.62	1.7

The results illustrate that the junction operates within capacity in all scenarios in the AM peak however in the PM peak, the Ashtown Road approach is shown to be operating over capacity in all scenarios. This illustrates that in the future, even without the development, there will be a capacity issue on this approach. The proposed development does worsen capacity however the impacts of the development are lessened over time. This is due to greater capacity on the line reducing car-based travel and therefore vehicles on the network.

### 7.3.3 Blanchardstown Road / Clonsilla Road / Diswellstown Road (Junction 10)

Based on the results of the percentage change assessment, a junction capacity assessment for the Blanchardstown Road / Clonsilla Road / Diswellstown Road junction has been carried for the 2028 Do Nothing and Do Something scenarios for both the existing and future layouts of the junction. The results of the 2028 Do Nothing scenario is set out in Table 7-3.

**Table 7-3 Blanchardstown Road / Clonsilla Road / Diswellstown Road – Existing Layout**

Approach	2028 Do Nothing			
	AM Peak		PM Peak	
	RFC	Q	RFC	Q
Blanchardstown Road South	0.55	1.3	0.43	0.8
Clonsilla Road East	0.39	0.6	0.79	3.8
Diswellstown Road	0.64	1.8	0.47	0.9
Clonsilla Road West	0.90	8.8	0.27	0.4

The results illustrate that the junction would be operating over capacity in the 2028 Do Nothing scenario. Although this junction is shown to be operating just over capacity, there are proposals for the junction to be upgraded to a signalised junction.

The traffic flows for the Do Something scenarios have been assessed using the proposed layout. The results of the capacity assessment of the proposed layout are set out in Table 7-4.

**Table 7-4 Blanchardstown Road / Clonsilla Road / Diswellstown Road – Proposed Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Diswellstown Road Entry Ahead Left	131.7: 131.7%	106.5	115.6: 115.6%	41.0	130.1: 130.1%	97.0	121.0: 121.0%	54.2
Diswellstown Road Entry Right Ahead	131.3: 131.3%	93.7	115.4:1 15.4%	37.1	129.7: 129.7%	79.6	123.8: 123.8%	49.8
Clonsilla Road E Entry Left Ahead	101.8%	24.8	117.7%	71.9	132.9%	79.2	121.8%	88.4
Clonsilla Road E Entry Right	41.5%	1.3	49.0%	4.6	40.4%	1.3	46.7%	4.4
Blanchardstown Road Entry Ahead Left	132.4%	23.8	112.7%	21.3	125.2%	32.5	121.6%	26.5
Blanchardstown Road Entry Ahead	133.0%	33.5	112.8%	22.0	124.8%	32.8	120.9%	26.8
Blanchardstown Road Entry Ahead	133.0%	33.5	112.8%	22.0	124.8%	32.8	121.6%	27.3
Blanchardstown Road Entry Right	133.0%	33.5	112.7%	21.3	125.9%	33.8	121.5%	26.5
Clonsilla Road W Entry Ahead Left	133.4%	115.4	35.2%	5.7	112.8%	57.7	36.9%	6.2
Clonsilla Road W Entry Right Ahead Right	102.0%	10.9	85.8%	6.0	131.1%	36.3	109.0%	14.9

The results illustrate that the proposed junction design would operate over capacity in both 2028 and 2043. Despite this, the junction is providing significant improved facilities for pedestrian and cyclists which impact on the capacity available for vehicles. It is considered that the improvements provided for pedestrians and cyclists outweigh the reduction in capacity at the junction for vehicles.

### 7.3.4 Diswellstown Road / School Access (Junction 11)

Based on the results of the percentage change assessment, a junction capacity assessment for the Diswellstown Road / School Access junction has been carried for the 2028 and 2043 Do Nothing and scenarios with the results set out in Table 7-5.

**Table 7-5 Diswellstown Road / School Access – Existing Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Diswellstown Road N Entry Left Ahead Right	102.4: 102.4%	48.2	106.8: 106.8%	68.8	128.1: 128.1%	166.6	116.4: 116.4%	108.6
Diswellstown Road E Entry Right Left Ahead	101.9: 97.8%	22.4	103.7: 103.7%	27.8	123.0: 124.2%	78.0	117.6: 117.6%	59.0
Diswellstown Road S Entry Ahead Right Left	75.5: 75.5%	18.3	105.2: 105.2%	20.3	91.7: 91.7%	18.1	117.0: 117.0%	42.5
Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	49.3: 49.3%	4.1	33.6: 33.6%	1.6	57.7: 57.7%	4.2	20.3: 20.3%	0.9

The results illustrate that the existing layout of the junction will operate over capacity in 2028 and 2043 without the development in place. It is proposed for the junction to be improved as part of the proposed development and therefore the Do Something flows has been assessed using the new layout. The results are set out in Table 7-6.

**Table 7-6 Diswellstown Road / School Access – Proposed Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Diswellstown Road N Entry Left	44.8%	8.5	66.6%	14.8	72.7%	17.0	69.4%	15.8
Diswellstown Road N Entry Ahead Right	87.6: 83.1%	17.9	87.1: 87.1%	20.0	105.1: 95.7%	45.4	91.2: 91.2%	21.9
Diswellstown Road E Entry Left Ahead	88.9%	11.7	31.9%	2.4	89.7%	11.6	31.0%	2.5
Diswellstown Road E Entry Right	101.6%	18.4	77.5%	6.7	104.7%	20.6	86.0%	8.8
Diswellstown Road E Entry Right	101.4%	19.3	81.4%	7.8	105.2%	22.3	89.5%	10.3
Diswellstown Road S Entry Ahead Left	104.6%	41.5	58.4%	11.0	83.4	17.6	63.7%	12.2
Diswellstown Road S Entry Right	18.8: 18.8%	1.1	40.0: 40.0%	2.4	31.7: 31.7%	1.9	46.4: 46.4%	2.9
Bóthar Bhaile an Phoirtearaigh Entry Left Right	92.0: 92.0%	7.6	16.9: 12.8%	0.8	91.2: 91.2%	7.5	21.8: 21.8%	1.1

The results illustrate that the proposed layout of the junction would operate slightly over theoretical maximum capacity in 2028 and 2043 however the operation of the junction is significantly improved over that which would occur in Do Nothing scenarios representing an improvement and a beneficial impact of the development.

It should be noted that this junction will, like Junction 10, provide significant improvements to pedestrian and cyclist facilities at the junction. This is being provided to encourage trips by alternative modes.

### 7.3.5 Diswellstown Road / Bothar Bhaile an Phoirtearaigh (Junction 14)

Based on the results of the percentage change assessment, a junction capacity assessment for the Diswellstown Road / Bothar Bhaile an Phoirtearaigh junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-7.

**Table 7-7 Diswellstown Road / Bothar Bhaile an Phoirtearaigh – Existing Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Diswellstown Road Entry Left Right	108.4%	49.4	95.6%	20.0	117.6%	76.7	102.8%	29.9
Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	108.4: 108.4%	40.8	60.1: 60.1%	2.6	47.7: 47.7%	2.9	90.5: 90.5%	7.5
Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	110.9%	30.6	96.9%	23.2	119.8%	74.4	103.4%	36.2

The results illustrate that the existing layout of the junction will operate over capacity in both 2028 and 2043 without the development in place. It is proposed for the junction to be improved as part of the proposed development and therefore the Do Something flows have been assessed using the new layout. The results are set out in Table 7-8.

**Table 7-8 Diswellstown Road / Bothar Bhaile an Phoirtearaigh – Proposed Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Diswellstown Road Entry Left Right	106.7: 106.7%	45.7	95.4: 95.4%	20.4	111.9: 111.9%	65.8	102.1: 102.1%	31.0
Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	107.3: 107.3%	32.8	80.7: 80.7%	5.9	47.7: 47.7%	1.7	100.6: 100.6%	12.8
Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	103.5%	22.3	96.5%	22.3	108.9%	48.6	98.6%	26.3

The results illustrate that, with the proposed layout, the junction will still operate over capacity in both the 2028 and 2043 scenarios. However, when compared with the existing layout, the proposed layout with the flows resulting from the proposed development will result in a slight improvement in the operation of the junction.

### 7.3.6 Clonsilla Road / Shelerin Road (Junction 15)

Based on the results of the percentage change assessment, a junction capacity assessment for the Clonsilla Road / Shelerin Road junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-9.

**Table 7-9 Clonsilla Road / Shelerin Road**

Approach	2028 Do Nothing				2028 Do Something				2043 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Shelerin Road Entry Left Right	67.5 %	3.9	12.0 %	0.5	82.4 %	8.4	9.4 %	0.4	81.6 %	5.9	13.2 %	0.6	99.7%	17.2	14.5 %	0.6
Clonsilla Road E Entry Right Ahead	28.5 %	4.3	24.4 %	3.6	32.8 %	5.1	27.0 %	4.0	20.8 %	3.0	33.0 %	5.1	34.5%	5.5	31.1 %	4.8
Clonsilla Road W Entry Left Ahead	69.5 %	14.0	29.1 %	4.3	86.1 %	18.6	33.8 %	5.3	85.5 %	20.2	32.8 %	4.9	102.2 %	38.4	39.2 %	6.2

The results illustrate that the junction would operate with significant spare capacity in both 2028 scenarios, as well as the 2043 Do Nothing scenario. The junction would operate over capacity in the 2043 scenario in the AM peak period.

### 7.3.7 Clonsilla Road / Clonsilla Link Road (Junction 16)

Based on the results of the percentage change assessment, a junction capacity assessment for the Clonsilla Road / Clonsilla Link Road junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-10.

**Table 7-10 Clonsilla Road / Clonsilla Link Road**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
Clonsilla Link Road Entry Left Right	0.0: 7.1%	0.3	0.0: 0.0%	0.0	0.0: 2.6%	0.1	0.0: 0.0%	0.0
Clonsilla Road Entry Right Ahead	25.1%	3.7	34.2%	4.3	38.4%	6.1	30.0%	4.4

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
R121 Larch Grove Entry Left Ahead	68.4%	13.1	31.4%	4.5	72.0%	14.3	33.8%	5.1

The results illustrate that junction operates within capacity in all scenarios assessed.

### 7.3.8 R121 Larch Grove / R121 Clonsilla Road (Junction 16)

Based on the results of the percentage change assessment, a junction capacity assessment for the R121 Larch Grove / R121 Clonsilla Road junction has been carried for the 2028 and 2043 Do Nothing and Do Something scenarios with the results set out in Table 7-11.

**Table 7-11 R121 Larch Grove / R121 Clonsilla Road – Existing Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
R121 Larch Grove Entry Right Left Ahead	79.1%	5.6	48.8%	2.3	80.1%	5.7	68.8%	4.4
Clonsilla Road Entry Ahead Right Left	12.1%	0.5	52.8%	2.5	49.8%	2.3	54.9%	2.6
Towards Ongar Entry Left Ahead Right	74.5: 74.5%	8.7	49.3: 49.3%	2.7	85.9: 85.9%	12.0	56.7: 56.7%	2.8

The results illustrate that the junction will operate within capacity in both the 2028 and 2043 Do Nothing scenarios.

It is proposed for the junction to be improved as part of the proposed development and therefore the Do Something flows have been assessed using the new layout. The results are set out in Table 7-12.

**Table 7-12 R121 Larch Grove / R121 Clonsilla Road – Proposed Layout**

Approach	2028 Do Nothing				2043 Do Something			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	Q	DoS	Q	DoS	Q	DoS	Q
R121 Larch Grove Entry Right Ahead	39.6%	4.1	19.9%	1.7	41.6%	4.3	23.1%	2.0
Towards Ongar Entry Left Ahead	59.6%	7.3	23.8%	2.3	67.6%	9.0	30.1%	3.0

The results illustrate that the traffic associated with the proposed development can be accommodated within the layout identified for the junction with significant spare capacity in the peaks in both scenarios.

### 7.3.9 Unnamed Road (Barberstown) (Junction 20)

Although the junction in Barberstown is shown to have a greater than 10% increase in traffic once the proposed development is operational, no assessment has been undertaken due to the low levels of traffic and the increase in trips being minimal.

## 7.4 Conclusion

The results illustrate that where junctions are illustrated to operate over capacity, improvements are proposed which provide a betterment over the existing arrangement. It is therefore considered that the improvements

proposed are sufficient to cater for the development and over time traffic are anticipated to decrease further from that assessed due to the proposed development and other wider transport infrastructure improvements coming forward in the area.

## **7.5 Public Transport User Impacts**

The introduction of the proposed project will add capacity to the rail network to allow for additional capacity and increased frequency therefore increasing passenger numbers. The increase in passenger numbers on the rail network would result in a reduction in vehicles on the road network therefore improving operation of the junctions and links located within the study area.

## 8. MITIGATION

### 8.1 Introduction

In order to reduce the impact of the cumulative construction traffic this chapter will set out the mitigation measures proposed.

This chapter of the report presents the measures proposed to be implemented at the each of the compounds to reduce the impact of construction.

### 8.2 Construction Traffic Management Plan

As with any construction project, the contractor will be required to a prepare a comprehensive traffic management plan for the construction phase. The purpose of such a plan is to outline measures to manage the expected construction traffic activity during the construction period.

It will be the project contractor's responsibility to prepare a Traffic Management Plan for the approval of local authorities.

There are a number of potential mitigation measures which could be implemented during the construction period in order to mitigate any detrimental impact of construction vehicles on the surrounding highway network. Potential mitigation measures could include the following:

- Use of sufficient clear signage to ensure that construction vehicles use only designated routes.
- Routing of HGVs on main roads away from sensitive areas such as schools, residential areas, and areas sensitive in terms of air quality.
- Time slots for bulk deliveries to ensure that convoys of vehicles do not arrive simultaneously.
- Provision of holding spaces to avoid congestion on the local road network by waiting vehicles.
- Co-ordination of abnormal large loads.
- Scheduling of deliveries / collections away from peak hours, either before the AM peak or during the inter-peak daytime period.
- Encouraging construction hours to avoid the AM and PM peak traffic period for construction workers.
- On-site recycling of materials to reduce export and import vehicle movements, including stockpiling topsoil for landscape works, or crushing existing hard standing material for engineering fill.
- Keeping the access routes clear of mud using a road sweeper.
- Implementation of wheel washing facilities to prevent debris being deposited on the highway network.
- Implementation of appropriate traffic management to ensure that construction does not give rise to undue disruption.
- Use of appropriate construction and delivery vehicles to minimise environmental impacts from transporting construction material, for example, the use of dust covers on trucks carrying dust producing material.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicles speeds within the site.
- A road sweeper could be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leads away from the construction works.
- All vehicles would be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol, or diesel. Spill kits could be available on site. All scheduled maintenance would be carried out off-site and not carried out on the public highway.
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing footways. Alternative pedestrian facilities will be provided in these instances, supported by

physical barriers to segregate traffic and pedestrian movements and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.

The mitigation measures will therefore ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the projects. Furthermore, in the interests of the construction programme, it is recommended, to ensure that deliveries are not unduly hampered by traffic congestion, that a continuous review of routing, timings, and access arrangements is undertaken as construction progresses to ensure smooth operation.

### 8.3 Construction Routing

The impact of the construction phase will need to be monitored and managed across the lifecycle of construction to ensure that all modes are impacted upon as little as possible. To assist in this a number of measures can be implemented including routing, hours of work, compound locations and traffic management, such as diversions and traffic signals to manage the highway network. In addition to this, a Construction Traffic Management Plan and a Construction Worker Travel Plan can be implemented by the contractor(s) to ensure that staff and the works have as little an impact on the surrounding area as possible.

### 8.4 Construction and Operational Parking

All contractors' vehicles would park within their respective designated parking areas and be managed through the Mobility Management Plan as set out in the following section. This would ensure that there is no contractor parking on the public roads or within car parks designated for use by those visiting or working at the airport.

To ensure that parking at the stations remains available for use of rail line users and does not result in overspill into the surrounding area, Iarnród Éireann will continue to monitor the level of parking at all station car parks, as part of its annual car park surveys, such that should any capacity issues or trends that arise can be identified early. If and when additional car parking capacity is required, Iarnród Éireann, working in collaboration with the NTA's Park and Ride Office, will implement a separate and site-specific car park project. Car parking spaces will be lost at M3 Parkway, Coolmine and Dunboyne for a short period during the construction programme, as construction compounds are proposed in these facilities.

The contractor will minimise the construction compound footprint throughout the construction programme and return the maximum number of car spaces back to public use.

As users of the rail line will increase over time, it is proposed that the monitor and manage approach of the car parks will continue. The NTA has identified that a new Park and Ride facility be provided at Collinstown or at the Maynooth Depot to capture those users of the rail line travelling from wider locations. It is anticipated that those living close to the rail line will be encouraged to utilise more sustainable modes and additional parking at stations or in new car parks will only be provided as a last resort should all other options have been explored.

### 8.5 Mobility Management Plan

To manage trips associated with construction staff, a Mobility Management Plan will be prepared. The preparation and implementation of a Mobility Management Plan is to achieve the following objectives:

- To discourage private car use as a means of travel to and from the construction compounds.
- To increase and facilitate the number of people choosing to walk, cycle or travel by public transport the construction compounds.

- To work with the Local Authorities, the NTA and Iarnród Éireann to support and encourage staff take up.
- To develop an integrated and unified public transport, private vehicle, business fleet management and suppliers of commercial services to the construction compounds.
- To liaise and co-operate with adjacent construction projects in relation to a coordinated approach to Mobility Management.

To achieve the above objectives measures have been proposed for the specific modes of transport. These are based on existing infrastructure and public transport systems. These objectives are preliminary and will be further developed in the light of ongoing monitoring as the proposed development is occupied and information becomes available on future travel behaviour of residents.

It is recommended that an Action Plan Coordinator is appointed, as someone who will take ownership of implementing the measures.

Campaigns and promotions will be run throughout the construction period to maintain staff awareness of modes of travel other than the car and the benefits accrued to both the individual and the environment.

The contractor and Action Plan Co-ordinator will be encouraged to continually monitor the Mobility Management Plan initiatives in order to maximise the success.

Table 8-1 presents a list of recommended measures and actions.

**Table 8-1 Recommended Mobility Management Measures and Actions**

Mode	Initiatives	Responsibility / Ownership	Timescale
Walking	Provision of details on how to access the site on foot. Details would include safe walking routes and location of the nearest bus / rail station	Action Plan Co-ordinator	At start of construction and ongoing
	Promote walking events to encourage mode for journeys		
Cycling	Establish a Bicycle User Group for staff to cycle together	Action Plan Co-ordinator	At start of construction and ongoing
	Display / provide maps of local cycle networks on notice boards in cycle parking areas		
Public Transport	Display of public transport maps and timetables in prominent locations on site / available online. Information should be kept up to date.	Action Plan Co-ordinator	At start of construction and ongoing
	Publicise real-time passenger information apps and websites where relevant.		
	Publicise door-to-door multi-modal journey planning websites		
Car Sharing	Encourage staff to use other modes of travel than the private car.	Action Plan Co-ordinator	At start of construction and ongoing
	Where it is necessary for car use to travel to and from work, staff should be made aware of other people who are within close proximity of their route to work.		
Parking	Monitor parking use at the compounds and any locations where compounds are utilising car parks to ensure that there is no overspill into local areas impacting on traffic flows or local residents.	Action Plan Co-ordinator	At start of construction and ongoing
	Ensure that where parking is provided at compounds staff are aware of who can use it and the appropriate way in which vehicles should be parked for safety and management purposes.		
Other Measures	Inform staff of the health and fitness benefits of cycling and walking through posters and notice boards.	Action Plan Co-ordinator	At start of construction and ongoing
	Include travel information in staff induction packs.		
	Distribute travel maps, leaflets, and timetables, ensuring consistent accessible formats, health information for walking routes, signposting to website / apps.		

## 9. SUMMARY AND CONCLUSION

### 9.1 Summary

This Traffic Impact Assessment considers the transport impacts of the proposed electrification of the DART+ West line which runs between Connolly Station in Dublin City Centre and M3 Parkway and Maynooth. The electrification of the line will allow for a greater frequency of services as well as providing additional capacity to increase the number of users and improving facilities for pedestrians and cyclists at a number of stations along the line. Furthermore, six of the existing level crossings will be closed to vehicular traffic with access maintained only where necessary for sustainable modes of transport.

The DART+ West forms part of a wider network of lines being upgraded by Iarnród Éireann as well as other improvements to sustainable transport options across the Greater Dublin Area.

The need for the proposed project has arisen through the requirement to modernise existing rail lines through switching to more renewables form of energy and thus reducing carbon levels generated as well as providing additional capacity to encourage a greater number of users who would otherwise use their car to drive to their destination.

Reference has been made to relevant National, Regional and Local planning policies especially those specific to transport and the development site. It is considered that the proposed development complies with a range of policies especially those relating to accessibility, location, and land use and decarbonising transport.

A review of the existing walking, cycling and public transport facilities was carried out. This highlights that at present there are a number of pedestrian and cyclist routes which provide access to stations or follow the line ensuring connections to nearby residential areas and therefore encourage multi-modal sustainable trips for journeys. Facilities for cyclists are provided along the line and to the stations, again encouraging multi-modal sustainable trips for journeys.

There are a number of bus stops located at the stations along the line or within the recommended walking distance. Similarly, to walking and cycling, this allows for multi-modal sustainable trips to occur.

The upgrading of the line and the facilities which are provided as part of it for pedestrians, cyclists and public transport users will have a role in relieving congestion and improving connectivity between residential areas along the length of the railway line.

Pedestrian and cyclist facilities will be provided or re-provided in an improved form at a number of locations along the line to improve access to the stations and encourage trips by sustainable modes. Further to this, six existing level crossings will be closed with either traffic free alternatives crossings or crossings for all vehicles being provided such that they are not impacted upon by the trains.

The traffic flows utilised in the assessment of the construction and operational phases, as discussed in the following paragraphs, include traffic associated with committed developments and other infrastructure which will come forward during the years assessed.

Construction works required for the upgrading of the line and provision of the associated facilities will cover a 50-month period. The construction works taking place will, generally be for short periods of time and where possible work is to take place at night or on weekends therefore limiting the impact on all road users during peak periods. Although trips relating to construction would be managed such that they do not occur in the road network peak hours, an assessment has been undertaken to identify the impact if they were this is considered to be robust.

The greatest impact of construction will occur in the area around the new Spencer Dock station, at Ashtown and in the area around the new Depot at Maynooth. In the area around the new Spencer Dock station, traffic will be required to utilise alternative routes due to the closure of the Sherriff Street Bridge for a period of 18

months. Traffic analysis indicates that generally traffic will redistribute and use alternative routes thereby reducing vehicle levels on the roads within this area and thus have a beneficial impact on the network.

In terms of at Maynooth and Ashtown, the increases in construction traffic are considered to have an adverse effect on the road network. This is due to be the result of a large number of earthworks required to be undertaken early on in its programme at the Depot in Maynooth. This will be for a short period of time after which the levels of traffic will reduce significantly.

At Ashtown, a large amount of road building is required to provide an alternative route following the closure of the level crossing as well the provision of a new bridge for pedestrians and cyclists. The junctions in the vicinity of this site would also be used by other areas along the line in reaching the wider road network. These works are unlikely to occur at the same time but have been assessed as such, thus resulting in a robust level of trips on the network.

Construction compounds will be required, and these will at some locations utilise existing station parking such as at Dunboyne and M3 Parkway. The results of surveys undertaken to identify the use of these car parks suggests that both are underutilised with spare spaces available such that some can be utilised by compounds.

As part of the construction phase, mitigation will be implemented to reduce the impact of this phase as much as possible on users of the road and sustainable transport networks. Where possible work will be undertaken at night and on weekend limiting the impact on rail users as well as the road network. Construction vehicles and those of staff will be subject to a Construction Traffic Management Plan which will set out a number of restrictions which will be implemented by the contractor. This will include, where possible, ensuring that construction vehicles do not travel on the road network during the peak hours therefore reducing the impact of the development on those travelling at peak times. Staff will also be subject to these restrictions. Furthermore, Iarnród Éireann will, alongside the operators of the station car parks, undertake a monitor, and manage approach such that where compounds are impacting upon capacity, a review will be undertaken to establish if these can be amended such to 'give back' spaces.

A highway impact assessment was carried out and the results are summarised in the following paragraphs. The assessment takes into consideration the impact of the proposed project on junctions and links within the study area. Future year traffic flows have been taken from the Local Area Models and the ERM models prepared for use in other projects by AECOM. The assessment undertaken takes account of the changes to the level crossings including the reassignment of traffic and the proposed junction improvements.

A percentage change assessment was carried out using the traffic flows identified for each of the Do Nothing (without the proposed project) and Do Something (with the proposed) scenarios. This identified that the proposed project would result in a neutral or positive change in vehicular trips travelling through 11 out of the 20 junctions within the study area across all scenarios tested. Therefore, the performance of the junctions is expected to not change or improve over what would occur in the Do-Nothing scenarios.

Capacity assessments have been carried out at nine junctions within the study area. The results of the capacity assessments show that generally junctions will continue to operate within maximum theoretical capacity however there are two junctions which are shown to operate over capacity. These are the Blanchardstown Road / Clonsilla Road / Diswellstown Road junction and the Diswellstown Road / School Access junction. Although the junctions are shown in the future year Do Something scenarios as operating over capacity, the results show an improvement over the Do-Nothing scenario based on the existing layout. Furthermore, the proposed design of these junctions will significantly improve the facilities at the junctions for pedestrians and cyclists. The improvements proposed for, especially for cyclists, are considered to outweigh the issues identified in terms of capacity.

The likely impacts on public transport users, pedestrians and cyclists are likely to be small with improved infrastructure provided for active modes.

## 9.2 Conclusion

The provision of the proposed project is considered to have an overall significant benefit on the operation of the transport network in the study area, with a neutral or beneficial impact on 80% of junctions assessed.

It is considered that proposed project will assist in reducing traffic and congestion on the road network in the vicinity of the line and where increases are identified, improvements are proposed to junctions and facilities for encouraging trips by sustainable mode. The provision of the improved service would reduce the number of trips which need to be made to the more urban areas capturing those trips from further afield. Furthermore, the improved pedestrian and cyclist facilities such as the bridges and traffic free route should encourage greater numbers of trips to be made by these modes to the stations further reducing traffic on the network.

## APPENDIX A. Ashtown Model Development Report

## Table of Contents

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>3</b>
1.1	Overview.....	3
1.2	DART+ West Project .....	3
1.3	Transport Modelling Process Overview.....	5
1.3.1	Strategic Modelling.....	6
1.3.2	Local Area Modelling.....	6
<b>2.</b>	<b>DATA COLLECTION.....</b>	<b>9</b>
2.1	Introduction.....	9
2.2	National Transport Authority – East Regional Model.....	9
2.3	2019 Traffic Surveys.....	10
2.4	Automatic Traffic Counts .....	14
2.5	Junction Turning Counts.....	16
2.6	Origin-Destination Surveys.....	17
2.6.1	ANPR Survey Data Example.....	18
<b>2.7</b>	<b>Journey Time Surveys .....</b>	<b>19</b>
<b>3.</b>	<b>BASE YEAR MODEL DEVELOPMENT .....</b>	<b>20</b>
3.1	Determination of Peak Hours .....	20
3.2	Model Study Area .....	20
3.3	Network Development .....	21
3.3.1	Capacity Restraint Mechanism- Junction Modelling and Speed/Flow Relationships .....	24
3.4	Matrix Development.....	24
3.5	Assignment Model .....	25
3.6	Assignment Algorithm.....	25
3.7	Modelling Software .....	25
<b>4.</b>	<b>MODEL CALIBRATION .....</b>	<b>26</b>
4.1	Introduction.....	26
4.2	Calibration .....	26
4.2.1	Matrix Estimation.....	26
4.2.2	Calibration Criteria and Link Flow Calibration Results.....	26
4.2.3	Trip Length Distribution Check.....	27
4.3	Model Validation .....	29
4.3.1	Validation of Link Flows.....	29
4.3.2	Comparison of Traffic Patterns (O-D Surveys).....	29
4.3.3	Journey Time (O-D Surveys).....	30
4.4	Model Convergence .....	31
4.5	Model Statistics .....	31
<b>5.</b>	<b>SUMMARY AND NEXT STEPS.....</b>	<b>32</b>
5.1	Summary .....	32
5.2	Next Steps .....	32

### APPENDIX A 2019 Traffic Surveys

**APPENDIX B ALAM Calibration**

**APPENDIX C ALAM Validation**

## APPENDIX A. ASHTOWN MODEL DEVELOPMENT REPORT

### 1. INTRODUCTION

#### 1.1 Overview

This report describes the development of a Local Area Model for the DART + West project. The model will be used to inform the impact of proposed level crossing closures on highway network in the Ashtown area. Overall there are two Local Area Models developed, one for Ashtown and one for Blanchardstown. Details of the Blanchardstown model development is described in the '*Blanchardstown Local Area Model Development Report*'.

#### 1.2 DART+ West Project

DART+ West will introduce electrified, high-capacity trains at increased frequency for all stations between Maynooth / M3 Parkway and Connolly / Spencer Dock stations on the Maynooth and M3 Parkway commuter rail lines in Dublin. The length of this project is approximately 40 km.

The scope of DART+ West includes the following infrastructural works:

- Electrification and re-signalling of the Maynooth and M3 Parkway lines between Dublin city centre and Maynooth.
- Capacity enhancements at Connolly Station, including modifications to platforms, junctions and the station to increase train capacity.
- Relocation of the Docklands station to Spencer Dock, to better serve the Docklands and interface with Red Line Luas.
- Closure of level crossings on the Maynooth line and provision of replacement crossings, as required.
- Provision of a new train depot west of Maynooth Station for stabling and maintenance of additional trains.
- All civil, bridge and ancillary works as necessary to accommodate electrification and other aspects of the project.
- All required temporary works.

Figure 1-1 shows the DART + West project extent.

Delivery of the proposed project will support the existing communities along the railway and support future sustainable development in the area. The frequency and quality of service that will be provided will provide a viable transport alternative to communities along the route.

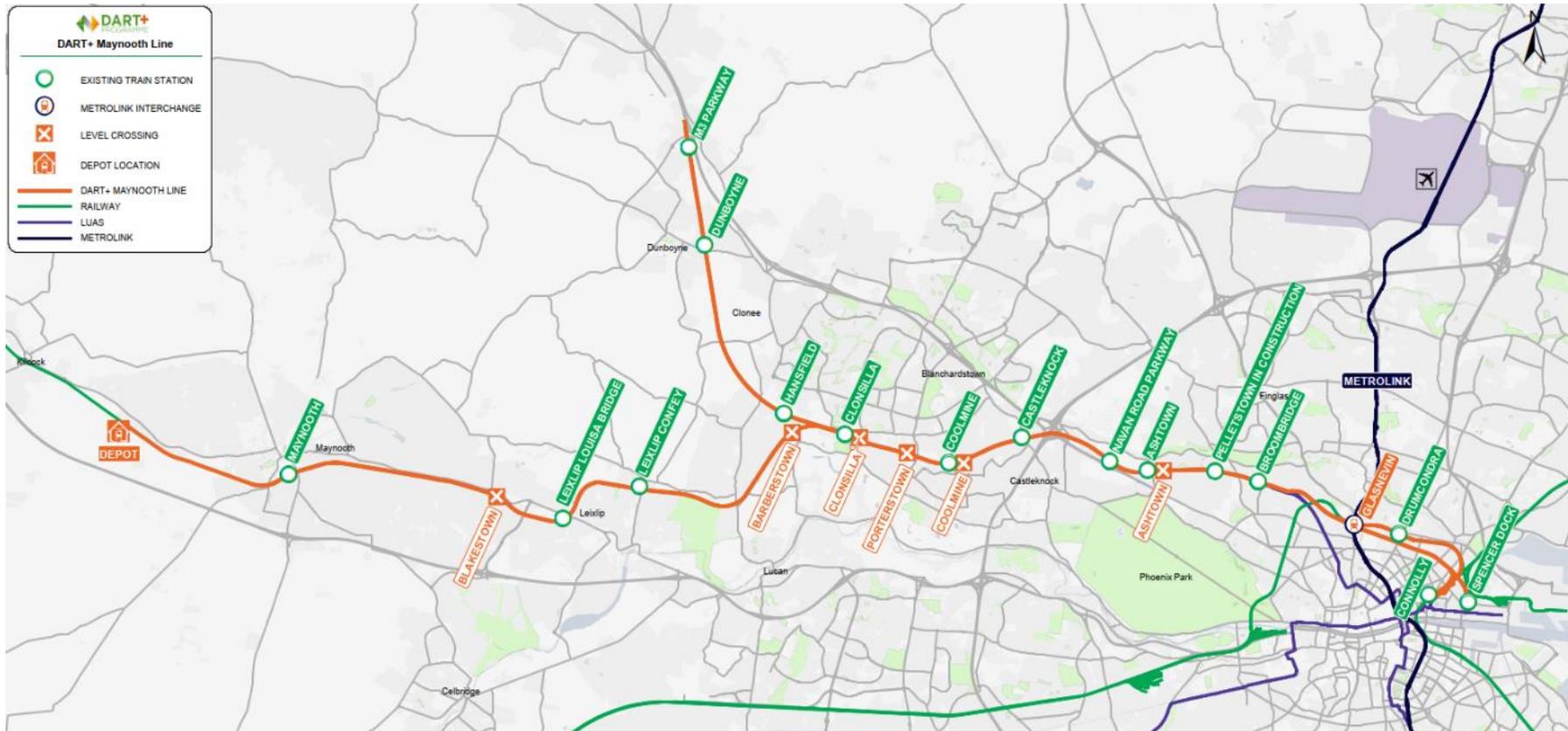
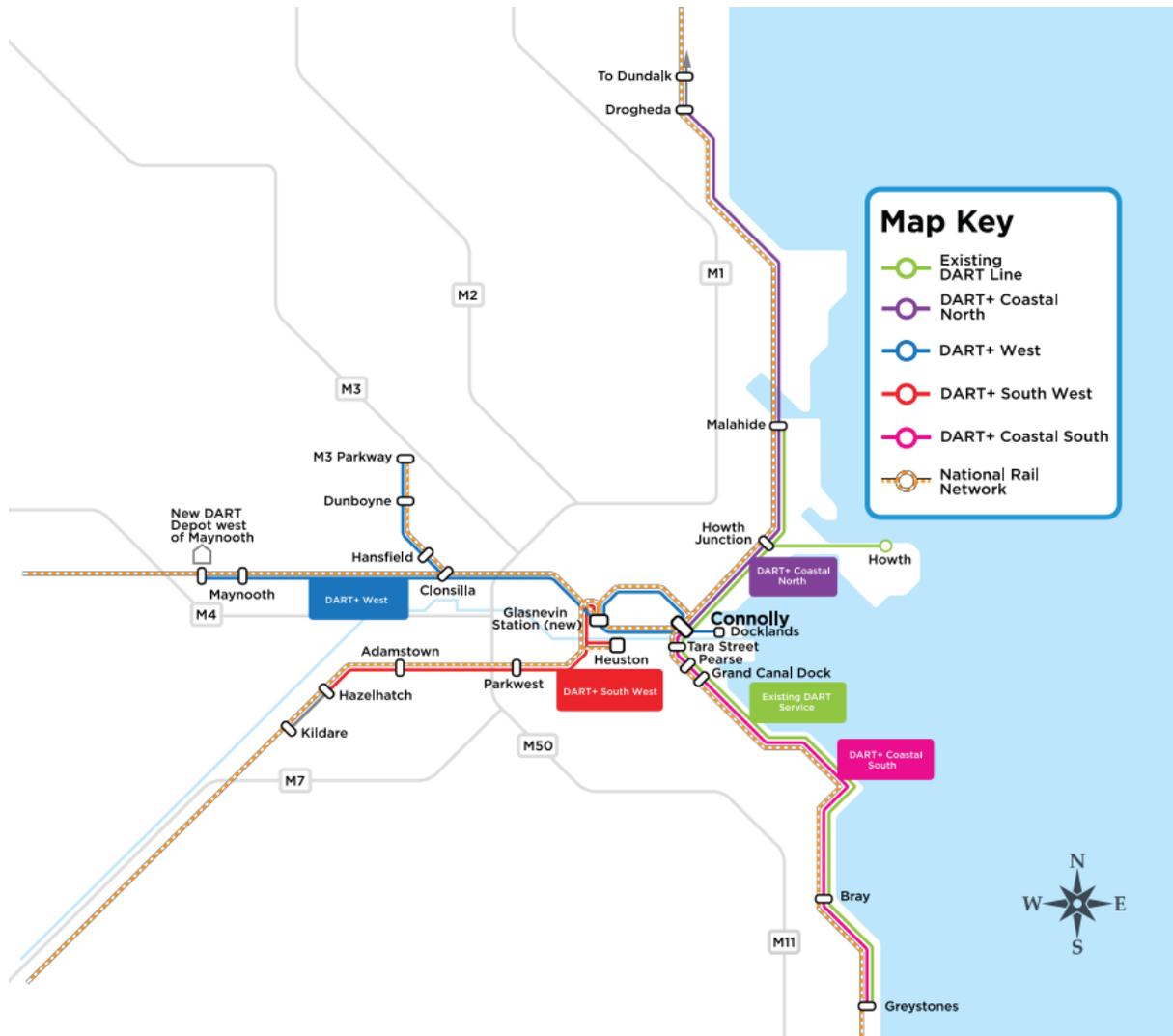


Figure 1-1 DART+ West Project Extent

DART+ is an overall programme of works comprised of five separate projects. DART+ will modernise and improve the existing rail network in the Dublin area. It will provide a sustainable, electrified, fast, reliable and user-friendly rail system, increasing train frequencies and customer carrying capacity. DART + Programme scope for years 2018-2027 is included in Figure 1-2.



**Figure 1-2 DART+ Programme Scope 2018-2027**

DART + Programme comprises the following improvement projects across the four main rail corridors:

- DART+ West Maynooth and M3 Parkway to the City Centre.
- DART + South West – Hazelhatch & Celbridge to the City Centre.
- DART+ Coastal North – Drogheda to the City Centre.
- DART+ Coastal South – Greystones to the City Centre.
- DART+ Fleet – purchase of new train fleet to increase train services.

### 1.3 Transport Modelling Process Overview

This report describes the development of Ashtown Local Area Model (ALAM) and this chapter describes the overall modelling approach adopted in the DART + West project.

### 1.3.1 Strategic Modelling

The design team developed a railway operation model in RailSys for DART + Programme for the base year reflecting the current railway infrastructure and train service specification and for the Design year incorporating enhanced infrastructure and an associated Train Service Specification.

National Transport Authority's Regional Modelling System (RMS) has also been used by the team to assess wider impacts of all individual improvement projects and entire DART + Programme. RMS comprises the National Demand Forecasting Model, five large scale, complex multi-modal regional transport models and a suite of appraisal modules covering the entire national transport network of Ireland. East regional Transport Model (ERM) was used for this project as it concentrates on Dublin and covers the entire Greater Dublin Area (GDA).

Outputs from the RailSys modelling were used as inputs into the ERM in the form of Train Service Specifications (TSS). The RailSys modelling and ERM model runs were undertaken centrally for the entire DART+ Programme to ensure consistency between the individual DART+ improvements projects. The outputs of the ERM were used as inputs into the ALAM.

Figure 1-3 shows the process of developing the traffic models for the DART + West project and the interactions LAM with the NTA ERM and RailSys models.

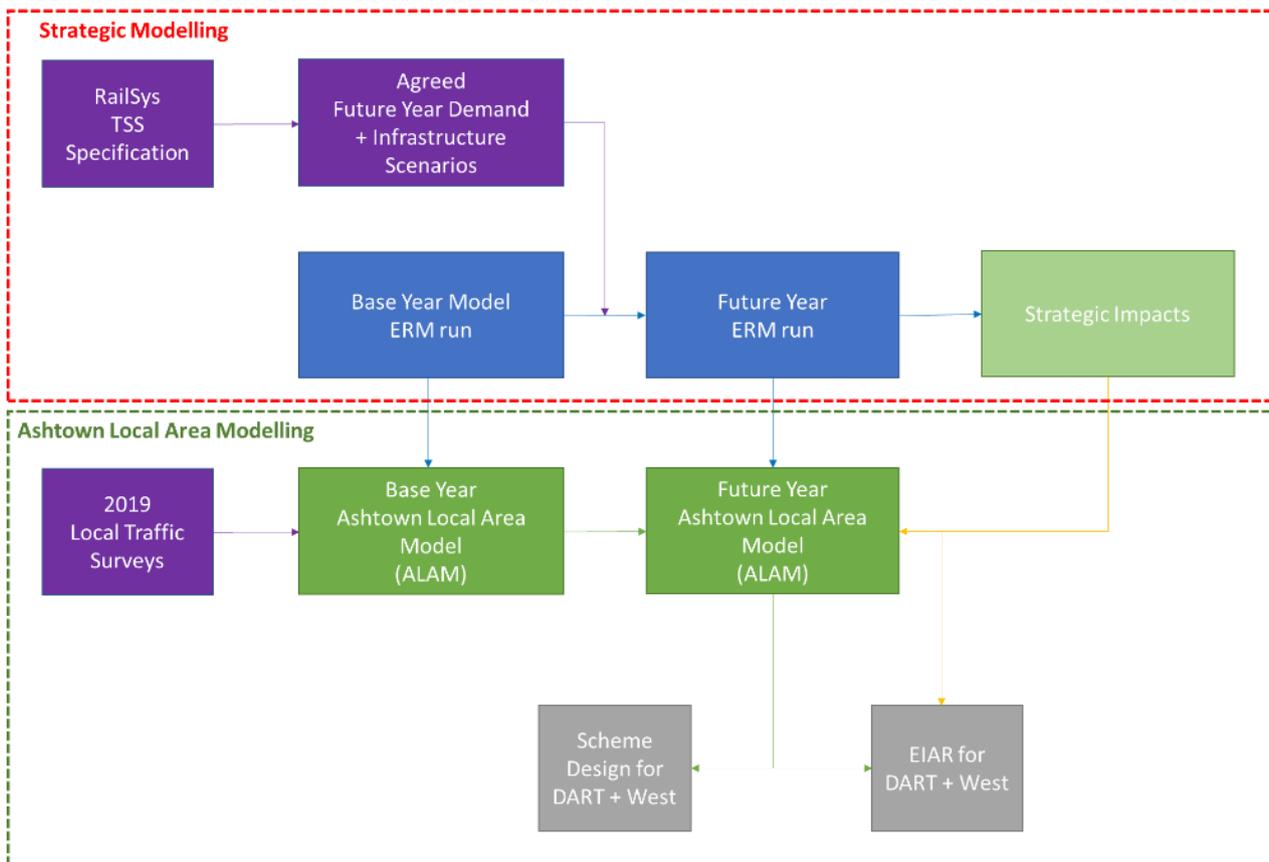


Figure 1-3 Overview of the DART+ Modelling Process

### 1.3.2 Local Area Modelling

The basis for the ALAM was the 2016 NTA East Regional Model (ERM). The ALAM was cordoned out of the ERM, refined and calibrated/validated using the 2019 traffic survey data which is presented in Section 2.3.

Future year traffic growth projections for the ALAM were based on the NTA 2028 and 2043 ERM runs with and without the proposed scheme. The base and future ERM model runs were used to develop growth factors,

which were then applied to the 2019 ALAM to generate future demand. The resulting future year ALAM was then used to inform the impact of the DART+ West in the Ashtown area.

Figure 1-4 details the proposed level crossing closure locations and the study area for the ALAM. This report describes the development of the Ashtown Local Area Model.

The extent of the local area model was determined by the number of local road network interventions associated with the proposed development and traffic flows using the level crossings.

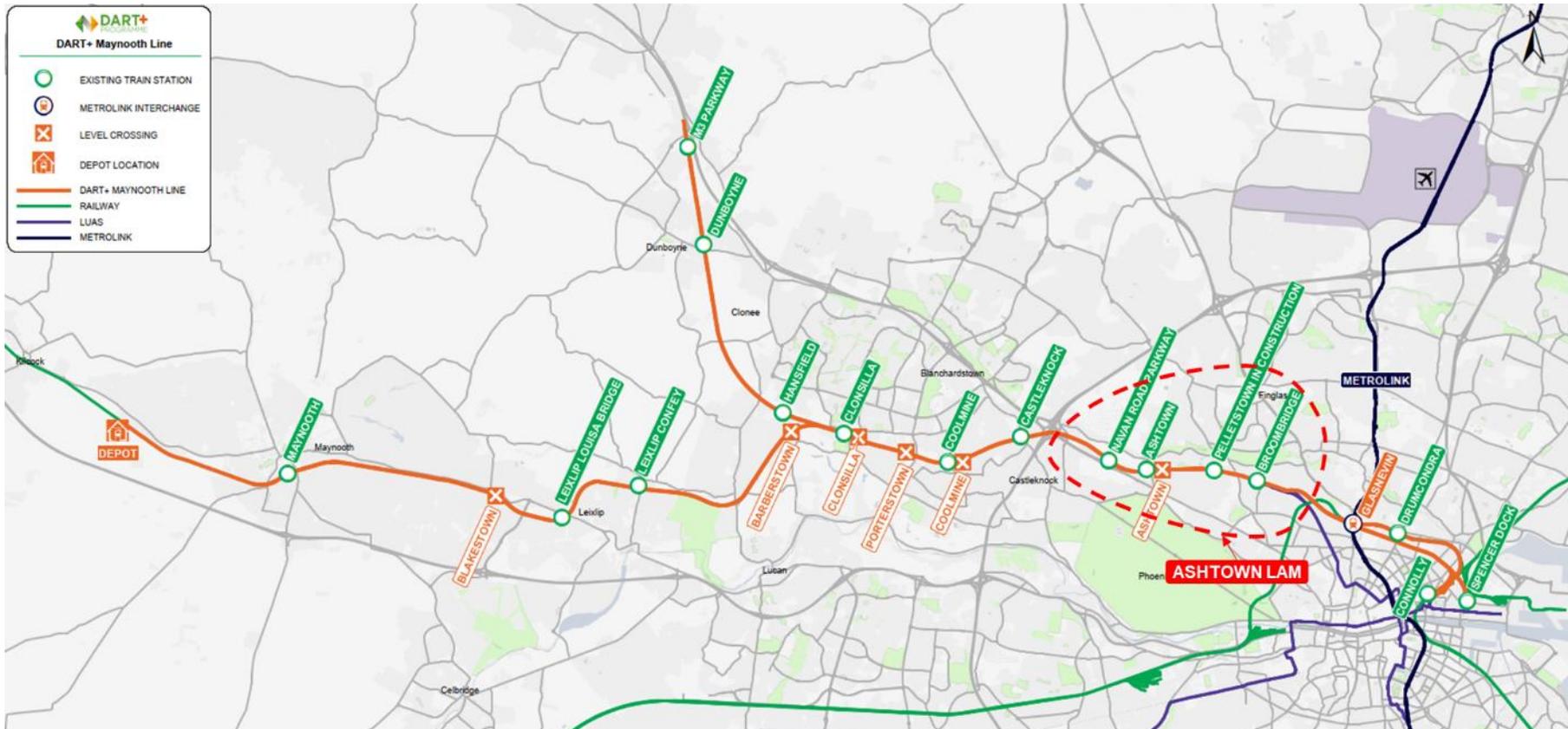


Figure 1-4 Ashtown LAM Study Area

## 2. DATA COLLECTION

### 2.1 Introduction

In order to develop a Traffic Model, a significant level of traffic data is required to ensure that the model can replicate existing traffic patterns and volumes. This section of the model development report describes the collection and collation of traffic data for the construction of the Base Year (2019) Ashtown Local Area Model (ALAM). For the purposes of this report, the model is referred to as the ALAM.

The existing modelling tools and data used to inform the development of the Base Year 2019 ALAM model is presented in the following sections.

### 2.2 National Transport Authority – East Regional Model

The National Transport Authority's<sup>1</sup> (NTA) East Regional Model (ERM) is a strategic multi-modal variable demand model used by NTA to assess the impact of infrastructure or policy changes at regional and local levels.

The ERM sits within the overall NTA Regional Modelling System (RMS) which comprises of the following three main components:

- The National Demand Forecasting Model (NDFM).
- Five Regional Models, including the ERM.
- A suite of Appraisal Modules.

The Regional Modelling System is the NTA's strategic transport planning tool. Based around a classic transport modelling four-stage model framework, the system forecasts future year transport demand based upon population and employment scenarios, assigns it to networks and services. The RMS and its associated appraisal tools provide strong mathematical analysis to support decision makers and planners and is used in the appraisal of major projects.

The East Regional Model (ERM) is a strategic (macroscopic) traffic model developed using the transportation modelling software SATURN<sup>2</sup> and forms the road traffic element of the Dublin, Wicklow, Kildare, Meath, Louth, Wexford, Carlow, Laois, Offaly, Westmeath, Longford, Cavan and Monaghan Counties.

Two forecast years (2028 and 2043) and two scenarios: Do Minimum and Do Something NTA ERM were made available to inform the DART+ West project.

The Highway element of the ERM provides demand data for nine user classes (Taxi, Car Employer's Business, Car Commute, Car Education, Car Other, Light Goods Vehicles (LGV), Other Good Vehicle 1 (OGV1), Other Goods Vehicle 2 (OGV2) Permit Holder and OGV2 Non Permit Holder), which for the purpose of the ALAM were aggregated to two user classes: Light (Car & LGV) and Heavy (OGV1, OGV2) vehicles for the following time periods:

- AM Peak Hour (between 08:00 – 09:00).
- PM Peak Hour (between 17:00 – 18:00).

The model provides both the highway network and demand matrices for the Local Area Models (LAM). The ERM is a strategic traffic model assessing impact on both highway and public transport networks. The Ashtown

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<sup>1</sup> NTA East Regional Model: <https://www.nationaltransport.ie/planning-and-investment/transport-modelling/regional-modelling-system/regional-multi-modal-models/east-regional-model/>

<sup>2</sup> SATURN - Simulation and Assignment of Traffic to Urban Road Networks

LAM uses only the Highway Network, however future growth takes the impact of public transport proposals in the area into account in terms of their impact on mode shares and future travel patterns.

### 2.3 2019 Traffic Surveys

The traffic survey used for this project was collected as part of the Maynooth Line Transport Study undertaken by National Transport Authority (NTA) and Iarnród Éireann (IE) in 2019. The Study looked at the implications of permanently closing six level crossings along the Maynooth rail line. During 2020 and 2021 travel demand was impacted by the COVID-19 pandemic. In the future, while there may be some changes in travel behaviour driven by COVID-19, for example an increase in working from home, which could reduce overall travel demand and potentially shift the trends of peak demand, it is assumed that in general travel demand is likely to return to per-2020 levels. As such it is considered appropriate that traffic and transport data from 2019 is used for baseline assessments.

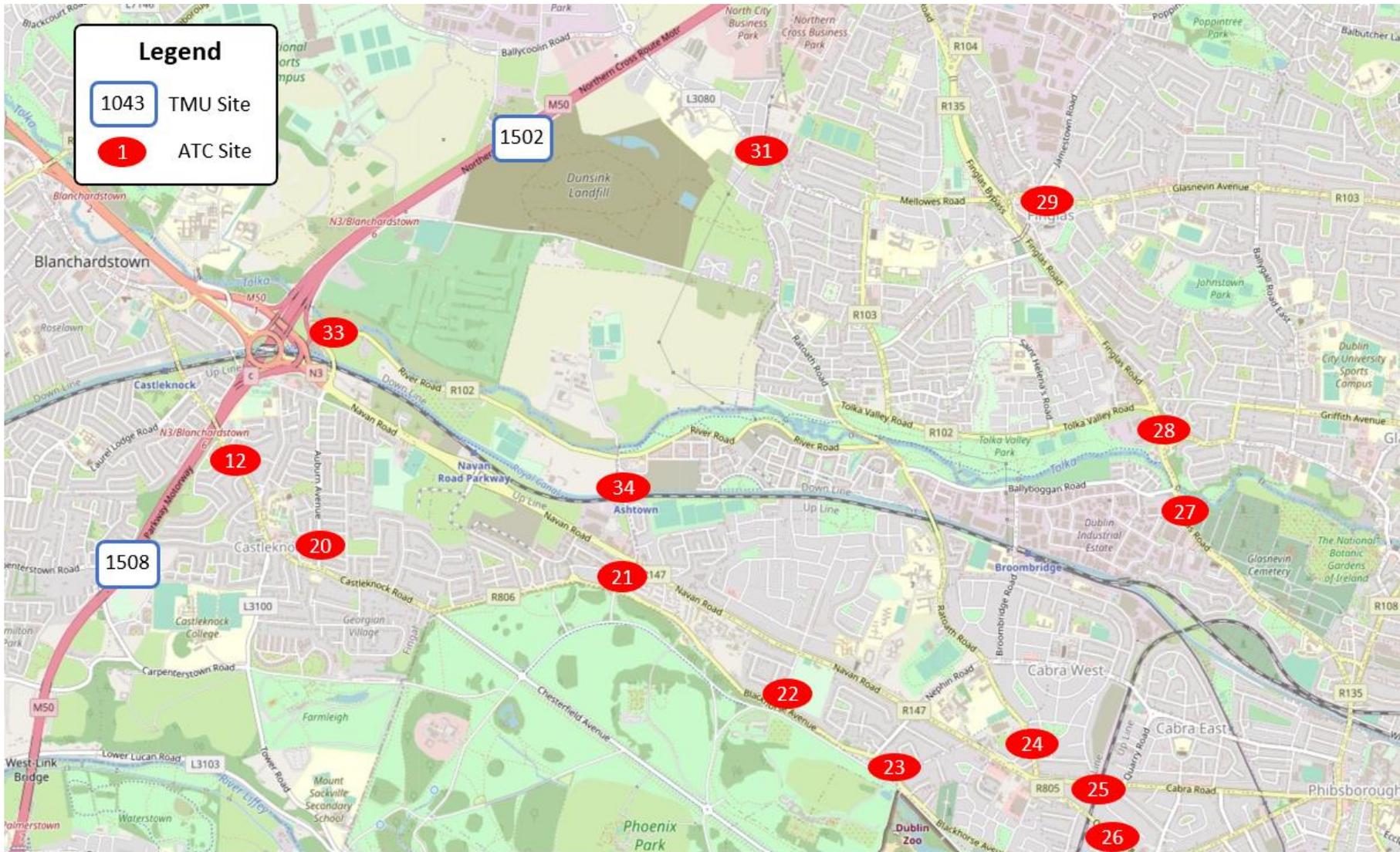
The traffic surveys were collected in January/February 2019 and were used in the development of the Base Year ALAM, they are outlined in Table 2-1. The location of the traffic surveys is illustrated in Figure 2-1 to Figure 2-3. Full details of the traffic survey data are provided in Appendix A.

**Table 2-1 Ashtown 2019 Traffic Survey Data**

Survey Type	Description
Origin – Destination (OD)	4 Origin-Destination (O-D) Automatic Number Plate Recognition (ANPR) camera surveys were carried out on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00). An Automatic Traffic Count (ATC) survey was also undertaken at each ANPR site on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).
Traffic Count	Automatic Traffic Count (ATC) surveys were carried out at 14 locations over a 3-week period from Monday 28 <sup>th</sup> Jan and Sunday 14 <sup>th</sup> February 2019 inclusive.
	Junction Turning Count (JTC) surveys at 13 locations were carried out on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).
	Traffic data from 4 TII Traffic Monitoring Units (TII 1033, 1034, 1044, 20047) was obtained to represent the same period as the ATC surveys.
Journey Time	Journey time information was extracted from the ANPR surveys described above on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).
Pedestrian and Cyclist Counts	Pedestrian and cyclist counts were undertaken at the Ashtown level crossing on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).



**Figure 2-1 O-D ANPR Survey Locations**



**Figure 2-2 TII TMU Sites and ATC Survey Locations**



## 2.4 Automatic Traffic Counts

An ATC captures the number for vehicle passing a given point on a road link and classifies the vehicles into different vehicle classifications, for example Cars, Light Goods Vehicles (LGV) and Heavy Goods Vehicles (HGV).

Traffic flow data was extracted from the ATC surveys undertaken as part of the study and is presented in Table 2-2 for the following time periods:

- 2019 AM Peak (08:00 – 09:00); and
- 2019 PM Peak (17:00 – 18:00).

The estimated 2019 Annual Average Daily Traffic (AADT) and the annual average estimates of average weekday (Mon – Fri) traffic flow at each location is also provided in the Table 2-2.

**Table 2-2 Automatic Traffic Counter Data Two-Way Flow**

Site No.	ATC Location	Dataset	Average Weekday (2-Way Flow)		Estimated 2019 AADT
			AM	PM	
12	R806, southeast to M50	ATC	1,059	1,196	13,088
20	Auburn Avenue, north to R806		915	686	18,229
21	Ashtown Gate Road, south to R147		1,140	819	23,425
22	Baggot Road, south to R147		247	266	3,308
23	Nephin Road, south to R147		352	340	5,503
24	R805, south to R147		1,064	1,208	13,037
25	R147, north to R805		890	969	11,742
26	Faussagh Avenue, close to Bannow Road		950	969	13,812
27	R135, south to Ballyboggan Road		1,512	1,749	17,885
28	R102, close to Glasnevin Downs		1,127	1,086	17,678
29	R103, east to R135		1,105	971	19,194
31	Cappagh Road, close to Ratoath Road		1,436	1,436	21,455
33	R102, east to M50/N3		692	444	15,281
34	Ashtown Road, west to Ashtown train station		454	371	8,449

## 2.5 Junction Turning Counts

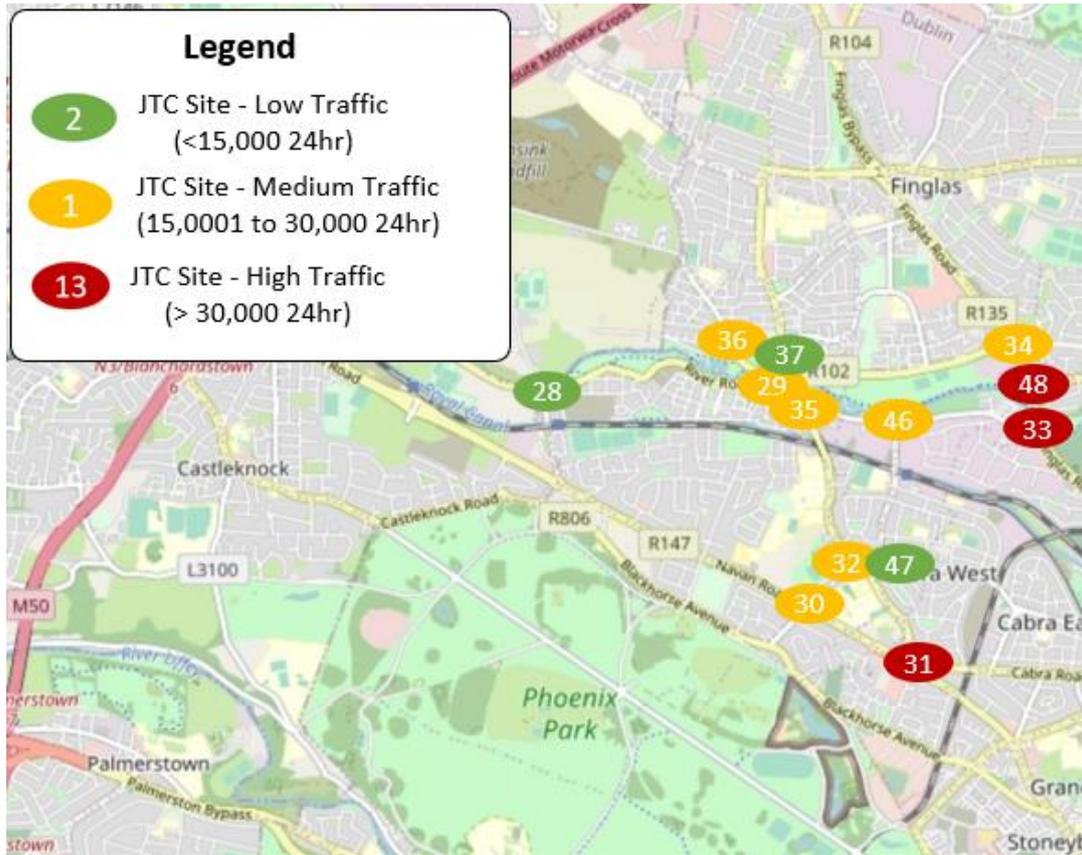
A Junction Turning Count (JTC) captures the total number of vehicles turning at a junction and observes which turn they take. As with the ATCs, they classify the traffic into different vehicle categories. JTC surveys were undertaken at 13 junctions on Tuesday 5th February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00). Traffic flow was classified by vehicle type and recorded in 15-minute time intervals. The following junctions were surveyed:

- Junction 28: Scribblestown Ave/R102/Ashtown Road Junction.
- Junction 29: R102/R805 Junction.
- Junction 30: Nephin Rd/R147 Junction.
- Junction 31: R805/R147 Junction.
- Junction 32: R805/Faussagh Ave/Ratoath Rd/ Nephin Rd Junction.
- Junction 33: R135/Ballyboggan Rd Junction.
- Junction 34: R135/R102 Junction.
- Junction 35: R805/Ballyboggan Rd/Spindrift Ave Junction.
- Junction 36: Ratoath Rd/R102 Junction.
- Junction 37: R103/R102 Junction.
- Junction 46: Ballyboggan Rd/Local Access Rd Junction.
- Junction 47: Broombridge Rd/Faussagh Ave Junction.
- Junction 48: R135/R102 Junction.

The 24-hour factored total flow for each JTC site is presented in Table 2-3. The summary of vehicle turning counts at each of the junctions outlined above are presented for the modelled time periods in Appendix A. Colour coded junction throughput is also presented in Figure 2-4.

**Table 2-3 JTC 24 Hour Factored Total Junction Throughput**

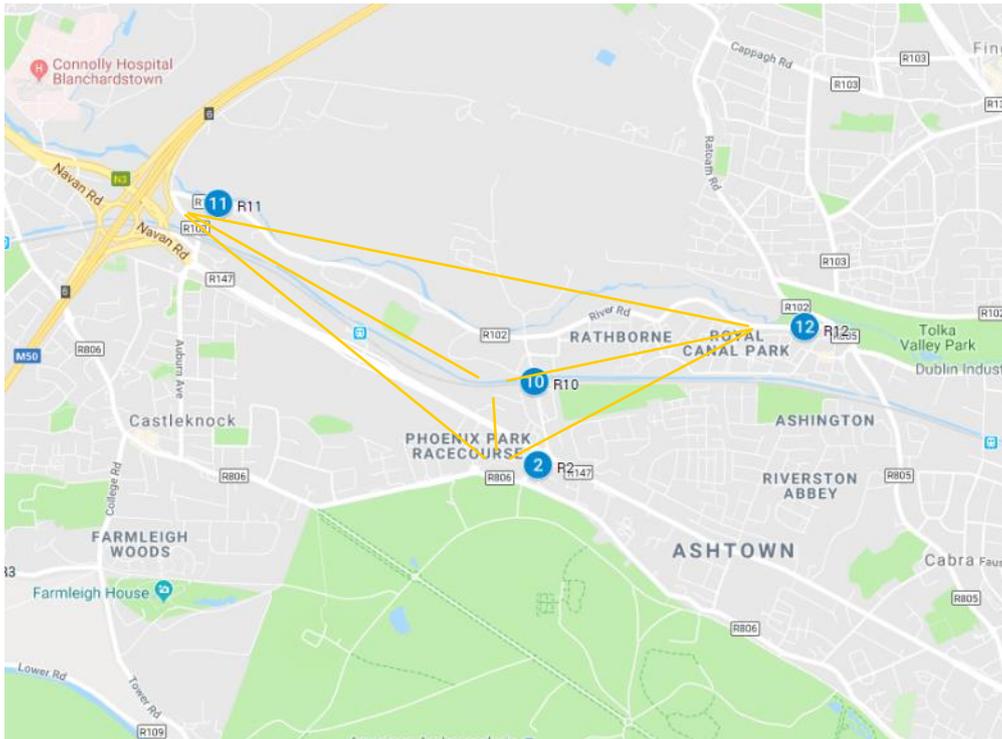
JTC Site	24Hr Factored Total Flow	% HGV
28	9,794	0.82
29	24,142	1.99
30	28,033	1.30
31	31,649	1.49
32	26,471	1.35
33	30,548	2.42
34	29,235	2.19
35	29,810	1.85
36	22,977	2.22
37	13,075	1.22
46	16,625	2.68
47	14,136	1.56
48	34,821	1.92



**Figure 2-4 JTC Survey Locations Colour-Coded by Throughput**

## 2.6 Origin-Destination Surveys

Origin – Destination surveys via Automatic Number Plate Recognition (ANPR) cameras were undertaken for all traffic passing through the 5 sites shown graphically in Figure 2-5. The O-D surveys included goods vehicles exceeding 3.5 tonnes in weight and having two or more axles. The ANPR surveys were undertaken on Tuesday 5th February 2019 between 07:00 – 10:00 and 16:00 – 19:00.



**Figure 2-5 ANPR sites in Ashtown Area**

The survey data was interrogated to produce 4 x 4 matrices for the 4 sites shown in Table 2-4. Matrices were recorded for every hour for the duration of the survey. The matrices recorded the data in “First Seen, Last Seen” format where each vehicle is input as an O-D pair based on the first and last site it is seen in the surveys area i.e. a trip from A-B-C-D is shown as a trip from A-D only. The “Next Seen” format was also provided for cases where the O-D pair is based on the next site a vehicle was seen at.

**2.6.1 ANPR Survey Data Example**

An example of the data provided by the ANPR surveys is illustrated in Table 2-4 and Table 2-5. This example data is from the PM peak hour (17:00 to 18:00).

**Table 2-4 ANPR Location Vehicle Flows: Total Flows**

	2 NB	2 SB	10 SB	10 NB	11 EB	11 WB	12 WB	12 EB	Tot.
2 NB	0	6	0	46	1	0	1	0	54
2 SB	5	0	0	0	0	0	0	0	5
10 SB	1	47	0	9	0	0	0	1	58
10 NB	0	1	7	0	0	6	0	27	41
11 EB	0	0	40	0	0	3	2	109	154
11 WB	0	0	0	0	4	0	0	0	4
12 WB	0	0	61	0	0	53	0	5	119
12 EB	0	0	0	0	0	0	4	0	4
Tot.	6	54	108	55	5	62	7	142	439

**Table 2-5 ANPR Location Vehicle Flows: Percent of Total Flow**

	2 NB	2 SB	10 SB	10 NB	11 EB	11 WB	12 WB	12 EB
2 NB	0%	11%	0%	85%	2%	0%	2%	0%

	2 NB	2 SB	10 SB	10 NB	11 EB	11 WB	12 WB	12 EB
2 SB	100%	0%	0%	0%	0%	0%	0%	0%
10 SB	2%	81%	0%	16%	0%	0%	0%	2%
10 NB	0%	2%	17%	0%	0%	15%	0%	66%
11 EB	0%	0%	26%	0%	0%	2%	1%	71%
11 WB	0%	0%	0%	0%	100%	0%	0%	0%
12 WB	0%	0%	51%	0%	0%	45%	0%	4%
12 EB	0%	0%	0%	0%	0%	0%	100%	0%

Based on the data above, a few notable movements are observed:

- Most of the traffic crossing the Ashtown level crossing in either direction passes through both ANPR Site 10 and ANPR Site 2, indicating that they have destinations outside of the Ashtown centre.
- Sixty-six percent of the traffic passing through ANPR Site 10 NB (Ashtown Level Crossing) continues on to pass through ANPR Site 12 EB (R102), indicating destinations towards Dublin city centre.
- Seventy-one percent of the traffic passing through ANPR Site 11 EB (R102) continues on to pass through ANPR Site 12 EB (R102), indicating that most traffic coming from the west is not stopping in Ashtown, but continuing on towards Dublin city centre.

The O-D information from the ANPR surveys were used to inform the travel patterns in the LAM.

## 2.7 Journey Time Surveys

Journey times have been recorded for selected routes in the ALAM from the ANPR surveys covering the AM and PM Peak hours. Table 2-6 shows average journey times extracted from the ANPR surveys for the AM and PM peaks.

**Table 2-6 ANPR Average Journey Times AM and PM Peak**

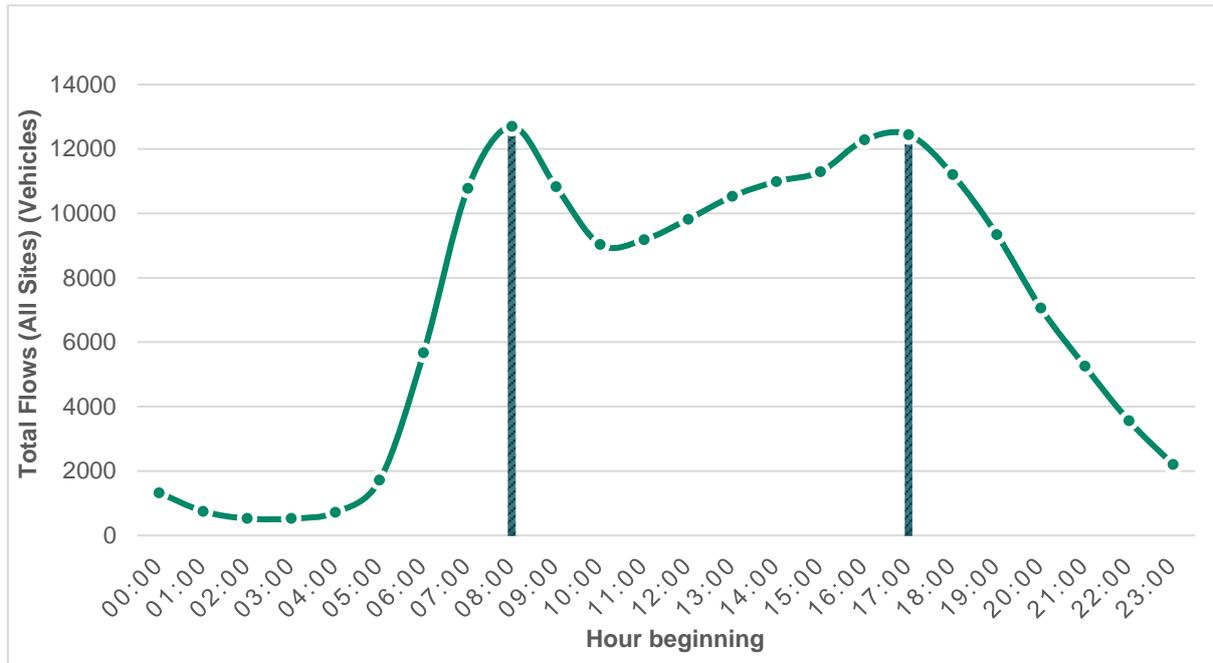
Site A	Site B	AM Journey Time (min:sec)	AM Peak Speed (kph)	PM Journey Time (min:sec)	PM Peak Speed (kph)
11	12	4:35	40	6:03	39
12	11	5:47	42	5:14	42
10	12	6:12	21	5:35	20
12	10	4:55	19	4:41	20
2	10	2:14	5	3:18	4
10	2	3:12	10	3:25	11

The above journey time information was used to validate the ALAM.

### 3. BASE YEAR MODEL DEVELOPMENT

#### 3.1 Determination of Peak Hours

The peak hours were defined following an assessment of the ATCs within the study area. Traffic flows at each of the ATCs within the study area were aggregated together to assess average daily the traffic flow profile which is presented in Figure 3-1.



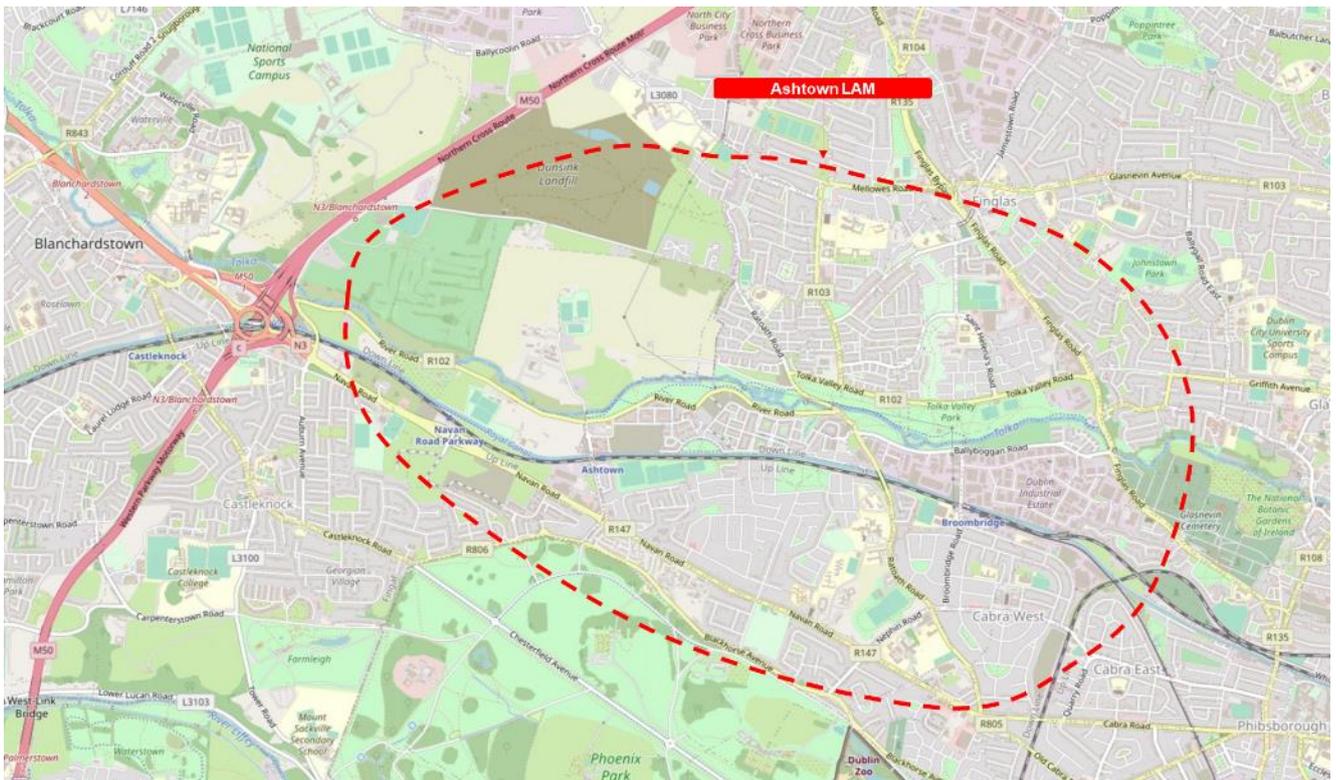
**Figure 3-1 2019 Average Daily Traffic Flow Profile (All ATCs)**

This section describes the development, calibration and validation of the 2019 ALAM which has been developed for the following time periods:

- AM Peak Hour (08:00 – 09:00).
- PM Peak Hour (17:00 – 18:00).

#### 3.2 Model Study Area

The extent of ALAM is presented in Figure 3-2 below.



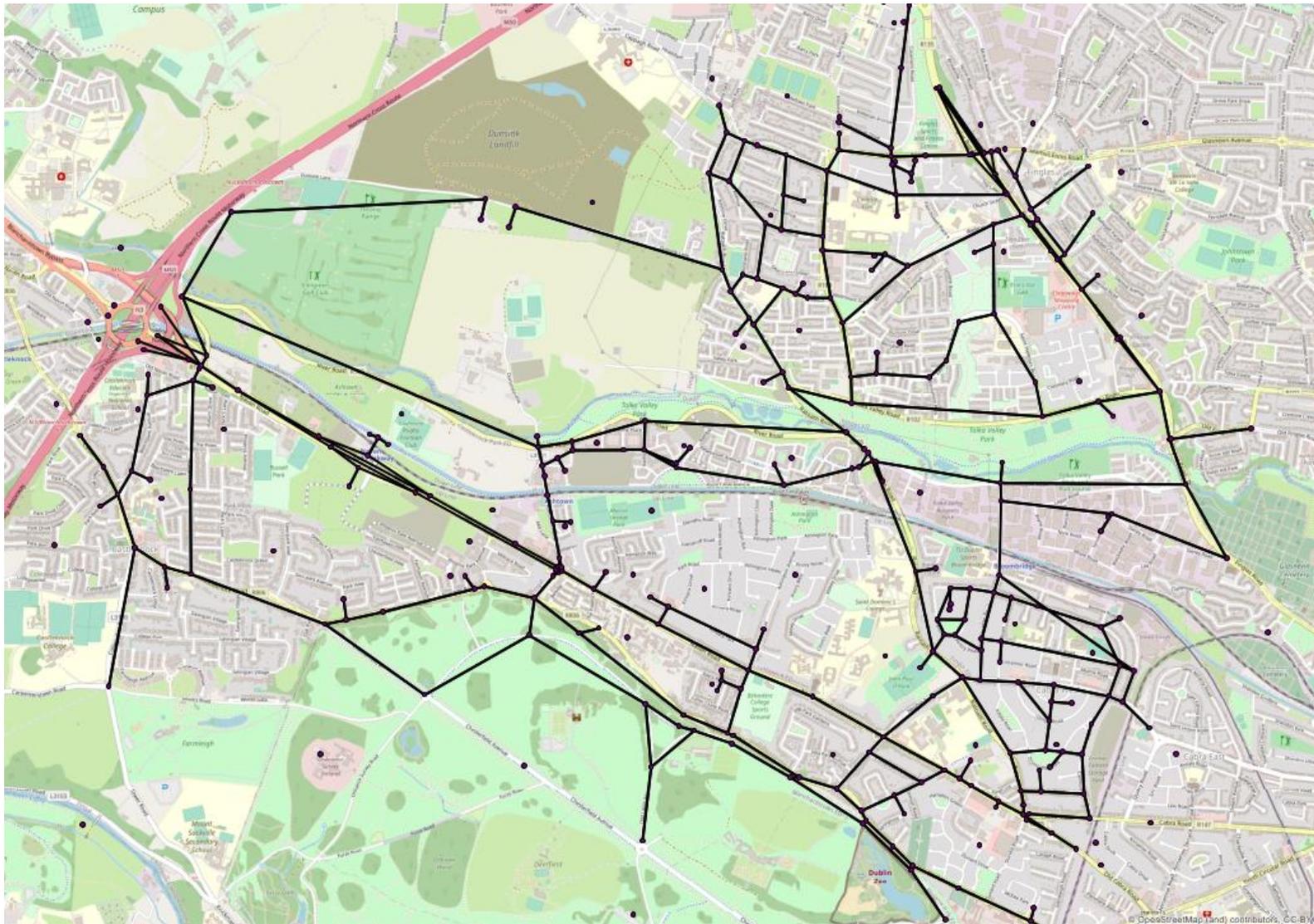
**Figure 3-2 Ashtown LAM Extent**

The modelled area is bounded by Finglas to the north and the Phoenix Park to the south. The western extent is bounded by the M50, while the eastern extent is bounded by Phibsborough and Stoneybatter.

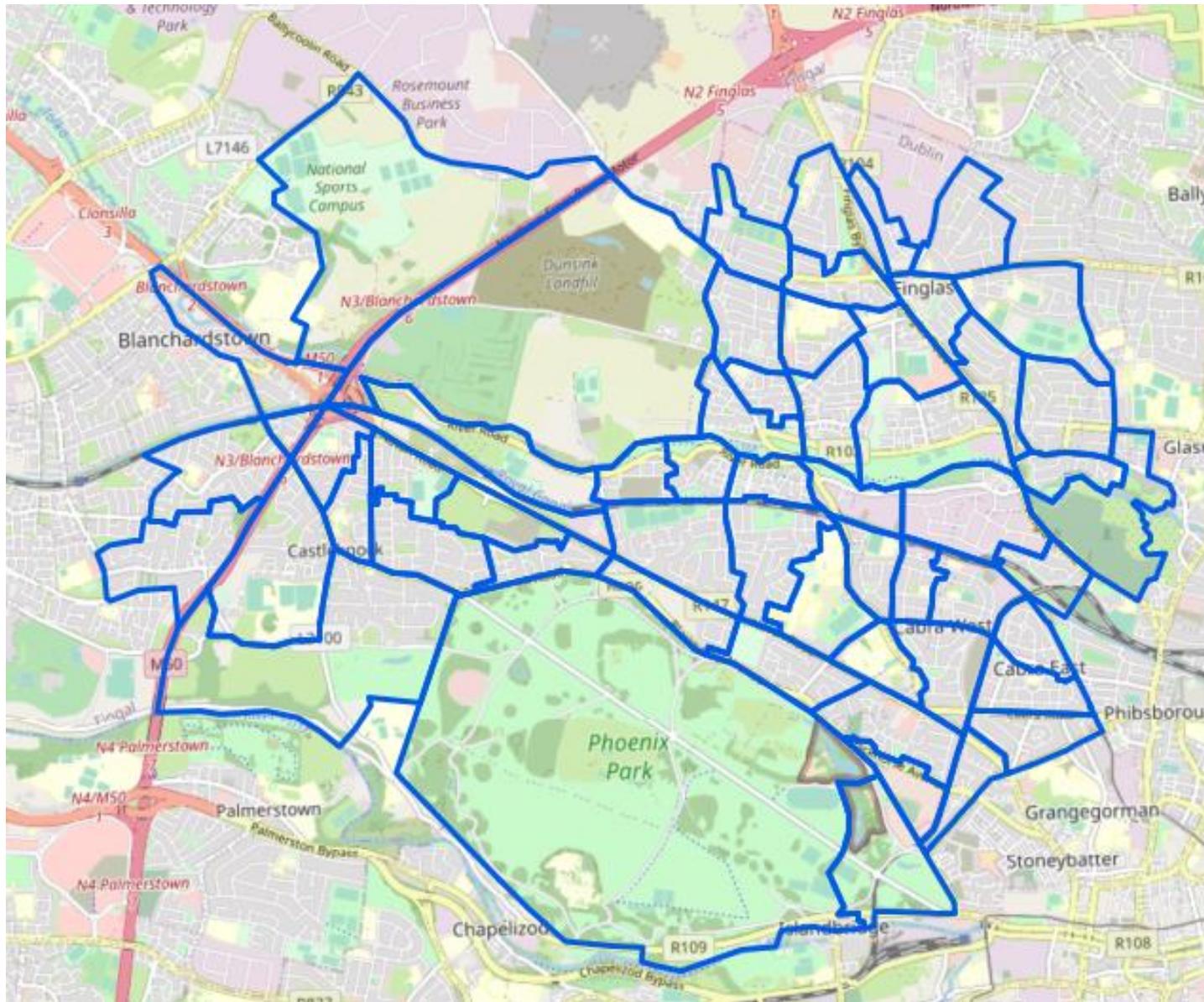
### 3.3 Network Development

The simulation area extent formed the basis of the ALAM Saturn Highway Network. The cordoned road network was reviewed to make sure the network represents 2019 traffic conditions. The 2019 ALAM network is shown in Figure 3-3 while the adopted zoning system for the area from the ERM is shown in Figure 3-4.

The zoning system was determined to be detailed enough for the ALAM, therefore no adjustments were made.



**Figure 3-3 ALAM 2019 Base Year Road Network**



**Figure 3-4 NTA ERM Zoning System**

### 3.3.1 Capacity Restraint Mechanism- Junction Modelling and Speed/Flow Relationships

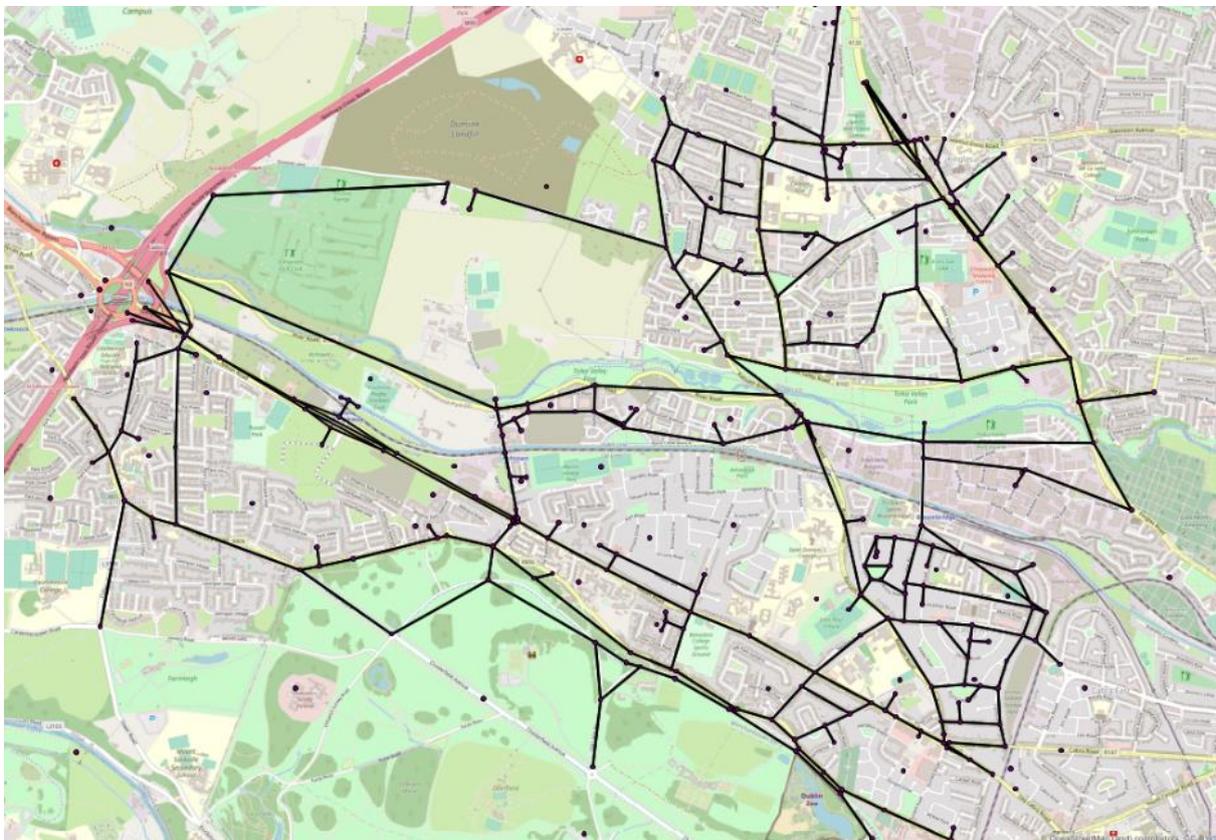
The total travel time of a trip from origin to destination is a function of both link travel time and junction delay. SATURN uses a curve fitting procedure to create speed flow curves. The formula within SATURN is as follows:

$$t(v) = t_0 + AV^n \quad v < c$$

Where,

- “t” is time on link (analogous to speed).
- “t<sub>0</sub>” is free flow time (analogous to free flow speed).
- “a” is a constant (determined from speed and flow at capacity).
- “V” is link flow.
- “n” is the power of the curve (determines the length of the flat part and how quickly the curve falls).

Figure 3-5 shows the extent of the simulation network



**Figure 3-5 ALAM Simulation Network**

## 3.4 Matrix Development

The following time periods were required for the ALAM:

- Morning peak from 08:00 – 09:00 (AM Peak Period).
- Evening peak from 17:00 – 16:00 (PM Peak Period).

‘Prior’ AM Peak and Inter Peak hour Light and Heavy vehicle matrices were taken from the 2016 NTA ERM. The matrices did not require disaggregation between cordoned ERM and ALAM, as the diss-aggregation in ERM was considered appropriate to use in ALAM as discussed in Section 3.3.

### 3.5 Assignment Model

The assignment model applies the demand for travel, represented by the trip matrices, to the supply, in the form of the road network. The 'generalised cost' of a journey, represented by a combination of time and distance, is compared in a route choice algorithm, and a stable output produced, where ideally, all possible routes between an origin and destination have the same 'cost'. Generalised cost is computed as follows:

$$\text{Generalised Cost} = (\text{Value of Time} * \text{Time}) + (\text{Vehicle Operating Cost} * \text{Distance}) + \text{Tolls}$$

The economic parameters used in the ALAM are outlined in Table 3-1. These generalised costs parameters were calculated based on the parameters set out in PAG and in the DoT Common Appraisal Framework.

**Table 3-1 Generalised Cost Economic Parameters (2019)**

Peak Hour	User Class	Value of Time (VoT)*		Vehicle Operating Cost (VOC)	
		Cents/sec	€/hr	Cents/metre	€/km
AM	Light	0.76	27.46	0.02	0.18
	Heavy	1.14	41.21	0.07	0.70
PM	Light	0.76	27.41	0.02	0.18
	Heavy	1.14	40.88	0.07	0.70

\*Average 2019 VoT for Commuting, Working & Other Trip Purposes

### 3.6 Assignment Algorithm

The Route Choice Algorithm used in the ERM and also maintained in the ALAM is 'Equilibrium Assignment'. Equilibrium assignment distributes the demand according to Wardrop's first principle, whereby every road user selects their route in such a way, that the cost on all alternative routes is the same and that switching route would increase personal travel time.

The assignment terminates when a stable solution is calculated, and user equilibrium is reached. When equilibrium conditions have been reached, no user can further reduce the impedance of their trip by switching route.

### 3.7 Modelling Software

The assignment was carried out using the software SATURN (version 11.4.07H).

## 4. MODEL CALIBRATION

### 4.1 Introduction

Following the development of the base year models, the process of calibrating and validating the models was undertaken.

### 4.2 Calibration

The purpose of model calibration is to ensure that the model assignments reflect the existing travel situation. Calibration is an iterative process, whereby the model is continually revised to ensure that the most accurate replication of the base year conditions is represented.

#### 4.2.1 Matrix Estimation

Matrix Estimation (ME) is the process in which the number of trips assigned along a model link is adjusted to match an observed total. Using transportation modelling software (SATURN in this case) it is possible to perform this operation at numerous locations in a single matrix estimation run, adjusting large sections of the trip matrix to match observed demand.

In SATURN, Matrix Estimation is an iterative process, where the trips are assigned to the link in lieu with the traffic data observed on the link. The vehicle class wise traffic volumes on each link and other numerical parameters are set to form tolerance values, which ensure accuracy within the matrix estimation process.

#### 4.2.2 Calibration Criteria and Link Flow Calibration Results

Calibration was undertaken using survey data from year 2019. The model calibration process has been undertaken based on the requirements of the TII *PAG Unit 5.1: Construction of Traffic Models* and with reference to the calibration criteria outlined in Table 5.1.3 of that document. The PAG specify the acceptable values for modelled and observed flow comparisons and suggests how calibration should relate to the magnitude of the values being compared. A summary of these targets is shown in Table 4-1.

**Table 4-1 Model Calibration Criteria: Individual Flows**

Class Test	Criteria and Measure	Guideline
	<i>Assigned Hourly Flows vs. Observed Flows:</i>	
1	Individual flows within 100 vph for flows <700 vph	> 85% of cases
2	Individual flows within 15% for flows 700 – 2700 vph	
3	Individual flows within 400 vph for flows > 2700 vph	

The standard method used to compare modelled values against observations on a link involves the calculation of the Geoff E. Havers (GEH) statistic (Chi-squared statistic), incorporating both relative and absolute errors. The GEH statistic is a measure of comparability that takes account of not only the difference between the observed and modelled flows, but also the significance of this difference with respect to the size of the observed flow. The GEH statistic is calculated as follows:

$$GEH = \sqrt{\frac{(M - O)^2}{0.5(M + O)}}$$

Where *M* = Modelled Flow and *O* = Observed Flow.

Guidance in the Project Appraisal Guidelines sets out the criteria in Table 4-2.

**Table 4-2 Model Calibration Criteria: GEH Values**

Criteria and Measures		Requirement
GEH statistic	Individual flows: GEH < 5	> 85% of cases

A total of 82 links flows were used in the calibration process, the results of which are summarised in Table 4-3 and Table 4-4. The results in full can be found in Appendix B of this report.

**Table 4-3 Link Calibration Results: Individual Flows**

% of Calibration Sites Meeting Individual Flow Criteria				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	94%	95%	100%	>85%
PM Peak	95%	95%	100%	>85%

**Table 4-4 Link Calibration Results: GEH Values**

% of Calibration Sites with GEH < 5				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	91%	93%	90%	>85%
PM Peak	94%	94%	94%	>85%

The comparison of modelled and observed flows demonstrates that the AM and PM Peak period models exceed the flow criteria for all user classes. Likewise, the GEH results show that the AM and PM Peak periods models also exceed the criteria for all user classes. The results therefore confirm that the models have been calibrated to a standard compliant with the PAG criteria for all user classes and all time periods.

#### 4.2.3 Trip Length Distribution Check

The output trip matrix from the matrix estimation process must be checked to ensure that the process has not significantly altered trip distribution. It is possible that in seeking to increase the flow along a particular link, the matrix estimation process might add significant numbers of trips between the two zones at either end of the link in question. This change may have the effect of creating excessive short distance trips while longer distance trips are unaffected, which in turn would push the trip distance distribution toward short trips.

To check the output of the matrix estimation process, the trip length distributions (TLD) from before (pre) and after (post) matrix estimation are compared. The trip length distributions for each peak hour for Light Vehicles are represented as histograms in Figure 4-1 and Figure 4-2.

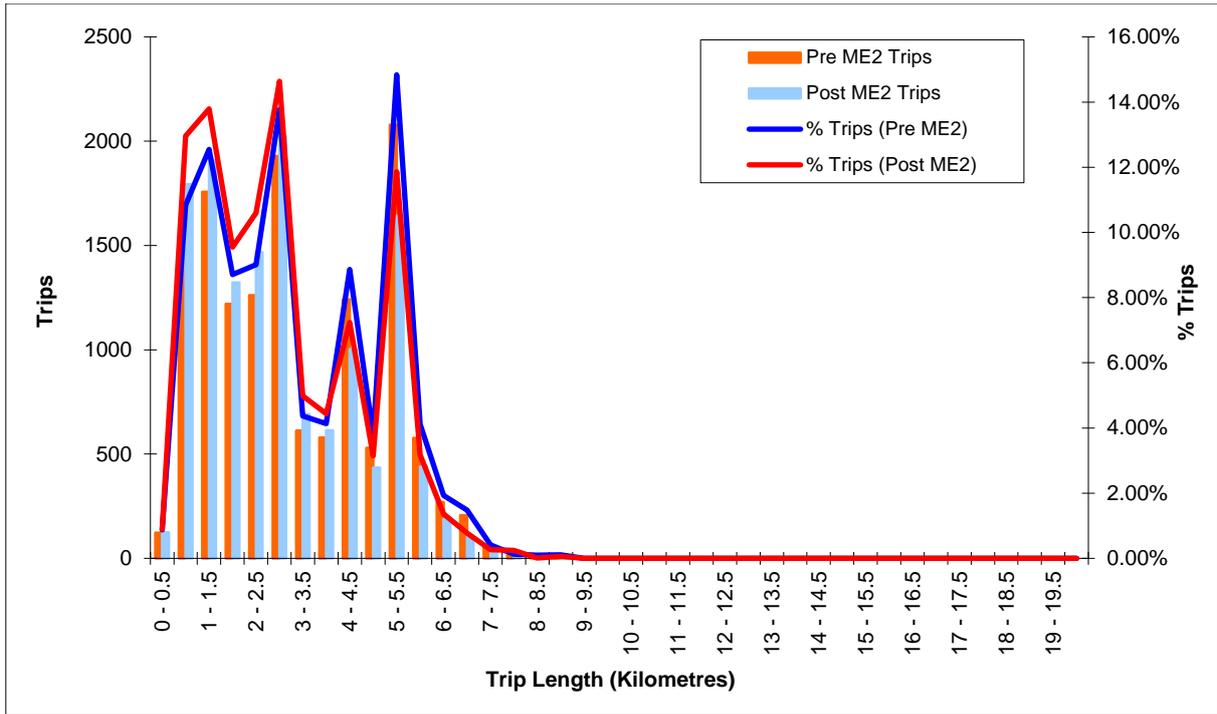


Figure 4-1 TLD AM Peak Hour (LV)

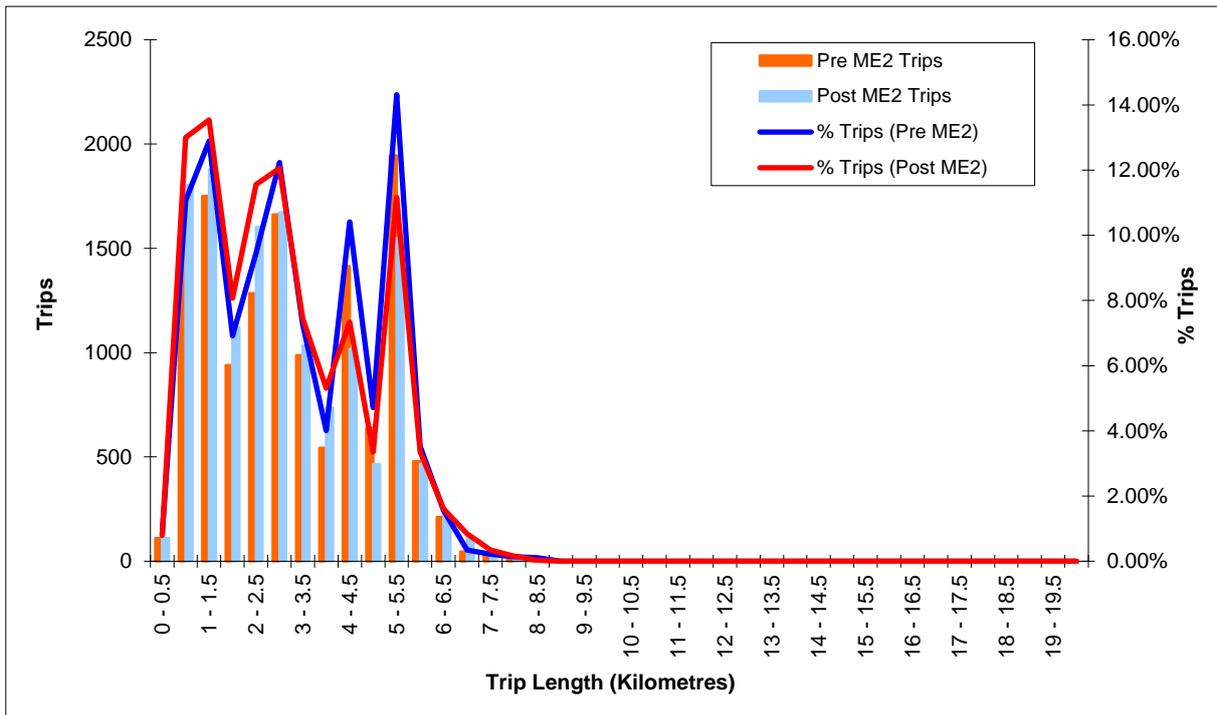


Figure 4-2 TLD PM Peak Hour (LV)

The 2019 calibrated matrices were adjusted using the observed traffic count data in order to represent these local characteristics of travel in the study area. Based on the above, the trip length distribution diagrams are considered acceptable.

### 4.3 Model Validation

Model validation comprises the comparison of calibrated flows against an independent data set which was not used as part of the calibration process. Validation checks included:

- Link Flow Validation.
- O-D Matrix validation checks using the O-D data.
- Journey time validation.

#### 4.3.1 Validation of Link Flows

A total of 26 observed and modelled link flows were compared at a number of validation sites which were kept exclusive of the calibration data, in accordance with the criteria above. The permissible difference was calculated for each value (based on the observed figure) and compared with that which had been modelled. Validation results are included in Appendix C and are summarised in Table 4-5 and Table 4-6.

**Table 4-5 Link Validation Results: Individual Flows**

% of Validation Sites Meeting Individual Flow Criteria				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	100%	100%	100%	>85%
PM Peak	88%	92%	100%	>85%

**Table 4-6 Link Validation Results: GEH Values**

% of Validation Sites with GEH < 5				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	92%	96%	92%	>85%
PM Peak	92%	96%	88%	>85%

The comparison of modelled and observed flows demonstrates that the AM and PM peak period models meet or exceed the flow and GEH criteria for all user classes. Therefore, the model is deemed validated in terms of link flows.

#### 4.3.2 Comparison of Traffic Patterns (O-D Surveys)

Although not required under PAG guidance, the routing of traffic through the study area was checked against the results from the ANPR surveys. The survey data was compared against the model data on a 'first seen-last seen' basis, whereby the survey data records the first site and last site the vehicle was seen at. The vehicle's origin and destination within the study area is then considered to be the first and last site it is seen.

The patterns were compared based on the percentage split of destinations from each survey location based on the locations shown in Figure 2-4.

The ANPR data have been analysed and O-D movement matrices have been created and compared with the modelled traffic patterns between all ANPR. The dimension of the O-D matrices is 8x8 movements as the ANPR sites are bi-directional. Table 4-7 and Table 4-8 show O-D patterns comparison for both peak periods.

The AM and PM Peak models met this target with 100% of O-D pair having a difference less than +/- 20%.

**Table 4-7 ANPR O-D Validation AM**

Site	2 NB	2 SB	10 SB	10 NB	11 EB	11 WB	12 WB	12 EB
2 NB	0%	0%	0%	4%	-2%	0%	-2%	0%
2 SB	0%	0%	0%	0%	0%	0%	0%	0%
10 SB	-2%	2%	0%	0%	0%	0%	0%	0%
10 NB	0%	0%	0%	0%	0%	-18%	0%	18%
11 EB	0%	0%	-9%	0%	0%	0%	-1%	10%
11 WB	0%	0%	0%	0%	0%	0%	0%	0%
12 WB	0%	0%	8%	0%	0%	-8%	0%	0%
12 EB	0%	0%	0%	0%	0%	0%	0%	0%

**Table 4-8 ANPR O-D Validation PM**

Site	2 NB	2 SB	10 SB	10 NB	11 EB	11 WB	12 WB	12 EB
2 NB	0%	0%	0%	0%	0%	0%	0%	0%
2 SB	0%	0%	0%	0%	0%	0%	0%	0%
10 SB	0%	0%	0%	0%	0%	0%	0%	0%
10 NB	0%	0%	0%	0%	0%	-4%	0%	4%
11 EB	0%	0%	-14%	0%	0%	0%	-3%	17%
11 WB	0%	0%	0%	0%	0%	0%	0%	0%
12 WB	0%	0%	-6%	0%	0%	6%	0%	0%
12 EB	0%	0%	0%	0%	0%	0%	0%	0%

### 4.3.3 Journey Time (O-D Surveys)

The journey time comparison is required to show that the model is reflecting base year network conditions, in terms of network speed and delay. Table 4-9 and Table 4-10 provide a comparison of the modelled and observed journey times for the AM and PM Peak Hours respectively. The observed journey times are based on the ANPR survey data in Section 2.0 of this report.

**Table 4-9 AM Peak Modelled/Observed Journey Times**

Site A	Site B	Observed (sec)	Modelled (sec)	Absolute Difference (sec)	% Difference	Validated
11	12	4:35	5:14	39	26%	PASS
12	11	5:47	5:02	45	24%	PASS
10	12	6:12	6:18	6	2%	PASS
12	10	4:55	5:51	56	6%	PASS
2	10	2:14	3:00	46	12%	PASS
10	2	3:12	4:11	59	8%	PASS
<b>Percentage Validated</b>						<b>100%</b>

**Table 4-10 PM Peak Modelled/Observed Journey Times**

Site A	Site B	Observed (sec)	Modelled (sec)	Absolute Difference (sec)	% Difference	Validated
11	12	6:03	5:29	34	26%	PASS

Site A	Site B	Observed (sec)	Modelled (sec)	Absolute Difference (sec)	% Difference	Validated
12	11	5:14	5:03	11	24%	PASS
10	12	5:35	6:32	57	2%	PASS
12	10	4:41	5:36	55	6%	PASS
2	10	3:18	3:10	8	12%	PASS
10	2	3:25	3:46	21	8%	PASS
Percentage Validated						100%

All models satisfy the PAG requirement that 85% of all modelled journey times are within 15% of observed data or less than 60 seconds. As such the base year models are considered validated to the requirements of TII PAG Unit 5.1: Construction of Transport Models in terms of journey times.

#### 4.4 Model Convergence

The model assignment procedure involves the model reaching a point of equilibrium through an iterative process. The model must therefore achieve a satisfactory point of convergence in order to produce results that are both reflective of the network over a number of iterations of assigning demand to the network.

The convergence indicators vary by different transport modelling packages; therefore, multiple criteria are outlined in the UK DMRB Volume 12.2.1. The criterion used to show that the SATURN software reaches a level of convergence are as follows:

- The percentage (P) of links on which flows or costs change by less than a fixed percentage (<5%) for four consecutive iterations greater than 98%.
- The difference between the costs along the chosen routes and those along the minimum cost routes, summed across the whole network, and expressed as a percentage of the minimum costs, usually known as 'Delta' or the '%GAP' (<0.1%).

The model software produces the convergence information for all user classes, defining the percentage difference in link volume. Table 4-11 indicates that the AM Peak and PM Peak models both reached a satisfactory level of convergence.

**Table 4-11 Model Convergence Results**

Time Period	%GAP	Total Traffic	
		Iterations	P
AM	.035	76	98.9%
PM	.011	113	98.3%

#### 4.5 Model Statistics

The Base Year Model Statistics are shown in Table 4-12 below.

**Table 4-12 Base Year Model Statistics**

Time Period	Matrix Total	Travel Time (Total – pcu hours)	Travel Distance (Total pcu-kms)	Average Speed (km/h)
AM	14,975	1,860	43,060	23
PM	14,545	1,662	42,853	26

## **5. SUMMARY AND NEXT STEPS**

### **5.1 Summary**

The basis for the ALAM was the 2016 NTA East Regional Model (ERM). The ALAM was cordoned from the ERM. It was then refined, calibrated and validated using 2019 traffic surveys comprising of ATC, JTC and ANPR survey data.

The ALAM was calibrated using individual link flows and GEH values, and validated using individual link flows, O-D matrix validation and journey time validation. The model passed each calibration and validation test.

### **5.2 Next Steps**

The model will be used to model the impacts on traffic of DART+ West for the years 2028 and 2043. These models will be compared to the Do Something scenarios, which incorporate the emerging preferred DART+ West scenario, namely closing the existing level crossings along the rail line.

## **Appendix A**

### **2019 Traffic Surveys**

### JTC Site 28

8:00:00 to 9:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	22	293	94	4	0	2	2	193	12	0	121	27	14	49	0
LGV	0	2	54	2	0	0	3	0	22	0	0	18	4	3	4	0
M/C	0	0	0.8	0	0	0	0	0	0.4	0	0	0	0	0	0.4	0
OGV1	0	0	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV2	0	0	2.9	2.9	0	0	0	0	5.8	0	0	0	0	2.9	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4	0	0
PSV	0	0	0	0	0	0	0	2.5	0	0	7.5	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>24</b>	<b>351.8</b>	<b>98.9</b>	<b>4</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>220.8</b>	<b>12</b>	<b>0</b>	<b>139</b>	<b>31</b>	<b>19.9</b>	<b>53</b>	<b>0</b>
LV	0	24	347	96	4	0	5	2	215	12	0	139	31	17	53	0
HV	0	0	5	3	0	0	0	0	6	0	0	0	0	3	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	409	224	8	48	326	344	90	217
LGV	58	26	3	5	40	61	11	20
M/C	0.8	0.4	0	0	0.4	1.2	0.4	0
OGV1	1.9	0	0	0	0	1.9	0	0
OGV2	5.8	5.8	0	2.9	5.8	2.9	2.9	2.9
P/C	0	0	0	2.4	0	0	2.4	0
PSV	0	0	2.5	0	7.5	7.5	0	2.5
<b>Total</b>	<b>474.7</b>	<b>255.8</b>	<b>11</b>	<b>55.9</b>	<b>371.8</b>	<b>409.8</b>	<b>103.9</b>	<b>239.9</b>
LV	410	224	8	48	326	345	90	217
HV	8	6	0	3	6	5	3	3

Arm	Road name
From A	River rd eastbound
To A	River rd westbound
From B	Dunsinea Ln southbound
To B	Dunsinea Ln northbound
From C	River rd westbound
To C	River rd eastbound
From D	Ashtown rd northbound
To D	Ashtown rd southbound

17:00:00 to 18:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	3	137	32	16	0	11	22	183	1	1	117	14	1	57	0
LGV	0	1	18	3	3	0	1	0	32	0	0	12	2	0	8	0
M/C	0	0	0.4	0	0	0	0	0	0.4	0	0	0	0	0	0	0
OGV1	0	0	3.8	0	0	0	0	0	1.9	0	0	0	0	0	1.9	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	2.4	0	0	0	0	0	0.8	0	0
PSV	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>4</b>	<b>158.8</b>	<b>35</b>	<b>19</b>	<b>0</b>	<b>12</b>	<b>22</b>	<b>216.9</b>	<b>1</b>	<b>1</b>	<b>129</b>	<b>16</b>	<b>1</b>	<b>66.9</b>	<b>0</b>
LV	1	4	155	35	19	0	12	22	215	1	1	129	16	1	65	0
HV	0	0	4	0	0	0	0	0	2	0	0	0	0	0	2	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	173	214	49	5	302	206	72	171
LGV	22	37	4	1	44	27	10	15
M/C	0.4	0.4	0	0	0.4	0.4	0	0
OGV1	3.8	1.9	0	0	1.9	5.7	1.9	0
OGV2	0	0	0	0	0	0	0	0
P/C	0	0	2.4	0.8	0	0	0.8	2.4
PSV	0	0	0	0	2.5	0	0	2.5
<b>Total</b>	<b>198.8</b>	<b>252.9</b>	<b>53</b>	<b>6</b>	<b>347.9</b>	<b>238.7</b>	<b>83.9</b>	<b>186</b>
LV	173	214	49	5	302	206	72	171
HV	4	2	0	0	2	6	2	0

Arm	Road name
From A	Riverwood Dene southbound
To A	Riverwood Dene northbound
From B	Diswellstown rd westbound
To B	Diswellstown rd eastbound
From C	Fernleigh Dr northbound
To C	Fernleigh Dr southbound
From D	Diswellstown rd eastbound
To D	Diswellstown rd westbound

## JTC Site 29

8:00:00 to 9:00:00 (Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	297	115	520	0	107	142	90	1	1
LGV	0	46	19	37	0	20	12	20	0	1
M/C	0	2	0	0.4	0	0	0.8	0.4	0	0.4
OGV1	0	22.8	1.9	13.3	0	1.9	0	0	0	1.9
OGV2	0	5.8	0	11.6	0	2.9	0	0	0	2.9
P/C	0	0.4	0	2	0	0	0	0	0	0.4
PSV	0	7.5	2.5	2.5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>371.6</b>	<b>135.9</b>	<b>581.9</b>	<b>0</b>	<b>131.8</b>	<b>154</b>	<b>110</b>	<b>1</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	412	662	627	387	233	223
LGV	65	49	57	66	32	39
M/C	2	1.2	0.4	2.4	1.2	0
OGV1	24.7	13.3	15.2	22.8	0	3.8
OGV2	5.8	11.6	14.5	5.8	0	2.9
P/C	0.4	2	2	0.4	0	0
PSV	10	2.5	2.5	7.5	0	2.5
<b>Total</b>	<b>507.5</b>	<b>735.9</b>	<b>713.7</b>	<b>481.6</b>	<b>265</b>	<b>268.7</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Ratoath rd northbound
To B	Ratoath rd southbound
From C	River rd eastbound
To C	River rd westbound

17:00:00 to 18:00:00 (Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	545	104	805	0	287	82	45	0	1
LGV	0	43	9	93	0	28	14	3	0	1
M/C	0	0.8	0	2.4	0	1.2	0	0	0	0.4
OGV1	0	7.6	1.9	26.6	0	0	3.8	0	0	1.9
OGV2	0	5.8	0	14.5	0	0	0	0	0	2.9
P/C	0	0.8	0.8	3.2	0	0	0	0	0	0.4
PSV	0	7.5	0	7.5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>601.4</b>	<b>114.9</b>	<b>939.1</b>	<b>0</b>	<b>315</b>	<b>99.8</b>	<b>48</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	649	887	1092	590	127	391
LGV	52	107	121	46	17	37
M/C	0.8	2.4	3.6	0.8	0	1.2
OGV1	9.5	30.4	26.6	7.6	3.8	1.9
OGV2	5.8	14.5	14.5	5.8	0	0
P/C	1.6	3.2	3.2	0.8	0	0.8
PSV	7.5	7.5	7.5	7.5	0	0
<b>Total</b>	<b>716.3</b>	<b>1038.9</b>	<b>1254.1</b>	<b>649.4</b>	<b>147.8</b>	<b>429.9</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Ratoath rd northbound
To B	Ratoath rd southbound
From C	River rd eastbound
To C	River rd westbound

## JTC Site 30

8:00:00 to 9:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	288	553	14	188	0	28	113	308	0	0	16	24	178	0	0
LGV	0	12	59	0	13	0	4	8	29	0	0	3	1	10	0	0
M/C	0	0	14.4	0	0.4	0	0	1.6	1.6	0	0	0	0	0	0	0
OGV1	0	5.7	36.1	0	1.9	0	1.9	1.9	26.6	0	0	1.9	0	0	0	0
OGV2	0	0	8.7	0	0	0	0	0	5.8	0	0	0	0	0	0	0
P/C	0	4.4	29.6	0.4	0.8	0	0	2	6.4	0	0	0.4	0	2	0.4	0
PSV	15	127.5	0	17.5	0	0	0	57.5	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>305.7</b>	<b>656.8</b>	<b>14</b>	<b>202.9</b>	<b>0</b>	<b>33.9</b>	<b>122.9</b>	<b>369.4</b>	<b>0</b>	<b>0</b>	<b>20.9</b>	<b>25</b>	<b>188</b>	<b>0</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	855	520	329	466	324	581	202	143
LGV	71	43	25	22	32	63	11	11
M/C	14.4	2	2	0	1.6	14.4	0	1.6
OGV1	41.8	28.5	5.7	5.7	28.5	38	0	3.8
OGV2	8.7	5.8	0	0	5.8	8.7	0	0
P/C	34.4	7.2	2.8	6.4	6.8	30	2.4	2.8
PSV	160	15	57.5	127.5	0	0	0	75
<b>Total</b>	<b>976.5</b>	<b>597.3</b>	<b>359.7</b>	<b>493.7</b>	<b>390.3</b>	<b>690.7</b>	<b>213</b>	<b>157.8</b>

Arm	Road name
From A	Navan rd southbound
To A	Navan rd northbound
From B	Nepin rd westbound
To B	Nepin rd eastbound
From C	Navan rd northbound
To C	Navan rd southbound
From D	Nepin rd eastbound
To D	Nepin rd westbound

17:00:00 to 18:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	144	500	4	159	0	12	110	514	1	0	4	66	133	0	0
LGV	0	18	31	0	7	0	0	6	55	0	0	1	9	13	0	0
M/C	0	0.8	2	0	0	0	0	0.4	7.6	0	0	0	0	1.6	0	0
OGV1	0	0	5.7	0	1.9	0	0	0	3.8	0	0	0	0	0	0	0
OGV2	0	0	2.9	0	2.9	0	0	2.9	2.9	0	0	0	0	0	0	0
P/C	0	0.8	8.8	0	2	0	0	2.8	16	0	0	1.2	0	2.8	0	0
PSV	0	12.5	77.5	0	17.5	0	0	0	100	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>162</b>	<b>539.6</b>	<b>4</b>	<b>170.8</b>	<b>0</b>	<b>12</b>	<b>118.9</b>	<b>575.7</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>75</b>	<b>146</b>	<b>0</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	648	739	281	278	519	512	199	118
LGV	49	71	13	31	56	31	22	7
M/C	2.8	7.6	0.4	2.4	7.6	2	1.6	0.4
OGV1	5.7	5.7	1.9	0	3.8	5.7	0	0
OGV2	2.9	5.8	5.8	0	2.9	2.9	0	2.9
P/C	9.6	1.8	4.8	3.6	17.2	8.8	2.8	4
PSV	90	117.5	17.5	12.5	100	77.5	0	0
<b>Total</b>	<b>705.6</b>	<b>821.5</b>	<b>301.7</b>	<b>309</b>	<b>581.7</b>	<b>551.6</b>	<b>221</b>	<b>127.9</b>

Arm	Road name
From A	Riverwood Dene southbound
To A	Riverwood Dene northbound
From B	Diswellstown rd westbound
To B	Diswellstown rd eastbound
From C	Fernleigh Dr northbound
To C	Fernleigh Dr southbound
From D	Diswellstown rd eastbound
To D	Diswellstown rd westbound

### JTC Site 31

8:00:00 to 9:00:00 (Turning movement counts)																									
Vehicle type	A TO A	A TO B	A TO C	A TO D	A TO E	B TO A	B TO B	B TO C	B TO D	B TO E	C TO A	C TO B	C TO C	C TO D	C TO E	D TO A	D TO B	D TO C	D TO D	D TO E	E TO A	E TO B	E TO C	E TO D	E TO E
CAR	0	53	355	276	30	21	0	7	197	16	229	13	0	59	19	116	199	27	0	17	15	9	4	11	0
LGV	0	2	33	31	3	1	0	2	25	1	26	1	0	7	5	7	15	7	0	2	2	1	3	4	0
M/C	0	0	10.4	5.2	0.4	0	0	0	1.6	0	0.4	0.4	0	0.4	0	0.8	0	0	0	0	0	0	0	0.4	0
OGV1	0	0	20.9	7.6	5.7	0	0	0	11.4	1.9	19	0	0	7.6	1.9	11.4	1.9	0	0	0	0	0	1.9	5.7	0
OGV2	0	0	2.9	5.8	0	2.9	0	0	0	0	2.9	0	0	0	0	5.8	0	0	0	0	2.9	0	0	2.9	0
P/C	0	0	20.8	16	0.8	0.4	0	1.2	10.4	0	4.8	0	0	0	2	3.2	0.4	0	0	0	0.8	0	0	0	0
PSV	5	52.5	55	40	0	0	0	2.5	0	37.5	0	0	0	0	10	7.5	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>5</b>	<b>55</b>	<b>411.8</b>	<b>320.4</b>	<b>38.7</b>	<b>24.9</b>	<b>0</b>	<b>9</b>	<b>233.4</b>	<b>18.9</b>	<b>276.9</b>	<b>14</b>	<b>0</b>	<b>73.6</b>	<b>25.9</b>	<b>140.2</b>	<b>215.9</b>	<b>34</b>	<b>0</b>	<b>19</b>	<b>19.9</b>	<b>10</b>	<b>8.9</b>	<b>23.6</b>	<b>0</b>

8:00:00 to 9:00:00 (Link flows in approach arm - Inbound & Outbound)										
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D	From E	To E
CAR	714	381	241	274	320	393	359	543	39	82
LGV	69	34	29	19	39	45	31	67	10	11
M/C	16	1.2	1.6	0.4	1.2	10.4	0.8	7.6	0.4	0.4
OGV1	34.2	30.4	13.3	1.9	28.5	22.8	13.3	32.3	7.6	9.5
OGV2	8.7	11.6	2.9	0	2.9	2.9	5.8	8.7	5.8	0
P/C	37.6	7.2	12	3.2	4.8	22.4	5.6	26.4	0.8	0.8
PSV	112.5	12.5	40	52.5	10	57.5	7.5	0	0	47.5
<b>Total</b>	<b>825.9</b>	<b>457</b>	<b>286.2</b>	<b>294.9</b>	<b>390.4</b>	<b>463.7</b>	<b>409.1</b>	<b>651</b>	<b>62.4</b>	<b>102.5</b>

Arm	Road name
From A	R805 eastbound
To A	R805 westbound
From B	R805 southbound
To B	R805 northbound
From C	R147 west bound
To C	R147 east bound
From D	R805 westbound
To D	R805 eastbound
From E	unknown rd
To E	unknown rd

17:00:00 to 18:00:00 (Turning movement counts)																									
Vehicle type	A TO A	A TO B	A TO C	A TO D	A TO E	B TO A	B TO B	B TO C	B TO D	B TO E	C TO A	C TO B	C TO C	C TO D	C TO E	D TO A	D TO B	D TO C	D TO D	D TO E	E TO A	E TO B	E TO C	E TO D	E TO E
CAR	0	33	298	203	57	49	0	19	176	14	342	23	0	77	48	138	385	7	0	38	59	53	27	38	0
LGV	0	4	14	11	3	4	0	1	14	0	33	2	0	7	3	11	44	0	0	4	1	1	2	1	0
M/C	0	0	1.2	1.6	0	0	0	0.4	0	0	5.6	0	0	0.4	0	4.8	1.6	0	0	0	0	0.4	0	0	0
OGV1	0	0	3.8	1.9	0	1.9	0	0	0	0	5.7	0	0	1.9	0	7.6	0	0	0	0	1.9	0	0	0	0
OGV2	0	0	2.9	0	0	0	0	0	0	0	2.9	0	0	0	0	0	0	0	0	0	2.9	0	0	0	0
P/C	0	0	6.4	2.8	1.2	0.4	0	0	3.2	0	12	0.4	0	0.4	0.8	9.2	6	0	0	0	0.4	0	0.4	0	0
PSV	0	32.5	32.5	0	0	0	0	0	0	32.5	0	0	0	0	45	2.5	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>37</b>	<b>318.7</b>	<b>215.9</b>	<b>60</b>	<b>54.9</b>	<b>0</b>	<b>20</b>	<b>190</b>	<b>14</b>	<b>380.7</b>	<b>25</b>	<b>0</b>	<b>85.9</b>	<b>51</b>	<b>149</b>	<b>436.6</b>	<b>7</b>	<b>0</b>	<b>42</b>	<b>64.8</b>	<b>54</b>	<b>29</b>	<b>39</b>	<b>0</b>

8:00:00 to 9:00:00 (Link flows in approach arm - Inbound & Outbound)										
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D	From E	To E
CAR	591	588	258	494	490	351	568	494	177	157
LGV	32	48	19	51	45	17	59	33	5	10
M/C	2.8	10.4	0.4	2	6	1.6	6.4	2	0.4	0
OGV1	5.7	7.6	1.9	7.6	7.6	3.8	7.6	3.8	1.9	0
OGV2	2.9	0	0	0	0	2.9	0	0	2.9	0
P/C	10.4	21.6	3.6	6.4	13.6	6.8	15.2	6.4	0.8	2
PSV	65	2.5	32.5	32.5	45	32.5	2.5	0	0	77.5
<b>Total</b>	<b>631.6</b>	<b>643.6</b>	<b>278.9</b>	<b>552.6</b>	<b>542.6</b>	<b>374.7</b>	<b>634.6</b>	<b>530.8</b>	<b>186.8</b>	<b>167</b>

Arm	Road name
From A	R805 eastbound
To A	R805 westbound
From B	R805 southbound
To B	R805 northbound
From C	R147 west bound
To C	R147 east bound
From D	R805 westbound
To D	R805 eastbound
From E	unknown rd
To E	unknown rd

## JTC Site 32

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	4	246	238	161	137	5	37	128	234	63	3	42	152	282	41	24
LGV	0	27	29	8	12	0	2	15	12	8	0	3	6	20	0	0
M/C	0	0.4	1.2	1.2	0	0	0.4	0.4	0.4	0.4	0	0.4	0	0	0	0
OGV1	0	13.3	11.4	1.9	1.9	0	1.9	3.8	1.9	0	0	0	0	5.7	0	0
OGV2	0	0	0	0	2.9	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0.8	6.8	1.2	1.2	0	1.6	0.4	0.4	1.6	0	1.2	0.8	6	0.4	0
PSV	0	0	2.5	0	0	0	0	10	2.5	0	0	5	2.5	12.5	0	0
<b>Total</b>	<b>4</b>	<b>286.3</b>	<b>278.4</b>	<b>170.9</b>	<b>153.8</b>	<b>5</b>	<b>40.9</b>	<b>146.8</b>	<b>247.9</b>	<b>71</b>	<b>3</b>	<b>45</b>	<b>158</b>	<b>307.7</b>	<b>41</b>	<b>24</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	649	527	307	596	342	319	499	355
LGV	64	30	29	55	23	31	26	26
M/C	2.8	0.4	0.8	0.8	1.2	1.6	0	2
OGV1	26.6	3.8	7.6	19	1.9	13.3	5.7	5.7
OGV2	0	2.9	2.9	0	0	0	0	0
P/C	8.8	2.4	3.2	8.4	3.2	8.8	7.2	2.8
PSV	2.5	5	10	12.5	7.5	2.5	15	15
<b>Total</b>	<b>739.6</b>	<b>563.7</b>	<b>346.5</b>	<b>670</b>	<b>366.9</b>	<b>363.3</b>	<b>530.7</b>	<b>386.7</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Faussagh Ave rd westbound
To B	Faussagh Ave rd eastbound
From C	R805 northbound
To C	R805 southbound
From D	Nepin rd eastbound
To D	Nepin rd westbound

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	3	246	259	111	209	7	40	137	367	87	1	31	120	170	26	0
LGV	0	24	32	7	18	1	3	9	39	5	0	0	15	19	1	0
M/C	0	0	0.8	0.4	0	0	0	0	0.8	0.8	0	0	1.2	1.2	0	0
OGV1	0	9.5	1.9	1.9	3.8	0	0	0	5.7	1.9	0	0	0	0	0	0
OGV2	0	0	0	0	2.9	0	0	2.9	2.9	0	0	0	0	0	0	0
P/C	0	0.4	0.8	0.8	0.4	0	0.8	4.4	3.6	0.4	0	0.4	0.8	1.2	0.8	0
PSV	0	2.5	0	2.5	0	0	0	10	0	2.5	0	0	0	12.5	0	0
<b>Total</b>	<b>3</b>	<b>279.5</b>	<b>292.9</b>	<b>119.9</b>	<b>233.7</b>	<b>8</b>	<b>43</b>	<b>148.9</b>	<b>414.6</b>	<b>93.9</b>	<b>1</b>	<b>31</b>	<b>135</b>	<b>189</b>	<b>27</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	619	699	393	510	486	326	316	279
LGV	63	72	31	49	44	36	35	16
M/C	1.2	2	0	2	1.6	0.8	2.4	0.4
OGV1	13.3	9.5	3.8	11.4	7.6	1.9	0	1.9
OGV2	0	5.8	5.8	0	2.9	0	0	2.9
P/C	2	4.8	5.6	2	4.4	2.4	2.8	5.6
PSV	5	0	10	17.5	2.5	0	12.5	12.5
<b>Total</b>	<b>695.3</b>	<b>786.3</b>	<b>433.6</b>	<b>570.4</b>	<b>540.5</b>	<b>363.9</b>	<b>351</b>	<b>299.8</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Faussagh Ave rd westbound
To B	Faussagh Ave rd eastbound
From C	R805 northbound
To C	R805 southbound
From D	Nepin rd eastbound
To D	Nepin rd westbound

### JTC Site 33

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	587	459	440	0	111	228	53	0	1
LGV	0	114	43	57	0	15	33	10	0	1
M/C	0	11.6	0.4	0.8	0	0	0.4	3.2	0	0.4
OGV1	0	34.2	1.9	32.3	0	0	9.5	1.9	0	1.9
OGV2	0	31.9	20.3	40.6	0	8.7	2.9	0	0	2.9
P/C	0	1.2	0.4	5.2	0	0	1.2	1.6	0	0.4
PSV	0	95	0	67.5	0	0	2.5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>767.1</b>	<b>524.2</b>	<b>569.9</b>	<b>0</b>	<b>134.7</b>	<b>273.4</b>	<b>64.9</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	1046	668	551	640	281	570
LGV	157	90	72	124	43	58
M/C	12	1.2	0.8	14.8	3.6	0.4
OGV1	36.1	41.8	32.3	36.1	11.4	1.9
OGV2	52.2	43.5	49.3	31.9	2.9	29
P/C	1.6	6.4	5.2	2.8	2.8	0.4
PSV	95	70	67.5	95	2.5	0
<b>Total</b>	<b>1291.3</b>	<b>843.3</b>	<b>704.6</b>	<b>832</b>	<b>338.3</b>	<b>658.9</b>

Arm	Road name
From A	R135 southbound
To A	R135 northbound
From B	R135 northbound
To B	R135 southbound
From C	unknown rd
To C	unknown rd

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	385	210	845	1	160	313	57	0	1
LGV	0	44	15	100	0	17	25	7	0	1
M/C	0	0.4	0.4	9.2	0	2.8	3.2	0	0	0.4
OGV1	0	7.6	3.8	7.6	0	11.4	3.8	0	0	1.9
OGV2	0	11.6	0	14.5	0	0	0	2.9	0	2.9
P/C	0	0.4	0.4	19.6	0	0	0.4	0.4	0	0.4
PSV	0	72.5	2.5	77.5	0	5	5	5	0	2.5
<b>Total</b>	<b>0</b>	<b>448.2</b>	<b>228.8</b>	<b>967.1</b>	<b>1</b>	<b>188.4</b>	<b>341.8</b>	<b>66.9</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	595	1158	1006	443	370	370
LGV	59	125	117	51	32	32
M/C	0.8	12.4	12	0.4	3.2	3.2
OGV1	11.4	11.4	19	7.6	3.8	15.2
OGV2	11.6	14.5	14.5	14.5	2.9	0
P/C	0.8	20	19.6	0.8	0.8	0.4
PSV	75	82.5	82.5	77.5	10	7.5
<b>Total</b>	<b>677</b>	<b>1308.9</b>	<b>1156.5</b>	<b>516.1</b>	<b>408.7</b>	<b>417.2</b>

Arm	Road name
From A	R135 southbound
To A	R135 northbound
From B	R135 northbound
To B	R135 southbound
From C	unknown rd
To C	unknown rd

## JTC Site 34

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	15	0	689	27	5	0	6	0	548	0	2	179	29	0	425	0
LGV	1	0	107	3	0	0	0	0	62	0	1	15	7	0	43	0
M/C	0	0	10.8	0	0	0	0	0	0.4	0	0	0	0	0	0	0
OGV1	0	0	28.5	3.8	0	0	0	0	32.3	0	0	1.9	5.7	0	7.6	0
OGV2	0	0	52.2	0	0	0	0	0	46.4	0	0	0	0	0	11.6	0
P/C	0	0	13.6	0	0	0	0	0	4.8	0	0	0	0	0	6.4	0
PSV	0	0	80	2.5	0	0	0	0	57.5	0	0	12.5	2.5	0	15	0
<b>Total</b>	<b>16</b>	<b>0</b>	<b>876.7</b>	<b>33.8</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>688.7</b>	<b>0</b>	<b>3</b>	<b>195.9</b>	<b>41.7</b>	<b>0</b>	<b>487.2</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	731	597	11	0	729	1122	454	206
LGV	111	70	0	0	78	151	50	18
M/C	10.8	0.4	0	0	0.4	10.8	0	0
OGV1	32.3	38	0	0	34.2	36.1	13.3	5.7
OGV2	52.2	46.4	0	0	46.4	63.8	11.6	0
P/C	13.6	4.8	0	0	4.8	20	6.4	0
PSV	82.5	60	0	0	70	95	17.5	15
<b>Total</b>	<b>926.5</b>	<b>751.4</b>	<b>11</b>	<b>0</b>	<b>887.6</b>	<b>1372.9</b>	<b>528.9</b>	<b>229.7</b>

Arm	Road name
From A	R135 southbound
To A	R135 northbound
From B	R102 westbound
To B	R102 eastbound
From C	R135 northbound
To C	R135 southbound
From D	Tolka valley rd eastbound
To D	Tolka valley rd westbound

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	7	3	510	62	2	0	2	1	758	2	0	260	31	1	175	0
LGV	0	0	44	4	0	0	0	0	89	0	0	25	3	0	13	0
M/C	0	0	0.8	0	0	0	0	0	8.4	0	0	0.8	0	0	0	0
OGV1	1.9	0	7.6	0	0	0	0	0	11.4	0	0	0	1.9	0	0	0
OGV2	0	0	5.8	0	0	0	0	0	14.5	0	0	0	0	0	0	0
P/C	0	0	3.6	0.4	0	0	0	0	6	0	0	1.2	0	0	0.4	0
PSV	0	0	57.5	2.5	0	0	0	0	67.5	0	0	10	0	0	15	0
<b>Total</b>	<b>8.9</b>	<b>3</b>	<b>567.4</b>	<b>66</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>872.9</b>	<b>2</b>	<b>0</b>	<b>285</b>	<b>35.9</b>	<b>1</b>	<b>188</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	582	798	5	6	1020	687	207	323
LGV	48	92	0	0	114	57	16	29
M/C	0.8	8.4	0	0	9.2	0.8	0	0.8
OGV1	9.5	15.2	0	0	11.4	7.6	1.9	0
OGV2	5.8	14.5	0	0	14.5	5.8	0	0
P/C	4	6	0	0	7.2	4	0.4	1.6
PSV	60	67.5	0	0	77.5	72.5	15	12.5
<b>Total</b>	<b>645.3</b>	<b>919.7</b>	<b>5</b>	<b>6</b>	<b>1159.9</b>	<b>757.4</b>	<b>224.9</b>	<b>352</b>

Arm	Road name
From A	R135 southbound
To A	R135 northbound
From B	R102 westbound
To B	R102 eastbound
From C	R135 northbound
To C	R135 southbound
From D	Tolka valley rd eastbound
To D	Tolka valley rd westbound

### JTC Site 35

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	91	290	13	244	0	271	41	315	33	0	25	79	137	141	0
LGV	0	25	32	4	36	0	24	9	18	6	0	2	5	13	6	0
M/C	0	0.8	1.6	0	0	0	0.4	0	0.4	0	0	0	0	2.8	0.8	0
OGV1	0	5.7	17.1	1.9	3.8	0	5.7	0	5.7	1.9	0	0	3.8	0	1.9	0
OGV2	0	0	0	2.9	14.5	0	0	0	0	2.9	0	0	0	0	0	0
P/C	0	0	1.6	0	0	0	0	0.4	1.2	0	0	0.4	0.4	1.2	0.8	0
PSV	0	0	7.5	0	0	0	0	0	2.5	2.5	0	7.5	0	0	10	0
<b>Total</b>	<b>0</b>	<b>121.7</b>	<b>339.1</b>	<b>21.8</b>	<b>298.3</b>	<b>0</b>	<b>300.7</b>	<b>50</b>	<b>338.7</b>	<b>43.8</b>	<b>0</b>	<b>27</b>	<b>87.8</b>	<b>150</b>	<b>148.9</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	394	638	556	261	373	702	357	79
LGV	61	59	69	44	26	62	24	15
M/C	2.4	0.4	0.4	3.6	0.4	2.8	3.6	0
OGV1	24.7	13.3	9.5	7.6	7.6	24.7	5.7	1.9
OGV2	2.9	14.5	14.5	2.9	2.9	0	0	2.9
P/C	1.6	1.6	0.4	1.2	1.6	2.4	2.4	0.8
PSV	7.5	2.5	0	2.5	12.5	17.5	10	7.5
<b>Total</b>	<b>482.6</b>	<b>724.8</b>	<b>649</b>	<b>315.5</b>	<b>409.5</b>	<b>788.7</b>	<b>386.7</b>	<b>98.8</b>

Arm	Road name
From A	R805 southbound
To A	R805 northbound
From B	Ballyboggan rd westbound
To B	Ballyboggan rd eastbound
From C	Ballyboggan rd westbound
To C	R805 southbound
From D	unknown rd
To D	unknown rd

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	113	374	84	374	0	207	165	455	36	0	73	249	37	67	0
LGV	0	5	39	4	50	0	24	22	49	5	0	4	23	1	3	0
M/C	0	0	1.2	0	2	0	0.4	1.6	1.2	0	0	0.4	0.4	0.4	0	0
OGV1	0	0	5.7	0	13.3	0	3.8	1.9	9.5	0	0	0	3.8	0	0	0
OGV2	0	2.9	0	0	5.8	0	0	0	2.9	0	0	0	5.8	0	0	0
P/C	0	0	1.2	0	1.2	0	0	2	0.4	0.4	0	0.4	0.4	0.8	0	0
PSV	0	0	7.5	0	2.5	0	2.5	0	5	0	0	12.5	0	5	2.5	0
<b>Total</b>	<b>0</b>	<b>120.9</b>	<b>418.7</b>	<b>88</b>	<b>443.1</b>	<b>0</b>	<b>234.8</b>	<b>188.9</b>	<b>516.4</b>	<b>41</b>	<b>0</b>	<b>77</b>	<b>281.6</b>	<b>38</b>	<b>70</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	571	1078	746	186	564	648	353	322
LGV	48	122	96	11	58	66	27	30
M/C	1.2	3.6	4	0.4	1.6	1.6	0.8	2
OGV1	5.7	26.6	19	0	9.5	9.5	3.8	1.9
OGV2	2.9	14.5	5.8	2.9	2.9	0	5.8	0
P/C	1.2	2	3.2	1.2	1.2	1.2	1.2	2.4
PSV	7.5	7.5	5	5	17.5	12.5	7.5	12.5
<b>Total</b>	<b>627.6</b>	<b>1241.1</b>	<b>866.8</b>	<b>199.9</b>	<b>634.4</b>	<b>723.5</b>	<b>389.6</b>	<b>353.9</b>

Arm	Road name
From A	R805 southbound
To A	R805 northbound
From B	Ballyboggan rd westbound
To B	Ballyboggan rd eastbound
From C	Ballyboggan rd westbound
To C	R805 southbound
From D	unknown rd
To D	unknown rd

## JTC Site 36

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	118	215	78	0	202	391	282	0	1
LGV	0	29	35	7	0	31	28	21	0	1
M/C	0	0	1.6	0	0	0.4	0.4	0.8	0	0.4
OGV1	0	9.5	19	1.9	0	5.7	5.7	7.6	0	1.9
OGV2	0	11.6	5.8	0	0	2.9	8.7	0	0	2.9
P/C	0	0.8	2	0.4	0	0.4	0.8	0.4	0	0.4
PSV	0	0	5	0	0	5	2.5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>168.1</b>	<b>274.8</b>	<b>86.9</b>	<b>0</b>	<b>241.6</b>	<b>433.4</b>	<b>310.6</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	333	469	280	400	673	417
LGV	64	35	38	50	49	66
M/C	1.6	0.4	0.4	0.8	1.2	2
OGV1	28.5	7.6	7.6	17.1	13.3	24.7
OGV2	17.4	8.7	2.9	11.6	8.7	8.7
P/C	2.8	1.2	0.8	1.2	1.2	2.4
PSV	5	2.5	5	0	2.5	10
<b>Total</b>	<b>442.9</b>	<b>520.3</b>	<b>328.5</b>	<b>478.7</b>	<b>744</b>	<b>516.4</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Tolka valley rd westbound
To B	Tolka valley rd eastbound
From C	Ratoath rd northbound
To C	Ratoath rd southbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	142	353	70	0	302	529	374	0	1
LGV	0	8	25	8	0	30	76	41	0	1
M/C	0	0	0.4	0	0	0.4	2	0.8	0	0.4
OGV1	0	0	3.8	0	0	5.7	24.7	3.8	0	1.9
OGV2	0	0	5.8	0	0	0	8.7	2.9	0	2.9
P/C	0	0	1.6	0	0	0.4	3.2	0	0	0.4
PSV	0	0	5	0	0	2.5	7.5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>150</b>	<b>387.6</b>	<b>78</b>	<b>0</b>	<b>337.7</b>	<b>638.4</b>	<b>421.7</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	495	599	372	516	903	655
LGV	33	84	38	49	117	55
M/C	0.4	2	0.4	0.8	2.8	0.8
OGV1	3.8	24.7	5.7	3.8	28.5	9.5
OGV2	5.8	8.7	0	2.9	11.6	5.8
P/C	1.6	3.2	0.4	0	3.2	2
PSV	5	7.5	2.5	0	7.5	7.5
<b>Total</b>	<b>537.6</b>	<b>716.4</b>	<b>415.7</b>	<b>571.7</b>	<b>1060.1</b>	<b>725.3</b>

Arm	Road name
From A	Ratoath rd southbound
To A	Ratoath rd northbound
From B	Tolka valley rd westbound
To B	Tolka valley rd eastbound
From C	Ratoath rd northbound
To C	Ratoath rd southbound

### JTC Site 37

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	133	141	56	0	114	224	191	0	1
LGV	0	9	28	6	0	13	17	30	0	1
M/C	0	0	0.4	0	0	0	0.4	0.4	0	0.4
OGV1	0	1.9	1.9	0	0	1.9	3.8	17.1	0	1.9
OGV2	0	0	2.9	0	0	0	2.9	11.6	0	2.9
P/C	0	1.2	1.2	0	0	0	0.4	0.4	0	0.4
PSV	0	0	2.5	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>143.9</b>	<b>173.8</b>	<b>62</b>	<b>0</b>	<b>128.9</b>	<b>247.7</b>	<b>249.7</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	274	280	170	324	415	255
LGV	37	23	19	39	47	41
M/C	0.4	0.4	0	0.4	0.8	0.4
OGV1	3.8	3.8	1.9	19	20.9	3.8
OGV2	2.9	2.9	0	11.6	14.5	2.9
P/C	2.4	0.4	0	1.6	0.8	1.2
PSV	2.5	0	0	0	0	2.5
<b>Total</b>	<b>317.7</b>	<b>309.7</b>	<b>190.9</b>	<b>393.6</b>	<b>497.4</b>	<b>302.7</b>

Arm	Road name
From A	R103 southbound
To A	R103 northbound
From B	R102 westbound
To B	R102 eastbound
From C	R102 eastbound
To C	R102 westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	26	204	61	0	181	307	211	0	1
LGV	1	1	22	9	0	16	29	20	0	1
M/C	0	0	0.4	0	0	0	0	0.4	0	0.4
OGV1	0	0	3.8	0	0	1.9	5.7	0	0	1.9
OGV2	0	0	0	0	0	0	2.9	0	0	2.9
P/C	0	0	0.8	0.8	0	0	0	0	0	0.4
PSV	0	0	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>1</b>	<b>27</b>	<b>229.8</b>	<b>70</b>	<b>0</b>	<b>198.9</b>	<b>344.6</b>	<b>231</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	230	368	242	237	518	385
LGV	24	39	25	21	49	38
M/C	0.4	0	0	0.4	0.4	0.4
OGV1	3.8	5.7	1.9	0	5.7	5.7
OGV2	0	2.9	0	0	2.9	0
P/C	0.8	0.8	0.8	0	0	0.8
PSV	0	0	0	0	0	0
<b>Total</b>	<b>257.8</b>	<b>415.6</b>	<b>268.9</b>	<b>258</b>	<b>575.6</b>	<b>428.7</b>

Arm	Road name
From A	R103 southbound
To A	R103 northbound
From B	R102 westbound
To B	R102 eastbound
From C	R102 eastbound
To C	R102 westbound

## JTC Site 46

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	110	490	141	0	115	121	124	0	1
LGV	0	15	44	17	0	37	23	32	0	1
M/C	0	0.4	0.4	0.4	0	0	2.8	0.4	0	0.4
OGV1	0	0	3.8	1.9	0	9.5	11.4	1.9	0	1.9
OGV2	0	8.7	17.4	0	0	2.9	2.9	2.9	0	2.9
P/C	0	1.6	0.8	0.4	0	0.4	0.4	0	0	0.4
PSV	0	0	0	0	0	0	2.5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>133.7</b>	<b>555.2</b>	<b>159.9</b>	<b>0</b>	<b>164.4</b>	<b>158.3</b>	<b>160.8</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	600	262	256	234	245	605
LGV	59	40	54	47	55	81
M/C	0.8	3.2	0.4	0.8	3.2	0.4
OGV1	3.8	13.3	11.4	1.9	13.3	13.3
OGV2	26.1	2.9	2.9	11.6	5.8	20.3
P/C	2.4	0.8	0.8	1.6	0.4	1.2
PSV	0	2.5	0	0	2.5	0
<b>Total</b>	<b>688.9</b>	<b>318.2</b>	<b>324.3</b>	<b>294.5</b>	<b>319.1</b>	<b>719.6</b>

Arm	Road name
From A	Ballyboggan rd westbound
To A	Ballyboggan rd eastbound
From B	Coolmine rd northbound
To B	Coolmine rd southbound
From C	Ballyboggan rd eastbound
To C	Ballyboggan rd westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	19	335	207	0	404	179	43	0	1
LGV	0	0	33	17	0	50	12	5	0	1
M/C	0	0.4	2.8	2.4	0	0.8	0.4	0	0	0.4
OGV1	0	1.9	7.6	3.8	0	11.4	0	0	0	1.9
OGV2	0	0	8.7	0	0	2.9	2.9	0	0	2.9
P/C	0	0.4	1.6	0.4	0	2	1.2	0.4	0	0.4
PSV	0	0	5	7.5	0	0	5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>20.9</b>	<b>384.3</b>	<b>227.8</b>	<b>0</b>	<b>468.3</b>	<b>193.9</b>	<b>48</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	354	386	611	62	222	739
LGV	33	29	67	5	17	83
M/C	3.2	2.8	3.2	0.4	0.4	3.6
OGV1	9.5	3.8	15.2	1.9	0	19
OGV2	8.7	2.9	2.9	0	2.9	11.6
P/C	2	1.6	2.4	0.8	1.6	3.6
PSV	5	12.5	7.5	0	5	5
<b>Total</b>	<b>405.2</b>	<b>421.7</b>	<b>696.1</b>	<b>68.9</b>	<b>241.9</b>	<b>852.6</b>

Arm	Road name
From A	Ballyboggan rd westbound
To A	Ballyboggan rd eastbound
From B	Coolmine rd northbound
To B	Coolmine rd southbound
From C	Ballyboggan rd eastbound
To C	Ballyboggan rd westbound

## JTC Site 47

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	12	45	21	0	263	179	413	0	1
LGV	0	2	7	6	0	20	16	37	0	1
M/C	0	0	0.4	0	0	0.4	0.4	0.4	0	0.4
OGV1	0	0	0	1.9	0	7.6	1.9	19	0	1.9
OGV2	0	0	0	0	0	2.9	0	0	0	2.9
P/C	0	0.4	2	0	0	3.6	4.8	3.6	0	0.4
PSV	0	0	0	0	0	12.5	0	12.5	0	2.5
<b>Total</b>	<b>0</b>	<b>14</b>	<b>52</b>	<b>28.9</b>	<b>0</b>	<b>293.5</b>	<b>196.9</b>	<b>469</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	57	200	284	425	592	308
LGV	9	22	26	39	53	27
M/C	0.4	0.4	0.4	0.4	0.8	0.8
OGV1	0	3.8	9.5	19	20.9	7.6
OGV2	0	0	2.9	0	0	2.9
P/C	2.4	4.8	3.6	4	8.4	5.6
PSV	0	0	12.5	12.5	12.5	12.5
<b>Total</b>	<b>66</b>	<b>225.8</b>	<b>322.4</b>	<b>483</b>	<b>665.9</b>	<b>345.5</b>

Arm	Road name
From A	Broombridge road southbound
To A	Broombridge road northbound
From B	Faussagh ave westbound
To B	Faussagh ave eastbound
From C	Faussagh ave eastbound
To C	Faussagh ave westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	20	40	48	1	353	192	316	0	1
LGV	0	1	4	6	0	25	12	37	0	1
M/C	0	0	0	0.4	0	0	2.4	0	0	0.4
OGV1	0	0	0	0	0	3.8	1.9	7.6	0	1.9
OGV2	0	0	0	0	0	5.8	0	0	0	2.9
P/C	0	0	2	0	0	4.4	1.6	1.2	0	0.4
PSV	0	0	0	0	0	10	5	12.5	0	2.5
<b>Total</b>	<b>0</b>	<b>21</b>	<b>44</b>	<b>54</b>	<b>1</b>	<b>387.6</b>	<b>205.9</b>	<b>360.6</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	60	240	402	337	508	393
LGV	5	18	31	38	49	29
M/C	0	2.8	0.4	0	2.4	0
OGV1	0	1.9	3.8	7.6	9.5	3.8
OGV2	0	0	5.8	0	0	5.8
P/C	2	1.6	4.4	1.2	2.8	6.4
PSV	0	5	10	12.5	17.5	10
<b>Total</b>	<b>65</b>	<b>259.9</b>	<b>442.6</b>	<b>382.6</b>	<b>566.5</b>	<b>431.6</b>

Arm	Road name
From A	Broombridge road southbound
To A	Broombridge road northbound
From B	Faussagh ave westbound
To B	Faussagh ave eastbound
From C	Faussagh ave eastbound
To C	Faussagh ave westbound

### JTC Site 48

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	348	786	2	234	0	263	0	487	186	0	10	10	12	0	0
LGV	0	28	115	4	8	0	31	0	73	23	0	0	1	0	5	0
M/C	0	0.4	10.4	0	0	0	0.8	0	0.4	0.4	0	0	0	0	0.4	0
OGV1	0	7.6	32.3	0	1.9	0	0	0	32.3	7.6	0	0	0	0	1.9	0
OGV2	0	2.9	58	0	0	0	0	0	43.5	0	0	0	0	0	0	0
P/C	0	0.8	19.2	0	0.8	0	0.4	0	0.8	0.8	0	0	0	0	0.8	0
PSV	0	0	90	0	0	0	0	0	72.5	2.5	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>386.5</b>	<b>991.3</b>	<b>6</b>	<b>243.9</b>	<b>0</b>	<b>294</b>	<b>0</b>	<b>635.8</b>	<b>216.6</b>	<b>0</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>6.9</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	1137	732	497	546	683	1049	22	12
LGV	147	82	39	51	96	151	6	4
M/C	10.8	0.4	0.8	0.8	0.8	11.6	0.4	0
OGV1	39.9	34.2	1.9	15.2	39.9	34.2	1.9	0
OGV2	60.9	43.5	0	2.9	43.5	58	0	0
P/C	20	1.6	1.2	1.6	1.6	20.4	0.8	0
PSV	90	72.5	0	2.5	75	90	0	0
<b>Total</b>	<b>1384.8</b>	<b>891.7</b>	<b>537.9</b>	<b>615.1</b>	<b>862.4</b>	<b>1292.2</b>	<b>29.9</b>	<b>16</b>

Arm	Road name
From A	Flinglas rd southbound
To A	Flinglas rd northbound
From B	R102 westbound
To B	R102 eastbound
From C	R135 northbound
To C	R135 southbound
From D	
To D	

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	271	405	8	190	0	190	2	823	347	0	4	0	1	3	0
LGV	0	17	40	1	13	0	10	0	103	25	0	0	0	0	0	0
M/C	0	0	0	0	0.8	0	0.4	0	9.6	1.2	0	0	0	0	0	0
OGV1	0	0	9.5	0	0	0	1.9	0	13.3	0	0	0	0	0	0	0
OGV2	0	0	5.8	0	0	0	2.9	0	14.5	0	0	0	0	0	0	0
P/C	0	0	4.4	0	0.4	0	0	0.4	7.8	0.8	0	0	0	0	0	0
PSV	0	0	70	0	0	0	2.5	0	77.5	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>288</b>	<b>460.3</b>	<b>9</b>	<b>203</b>	<b>0</b>	<b>204.8</b>	<b>2</b>	<b>953.8</b>	<b>372</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	685	1014	382	619	1174	598	4	14
LGV	58	116	23	42	128	50	0	1
M/C	0	10.4	1.2	1.2	10.8	0.4	0	0
OGV1	9.5	13.3	1.9	0	13.3	11.4	0	0
OGV2	5.8	14.5	2.9	0	14.5	8.7	0	0
P/C	4.4	1.2	0.8	0.8	1.6	4.4	0	0.4
PSV	70	77.5	2.5	0	77.5	72.5	0	0
<b>Total</b>	<b>758.3</b>	<b>1157.8</b>	<b>409.8</b>	<b>661</b>	<b>1329.8</b>	<b>668.1</b>	<b>4</b>	<b>15</b>

Arm	Road name
From A	Flinglas rd southbound
To A	Flinglas rd northbound
From B	R102 westbound
To B	R102 eastbound
From C	R135 northbound
To C	R135 southbound
From D	
To D	

## **Appendix B**

### **ALAM Calibration**

AM Link Calibration										
Counts :				82		RESULT =	93%	RESULT =		95%
Light Traffic						REQD =	85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	15125	15124	366	384	-18	0.9	1	100	1	18
2	15124	15125	525	517	8	0.3	1	100	1	-8
3	12146	12145	529	477	51	2.3	1	100	1	-51
4	12145	12146	558	615	-57	2.4	1	100	1	57
5	12232	12203	149	149	0	0.0	1	100	1	0
6	12203	12232	75	75	0	0.0	1	100	1	0
7	12198	12295	192	200	-9	0.6	1	100	1	9
8	12295	12198	147	103	44	3.9	1	100	1	-44
9	12227	12117	464	464	0	0.0	1	100	1	0
10	12117	12227	532	436	96	4.4	1	100	1	-96
11	12109	12257	440	440	0	0.0	1	100	1	0
12	12257	12109	388	321	67	3.6	1	100	1	-67
13	12144	12193	563	508	55	2.4	1	100	1	-55
14	12193	12144	344	344	0	0.0	1	100	1	0
15	10199	10192	670	698	-28	1.1	1	100	1	28
16	10192	10199	701	737	-37	1.4	1	105	1	37
17	10198	10209	521	526	-5	0.2	1	100	1	5
18	10209	10198	532	600	-68	2.8	1	100	1	68
19	18102	18101	573	573	0	0.0	1	100	1	0
20	18101	18102	467	399	67	3.2	1	100	1	-67
21	15128	15118	604	604	0	0.0	1	100	1	0
22	15118	15128	604	604	0	0.0	1	100	1	0
23	15132	15194	457	458	-1	0.1	1	100	1	1
24	15194	15132	223	225	-2	0.1	1	100	1	2
25	12147	12400	108	111	-3	0.3	1	100	1	3
26	12400	12147	315	326	-11	0.6	1	100	1	11
27	15194	12260	467	484	-17	0.8	1	100	1	17
28	12260	15194	250	319	-69	4.1	1	100	1	69
29	12308	12260	11	67	-56	9.0	0	100	1	56
30	12260	12308	53	52	1	0.1	1	100	1	-1
31	12261	12260	366	278	88	4.9	1	100	1	-88
32	12260	12261	405	350	55	2.8	1	100	1	-55
33	12259	12260	101	80	21	2.2	1	100	1	-21
34	12260	12259	237	188	49	3.4	1	100	1	-49
35	12273	12225	926	916	10	0.3	1	139	1	-10
36	12225	12273	563	551	12	0.5	1	100	1	-12
37	12183	12225	354	299	55	3.0	1	100	1	-55
38	12225	12183	488	482	6	0.3	1	100	1	-6
39	12199	12225	356	356	0	0.0	1	100	1	0
40	12225	12199	644	635	9	0.3	1	100	1	-9
41	12295	12225	213	200	13	0.9	1	100	1	-13
42	12225	12295	154	103	51	4.5	1	100	1	-51

43	10118	10192	1203	1087	116	3.4	1	180	1	-116
44	10192	10118	758	784	-26	0.9	1	114	1	26
45	18376	18216	842	898	-56	1.9	1	126	1	56
46	18216	18234	667	614	53	2.1	1	100	1	-53
47	10118	18216	807	829	-22	0.8	1	121	1	22
48	18216	10118	1273	1145	128	3.7	1	191	1	-128
49	18231	18216	504	276	228	11.5	0	100	0	-228
50	18216	18231	224	216	8	0.5	1	100	1	-8
51	12213	12214	455	456	-1	0.1	1	100	1	1
52	12214	12213	697	697	0	0.0	1	100	1	0
53	12219	12214	625	602	23	0.9	1	100	1	-23
54	12214	12219	305	275	30	1.7	1	100	1	-30
55	12263	12214	399	451	-52	2.5	1	100	1	52
56	12214	12263	764	755	9	0.3	1	115	1	-9
57	12217	12214	381	349	32	1.7	1	100	1	-32
58	12214	12217	94	131	-37	3.5	1	100	1	37
59	18258	18100	397	402	-5	0.2	1	100	1	5
60	18100	18258	504	498	6	0.3	1	100	1	-6
61	18310	18100	318	248	70	4.1	1	100	1	-70
62	18100	18310	450	427	23	1.1	1	100	1	-23
63	12267	18100	722	751	-29	1.1	1	108	1	29
64	18100	12267	483	477	6	0.3	1	100	1	-6
65	18256	18310	311	69	242	17.6	0	100	0	-242
66	18310	18256	303	290	13	0.8	1	100	1	-13
67	18209	18310	189	185	4	0.3	1	100	1	-4
68	18310	18209	363	143	220	13.9	0	100	0	-220
69	18100	18310	462	427	35	1.6	1	100	1	-35
70	18310	18100	296	248	48	2.9	1	100	1	-48
71	12219	12266	300	271	29	1.7	1	100	1	-29
72	12266	12219	686	652	34	1.3	1	100	1	-34
73	10192	12266	659	536	123	5.0	0	100	0	-123
74	12266	10192	302	270	32	1.9	1	100	1	-32
75	12282	12266	310	308	2	0.1	1	100	1	-2
76	12266	12282	281	191	90	5.8	0	100	1	-90
77	12265	12173	66	54	12	1.6	1	100	1	-12
78	12173	12265	222	217	5	0.3	1	100	1	-5
79	12172	12173	310	311	-1	0.1	1	100	1	1
80	12173	12172	464	459	5	0.2	1	100	1	-5
81	12211	12173	651	648	3	0.1	1	100	1	-3
82	12173	12211	336	336	0	0.0	1	100	1	0
			36016	<b>34243</b>	1,773	9.5	<b>76</b>		<b>78</b>	<b>-1,773</b>

AM Link Calibration											
Counts :				82		RESULT =		90%	RESULT =		100%
Heavy Traffic						REQD =		85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	15125	15124	11	7.44	3	1.1	1	100	1	-3	
2	15124	15125	23	22.97	0	0.1	1	100	1	0	
3	12146	12145	49	0.26	48	9.8	0	100	1	-48	
4	12145	12146	27	23.37	4	0.7	1	100	1	-4	
5	12232	12203	0	40.29	-40	8.8	0	100	1	40	
6	12203	12232	20	19.97	1	0.1	1	100	1	-1	
7	12198	12295	2	0	2	2.1	1	100	1	-2	
8	12295	12198	4	0	4	2.7	1	100	1	-4	
9	12227	12117	45	45	0	0.0	1	100	1	0	
10	12117	12227	64	68	-4	0.5	1	100	1	4	
11	12109	12257	44	43.99	0	0.0	1	100	1	0	
12	12257	12109	29	21.21	8	1.5	1	100	1	-8	
13	12144	12193	30	30	0	0.0	1	100	1	0	
14	12193	12144	14	0	14	5.4	0	100	1	-14	
15	10199	10192	117	107.83	9	0.8	1	100	1	-9	
16	10192	10199	106	99.13	7	0.6	1	100	1	-7	
17	10198	10209	107	108.05	-1	0.1	1	100	1	1	
18	10209	10198	45	45	0	0.0	1	100	1	0	
19	18102	18101	75	74.99	0	0.0	1	100	1	0	
20	18101	18102	44	44.06	0	0.0	1	100	1	0	
21	15128	15118	48	76.51	-29	3.7	1	100	1	29	
22	15118	15128	48	48	0	0.1	1	100	1	0	
23	15132	15194	20	2.27	18	5.4	0	100	1	-18	
24	15194	15132	4	4	0	0.2	1	100	1	0	
25	12147	12400	9	9.04	0	0.1	1	100	1	0	
26	12400	12147	14	14.01	0	0.1	1	100	1	0	
27	15194	12260	8	1.93	6	2.6	1	100	1	-6	
28	12260	15194	6	8.97	-3	1.2	1	100	1	3	
29	12308	12260	0	0.49	0	1.0	1	100	1	0	
30	12260	12308	3	5.96	-3	1.5	1	100	1	3	
31	12261	12260	6	3.47	2	1.1	1	100	1	-2	
32	12260	12261	5	0	5	3.1	1	100	1	-5	
33	12259	12260	3	9.04	-6	2.5	1	100	1	6	
34	12260	12259	3	0	3	2.4	1	100	1	-3	
35	12273	12225	51	50.97	0	0.1	1	100	1	0	
36	12225	12273	34	42.19	-8	1.3	1	100	1	8	
37	12183	12225	6	0	6	3.4	1	100	1	-6	
38	12225	12183	6	0	6	3.4	1	100	1	-6	
39	12199	12225	34	42.24	-8	1.3	1	100	1	8	
40	12225	12199	47	50.98	-4	0.6	1	100	1	4	
41	12295	12225	0	0	0	0.0	1	100	1	0	
42	12225	12295	4	0	4	2.8	1	100	1	-4	

43	10118	10192	88	78.71	10	1.0	1	100	1	-10
44	10192	10118	85	84.89	0	0.0	1	100	1	0
45	18376	18216	85	84.51	0	0.0	1	100	1	0
46	18216	18234	84	48.25	36	4.4	1	100	1	-36
47	10118	18216	81	99.49	-19	2.0	1	100	1	19
48	18216	10118	100	168.34	-68	5.9	0	100	1	68
49	18231	18216	25	87.7	-63	8.4	0	100	1	63
50	18216	18231	6	51.22	-46	8.5	0	100	1	46
51	12213	12214	28	28.03	0	0.1	1	100	1	0
52	12214	12213	28	29.72	-2	0.4	1	100	1	2
53	12219	12214	24	24.22	0	0.0	1	100	1	0
54	12214	12219	11	22.88	-12	3.0	1	100	1	12
55	12263	12214	11	0.86	10	4.0	1	100	1	-10
56	12214	12263	25	6.9	18	4.5	1	100	1	-18
57	12217	12214	6	6.01	0	0.1	1	100	1	0
58	12214	12217	5	0	5	3.1	1	100	1	-5
59	18258	18100	46	40.95	5	0.8	1	100	1	-5
60	18100	18258	16	24.08	-8	1.7	1	100	1	8
61	18310	18100	11	0.01	10	4.6	1	100	1	-10
62	18100	18310	29	18.31	10	2.1	1	100	1	-10
63	12267	18100	22	29.67	-8	1.5	1	100	1	8
64	18100	12267	33	28.19	5	0.9	1	100	1	-5
65	18256	18310	7	0	7	3.7	1	100	1	-7
66	18310	18256	7	5.65	1	0.4	1	100	1	-1
67	18209	18310	2	0.01	2	1.9	1	100	1	-2
68	18310	18209	31	12.66	18	3.9	1	100	1	-18
69	18100	18310	35	18.31	17	3.3	1	100	1	-17
70	18310	18100	7	0.01	7	3.7	1	100	1	-7
71	12219	12266	19	22.01	-3	0.6	1	100	1	3
72	12266	12219	34	24.04	10	1.8	1	100	1	-10
73	10192	12266	30	22.95	7	1.4	1	100	1	-7
74	12266	10192	16	22.08	-6	1.3	1	100	1	6
75	12282	12266	14	1.03	13	4.8	1	100	1	-13
76	12266	12282	14	0	14	5.2	0	100	1	-14
77	12265	12173	0	0	0	0.0	1	100	1	0
78	12173	12265	4	0	4	2.8	1	100	1	-4
79	12172	12173	12	0	12	5.0	1	100	1	-12
80	12173	12172	19	18.99	0	0.0	1	100	1	0
81	12211	12173	19	18.98	0	0.0	1	100	1	0
82	12173	12211	11	0	11	4.6	1	100	1	-11
			2338	<b>2,301</b>	37	0.8	<b>74</b>		<b>82</b>	<b>-37</b>

**AM Link Calibration**

Counts :			82			RESULT =	91%	RESULT =			94%
Total Traffic						REQD =	85%	REQD =			85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	15125	15124	377	392	-15	0.8	1	100	1	15	
2	15124	15125	549	540	8	0.3	1	100	1	-8	
3	12146	12145	577	477	100	4.3	1	100	1	-100	
4	12145	12146	585	638	-54	2.2	1	100	1	54	
5	12232	12203	149	189	-40	3.1	1	100	1	40	
6	12203	12232	96	95	1	0.1	1	100	1	-1	
7	12198	12295	194	200	-6	0.5	1	100	1	6	
8	12295	12198	151	103	48	4.2	1	100	1	-48	
9	12227	12117	509	509	0	0.0	1	100	1	0	
10	12117	12227	596	504	92	3.9	1	100	1	-92	
11	12109	12257	483	484	-1	0.0	1	100	1	1	
12	12257	12109	417	342	75	3.8	1	100	1	-75	
13	12144	12193	593	538	55	2.3	1	100	1	-55	
14	12193	12144	359	344	15	0.8	1	100	1	-15	
15	10199	10192	787	806	-19	0.7	1	118	1	19	
16	10192	10199	806	837	-30	1.1	1	121	1	30	
17	10198	10209	628	634	-7	0.3	1	100	1	7	
18	10209	10198	577	645	-68	2.7	1	100	1	68	
19	18102	18101	648	648	0	0.0	1	100	1	0	
20	18101	18102	511	443	68	3.1	1	100	1	-68	
21	15128	15118	652	681	-29	1.1	1	100	1	29	
22	15118	15128	652	652	0	0.0	1	100	1	0	
23	15132	15194	478	461	17	0.8	1	100	1	-17	
24	15194	15132	227	229	-3	0.2	1	100	1	3	
25	12147	12400	117	120	-3	0.3	1	100	1	3	
26	12400	12147	328	340	-11	0.6	1	100	1	11	
27	15194	12260	475	486	-11	0.5	1	100	1	11	
28	12260	15194	256	328	-73	4.2	1	100	1	73	
29	12308	12260	11	68	-57	9.1	0	100	1	57	
30	12260	12308	56	58	-2	0.3	1	100	1	2	
31	12261	12260	372	281	90	5.0	0	100	1	-90	
32	12260	12261	410	350	60	3.1	1	100	1	-60	
33	12259	12260	104	89	15	1.5	1	100	1	-15	
34	12260	12259	240	188	52	3.6	1	100	1	-52	
35	12273	12225	977	967	9	0.3	1	146	1	-9	
36	12225	12273	597	593	4	0.2	1	100	1	-4	
37	12183	12225	360	299	60	3.3	1	100	1	-60	
38	12225	12183	494	482	11	0.5	1	100	1	-11	
39	12199	12225	390	398	-8	0.4	1	100	1	8	
40	12225	12199	691	686	4	0.2	1	100	1	-4	
41	12295	12225	213	200	13	0.9	1	100	1	-13	
42	12225	12295	158	103	55	4.8	1	100	1	-55	

43	10118	10192	1291	1166	125	3.6	1	194	1	-125
44	10192	10118	843	869	-26	0.9	1	126	1	26
45	18376	18216	927	982	-56	1.8	1	139	1	56
46	18216	18234	751	662	89	3.3	1	113	1	-89
47	10118	18216	888	928	-41	1.3	1	133	1	41
48	18216	10118	1373	1314	59	1.6	1	206	1	-59
49	18231	18216	529	364	165	7.8	0	100	0	-165
50	18216	18231	230	267	-38	2.4	1	100	1	38
51	12213	12214	483	484	-2	0.1	1	100	1	2
52	12214	12213	725	727	-2	0.1	1	109	1	2
53	12219	12214	649	626	23	0.9	1	100	1	-23
54	12214	12219	316	298	17	1.0	1	100	1	-17
55	12263	12214	410	452	-42	2.0	1	100	1	42
56	12214	12263	789	762	27	1.0	1	118	1	-27
57	12217	12214	387	355	32	1.6	1	100	1	-32
58	12214	12217	99	131	-32	3.0	1	100	1	32
59	18258	18100	443	443	0	0.0	1	100	1	0
60	18100	18258	520	522	-1	0.1	1	100	1	1
61	18310	18100	329	248	80	4.7	1	100	1	-80
62	18100	18310	479	446	33	1.5	1	100	1	-33
63	12267	18100	744	781	-37	1.3	1	112	1	37
64	18100	12267	516	505	11	0.5	1	100	1	-11
65	18256	18310	318	69	249	17.9	0	100	0	-249
66	18310	18256	310	296	14	0.8	1	100	1	-14
67	18209	18310	191	185	6	0.4	1	100	1	-6
68	18310	18209	394	155	238	14.4	0	100	0	-238
69	18100	18310	497	446	52	2.4	1	100	1	-52
70	18310	18100	303	248	54	3.3	1	100	1	-54
71	12219	12266	319	293	27	1.5	1	100	1	-27
72	12266	12219	720	676	43	1.6	1	108	1	-43
73	10192	12266	689	559	130	5.2	0	100	0	-130
74	12266	10192	318	292	26	1.5	1	100	1	-26
75	12282	12266	324	309	15	0.9	1	100	1	-15
76	12266	12282	295	191	103	6.6	0	100	0	-103
77	12265	12173	66	54	12	1.6	1	100	1	-12
78	12173	12265	226	217	8	0.6	1	100	1	-8
79	12172	12173	322	311	11	0.6	1	100	1	-11
80	12173	12172	483	478	5	0.2	1	100	1	-5
81	12211	12173	670	667	3	0.1	1	100	1	-3
82	12173	12211	347	336	10	0.6	1	100	1	-10
			38354	<b>36,545</b>	1,810	9.4	<b>75</b>		<b>77</b>	<b>-1,810</b>

PM Link Calibration										
Counts :			82		RESULT =		94%	RESULT =	95%	
Light Traffic					REQD =		85%	REQD =	85%	
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	15125	15124	453	458	-5	0.2	1	100	1	5
2	15124	15125	210	195	16	1.1	1	100	1	-16
3	12146	12145	397	390	6	0.3	1	100	1	-6
4	12145	12146	369	366	3	0.2	1	100	1	-3
5	12232	12203	202	206	-4	0.3	1	100	1	4
6	12203	12232	47	47	0	0.0	1	100	1	0
7	12198	12295	211	212	-1	0.1	1	100	1	1
8	12295	12198	118	118	0	0.0	1	100	1	0
9	12227	12117	596	593	3	0.1	1	100	1	-3
10	12117	12227	553	553	1	0.0	1	100	1	-1
11	12109	12257	382	382	1	0.0	1	100	1	-1
12	12257	12109	531	531	1	0.0	1	100	1	-1
13	12144	12193	365	364	1	0.1	1	100	1	-1
14	12193	12144	553	553	0	0.0	1	100	1	0
15	10199	10192	1108	1108	0	0.0	1	166	1	0
16	10192	10199	514	519	-6	0.3	1	100	1	6
17	10198	10209	596	596	0	0.0	1	100	1	0
18	10209	10198	430	374	56	2.8	1	100	1	-56
19	18102	18101	430	430	1	0.0	1	100	1	-1
20	18101	18102	480	367	114	5.5	0	100	0	-114
21	15128	15118	771	771	-1	0.0	1	116	1	1
22	15118	15128	783	778	5	0.2	1	118	1	-5
23	15132	15194	182	182	0	0.0	1	100	1	0
24	15194	15132	258	324	-66	3.9	1	100	1	66
25	12147	12400	130	129	2	0.1	1	100	1	-2
26	12400	12147	220	214	6	0.4	1	100	1	-6
27	15194	12260	195	204	-9	0.6	1	100	1	9
28	12260	15194	251	335	-84	4.9	1	100	1	84
29	12308	12260	53	53	0	0.0	1	100	1	0
30	12260	12308	6	66	-60	10.0	0	100	1	60
31	12261	12260	346	311	35	1.9	1	100	1	-35
32	12260	12261	233	180	53	3.7	1	100	1	-53
33	12259	12260	82	71	11	1.3	1	100	1	-11
34	12260	12259	186	57	129	11.7	0	100	0	-129
35	12273	12225	697	697	0	0.0	1	100	1	0
36	12225	12273	810	727	83	3.0	1	122	1	-83
37	12183	12225	294	293	1	0.1	1	100	1	-1
38	12225	12183	309	389	-80	4.3	1	100	1	80
39	12199	12225	575	573	2	0.1	1	100	1	-2
40	12225	12199	543	542	1	0.1	1	100	1	-1
41	12295	12225	221	212	9	0.6	1	100	1	-9
42	12225	12295	125	118	7	0.7	1	100	1	-7

43	10118	10192	654	668	-14	0.6	1	100	1	14
44	10192	10118	1283	1271	12	0.3	1	192	1	-12
45	18376	18216	630	609	21	0.8	1	100	1	-21
46	18216	18234	890	869	21	0.7	1	134	1	-21
47	10118	18216	1134	1123	11	0.3	1	170	1	-11
48	18216	10118	744	743	1	0.0	1	112	1	-1
49	18231	18216	223	223	0	0.0	1	100	1	0
50	18216	18231	352	343	9	0.5	1	100	1	-9
51	12213	12214	619	621	-2	0.1	1	100	1	2
52	12214	12213	1200	1061	139	4.1	1	180	1	-139
53	12219	12214	842	826	16	0.5	1	126	1	-16
54	12214	12219	197	197	0	0.0	1	100	1	0
55	12263	12214	622	674	-52	2.1	1	100	1	52
56	12214	12263	714	713	1	0.0	1	107	1	-1
57	12217	12214	380	248	132	7.4	0	100	0	-132
58	12214	12217	352	398	-46	2.4	1	100	1	46
59	18258	18100	528	571	-43	1.8	1	100	1	43
60	18100	18258	683	676	7	0.3	1	100	1	-7
61	18310	18100	410	343	67	3.5	1	100	1	-67
62	18100	18310	565	563	2	0.1	1	100	1	-2
63	12267	18100	1020	1032	-12	0.4	1	153	1	12
64	18100	12267	710	707	3	0.1	1	107	1	-3
65	18256	18310	254	118	136	10.0	0	100	0	-136
66	18310	18256	407	409	-2	0.1	1	100	1	2
67	18209	18310	267	266	1	0.0	1	100	1	-1
68	18310	18209	258	195	63	4.2	1	100	1	-63
69	18100	18310	567	563	4	0.2	1	100	1	-4
70	18310	18100	423	343	80	4.1	1	100	1	-80
71	12219	12266	239	186	53	3.6	1	100	1	-53
72	12266	12219	822	791	31	1.1	1	123	1	-31
73	10192	12266	387	398	-11	0.6	1	100	1	11
74	12266	10192	415	412	3	0.2	1	100	1	-3
75	12282	12266	678	674	4	0.2	1	100	1	-4
76	12266	12282	67	55	12	1.5	1	100	1	-12
77	12265	12173	65	54	11	1.4	1	100	1	-11
78	12173	12265	258	206	52	3.4	1	100	1	-52
79	12172	12173	433	399	34	1.7	1	100	1	-34
80	12173	12172	375	374	1	0.1	1	100	1	-1
81	12211	12173	559	553	6	0.3	1	100	1	-6
82	12173	12211	424	426	-2	0.1	1	100	1	2
			37466	<b>36483</b>	982	5.1	77		78	-982

**PM Link Calibration**

Counts :						82	RESULT =	94%	RESULT =		100%
Heavy Traffic						REQD =	85%	REQD =			85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	15125	15124	11	9	2	0.7	1	100	1	-2	
2	15124	15125	5	5	1	0.3	1	100	1	-1	
3	12146	12145	37	25	13	2.3	1	100	1	-13	
4	12145	12146	13	13	0	0.1	1	100	1	0	
5	12232	12203	2	2	0	0.3	1	100	1	0	
6	12203	12232	17	17	0	0.1	1	100	1	0	
7	12198	12295	4	0	4	3.0	1	100	1	-4	
8	12295	12198	2	0	2	2.2	1	100	1	-2	
9	12227	12117	60	60	0	0.0	1	100	1	0	
10	12117	12227	35	35	0	0.0	1	100	1	0	
11	12109	12257	21	16	5	1.1	1	100	1	-5	
12	12257	12109	33	47	-15	2.3	1	100	1	15	
13	12144	12193	16	0	16	5.7	0	100	1	-16	
14	12193	12144	47	0	47	9.7	0	100	1	-47	
15	10199	10192	143	143	0	0.0	1	100	1	0	
16	10192	10199	63	30	34	4.9	1	100	1	-34	
17	10198	10209	98	93	5	0.5	1	100	1	-5	
18	10209	10198	20	16	4	1.0	1	100	1	-4	
19	18102	18101	51	51	0	0.0	1	100	1	0	
20	18101	18102	50	50	0	0.0	1	100	1	0	
21	15128	15118	68	68	0	0.0	1	100	1	0	
22	15118	15128	65	65	0	0.0	1	100	1	0	
23	15132	15194	4	4	0	0.1	1	100	1	0	
24	15194	15132	2	2	0	0.1	1	100	1	0	
25	12147	12400	11	11	0	0.0	1	100	1	0	
26	12400	12147	5	5	0	0.2	1	100	1	0	
27	15194	12260	4	4	0	0.1	1	100	1	0	
28	12260	15194	2	2	0	0.0	1	100	1	0	
29	12308	12260	0	1	-1	1.2	1	100	1	1	
30	12260	12308	0	14	-14	5.4	0	100	1	14	
31	12261	12260	2	2	0	0.1	1	100	1	0	
32	12260	12261	6	0	6	3.4	1	100	1	-6	
33	12259	12260	2	11	-9	3.5	1	100	1	9	
34	12260	12259	0	1	-1	1.2	1	100	1	1	
35	12273	12225	9	15	-6	1.8	1	100	1	6	
36	12225	12273	12	19	-7	1.8	1	100	1	7	
37	12183	12225	8	0	8	3.9	1	100	1	-8	
38	12225	12183	0	0	0	0.0	1	100	1	0	
39	12199	12225	7	19	-12	3.3	1	100	1	12	
40	12225	12199	9	15	-6	1.8	1	100	1	6	
41	12295	12225	0	0	0	0.0	1	100	1	0	
42	12225	12295	3	0	3	2.4	1	100	1	-3	

43	10118	10192	23	23	0	0.0	1	100	1	0
44	10192	10118	26	114	-88	10.6	0	100	1	88
45	18376	18216	15	19	-4	0.9	1	100	1	4
46	18216	18234	30	30	0	0.0	1	100	1	0
47	10118	18216	26	40	-14	2.5	1	100	1	14
48	18216	10118	13	26	-13	2.9	1	100	1	13
49	18231	18216	2	7	-5	2.5	1	100	1	5
50	18216	18231	0	10	-10	4.5	1	100	1	10
51	12213	12214	9	9	0	0.1	1	100	1	0
52	12214	12213	41	39	3	0.4	1	100	1	-3
53	12219	12214	25	30	-5	1.0	1	100	1	5
54	12214	12219	3	7	-4	1.9	1	100	1	4
55	12263	12214	12	0	12	4.7	1	100	1	-12
56	12214	12263	10	9	1	0.2	1	100	1	-1
57	12217	12214	10	15	-5	1.5	1	100	1	5
58	12214	12217	2	0	2	1.9	1	100	1	-2
59	18258	18100	10	11	-2	0.5	1	100	1	2
60	18100	18258	33	33	0	0.1	1	100	1	0
61	18310	18100	6	0	5	3.0	1	100	1	-5
62	18100	18310	7	8	-2	0.6	1	100	1	2
63	12267	18100	40	39	1	0.2	1	100	1	-1
64	18100	12267	15	9	6	1.8	1	100	1	-6
65	18256	18310	4	0	4	2.8	1	100	1	-4
66	18310	18256	9	6	3	1.0	1	100	1	-3
67	18209	18310	2	0	1	1.3	1	100	1	-1
68	18310	18209	0	2	-2	2.2	1	100	1	2
69	18100	18310	9	8	0	0.1	1	100	1	0
70	18310	18100	6	0	5	3.0	1	100	1	-5
71	12219	12266	3	7	-4	1.9	1	100	1	4
72	12266	12219	31	31	0	0.0	1	100	1	0
73	10192	12266	18	29	-11	2.2	1	100	1	11
74	12266	10192	7	7	-1	0.2	1	100	1	1
75	12282	12266	18	2	16	5.0	0	100	1	-16
76	12266	12282	2	0	2	1.9	1	100	1	-2
77	12265	12173	0	0	0	0.0	1	100	1	0
78	12173	12265	2	0	2	1.9	1	100	1	-2
79	12172	12173	10	0	10	4.4	1	100	1	-10
80	12173	12172	8	8	0	0.1	1	100	1	0
81	12211	12173	11	8	3	1.1	1	100	1	-3
82	12173	12211	10	0	10	4.4	1	100	1	-10
			1447	1,455	-8	0.2	77		82	8

PM Link Calibration											
Counts :				82		RESULT =		94%	RESULT =	95%	
Total Traffic						REQD =		85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	15125	15124	464	467	-3	0.1	1	100	1	3	
2	15124	15125	216	199	17	1.2	1	100	1	-17	
3	12146	12145	434	415	19	0.9	1	100	1	-19	
4	12145	12146	382	379	3	0.2	1	100	1	-3	
5	12232	12203	204	207	-4	0.2	1	100	1	4	
6	12203	12232	64	64	0	0.0	1	100	1	0	
7	12198	12295	215	212	3	0.2	1	100	1	-3	
8	12295	12198	120	118	2	0.2	1	100	1	-2	
9	12227	12117	656	653	3	0.1	1	100	1	-3	
10	12117	12227	588	588	1	0.0	1	100	1	-1	
11	12109	12257	403	398	6	0.3	1	100	1	-6	
12	12257	12109	564	578	-14	0.6	1	100	1	14	
13	12144	12193	381	364	17	0.9	1	100	1	-17	
14	12193	12144	600	553	47	2.0	1	100	1	-47	
15	10199	10192	1250	1251	-1	0.0	1	188	1	1	
16	10192	10199	577	549	28	1.2	1	100	1	-28	
17	10198	10209	694	689	6	0.2	1	100	1	-6	
18	10209	10198	450	390	61	3.0	1	100	1	-61	
19	18102	18101	481	481	1	0.0	1	100	1	-1	
20	18101	18102	530	417	113	5.2	0	100	0	-113	
21	15128	15118	839	839	0	0.0	1	126	1	0	
22	15118	15128	848	843	5	0.2	1	127	1	-5	
23	15132	15194	186	186	0	0.0	1	100	1	0	
24	15194	15132	260	326	-66	3.9	1	100	1	66	
25	12147	12400	141	139	2	0.2	1	100	1	-2	
26	12400	12147	224	219	5	0.4	1	100	1	-5	
27	15194	12260	199	208	-9	0.6	1	100	1	9	
28	12260	15194	253	337	-84	4.9	1	100	1	84	
29	12308	12260	53	54	-1	0.1	1	100	1	1	
30	12260	12308	6	81	-75	11.3	0	100	1	75	
31	12261	12260	348	313	35	1.9	1	100	1	-35	
32	12260	12261	239	180	58	4.0	1	100	1	-58	
33	12259	12260	84	81	3	0.3	1	100	1	-3	
34	12260	12259	186	57	129	11.6	0	100	0	-129	
35	12273	12225	706	712	-6	0.2	1	106	1	6	
36	12225	12273	822	745	76	2.7	1	123	1	-76	
37	12183	12225	302	293	9	0.5	1	100	1	-9	
38	12225	12183	309	389	-80	4.3	1	100	1	80	
39	12199	12225	582	592	-10	0.4	1	100	1	10	
40	12225	12199	552	556	-5	0.2	1	100	1	5	
41	12295	12225	221	212	9	0.6	1	100	1	-9	
42	12225	12295	128	118	10	0.9	1	100	1	-10	

43	10118	10192	677	691	-14	0.5	1	100	1	14
44	10192	10118	1309	1385	-76	2.1	1	196	1	76
45	18376	18216	645	628	17	0.7	1	100	1	-17
46	18216	18234	920	899	20	0.7	1	138	1	-20
47	10118	18216	1160	1164	-4	0.1	1	174	1	4
48	18216	10118	757	769	-12	0.4	1	114	1	12
49	18231	18216	225	230	-5	0.3	1	100	1	5
50	18216	18231	352	353	-1	0.1	1	100	1	1
51	12213	12214	628	630	-3	0.1	1	100	1	3
52	12214	12213	1241	1100	141	4.1	1	186	1	-141
53	12219	12214	867	856	11	0.4	1	130	1	-11
54	12214	12219	200	204	-4	0.3	1	100	1	4
55	12263	12214	634	675	-41	1.6	1	100	1	41
56	12214	12263	724	722	1	0.1	1	109	1	-1
57	12217	12214	390	263	127	7.0	0	100	0	-127
58	12214	12217	354	398	-44	2.3	1	100	1	44
59	18258	18100	538	582	-44	1.9	1	100	1	44
60	18100	18258	716	709	8	0.3	1	107	1	-8
61	18310	18100	416	343	73	3.7	1	100	1	-73
62	18100	18310	572	571	1	0.0	1	100	1	-1
63	12267	18100	1060	1070	-10	0.3	1	159	1	10
64	18100	12267	725	716	10	0.4	1	109	1	-10
65	18256	18310	258	118	140	10.2	0	100	0	-140
66	18310	18256	416	415	0	0.0	1	100	1	0
67	18209	18310	269	267	2	0.1	1	100	1	-2
68	18310	18209	258	197	61	4.0	1	100	1	-61
69	18100	18310	576	571	5	0.2	1	100	1	-5
70	18310	18100	429	343	86	4.4	1	100	1	-86
71	12219	12266	242	193	49	3.3	1	100	1	-49
72	12266	12219	853	822	31	1.1	1	128	1	-31
73	10192	12266	405	427	-22	1.1	1	100	1	22
74	12266	10192	422	419	3	0.1	1	100	1	-3
75	12282	12266	696	676	20	0.8	1	100	1	-20
76	12266	12282	69	55	14	1.8	1	100	1	-14
77	12265	12173	65	54	11	1.4	1	100	1	-11
78	12173	12265	260	206	54	3.5	1	100	1	-54
79	12172	12173	443	399	44	2.1	1	100	1	-44
80	12173	12172	383	382	1	0.0	1	100	1	-1
81	12211	12173	570	561	10	0.4	1	100	1	-10
82	12173	12211	434	426	8	0.4	1	100	1	-8
			38913	<b>37,938</b>	975	5.0	77		78	-975

## **Appendix C**

### **ALAM Validation**

**AM Link Validation**

Counts :			26			RESULT =	96%	RESULT =			100%
Light Traffic						REQD =	85%	REQD =			85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	18100	12267	477	477	0	0.0	1	100	1	0	
2	12267	18100	711	751	-40	1.5	1	107	1	40	
3	12212	12267	684	697	-13	0.5	1	100	1	13	
4	12267	12212	453	456	-3	0.2	1	100	1	3	
5	12258	12267	265	226	39	2.5	1	100	1	-39	
6	12267	12258	262	193	69	4.6	1	100	1	-69	
7	12143	12108	783	696	87	3.2	1	117	1	-87	
8	12108	12143	415	491	-76	3.6	1	100	1	76	
9	12100	12108	270	332	-62	3.6	1	100	1	62	
10	12108	12100	293	391	-98	5.3	0	100	1	98	
11	12109	12108	359	321	38	2.1	1	100	1	-38	
12	12108	12109	438	440	-2	0.1	1	100	1	2	
13	12184	12211	713	714	-1	0.0	1	107	1	1	
14	12211	12184	557	541	16	0.7	1	100	1	-16	
15	12173	12211	336	336	0	0.0	1	100	1	0	
16	12211	12173	651	648	3	0.1	1	100	1	-3	
17	12192	12211	365	378	-13	0.7	1	100	1	13	
18	12211	12192	350	422	-72	3.7	1	100	1	72	
19	12183	12211	525	482	43	1.9	1	100	1	-43	
20	12211	12183	381	299	82	4.4	1	100	1	-82	
21	18216	10118	1284	1145	139	4.0	1	193	1	-139	
22	10118	18216	814	829	-15	0.5	1	122	1	15	
23	10198	10118	536	600	-64	2.7	1	100	1	64	
24	10118	10198	597	526	71	3.0	1	100	1	-71	
25	10192	10118	779	784	-5	0.2	1	117	1	5	
26	10118	10192	1200	1087	113	3.3	1	180	1	-113	
			14498	<b>14,262</b>	236	2.0	<b>25</b>		<b>26</b>	<b>-236</b>	

AM Link Validation										
Counts :				26		RESULT =	92%	RESULT =	100%	
Heavy Traffic						REQD =	85%	REQD =	85%	
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	18100	12267	31	28	2	0.4	1	100	1	-2
2	12267	18100	25	30	-5	0.9	1	100	1	5
3	12212	12267	30	30	0	0.0	1	100	1	0
4	12267	12212	29	28	1	0.1	1	100	1	-1
5	12258	12267	0	0	0		1	100	1	0
6	12267	12258	7	0	7	3.7	1	100	1	-7
7	12143	12108	43	50	-7	1.1	1	100	1	7
8	12108	12143	42	50	-8	1.2	1	100	1	8
9	12100	12108	16	0	16	5.6	0	100	1	-16
10	12108	12100	2	0	2	1.9	1	100	1	-2
11	12109	12108	31	21	10	2.0	1	100	1	-10
12	12108	12109	26	44	-18	3.1	1	100	1	18
13	12184	12211	27	19	8	1.6	1	100	1	-8
14	12211	12184	7	0	7	3.7	1	100	1	-7
15	12173	12211	11	0	11	4.6	1	100	1	-11
16	12211	12173	19	19	0	0.0	1	100	1	0
17	12192	12211	2	0	2	1.9	1	100	1	-2
18	12211	12192		0	0		1	100	1	0
19	12183	12211	6	0	6	3.4	1	100	1	-6
20	12211	12183	6	0	6	3.4	1	100	1	-6
21	18216	10118	101	168	-68	5.8	0	100	1	68
22	10118	18216	78	99	-22	2.3	1	100	1	22
23	10198	10118			0		1	100	1	0
24	10118	10198			0		1	100	1	0
25	10192	10118	83	85	-1	0.2	1	100	1	1
26	10118	10192	92	79	13	1.5	1	100	1	-13
			711	<b>751</b>	-40	1.5	<b>24</b>		<b>26</b>	<b>40</b>

**AM Link Validation**

Counts :			26			RESULT =	92%	RESULT =			100%
Total Traffic						REQD =	85%	REQD =			85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	18100	12267	508	505	3	0.1	1	100	1	-3	
2	12267	18100	736	781	-45	1.6	1	110	1	45	
3	12212	12267	714	727	-13	0.5	1	107	1	13	
4	12267	12212	482	484	-3	0.1	1	100	1	3	
5	12258	12267	265	226	39	2.5	1	100	1	-39	
6	12267	12258	269	193	76	5.0	0	100	1	-76	
7	12143	12108	826	746	80	2.8	1	124	1	-80	
8	12108	12143	457	541	-84	3.8	1	100	1	84	
9	12100	12108	286	333	-46	2.6	1	100	1	46	
10	12108	12100	295	391	-96	5.2	0	100	1	96	
11	12109	12108	390	342	48	2.5	1	100	1	-48	
12	12108	12109	464	484	-20	0.9	1	100	1	20	
13	12184	12211	740	732	7	0.3	1	111	1	-7	
14	12211	12184	564	541	23	1.0	1	100	1	-23	
15	12173	12211	347	336	10	0.6	1	100	1	-10	
16	12211	12173	670	667	3	0.1	1	100	1	-3	
17	12192	12211	367	378	-11	0.6	1	100	1	11	
18	12211	12192	350	422	-72	3.7	1	100	1	72	
19	12183	12211	531	482	48	2.1	1	100	1	-48	
20	12211	12183	387	299	87	4.7	1	100	1	-87	
21	18216	10118	1385	1314	71	1.9	1	208	1	-71	
22	10118	18216	892	928	-37	1.2	1	134	1	37	
23	10198	10118	536	600	-64	2.7	1	100	1	64	
24	10118	10198	597	526	71	3.0	1	100	1	-71	
25	10192	10118	862	869	-7	0.2	1	129	1	7	
26	10118	10192	1292	1166	126	3.6	1	194	1	-126	
			15209	<b>15,013</b>	196	1.6	<b>24</b>		<b>26</b>	<b>-196</b>	

PM Link Validation										
Counts :					26	RESULT =	96%	RESULT =	92%	
Light Traffic					REQD =	85%	REQD =	85%		
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	18100	12267	701	707	-6	0.2	1	105	1	6
2	12267	18100	994	1032	-38	1.2	1	149	1	38
3	12212	12267	1213	1061	152	4.5	1	182	1	-152
4	12267	12212	636	621	15	0.6	1	100	1	-15
5	12258	12267	144	126	18	1.5	1	100	1	-18
6	12267	12258	428	241	187	10.2	0	100	0	-187
7	12143	12108	623	607	16	0.6	1	100	1	-16
8	12108	12143	636	616	20	0.8	1	100	1	-20
9	12100	12108	277	350	-73	4.1	1	100	1	73
10	12108	12100	545	450	95	4.3	1	100	1	-95
11	12109	12108	535	531	4	0.2	1	100	1	-4
12	12108	12109	368	382	-14	0.7	1	100	1	14
13	12184	12211	682	766	-84	3.1	1	100	1	84
14	12211	12184	771	727	44	1.6	1	116	1	-44
15	12173	12211	424	426	-2	0.1	1	100	1	2
16	12211	12173	559	553	6	0.3	1	100	1	-6
17	12192	12211	530	423	107	4.9	1	100	0	-107
18	12211	12192	362	432	-70	3.5	1	100	1	70
19	12183	12211	351	389	-38	2.0	1	100	1	38
20	12211	12183	295	293	2	0.1	1	100	1	-2
21	18216	10118	743	743	0	0.0	1	111	1	0
22	10118	18216	1130	1123	7	0.2	1	170	1	-7
23	10198	10118	405	374	31	1.6	1	100	1	-31
24	10118	10198	661	596	65	2.6	1	100	1	-65
25	10192	10118	1302	1271	31	0.9	1	195	1	-31
26	10118	10192	648	668	-20	0.8	1	100	1	20
			15963	<b>15,508</b>	455	3.6	<b>25</b>		<b>24</b>	<b>-455</b>

PM Link Validation											
Counts :			26			RESULT =		88%	RESULT =		100%
Heavy Traffic						REQD =		85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	18100	12267	15	9	6	1.8	1	100	1	-6	
2	12267	18100	45	39	6	1.0	1	100	1	-6	
3	12212	12267	41	39	3	0.4	1	100	1	-3	
4	12267	12212	13	9	4	1.3	1	100	1	-4	
5	12258	12267	4	0	4	2.8	1	100	1	-4	
6	12267	12258	2	0	2	1.9	1	100	1	-2	
7	12143	12108	9	15	-6	1.7	1	100	1	6	
8	12108	12143	8	28	-21	4.9	1	100	1	21	
9	12100	12108	2	8	-6	2.7	1	100	1	6	
10	12108	12100	8	0	8	3.9	1	100	1	-8	
11	12109	12108	8	47	-40	7.6	0	100	1	40	
12	12108	12109	7	16	-9	2.8	1	100	1	9	
13	12184	12211	13	8	5	1.6	1	100	1	-5	
14	12211	12184		0	0		1	100	1	0	
15	12173	12211	10	0	10	4.4	1	100	1	-10	
16	12211	12173	11	8	3	1.1	1	100	1	-3	
17	12192	12211	11	0	11	4.6	1	100	1	-11	
18	12211	12192		0	0		1	100	1	0	
19	12183	12211	0	0	0		1	100	1	0	
20	12211	12183	5	0	5	3.1	1	100	1	-5	
21	18216	10118	15	26	-11	2.4	1	100	1	11	
22	10118	18216	28	40	-12	2.1	1	100	1	12	
23	10198	10118	5	16	-11	3.4	1	100	1	11	
24	10118	10198	0	93	-93	13.6	0	100	1	93	
25	10192	10118	28	114	-87	10.3	0	100	1	87	
26	10118	10192	20	23	-3	0.6	1	100	1	3	
			306	<b>538</b>	-232	11.3	<b>23</b>		<b>26</b>	<b>232</b>	

PM Link Validation											
Counts :				26		RESULT =		92%	RESULT =		88%
Total Traffic						REQD =		85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	18100	12267	716	716	1	0.0	1	107	1	-1	
2	12267	18100	1039	1070	-32	1.0	1	156	1	32	
3	12212	12267	1254	1100	154	4.5	1	188	1	-154	
4	12267	12212	649	630	19	0.8	1	100	1	-19	
5	12258	12267	148	126	21	1.8	1	100	1	-21	
6	12267	12258	430	241	189	10.3	0	100	0	-189	
7	12143	12108	632	622	10	0.4	1	100	1	-10	
8	12108	12143	644	645	-1	0.0	1	100	1	1	
9	12100	12108	279	358	-79	4.4	1	100	1	79	
10	12108	12100	553	450	103	4.6	1	100	0	-103	
11	12109	12108	543	578	-35	1.5	1	100	1	35	
12	12108	12109	375	398	-23	1.2	1	100	1	23	
13	12184	12211	695	774	-79	2.9	1	100	1	79	
14	12211	12184	771	727	44	1.6	1	116	1	-44	
15	12173	12211	434	426	8	0.4	1	100	1	-8	
16	12211	12173	570	561	10	0.4	1	100	1	-10	
17	12192	12211	541	423	117	5.3	0	100	0	-117	
18	12211	12192	362	432	-70	3.5	1	100	1	70	
19	12183	12211	351	389	-38	2.0	1	100	1	38	
20	12211	12183	300	293	7	0.4	1	100	1	-7	
21	18216	10118	758	769	-11	0.4	1	114	1	11	
22	10118	18216	1158	1164	-6	0.2	1	174	1	6	
23	10198	10118	410	390	20	1.0	1	100	1	-20	
24	10118	10198	661	689	-28	1.1	1	100	1	28	
25	10192	10118	1330	1385	-55	1.5	1	199	1	55	
26	10118	10192	668	691	-23	0.9	1	100	1	23	
			16269	<b>16,046</b>	<b>222</b>	1.8	<b>24</b>		<b>23</b>	<b>-222</b>	

AM Peak

Direction	Site A	Site B	Observed	Modelled	Absolute Diff	%	Validated	
			mm:ss	mm:ss	mm:ss	Difference		
	11	12	04:35	05:14	00:39	26%	YES	
	12	11	05:47	05:02	00:45	24%	YES	
	10	12	06:12	06:18	00:06	2%	YES	
	12	10	04:55	05:51	00:56	6%	YES	
	2	10	02:14	03:00	00:46	12%	YES	
	10	2	03:12	04:11	00:59	8%	YES	
<b>Summary</b>			<b>6</b>					<b>100.0%</b>

PM Peak

Direction	Site A	Site B	Observed	Modelled	Absolute Diff	%	Validated	
			mm:ss	mm:ss	mm:ss	Difference		
	11	12	06:03	05:29	00:34	26%	YES	
	12	11	05:14	05:03	00:11	24%	YES	
	10	12	05:35	06:32	00:57	2%	YES	
	12	10	04:41	05:36	00:55	6%	YES	
	2	10	03:18	03:10	00:08	12%	YES	
	10	2	03:25	03:46	00:21	8%	YES	
<b>Summary</b>			<b>6</b>					<b>100.0%</b>

## APPENDIX B. Blanchardstown Model Development Report

## Table of Contents

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>3</b>
1.1	Overview.....	3
1.2	DART+ West Project .....	3
1.3	Transport Modelling Process Overview.....	5
1.3.1	Strategic Modelling.....	6
1.3.2	Local Area Modelling.....	6
<b>2.</b>	<b>DATA COLLECTION.....</b>	<b>9</b>
2.1	Introduction.....	9
2.2	Existing Transport Models .....	9
2.2.1	National Transport Authority – East Regional Model .....	9
2.3	2019 Traffic Surveys.....	10
2.4	Automatic Traffic Counts .....	14
2.5	Junction Turning Counts.....	16
2.6	Origin-Destination Surveys.....	18
2.6.1	ANPR Survey Data Example.....	19
2.7	Journey Time Surveys.....	22
<b>3.</b>	<b>BASE YEAR MODEL DEVELOPMENT .....</b>	<b>23</b>
3.1	Determination of Peak Hours .....	23
3.2	Model Study Area .....	23
3.3	Network Development.....	24
3.3.1	Capacity Restraint Mechanism- Junction Modelling and Speed/Flow Relationships .....	27
3.4	Matrix Development.....	27
3.5	Assignment Model.....	28
3.6	Assignment Algorithm.....	28
3.7	Modelling Software .....	28
<b>4.</b>	<b>MODEL CALIBRATION .....</b>	<b>29</b>
4.1	Introduction.....	29
4.2	Calibration .....	29
4.2.1	Matrix Estimation.....	29
4.2.2	Calibration Criteria and Link Flow Calibration Results.....	29
4.2.3	Trip Length Distribution Check.....	31
4.3	Model Validation .....	32
4.3.1	Validation of Link Flows.....	32
4.3.2	Comparison of Traffic Patterns (O-D Surveys).....	32
4.3.3	Journey Time (O-D Surveys).....	36
4.4	Model Convergence .....	37
4.5	Model Statistics .....	37
<b>5.</b>	<b>SUMMARY AND NEXT STEPS.....</b>	<b>38</b>
5.1	Summary .....	38
5.2	Next Steps.....	38

**APPENDIX A 2019 Traffic Surveys**

**APPENDIX B BLAM Calibration**

**APPENDIX C BLAM Validation**

# APPENDIX B – BLANCHARDSTOWN MODEL DEVELOPMENT REPORT

## 1. INTRODUCTION

### 1.1 Overview

This report describes the development of a Local Area Model for the Dart + West project. The model will be used to inform the impact of proposed level crossing closures on highway network in the Blanchardstown area. Overall there are two Local Area Models developed, one for Blanchardstown and one for Ashtown. Details of the Ashtown model development is described in the '*Ashtown Local Area Model Development Report*'.

### 1.2 DART+ West Project

The DART+ West project will introduce electrified, high-capacity trains at increased frequency for all stations between Maynooth / M3 Parkway and Connolly / Spencer Dock stations on the Maynooth and M3 Parkway commuter rail lines in Dublin. The length of this project is approximately 40 km.

The scope of DART+ West includes the following infrastructural works:

- Electrification and re-signalling of the Maynooth and M3 Parkway lines between Dublin city centre and Maynooth.
- Capacity enhancements at Connolly Station, including modifications to platforms, junctions and the station to increase train capacity.
- Relocation of the Docklands station to Spencer Dock, to better serve the Docklands and interface with the Red Line Luas.
- Closure of level crossings on the Maynooth line and provision of replacement crossings, as required.
- Provision of a new train depot west of Maynooth Station for stabling and maintenance of additional trains.
- All civil, bridge and ancillary works as necessary to accommodate electrification and other aspects of the project.
- All required temporary works.

Figure 1-1 shows the DART + West project extent.

Delivery of the proposed project will support the existing communities along the railway and support future sustainable development in the area. The frequency and quality of service that will be provided will provide a viable transport alternative to communities along the route.

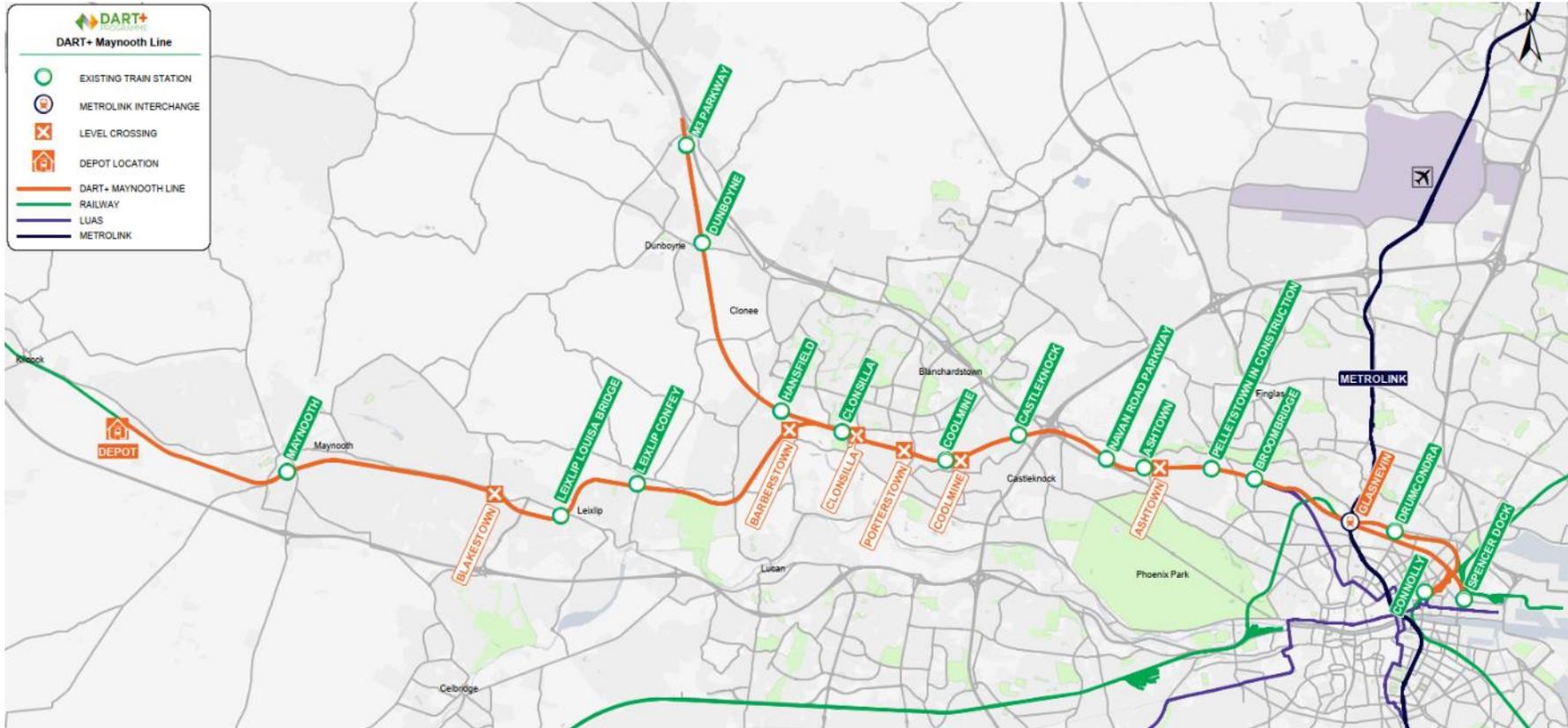
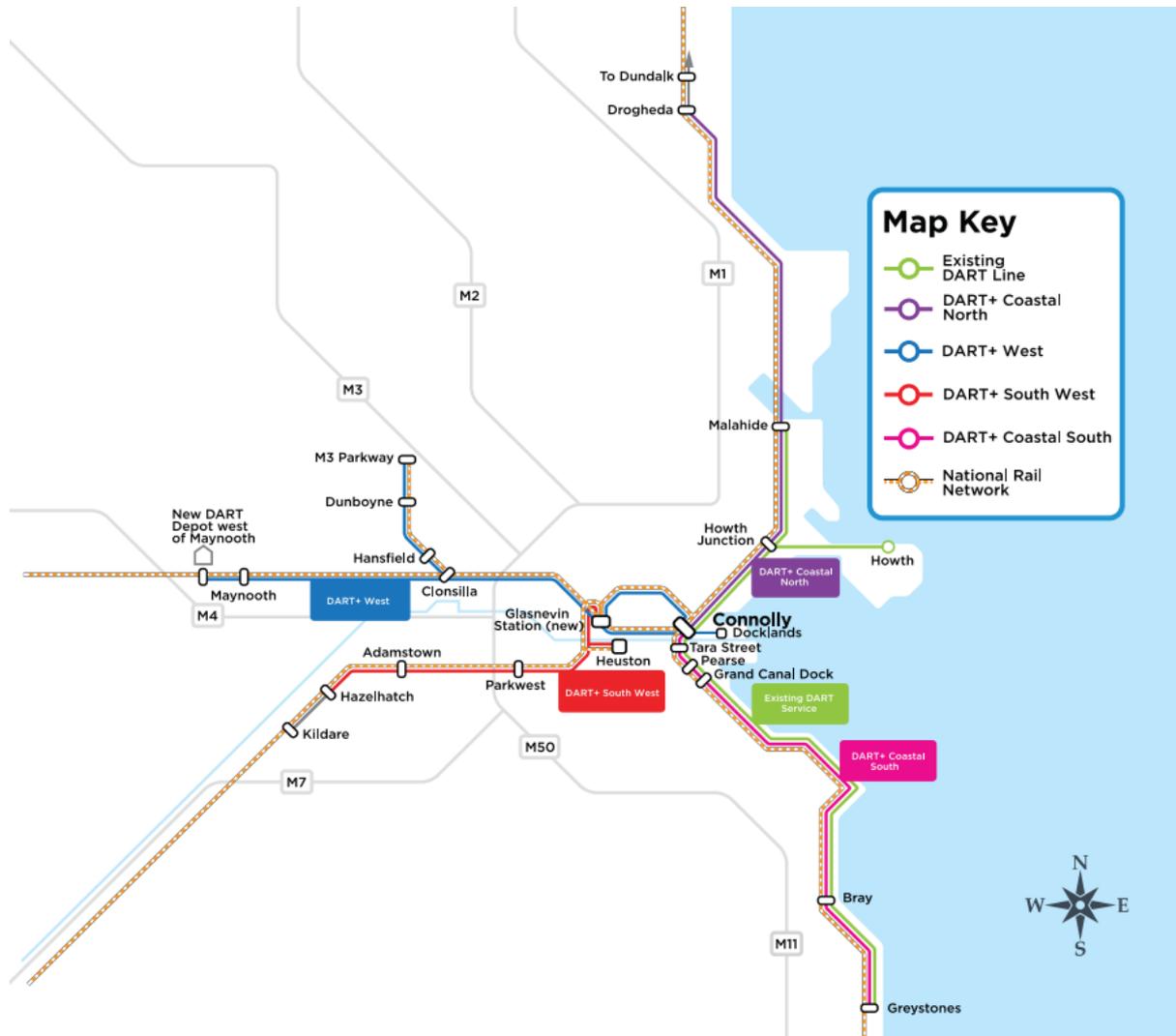


Figure 1-1 DART+ West Project Extent

DART+ Programme is an overall programme of works comprised of five separate projects. DART+ will modernise and improve the existing rail network in the Dublin area. It will provide a sustainable, electrified, fast, reliable and user-friendly rail system, increasing train frequencies and customer carrying capacity. DART + Programme scope for years 2018-2027 is included in Figure 1-2.



**Figure 1-2 DART+ Programme Scope 2018-2027**

DART + Programme comprises the following improvement projects across the four main rail corridors:

- DART+ West Maynooth and M3 Parkway to the City Centre.
- DART + South West – Hazelhatch & Celbridge to the City Centre.
- DART+ Coastal North – Drogheda to the City Centre.
- DART+ Coastal South – Greystones to the City Centre.
- DART+ Fleet – purchase of new train fleet to increase train services.

### 1.3 Transport Modelling Process Overview

This report describes the development of Blanchardstown Local Area Model (BLAM) and this chapter describes the overall modelling approach adopted in the DART + West project.

### 1.3.1 Strategic Modelling

The design team developed a railway operation model in RailSys for DART + Programme for the base year reflecting the current railway infrastructure and train service specification and for the Design year incorporating enhanced infrastructure and an associated Train Service Specification.

National Transport Authority’s Regional Modelling System (RMS) has also been used by the team to assess wider impacts of all individual improvement projects and entire DART + Programme. RMS comprises the National Demand Forecasting Model, five large scale, complex multi-modal regional transport models and a suite of appraisal modules covering the entire national transport network of Ireland. East regional Transport Model (ERM) was used for this project as it concentrates on Dublin and covers the entire Greater Dublin Area (GDA).

Outputs from the RailSys modelling were used as inputs into the ERM in the form of Train Service Specifications (TSS). The RailSys modelling and ERM model runs were undertaken centrally for the entire DART+ Programme to ensure consistency between the individual DART+ improvements projects. The outputs of the ERM were used as inputs into the BLAM.

Figure 1-3 shows the process of developing the traffic models for the DART + West project and the interactions of LAM with the NTA ERM and RailSys models.

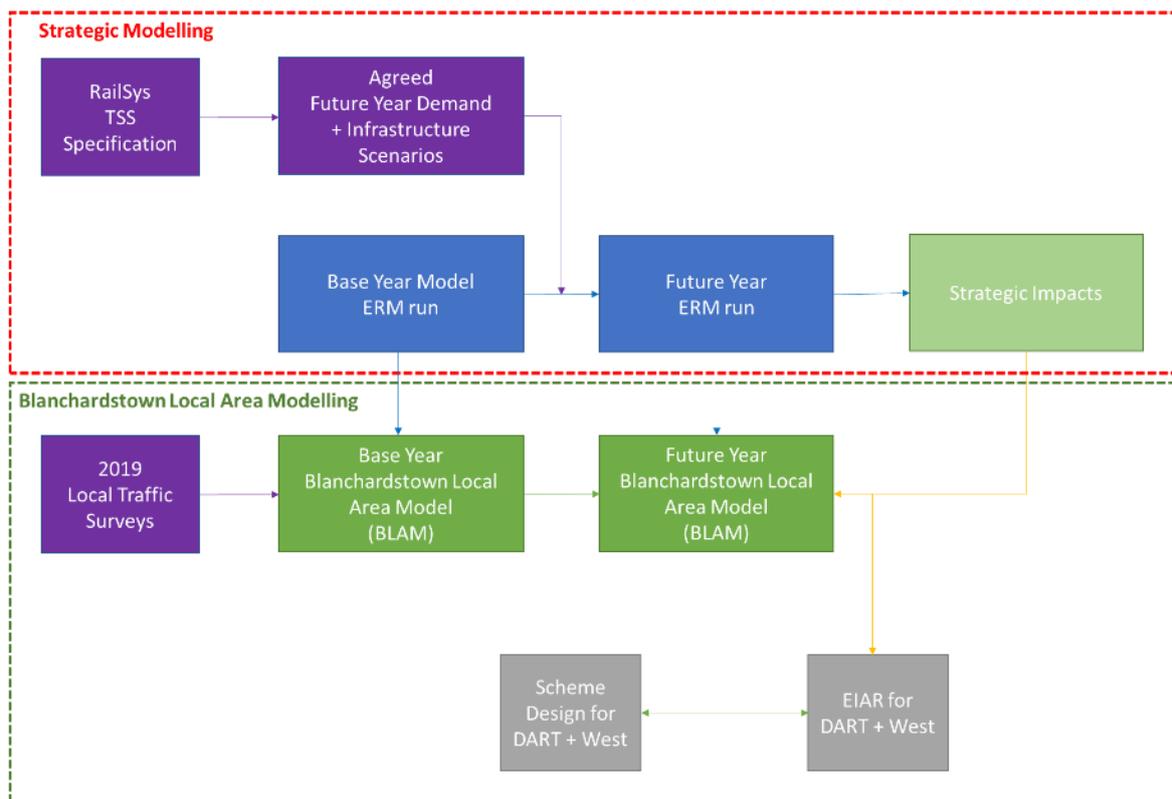


Figure 1-3 Overview of the DART+ West Modelling Process

### 1.3.2 Local Area Modelling

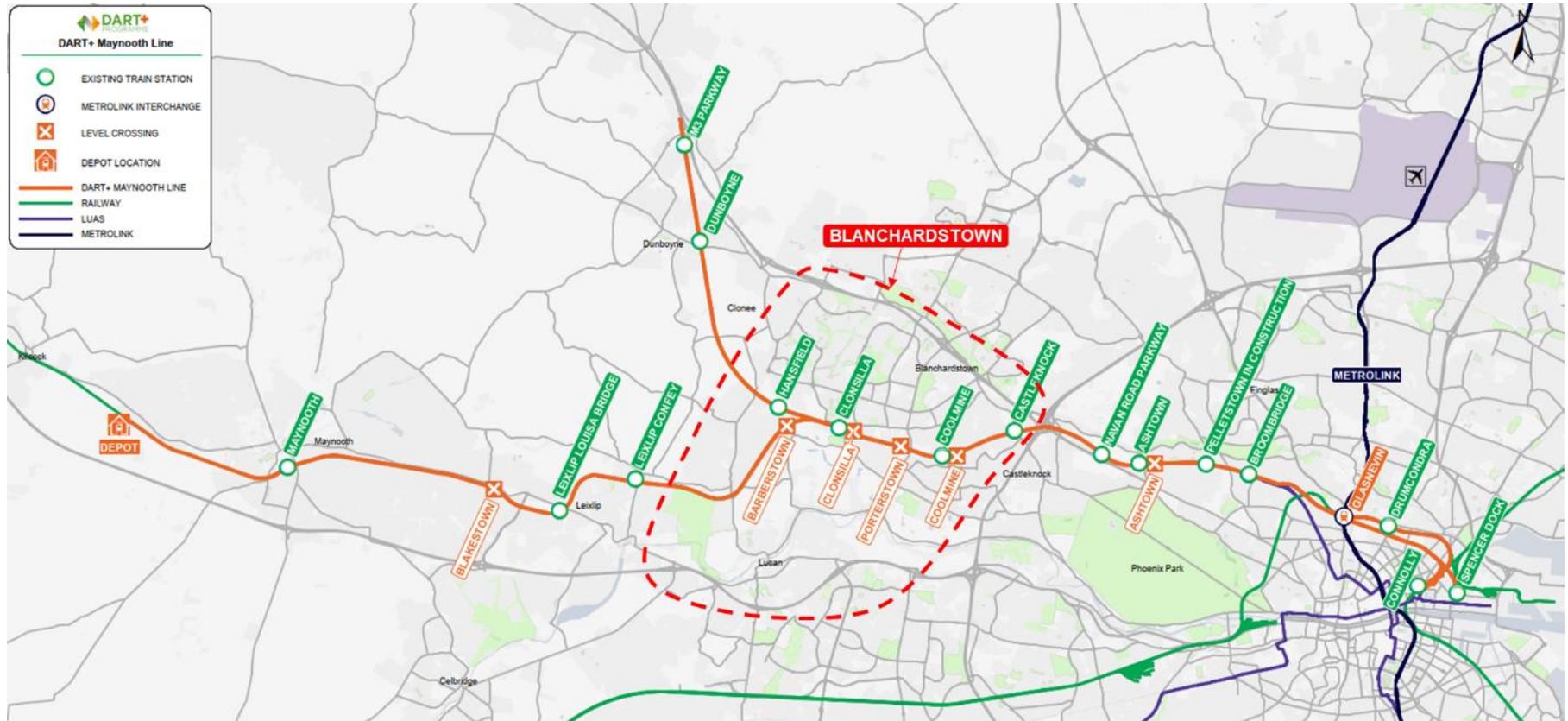
The basis for the BLAM was the 2016 NTA East Regional Model (ERM). The BLAM was cordoned out of the ERM, refined and calibrated/validated using the 2019 traffic survey data which is presented in Section 2.3.

Future year traffic growth projections for the BLAM were based on the NTA 2028 and 2043 ERM runs with and without the proposed scheme. The base and future ERM model runs were used to develop growth factors, which were then applied to the 2019 BLAM to generate future demand. The resulting future year BLAM was then used to inform the impact of the DART+ West in the Blanchardstown area.

Figure 1-4 details the proposed level crossing closure locations and the study area for the BLAM. This report describes the development of the Blanchardstown Local Area Model.

The extent of the local area model was determined by the number of local road network interventions associated with the proposed development and traffic flows using the level crossings.

The west boundary of the BLAM extent did not cover the Blakestown level crossing as traffic flows using the L81206 local road was below 17 veh an hour in both directions during morning and evening peak period. Apart from the closure of the level crossing south of Deey Bridge no other local road network modifications were proposed between Barberstown Level crossing closure and Maynooth and between Hansfield and M3 Parkway.



**Figure 1-4 Blanchardstown LAM Study Area**

## 2. DATA COLLECTION

### 2.1 Introduction

In order to develop a Traffic Model, a significant level of traffic data is required to ensure that the model can replicate existing traffic patterns and volumes. This section of the model development report describes the collection and collation of traffic data for the construction of the Base Year (2019) Blanchardstown Local Area Model (BLAM). For the purposes of this report, the model is referred to as the BLAM.

The existing modelling tools and data used to inform the development of the Base Year 2019 BLAM model is presented in the following sections.

### 2.2 Existing Transport Models

#### 2.2.1 National Transport Authority – East Regional Model

The National Transport Authority's<sup>1</sup> (NTA) East Regional Model (ERM) is a strategic multi-modal variable demand model used by NTA to assess the impact of infrastructure or policy changes at regional and local levels.

The ERM sits within the overall NTA Regional Modelling System (RMS) which comprises of the following three main components:

- The National Demand Forecasting Model (NDFM).
- Five Regional Models, including the ERM.
- A suite of Appraisal Modules.

The Regional Modelling System is the NTA's strategic transport planning tool. Based around a classic transport modelling four-stage model framework, the system forecasts future year transport demand based upon population and employment scenarios, assigns it to networks and services. The RMS and its associated appraisal tools provide strong mathematical analysis to support decision makers and planners and is used in the appraisal of major projects.

The East Regional Model (ERM) is a strategic (macroscopic) traffic model developed using the transportation modelling software SATURN2 and forms the road traffic element of the Dublin, Wicklow, Kildare, Meath, Louth, Wexford, Carlow, Laois, Offaly, Westmeath, Longford, Cavan and Monaghan Counties.

The Highway element of the ERM provides demand data for nine user classes (Taxi, Car Employer's Business, Car Commute, Car Education, Car Other, Light Goods Vehicles (LGV), Other Good Vehicle 1 (OGV1), Other Goods Vehicle 2 (OGV2) Permit Holder and OGV2 Non Permit Holder), which for the purpose of the BLAM were aggregated to two user classes: Light (Car & LGV) and Heavy (OGV1, OGV2) vehicles for the following time periods:

- AM Peak Hour (between 08:00 – 09:00)
- PM Peak Hour (between 17:00 – 18:00)

The model provides both the highway network and prior demand matrices for the Local Area Models (LAM). The ERM is a strategic traffic model assessing impact on both highway and public transport networks. The Blanchardstown LAM focuses on the Highway Network, however future growth takes the impact of public transport proposals in the area into account in terms of their impact on mode shares and future travel patterns.

---

<sup>1</sup> NTA East Regional Model: <https://www.nationaltransport.ie/planning-and-investment/transport-modelling/regional-modelling-system/regional-multi-modal-models/east-regional-model/>

<sup>2</sup> SATURN - Simulation and Assignment of Traffic to Urban Road Networks

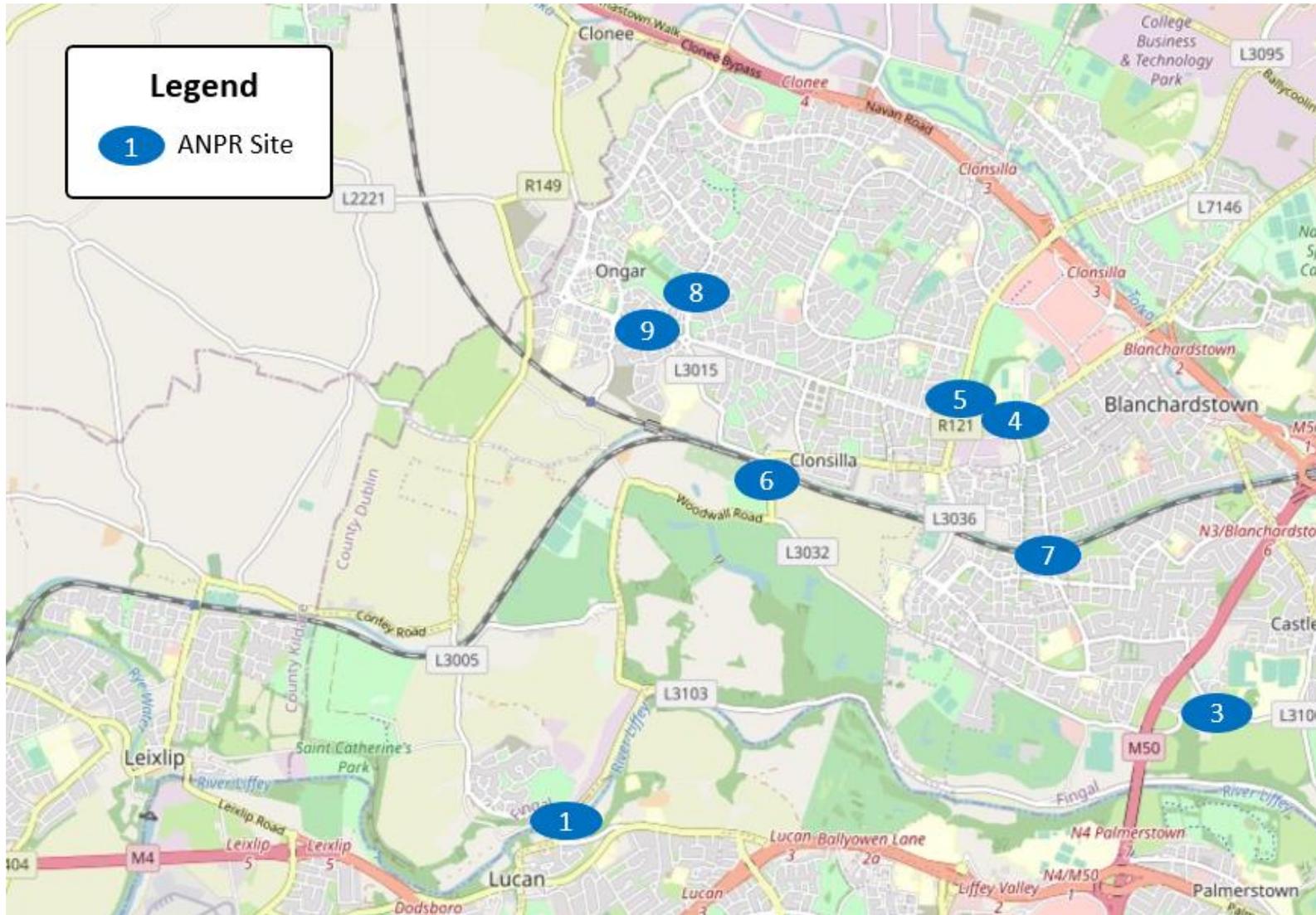
### 2.3 2019 Traffic Surveys

The traffic survey used for this project was collected as part of the Maynooth Line Transport Study undertaken by National Transport Authority (NTA) and Iarnród Éireann (IE) in 2019. The Study looked at the implications of permanently closing six level crossings along the Maynooth rail line. During 2020 and 2021 travel demand was impacted by the COVID-19 pandemic. In the future, while there may be some changes in travel behaviour driven by COVID-19, for example an increase in working from home, which could reduce overall travel demand and potentially shift the trends of peak demand, it is assumed that in general travel demand is likely to return to per-2020 levels. As such it is considered appropriate that traffic and transport data from 2019 is used for baseline assessments.

The traffic surveys were collected in January/February 2019 and were used in the development of the Base Year BLAM, they are outlined in Table 2-1. The location of the traffic surveys is illustrated in Figure 2-1 to Figure 2-3. Full details of the traffic survey data are provided in Appendix A.

**Table 2-1 Blanchardstown 2019 Traffic Survey Data**

Survey Type	Description
Origin – Destination (OD)	8 Origin-Destination (O-D) Automatic Number Plate Recognition (ANPR) camera surveys were carried out on Tuesday 5th February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00). An Automatic Traffic Count (ATC) survey was also undertaken at each ANPR site on Tuesday 5th February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).
Traffic Count	Automatic Traffic Count (ATC) surveys were carried out at 20 locations over a 3-week period from Monday 28 <sup>th</sup> Jan and Sunday 14 <sup>th</sup> February 2019 inclusive.
	Junction Turning Count (JTC) surveys at 34 locations were carried out on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).
	Traffic data from 4 TII Traffic Monitoring Units (TII 1044, 20047, 1034, 1033) was obtained to represent the same period as the ATC surveys.
Journey Time	Journey time information was extracted from the Origin-Destination Surveys, which was carried out on Tuesday 5 <sup>th</sup> February 2019 during morning and evening peak periods.
Pedestrian and Cyclist Counts	Pedestrian and cyclist counts were undertaken at the Blakestown level crossing on Tuesday 5 <sup>th</sup> February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00).



**Figure 2-1 O-D ANPR Survey Locations**





## 2.4 Automatic Traffic Counts

An ATC captures the number for vehicles passing a given point on a road link and classifies the vehicles into different vehicle classifications, for example Cars, Light Goods Vehicles (LGV) and Heavy Goods Vehicles (HGV).

Traffic flow data was extracted from the ATC surveys undertaken as part of the study and is presented in Table 2-2.

In addition, traffic data was also extracted from the permanent TII Traffic Monitoring Unit (TMU) sites in the area and is also included in the table for the following time periods:

- 2019 AM Peak (08:00 – 09:00).
- 2019 PM Peak (17:00 – 18:00).

The estimated 2019 Annual Average Daily Traffic (AADT) and the annual average estimates of average weekday (Mon – Fri) traffic flow at each location is also provided in the Table 2-2.

**Table 2-2 Automatic Traffic Counter Data Two-Way Flow**

Site No.	ATC Location	Dataset	Average Weekday (2-Way Flow)		Estimated 2019 AADT
			AM	PM	
1	R109, north to Chapel Hill Roundabout	ATC	1,428	1,652	16,856
2	Barberstown Lane South (L7005) west of Barnhill Road		10	16	44
3	R149, west to Westmanstown Road		505	560	6,465
4	Local Access Road to Saint Catherine's Park, off L3005		34	23	742
5	L2222 Stirling Road, west to R149		339	258	6,672
6	R149, south to R147		1,039	939	17,510
7	L3025, south to R147/M3		1,386	1,508	18,262
8	Blakestown Road, southwest to N3		769	831	10,261
9	R121, southwest to N3		2,031	2,325	24,496
10	R843, west to L3020/N3		746	699	12,069
11	Navan Road, southwest to N3		1,303	1,253	20,483
12	R806, southeast to M50		1,059	1,196	13,088
13	Carpenterstown Road, south to M50		765	727	12,200
14	Porterstown Road, east to M50		447	540	4,813
15	R109, east to M50		408	450	5,270
16	R121, south to Clonsilla train station		343	329	5,401
17	Porterstown Road, east to St Mochtas Football Club		1,573	1,647	22,017
18	Coolmine Rd, west to Coolmine train station		519	447	9,182
19	R806, east to Castleknock train station		1,164	1,265	15,384
33	R102, east to M50/N3	692	444	15,281	
1033	N3, between J3 Clonsilla and J4 Clonee	TMU	4,807	1,033	61,907
1034	N3, between J2 Blanchardstown and J3 Clonsilla		5,935	1,034	79,120
1044	N4, between J3 Newcastle and J4 Lucan		6,122	1,044	83,587
20047	N4, between J1 N4/M50 and J2 Liffey Valley		7,584	20,047	106,427

## 2.5 Junction Turning Counts

A Junction Turning Count (JTC) captures the total number of vehicles turning at a junction and observes which turn they take. As with the ATCs they classify the traffic into different vehicle categories. JTC surveys were undertaken at 34 junctions on Tuesday 5th February 2019 during AM and PM peak periods (07:00-10:00 and 16:00 – 19:00). Traffic flow was classified by vehicle type and recorded in 15-minute time intervals. The following junctions were surveyed:

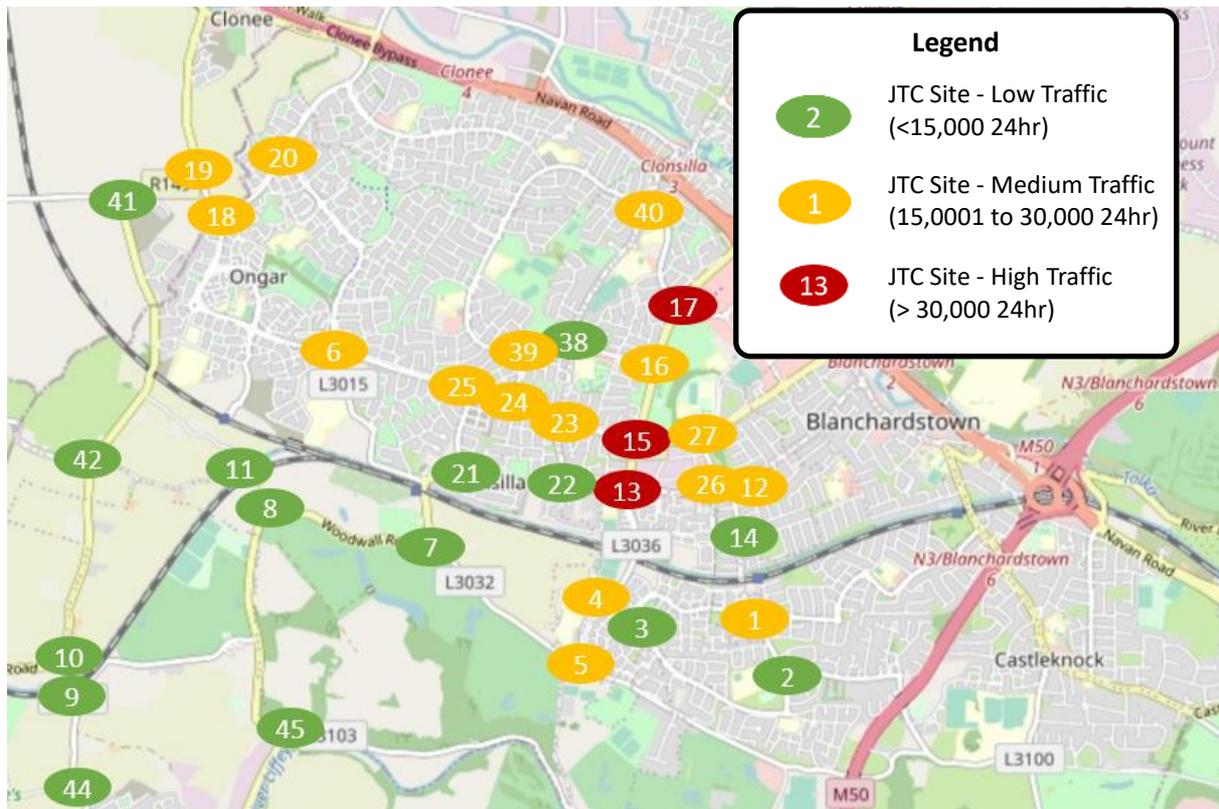
- Junction 1: Phibblestown Rd Roundabout.
- Junction 2: Carpenterstown Road/ Diswellstown Road Roundabout.
- Junction 3: Diswellstown Road Roundabout.
- Junction 4: Diswellstown Rd/Porterstown Rd Junction.
- Junction 5: Porterstown Rd Junction.
- Junction 6: Ongar Distributor Road Roundabout.
- Junction 7: R121/Porterstown Road Junction.
- Junction 8: R121/Barberstown Lane North Junction.
- Junction 9: Westmanstown Road Junction.
- Junction 10: R149 Junction.
- Junction 11: Barberstown Lane North Junction.
- Junction 12: Clonsilla Rd/Coolmin Rd Junction.
- Junction 13: R121/Clonsilla Rd/Diswellstown Rd Roundabout.
- Junction 14: Coolmine Rd/Delwood Rd Junction.
- Junction 15: R121/R843/Ongar Distributor Rd Roundabout.
- Junction 16: Mountview Rd/Blanchardstown Rd South Junction.
- Junction 17: R121/Sheepmoor Grove Roundabout.
- Junction 18: Blackwood Estate Roundabout.
- Junction 19: R149 Junction.
- Junction 20: Phibblestown Rd Roundabout.
- Junction 21: Clonsilla Link Rd/R121 Junction.
- Junction 22: Shelerin Rd/ R121 Junction.
- Junction 23: Shelerin Rd/Ongar Distributor Rd Junction.
- Junction 24: Local Access/ Ongar Distributor Rd Junction.
- Junction 25: Ongar Distributor Rd/Clonsilla Link Rd Junction.
- Junction 26: Clonsilla Rd/Snugborough Rd Junction.
- Junction 27: Snugborough Rd Roundabout.
- Junction 38: Blakestown Rd/Mountview Rd/Hartstown Rd Junction.
- Junction 39: Hartstown Rd/Local Access Road Junction.
- Junction 40: Blakestown Rd/ Whitestown Park Junction.
- Junction 41: R149/L222 Stirling Rd Junction.
- Junction 42: R149/ Local Access Road.
- Junction 44: Laraghcon/Local Access road Junction.
- Junction 45: R109/R121 Junction.

The 24-hour factored total flow for each JTC site is presented in Table 2-3. The summary of vehicle turning counts at each of the junctions outlined above are presented for the modelled time periods in Appendix A. Colour coded junction throughput is also presented in Figure 2-4.

**Table 2-3 JTC 24 Hour Factored Total Junction Throughput**

JTC Site	24Hr Factored Total Flow	% HGV
1	19,051	0.63
2	17,198	0.53
3	13,234	1.22

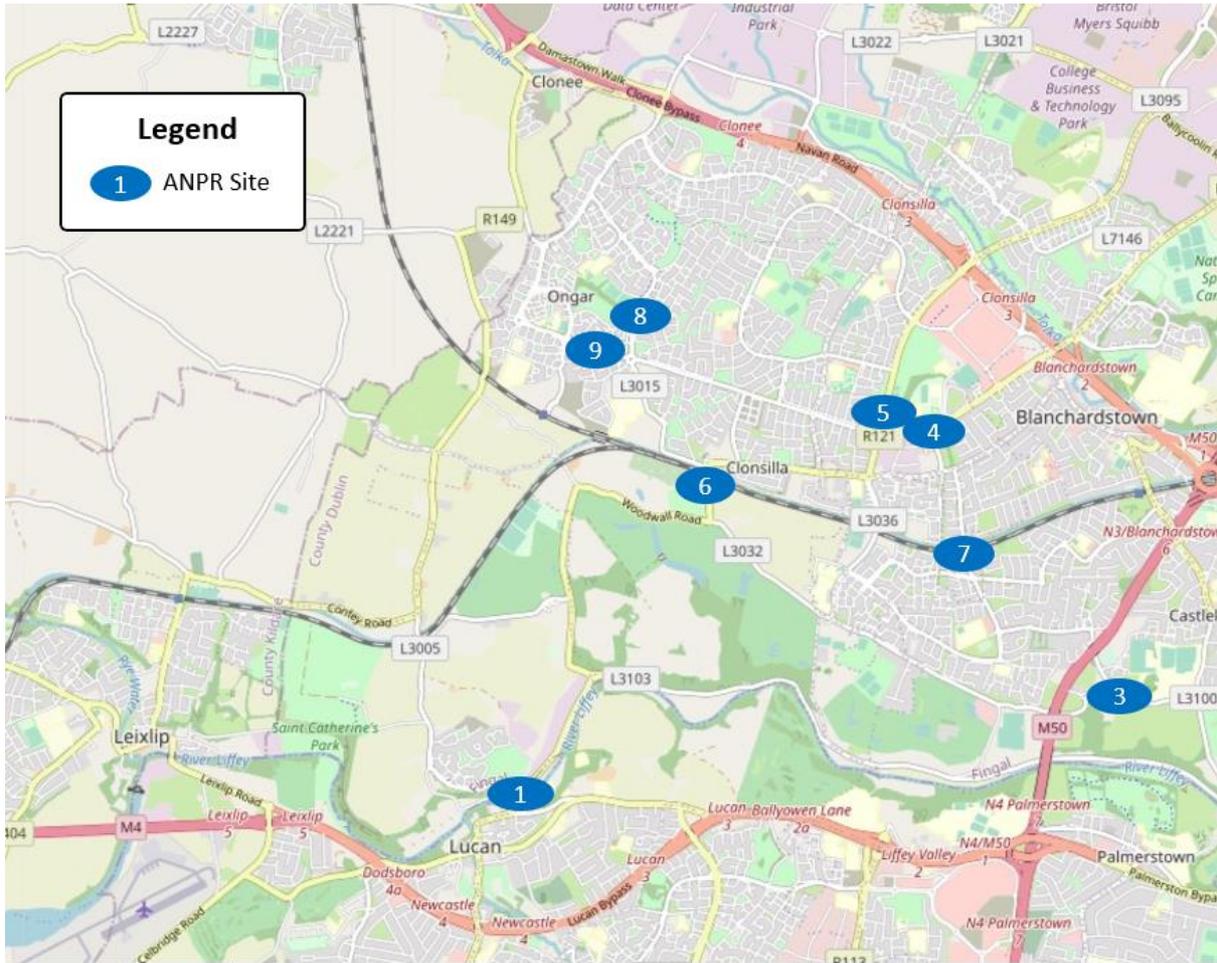
JTC Site	24Hr Factored Total Flow	% HGV
4	23,827	0.94
5	16,256	0.69
6	27,763	0.64
7	12,807	0.68
8	12,091	0.64
9	14,087	0.92
10	14,575	0.89
11	1,317	0.53
12	17,884	1.10
13	31,999	1.08
14	8,517	1.24
15	35,958	1.27
16	27,042	1.40
17	39,994	1.26
18	19,215	1.27
19	20,354	1.36
20	21,289	0.63
21	11,267	0.56
22	12,889	0.93
23	20,246	0.90
24	22,465	0.82
25	23,259	0.79
26	19,145	0.99
27	24,832	1.21
38	14,192	0.73
39	16,217	0.74
40	20,096	0.55
41	14,268	0.95
42	11,086	1.02
44	10,567	0.98
45	10,586	0.24



**Figure 2-4 JTC Survey Locations Colour-Coded by Throughput**

## 2.6 Origin-Destination Surveys

Origin – Destination surveys via Automatic Number Plate Recognition (ANPR) cameras were undertaken for all traffic passing through the 8 sites shown graphically in Figure 2-5. The O-D surveys included goods vehicles exceeding 3.5 tonnes in weight and having two or more axles. The ANPR surveys were undertaken on Tuesday 5th February 2019 between 07:00 – 10:00 and 16:00 – 19:00.



**Figure 2-5 ANPR sites in Blanchardstown Area**

The survey data was interrogated to produce 16 x 16 matrices for the 8 sites shown in Figure 2-5. Matrices were recorded for every hour for the duration of the survey. The matrices recorded the data in “First Seen, Last Seen” format where each vehicle is input as an O-D pair based on the first and last site it is seen in the surveys area i.e. a trip from A-B-C-D is shown as a trip from A-D only. The “Next Seen” format was also provided for cases where the O-D pair is based on the next site a vehicle was seen at.

### 2.6.1 ANPR Survey Data Example

An example of the data provided by the ANPR surveys is illustrated in Table 2-4 and Table 2-5. This example data is from the AM peak hour (08:00 to 09:00).

**Table 2-4 ANPR Location Vehicle Flows: Total Flows**

	1 NB	1 SB	3 WB	3EB	4 WB	4 EB	5 SB	5 NB	6 NB	6 SB	7 NB	7 SB	8 NB	8 SB	9 WB	9 EB	Tot.
1 NB	3	9	0	5	1	5	32	0	25	0	1	0	0	1	0	2	84
1 SB	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
3 WB	0	10	0	14	0	1	8	0	11	0	10	0	3	0	5	1	63
3 EB	0	0	38	0	0	0	0	1	0	0	0	0	0	0	0	0	39
4 WB	0	6	0	1	0	1	63	1	0	7	0	1	17	0	40	1	138
4 EB	0	0	0	0	23	0	2	0	0	0	0	12	1	0	1	0	39
5 SB	0	0	1	0	0	1	0	7	0	0	0	1	1	0	0	1	12
5 NB	0	12	0	6	2	55	41	0	2	9	3	4	3	0	20	0	157
6 NB	0	0	0	1	0	2	8	0	1	1	0	0	9	0	9	0	31
6 SB	0	39	1	16	0	0	0	0	2	0	0	0	2	0	0	0	60
7 NB	0	1	0	0	18	0	5	0	0	1	1	10	0	0	0	0	36
7 SB	0	2	0	24	0	0	1	0	0	0	16	1	0	0	0	0	44
8 NB	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	6	40
8 SB	0	0	0	6	6	36	31	1	2	21	1	2	30	0	163	6	305
9 WB	0	9	0	0	0	2	0	1	0	0	0	0	9	5	1	158	185
9 EB	0	1	0	5	2	42	18	2	1	14	0	6	68	0	23	0	182
Tot.	15	89	40	78	52	145	209	13	44	53	32	37	143	40	262	175	1427

**Table 2-5 ANPR Location Vehicle Flows: Percent of Total Flow**

	1 NB	1 SB	3 WB	3 EB	4 WB	4 EB	5 SB	5 NB	6 NB	6 SB	7 NB	7 SB	8 NB	8 SB	9 WB	9 EB
1 NB	4%	11%	0%	6%	1%	6%	38%	0%	30%	0%	1%	0%	0%	1%	0%	2%
1 SB	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3 WB	0%	16%	0%	22%	0%	2%	13%	0%	17%	0%	16%	0%	5%	0%	8%	2%
3 EB	0%	0%	97%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
4 WB	0%	4%	0%	1%	0%	1%	46%	1%	0%	5%	0%	1%	12%	0%	29%	1%
4 EB	0%	0%	0%	0%	59%	0%	5%	0%	0%	0%	0%	31%	3%	0%	3%	0%
5 SB	0%	0%	8%	0%	0%	8%	0%	58%	0%	0%	0%	8%	8%	0%	0%	8%
5 NB	0%	8%	0%	4%	1%	35%	26%	0%	1%	6%	2%	3%	2%	0%	13%	0%
6 NB	0%	0%	0%	3%	0%	6%	26%	0%	3%	3%	0%	0%	29%	0%	29%	0%
6 SB	0%	65%	2%	27%	0%	0%	0%	0%	3%	0%	0%	0%	3%	0%	0%	0%
7 NB	0%	3%	0%	0%	50%	0%	14%	0%	0%	3%	3%	28%	0%	0%	0%	0%
7 SB	0%	5%	0%	55%	0%	0%	2%	0%	0%	0%	36%	2%	0%	0%	0%	0%
8 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	85%	0%	15%
8 SB	0%	0%	0%	2%	2%	12%	10%	0%	1%	7%	0%	1%	10%	0%	53%	2%
9 WB	0%	5%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	5%	3%	1%	85%
9 EB	0%	1%	0%	3%	1%	23%	10%	1%	1%	8%	0%	3%	37%	0%	13%	0%

Based on the data above, a few notable movements are observed:

- Sixty-five percent of traffic passing through ANPR Site 6 Southbound (Clonsilla Level Crossing) continues on to pass through ANPR Site 1 Southbound (R109), likely travelling to Lucan.
- Fifty percent of the traffic passing through ANPR Site 7 Northbound (Coolmine Level Crossing) is last seen exiting the are through ANPR Site 4 Westbound (R843), indicating their final destination is further west and not heading towards Blanchardstown.

The O-D information from the ANPR surveys were used to inform the travel patterns in the LAM.

## 2.7 Journey Time Surveys

Journey times have been recorded for selected routes in the BLAM from the ANPR surveys covering the AM and PM Peak hours. Table 2-6 shows average journey times extracted from the ANPR surveys for the AM and PM peaks.

**Table 2-6 ANPR Average Journey Times and Average Speed for AM and PM Peak**

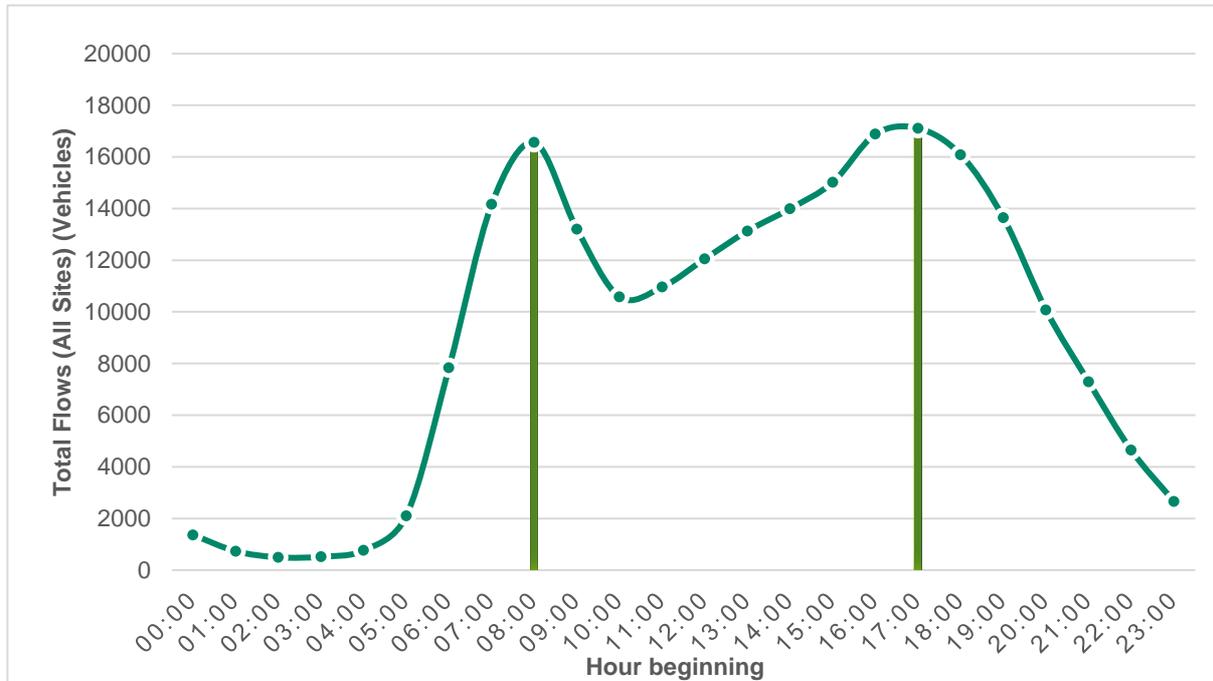
Site A	Site B	AM Journey Time (min:sec)	AM Peak Speed (kph)	PM Journey Time (min:sec)	PM Peak Speed (kph)
6	8	3:27	32	3:09	32
8	6	3:13	21	4:29	21
9	4	6:49	26	5:04	43
4	9	5:04	34	5:31	28
3	6	7:35	34	8:10	34
6	3	9:01	35	6:56	37
3	7	6:25	23	7:43	25
7	3	7:45	22	5:58	24
4	7	5:26	18	4:04	19
7	4	5:35	17	4:52	19
4	8	4:40	32	5:51	27
8	4	7:26	24	4:39	41

The above journey time information was used to validate the BLAM.

### 3. BASE YEAR MODEL DEVELOPMENT

#### 3.1 Determination of Peak Hours

The peak hours were defined following an assessment of the ATCs within the study area. Traffic flows at each of the ATCs within the study area were aggregated together to assess average hourly traffic flow profile throughout the day which is presented in Figure 3-1.



**Figure 3-1 2019 Average Daily Traffic Flow Profile (All ATCs)**

This section of the report describes the development, calibration and validation of the 2019 BLAM which has been developed for the following time periods:

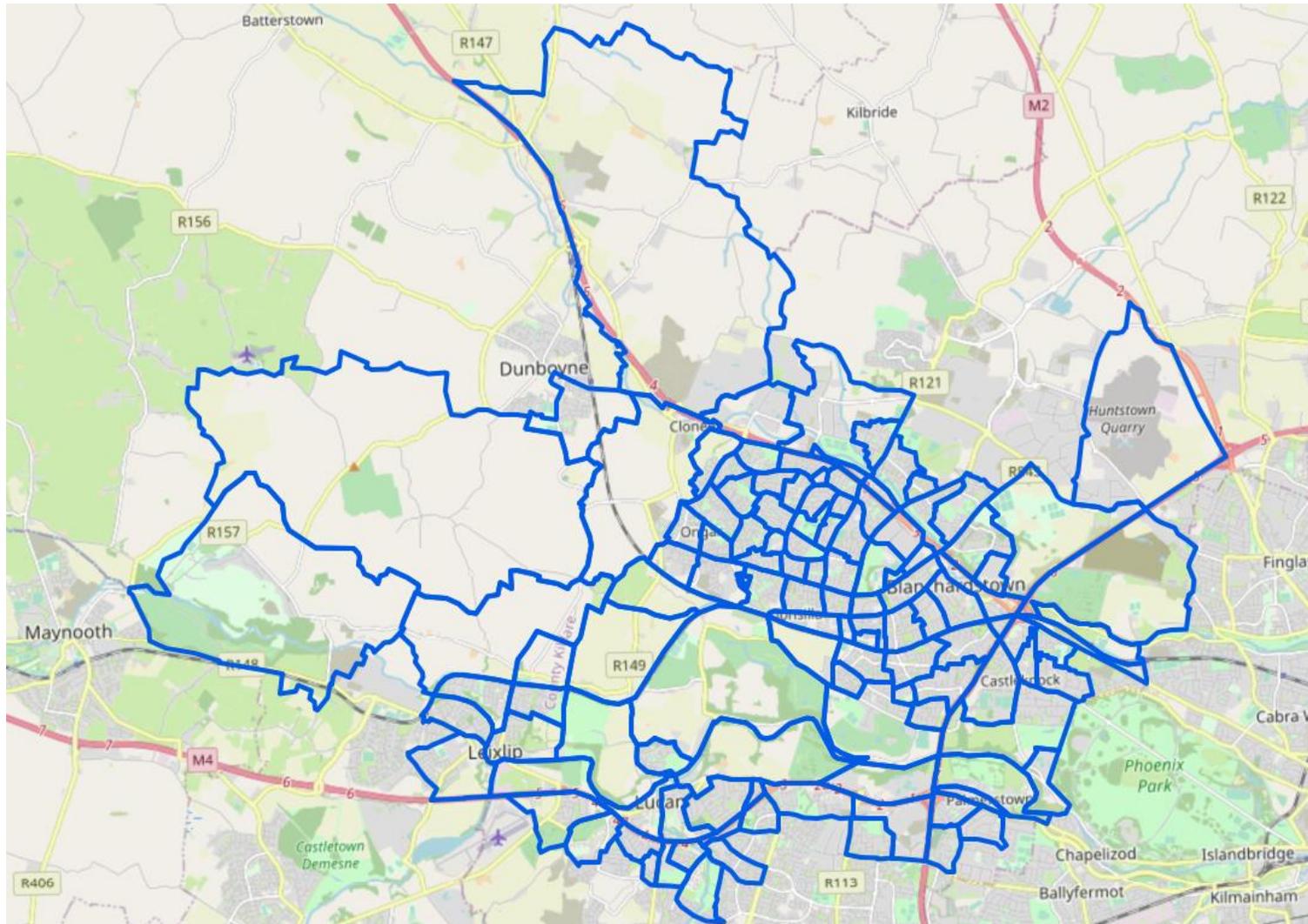
- AM Peak Hour (08:00 – 09:00).
- PM Peak Hour (17:00 – 18:00).

#### 3.2 Model Study Area

The extent of BLAM is presented in Figure 3-2 below.







**Figure 3-4 NTA ERM Zoning System**

### 3.3.1 Capacity Restraint Mechanism- Junction Modelling and Speed/Flow Relationships

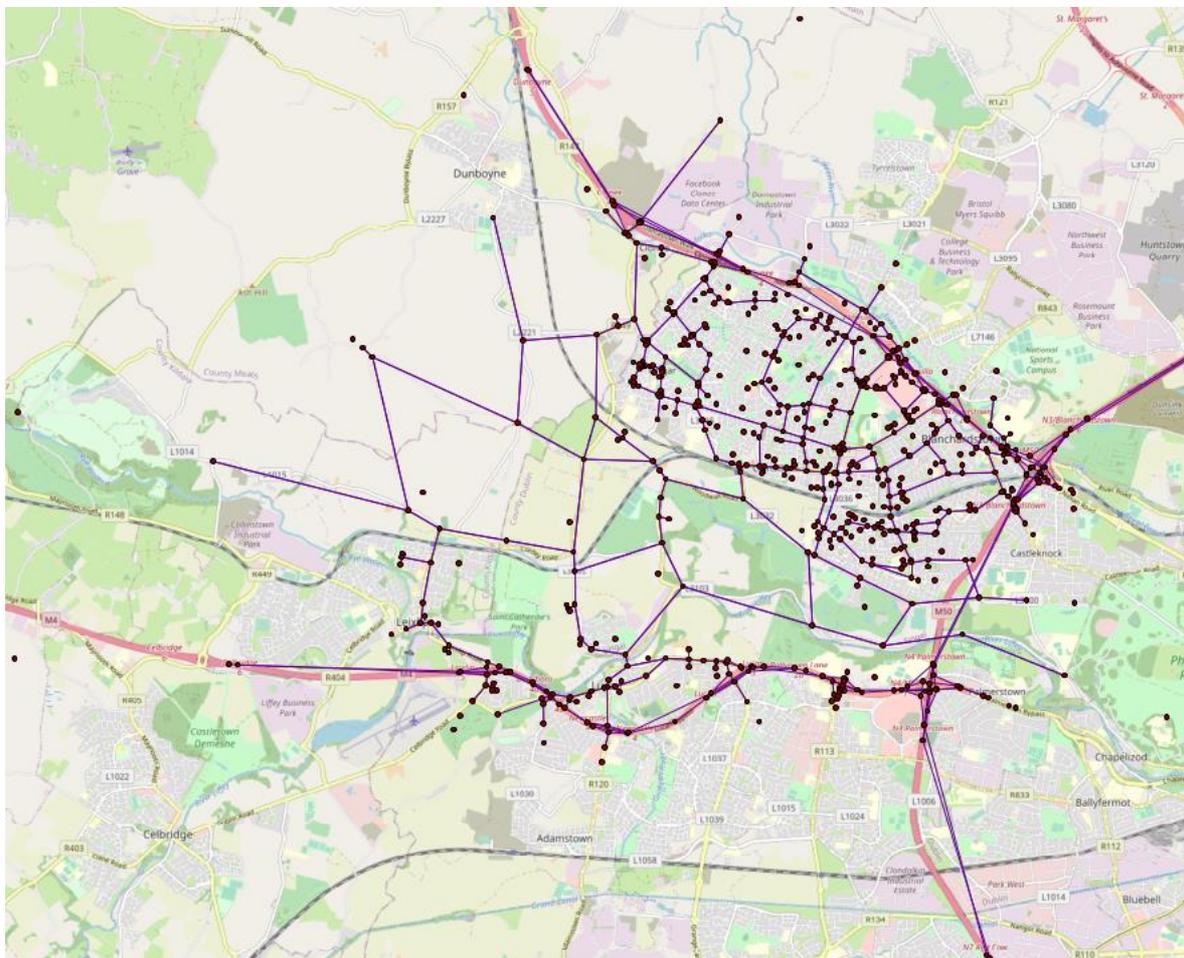
The total travel time of a trip from origin to destination is a function of both link travel time and junction delay. SATURN uses a curve fitting procedure to create speed flow curves. The formula within SATURN is as follows:

$$t(v) = t_0 + AV^n \quad v < c$$

Where,

- “t” is time on link (analogous to speed).
- “t<sub>0</sub>” is free flow time (analogous to free flow speed).
- “a” is a constant (determined from speed and flow at capacity).
- “V” is link flow.
- “n” is the power of the curve (determines the length of the flat part and how quickly the curve falls).

Figure 3-5 shows the extent of the simulation network.



**Figure 3-5 BLAM Local Road Network**

### 3.4 Matrix Development

Demand matrices were required for the following time periods:

- Morning peak from 08:00 – 09:00 (AM Peak Period).
- Evening peak from 17:00 – 16:00 (PM Peak Period).

'Prior' morning and evening Peak hour Light and Heavy vehicle matrices were extracted from the 2016 ERM. The matrices did not require disaggregation between cordoned ERM and BLAM, as the diss-aggregation in ERM was considered appropriate to use in BLAM as discussed in Section 3.3.

### 3.5 Assignment Model

The assignment model applies the demand for travel, represented by the trip matrices, to the supply, in the form of the road network. The 'generalised cost' of a journey, represented by a combination of time and distance, is compared in a route choice algorithm, and a stable output produced, where ideally, all possible routes between an origin and destination have the same 'cost'. Generalised cost is computed as follows:

$$\text{Generalised Cost} = (\text{Value of Time} * \text{Time}) + (\text{Vehicle Operating Cost} * \text{Distance}) + \text{Tolls}$$

The economic parameters used in the BLAM are outlined in Table 3-1. These generalised costs parameters were calculated based on the parameters set out in PAG and in the DoT Common Appraisal Framework.

**Table 3-1 Generalised Cost Economic Parameters (2019)**

Peak Hour	User Class	Value of Time (VoT)*		Vehicle Operating Cost (VOC)	
		Cents/sec	€/hr	Cents/metre	€/km
AM	Light	0.76	27.46	0.02	0.18
	Heavy	1.14	41.21	0.06	0.72
PM	Light	0.76	27.41	0.02	0.18
	Heavy	1.14	40.88	0.07	0.70

\*Average 2020 VoT for Commuting, Working & Other Trip Purposes

### 3.6 Assignment Algorithm

The Route Choice Algorithm used in ERM and also maintained in the BLAM is 'Equilibrium Assignment'. Equilibrium assignment distributes the demand according to Wardrop's first principle, whereby every road user selects their route in such a way, that the cost on all alternative routes is the same and that switching route would increase personal travel time.

The assignment terminates when a stable solution is calculated, and user equilibrium is reached. When equilibrium conditions have been reached, no user can further reduce the impedance of their trip by switching route.

### 3.7 Modelling Software

The assignment was done using the software SATURN (version 11.4.07H).

## 4. MODEL CALIBRATION

### 4.1 Introduction

Following the development of the base year models, the process of calibrating and validating the models was undertaken.

### 4.2 Calibration

The purpose of model calibration is to ensure that the model assignments reflect the existing travel situation. Calibration is an iterative process, whereby the model is continually revised to ensure that the most accurate replication of the base year conditions is represented.

#### 4.2.1 Matrix Estimation

Matrix Estimation (ME) is the process in which the number of trips assigned along a model link is adjusted to match an observed total. Using transportation modelling software (SATURN in this case) it is possible to perform this operation at numerous locations in a single matrix estimation run, adjusting large sections of the trip matrix to match observed demand.

In SATURN, Matrix Estimation is an iterative process, where the trips are assigned to the link in lieu with the traffic data observed on the link. The vehicle class wise traffic volumes on each link and other numerical parameters are set to form tolerance values, which ensure accuracy within the matrix estimation process.

#### 4.2.2 Calibration Criteria and Link Flow Calibration Results

Calibration was undertaken using survey data from year 2019. The model calibration process has been undertaken based on the requirements of the TII *PAG Unit 5.1: Construction of Traffic Models* and with reference to the calibration criteria outlined in Table 5.1.3 of that document. The PAG specify the acceptable values for modelled and observed flow comparisons and suggests how calibration should relate to the magnitude of the values being compared. A summary of these targets is shown in Table 4-1.

**Table 4-1 Model Calibration Criteria: Individual Flows**

Class Test	Criteria and Measure	Guideline
	<i>Assigned Hourly Flows vs. Observed Flows:</i>	
1	Individual flows within 100 vph for flows <700 vph	> 85% of cases
2	Individual flows within 15% for flows 700 – 2700 vph	
3	Individual flows within 400 vph for flows > 2700 vph	

The standard method used to compare modelled values against observations on a link involves the calculation of the Geoff E. Havers (GEH) statistic (Chi-squared statistic), incorporating both relative and absolute errors. The GEH statistic is a measure of comparability that takes account of not only the difference between the observed and modelled flows, but also the significance of this difference with respect to the volume of the observed flow. The GEH statistic is calculated as follows:

$$GEH = \sqrt{\frac{(M - O)^2}{0.5(M + O)}}$$

Where *M* = Modelled Flow and *O* = Observed Flow.

Guidance in the Project Appraisal Guidelines sets out the criteria in Table 4-2.

**Table 4-2 Model Calibration Criteria: GEH Values**

Criteria and Measures		Requirement
GEH statistic	Individual flows: GEH < 5	> 85% of cases

A total of 102 links flows and 82 turns were used in the calibration process, the results of which are summarised in Table 4-3, Table 4-4, Table 4-5 and Table 4-6 for GEH criteria for turns and links calibration respectively. The results in full can be found in Appendix B of this report.

**Table 4-3 Turn Calibration Results: Individual Flows**

% of Calibration Sites Meeting Individual Flow Criteria				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	96%	96%	100%	>85%
PM Peak	95%	96%	100%	>85%

**Table 4-4 Link Calibration Results: Individual Flows**

% of Calibration Sites Meeting Individual Flow Criteria				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	90%	90%	100%	>85%
PM Peak	89%	90%	100%	>85%

**Table 4-5 Turn Calibration Results: GEH Values**

% of Calibration Sites with GEH < 5				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	86%	90%	95%	>85%
PM Peak	87%	89%	93%	>85%

**Table 4-6 Link Calibration Results: GEH Values**

% of Calibration Sites with GEH < 5				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	88%	86%	95%	>85%
PM Peak	86%	86%	91%	>85%

The comparison of modelled and observed flows demonstrates that the AM and PM Peak period models exceed the flow criteria for all user classes. Likewise, the GEH results show that the AM and PM Peak periods models also exceed the criteria for all user classes. The results therefore confirm that the models have been calibrated to a standard compliant with the PAG criteria for all user classes and all time periods.

### 4.2.3 Trip Length Distribution Check

The output trip matrix from the matrix estimation process must be checked to ensure that the process has not significantly altered trip distribution. It is possible that in seeking to increase the flow along a particular link, the matrix estimation process might add significant numbers of trips between the two zones at either end of the link in question. This change may have the effect of creating excessive short distance trips while longer distance trips are unaffected, which in turn would push the trip distance distribution toward short trips.

To check the output of the matrix estimation process, the trip length distributions (TLD) from before (pre) and after (post) matrix estimation are compared. The trip length distributions for each peak hour for Light Vehicles are represented as histograms in Figure 4-1 and Figure 4-2.

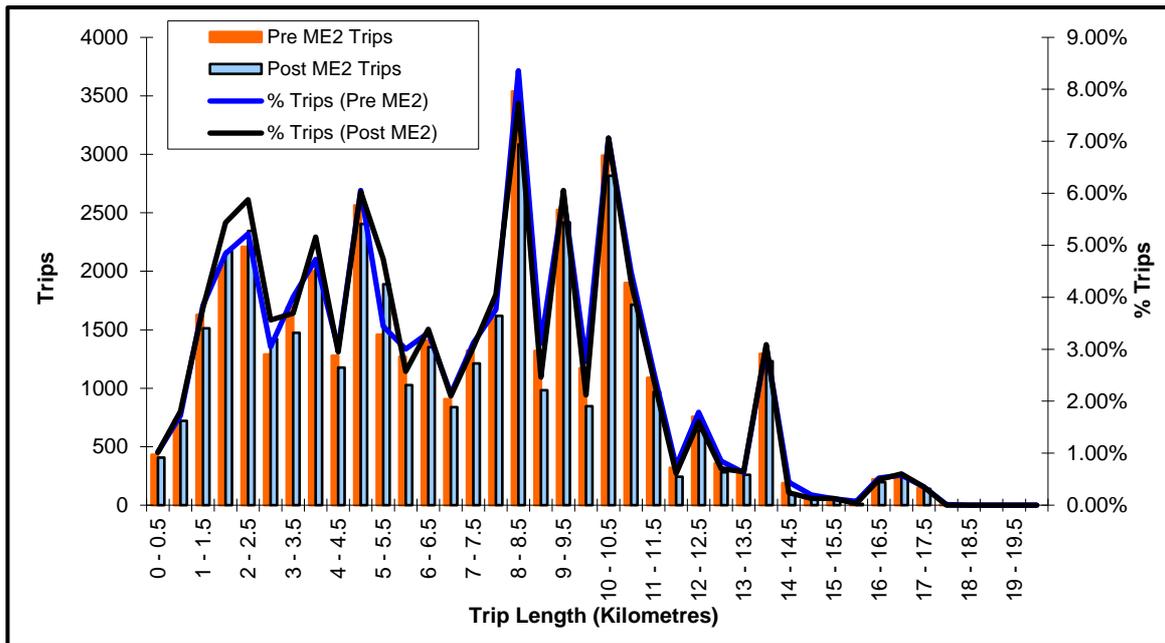


Figure 4-1 TLD AM Peak Hour (LV)

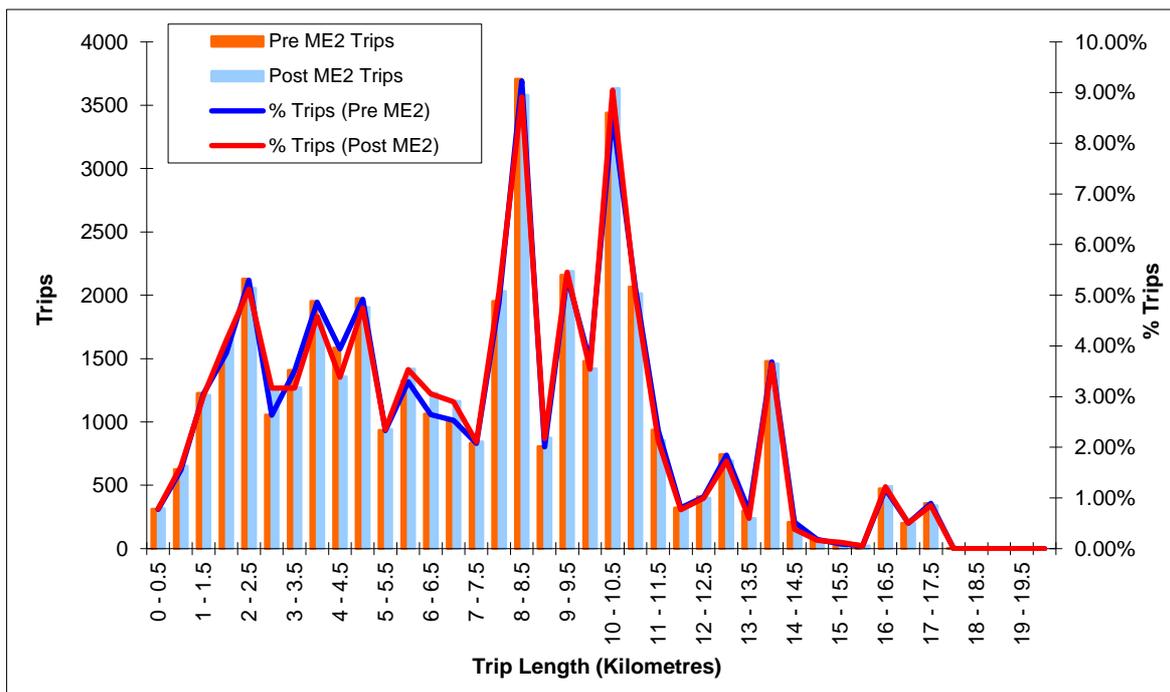


Figure 4-2 TLD PM Peak Hour (LV)

The 2019 calibrated matrices were adjusted using the observed traffic count data in order to represent these local characteristics of travel in the study area. Based on the above, the trip length distribution diagrams are considered acceptable.

### 4.3 Model Validation

Model validation comprises the comparison of calibrated flows against an independent data set which was not used as part of the calibration process. Validation checks included:

- Link Flow Validation.
- O-D Matrix validation checks using the O-D data.
- Journey time validation.

#### 4.3.1 Validation of Link Flows

A total of 54 observed and modelled link flows were compared at a number of validation sites which were kept exclusive of the calibration data, in accordance with the criteria above. The permissible difference was calculated for each value (based on the observed figure) and compared with that which had been modelled. Link flow validation results are included in Appendix C and are summarised in Table 4-7 and Table 4-8.

**Table 4-7 Link Validation Results: Individual Flows**

% of Validation Sites Meeting Individual Flow Criteria				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	91%	94%	97%	>85%
PM Peak	85%	91%	100%	>85%

**Table 4-8 Link Validation Results: GEH Values**

% of Validation Sites with GEH < 5				
Time Period	Link Flows			Required
	Total Traffic	Lights	Heavies	
AM Peak	91%	94%	88%	>85%
PM Peak	88%	91%	88%	>85%

The comparison of modelled and observed flows demonstrates that the AM and PM peak period models meet or exceed the flow and GEH criteria for all user classes. Therefore, the model is deemed validated in terms of link flows.

#### 4.3.2 Comparison of Traffic Patterns (O-D Surveys)

Although not required under PAG guidance, the routing of traffic through the study area was checked against the results from the ANPR surveys. The survey data was compared against the model data on a 'first seen-last seen' basis, whereby the survey data records the first site and last site the vehicle was seen at. The vehicle's origin and destination within the study area is then considered to be the first and last site it is seen.

The patterns were compared based on the percentage split of destinations from each survey location based on the locations shown in Figure 2-5.

The ANPR data have been analysed and O-D movement matrices have been created and compared with the modelled traffic patterns between all ANPR. The dimension of the O-D matrices is 16x16 movements as the ANPR sites are bi-directional. Table 4-9 and Table 4-10 show O-D patterns comparison for both peak periods.

The AM and PM Peak models have 85% and 80% of O-D pairs with a difference less than +/- 20% respectively, therefore the models are deemed validated in terms of travel patterns. The non-validated O-D pairs relate to small numbers therefore deemed not significant in terms of the overall validation.

**Table 4-9 ANPR O-D Validation AM**

	1 NB	1 SB	3 WB	3 EB	4 WB	4 EB	5 SB	5 NB	6 NB	6 SB	7 NB	7 SB	8 NB	8 SB	9 WB	9 EB
1 NB	0%	0%	0%	-8%	-3%	-9%	0%	0%	-10%	0%	-3%	0%	16%	-3%	23%	-5%
1 SB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2 WB	0%	-23%	0%	0%	0%	24%	0%	0%	-6%	0%	13%	0%	-2%	0%	-3%	-2%
3 EB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4 WB	0%	-6%	0%	-1%	0%	0%	0%	0%	0%	-10%	0%	-1%	7%	0%	12%	0%
4 EB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5 SB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-42%	0%	42%	0%
5 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6 NB	0%	0%	0%	-5%	0%	-10%	0%	0%	0%	0%	0%	0%	-2%	0%	16%	0%
6 SB	0%	0%	-2%	5%	0%	0%	0%	0%	0%	0%	0%	0%	-3%	0%	0%	0%
7 NB	0%	-5%	0%	0%	0%	0%	0%	0%	0%	-5%	0%	0%	0%	0%	0%	0%
7 SB	0%	-8%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8 SB	0%	1%	0%	0%	-2%	-5%	-11%	36%	-1%	1%	0%	-1%	0%	0%	-15%	-2%
9 WB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9 EB	0%	-1%	0%	-1%	-1%	-19%	-11%	47%	-1%	4%	0%	-4%	-14%	0%	0%	0%

**Table 4-10 ANPR O-D Validation PM**

	1 NB	1 SB	3 WB	3 EB	4 WB	4 EB	5 SB	5 NB	6 NB	6 SB	7 NB	7 SB	8 NB	8 SB	9 WB	9 EB
1 NB	0%	0%	0%	-3%	0%	13%	0%	0%	5%	0%	-2%	0%	-3%	-3%	-1%	-7%
1 SB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2 WB	0%	1%	0%	0%	-2%	15%	0%	3%	-10%	-1%	17%	0%	-12%	0%	-12%	0%
3 EB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4 WB	0%	0%	0%	-1%	0%	0%	0%	0%	0%	-3%	0%	0%	4%	-1%	1%	0%
4 EB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5 SB	0%	0%	0%	0%	-38%	0%	0%	0%	0%	0%	0%	0%	53%	0%	-16%	0%
5 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6 NB	0%	0%	0%	0%	0%	-18%	0%	0%	0%	0%	0%	0%	-10%	0%	28%	0%
6 SB	0%	-17%	0%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-3%	0%
7 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7 SB	0%	53%	0%	-53%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8 NB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8 SB	0%	3%	0%	6%	-1%	14%	-10%	12%	0%	5%	0%	0%	0%	0%	-29%	0%
9 WB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9 EB	0%	0%	0%	7%	-1%	29%	-14%	10%	0%	10%	0%	0%	-41%	0%	0%	0%

### 4.3.3 Journey Time (O-D Surveys)

The journey time comparison is required to show that the model is reflecting base year network conditions in terms of network speed and delay. Table 4-11 and Table 4-12 provide a comparison of the modelled and observed journey times for the AM and PM Peak Hours respectively. The observed journey times are based on the ANPR survey data in Section 2.0 of this report.

**Table 4-11 AM Peak Modelled/Observed Journey Times**

Site A	Site B	Observed (sec)	Modelled (sec)	Absolute Difference (sec)	% Difference	Validated
6	8	3:27	02:34	00:53	26%	PASS
8	6	3:13	03:58	00:45	24%	PASS
9	4	6:49	06:58	00:09	2%	PASS
4	9	5:04	05:21	00:17	6%	PASS
3	6	7:35	08:30	00:55	12%	PASS
6	3	9:01	08:19	00:42	8%	PASS
3	7	6:25	07:25	01:00	16%	PASS
7	3	7:45	07:39	00:06	1%	PASS
4	7	5:26	05:38	00:12	4%	PASS
7	4	5:35	05:46	00:11	3%	PASS
4	8	4:40	05:20	00:40	14%	PASS
8	4	7:26	06:50	00:36	8%	PASS
<b>Percentage Validated</b>						<b>100%</b>

**Table 4-12 PM Peak Modelled/Observed Journey Times**

Site A	Site B	Observed (sec)	Modelled (sec)	Absolute Difference (sec)	% Difference	Validated
6	8	3:09	02:37	00:32	26%	PASS
8	6	4:29	04:00	00:29	24%	PASS
9	4	5:04	04:13	00:51	2%	PASS
4	9	5:31	06:21	00:50	6%	PASS
3	6	8:10	08:25	00:15	12%	PASS
6	3	6:56	07:47	00:51	8%	PASS
3	7	7:43	06:40	01:03	16%	FAIL
7	3	5:58	06:56	00:58	1%	PASS
4	7	4:04	05:16	01:12	4%	PASS
7	4	4:52	05:07	00:15	3%	PASS
4	8	5:51	06:21	00:30	14%	PASS
8	4	4:39	04:01	00:38	8%	PASS
<b>Percentage Validated</b>						<b>100%</b>

All models satisfy the PAG requirement that 85% of all modelled journey times are within 15% of observed data or less than 60 seconds. As such the base year models are considered validated to the requirements of TII PAG Unit 5.1: Construction of Transport Models in terms of journey times.

#### 4.4 Model Convergence

The model assignment procedure involves the model reaching a point of equilibrium through an iterative process. The model must therefore achieve a satisfactory point of convergence in order to produce results that are both reflective of the network over a number of iterations of assigning demand to the network.

The convergence indicators vary by different transport modelling packages; therefore, multiple criteria are outlined in the UK DMRB Volume 12.2.1. The criterion used to show that the SATURN software reaches a level of convergence are as follows:

- The percentage (P) of links on which flows or costs change by less than a fixed percentage (<5%) for four consecutive iterations greater than 98%.
- The difference between the costs along the chosen routes and those along the minimum cost routes, summed across the whole network, and expressed as a percentage of the minimum costs, usually known as 'Delta' or the '%GAP' (<0.1%).

The model software produces the convergence information for all user classes, defining the percentage difference in link volume. Table 4-13 shows the level of convergence in AM and PM peak models.

**Table 4-13 Model Convergence Results**

Time Period	%GAP	Total Traffic	
		Iterations	P
AM	0.0086	35	98.8%
PM	0.0058	58	99.5%

The results indicate that the AM Peak and PM Peak models both reached a satisfactory level of convergence.

#### 4.5 Model Statistics

The base year model statistics are shown in Table 4-14 below.

**Table 4-14: Base Year Model Statistics**

Time Period	Matrix Total	Travel Time (Total – pcu hours)	Travel Distance (Total pcu-kms)	Average Speed (km/h)
AM	43,840	5,743	302,424	53
PM	43,020	6,532	312,730	48

## **5. SUMMARY AND NEXT STEPS**

### **5.1 Summary**

The basis for the BLAM was the 2016 NTA East Regional Model (ERM). The BLAM was cordoned from the ERM. It was then refined, calibrated and validated using 2019 traffic surveys comprising of ATC, JTC and ANPR survey data.

The BLAM was calibrated and validated using turning movements and link flows, and validated using individual link flows, traffic patterns and journey time. The model passed each calibration and validation test and is deemed to be fit for the purpose of this project.

### **5.2 Next Steps**

The Base year 2019 AM and PM peak models were used as the basis for the development of future year models, namely 2028 and 2043 to assess the impacts of DART+ West proposals.

## **Appendix A**

### **2019 Traffic Surveys**

## JTC Site 1

8:00:00 to 9:00:00(Turning movement counts)

Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	70	154	42	64	1	173	113	212	252	3	108	98	219	143	1
LGV	0	7	14	2	1	0	12	10	8	8	0	3	2	7	2	0
M/C	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
OGV1	0	6	6	2	4	0	0	0	4	2	0	0	0	2	4	0
OGV2	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0
P/C	0	0	1	0	0	0	0	0	3	0	0	0	0	4	0	0
PSV	0	0	0	0	0	0	8	3	0	18	0	0	0	3	0	0
<b>Total</b>	<b>0</b>	<b>85.6</b>	<b>173.7</b>	<b>45.9</b>	<b>68.8</b>	<b>1</b>	<b>185</b>	<b>123</b>	<b>223.8</b>	<b>261.9</b>	<b>3</b>	<b>111</b>	<b>100</b>	<b>230.8</b>	<b>148.8</b>	<b>1</b>
LV	0	77	168	44	65	1	185	123	220	260	3	111	100	226	145	1
HV	0	9	6	2	4	0	0	0	4	2	0	0	0	5	4	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)

Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	266	374	351	542	575	473	461	264
LGV	23	11	23	22	19	28	11	15
M/C	1	0	0	1	0	2	2	0
OGV1	13	8	4	10	6	10	6	2
OGV2	3	0	0	6	0	0	3	0
P/C	2	3	1	4	3	2	4	1
PSV	0	0	10	20	18	8	3	3
<b>Total</b>	<b>305</b>	<b>393</b>	<b>378</b>	<b>579</b>	<b>600</b>	<b>511</b>	<b>481</b>	<b>281</b>
LV	289	385	374	564	594	501	472	279
HV	16	8	4	15	6	10	9	2

Arm	Road name
From A	Carpenterstown rd southbound
To A	Carpenterstown rd northbound
From B	Carpenterstown rd westbound
To B	Carpenterstown rd eastbound
From C	Diswellstown rd northbound
To C	Diswellstown rd southbound
From D	Carpenterstown rd eastbound
To D	Carpenterstown rd westbound

Check 1807 1807 1807 TRUE TRUE TRUE

17:00:00 to 18:00:00(Turning movement counts)

Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	3	73	152	86	61	0	153	151	153	164	0	97	50	123	58	3
LGV	0	2	5	3	4	0	14	11	8	6	0	6	1	4	3	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	1	2	1	0	0	0	0	1	0	0	2	0	0	0	0
PSV	0	0	0	0	0	0	8	5	0	5	0	0	0	5	0	0
<b>Total</b>	<b>3</b>	<b>75</b>	<b>157</b>	<b>89</b>	<b>65</b>	<b>0</b>	<b>167</b>	<b>166</b>	<b>161</b>	<b>170</b>	<b>0</b>	<b>103</b>	<b>51</b>	<b>127</b>	<b>61</b>	<b>3</b>
LV	3	75	157	89	65	0	167	162	161	170	0	103	51	127	61	3
HV	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)

Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	314	267	365	360	414	363	234	337
LGV	10	13	29	12	20	22	8	20
M/C	0	0	0	0	0	0	0	0
OGV1	0	0	4	0	0	0	0	4
OGV2	0	0	0	0	0	0	0	0
P/C	3	2	0	1	3	2	0	2
PSV	0	0	13	10	5	8	5	5
<b>Total</b>	<b>324</b>	<b>280</b>	<b>398</b>	<b>372</b>	<b>434</b>	<b>385</b>	<b>242</b>	<b>361</b>
LV	324	280	394	372	434	385	242	357
HV	0	0	4	0	0	0	0	4

Arm	Road name
From A	stown rd southbound
To A	stown rd northbound
From B	stown rd westbound
To B	stown rd eastbound
From C	own rd northbound
To C	own rd southbound
From D	stown rd eastbound
To D	stown rd westbound

Check 1428 1428 1428 TRUE TRUE TRUE

### JTC Site 2

8:00:00 to 9:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	17	192	124	153	190	11	80	66	196	159	0	34	126	54	38	0
LGV	1	21	4	8	6	0	5	2	6	7	0	1	3	3	2	0
M/C	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0
OGV1	0	8	0	2	2	0	0	0	2	0	0	0	4	4	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	3	0	0	0	0	0	0	2	7	0	0	0	2	0	0
PSV	0	0	8	0	0	0	3	0	18	3	0	0	0	0	3	0
<b>Total</b>	<b>18</b>	<b>221</b>	<b>128</b>	<b>163</b>	<b>198</b>	<b>11</b>	<b>85</b>	<b>68</b>	<b>204</b>	<b>166</b>	<b>0</b>	<b>35</b>	<b>133</b>	<b>61</b>	<b>40</b>	<b>0</b>
LV	18	213	128	161	196	11	85	68	202	166	0	35	129	57	40	0
HV	0	8	0	2	2	0	0	0	2	0	0	0	4	4	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	486	529	347	416	389	242	218	253
LGV	34	16	13	31	14	11	8	11
M/C	2	0	0	5	3	0	0	0
OGV1	10	8	2	11	2	0	8	2
OGV2	0	0	0	0	0	0	0	0
P/C	3	3	1	12	10	0	2	0
PSV	8	18	3	3	20	13	3	0
<b>Total</b>	<b>530</b>	<b>553</b>	<b>362</b>	<b>458</b>	<b>405</b>	<b>253</b>	<b>234</b>	<b>266</b>
LV	520	545	360	447	403	253	226	264
HV	10	8	2	11	2	0	8	2

Arm	Road name
From A	Carpenterstown rd southbound
To A	Carpenterstown rd northbound
From B	Carpenterstown rd westbound
To B	Carpenterstown rd eastbound
From C	Diswellstown rd northbound
To C	Diswellstown rd southbound
From D	Carpenterstown rd eastbound
To D	Carpenterstown rd westbound

Check 1583 1583 1583 TRUE TRUE TRUE

17:00:00 to 18:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	138	123	66	246	2	135	47	90	99	0	44	79	38	47	0
LGV	0	10	8	4	13	1	8	3	4	5	0	2	2	1	2	0
M/C	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	1	0	0	3	0	2	2	0	0	0	0	0	0	0	0
PSV	0	0	8	0	0	0	3	0	5	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>148</b>	<b>131</b>	<b>70</b>	<b>259</b>	<b>3</b>	<b>143</b>	<b>50</b>	<b>94</b>	<b>104</b>	<b>0</b>	<b>46</b>	<b>81</b>	<b>39</b>	<b>49</b>	<b>0</b>
LV	1	148	131	70	259	3	143	50	94	104	0	46	81	39	49	0
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	328	416	430	277	233	305	164	157
LGV	22	19	25	17	11	18	5	9
M/C	0	0	2	1	0	2	0	0
OGV1	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0
P/C	2	4	7	1	0	3	0	2
PSV	8	5	3	0	5	10	0	0
<b>Total</b>	<b>350</b>	<b>435</b>	<b>455</b>	<b>294</b>	<b>244</b>	<b>323</b>	<b>169</b>	<b>166</b>
LV	350	435	455	294	244	323	169	166
HV	0	0	0	0	0	0	0	0

S	Road name
From A	Carpenterstown rd southbound
To A	Carpenterstown rd northbound
From B	Carpenterstown rd westbound
To B	Carpenterstown rd eastbound
From C	Diswellstown rd northbound
To C	Diswellstown rd southbound
From D	Carpenterstown rd eastbound
To D	Carpenterstown rd westbound

Check 1246 1246 1246 TRUE TRUE TRUE

A

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### JTC Site 3

8:00:00 to 9:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	17	10	223	8	1	4	188	51	15	0	93	131	159	12	1
LGV	0	2	1	15	1	0	0	10	1	2	0	4	9	9	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	4	0	0	0	0	0	0	0	0	8	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
PSV	0	0	3	0	0	0	13	0	0	0	0	3	20	0	0	0
<b>Total</b>	<b>0</b>	<b>19</b>	<b>11</b>	<b>242</b>	<b>9</b>	<b>1</b>	<b>4</b>	<b>198</b>	<b>52</b>	<b>17</b>	<b>0</b>	<b>97</b>	<b>151</b>	<b>168</b>	<b>12</b>	<b>1</b>
LV	0	19	11	238	9	1	4	198	52	17	0	97	140	168	12	1
HV	0	0	0	4	0	0	0	0	0	0	0	0	11	0	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	250	190	201	192	159	26	303	505
LGV	18	11	11	13	7	1	18	29
M/C	0	0	0	0	0	0	0	1
OGV1	4	8	0	0	0	0	8	4
OGV2	0	3	0	0	0	0	3	0
P/C	0	1	0	3	1	0	3	0
PSV	3	20	13	0	3	15	20	3
<b>Total</b>	<b>272</b>	<b>212</b>	<b>212</b>	<b>205</b>	<b>166</b>	<b>27</b>	<b>332</b>	<b>538</b>
LV	268	201	212	205	166	27	321	534
HV	4	11	0	0	0	0	11	4

Arm	Road name
From A	Riverwood Dene southbound
To A	Riverwood Dene northbound
From B	Diswellstown rd westbound
To B	Diswellstown rd eastbound
From C	Fernleigh Dr northbound
To C	Fernleigh Dr southbound
From D	Diswellstown rd eastbound
To D	Diswellstown rd westbound

Check 1024 1024 1024 TRUE TRUE TRUE

17:00:00 to 18:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	22	27	190	11	1	11	139	15	9	1	37	198	189	73	3
LGV	0	1	1	20	0	0	2	10	1	1	0	4	10	11	10	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	6	0	0	6	0	0	0	0	0	0	0	0	2	2	2	0
OGV2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	0	0	5	0	0	0	10	0	0	0	0	5	8	0	0
<b>Total</b>	<b>6</b>	<b>23</b>	<b>28</b>	<b>219</b>	<b>11</b>	<b>1</b>	<b>13</b>	<b>149</b>	<b>16</b>	<b>10</b>	<b>1</b>	<b>41</b>	<b>210</b>	<b>202</b>	<b>85</b>	<b>3</b>
LV	0	23	28	210	11	1	13	149	16	10	1	41	208	200	83	3
HV	6	0	0	9	0	0	0	0	0	0	0	0	2	2	2	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	239	224	162	221	62	112	463	369
LGV	22	11	12	13	6	13	31	34
M/C	0	0	1	0	0	0	0	0
OGV1	11	8	0	2	0	2	6	6
OGV2	3	0	0	0	0	0	0	3
P/C	0	0	1	0	0	0	0	0
PSV	5	5	10	8	0	0	13	15
<b>Total</b>	<b>275</b>	<b>243</b>	<b>174</b>	<b>236</b>	<b>68</b>	<b>127</b>	<b>500</b>	<b>412</b>
LV	261	235	174	234	68	125	494	403
HV	14	8	0	2	0	2	6	9

Arm	Road name
From A	Riverwood Dene southbound
To A	Riverwood Dene northbound
From B	Diswellstown rd westbound
To B	Diswellstown rd eastbound
From C	Fernleigh Dr northbound
To C	Fernleigh Dr southbound
From D	Diswellstown rd eastbound
To D	Diswellstown rd westbound

Check 1047 1047 1047 TRUE TRUE TRUE

## JTC Site 4

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	4	184	253	109	318	0	137	45	412	90	0	33	121	35	67	0
LGV	0	11	30	1	11	0	16	1	24	7	0	0	2	0	2	0
M/C	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
OGV1	0	4	10	0	2	0	2	0	0	2	0	0	0	2	0	0
OGV2	0	3	6	0	0	0	0	0	3	0	0	0	0	0	0	0
P/C	0	3	3	0	2	0	0	1	0	0	0	0	0	0	0	0
PSV	0	20	3	0	13	0	0	0	5	0	0	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>202</b>	<b>298</b>	<b>110</b>	<b>331</b>	<b>0</b>	<b>155</b>	<b>46</b>	<b>439</b>	<b>99</b>	<b>0</b>	<b>33</b>	<b>123</b>	<b>37</b>	<b>69</b>	<b>0</b>
LV	4	195	283	110	329	0	153	46	436	97	0	33	123	35	69	0
HV	0	7	15	0	2	0	2	0	3	2	0	0	0	2	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	550	855	500	309	535	457	223	187
LGV	42	37	28	18	31	48	4	2
M/C	0	2	1	0	1	0	0	0
OGV1	13	2	4	8	2	11	2	0
OGV2	9	3	0	3	3	6	0	0
P/C	6	2	3	4	1	4	1	1
PSV	23	18	13	20	5	3	0	0
<b>Total</b>	<b>614</b>	<b>897</b>	<b>532</b>	<b>338</b>	<b>571</b>	<b>522</b>	<b>229</b>	<b>189</b>
LV	592	892	528	327	566	505	227	189
HV	22	5	4	11	5	17	2	0

Arm	Road name
From A	Porterstown Road Southbound
To A	Porterstown Road Northbound
From B	Diswelltown Road Westbound
To B	Diswelltown Road Eastbound
From C	Porterstown Road Northbound
To C	Porterstown Road Southbound
From D	Bothar bhaile an Phoirtearaigh Westbound
To D	Bothar bhaile an Phoirtearaigh Eastbound

Check 1998 1998 1998 TRUE TRUE TRUE

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	342	343	6	289	1	64	7	469	116	0	10	3	6	10	0
LGV	0	19	20	1	19	0	19	2	46	11	0	1	0	1	1	0
M/C	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
OGV1	0	2	0	0	4	2	0	0	4	2	0	0	0	0	0	0
OGV2	0	0	3	0	6	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	13	0	0	15	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>363</b>	<b>366</b>	<b>7</b>	<b>318</b>	<b>3</b>	<b>83</b>	<b>9</b>	<b>519</b>	<b>129</b>	<b>0</b>	<b>11</b>	<b>3</b>	<b>7</b>	<b>11</b>	<b>0</b>
LV	1	361	363	7	308	1	83	9	515	127	0	11	3	7	11	0
HV	0	2	3	0	10	2	0	0	4	2	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	692	762	361	465	595	417	19	23
LGV	40	65	40	31	58	40	2	4
M/C	1	1	0	0	1	0	0	0
OGV1	2	8	6	6	6	0	0	0
OGV2	3	6	6	0	0	3	0	0
P/C	1	1	0	0	0	0	0	0
PSV	13	15	15	13	0	0	0	0
<b>Total</b>	<b>737</b>	<b>840</b>	<b>413</b>	<b>502</b>	<b>659</b>	<b>460</b>	<b>21</b>	<b>27</b>
LV	732	827	401	496	653	457	21	27
HV	5	13	12	6	6	3	0	0

Arm	Road name
From A	Porterstown Road Southbound
To A	Porterstown Road Northbound
From B	Diswelltown Road Westbound
To B	Diswelltown Road Eastbound
From C	Porterstown Road Northbound
To C	Porterstown Road Southbound
From D	Bothar bhaile an Phoirtearaigh Westbound
To D	Bothar bhaile an Phoirtearaigh Eastbound

Check 1860 1860 1860 TRUE TRUE TRUE

### JTC Site 5

8:00:00 to 9:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	170	0	247	111	0	0	80	0	0	0	0	329	171	0	0
LGV	0	8	0	37	8	0	0	0	0	0	0	0	26	9	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
OGV1	0	4	0	10	2	0	0	0	0	0	0	0	0	4	0	0
OGV2	0	0	0	6	0	0	0	0	0	0	0	0	3	0	0	0
P/C	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>182</b>	<b>0</b>	<b>299</b>	<b>121</b>	<b>0</b>	<b>0</b>	<b>80</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>358</b>	<b>184</b>	<b>0</b>	<b>0</b>
LV	0	178	0	284	119	0	0	80	0	0	0	0	355	180	0	0
HV	0	4	0	15	2	0	0	0	0	0	0	0	3	4	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	417	440	191	341	0	0	500	327
LGV	45	34	8	17	0	0	35	37
M/C	0	1	0	0	0	0	1	0
OGV1	13	2	2	8	0	0	4	10
OGV2	6	3	0	0	0	0	3	6
P/C	2	0	0	1	0	0	0	2
PSV	3	0	3	0	0	3	0	3
<b>Total</b>	<b>481</b>	<b>479</b>	<b>201</b>	<b>366</b>	<b>0</b>	<b>0</b>	<b>542</b>	<b>379</b>
LV	462	474	199	358	0	0	535	364
HV	19	5	2	8	0	0	7	15

Arm	Road name
From A	Unnamed road
To A	Unnamed road
From B	Bothar bhaile an Phoirtearaigh westbound
To B	Bothar bhaile an Phoirtearaigh eastbound
From C	Unnamed road
To C	Unnamed road
From D	Bothar bhaile an Phoirtearaigh eastbound
To D	Bothar bhaile an Phoirtearaigh westbound

Check 1233 1233 1233 TRUE TRUE TRUE

17:00:00 to 18:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	116	0	310	289	0	0	111	0	0	0	0	272	58	0	0
LGV	0	7	0	37	28	0	0	12	0	0	0	0	32	4	0	0
M/C	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0
OGV2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0
PSV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>123</b>	<b>0</b>	<b>350</b>	<b>319</b>	<b>0</b>	<b>0</b>	<b>123</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>306</b>	<b>62</b>	<b>0</b>	<b>0</b>
LV	0	123	0	347	317	0	0	123	0	0	0	0	304	62	0	0
HV	0	0	0	3	2	0	0	0	0	0	0	0	2	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	426	561	400	174	0	0	330	421
LGV	44	60	40	11	0	0	36	49
M/C	0	1	1	0	0	0	0	1
OGV1	0	4	2	0	0	0	2	0
OGV2	3	0	0	0	0	0	0	3
P/C	0	0	2	1	0	0	1	2
PSV	0	0	0	0	0	0	0	0
<b>Total</b>	<b>473</b>	<b>625</b>	<b>442</b>	<b>185</b>	<b>0</b>	<b>0</b>	<b>368</b>	<b>473</b>
LV	470	621	440	185	0	0	366	470
HV	3	4	2	0	0	0	2	3

Arm	Road name
From A	Riverwood Dene southbound
To A	Riverwood Dene northbound
From B	Diswellstown rd westbound
To B	Diswellstown rd eastbound
From C	Ferleigh Dr northbound
To C	Ferleigh Dr southbound
From D	Diswellstown rd eastbound
To D	Diswellstown rd westbound

Check 1288 1288 1288 TRUE TRUE TRUE

### JTC Site 6

8:00:00 to 9:00:00 (Turning movement counts)																									
Vehicle type	A TO A	A TO B	A TO C	A TO D	A TO E	B TO A	B TO B	B TO C	B TO D	B TO E	C TO A	C TO B	C TO C	C TO D	C TO E	D TO A	D TO B	D TO C	D TO D	D TO E	E TO A	E TO B	E TO C	E TO D	E TO E
CAR	0	444	153	15	145	77	1	62	37	410	45	39	2	7	93	56	63	14	0	73	96	569	44	30	2
LGV	0	18	7	0	6	7	0	5	4	28	2	2	0	0	4	1	3	0	0	2	6	32	1	0	0
M/C	0	0.4	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0.4	0	0	0	0	0	0	0	0
OGV1	0	3.8	0	0	0	1.9	3.8	0	0	7.6	0	0	0	0	1.9	0	0	0	0	0	1.9	20.9	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	2.9	0	0	0	0	0	0	0	0	0	0	0	2.9	0	0	0
P/C	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0	0
PSV	25	17.5	0	0	5	0	0	0	20	7.5	0	0	0	0	0	0	0	0	0	0	5	2.5	0	15	0
<b>Total</b>	<b>0</b>	<b>465.9</b>	<b>160</b>	<b>15</b>	<b>151</b>	<b>85.9</b>	<b>4.8</b>	<b>67</b>	<b>41</b>	<b>448.5</b>	<b>47</b>	<b>41</b>	<b>2</b>	<b>7</b>	<b>98.9</b>	<b>57</b>	<b>66</b>	<b>14</b>	<b>0</b>	<b>75</b>	<b>103.9</b>	<b>624.8</b>	<b>45</b>	<b>30</b>	<b>2</b>

8:00:00 to 9:00:00 (Link flows in approach arm - Inbound & Outbound)										
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D	From E	To E
CAR	757	274	587	1116	186	275	206	89	741	723
LGV	31	10	44	55	8	13	5	4	39	40
M/C	0.4	0	0.4	0.8	0	0	0.4	0	0	0.4
OGV1	3.8	1.9	13.3	28.5	1.9	0	0	0	22.8	9.5
OGV2	0	0	2.9	2.9	0	0	0	0	2.9	2.9
P/C	0.4	0	0	0	0	0.4	0	0	0.4	0
PSV	47.5	25	27.5	20	0	0	35	22.5	12.5	12.5
<b>Total</b>	<b>791.8</b>	<b>285.9</b>	<b>647.2</b>	<b>1202.4</b>	<b>195.9</b>	<b>288</b>	<b>212</b>	<b>93</b>	<b>805.7</b>	<b>775.4</b>

Arm	Road name
From A	Manorfields Dr southbound
To A	Manorfields Dr northbound
From B	Ongar Distributor rd westbound
To B	Ongar Distributor rd eastbound
From C	Unnamed road
To C	Unnamed road
From D	The lawn northbound
To D	The lawn southbound
From E	Ongar Distributor rd eastbound
To E	Ongar Distributor rd westbound

17:00:00 to 18:00:00 (Turning movement counts)																									
Vehicle type	A TO A	A TO B	A TO C	A TO D	A TO E	B TO A	B TO B	B TO C	B TO D	B TO E	C TO A	C TO B	C TO C	C TO D	C TO E	D TO A	D TO B	D TO C	D TO D	D TO E	E TO A	E TO B	E TO C	E TO D	E TO E
CAR	0	247	92	14	20	338	1	57	41	381	83	26	2	19	84	30	16	11	0	23	65	270	60	33	1
LGV	0	17	3	2	3	37	0	3	1	40	7	1	0	0	4	1	2	0	0	3	4	22	2	7	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0.4	0	0	0.8	0	0.4	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0
PSV	10	5	0	0	15	0	0	0	7.5	2.5	0	0	0	0	0	0	0	0	0	0	2.5	0	0	7.5	0
<b>Total</b>	<b>0</b>	<b>264</b>	<b>95</b>	<b>16</b>	<b>23</b>	<b>375</b>	<b>1</b>	<b>60</b>	<b>42</b>	<b>421</b>	<b>90</b>	<b>27</b>	<b>2</b>	<b>19</b>	<b>88</b>	<b>31</b>	<b>18</b>	<b>11</b>	<b>0</b>	<b>26</b>	<b>69</b>	<b>293.9</b>	<b>62</b>	<b>40</b>	<b>1</b>

17:00:00 to 18:00:00 (Link flows in approach arm - Inbound & Outbound)										
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D	From E	To E
CAR	373	516	818	560	214	222	80	107	429	509
LGV	25	45	81	42	12	8	6	10	35	50
M/C	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	1.9	0	0	0	0	1.9	0
OGV2	0	0	0	0	0	0	0	0	0	0
P/C	0.4	0.4	1.2	0	0.8	0.8	0	0.4	0	0.8
PSV	30	10	10	5	0	0	15	10	17.5	17.5
<b>Total</b>	<b>398</b>	<b>561</b>	<b>899</b>	<b>603.9</b>	<b>226</b>	<b>230</b>	<b>86</b>	<b>117</b>	<b>465.9</b>	<b>559</b>

Arm	Road name
From A	Manorfields Dr southbound
To A	Manorfields Dr northbound
From B	Ongar Distributor rd westbound
To B	Ongar Distributor rd eastbound
From C	Unnamed road
To C	Unnamed road
From D	The lawn northbound
To D	The lawn southbound
From E	Ongar Distributor rd eastbound
To E	Ongar Distributor rd westbound

### JTC Site 7

8:00:00 to 9:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	98	1	106	60	0	0	161	2	1	0	0	82	408	1	0
LGV	0	2	0	15	0	0	0	28	0	0	0	0	9	29	0	0
M/C	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0.4	0	0
OGV1	0	0	0	0	0	0	0	7.6	0	0	0	0	5.7	5.7	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	1.2	0	0	0	0.4	0	0	0	0	0	0.8	0	0
PSV	0	0	2.5	0	0	0	2.5	0	0	0	0	2.5	0	0	0	0
<b>Total</b>	<b>0</b>	<b>100</b>	<b>1</b>	<b>121</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>196.6</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>96.7</b>	<b>442.7</b>	<b>1</b>	<b>0</b>
LV	0	100	1	121	60	0	0	189	2	1	0	0	91	437	1	0
HV	0	0	0	0	0	0	0	8	0	0	0	0	6	6	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	205	144	221	507	3	2	491	267
LGV	17	9	28	31	0	0	38	43
M/C	0.4	0	0	0.4	0	0	0.4	0.4
OGV1	0	5.7	7.6	5.7	0	0	11.4	7.6
OGV2	0	0	0	0	0	0	0	0
P/C	1.2	0	0.4	0.8	0	0	0.8	1.6
PSV	2.5	0	2.5	0	2.5	5	0	2.5
<b>Total</b>	<b>222</b>	<b>158.7</b>	<b>256.6</b>	<b>543.7</b>	<b>3</b>	<b>2</b>	<b>540.4</b>	<b>317.6</b>
LV	222	153	249	538	3	2	529	310
HV	0	6	8	6	0	0	11	8

Arm	Road name
From A	Clonsilla rd southbound
To A	Clonsilla rd northbound
From B	Bothar bhaile an Phoirtearaigh westbound
To B	Bothar bhaile an Phoirtearaigh eastbound
From C	Unnamed rd
To C	Unnamed rd
From D	R121 eastbound
To D	R121 westbound

17:00:00 to 18:00:00 (Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	16	0	103	53	0	0	292	0	1	0	0	189	262	0	0
LGV	0	2	0	5	8	0	0	34	1	0	0	0	22	22	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0
OGV1	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0
OGV2	0	0	0	0	0	0	0	2.9	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0.4	0.4	0	0
PSV	0	0	0	2.5	0	0	0	0	0	0	0	0	2.5	0	0	0
<b>Total</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>108</b>	<b>61</b>	<b>0</b>	<b>0</b>	<b>328.9</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>211</b>	<b>285.9</b>	<b>0</b>	<b>0</b>
LV	0	18	0	108	61	0	0	326	1	1	0	0	211	284	0	0
HV	0	0	0	0	0	0	0	3	0	0	0	0	0	2	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	119	242	345	279	1	0	451	395
LGV	7	31	42	24	1	0	44	39
M/C	0	0	0	0.4	0	0	0.4	0
OGV1	0	0	0	1.9	0	0	1.9	0
OGV2	0	0	2.9	0	0	0	0	2.9
P/C	0	1.2	1.6	0.4	0	0	0.8	0.8
PSV	2.5	2.5	0	0	0	0	2.5	2.5
<b>Total</b>	<b>126</b>	<b>273</b>	<b>389.9</b>	<b>304.9</b>	<b>2</b>	<b>0</b>	<b>496.9</b>	<b>436.9</b>
LV	126	273	387	303	2	0	495	434
HV	0	0	3	2	0	0	2	3

Arm	Road name
From A	Clonsilla rd southbound
To A	Clonsilla rd northbound
From B	Bothar bhaile an Phoirtearaigh westbound
To B	Bothar bhaile an Phoirtearaigh eastbound
From C	Unnamed rd
To C	Unnamed rd
From D	R121 eastbound
To D	R121 westbound

## JTC Site 8

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	107	23	14	0	254	4	369	0	1
LGV	0	5	2	1	0	42	1	34	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	0	2	0	6	0	11	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0	0	0	0	1	0	1	0	0.4
PSV	0	0	0	0	0	5	0	3	0	2.5
<b>Total</b>	<b>0</b>	<b>112</b>	<b>25</b>	<b>17</b>	<b>0</b>	<b>302</b>	<b>5</b>	<b>414</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	130	18	268	476	373	277
LGV	7	2	43	39	35	44
M/C	0	0	0	0	0	0
OGV1	0	2	8	11	11	6
OGV2	0	0	0	0	0	0
P/C	0	0	1	1	1	1
PSV	0	0	5	3	3	5
<b>Total</b>	<b>137</b>	<b>22</b>	<b>319</b>	<b>526</b>	<b>419</b>	<b>327</b>
LV	137	20	311	515	408	321
HV	0	2	8	11	11	6

Arm	Road name
From A	southbound
To A	northbound
From B	R121 westbound
To B	R121 eastbound
From C	R121 eastbound
To C	R121 westbound

Check	886	886	886	TRUE	TRUE	TRUE
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17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	10	18	19	0	367	30	446	0	1
LGV	0	3	1	2	0	39	2	41	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	0	0	0	0	3	0	0	0	2.9
P/C	0	0	0	0	0	1	0	0	0	0.4
PSV	0	0	0	0	0	3	0	3	0	2.5
<b>Total</b>	<b>0</b>	<b>13</b>	<b>19</b>	<b>21</b>	<b>0</b>	<b>409</b>	<b>32</b>	<b>487</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	28	49	386	456	476	385
LGV	4	4	41	44	43	40
M/C	0	0	0	0	0	0
OGV1	0	0	0	0	0	0
OGV2	0	0	3	0	0	3
P/C	0	0	1	1	0	1
PSV	0	0	3	3	3	3
<b>Total</b>	<b>32</b>	<b>53</b>	<b>430</b>	<b>500</b>	<b>519</b>	<b>428</b>
LV	32	53	427	500	519	425
HV	0	0	3	0	0	3

Arm	Road name
From A	southbound
To A	northbound
From B	R121 westbound
To B	R121 eastbound
From C	R121 eastbound
To C	R121 westbound

Check	988	988	988	TRUE	TRUE	TRUE
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## JTC Site 9

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	220	253	72	0	33	184	103	0	1
LGV	0	18	45	10	0	14	18	12	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	6	10	0	0	6	0	4	0	1.9
OGV2	0	0	6	0	0	0	3	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	0	0	0	5	3	3	0	2.5
<b>Total</b>	<b>0</b>	<b>244</b>	<b>313</b>	<b>82</b>	<b>0</b>	<b>53</b>	<b>205</b>	<b>119</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	473	256	105	323	287	286
LGV	63	28	24	30	30	59
M/C	0	0	0	0	0	1
OGV1	15	0	6	10	4	15
OGV2	6	3	0	0	3	6
P/C	0	0	0	0	0	0
PSV	0	3	5	3	5	5
<b>Total</b>	<b>557</b>	<b>287</b>	<b>135</b>	<b>363</b>	<b>324</b>	<b>366</b>
LV	536	284	129	353	317	345
HV	21	3	6	10	7	21

Arm	Road name
From A	southbound
To A	northbound
From B	Westmanstown rd westbound
To B	Westmanstown rd eastbound
From C	northbound
To C	southbound

Check	1027	1027	1027	TRUE	TRUE	TRUE
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17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	83	206	205	0	55	267	128	0	1
LGV	0	8	22	24	0	13	48	10	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	0	0	0	0	3	3	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	0	0	0	3	0	3	0	2.5
<b>Total</b>	<b>0</b>	<b>91</b>	<b>228</b>	<b>229</b>	<b>0</b>	<b>71</b>	<b>318</b>	<b>138</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	289	472	260	211	395	261
LGV	30	72	37	18	58	35
M/C	0	0	0	0	0	0
OGV1	0	0	0	0	0	0
OGV2	0	3	3	0	3	3
P/C	0	0	0	0	0	0
PSV	0	0	3	3	3	3
<b>Total</b>	<b>319</b>	<b>547</b>	<b>300</b>	<b>229</b>	<b>456</b>	<b>299</b>
LV	319	544	297	229	453	296
HV	0	3	3	0	3	3

Arm	Road name
From A	southbound
To A	northbound
From B	Westmanstown rd westbound
To B	Westmanstown rd eastbound
From C	northbound
To C	southbound

Check	1081	1081	1081	TRUE	TRUE	TRUE
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## JTC Site 10

8:00:00 to 9:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	271	133	167	0	95	96	201	0	1
LGV	0	44	19	14	0	11	17	21	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	8	6	0	0	0	11	4	0	1.9
OGV2	0	6	0	3	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	0	0	0	3	3	0	0	2.5
<b>Total</b>	<b>0</b>	<b>328</b>	<b>158</b>	<b>184</b>	<b>0</b>	<b>106</b>	<b>124</b>	<b>226</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	404	263	262	472	297	228
LGV	63	31	25	65	38	30
M/C	0	0	0	0	0	0
OGV1	13	11	0	11	15	6
OGV2	6	3	3	6	0	0
P/C	0	0	0	0	0	0
PSV	0	3	3	0	3	3
<b>Total</b>	<b>486</b>	<b>308</b>	<b>290</b>	<b>554</b>	<b>350</b>	<b>264</b>
LV	467	294	287	537	335	258
HV	19	14	3	17	15	6

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	R149 northbound
To B	R149 southbound
From C	R149 eastbound
To C	R149 westbound

Check 1132 1132 1132 TRUE TRUE TRUE

17:00:00 to 18:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	202	144	261	0	205	76	89	0	1
LGV	0	19	20	46	0	24	9	11	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	4	0	0	0	0	0	0	1.9
OGV2	0	0	0	3	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	3	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>221</b>	<b>168</b>	<b>310</b>	<b>0</b>	<b>229</b>	<b>85</b>	<b>100</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	346	337	466	291	165	349
LGV	39	55	70	30	20	44
M/C	0	0	0	0	0	0
OGV1	4	0	0	0	0	4
OGV2	0	3	3	0	0	0
P/C	0	0	0	0	0	0
PSV	3	0	0	0	0	3
<b>Total</b>	<b>389</b>	<b>395</b>	<b>539</b>	<b>321</b>	<b>185</b>	<b>397</b>
LV	385	392	536	321	185	393
HV	4	3	3	0	0	4

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	R149 northbound
To B	R149 southbound
From C	R149 eastbound
To C	R149 westbound

Check 1116 1116 1116 TRUE TRUE TRUE

### JTC Site 11

8:00:00 to 9:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	80	0	18	0	0	1	42	0	1
LGV	0	5	0	2	0	0	0	3	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	0	0	0	2	0	0	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>85</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>45</b>	<b>0</b>	
LV	0	85	0	20	0	0	1	45	0	
HV	0	0	0	0	0	2	0	0	0	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	80	19	18	122	43	0
LGV	5	2	2	8	3	0
M/C	0	0	0	0	0	0
OGV1	0	0	2	0	0	2
OGV2	0	0	0	0	0	0
P/C	0	0	0	0	0	0
PSV	0	0	0	0	0	0
<b>Total</b>	<b>85</b>	<b>21</b>	<b>22</b>	<b>130</b>	<b>46</b>	<b>2</b>
LV	85	21	20	130	46	0
HV	0	0	2	0	0	2

Arm	Road name
From A	Barbers town lane North southbound
To A	Barbers town lane North northbound
From B	Barbers town lane North northbound
To B	Barbers town lane south northbound
From C	
To C	

Check 153 153 153 TRUE TRUE TRUE

17:00:00 to 18:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	19	1	39	0	4	0	11	0	1
LGV	0	4	0	3	0	2	0	1	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>23</b>	<b>1</b>	<b>42</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>0</b>	
LV	0	23	1	42	0	6	0	12	0	
HV	0	0	0	0	0	0	0	0	0	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	20	39	43	30	11	5
LGV	4	3	5	5	1	2
M/C	0	0	0	0	0	0
OGV1	0	0	0	0	0	0
OGV2	0	0	0	0	0	0
P/C	0	0	0	0	0	0
PSV	0	0	0	0	0	0
<b>Total</b>	<b>24</b>	<b>42</b>	<b>48</b>	<b>35</b>	<b>12</b>	<b>7</b>
LV	24	42	48	35	12	7
HV	0	0	0	0	0	0

Arm	Road name
From A	Barbers town lane North southbound
To A	Barbers town lane North northbound
From B	Barbers town lane North northbound
To B	Barbers town lane south northbound
From C	
To C	

Check 84 84 84 TRUE TRUE TRUE

## JTC Site 12

8:00:00 to 9:00:00(Turning movement counts)										
/ehicle typ	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	17	347	63	0	218	497	211	0	1
LGV	0	1	16	7	0	5	30	16	0	1
M/C	0	0	0	0	0	0	1	0	0	0.4
OGV1	0	2	6	4	0	8	10	15	0	1.9
OGV2	0	0	0	0	0	3	3	6	0	2.9
P/C	0	0	2	1	0	1	4	4	0	0.4
PSV	0	0	5	0	0	3	10	3	0	2.5
<b>Total</b>	<b>0</b>	<b>20</b>	<b>369</b>	<b>74</b>	<b>0</b>	<b>234</b>	<b>539</b>	<b>248</b>	<b>0</b>	
LV	0	18	363	70	0	223	527	227	0	
HV	0	2	6	4	0	11	12	21	0	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
/ehicle typ	From A	To A	From B	To B	From C	To C
CAR	364	560	281	228	708	565
LGV	17	37	12	17	46	21
M/C	0	1	0	0	1	0
OGV1	8	13	11	17	25	13
OGV2	0	3	3	6	9	3
P/C	2	5	2	4	8	3
PSV	5	10	3	3	13	8
<b>Total</b>	<b>389</b>	<b>613</b>	<b>307</b>	<b>268</b>	<b>787</b>	<b>602</b>
LV	381	597	293	245	754	586
HV	8	16	14	23	33	16

Arm	Road name
From A	Clonsilla rd westbound
To A	Clonsilla rd eastbound
From B	Coolmine rd northbound
To B	Coolmine rd southbound
From C	Clonsilla rd eastbound
To C	Clonsilla rd westbound

Check 1516 1516 1516 TRUE TRUE TRUE

17:00:00 to 18:00:00(Turning movement counts)										
/ehicle typ	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	33	446	32	0	160	403	208	0	1
LGV	0	4	41	4	0	11	31	6	0	1
M/C	0	0	1	0	0	0	1	0	0	0.4
OGV1	0	0	0	0	0	0	4	0	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0	2	0	0	3	0	1	0	0.4
PSV	0	0	8	0	0	0	10	0	0	2.5
<b>Total</b>	<b>0</b>	<b>37</b>	<b>487</b>	<b>36</b>	<b>0</b>	<b>171</b>	<b>438</b>	<b>214</b>	<b>0</b>	
LV	0	37	487	36	0	171	434	214	0	
HV	0	0	0	0	0	0	4	0	0	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
/ehicle typ	From A	To A	From B	To B	From C	To C
CAR	479	435	192	241	611	606
LGV	45	35	15	10	37	52
M/C	1	1	0	0	1	1
OGV1	0	4	0	0	4	0
OGV2	0	0	0	0	0	0
P/C	2	0	3	1	1	6
PSV	8	10	0	0	10	8
<b>Total</b>	<b>524</b>	<b>474</b>	<b>207</b>	<b>251</b>	<b>652</b>	<b>658</b>
LV	524	470	207	251	648	658
HV	0	4	0	0	4	0

Arm	Road name
From A	Clonsilla rd westbound
To A	Clonsilla rd eastbound
From B	Coolmine rd northbound
To B	Coolmine rd southbound
From C	Clonsilla rd eastbound
To C	Clonsilla rd westbound

Check 1410 1410 1410 TRUE TRUE TRUE

### JTC Site 13

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	7	171	315	123	65	0	99	122	489	190	0	160	135	217	118	2
LGV	0	20	31	13	7	0	6	13	20	14	0	5	13	10	7	0
M/C	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
OGV1	0	2	8	2	11	0	2	6	0	2	0	0	4	4	2	0
OGV2	0	0	6	0	6	0	0	0	3	0	0	0	3	0	0	0
P/C	0	0	0	0	1	0	1	1	1	0	0	0	0	4	2	0
PSV	0	0	18	3	3	0	0	3	18	0	0	0	0	3	3	0
<b>Total</b>	<b>7</b>	<b>193</b>	<b>359</b>	<b>138</b>	<b>89</b>	<b>0</b>	<b>107</b>	<b>141</b>	<b>512</b>	<b>206</b>	<b>0</b>	<b>165</b>	<b>155</b>	<b>231</b>	<b>127</b>	<b>2</b>
LV	7	191	346	136	72	0	105	135	509	204	0	165	148	227	125	2
HV	0	2	13	2	17	0	2	6	3	2	0	0	7	4	2	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	616	696	286	578	839	532	472	407
LGV	64	40	26	44	39	44	30	31
M/C	0	2	0	1	2	0	1	0
OGV1	11	15	19	8	2	11	10	8
OGV2	6	12	6	0	3	6	3	0
P/C	0	2	2	4	1	3	6	1
PSV	20	20	5	3	18	20	5	5
<b>Total</b>	<b>697</b>	<b>763</b>	<b>337</b>	<b>630</b>	<b>883</b>	<b>593</b>	<b>514</b>	<b>446</b>
LV	680	736	312	622	878	576	502	438
HV	17	27	25	8	5	17	12	8

Arm	Road name
From A	Bothar Chluain Sailea eastbound
To A	Bothar Chluain Sailea westbound
From B	Clonsilla rd southbound
To B	Clonsilla rd northbound
From C	Bothar Chluain Sailea westbound
To C	Bothar Chluain Sailea eastbound
From D	Clonsilla rd northbound
To D	Clonsilla rd southbound

Check 2492 2492 2492 TRUE TRUE TRUE

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	100	476	152	126	0	161	239	394	150	1	194	108	131	99	0
LGV	0	6	23	22	16	0	16	14	35	16	0	13	12	10	6	0
M/C	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0
OGV1	0	2	4	2	0	0	0	0	6	0	0	2	0	0	0	0
OGV2	0	0	3	0	0	0	0	0	6	0	0	0	3	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	0	13	0	0	0	0	3	15	0	0	0	0	3	0	0
<b>Total</b>	<b>1</b>	<b>108</b>	<b>506</b>	<b>176</b>	<b>142</b>	<b>0</b>	<b>177</b>	<b>253</b>	<b>441</b>	<b>166</b>	<b>1</b>	<b>209</b>	<b>123</b>	<b>141</b>	<b>105</b>	<b>0</b>
LV	1	106	499	174	142	0	177	253	429	166	1	207	120	141	105	0
HV	0	2	7	2	0	0	0	0	12	0	0	2	3	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	729	629	526	381	739	737	338	585
LGV	51	63	46	32	64	45	28	49
M/C	2	0	1	1	1	1	0	2
OGV1	8	6	0	2	8	4	0	4
OGV2	3	9	0	0	6	3	3	0
P/C	1	0	1	0	0	0	0	1
PSV	13	15	3	3	15	13	3	3
<b>Total</b>	<b>791</b>	<b>706</b>	<b>572</b>	<b>415</b>	<b>816</b>	<b>789</b>	<b>369</b>	<b>638</b>
LV	780	692	572	413	803	782	366	634
HV	11	14	0	2	13	7	3	4

Arm	Road name
From A	Bothar Chluain Sailea eastbound
To A	Bothar Chluain Sailea westbound
From B	Clonsilla rd southbound
To B	Clonsilla rd northbound
From C	Bothar Chluain Sailea westbound
To C	Bothar Chluain Sailea eastbound
From D	Clonsilla rd northbound
To D	Clonsilla rd southbound

Check 2586 2586 2586 TRUE TRUE TRUE

### JTC Site 14

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle ty	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	58	173	4	31	0	66	4	240	92	1	2	4	5	3	0
LGV	0	5	16	0	1	0	5	0	9	2	0	1	2	1	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	17	0	2	0	0	0	6	0	0	2	2	0	0	0
OGV2	0	0	6	0	3	0	0	0	0	0	0	0	0	0	0	0
P/C	0	3	3	0	0	0	0	0	3	0	0	0	0	0	0	0
PSV	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>63</b>	<b>212</b>	<b>4</b>	<b>37</b>	<b>0</b>	<b>71</b>	<b>4</b>	<b>255</b>	<b>94</b>	<b>1</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>3</b>	<b>0</b>
LV	1	63	189	4	32	0	71	4	249	94	1	3	6	6	3	0
HV	0	0	23	0	5	0	0	0	6	0	0	2	2	0	0	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle ty	From A	To A	From B	To B	From C	To C	From D	To D
CAR	236	276	101	155	335	243	12	10
LGV	21	12	6	8	12	21	3	1
M/C	0	0	0	0	0	0	0	0
OGV1	17	10	2	0	8	17	2	2
OGV2	6	3	3	0	0	6	0	0
P/C	6	4	1	4	4	3	0	0
PSV	0	3	3	0	3	3	0	0
<b>Total</b>	<b>280</b>	<b>300</b>	<b>112</b>	<b>163</b>	<b>355</b>	<b>287</b>	<b>17</b>	<b>13</b>
LV	257	288	107	163	347	264	15	11
HV	23	12	5	0	8	23	2	2

Arm	Road name
From A	Coolmine rd southbound
To A	Coolmine rd northbound
From B	Dellwood rd westbound
To B	Dellwood rd eastbound
From C	Coolmine rd northbound
To C	Coolmine rd southbound
From D	Dellwood rd eastbound
To D	Dellwood rd westbound

Check 779 779 779 TRUE TRUE TRUE

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle ty	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	40	177	8	33	0	83	5	169	74	0	1	5	1	1	0
LGV	0	0	9	0	2	0	3	1	14	0	0	0	0	1	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	2	0	1	0	1	0	1	0	0	0	0	0	0	0
PSV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>40</b>	<b>186</b>	<b>8</b>	<b>35</b>	<b>0</b>	<b>86</b>	<b>6</b>	<b>183</b>	<b>74</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>0</b>
LV	0	40	186	8	35	0	86	6	183	74	0	1	5	2	1	0
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle ty	From A	To A	From B	To B	From C	To C	From D	To D
CAR	225	207	121	115	244	261	7	14
LGV	9	16	6	1	14	12	1	1
M/C	0	1	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0
P/C	2	2	2	0	1	3	0	0
PSV	0	0	0	0	0	0	0	0
<b>Total</b>	<b>234</b>	<b>223</b>	<b>127</b>	<b>116</b>	<b>258</b>	<b>273</b>	<b>8</b>	<b>15</b>
LV	234	223	127	116	258	273	8	15
HV	0	0	0	0	0	0	0	0

Arm	Road name
From A	Coolmine rd southbound
To A	Coolmine rd northbound
From B	Dellwood rd westbound
To B	Dellwood rd eastbound
From C	Coolmine rd northbound
To C	Coolmine rd southbound
From D	Dellwood rd eastbound
To D	Dellwood rd westbound

Check 633 633 633 TRUE TRUE TRUE

### JTC Site 15

8:00:00 to 9:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	116	297	60	99	0	72	184	483	67	0	149	203	343	227	0
LGV	0	13	32	18	11	1	10	14	26	3	0	9	21	11	16	0
M/C	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
OGV1	0	6	4	6	8	0	4	6	8	0	0	6	4	8	4	0
OGV2	0	0	3	0	0	0	3	0	12	0	0	0	3	0	0	0
P/C	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0
PSV	0	15	18	10	13	0	0	3	15	3	0	3	8	3	0	0
<b>Total</b>	<b>0</b>	<b>135</b>	<b>336</b>	<b>84</b>	<b>118</b>	<b>1</b>	<b>89</b>	<b>204</b>	<b>528</b>	<b>70</b>	<b>0</b>	<b>164</b>	<b>231</b>	<b>362</b>	<b>247</b>	<b>0</b>
LV	0	129	329	78	110	1	82	198	509	70	0	158	224	354	243	0
HV	0	6	7	6	8	0	7	6	19	0	0	6	7	8	4	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	473	785	355	526	699	596	773	393
LGV	63	58	36	28	38	58	48	41
M/C	0	2	0	1	2	0	1	0
OGV1	15	19	17	13	13	11	15	17
OGV2	3	15	3	0	12	6	3	0
P/C	1	2	0	2	2	0	2	0
PSV	43	35	15	20	20	18	10	15
<b>Total</b>	<b>554</b>	<b>877</b>	<b>411</b>	<b>567</b>	<b>762</b>	<b>671</b>	<b>839</b>	<b>451</b>
LV	536	843	391	554	737	654	821	434
HV	18	34	20	13	25	17	18	17

Arm	Road name
From A	Blanchardstown rd south - southbound
To A	Blanchardstown rd south - northbound
From B	R843 westbound
To B	R843 eastbound
From C	Blanchardstown rd south - northbound
To C	Blanchardstown rd south - southbound
From D	Ongar Distributor rd eastbound
To D	Ongar Distributor rd westbound

Check 2662 2662 2662 TRUE TRUE TRUE

17:00:00 to 18:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	206	461	132	158	0	185	382	369	70	0	178	95	286	83	0
LGV	0	16	41	14	17	0	10	24	37	2	0	23	10	16	0	0
M/C	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	2	6	0	0	0	0	2	6	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	3	0	9	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
PSV	0	15	13	3	10	0	0	3	15	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>224</b>	<b>508</b>	<b>146</b>	<b>175</b>	<b>0</b>	<b>198</b>	<b>408</b>	<b>420</b>	<b>72</b>	<b>0</b>	<b>201</b>	<b>105</b>	<b>302</b>	<b>83</b>	<b>0</b>
LV	0	222	502	146	175	0	195	406	406	72	0	201	105	302	83	0
HV	0	2	6	0	0	0	3	2	14	0	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	799	622	725	562	617	729	464	692
LGV	71	64	51	34	62	51	26	61
M/C	2	0	1	0	0	2	0	0
OGV1	8	6	2	2	6	6	0	2
OGV2	0	9	3	0	9	3	0	0
P/C	0	0	2	0	0	0	0	2
PSV	30	25	13	15	15	13	0	5
<b>Total</b>	<b>878</b>	<b>700</b>	<b>781</b>	<b>598</b>	<b>693</b>	<b>789</b>	<b>490</b>	<b>755</b>
LV	870	686	776	596	679	780	490	753
HV	8	14	5	2	14	9	0	2

Arm	Road name
From A	Blanchardstown rd south - southbound
To A	Blanchardstown rd south - northbound
From B	R843
To B	R843
From C	Blanchardstown rd south - northbound
To C	Blanchardstown rd south - southbound
From D	Ongar Distributor rd eastbound
To D	Ongar Distributor rd westbound

Check 2904 2904 2904 TRUE TRUE TRUE

## JTC Site 16

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	345	114	700	0	57	354	117	0	1
LGV	0	48	6	51	0	5	23	14	0	1
M/C	0	0	0.4	1.6	0	0	0.8	0	0	0.4
OGV1	0	9.5	0	19	0	1.9	1.9	5.7	0	1.9
OGV2	0	2.9	2.9	5.8	0	2.9	2.9	0	0	2.9
P/C	0	1.2	0	0.8	0	0	0	0.4	0	0.4
PSV	0	47.5	2.5	35	0	0	5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>405.4</b>	<b>122.9</b>	<b>775.8</b>	<b>0</b>	<b>66.8</b>	<b>381.8</b>	<b>136.7</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	459	1054	757	462	471	171
LGV	54	74	56	62	37	11
M/C	0.4	2.4	1.6	0	0.8	0.4
OGV1	9.5	20.9	20.9	15.2	7.6	1.9
OGV2	5.8	8.7	8.7	2.9	2.9	5.8
P/C	1.2	0.8	0.8	1.6	0.4	0
PSV	50	40	35	47.5	5	2.5
<b>Total</b>	<b>528.3</b>	<b>1157.6</b>	<b>842.6</b>	<b>542.1</b>	<b>518.5</b>	<b>189.7</b>

Arm	Road name
From A	Blanchardstown rd southbound
To A	Blanchardstown rd northbound
From B	Blanchardstown rd northbound
To B	Blanchardstown rd southbound
From C	Mountview rd eastbound
To C	Mountview rd westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	378	155	316	0	51	92	51	0	1
LGV	0	39	16	28	0	6	8	1	0	1
M/C	0	1.6	0.8	0.8	0	0	0.4	0.4	0	0.4
OGV1	0	3.8	0	7.6	0	0	0	0	0	1.9
OGV2	0	5.8	0	0	0	0	0	0	0	2.9
P/C	0	3.2	0	2	0	0	0	0	0	0.4
PSV	0	12.5	2.5	12.5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>426.6</b>	<b>171</b>	<b>351.6</b>	<b>0</b>	<b>57</b>	<b>100</b>	<b>52</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	533	408	367	429	143	206
LGV	55	36	34	40	9	22
M/C	2.4	1.2	0.8	2	0.8	0.8
OGV1	3.8	7.6	7.6	3.8	0	0
OGV2	5.8	0	0	5.8	0	0
P/C	3.2	2	2	3.2	0	0
PSV	15	12.5	12.5	12.5	0	2.5
<b>Total</b>	<b>597.6</b>	<b>451.6</b>	<b>408.6</b>	<b>478.6</b>	<b>152</b>	<b>228</b>

Arm	Road name
From A	Blanchardstown rd southbound
To A	Blanchardstown rd northbound
From B	Blanchardstown rd northbound
To B	Blanchardstown rd southbound
From C	Mountview rd eastbound
To C	Mountview rd westbound

## JTC Site 17

8:00:00 to 9:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	360	232	78	122	2	196	322	32	61	12	65	58	755	261	1
LGV	0	39	10	7	11	0	8	39	1	9	2	5	2	55	14	0
M/C	0	1.6	0	0	0	0	0	0.4	0	0.4	0	0	0	2	0.4	0
OGV1	0	5.7	0	0	5.7	0	9.5	9.5	1.9	3.8	3.8	0	3.8	13.3	1.9	0
OGV2	0	0	0	0	0	0	0	5.8	0	0	0	0	2.9	5.8	0	0
P/C	0	0	0.8	0	0	0	0	0.4	0	0	0	0.8	0	1.6	0	0
PSV	7.5	22.5	2.5	5	0	17.5	42.5	12.5	2.5	0	5	2.5	17.5	17.5	0	0
<b>Total</b>	<b>1</b>	<b>404.7</b>	<b>242</b>	<b>85</b>	<b>138.7</b>	<b>2</b>	<b>213.5</b>	<b>376.3</b>	<b>34.9</b>	<b>73.8</b>	<b>17.8</b>	<b>70</b>	<b>66.7</b>	<b>829.1</b>	<b>276.9</b>	<b>1</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	671	213	642	1178	170	701	1075	466
LGV	56	14	58	103	17	34	71	51
M/C	1.6	0	0.4	4	0.4	0.4	2.4	0.4
OGV1	5.7	11.4	24.7	22.8	9.5	15.2	19	9.5
OGV2	0	2.9	5.8	5.8	0	0	8.7	5.8
P/C	0.8	0	0.4	1.6	0.8	0.8	1.6	1.2
PSV	37.5	27.5	72.5	57.5	10	50	35	20
<b>Total</b>	<b>732.7</b>	<b>241.3</b>	<b>730.5</b>	<b>1309.6</b>	<b>196.5</b>	<b>750.2</b>	<b>1173.7</b>	<b>532.3</b>

Arm	Road name
From A	Blakestown Way eastbound
To A	Blakestown Way westbound
From B	Blanchardstown rd south southbound
To B	Blanchardstown rd south northbound
From C	Unnamed rd westbound
To C	Unnamed rd eastbound
From D	Blanchardstown rd south northbound
To D	Blanchardstown rd south southbound

17:00:00 to 18:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	152	113	99	186	10	167	629	125	264	5	277	80	412	180	2
LGV	1	25	7	8	39	1	7	87	11	22	1	9	9	62	4	0
M/C	0	0.4	0.4	0	1.6	0	0	2	0.4	0	0	0	0	0.4	0	0
OGV1	0	1.9	0	0	5.7	0	3.8	9.5	0	0	0	0	1.9	5.7	0	0
OGV2	0	2.9	0	0	0	0	0	0	0	0	0	0	0	8.7	0	0
P/C	0	0	0.4	0	0	0	0	0.8	0.8	0	0	0	0	0	0	0
PSV	0	5	20	0	2.5	0	5	17.5	22.5	5	0	15	0	7.5	17.5	0
<b>Total</b>	<b>1</b>	<b>181.8</b>	<b>120</b>	<b>107</b>	<b>230.7</b>	<b>11</b>	<b>177.8</b>	<b>725.5</b>	<b>136</b>	<b>286</b>	<b>6</b>	<b>286</b>	<b>90.9</b>	<b>488.4</b>	<b>184</b>	<b>2</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	364	391	992	838	671	465	674	1007
LGV	41	60	134	110	43	19	75	104
M/C	0.8	2	3.6	0.8	0.4	0.4	0.4	2
OGV1	1.9	7.6	19	7.6	0	3.8	7.6	9.5
OGV2	2.9	0	0	11.6	0	0	8.7	0
P/C	0.4	0.8	0.8	0	0.8	0.4	0	0.8
PSV	25	25	25	17.5	42.5	42.5	25	32.5
<b>Total</b>	<b>409.8</b>	<b>458.6</b>	<b>1145</b>	<b>967.2</b>	<b>714</b>	<b>487.8</b>	<b>765.3</b>	<b>1120.5</b>

Arm	Road name
From A	Blakestown Way eastbound
To A	Blakestown Way westbound
From B	Blanchardstown rd south southbound
To B	Blanchardstown rd south northbound
From C	Unnamed rd westbound
To C	Unnamed rd eastbound
From D	Blanchardstown rd south northbound
To D	Blanchardstown rd south southbound

## JTC Site 18

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	87	399	173	1	344	374	260	0	1
LGV	0	11	29	14	0	20	41	15	1	1
M/C	0	0	0	0	0	0	0	0.8	0	0.4
OGV1	0	1.9	19	0	0	1.9	3.8	3.8	1.9	1.9
OGV2	0	0	2.9	2.9	0	2.9	8.7	8.7	0	2.9
P/C	0	0	0	0	0	0	0	0	0	0.4
PSV	0	0	2.5	0	0	22.5	2.5	27.5	0	2.5
<b>Total</b>	<b>0</b>	<b>99.9</b>	<b>449.9</b>	<b>189.9</b>	<b>1</b>	<b>368.8</b>	<b>427.5</b>	<b>287.5</b>	<b>2.9</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	486	547	518	348	634	743
LGV	40	55	34	26	57	50
M/C	0	0	0	0.8	0.8	0
OGV1	20.9	3.8	1.9	5.7	9.5	22.8
OGV2	2.9	11.6	5.8	8.7	17.4	5.8
P/C	0	0	0	0	0	0
PSV	2.5	2.5	22.5	27.5	30	25
<b>Total</b>	<b>549.8</b>	<b>617.4</b>	<b>559.7</b>	<b>388.4</b>	<b>717.9</b>	<b>821.6</b>

Arm	Road name
From A	Unnamed rd eastbound
To A	Unnamed rd westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Unnamed rd westbound
To C	Unnamed rd eastbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	99	145	59	1	147	162	128	2	1
LGV	0	10	11	5	0	10	9	11	0	1
M/C	0	0	0	0	0	2	0.4	0.4	0	0.4
OGV1	0	3.8	0	0	3.8	0	0	0	0	1.9
OGV2	0	2.9	5.8	2.9	0	2.9	0	2.9	0	2.9
P/C	0	0	0	0.4	0	0.8	0.8	2.4	0	0.4
PSV	0	0	0	0	0	10	0	5	0	2.5
<b>Total</b>	<b>0</b>	<b>115.7</b>	<b>161.8</b>	<b>66.9</b>	<b>4.8</b>	<b>159.9</b>	<b>171</b>	<b>141.9</b>	<b>2</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	244	221	207	228	292	294
LGV	21	14	15	21	20	21
M/C	0	0.4	2	0.4	0.8	2
OGV1	3.8	0	3.8	7.6	0	0
OGV2	8.7	2.9	5.8	5.8	2.9	8.7
P/C	0	1.2	1.2	2.4	3.2	0.8
PSV	0	0	10	5	5	10
<b>Total</b>	<b>277.5</b>	<b>237.9</b>	<b>231.6</b>	<b>262.4</b>	<b>314.9</b>	<b>323.7</b>

Arm	Road name
From A	Unnamed rd eastbound
To A	Unnamed rd westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Unnamed rd westbound
To C	Unnamed rd eastbound

## JTC Site 19

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	340	238	300	0	255	273	144	0	1
LGV	0	28	49	22	0	30	26	14	0	1
M/C	0	0	0.4	0	0	0	0	0	0	0.4
OGV1	0	17.1	15.2	3.8	0	0	7.6	1.9	0	1.9
OGV2	0	2.9	8.7	11.6	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0.4	0	0	0.4
PSV	0	0	2.5	2.5	0	0	0	2.5	0	2.5
<b>Total</b>	<b>0</b>	<b>388</b>	<b>310.9</b>	<b>337.4</b>	<b>0</b>	<b>285</b>	<b>306.6</b>	<b>159.9</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	578	573	555	484	417	493
LGV	77	48	52	42	40	79
M/C	0.4	0	0	0	0	0.4
OGV1	32.3	11.4	3.8	19	9.5	15.2
OGV2	11.6	11.6	11.6	2.9	0	8.7
P/C	0	0.4	0	0	0.4	0
PSV	2.5	2.5	2.5	2.5	2.5	2.5
<b>Total</b>	<b>698.9</b>	<b>644</b>	<b>622.4</b>	<b>547.9</b>	<b>466.5</b>	<b>595.9</b>

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	Unnamed rd northbound
To B	Unnamed rd southbound
From C	R149 eastbound
To C	R149 westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	154	166	124	0	98	86	91	0	1
LGV	0	11	14	11	0	7	13	15	0	1
M/C	0	0	1.2	0.4	0	0	0.4	0	0	0.4
OGV1	0	0	0	0	0	0	0	1.9	0	1.9
OGV2	0	5.8	2.9	0	0	2.9	0	2.9	0	2.9
P/C	0	0	0	0.8	0	0.4	0	0	0	0.4
PSV	0	0	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>170.8</b>	<b>182.9</b>	<b>135</b>	<b>0</b>	<b>107.9</b>	<b>99</b>	<b>110.8</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	320	210	222	245	177	264
LGV	25	24	18	26	28	21
M/C	1.2	0.8	0.4	0	0.4	1.2
OGV1	0	0	0	1.9	1.9	0
OGV2	8.7	0	2.9	8.7	2.9	5.8
P/C	0	0.8	1.2	0	0	0.4
PSV	0	0	0	0	0	0
<b>Total</b>	<b>353.7</b>	<b>234</b>	<b>242.9</b>	<b>281.6</b>	<b>209.8</b>	<b>290.8</b>

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	Unnamed rd northbound
To B	Unnamed rd southbound
From C	R149 eastbound
To C	R149 westbound

## JTC Site 20

8:00:00 to 9:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	59	40	83	25	0	279	274	21	387	1	165	29	236	82	1
LGV	0	6	3	4	3	0	18	21	3	31	0	10	1	18	8	0
M/C	0	0	0	0	0	0	0	0	0	1.2	0	0	0	0.8	0	0
OGV1	0	0	0	0	0	0	0	1.9	0	3.8	0	0	0	5.7	0	0
OGV2	0	0	0	0	0	0	2.9	2.9	0	2.9	0	0	0	5.8	0	2.9
P/C	0	0	0.4	0	0	0	0	0	0	0.4	0	0	0	0	0	0
PSV	0	0	0	0	0	5	7.5	0	0	0	15	0	0	27.5	0	0
<b>Total</b>	<b>0</b>	<b>65</b>	<b>43</b>	<b>87</b>	<b>28</b>	<b>0</b>	<b>299.9</b>	<b>299.8</b>	<b>24</b>	<b>424.7</b>	<b>1</b>	<b>175</b>	<b>30</b>	<b>265.5</b>	<b>90</b>	<b>3.9</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	182	75	578	682	574	402	348	523
LGV	13	7	42	55	44	29	27	35
M/C	0	0	0	2	1.2	0	0.8	0
OGV1	0	0	1.9	9.5	3.8	0	5.7	1.9
OGV2	0	0	5.8	8.7	2.9	2.9	8.7	5.8
P/C	0.4	0	0	0.4	0.4	0.4	0	0
PSV	0	0	12.5	32.5	15	22.5	27.5	0
<b>Total</b>	<b>195</b>	<b>82</b>	<b>627.7</b>	<b>755.2</b>	<b>624.7</b>	<b>433.9</b>	<b>389.4</b>	<b>565.7</b>

Arm	Road name
From A	Beachfield Ave eastbound
To A	Beachfield Ave westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Phibblestown rd westbound
To C	Phibblestown rd eastbound
From D	Unnamed rd northbound
To D	Unnamedr southbound

17:00:00 to 18:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	29	24	15	42	1	337	243	32	220	0	78	53	214	140	0
LGV	0	4	1	3	10	0	33	34	3	25	0	8	6	31	10	1
M/C	0	0	0	0	0	0	0.4	0.8	0	0	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	1.9	1.9	0	1.9	0	0	0	1.9	3.8	0
OGV2	0	0	0	0	0	0	0	5.8	0	0	0	0	0	5.8	0	0
P/C	0	0	0	0	0	0	0	0.8	0	0.4	0	0	0	0	0	0
PSV	0	0	0	0	0	0	0	2.5	0	0	0	17.5	0	5	15	0
<b>Total</b>	<b>0</b>	<b>33</b>	<b>25</b>	<b>18</b>	<b>52</b>	<b>1</b>	<b>371.9</b>	<b>284.7</b>	<b>35</b>	<b>246.9</b>	<b>0</b>	<b>86</b>	<b>59</b>	<b>252.7</b>	<b>153.8</b>	<b>1</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	68	127	623	464	330	501	407	336
LGV	8	19	77	60	36	44	48	46
M/C	0	0	1.2	0	0	0.4	0	0.8
OGV1	0	0	3.8	3.8	1.9	5.7	5.7	1.9
OGV2	0	0	5.8	5.8	0	0	5.8	5.8
P/C	0	0	0.8	0.4	0.4	0	0	0.8
PSV	0	0	2.5	5	17.5	15	20	20
<b>Total</b>	<b>76</b>	<b>146</b>	<b>709.6</b>	<b>533.6</b>	<b>367.9</b>	<b>550.7</b>	<b>466.5</b>	<b>389.7</b>

Arm	Road name
From A	Beachfield Ave eastbound
To A	Beachfield Ave westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Phibblestown rd westbound
To C	Phibblestown rd eastbound
From D	Unnamedr northbound
To D	Unnamedr southbound

## JTC Site 21

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	118	248	71	1	176	121	155	0	1
LGV	0	6	14	8	0	11	17	9	0	1
M/C	0	0	0	0.4	0	0	0	0.4	0	0.4
OGV1	0	1.9	3.8	0	0	0	0	3.8	0	1.9
OGV2	0	0	0	0	0	2.9	0	0	0	2.9
P/C	0	0	1.2	0	0	0	0.4	0	0	0.4
PSV	0	2.5	15	0	0	0	10	0	0	2.5
<b>Total</b>	<b>0</b>	<b>125.9</b>	<b>265.8</b>	<b>79</b>	<b>1</b>	<b>189.9</b>	<b>138</b>	<b>167.8</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	366	192	248	274	276	424
LGV	20	25	19	15	26	25
M/C	0	0.4	0.4	0.4	0.4	0
OGV1	5.7	0	0	5.7	3.8	3.8
OGV2	0	0	2.9	0	0	2.9
P/C	1.2	0.4	0	0	0.4	1.2
PSV	17.5	10	0	2.5	10	15
<b>Total</b>	<b>391.7</b>	<b>217</b>	<b>269.9</b>	<b>294.7</b>	<b>305.8</b>	<b>455.7</b>

Arm	Road name
From A	Clonsilla rd eastbound
To A	Clonsilla rd westbound
From B	Clonsilla Link rd southbound
To B	Clonsilla Link rd northbound
From C	Clonsilla rd westbound
To C	Clonsilla rd eastbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	49	91	23	0	50	86	119	0	1
LGV	0	2	7	0	0	1	7	13	0	1
M/C	0	0.4	0.4	0	0	0	0	0.4	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	2.9	0	0	0	0	0	0	0	2.9
P/C	0	0	1.2	0	0	0	0.8	0.4	0	0.4
PSV	0	0	5	0	0	0	5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>53.9</b>	<b>98</b>	<b>23</b>	<b>0</b>	<b>51</b>	<b>93</b>	<b>132</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	140	109	73	168	205	141
LGV	9	7	1	15	20	8
M/C	0.8	0	0	0.8	0.4	0.4
OGV1	0	0	0	0	0	0
OGV2	2.9	0	0	2.9	0	0
P/C	1.2	0.8	0	0.4	1.2	1.2
PSV	5	5	0	0	5	5
<b>Total</b>	<b>151.9</b>	<b>116</b>	<b>74</b>	<b>185.9</b>	<b>225</b>	<b>149</b>

Arm	Road name
From A	Clonsilla rd eastbound
To A	Clonsilla rd westbound
From B	Clonsilla Link rd southbound
To B	Clonsilla Link rd northbound
From C	Clonsilla rd westbound
To C	Clonsilla rd eastbound

## JTC Site 22

8:00:00 to 9:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	1	39	435	6	27	0	143	6	221	75	0	10	2	8	6	0
LGV	0	3	20	4	4	0	2	1	17	2	0	9	5	1	7	0
M/C	0	0	0.4	0	0	0	0.4	0	0.4	0	0	0	0	0	0	0
OGV1	0	0	5.7	0	1.9	0	3.8	1.9	3.8	0	0	1.9	0	0	1.9	0
OGV2	0	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	3.6	0	0.4	0	0.8	0	0	0.4	0	0	0	0	0.4	0
PSV	10	5	0	5	0	0	0	5	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>42</b>	<b>463.6</b>	<b>10</b>	<b>32.9</b>	<b>0</b>	<b>148.8</b>	<b>8.9</b>	<b>241.8</b>	<b>77</b>	<b>0</b>	<b>20.9</b>	<b>7</b>	<b>9</b>	<b>14.9</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	481	251	176	122	306	584	16	22
LGV	27	26	7	6	28	29	13	14
M/C	0.4	0.4	0.4	0	0.4	0.8	0	0
OGV1	5.7	5.7	7.6	0	5.7	11.4	1.9	3.8
OGV2	2.9	0	0	0	0	2.9	0	0
P/C	3.6	0.4	1.2	0.4	0.4	4.8	0.4	0
PSV	20	10	5	5	0	0	0	10
<b>Total</b>	<b>516.6</b>	<b>282.7</b>	<b>190.6</b>	<b>128</b>	<b>339.7</b>	<b>627.3</b>	<b>30.9</b>	<b>39.8</b>

Arm	Road name
From A	Clonsilla rd eastbound
To A	Clonsilla rd westbound
From B	Shelerin rd southbound
To B	Shelerin rd northbound
From C	Clonsillard westbound
To C	Clonsilla rd eastbound
From D	Unnamed rd northbound
To D	Unnamed rd southbound

17:00:00 to 18:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	33	221	10	35	0	81	10	402	90	0	20	5	5	9	0
LGV	0	5	16	0	1	0	5	0	29	6	0	4	2	1	1	0
M/C	0	0	0.4	0	0	0	0	0	0.8	0.8	0	0	0	0	0	0
OGV1	0	0	0	0	0	0	0	0	1.9	0	0	0	0	0	0	0
OGV2	0	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0.4	0	0	0	0	0	1.6	0	0	0	0	0	0	0
PSV	0	7.5	2.5	0	5	0	0	0	2.5	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>38</b>	<b>239.9</b>	<b>10</b>	<b>36</b>	<b>0</b>	<b>86</b>	<b>10</b>	<b>432.9</b>	<b>96</b>	<b>0</b>	<b>24</b>	<b>7</b>	<b>6</b>	<b>10</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	264	442	126	128	512	311	19	40
LGV	21	32	6	12	39	22	4	4
M/C	0.4	0.8	0	0.8	1.6	0.4	0	0
OGV1	0	1.9	0	0	1.9	0	0	0
OGV2	2.9	0	0	0	0	2.9	0	0
P/C	0.4	1.6	0	0	1.6	0.4	0	0
PSV	10	7.5	5	7.5	2.5	2.5	0	0
<b>Total</b>	<b>287.9</b>	<b>475.9</b>	<b>132</b>	<b>140</b>	<b>552.9</b>	<b>335.9</b>	<b>23</b>	<b>44</b>

Arm	Road name
From A	Clonsilla rd eastbound
To A	Clonsilla rd westbound
From B	Shelerin rd southbound
To B	Shelerin rd northbound
From C	Clonsillard westbound
To C	Clonsilla rd eastbound
From D	Unnamed rd
To D	Unnamed rd

## JTC Site 23

8:00:00 to 9:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	55	635	73	24	0	49	49	288	58	0	28	30	96	103	0
LGV	0	3	37	2	2	0	5	2	35	5	0	2	2	5	7	0
M/C	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0.4	0
OGV1	0	0	13.3	3.8	0	0	1.9	1.9	9.5	1.9	0	1.9	1.9	3.8	0	0
OGV2	0	0	2.9	0	0	0	0	0	2.9	0	0	0	0	0	0	0
P/C	0	0	7.2	1.6	0	0	0.4	0.8	1.2	0	0	0	0	0.4	0.4	0
PSV	20	7.5	0	10	0	0	5	12.5	2.5	0	0	2.5	10	0	0	0
<b>Total</b>	<b>0</b>	<b>58</b>	<b>688.2</b>	<b>78.8</b>	<b>26</b>	<b>0</b>	<b>55.9</b>	<b>52.9</b>	<b>335.4</b>	<b>64.9</b>	<b>0</b>	<b>31.9</b>	<b>33.9</b>	<b>104.8</b>	<b>110</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	763	342	122	209	374	787	229	150
LGV	42	39	9	13	42	49	14	6
M/C	0.8	0	0	0	0	1.2	0.4	0
OGV1	17.1	11.4	3.8	5.7	13.3	15.2	5.7	7.6
OGV2	2.9	2.9	0	0	2.9	2.9	0	0
P/C	8.8	1.2	1.2	0.4	1.2	8	0.8	2.4
PSV	37.5	32.5	17.5	7.5	5	5	10	25
<b>Total</b>	<b>825</b>	<b>395.3</b>	<b>134.8</b>	<b>227.7</b>	<b>432.2</b>	<b>854.1</b>	<b>248.7</b>	<b>163.6</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Shelerin rd southbound
To B	Shelerin rd northbound
From C	Ongar Distributor rd westbound
To C	Ongar Distributor rd eastbound
From D	Shelerin rd northbound
To D	Shelerin rd southbound

17:00:00 to 18:00:00 (Turning movement counts)																
/ehicle typ	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	27	388	33	36	0	44	68	568	60	0	70	31	43	39	0
LGV	0	5	22	2	2	0	1	2	46	8	0	5	9	6	2	0
M/C	0	0	0.4	0	0	0	0	0	0.4	0	0	0	0	0	0	0
OGV1	0	0	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0.4	0	0	0	0	0	3.6	0	0	0	0	0	0	0
PSV	0	15	0	0	17.5	0	0	5	7.5	0	0	0	0	7.5	0	0
<b>Total</b>	<b>0</b>	<b>32</b>	<b>411.9</b>	<b>35</b>	<b>38</b>	<b>0</b>	<b>45</b>	<b>70</b>	<b>614</b>	<b>68</b>	<b>0</b>	<b>75</b>	<b>40</b>	<b>49</b>	<b>41</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
/ehicle typ	From A	To A	From B	To B	From C	To C	From D	To D
CAR	448	635	148	130	698	471	113	171
LGV	29	57	5	19	59	25	17	9
M/C	0.4	0.4	0	0	0.4	0.4	0	0
OGV1	1.9	0	0	0	0	1.9	0	0
OGV2	0	0	0	0	0	0	0	0
P/C	0.4	3.6	0	0	3.6	0.4	0	0
PSV	15	25	22.5	22.5	7.5	0	7.5	5
<b>Total</b>	<b>478.9</b>	<b>692</b>	<b>153</b>	<b>149</b>	<b>757</b>	<b>497.9</b>	<b>130</b>	<b>180</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Shelerin rd southbound
To B	Shelerin rd northbound
From C	Ongar Distributor rd westbound
To C	Ongar Distributor rd eastbound
From D	Shelerin rd northbound
To D	Shelerin rd southbound

## JTC Site 24

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	492	674	237	0	86	278	73	0	1
LGV	0	12	42	17	0	3	32	6	0	1
M/C	0	0	0.8	0.4	0	0	0	0	0	0.4
OGV1	0	7.6	17.1	0	0	0	9.5	1.9	0	1.9
OGV2	0	0	2.9	2.9	0	0	2.9	0	0	2.9
P/C	0	0	4.8	0.4	0	0	0.8	0	0	0.4
PSV	0	5	27.5	0	0	0	25	0	0	2.5
<b>Total</b>	<b>0</b>	<b>511.6</b>	<b>736</b>	<b>256.9</b>	<b>0</b>	<b>89</b>	<b>322.4</b>	<b>80.9</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	1166	515	323	565	351	760
LGV	54	49	20	18	38	45
M/C	0.8	0.4	0.4	0	0	0.8
OGV1	24.7	9.5	0	9.5	11.4	17.1
OGV2	2.9	5.8	2.9	0	2.9	2.9
P/C	4.8	1.2	0.4	0	0.8	4.8
PSV	32.5	25	0	5	25	27.5
<b>Total</b>	<b>1247.6</b>	<b>579.3</b>	<b>345.9</b>	<b>592.5</b>	<b>403.3</b>	<b>825</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Ongar Distributor rd westbound
To C	Ongar Distributor rd eastbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	139	232	151	0	36	287	74	0	1
LGV	0	11	12	9	0	3	21	4	0	1
M/C	0	0.4	0.4	0	0	0	0.4	0	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	0	5.8	0	0	0	8.7	0	0	2.9
P/C	0	0	1.2	0.8	0	0	4	0.4	0	0.4
PSV	0	0	5	0	0	0	17.5	0	0	2.5
<b>Total</b>	<b>0</b>	<b>150</b>	<b>249.8</b>	<b>160</b>	<b>0</b>	<b>39</b>	<b>316.7</b>	<b>78</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	371	438	187	213	361	268
LGV	23	30	12	15	25	15
M/C	0.8	0.4	0	0.4	0.4	0.4
OGV1	0	0	0	0	0	0
OGV2	5.8	8.7	0	0	8.7	5.8
P/C	1.2	4.8	0.8	0.4	4.4	1.2
PSV	5	17.5	0	0	17.5	5
<b>Total</b>	<b>399.8</b>	<b>476.7</b>	<b>199</b>	<b>228</b>	<b>394.7</b>	<b>288.8</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Unnamed rd southbound
To B	Unnamed rd northbound
From C	Ongar Distributor rd westbound
To C	Ongar Distributor rd eastbound

## JTC Site 25

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	1	992	110	436	0	80	146	175	0	1
LGV	0	47	9	35	0	14	13	7	0	1
M/C	0	0.8	0	0	0	0.4	0.4	0	0	0.4
OGV1	0	22.8	3.8	9.5	0	0	3.8	1.9	0	1.9
OGV2	0	2.9	0	2.9	0	2.9	0	0	0	2.9
P/C	0	8.4	0	1.6	0	0.4	0.8	0	0	0.4
PSV	0	27.5	2.5	22.5	0	0	0	5	0	2.5
<b>Total</b>	<b>1</b>	<b>1064.7</b>	<b>122.8</b>	<b>483.4</b>	<b>0</b>	<b>96.9</b>	<b>162.8</b>	<b>183.9</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	1103	583	516	1167	321	190
LGV	56	48	49	54	20	23
M/C	0.8	0.4	0.4	0.8	0.4	0.4
OGV1	26.6	13.3	9.5	24.7	5.7	3.8
OGV2	2.9	2.9	5.8	2.9	0	2.9
P/C	8.4	2.4	2	8.4	0.8	0.4
PSV	30	22.5	22.5	32.5	5	2.5
<b>Total</b>	<b>1188.5</b>	<b>647.2</b>	<b>580.3</b>	<b>1248.6</b>	<b>346.7</b>	<b>219.7</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Ongar Distributor rd westbound
To B	Ongar Distributor rd eastbound
From C	Clonsilla rd northbound
To C	Clonsilla rd southbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	1	292	36	387	0	50	109	72	0	1
LGV	1	18	3	25	0	3	11	4	0	1
M/C	0	0.4	0	0.4	0	0	0.4	0	0	0.4
OGV1	0	0	0	0	0	0	0	0	0	1.9
OGV2	0	2.9	0	2.9	0	0	0	0	0	2.9
P/C	0	1.6	0	3.2	0	0	0	0	0	0.4
PSV	0	5	0	15	0	0	0	0	0	2.5
<b>Total</b>	<b>2</b>	<b>312.9</b>	<b>39</b>	<b>414.9</b>	<b>0</b>	<b>53</b>	<b>120</b>	<b>76</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	329	497	437	364	181	86
LGV	22	37	28	22	15	6
M/C	0.4	0.8	0.4	0.4	0.4	0
OGV1	0	0	0	0	0	0
OGV2	2.9	2.9	2.9	2.9	0	0
P/C	1.6	3.2	3.2	1.6	0	0
PSV	5	15	15	5	0	0
<b>Total</b>	<b>353.9</b>	<b>536.9</b>	<b>467.9</b>	<b>388.9</b>	<b>196</b>	<b>92</b>

Arm	Road name
From A	Ongar Distributor rd eastbound
To A	Ongar Distributor rd westbound
From B	Ongar Distributor rd westbound
To B	Ongar Distributor rd eastbound
From C	Clonsilla rd northbound
To C	Clonsilla rd southbound

### JTC Site 26

8:00:00 to 9:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	19	299	12	16	0	351	23	175	355	0	32	35	57	61	0
LGV	0	0	24	0	2	0	19	3	13	8	0	0	1	2	5	0
M/C	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	10	2	2	0	13	0	8	4	0	2	0	0	2	0
OGV2	0	0	3	0	0	0	6	0	3	0	0	0	0	0	0	0
P/C	0	0	4	0	0	0	3	0	1	1	0	0	0	0	0	0
PSV	0	3	0	0	3	0	13	0	0	8	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>19</b>	<b>335</b>	<b>14</b>	<b>20</b>	<b>0</b>	<b>389</b>	<b>26</b>	<b>199</b>	<b>367</b>	<b>0</b>	<b>34</b>	<b>36</b>	<b>59</b>	<b>68</b>	<b>0</b>
LV	0	19	323	12	18	0	370	26	188	363	0	32	36	59	66	0
HV	0	0	12	2	2	0	19	0	11	4	0	2	0	0	2	0

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	330	226	390	431	562	711	153	67
LGV	24	16	24	10	21	48	8	3
M/C	1	0	0	0	0	1	0	0
OGV1	11	10	15	4	13	25	2	4
OGV2	3	3	6	0	3	9	0	0
P/C	4	1	3	2	3	8	1	0
PSV	3	3	15	10	8	13	0	0
<b>Total</b>	<b>368</b>	<b>254</b>	<b>435</b>	<b>445</b>	<b>599</b>	<b>792</b>	<b>163</b>	<b>74</b>
LV	354	242	414	441	583	759	161	70
HV	14	12	21	4	16	33	2	4

Arm	Road name
From A	Bothar Chluain sileach eastbound
To A	Bothar Chluain sileach westbound
From B	
To B	
From C	Clonsilla rd westbound
To C	Clonsilla rd eastbound
From D	
To D	

Check 1602 1602 1602 TRUE TRUE TRUE

17:00:00 to 18:00:00 ( Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	13	226	21	32	0	347	49	307	241	0	55	33	43	31	0
LGV	0	1	13	1	2	0	21	1	24	22	0	6	1	3	3	0
M/C	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
OGV1	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	1	0	3	3	0	0	0	0	0	0
PSV	0	3	0	0	3	0	10	3	0	8	0	0	0	3	0	0
<b>Total</b>	<b>0</b>	<b>14</b>	<b>241</b>	<b>22</b>	<b>34</b>	<b>0</b>	<b>370</b>	<b>50</b>	<b>331</b>	<b>263</b>	<b>0</b>	<b>61</b>	<b>34</b>	<b>46</b>	<b>34</b>	<b>0</b>
LV	0	14	239	22	34	0	368	50	331	263	0	61	34	46	34	0
HV	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0

17:00:00 to 18:00:00 ( Link flows in approach arm Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	260	372	428	297	603	604	107	125
LGV	15	27	24	26	52	37	7	8
M/C	1	1	0	0	1	1	0	0
OGV1	2	0	2	0	0	4	0	0
OGV2	0	0	0	0	0	0	0	0
P/C	0	3	1	3	6	1	0	0
PSV	3	3	15	13	8	10	3	3
<b>Total</b>	<b>277</b>	<b>399</b>	<b>454</b>	<b>323</b>	<b>655</b>	<b>645</b>	<b>114</b>	<b>133</b>
LV	275	399	452	323	655	641	114	133
HV	2	0	2	0	0	4	0	0

Arm	Road name
From A	Bothar Chluain sileach eastbound
To A	Bothar Chluain sileach westbound
From B	L7061
To B	
From C	Clonsilla rd westbound
To C	Clonsilla rd eastbound
From D	Unnammed rd
To D	

Check 1537 1537 1537 TRUE TRUE TRUE

## JTC Site 27

8:00:00 to 9:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	2	300	251	180	4	258	218	380	4	1
LGV	1	12	15	18	0	17	22	20	0	1
M/C	0	1	0	0	0	0	0	0	0	0.4
OGV1	0	0	17	4	0	13	15	11	0	1.9
OGV2	0	0	0	3	0	6	0	0	0	2.9
P/C	0	0	2	0	0	0	0	0	0	0.4
PSV	0	3	15	3	0	0	10	0	0	2.5
<b>Total</b>	<b>3</b>	<b>312</b>	<b>283</b>	<b>205</b>	<b>4</b>	<b>294</b>	<b>255</b>	<b>411</b>	<b>4</b>	
LV	3	312	266	198	4	275	240	400	4	
HV	0	0	17	7	0	19	15	11	0	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	553	400	442	684	602	513
LGV	28	41	35	32	42	32
M/C	1	0	0	1	0	0
OGV1	17	19	17	11	27	30
OGV2	0	3	9	0	0	6
P/C	2	0	0	1	1	2
PSV	18	13	3	3	10	15
<b>Total</b>	<b>598</b>	<b>463</b>	<b>503</b>	<b>727</b>	<b>671</b>	<b>581</b>
LV	581	441	477	716	644	545
HV	17	22	26	11	27	36

Arm	Road name
From A	R843 eastbound
To A	R843 westbound
From B	Snugborough rd - westbound
To B	Snugborough rd - eastbound
From C	Snugborough rd - northbound
To C	Snugborough rd - southbound

Check	1806	1806	1806	TRUE	TRUE	TRUE
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17:00:00 to 18:00:00 ( Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	5	255	277	423	0	333	327	234	6	1
LGV	0	9	27	20	0	16	31	14	0	1
M/C	0	0	0	0	0	0	0	0	0	0.4
OGV1	0	0	6	0	0	6	4	0	0	1.9
OGV2	0	0	0	3	0	0	0	3	0	2.9
P/C	0	0	0	4	0	1	1	1	0	0.4
PSV	0	0	15	0	0	0	13	0	0	2.5
<b>Total</b>	<b>5</b>	<b>264</b>	<b>310</b>	<b>446</b>	<b>0</b>	<b>355</b>	<b>362</b>	<b>251</b>	<b>6</b>	
LV	5	264	304	443	0	349	358	248	6	
HV	0	0	6	3	0	6	4	3	0	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	537	755	756	489	567	616
LGV	36	51	36	23	45	43
M/C	0	1	1	0	0	1
OGV1	6	4	6	0	4	11
OGV2	0	3	3	3	3	0
P/C	0	4	4	2	2	1
PSV	15	13	0	0	13	15
<b>Total</b>	<b>579</b>	<b>813</b>	<b>801</b>	<b>515</b>	<b>619</b>	<b>670</b>
LV	573	806	792	512	612	659
HV	6	7	9	3	7	11

Arm	Road name
From A	R843 eastbound
To A	R843 westbound
From B	Snugborough rd - westbound
To B	Snugborough rd - eastbound
From C	Snugborough rd - northbound
To C	Snugborough rd - southbound

Check	2034	2034	2034	TRUE	TRUE	TRUE
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### JTC Site 38

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	68	52	88	37	0	7	99	92	20	0	27	205	373	19	0
LGV	0	4	3	2	4	0	0	6	6	0	0	1	8	22	0	0
M/C	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.8	0	0
OGV1	0	0	0	0	0	0	0	1.9	1.9	0	0	0	1.9	3.8	1.9	0
OGV2	0	2.9	0	0	2.9	0	0	5.8	0	0	0	0	0	0	0	0
P/C	0	0.4	0.4	0	0	0	0.4	0.4	0.8	0.4	0	0	0	0.4	0	0
PSV	0	2.5	0	0	0	0	0	2.5	2.5	0	0	30	0	5	12.5	0
<b>Total</b>	<b>0</b>	<b>74.9</b>	<b>55</b>	<b>90</b>	<b>43.9</b>	<b>0</b>	<b>7</b>	<b>112.7</b>	<b>99.9</b>	<b>20</b>	<b>0</b>	<b>28</b>	<b>214.9</b>	<b>398.8</b>	<b>20.9</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	208	334	143	461	139	78	597	214
LGV	9	18	10	26	7	3	30	9
M/C	0	0.4	0	0.8	0	0	1.2	0
OGV1	0	3.8	1.9	3.8	1.9	1.9	7.6	1.9
OGV2	2.9	2.9	8.7	2.9	0	0	0	5.8
P/C	0.8	0.8	0.8	1.2	1.2	0.8	0.4	0.4
PSV	2.5	2.5	2.5	7.5	32.5	12.5	17.5	32.5
<b>Total</b>	<b>219.9</b>	<b>358.7</b>	<b>163.6</b>	<b>493.7</b>	<b>147.9</b>	<b>82.9</b>	<b>634.6</b>	<b>230.7</b>

Arm	Road name
From A	Blakes town rd southbound
To A	Blakes town rd northbound
From B	Mountview rd westbound
To B	Mountview rd eastbound
From C	Shelerin rd northbound
To C	Shelerin rd southbound
From D	Harts town rd eastbound
To D	Harts town rd westbound

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	70	95	139	82	0	17	236	39	14	0	22	87	163	9	0
LGV	0	5	3	10	13	0	0	28	3	2	0	2	5	13	1	0
M/C	0	0	0	0	0	0	0	0.8	0	0	0	0	0	0.4	0	0
OGV1	0	1.9	0	1.9	0	0	0	3.8	0	0	0	0	0	3.8	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0.4	0	0
PSV	0	0	0	0	0	0	0	2.5	0	0	0	22.5	0	0	20	0
<b>Total</b>	<b>0</b>	<b>76.9</b>	<b>98</b>	<b>150.9</b>	<b>95</b>	<b>0</b>	<b>17</b>	<b>267.8</b>	<b>42</b>	<b>16</b>	<b>0</b>	<b>24</b>	<b>92</b>	<b>179.8</b>	<b>10</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	304	208	335	247	75	121	259	397
LGV	18	21	41	20	7	4	19	40
M/C	0	0	0.8	0.4	0	0	0.4	0.8
OGV1	3.8	0	3.8	5.7	0	0	3.8	5.7
OGV2	0	0	0	0	0	0	0	0
P/C	0	0	0.4	0.4	0	0	0.4	0.4
PSV	0	0	2.5	0	22.5	20	20	25
<b>Total</b>	<b>325.8</b>	<b>229</b>	<b>379.8</b>	<b>272.7</b>	<b>82</b>	<b>125</b>	<b>281.8</b>	<b>442.7</b>

Arm	Road name
From A	Blakes town rd southbound
To A	Blakes town rd northbound
From B	Mountview rd westbound
To B	Mountview rd eastbound
From C	Shelerin rd northbound
To C	Shelerin rd southbound
From D	Harts town rd eastbound
To D	Harts town rd westbound

## JTC Site 39

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	74	135	269	0	288	320	250	0	1
LGV	0	2	7	9	0	9	23	19	0	1
M/C	0	0	0	0	0	0	1.2	0.4	0	0.4
OGV1	0	0	0	3.8	0	5.7	3.8	0	0	1.9
OGV2	0	2.9	2.9	0	0	0	0	0	0	2.9
P/C	0	0	0.4	0	0	0.4	0.4	0	0	0.4
PSV	0	0	32.5	0	0	5	15	0	0	2.5
<b>Total</b>	<b>0</b>	<b>78.9</b>	<b>144.9</b>	<b>281.8</b>	<b>0</b>	<b>302.7</b>	<b>346.8</b>	<b>269</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	209	589	557	324	570	423
LGV	9	32	18	21	42	16
M/C	0	1.2	0	0.4	1.6	0
OGV1	0	7.6	9.5	0	3.8	5.7
OGV2	5.8	0	0	2.9	0	2.9
P/C	0.4	0.4	0.4	0	0.4	0.8
PSV	32.5	15	5	0	15	37.5
<b>Total</b>	<b>223.8</b>	<b>628.6</b>	<b>584.5</b>	<b>347.9</b>	<b>615.8</b>	<b>447.6</b>

Arm	Road name
From A	Harts town rd westbound
To A	Harts town rd eastbound
From B	unknown rd
To B	unknown rd
From C	Harts town rd eastbound
To C	Harts town rd westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	120	260	78	0	284	171	195	0	1
LGV	0	8	30	2	0	32	17	15	0	1
M/C	0	0	0.4	0	0	0	0.4	0	0	0.4
OGV1	0	0	5.7	0	0	1.9	1.9	0	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0	0.4	0	0	0.4	0.4	0	0	0.4
PSV	0	0	25	0	0	0	20	0	0	2.5
<b>Total</b>	<b>0</b>	<b>128</b>	<b>295.7</b>	<b>80</b>	<b>0</b>	<b>317.9</b>	<b>189.9</b>	<b>210</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	380	249	362	315	366	544
LGV	38	19	34	23	32	62
M/C	0.4	0.4	0	0	0.4	0.4
OGV1	5.7	1.9	1.9	0	1.9	7.6
OGV2	0	0	0	0	0	0
P/C	0.4	0.4	0.4	0	0.4	0.8
PSV	25	20	0	0	20	25
<b>Total</b>	<b>423.7</b>	<b>269.9</b>	<b>397.9</b>	<b>338</b>	<b>399.9</b>	<b>613.6</b>

Arm	Road name
From A	Harts town rd westbound
To A	Harts town rd eastbound
From B	unknown rd
To B	unknown rd
From C	Harts town rd eastbound
To C	Harts town rd westbound

### JTC Site 40

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	130	110	175	39	0	27	100	151	128	0	20	179	369	24	0
LGV	0	3	8	10	4	0	5	8	12	12	0	3	11	28	1	0
M/C	0	0.4	0	0	0	0	0	0	0.4	0.4	0	0	0	0.8	0	0
OGV1	0	0	0	0	0	0	0	9.5	1.9	1.9	0	3.8	0	1.9	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0.4	0	0	0	0.4	0	0	0	0.4	0.4	0	0
PSV	0	0	0	0	0	0	0	0	17.5	0	2.5	0	0	32.5	2.5	0
<b>Total</b>	<b>0</b>	<b>133</b>	<b>118</b>	<b>185</b>	<b>43</b>	<b>0</b>	<b>32</b>	<b>117.5</b>	<b>164.9</b>	<b>141.9</b>	<b>0</b>	<b>26.8</b>	<b>190</b>	<b>398.9</b>	<b>25</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	415	369	166	627	299	161	572	295
LGV	21	27	17	43	27	14	40	21
M/C	0.4	0.4	0	1.6	0.8	0	0.8	0
OGV1	0	1.9	9.5	3.8	7.6	0	1.9	13.3
OGV2	0	0	0	0	0	0	0	0
P/C	0	1.2	0.4	0.4	0.4	0	0.8	0
PSV	0	0	17.5	35	2.5	2.5	35	17.5
<b>Total</b>	<b>436</b>	<b>397.9</b>	<b>192.5</b>	<b>673.8</b>	<b>333.6</b>	<b>175</b>	<b>613.9</b>	<b>329.3</b>

Arm	Road name
From A	Blakestown rd southbound
To A	Blakestown rd northbound
From B	Whitestown park westbound
To B	Whitestown park eastbound
From C	Blakestown rd northbound
To C	Blakestown rd southbound
From D	Huntstown way eastbound
To D	Huntstown way westbound

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	103	197	224	35	0	63	277	68	67	0	39	101	192	41	0
LGV	0	11	16	28	4	0	3	40	9	6	0	5	10	20	2	0
M/C	0	0.4	0	0	0	0	0.4	0.8	0	0	0	0	0	0.8	0	0
OGV1	0	0	1.9	0	0	0	1.9	7.6	0	0	0	0	0	1.9	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	0	0	0	0	0	0	22.5	0	0	0	0	0	22.5	0	0
<b>Total</b>	<b>0</b>	<b>114</b>	<b>214.9</b>	<b>252</b>	<b>39</b>	<b>0</b>	<b>67.9</b>	<b>324.6</b>	<b>77</b>	<b>73</b>	<b>0</b>	<b>44</b>	<b>111</b>	<b>213.9</b>	<b>43</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	524	204	375	362	174	301	334	540
LGV	55	23	47	37	20	21	32	73
M/C	0.4	0	1.2	1.2	0	0.4	0.8	0.8
OGV1	1.9	0	9.5	1.9	0	3.8	1.9	7.6
OGV2	0	0	0	0	0	0	0	0
P/C	0.4	0	0	0	0	0.4	0	0
PSV	0	0	22.5	22.5	0	0	22.5	22.5
<b>Total</b>	<b>580.9</b>	<b>227</b>	<b>431.5</b>	<b>400.9</b>	<b>194</b>	<b>325.8</b>	<b>367.9</b>	<b>620.6</b>

Arm	Road name
From A	Blakestown rd southbound
To A	Blakestown rd northbound
From B	Whitestown park westbound
To B	Whitestown park eastbound
From C	Blakestown rd northbound
To C	Blakestown rd southbound
From D	Huntstown way eastbound
To D	Huntstown way westbound

## JTC Site 41

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	394	103	264	0	21	141	61	0	1
LGV	0	61	21	29	0	0	13	1	0	1
M/C	0	0.4	0	0.4	0	0	0	0	0	0.4
OGV1	0	11.4	1.9	9.5	0	0	0	0	0	1.9
OGV2	0	8.7	0	2.9	0	0	0	0	0	2.9
P/C	0	0	0	0	0	0	0.4	0	0	0.4
PSV	0	0	0	2.5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>475.1</b>	<b>125.9</b>	<b>305.4</b>	<b>0</b>	<b>21</b>	<b>154</b>	<b>62</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	497	405	285	455	202	124
LGV	82	42	29	62	14	21
M/C	0.4	0.4	0.4	0.4	0	0
OGV1	13.3	9.5	9.5	11.4	0	1.9
OGV2	8.7	2.9	2.9	8.7	0	0
P/C	0	0.4	0	0	0.4	0
PSV	0	2.5	2.5	0	0	0
<b>Total</b>	<b>601</b>	<b>459.4</b>	<b>326.4</b>	<b>537.1</b>	<b>216</b>	<b>146.9</b>

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	R149 northbound
To B	R149 southbound
From C	L2222 stirling rd eastbound
To C	L2222 stirling rd eastbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	351	113	298	0	49	39	17	0	1
LGV	0	37	16	50	0	4	5	2	0	1
M/C	0	0.4	0	0	0	0	0	0	0	0.4
OGV1	0	3.8	0	1.9	0	0	1.9	0	0	1.9
OGV2	0	0	0	2.9	0	0	0	0	0	2.9
P/C	0	0	0.8	0	0	0	0	0.4	0	0.4
PSV	0	2.5	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>391.8</b>	<b>129</b>	<b>352.8</b>	<b>0</b>	<b>53</b>	<b>45.9</b>	<b>19</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	464	337	347	368	56	162
LGV	53	55	54	39	7	20
M/C	0.4	0	0	0.4	0	0
OGV1	3.8	3.8	1.9	3.8	1.9	0
OGV2	0	2.9	2.9	0	0	0
P/C	0.8	0	0	0.4	0.4	0.8
PSV	2.5	0	0	2.5	0	0
<b>Total</b>	<b>520.8</b>	<b>398.7</b>	<b>405.8</b>	<b>410.8</b>	<b>64.9</b>	<b>182</b>

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	R149 northbound
To B	R149 southbound
From C	L2222 stirling rd eastbound
To C	L2222 stirling rd eastbound

## JTC Site 42

8:00:00 to 9:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	3	389	4	0	0	1	0	252	8	0	1	2	32	3	0
LGV	0	0	54	0	0	0	0	0	29	0	0	2	0	2	2	0
M/C	0	0	0.4	0	0	0	0	0	0.4	0	0	0	0	0	0	0
OGV1	0	0	11.4	0	0	0	1.9	0	9.5	0	0	0	0	0	0	0
OGV2	0	0	8.7	0	0	0	0	0	2.9	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSV	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>3</b>	<b>463.1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2.9</b>	<b>0</b>	<b>293.4</b>	<b>8</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>34</b>	<b>5</b>	<b>0</b>

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	396	254	1	43	261	393	37	5
LGV	54	29	0	2	31	56	4	2
M/C	0.4	0.4	0	0	0.4	0.4	0	0
OGV1	11.4	9.5	1.9	0	9.5	13.3	0	0
OGV2	8.7	2.9	0	0	2.9	8.7	0	0
P/C	0	0	0	0	0	0	0	0
PSV	0	2.5	0	0	2.5	0	0	0
<b>Total</b>	<b>470.1</b>	<b>295.4</b>	<b>2.9</b>	<b>45</b>	<b>304.4</b>	<b>471</b>	<b>41</b>	<b>7</b>

Arm	Road name
From A	R149 southbound
To A	R149 northbound
From B	unknown rd
To B	unknown rd
From C	R149 northbound
To C	R149 southbound
From D	unknown rd
To D	unknown rd

17:00:00 to 18:00:00(Turning movement counts)																
Vehicle type	A TO A	A TO B	A TO C	A TO D	B TO A	B TO B	B TO C	B TO D	C TO A	C TO B	C TO C	C TO D	D TO A	D TO B	D TO C	D TO D
CAR	0	3	330	2	0	0	6	1	324	7	0	5	0	2	2	0
LGV	0	0	41	2	0	0	1	1	48	1	0	1	0	0	0	0
M/C	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	0	0	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0
OGV2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/C	0	0	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0
PSV	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>3</b>	<b>374.8</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>2</b>	<b>372</b>	<b>8</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)								
Vehicle type	From A	To A	From B	To B	From C	To C	From D	To D
CAR	335	324	7	12	336	338	4	8
LGV	43	48	2	1	50	42	0	4
M/C	0.4	0	0	0	0	0.4	0	0
OGV1	3.8	0	0	0	0	3.8	0	0
OGV2	0	0	0	0	0	0	0	0
P/C	0	0	0	0.4	0.4	0	0	0
PSV	2.5	0	0	0	0	2.5	0	0
<b>Total</b>	<b>381.8</b>	<b>372</b>	<b>9</b>	<b>13</b>	<b>386</b>	<b>383.8</b>	<b>4</b>	<b>12</b>

Arm	Road name
From A	Flinglas rd southbound
To A	Flinglas rd northbound
From B	R102 westbound
To B	R102 eastbound
From C	R135 northbound
To C	R135 southbound
From D	unknown rd
To D	unknown rd

## JTC Site 44

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	276	9	285	0	2	0	0	0	1
LGV	0	53	2	30	0	1	0	0	0	1
M/C	0	0.8	0	0.4	0	0	0	0	0	0.4
OGV1	0	17.1	0	3.8	0	0	0	0	0	1.9
OGV2	0	5.8	0	2.9	0	0	0	0	0	2.9
P/C	0	0	0	0.4	0	0.4	0	0.8	0	0.4
PSV	0	5	0	5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>351.9</b>	<b>11</b>	<b>321.7</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	285	285	287	276	0	11
LGV	55	30	31	53	0	3
M/C	0.8	0.4	0.4	0.8	0	0
OGV1	17.1	3.8	3.8	17.1	0	0
OGV2	5.8	2.9	2.9	5.8	0	0
P/C	0	0.4	0.8	0.8	0.8	0.4
PSV	5	5	5	5	0	0
<b>Total</b>	<b>362.9</b>	<b>321.7</b>	<b>324.7</b>	<b>351.9</b>	<b>0</b>	<b>14</b>

Arm	Road name
From A	unknown rd
To A	unknown rd
From B	unknown rd
To B	unknown rd
From C	unknown rd
To C	unknown rd

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	265	0	379	0	0	5	0	0	1
LGV	0	35	1	56	0	0	0	0	0	1
M/C	0	0	0	0.4	0	0	0	0	0	0.4
OGV1	0	0	0	1.9	0	0	0	0	0	1.9
OGV2	0	2.9	0	0	0	0	0	0	0	2.9
P/C	0	0	0	0.4	0	0.8	0	0	0	0.4
PSV	0	2.5	0	2.5	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>302.9</b>	<b>1</b>	<b>436.9</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	265	384	379	265	5	0
LGV	36	56	56	35	0	1
M/C	0	0.4	0.4	0	0	0
OGV1	0	1.9	1.9	0	0	0
OGV2	2.9	0	0	2.9	0	0
P/C	0	0.4	1.2	0	0	0.8
PSV	2.5	2.5	2.5	2.5	0	0
<b>Total</b>	<b>303.9</b>	<b>441.9</b>	<b>436.9</b>	<b>302.9</b>	<b>5</b>	<b>1</b>

Arm	Road name
From A	unknown rd
To A	unknown rd
From B	unknown rd
To B	unknown rd
From C	unknown rd
To C	unknown rd

## JTC Site 45

8:00:00 to 9:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	192	7	135	0	136	84	173	0	1
LGV	0	18	1	10	0	15	3	27	0	1
M/C	0	0	0	0.4	0	0	0	0	0	0.4
OGV1	0	3.8	0	3.8	0	0	0	1.9	0	1.9
OGV2	0	2.9	0	0	0	0	0	0	0	2.9
P/C	0	1.2	0	0.8	0	0	0	0.4	0	0.4
PSV	0	2.5	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>216.7</b>	<b>8</b>	<b>148.8</b>	<b>0</b>	<b>151</b>	<b>87</b>	<b>201.9</b>	<b>0</b>	

8:00:00 to 9:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	199	219	271	365	257	143
LGV	19	13	25	45	30	16
M/C	0	0.4	0.4	0	0	0
OGV1	3.8	3.8	3.8	5.7	1.9	0
OGV2	2.9	0	0	2.9	0	0
P/C	1.2	0.8	0.8	1.6	0.4	0
PSV	2.5	0	0	2.5	0	0
<b>Total</b>	<b>224.7</b>	<b>235.8</b>	<b>299.8</b>	<b>418.6</b>	<b>288.9</b>	<b>159</b>

Arm	Road name
From A	R109 westbound
To A	R109 eastbound
From B	R109 eastbound
To B	R109 westbound
From C	R121 eastbound
To C	R121 westbound

17:00:00 to 18:00:00(Turning movement counts)										
Vehicle type	A TO A	A TO B	A TO C	B TO A	B TO B	B TO C	C TO A	C TO B	C TO C	PCU
CAR	0	270	82	50	0	201	7	194	0	1
LGV	0	33	8	9	0	25	0	16	0	1
M/C	0	0.4	0	0	0	0.4	0	0	0	0.4
OGV1	0	0	0	1.9	0	0	0	0	0	1.9
OGV2	0	0	0	0	0	0	0	0	0	2.9
P/C	0	0.4	0	0.4	0	0	0	0	0	0.4
PSV	0	0	0	0	0	0	0	0	0	2.5
<b>Total</b>	<b>0</b>	<b>303</b>	<b>90</b>	<b>60.9</b>	<b>0</b>	<b>226</b>	<b>7</b>	<b>210</b>	<b>0</b>	

17:00:00 to 18:00:00 ( Link flows in approach arm - Inbound & Outbound)						
Vehicle type	From A	To A	From B	To B	From C	To C
CAR	352	57	251	464	201	283
LGV	41	9	34	49	16	33
M/C	0.4	0	0.4	0.4	0	0.4
OGV1	0	1.9	1.9	0	0	0
OGV2	0	0	0	0	0	0
P/C	0.4	0.4	0.4	0.4	0	0
PSV	0	0	0	0	0	0
<b>Total</b>	<b>393</b>	<b>67.9</b>	<b>286.9</b>	<b>513</b>	<b>217</b>	<b>316</b>

Arm	Road name
From A	R109 westbound
To A	R109 eastbound
From B	R109 eastbound
To B	R109 westbound
From C	R121 eastbound
To C	R121 westbound

## Appendix B

### BLAM Calibration

**AM Link Calibration**

Counts :			102			RESULT =	86%	RESULT =			90%
Light Traffic						REQD =	85%	REQD =			85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF	
1	25453	25416	583	588	-5	0.2	1	100	1	5	
2	25416	25453	768	727	40	1.5	1	115	1	-40	
3	35427	36796	273	274	0	0.0	1	100	1	0	
4	36796	35427	222	222	1	0.1	1	100	1	-1	
5	37587	28296	27	65	-38	5.6	0	100	1	38	
6	28296	37587	6	23	-17	4.4	1	100	1	17	
7	37191	35416	209	209	0	0.0	1	100	1	0	
8	35416	37191	125	120	5	0.4	1	100	1	-5	
9	38044	38170	404	395	9	0.5	1	100	1	-9	
10	38170	38044	606	606	0	0.0	1	100	1	0	
11	28192	28661	908	912	-5	0.2	1	136	1	5	
12	28661	28192	432	532	-100	4.6	1	100	0	100	
13	28180	28179	386	386	0	0.0	1	100	1	0	
14	28179	28180	349	351	-2	0.1	1	100	1	2	
15	28770	28501	1117	1121	-4	0.1	1	168	1	4	
16	28501	28770	815	804	11	0.4	1	122	1	-11	
17	28152	28245	281	421	-140	7.5	0	100	0	140	
18	28245	28152	433	444	-10	0.5	1	100	1	10	
19	28247	28520	709	710	-1	0.0	1	106	1	1	
20	28520	28247	490	506	-16	0.7	1	100	1	16	
21	15104	28477	385	385	0	0.0	1	100	1	0	
22	28477	15104	587	628	-41	1.6	1	100	1	41	
23	15173	28262	349	349	0	0.0	1	100	1	0	
24	28262	15173	367	371	-4	0.2	1	100	1	4	
25	28267	15173	232	232	0	0.0	1	100	1	0	
26	15173	28267	203	203	0	0.0	1	100	1	0	
27	25536	15100	353	398	-45	2.3	1	100	1	45	
28	15100	25536	53	53	0	0.0	1	100	1	0	
29	35918	39002	139	144	-5	0.4	1	100	1	5	
30	39002	35918	198	178	19	1.4	1	100	1	-19	
31	28317	28230	837	831	6	0.2	1	126	1	-6	
32	28230	28317	687	693	-6	0.2	1	100	1	6	
33	28426	28439	289	257	33	2.0	1	100	1	-33	
34	28439	28426	203	203	1	0.0	1	100	1	-1	
35	28103	28246	568	571	-3	0.1	1	100	1	3	
36	28246	28103	541	455	86	3.9	1	100	1	-86	
37	28721	28359	788	786	2	0.1	1	118	1	-2	
38	28359	28721	284	282	2	0.1	1	100	1	-2	
39	28419	28385	631	600	31	1.2	1	100	1	-31	
40	28385	28419	1171	950	221	6.8	0	176	0	-221	
41	28357	28355	194	198	-4	0.3	1	100	1	4	
42	28355	28357	288	545	-257	12.6	0	100	0	257	

43	28321	28384	780	773	7	0.3	1	117	1	-7
44	28384	28321	763	745	18	0.7	1	114	1	-18
45	39002	35918	222	178	44	3.1	1	100	1	-44
46	35918	39002	153	144	9	0.7	1	100	1	-9
47	28268	35918	249	310	-61	3.6	1	100	1	61
48	35918	28268	538	539	-1	0.1	1	100	1	1
49	35426	35918	3	9	-6	2.4	1	100	1	6
50	35918	35426	2	17	-15	4.9	1	100	1	15
51	37861	35918	529	534	-5	0.2	1	100	1	5
52	35918	37861	310	330	-20	1.1	1	100	1	20
53	35918	37861	310	330	-20	1.1	1	100	1	20
54	37861	35918	529	534	-5	0.2	1	100	1	5
55	37862	37861	408	425	-17	0.9	1	100	1	17
56	37861	37862	321	320	1	0.1	1	100	1	-1
57	36796	37737	536	534	3	0.1	1	100	1	-3
58	37737	36796	284	331	-47	2.7	1	100	1	47
59	36470	37737	129	95	34	3.2	1	100	1	-34
60	37737	36470	353	265	88	5.0	0	100	1	-88
61	37924	37737	317	311	6	0.3	1	100	1	-6
62	37737	37924	345	344	1	0.1	1	100	1	-1
63	28556	28383	85	58	27	3.1	1	100	1	-27
64	28383	28556	21	21	0	0.0	1	100	1	0
65	39001	28383	20	25	-5	1.0	1	100	1	5
66	28383	39001	130	123	7	0.7	1	100	1	-7
67	28296	28383	46	74	-28	3.6	1	100	1	28
68	28383	28296	0	13	-13	5.1	0	100	1	13
69	38044	28289	526	644	-118	4.9	1	100	0	118
70	28289	38044	602	591	11	0.4	1	100	1	-11
71	28297	28283	552	499	53	2.3	1	100	1	-53
72	28283	28297	374	375	-1	0.0	1	100	1	1
73	28641	28336	691	615	76	3.0	1	100	1	-76
74	28336	28641	793	793	0	0.0	1	119	1	0
75	28361	28350	805	645	160	5.9	0	121	0	-160
76	28350	28361	381	400	-19	1.0	1	100	1	19
77	28739	28350	131	192	-61	4.8	1	100	1	61
78	28350	28739	222	222	0	0.0	1	100	1	0
79	28481	28350	416	417	-1	0.1	1	100	1	1
80	28350	28481	836	742	94	3.4	1	125	1	-94
81	28352	28350	243	248	-5	0.3	1	100	1	5
82	28350	28352	156	140	16	1.4	1	100	1	-16
83	28361	28419	564	493	71	3.1	1	100	1	-71
84	28419	28361	1220	697	523	16.9	0	183	0	-523
85	28270	28419	341	245	96	5.6	0	100	1	-96
86	28419	28270	213	213	0	0.0	1	100	1	0
87	28277	28180	183	183	0	0.0	1	100	1	0
88	28180	28277	670	546	124	5.0	0	100	0	-124
89	28440	28180	326	265	61	3.6	1	100	1	-61

90	28180	28440	175	172	3	0.2	1	100	1	-3
91	28181	28180	612	624	-12	0.5	1	100	1	12
92	28180	28181	316	318	-2	0.1	1	100	1	2
93	37736	37924	318	319	-1	0.0	1	100	1	1
94	37924	37736	329	341	-12	0.7	1	100	1	12
95	38929	37924	0	19	-19	6.1	0	100	1	19
96	37924	38929	14	29	-15	3.2	1	100	1	15
97	36470	25427	218	299	-81	5.0	0	100	1	81
98	25427	36470	232	235	-3	0.2	1	100	1	3
99	25431	25427	296	3	293	24.0	0	100	0	-293
100	25427	25431	410	138	272	16.4	0	100	0	-272
101	25416	25427	287	299	-12	0.7	1	100	1	12
102	25427	25416	159	227	-68	4.9	1	100	1	68
			39483	<b>38296</b>	1,187	6.0	<b>88</b>		<b>92</b>	<b>-1,187</b>

AM Link Calibration										
Counts :				102		RESULT =		95%	RESULT =	100%
Heavy Traffic						REQD =		85%	REQD =	
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	25453	25416	69	15.34	54	8.3	0	100	1	-54
2	25416	25453	74	19.73	54	7.9	0	100	1	-54
3	35427	36796	14	8.35	5	1.6	1	100	1	-5
4	36796	35427	2	5.99	-4	1.7	1	100	1	4
5	37587	28296	1	1.15	0	0.4	1	100	1	0
6	28296	37587	0	2.24	-2	2.1	1	100	1	2
7	37191	35416	1	2.41	-1	1.1	1	100	1	1
8	35416	37191	7	7	0	0.2	1	100	1	0
9	38044	38170	27	26.3	0	0.1	1	100	1	0
10	38170	38044	32	29.93	2	0.3	1	100	1	-2
11	28192	28661	54	53.92	0	0.0	1	100	1	0
12	28661	28192	20	21.79	-2	0.4	1	100	1	2
13	28180	28179	6	6.02	0	0.0	1	100	1	0
14	28179	28180	38	38.91	-1	0.2	1	100	1	1
15	28770	28501	0	0	0	0.0	1	100	1	0
16	28501	28770	0	0	0	0.0	1	100	1	0
17	28152	28245	16	34.97	-19	3.8	1	100	1	19
18	28245	28152	18	23.55	-5	1.1	1	100	1	5
19	28247	28520	76	68.04	8	0.9	1	100	1	-8
20	28520	28247	113	112.92	0	0.0	1	100	1	0
21	15104	28477	36	36.06	0	0.1	1	100	1	0
22	28477	15104	109	108.98	0	0.0	1	100	1	0
23	15173	28262	3	3	0	0.0	1	100	1	0
24	28262	15173	67	36.7	31	4.3	1	100	1	-31
25	28267	15173	3	15.63	-13	4.3	1	100	1	13
26	15173	28267	4	1.08	3	2.0	1	100	1	-3
27	25536	15100	1	1	0	0.3	1	100	1	0
28	15100	25536	2	8.57	-7	3.0	1	100	1	7
29	35918	39002	7	5.94	1	0.4	1	100	1	-1
30	39002	35918	3	3.2	-1	0.4	1	100	1	1
31	28317	28230	33	20.12	13	2.6	1	100	1	-13
32	28230	28317	68	48.5	19	2.5	1	100	1	-19
33	28426	28439	10	8.02	2	0.7	1	100	1	-2
34	28439	28426	32	52.62	-21	3.2	1	100	1	21
35	28103	28246	50	49.34	0	0.0	1	100	1	0
36	28246	28103	39	40.7	-2	0.3	1	100	1	2
37	28721	28359	4	13.45	-10	3.3	1	100	1	10
38	28359	28721	2	6.69	-5	2.3	1	100	1	5
39	28419	28385	16	14.72	1	0.4	1	100	1	-1
40	28385	28419	31	23.89	8	1.4	1	100	1	-8
41	28357	28355	2	2.03	0	0.1	1	100	1	0
42	28355	28357	0	13.11	-13	5.1	0	100	1	13

43	28321	28384	26	23.61	2	0.4	1	100	1	-2
44	28384	28321	12	9.92	2	0.7	1	100	1	-2
45	39002	35918	0	3.2	-3	2.5	1	100	1	3
46	35918	39002	6	5.94	0	0.1	1	100	1	0
47	28268	35918	8	8.11	-1	0.2	1	100	1	1
48	35918	28268	6	10.05	-4	1.6	1	100	1	4
49	35426	35918	0	0.06	0	0.3	1	100	1	0
50	35918	35426	0	0.07	0	0.4	1	100	1	0
51	37861	35918	11	12.18	-1	0.2	1	100	1	1
52	35918	37861	8	7.48	0	0.0	1	100	1	0
53	35918	37861	8	7.48	0	0.0	1	100	1	0
54	37861	35918	11	12.18	-1	0.2	1	100	1	1
55	37862	37861	11	11.03	0	0.1	1	100	1	0
56	37861	37862	6	5.99	0	0.1	1	100	1	0
57	36796	37737	21	8.33	13	3.3	1	100	1	-13
58	37737	36796	3	17.57	-15	4.6	1	100	1	15
59	36470	37737	6	5.99	0	0.1	1	100	1	0
60	37737	36470	10	11.02	-2	0.5	1	100	1	2
61	37924	37737	7	14.27	-8	2.3	1	100	1	8
62	37737	37924	21	0	21	6.5	0	100	1	-21
63	28556	28383	0	0	0	0.0	1	100	1	0
64	28383	28556	0	0	0	0.0	1	100	1	0
65	39001	28383	2	1.48	0	0.3	1	100	1	0
66	28383	39001	0	1.15	-1	1.5	1	100	1	1
67	28296	28383	0	1.15	-1	1.5	1	100	1	1
68	28383	28296	2	1.49	0	0.3	1	100	1	0
69	38044	28289	24	31.82	-8	1.5	1	100	1	8
70	28289	38044	15	23.7	-8	1.9	1	100	1	8
71	28297	28283	8	8.59	-1	0.3	1	100	1	1
72	28283	28297	14	13.95	0	0.1	1	100	1	0
73	28641	28336	27	26.31	1	0.1	1	100	1	-1
74	28336	28641	29	29.4	-1	0.1	1	100	1	1
75	28361	28350	20	19.84	0	0.0	1	100	1	0
76	28350	28361	14	13.34	1	0.3	1	100	1	-1
77	28739	28350	4	4	0	0.1	1	100	1	0
78	28350	28739	6	6.01	0	0.1	1	100	1	0
79	28481	28350	16	15.21	1	0.2	1	100	1	-1
80	28350	28481	18	20	-2	0.4	1	100	1	2
81	28352	28350	6	6	0	0.1	1	100	1	0
82	28350	28352	8	5.73	2	0.7	1	100	1	-2
83	28361	28419	15	13.72	2	0.4	1	100	1	-2
84	28419	28361	28	18.25	9	2.0	1	100	1	-9
85	28270	28419	6	2.33	3	1.7	1	100	1	-3
86	28419	28270	7	6.99	0	0.1	1	100	1	0
87	28277	28180	10	7.57	2	0.7	1	100	1	-2
88	28180	28277	4	16.27	-12	3.9	1	100	1	12
89	28440	28180	8	3.02	5	2.0	1	100	1	-5

90	28180	28440	0	12.51	-13	5.0	0	100	1	13
91	28181	28180	2	2.82	-1	0.6	1	100	1	1
92	28180	28181	13	17.52	-4	1.1	1	100	1	4
93	37736	37924	7	14.27	-8	2.3	1	100	1	8
94	37924	37736	23	6.68	16	4.2	1	100	1	-16
95	38929	37924	0	6.74	-7	3.7	1	100	1	7
96	37924	38929	0	0.04	0	0.3	1	100	1	0
97	36470	25427	7	0	7	3.7	1	100	1	-7
98	25427	36470	4	0	4	2.8	1	100	1	-4
99	25431	25427	4	8.57	-5	1.9	1	100	1	5
100	25427	25431	9	1	8	3.5	1	100	1	-8
101	25416	25427	2	1	1	0.7	1	100	1	-1
102	25427	25416	0	8.55	-9	4.1	1	100	1	9
			1625	<b>1,543</b>	82	2.1	<b>97</b>		<b>102</b>	<b>-82</b>

AM Link Calibration									
Counts :				102	RESULT =	88%	RESULT =		90%
Total Traffic					REQD =	85%	REQD =		85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	25453	25416	652	603	1.9	1	100	1	-49
2	25416	25453	842	747	3.3	1	126	1	-94
3	35427	36796	287	282	0.3	1	100	1	-5
4	36796	35427	225	228	0.2	1	100	1	3
5	37587	28296	28	66	5.6	0	100	1	39
6	28296	37587	6	25	4.8	1	100	1	19
7	37191	35416	210	211	0.1	1	100	1	1
8	35416	37191	131	127	0.4	1	100	1	-4
9	38044	38170	430	421	0.5	1	100	1	-10
10	38170	38044	638	636	0.1	1	100	1	-2
11	28192	28661	961	966	0.2	1	144	1	5
12	28661	28192	452	554	4.6	1	100	0	102
13	28180	28179	392	392	0.0	1	100	1	0
14	28179	28180	387	389	0.1	1	100	1	3
15	28770	28501	1117	1121	0.1	1	168	1	4
16	28501	28770	815	804	0.4	1	122	1	-11
17	28152	28245	296	456	8.2	0	100	0	160
18	28245	28152	452	467	0.7	1	100	1	15
19	28247	28520	785	778	0.2	1	118	1	-7
20	28520	28247	603	619	0.6	1	100	1	16
21	15104	28477	421	421	0.0	1	100	1	0
22	28477	15104	696	737	1.5	1	100	1	40
23	15173	28262	352	352	0.0	1	100	1	0
24	28262	15173	434	407	1.3	1	100	1	-27
25	28267	15173	235	248	0.8	1	100	1	13
26	15173	28267	207	204	0.2	1	100	1	-3
27	25536	15100	354	399	2.3	1	100	1	45
28	15100	25536	54	62	1.0	1	100	1	7
29	35918	39002	146	150	0.3	1	100	1	4
30	39002	35918	200	181	1.4	1	100	1	-19
31	28317	28230	870	851	0.7	1	131	1	-19
32	28230	28317	755	741	0.5	1	113	1	-13
33	28426	28439	300	265	2.1	1	100	1	-35
34	28439	28426	235	255	1.3	1	100	1	20
35	28103	28246	618	620	0.1	1	100	1	3
36	28246	28103	580	496	3.6	1	100	1	-84
37	28721	28359	792	800	0.3	1	119	1	8
38	28359	28721	286	289	0.2	1	100	1	3
39	28419	28385	647	615	1.3	1	100	1	-32
40	28385	28419	1202	974	6.9	0	180	0	-229
41	28357	28355	196	200	0.3	1	100	1	5
42	28355	28357	288	559	13.2	0	100	0	271

43	28321	28384	806	796	0.3	1	121	1	-9
44	28384	28321	775	755	0.7	1	116	1	-21
45	39002	35918	222	181	2.9	1	100	1	-41
46	35918	39002	159	150	0.7	1	100	1	-9
47	28268	35918	257	318	3.6	1	100	1	61
48	35918	28268	544	550	0.2	1	100	1	6
49	35426	35918	3	9	2.4	1	100	1	6
50	35918	35426	2	17	4.9	1	100	1	15
51	37861	35918	540	546	0.2	1	100	1	6
52	35918	37861	318	338	1.1	1	100	1	20
53	35918	37861	318	338	1.1	1	100	1	20
54	37861	35918	540	546	0.2	1	100	1	6
55	37862	37861	419	437	0.8	1	100	1	17
56	37861	37862	327	326	0.0	1	100	1	-1
57	36796	37737	557	542	0.6	1	100	1	-15
58	37737	36796	287	349	3.5	1	100	1	62
59	36470	37737	135	101	3.1	1	100	1	-33
60	37737	36470	363	276	4.9	1	100	1	-87
61	37924	37737	324	325	0.1	1	100	1	1
62	37737	37924	366	344	1.2	1	100	1	-22
63	28556	28383	85	58	3.1	1	100	1	-27
64	28383	28556	21	21	0.0	1	100	1	0
65	39001	28383	22	26	0.9	1	100	1	4
66	28383	39001	130	124	0.6	1	100	1	-6
67	28296	28383	46	75	3.7	1	100	1	29
68	28383	28296	2	15	4.4	1	100	1	13
69	38044	28289	550	676	5.1	0	100	0	126
70	28289	38044	617	615	0.1	1	100	1	-2
71	28297	28283	560	507	2.3	1	100	1	-52
72	28283	28297	388	388	0.0	1	100	1	0
73	28641	28336	718	642	2.9	1	108	1	-76
74	28336	28641	822	823	0.0	1	123	1	1
75	28361	28350	825	665	5.9	0	124	0	-160
76	28350	28361	395	413	0.9	1	100	1	18
77	28739	28350	135	196	4.8	1	100	1	61
78	28350	28739	228	228	0.0	1	100	1	0
79	28481	28350	432	432	0.0	1	100	1	0
80	28350	28481	854	762	3.2	1	128	1	-92
81	28352	28350	249	254	0.3	1	100	1	5
82	28350	28352	164	145	1.5	1	100	1	-18
83	28361	28419	579	507	3.1	1	100	1	-73
84	28419	28361	1248	715	17.0	0	187	0	-533
85	28270	28419	347	247	5.8	0	100	1	-100
86	28419	28270	220	220	0.0	1	100	1	1
87	28277	28180	193	190	0.2	1	100	1	-2
88	28180	28277	674	563	4.5	1	100	0	-111
89	28440	28180	334	268	3.8	1	100	1	-66

90	28180	28440	175	185	0.7	1	100	1	10
91	28181	28180	614	627	0.5	1	100	1	13
92	28180	28181	329	336	0.3	1	100	1	6
93	37736	37924	325	333	0.4	1	100	1	8
94	37924	37736	352	348	0.2	1	100	1	-4
95	38929	37924	0	25	7.1	0	100	1	25
96	37924	38929	14	29	3.2	1	100	1	15
97	36470	25427	225	299	4.6	1	100	1	74
98	25427	36470	236	235	0.0	1	100	1	0
99	25431	25427	300	11	23.2	0	100	0	-289
100	25427	25431	419	139	16.7	0	100	0	-279
101	25416	25427	289	300	0.7	1	100	1	11
102	25427	25416	159	236	5.5	0	100	1	77
			41108	<b>39,840</b>	6.3	<b>90</b>		<b>92</b>	<b>-1,268</b>

PM Link Calibration								
Counts :				102	RESULT =	86%	RESULT =	90%
Light Traffic					REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF
1	25453	25416	685	696	0.4	1	100	10
2	25416	25453	892	772	4.2	1	134	-120
3	35427	36796	183	184	0.1	1	100	1
4	36796	35427	370	372	0.1	1	100	1
5	37587	28296	8	16	2.3	1	100	8
6	28296	37587	14	36	4.4	1	100	22
7	37191	35416	62	62	0.0	1	100	0
8	35416	37191	192	171	1.5	1	100	-20
9	38044	38170	522	513	0.4	1	100	-9
10	38170	38044	394	426	1.6	1	100	32
11	28192	28661	492	487	0.2	1	100	-5
12	28661	28192	960	793	5.7	0	144	-168
13	28180	28179	239	286	2.9	1	100	47
14	28179	28180	562	560	0.1	1	100	-2
15	28770	28501	1004	968	1.2	1	151	-36
16	28501	28770	1239	1242	0.1	1	186	3
17	28152	28245	299	445	7.6	0	100	146
18	28245	28152	383	469	4.2	1	100	86
19	28247	28520	494	490	0.2	1	100	-4
20	28520	28247	692	668	0.9	1	100	-24
21	15104	28477	624	624	0.0	1	100	-1
22	28477	15104	450	458	0.4	1	100	8
23	15173	28262	510	508	0.1	1	100	-2
24	28262	15173	176	185	0.7	1	100	9
25	28267	15173	156	139	1.4	1	100	-18
26	15173	28267	370	177	11.7	0	100	-194
27	25536	15100	26	41	2.6	1	100	15
28	15100	25536	420	473	2.5	1	100	53
29	35918	39002	209	192	1.2	1	100	-17
30	39002	35918	112	122	0.9	1	100	10
31	28317	28230	810	803	0.2	1	121	-6
32	28230	28317	791	772	0.7	1	119	-19
33	28426	28439	201	197	0.3	1	100	-4
34	28439	28426	227	276	3.1	1	100	49
35	28103	28246	505	504	0.0	1	100	-1
36	28246	28103	696	693	0.1	1	100	-3
37	28721	28359	398	398	0.0	1	100	-1
38	28359	28721	561	566	0.2	1	100	5
39	28419	28385	899	930	1.0	1	135	31
40	28385	28419	602	586	0.6	1	100	-16
41	28357	28355	226	196	2.0	1	100	-30
42	28355	28357	230	234	0.3	1	100	4

43	28321	28384	464	395	3.3	1	100	-69
44	28384	28321	559	517	1.8	1	100	-42
45	39002	35918	126	122	0.3	1	100	-4
46	35918	39002	273	192	5.3	0	100	-81
47	28268	35918	387	485	4.7	1	100	98
48	35918	28268	303	393	4.8	1	100	90
49	35426	35918	2	10	3.2	1	100	8
50	35918	35426	0	10	4.4	1	100	10
51	37861	35918	495	491	0.2	1	100	-4
52	35918	37861	434	514	3.7	1	100	80
53	35918	37861	434	514	3.7	1	100	80
54	37861	35918	495	491	0.2	1	100	-4
55	37862	37861	519	483	1.6	1	100	-36
56	37861	37862	425	490	3.1	1	100	65
57	36796	37737	319	390	3.7	1	100	71
58	37737	36796	544	582	1.6	1	100	38
59	36470	37737	297	241	3.4	1	100	-56
60	37737	36470	229	222	0.5	1	100	-8
61	37924	37737	453	464	0.5	1	100	11
62	37737	37924	296	292	0.3	1	100	-4
63	28556	28383	24	30	1.2	1	100	6
64	28383	28556	42	42	0.0	1	100	0
65	39001	28383	48	48	0.0	1	100	0
66	28383	39001	35	32	0.5	1	100	-3
67	28296	28383	12	12	0.0	1	100	0
68	28383	28296	7	16	2.7	1	100	9
69	38044	28289	265	316	3.0	1	100	51
70	28289	38044	235	487	13.3	0	100	252
71	28297	28283	222	142	5.9	0	100	-80
72	28283	28297	249	236	0.8	1	100	-13
73	28641	28336	312	495	9.1	0	100	183
74	28336	28641	315	232	5.0	1	100	-83
75	28361	28350	477	542	2.9	1	100	65
76	28350	28361	692	715	0.9	1	100	23
77	28739	28350	153	115	3.3	1	100	-38
78	28350	28739	149	151	0.1	1	100	2
79	28481	28350	757	780	0.8	1	114	23
80	28350	28481	496	493	0.1	1	100	-3
81	28352	28350	130	105	2.3	1	100	-25
82	28350	28352	180	183	0.2	1	100	3
83	28361	28419	468	755	11.6	0	100	287
84	28419	28361	394	519	5.9	0	100	125
85	28270	28419	196	205	0.6	1	100	9
86	28419	28270	92	97	0.5	1	100	5
87	28277	28180	422	423	0.0	1	100	1
88	28180	28277	399	311	4.7	1	100	-88
89	28440	28180	194	184	0.7	1	100	-10

90	28180	28440	322	306	0.9	1	100	-16
91	28181	28180	366	355	0.6	1	100	-11
92	28180	28181	613	619	0.2	1	100	6
93	37736	37924	435	447	0.6	1	100	12
94	37924	37736	300	297	0.2	1	100	-3
95	38929	37924	5	37	6.9	0	100	32
96	37924	38929	1	14	4.7	1	100	13
97	36470	25427	393	347	2.4	1	100	-46
98	25427	36470	66	360	20.1	0	100	294
99	25431	25427	285	198	5.6	0	100	-87
100	25427	25431	513	1	31.9	0	100	-512
101	25416	25427	217	262	2.9	1	100	45
102	25427	25416	316	446	6.7	0	100	130
			36738	<b>37384</b>	3.4	<b>88</b>		<b>646</b>

PM Link Calibration								
Counts :				102	RESULT =	91%	RESULT =	100%
Heavy Traffic					REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF
1	25453	25416	75	10	9.9	0	100	-65
2	25416	25453	68	25	6.2	0	100	-43
3	35427	36796	7	3	1.5	1	100	-3
4	36796	35427	2	3	0.6	1	100	1
5	37587	28296	0	0	0.0	1	100	0
6	28296	37587	0	0	0.7	1	100	0
7	37191	35416	1	1	0.2	1	100	0
8	35416	37191	4	3	0.8	1	100	-1
9	38044	38170	24	24	0.1	1	100	0
10	38170	38044	20	16	0.9	1	100	-4
11	28192	28661	12	12	0.0	1	100	0
12	28661	28192	79	70	1.1	1	100	-9
13	28180	28179	2	7	2.3	1	100	5
14	28179	28180	33	33	0.1	1	100	0
15	28770	28501	95	95	0.0	1	100	0
16	28501	28770	79	79	0.0	1	100	0
17	28152	28245	10	19	2.1	1	100	8
18	28245	28152	7	15	2.4	1	100	8
19	28247	28520	36	36	0.1	1	100	0
20	28520	28247	78	76	0.3	1	100	-3
21	15104	28477	77	76	0.1	1	100	-1
22	28477	15104	106	106	0.0	1	100	0
23	15173	28262	6	0	3.5	1	100	-6
24	28262	15173	28	28	0.0	1	100	0
25	28267	15173	2	0	2.1	1	100	-2
26	15173	28267	5	5	0.0	1	100	0
27	25536	15100	0	0	0.0	1	100	0
28	15100	25536	1	25	6.6	0	100	23
29	35918	39002	7	2	2.0	1	100	-4
30	39002	35918	2	0	1.6	1	100	-1
31	28317	28230	36	19	3.2	1	100	-17
32	28230	28317	59	58	0.2	1	100	-1
33	28426	28439	4	4	0.2	1	100	0
34	28439	28426	24	24	0.0	1	100	0
35	28103	28246	50	65	2.0	1	100	15
36	28246	28103	46	52	0.8	1	100	6
37	28721	28359	0	1	1.4	1	100	1
38	28359	28721	0	12	5.0	1	100	12
39	28419	28385	0	19	6.2	0	100	19
40	28385	28419	2	2	0.1	1	100	0
41	28357	28355	0	3	2.3	1	100	3
42	28355	28357	0	0	0.4	1	100	0

43	28321	28384	2	1	0.7	1	100	-1
44	28384	28321	0	9	4.4	1	100	9
45	39002	35918	0	0	0.4	1	100	0
46	35918	39002	0	2	2.2	1	100	2
47	28268	35918	3	3	0.2	1	100	0
48	35918	28268	2	5	1.6	1	100	3
49	35426	35918	0	0	0.0	1	100	0
50	35918	35426	0	0	0.3	1	100	0
51	37861	35918	2	7	2.5	1	100	5
52	35918	37861	3	3	0.2	1	100	0
53	35918	37861	3	3	0.2	1	100	0
54	37861	35918	2	7	2.5	1	100	5
55	37862	37861	0	7	3.8	1	100	7
56	37861	37862	3	3	0.1	1	100	0
57	36796	37737	0	3	2.5	1	100	3
58	37737	36796	3	9	2.5	1	100	6
59	36470	37737	3	3	0.1	1	100	0
60	37737	36470	0	7	3.8	1	100	7
61	37924	37737	3	10	2.8	1	100	7
62	37737	37924	3	0	2.4	1	100	-3
63	28556	28383	0	0	0.0	1	100	0
64	28383	28556	0	0	0.0	1	100	0
65	39001	28383	0	0	0.6	1	100	0
66	28383	39001	0	0	0.0	1	100	0
67	28296	28383	0	0	0.0	1	100	0
68	28383	28296	0	0	0.6	1	100	0
69	38044	28289	13	20	1.9	1	100	8
70	28289	38044	3	23	5.6	0	100	20
71	28297	28283	10	10	0.1	1	100	0
72	28283	28297	13	13	0.2	1	100	-1
73	28641	28336	3	14	3.7	1	100	11
74	28336	28641	9	9	0.1	1	100	0
75	28361	28350	2	3	0.6	1	100	1
76	28350	28361	0	14	5.3	0	100	14
77	28739	28350	0	1	1.7	1	100	1
78	28350	28739	0	1	1.5	1	100	1
79	28481	28350	0	15	5.5	0	100	15
80	28350	28481	2	3	0.6	1	100	1
81	28352	28350	0	1	1.4	1	100	1
82	28350	28352	0	2	2.1	1	100	2
83	28361	28419	9	19	2.7	1	100	10
84	28419	28361	6	3	1.5	1	100	-3
85	28270	28419	0	2	1.9	1	100	2
86	28419	28270	0	1	1.1	1	100	1
87	28277	28180	10	3	2.7	1	100	-7
88	28180	28277	2	15	4.4	1	100	13
89	28440	28180	0	0	0.7	1	100	0

90	28180	28440	4	5	0.7	1	100	2
91	28181	28180	2	7	2.4	1	100	5
92	28180	28181	8	16	2.4	1	100	8
93	37736	37924	2	10	3.4	1	100	8
94	37924	37736	3	0	2.0	1	100	-3
95	38929	37924	0	0	0.8	1	100	0
96	37924	38929	0	0	0.3	1	100	0
97	36470	25427	0	0	0.0	1	100	0
98	25427	36470	2	0	1.9	1	100	-2
99	25431	25427	2	25	6.2	0	100	23
100	25427	25431	0	0	0.0	1	100	0
101	25416	25427	0	0	0.0	1	100	0
102	25427	25416	0	24	7.0	0	100	24
			1217	<b>1,369</b>	4.2	<b>93</b>		<b>152</b>

PM Link Calibration									
Counts :					102	RESULT =	86%	RESULT =	89%
Total Traffic						REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF	
1	25453	25416	761	706	2.0	1	114	-55	
2	25416	25453	960	797	5.5	0	144	-163	
3	35427	36796	190	187	0.2	1	100	-2	
4	36796	35427	372	375	0.1	1	100	2	
5	37587	28296	8	16	2.3	1	100	8	
6	28296	37587	14	36	4.5	1	100	22	
7	37191	35416	63	63	0.0	1	100	0	
8	35416	37191	196	174	1.6	1	100	-22	
9	38044	38170	546	537	0.4	1	100	-9	
10	38170	38044	414	442	1.4	1	100	28	
11	28192	28661	504	499	0.2	1	100	-5	
12	28661	28192	1039	862	5.7	0	156	-177	
13	28180	28179	241	293	3.2	1	100	52	
14	28179	28180	595	593	0.1	1	100	-3	
15	28770	28501	1099	1063	1.1	1	165	-36	
16	28501	28770	1318	1321	0.1	1	198	3	
17	28152	28245	309	463	7.8	0	100	154	
18	28245	28152	390	484	4.5	1	100	94	
19	28247	28520	530	526	0.2	1	100	-4	
20	28520	28247	770	743	1.0	1	116	-27	
21	15104	28477	701	699	0.1	1	105	-2	
22	28477	15104	556	564	0.3	1	100	8	
23	15173	28262	516	508	0.3	1	100	-8	
24	28262	15173	204	213	0.6	1	100	9	
25	28267	15173	158	139	1.6	1	100	-20	
26	15173	28267	375	181	11.6	0	100	-194	
27	25536	15100	26	41	2.6	1	100	15	
28	15100	25536	421	498	3.6	1	100	77	
29	35918	39002	216	195	1.5	1	100	-21	
30	39002	35918	114	122	0.8	1	100	9	
31	28317	28230	845	822	0.8	1	127	-23	
32	28230	28317	851	830	0.7	1	128	-21	
33	28426	28439	204	201	0.2	1	100	-3	
34	28439	28426	251	300	3.0	1	100	49	
35	28103	28246	556	570	0.6	1	100	14	
36	28246	28103	742	744	0.1	1	111	3	
37	28721	28359	398	399	0.0	1	100	1	
38	28359	28721	561	578	0.7	1	100	17	
39	28419	28385	899	950	1.7	1	135	51	
40	28385	28419	604	588	0.6	1	100	-16	
41	28357	28355	226	199	1.8	1	100	-27	
42	28355	28357	230	234	0.3	1	100	4	

43	28321	28384	466	396	3.4	1	100	-70
44	28384	28321	559	527	1.4	1	100	-32
45	39002	35918	126	122	0.3	1	100	-4
46	35918	39002	273	195	5.1	0	100	-78
47	28268	35918	390	489	4.7	1	100	99
48	35918	28268	305	397	4.9	1	100	93
49	35426	35918	2	10	3.2	1	100	8
50	35918	35426	0	10	4.4	1	100	10
51	37861	35918	497	498	0.1	1	100	1
52	35918	37861	437	517	3.7	1	100	80
53	35918	37861	437	517	3.7	1	100	80
54	37861	35918	497	498	0.1	1	100	1
55	37862	37861	519	490	1.3	1	100	-29
56	37861	37862	428	493	3.0	1	100	65
57	36796	37737	319	393	3.9	1	100	74
58	37737	36796	547	592	1.9	1	100	45
59	36470	37737	300	244	3.4	1	100	-56
60	37737	36470	229	229	0.0	1	100	0
61	37924	37737	456	475	0.9	1	100	19
62	37737	37924	299	292	0.4	1	100	-7
63	28556	28383	24	30	1.2	1	100	6
64	28383	28556	42	42	0.0	1	100	0
65	39001	28383	48	48	0.0	1	100	0
66	28383	39001	35	32	0.5	1	100	-3
67	28296	28383	12	12	0.0	1	100	0
68	28383	28296	7	16	2.7	1	100	9
69	38044	28289	278	336	3.3	1	100	58
70	28289	38044	238	510	14.1	0	100	272
71	28297	28283	232	152	5.7	0	100	-80
72	28283	28297	262	249	0.9	1	100	-14
73	28641	28336	315	509	9.5	0	100	194
74	28336	28641	324	241	4.9	1	100	-82
75	28361	28350	479	545	2.9	1	100	66
76	28350	28361	692	729	1.4	1	100	37
77	28739	28350	153	116	3.2	1	100	-37
78	28350	28739	149	152	0.2	1	100	3
79	28481	28350	757	795	1.4	1	114	38
80	28350	28481	498	496	0.1	1	100	-2
81	28352	28350	130	106	2.2	1	100	-24
82	28350	28352	180	185	0.4	1	100	5
83	28361	28419	477	774	11.9	0	100	297
84	28419	28361	400	522	5.7	0	100	122
85	28270	28419	196	207	0.8	1	100	11
86	28419	28270	92	97	0.6	1	100	5
87	28277	28180	432	426	0.3	1	100	-6
88	28180	28277	401	326	3.9	1	100	-75
89	28440	28180	194	185	0.7	1	100	-9

90	28180	28440	326	312	0.8	1	100	-14
91	28181	28180	368	362	0.3	1	100	-6
92	28180	28181	621	635	0.6	1	100	14
93	37736	37924	437	457	0.9	1	100	20
94	37924	37736	303	297	0.3	1	100	-6
95	38929	37924	5	37	7.0	0	100	32
96	37924	38929	1	14	4.7	1	100	13
97	36470	25427	393	347	2.4	1	100	-46
98	25427	36470	68	360	20.0	0	100	292
99	25431	25427	287	222	4.0	1	100	-65
100	25427	25431	513	1	31.9	0	100	-512
101	25416	25427	217	262	2.9	1	100	45
102	25427	25416	316	470	7.8	0	100	154
			37955	<b>38,753</b>	4.1	<b>88</b>		<b>798</b>

## Appendix C

### BLAM Validation

AM Link Validation										
Counts :					32	RESULT =	94%	RESULT =		94%
Light Traffic						REQD =	85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	28664	28423	1594	1504	90	2.3	1	239	1	-90
2	28424	28662	2917	3566	-649	11.4	0	438	0	649
3	28476	28491	2355	2202	153	3.2	1	353	1	-153
4	28311	28666	3204	3222	-18	0.3	1	481	1	18
5	22999	22993	5255	5178	77	1.1	1	788	1	-77
6	15999	22121	4946	4966	-20	0.3	1	742	1	20
7	25537	25637	4129	4150	-21	0.3	1	619	1	21
8	25465	25639	2939	2807	132	2.5	1	441	1	-132
9	25542	25696	3558	4194	-636	10.2	0	534	0	636
10	25480	25541	2149	1989	160	3.5	1	322	1	-160
11	28296	36796	467	417	50	2.4	1	100	1	-50
12	36796	28296	294	267	27	1.6	1	100	1	-27
13	35427	36796	335	274	61	3.5	1	100	1	-61
14	36796	35427	258	222	36	2.4	1	100	1	-36
15	28374	28373	727	671	56	2.1	1	109	1	-56
16	28373	28374	227	210	17	1.2	1	100	1	-17
17	28770	28219	700	804	-104	3.8	1	105	1	104
18	28219	28770	1281	1121	160	4.6	1	192	1	-160
19	28530	28462	187	140	47	3.7	1	100	1	-47
20	28462	28530	735	832	-97	3.5	1	110	1	97
21	28425	28375	1128	1104	24	0.7	1	169	1	-24
22	28375	28425	513	557	-44	1.9	1	100	1	44
23	38044	37190	579	514	65	2.8	1	100	1	-65
24	37190	38044	447	391	56	2.7	1	100	1	-56
25	28296	37190	314	255	59	3.5	1	100	1	-59
26	37190	28296	517	423	94	4.3	1	100	1	-94
27	35416	37190	216	219	-3	0.2	1	100	1	3
28	37190	35416	145	175	-30	2.3	1	100	1	30
29	28383	28296	1	13	-12	4.6	1	100	1	12
30	28296	28383	45	74	-29	3.7	1	100	1	29
31	37587	28296	41	65	-24	3.3	1	100	1	24
32	28296	37587	7	23	-16	4.0	1	100	1	16
			42210	<b>42,548</b>	-338	1.6	<b>30</b>		<b>30</b>	<b>338</b>

AM Link Validation										
Counts :					32	RESULT =	88%	RESULT =	97%	
Heavy Traffic					REQD =	85%	REQD =	85%		
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	28664	28423	313	193	120	7.6	0	100	0	-120
2	28424	28662	223	226	-4	0.2	1	100	1	4
3	28476	28491	296	203	93	5.9	0	100	1	-93
4	28311	28666	296	336	-40	2.2	1	100	1	40
5	22999	22993	908	868	40	1.3	1	136	1	-40
6	15999	22121	1467	1262	205	5.6	0	220	1	-205
7	25537	25637	341	287	54	3.1	1	100	1	-54
8	25465	25639	561	528	34	1.4	1	100	1	-34
9	25542	25696	298	254	44	2.6	1	100	1	-44
10	25480	25541	463	366	98	4.8	1	100	1	-98
11	28296	36796	19	0	19	6.2	0	100	1	-19
12	36796	28296	14	12	3	0.8	1	100	1	-3
13	35427	36796	15	8	7	2.0	1	100	1	-7
14	36796	35427	6	6	0	0.1	1	100	1	0
15	28374	28373	6	10	-5	1.7	1	100	1	5
16	28373	28374	14	10	4	1.2	1	100	1	-4
17	28770	28219	31	35	-5	0.8	1	100	1	5
18	28219	28770	29	50	-21	3.4	1	100	1	21
19	28530	28462	10	12	-2	0.7	1	100	1	2
20	28462	28530	15	11	4	1.2	1	100	1	-4
21	28425	28375	30	48	-19	3.0	1	100	1	19
22	28375	28425	15	35	-20	3.9	1	100	1	20
23	38044	37190	9	7	2	0.8	1	100	1	-2
24	37190	38044	9	13	-4	1.3	1	100	1	4
25	28296	37190	9	11	-2	0.7	1	100	1	2
26	37190	28296	9	0	9	4.2	1	100	1	-9
27	35416	37190	9	2	6	2.7	1	100	1	-6
28	37190	35416	9	7	2	0.7	1	100	1	-2
29	28383	28296	2	1	0	0.3	1	100	1	0
30	28296	28383	0	1	-1	1.5	1	100	1	1
31	37587	28296	0	1	-1	1.5	1	100	1	1
32	28296	37587	0	2	-2	2.1	1	100	1	2
			5424	<b>4,806</b>	618	8.6	<b>28</b>		<b>31</b>	<b>-618</b>

AM Link Validation										
Counts :					32	RESULT =	91%	RESULT =		91%
Total Traffic						REQD =	85%	REQD =		85%
No.	A node	B node	Obs	Mod	Diff	GEH	GEH TEST	Target Diff	Flow Test	ACT DIFF
1	28664	28423	1907	1698	210	4.9	1	286	1	-210
2	28424	28662	3140	3793	-653	11.1	0	471	0	653
3	28476	28491	2651	2405	246	4.9	1	398	1	-246
4	28311	28666	3500	3558	-58	1.0	1	525	1	58
5	22999	22993	6163	6046	117	1.5	1	924	1	-117
6	15999	22121	6413	6229	185	2.3	1	962	1	-185
7	25537	25637	4470	4436	34	0.5	1	671	1	-34
8	25465	25639	3500	3335	166	2.8	1	525	1	-166
9	25542	25696	3856	4448	-592	9.2	0	578	0	592
10	25480	25541	2612	2355	257	5.2	0	392	1	-257
11	28296	36796	486	417	69	3.3	1	100	1	-69
12	36796	28296	308	278	30	1.7	1	100	1	-30
13	35427	36796	350	282	68	3.8	1	100	1	-68
14	36796	35427	264	228	36	2.3	1	100	1	-36
15	28374	28373	733	682	51	1.9	1	110	1	-51
16	28373	28374	241	220	22	1.4	1	100	1	-22
17	28770	28219	731	839	-109	3.9	1	110	1	109
18	28219	28770	1310	1171	139	3.9	1	196	1	-139
19	28530	28462	197	152	45	3.4	1	100	1	-45
20	28462	28530	750	843	-93	3.3	1	113	1	93
21	28425	28375	1158	1152	5	0.2	1	174	1	-5
22	28375	28425	528	592	-64	2.7	1	100	1	64
23	38044	37190	588	521	67	2.8	1	100	1	-67
24	37190	38044	456	404	52	2.5	1	100	1	-52
25	28296	37190	323	265	57	3.3	1	100	1	-57
26	37190	28296	526	423	103	4.7	1	100	0	-103
27	35416	37190	225	222	3	0.2	1	100	1	-3
28	37190	35416	154	181	-28	2.1	1	100	1	28
29	28383	28296	3	15	-12	4.0	1	100	1	12
30	28296	28383	45	75	-30	3.8	1	100	1	30
31	37587	28296	41	66	-25	3.5	1	100	1	25
32	28296	37587	7	25	-18	4.5	1	100	1	18
			47634	<b>47,354</b>	280	1.3	<b>29</b>		<b>29</b>	<b>-280</b>

PM Link Validation								
Counts :				32	RESULT =	91%	RESULT =	91%
Light Traffic					REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF
1	28664	28423	3201	3304	1.8	1	480	103
2	28424	28662	1849	1730	2.8	1	277	-119
3	28476	28491	3325	3599	4.7	1	499	274
4	28311	28666	2796	2775	0.4	1	419	-21
5	22999	22993	5582	5699	1.6	1	837	117
6	15999	22121	5326	5572	3.3	1	799	246
7	25537	25637	3180	3005	3.1	1	477	-175
8	25465	25639	4406	4534	1.9	1	661	128
9	25542	25696	2305	2321	0.3	1	346	16
10	25480	25541	3965	4688	11.0	0	595	723
11	28296	36796	385	354	1.6	1	100	-31
12	36796	28296	392	360	1.7	1	100	-32
13	35427	36796	185	184	0.1	1	100	-1
14	36796	35427	393	372	1.1	1	100	-21
15	28374	28373	405	462	2.7	1	100	57
16	28373	28374	451	604	6.7	0	100	153
17	28770	28219	1126	1243	3.4	1	169	117
18	28219	28770	948	968	0.6	1	142	20
19	28530	28462	714	611	4.0	1	107	-103
20	28462	28530	484	478	0.3	1	100	-6
21	28425	28375	444	518	3.4	1	100	74
22	28375	28425	588	787	7.6	0	100	199
23	38044	37190	517	440	3.5	1	100	-77
24	37190	38044	392	357	1.8	1	100	-35
25	28296	37190	401	336	3.4	1	100	-65
26	37190	28296	407	346	3.1	1	100	-61
27	35416	37190	63	91	3.2	1	100	28
28	37190	35416	182	164	1.4	1	100	-18
29	28383	28296	9	16	2.0	1	100	7
30	28296	28383	13	12	0.3	1	100	-1
31	37587	28296	4	16	3.8	1	100	12
32	28296	37587	12	36	4.9	1	100	24
			44450	<b>45,983</b>	<b>7.2</b>	<b>29</b>		<b>1,533</b>

PM Link Validation								
Counts :				32	RESULT =	88%	RESULT =	100%
Heavy Traffic					REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF
1	28664	28423	177	129	3.9	1	100	-48
2	28424	28662	195	155	3.0	1	100	-40
3	28476	28491	148	131	1.4	1	100	-17
4	28311	28666	182	247	4.4	1	100	65
5	22999	22993	730	797	2.4	1	110	67
6	15999	22121	696	707	0.4	1	100	11
7	25537	25637	291	263	1.7	1	100	-28
8	25465	25639	248	269	1.3	1	100	21
9	25542	25696	252	233	1.2	1	100	-19
10	25480	25541	195	204	0.6	1	100	8
11	28296	36796	4	0	2.8	1	100	-4
12	36796	28296	3	6	1.5	1	100	3
13	35427	36796	0	3	2.6	1	100	3
14	36796	35427	4	3	0.5	1	100	-1
15	28374	28373	5	49	8.5	0	100	44
16	28373	28374	8	6	0.5	1	100	-1
17	28770	28219	19	103	10.7	0	100	84
18	28219	28770	19	95	10.0	0	100	76
19	28530	28462	0	10	4.5	1	100	10
20	28462	28530	4	7	1.2	1	100	3
21	28425	28375	8	21	3.5	1	100	13
22	28375	28425	10	76	10.1	0	100	66
23	38044	37190	4	2	0.8	1	100	-1
24	37190	38044	7	7	0.1	1	100	0
25	28296	37190	5	6	0.6	1	100	1
26	37190	28296	4	0	2.8	1	100	-4
27	35416	37190	2	0	1.3	1	100	-1
28	37190	35416	0	2	2.2	1	100	2
29	28383	28296	0	0	0.6	1	100	0
30	28296	28383	0	0	0.0	1	100	0
31	37587	28296	0	0	0.0	1	100	0
32	28296	37587	0	0	0.7	1	100	0
			3218	<b>3,530</b>	5.4	<b>28</b>		<b>313</b>

PM Link Validation								
Counts :				32	RESULT =	88%	RESULT =	85%
Total Traffic					REQD =	85%	REQD =	85%
No.	A node	B node	Obs	Mod	GEH	GEH TEST	Target Diff	ACT DIFF
1	28664	28423	3378	3434	1.0	1	507	56
2	28424	28662	2044	1885	3.6	1	307	-159
3	28476	28491	3473	3730	4.3	1	521	257
4	28311	28666	2978	3021	0.8	1	447	43
5	22999	22993	6312	6496	2.3	1	947	184
6	15999	22121	6022	6279	3.3	1	903	257
7	25537	25637	3471	3268	3.5	1	521	-203
8	25465	25639	4654	4803	2.2	1	698	149
9	25542	25696	2557	2554	0.1	1	384	-3
10	25480	25541	4160	4891	10.9	0	624	731
11	28296	36796	389	354	1.8	1	100	-35
12	36796	28296	395	366	1.5	1	100	-29
13	35427	36796	185	187	0.2	1	100	2
14	36796	35427	397	375	1.1	1	100	-22
15	28374	28373	410	511	4.7	1	100	101
16	28373	28374	459	610	6.6	0	100	152
17	28770	28219	1145	1346	5.7	0	172	201
18	28219	28770	967	1063	3.0	1	145	95
19	28530	28462	714	621	3.6	1	107	-93
20	28462	28530	488	484	0.2	1	100	-3
21	28425	28375	452	539	3.9	1	100	87
22	28375	28425	598	863	9.8	0	100	265
23	38044	37190	521	443	3.6	1	100	-78
24	37190	38044	399	363	1.8	1	100	-35
25	28296	37190	406	342	3.3	1	100	-63
26	37190	28296	411	346	3.3	1	100	-64
27	35416	37190	65	91	3.0	1	100	26
28	37190	35416	182	167	1.2	1	100	-15
29	28383	28296	9	16	2.0	1	100	7
30	28296	28383	13	12	0.3	1	100	-1
31	37587	28296	4	16	3.8	1	100	12
32	28296	37587	12	36	4.9	1	100	24
			47668	<b>49,514</b>	<b>8.4</b>	<b>28</b>		<b>1,846</b>

AM Peak

Direction	Site A	Site B	Observed	Modelled	Absolute Diff	%	Validated	
			mm:ss	mm:ss	mm:ss	Difference		
	6	8	03:27	02:34	00:53	26%	YES	
	8	6	03:13	03:58	00:45	24%	YES	
	9	4	06:49	06:58	00:09	2%	YES	
	4	9	05:04	05:21	00:17	6%	YES	
	3	6	07:35	08:30	00:55	12%	YES	
	6	3	09:01	08:19	00:42	8%	YES	
	3	7	06:25	07:25	01:00	16%	YES	
	7	3	07:45	07:39	00:06	1%	YES	
	4	7	05:26	05:38	00:12	4%	YES	
	7	4	05:35	05:46	00:11	3%	YES	
	4	8	04:40	05:20	00:40	14%	YES	
	8	4	07:26	06:50	00:36	8%	YES	
<b>Summary</b>			<b>12</b>					<b>100.0%</b>

PM Peak

Direction	Site A	Site B	Observed	Modelled	Absolute Diff	%	Validated	
			mm:ss	mm:ss	mm:ss	Difference		
	6	8	03:09	02:37	00:32	26%	YES	
	8	6	04:29	04:00	00:29	24%	YES	
	9	4	05:04	04:13	00:51	2%	YES	
	4	9	05:31	06:21	00:50	6%	YES	
	3	6	08:10	08:25	00:15	12%	YES	
	6	3	06:56	07:47	00:51	8%	YES	
	3	7	07:43	06:40	01:03	16%	NO	
	7	3	05:58	06:56	00:58	1%	YES	
	4	7	04:04	05:16	01:12	4%	YES	
	7	4	04:52	05:07	00:15	3%	YES	
	4	8	05:51	06:21	00:30	14%	YES	
	8	4	04:39	04:01	00:38	8%	YES	
<b>Summary</b>			<b>12</b>					<b>91.7%</b>

## APPENDIX C. Baseline Traffic Flows

## APPENDIX C. BASELINE TRAFFIC FLOWS (2019)

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			LV	HV	Total	LV	HV	Total
A/B	R108 North of Whitworth Road (L13)	Northbound	633	104	737	655	114	769
		Southbound	1209	135	1344	1246	90	1336
		Overall	1842	238	2080	1902	204	2106
A/B	Drumcondra Stop (L15)	Northbound	977	125	1102	851	92	943
		Southbound	998	89	1087	994	79	1073
		Overall	1975	213	2188	1845	171	2016
A/B	R108 South of Whitworth Road (L12)	Northbound	584	53	637	597	45	642
		Southbound	800	81	881	916	55	971
		Overall	1384	134	1518	1513	100	1613
A/B	Binn's Bridge South of Whitworth Road (L14)	Northbound	1084	167	1251	1131	153	1284
		Southbound	1524	137	1661	1147	111	1258
		Overall	2609	303	2912	2278	264	2542
A/B	Clonliffe Rail Bridge (L16)	Northbound	315	5	320	569	5	574
		Southbound	496	19	515	247	8	255
		Overall	811	24	835	816	13	829
A/B	Clark's Rail Bridge (L17)	Northbound	656	35	691	1391	16	1407
		Southbound	1959	32	1991	1170	22	1192
		Overall	2615	67	2682	2561	38	2599
A/B	Newcomen Rail Bridge – Strad Road (L18)	Northbound	419	104	523	1380	98	1478
		Southbound	1405	104	1509	753	97	850
		Overall	1824	208	2032	2133	195	2328
A/B	Sheriff Street (L19)	Eastbound	388	3	391	678	5	683
		Westbound	299	16	315	422	24	446
		Overall	687	19	706	1100	29	1129
A/B	Seville Place (L20)	Northbound	566	48	614	650	25	675
		Southbound	598	57	655	599	17	616
		Overall	1165	104	1269	1248	43	1291
A/B	Guide Street (L21)	Northbound	893	48	941	893	21	914
		Southbound	773	64	837	586	32	618
		Overall	1666	112	1778	1480	53	1533
A/B	Mayor Street (L22)	Eastbound	92	0	92	26	0	26
		Westbound	211	33	244	241	8	249
		Overall	303	33	336	267	8	275
A/B	Guide Street (L23)	Northbound	973	44	1017	813	21	834
		Southbound	941	103	1044	882	42	924
		Overall	2014	147	2161	1696	62	1758
A/B	North Wall Quay West (L24)	Eastbound	368	130	498	664	166	830
		Westbound	288	190	478	296	126	422
		Overall	658	319	977	960	292	1252

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			LV	HV	Total	LV	HV	Total
A/B	Samuel Beckett Bridge (L25)	Northbound	972	57	1029	826	34	860
		Southbound	905	92	997	768	45	813
		Overall	1877	149	2026	1594	79	1673
A/B	North Wall Quay East (L26)	Eastbound	369	115	484	664	151	815
		Westbound	260	164	424	182	98	280
		Overall	629	279	908	846	249	1095
C	Navan Road / Ashtown Road (J1)	Ashtown Road	334	0	334	216	0	216
		Navan Road East	937	1	938	1039	1	1040
		Ashtown Gate Road	450	4	454	375	4	379
		Navan Road West	1236	1	1237	1104	2	1106
		Overall	2956	6	2962	2735	7	2742
C	Ashtown Road / Rathbourne Avenue (J2)	Ashtown Road North	188	0	188	57	0	57
		Rathbourne Avenue	138	6	144	157	2	159
		Ashtown Road South	111	4	115	129	4	133
		Overall	436	10	446	342	7	349
C	River Road / Ashtown Road (J3)	Dunsink Lane	62	6	68	51	2	53
		R102 River Road East	241	38	279	302	10	312
		Ashtown Road	84	0	84	67	8	75
		R102 River Road West	473	12	485	198	8	206
		Overall	860	55	915	617	29	646
C	R806 Castleknock Road / Roselawn Road (J4)	R806 Castleknock Road North	509	41	550	710	31	741
		R806 Castleknock Road South	570	21	591	505	27	532
		Roselawn Road	86	4	90	117	0	117
		Overall	1165	66	1231	1332	58	1390
C	R806 Castleknock Road / Park Lodge (J5)	R806 Castleknock Road North	455	17	472	693	21	714
		R806 Castleknock Road South	383	24	407	657	36	693
		Park Lodge	695	57	752	347	4	351
		Overall	1533	98	1631	1697	61	1758
C	Clonsilla Road / Coolmine Road (J6)	Clonsilla Road East	406	7	413	524	0	524
		Coolmine Road	312	3	315	208	0	208
		Clonsilla Road West	711	7	718	638	2	640
		Overall	1430	17	1447	1371	2	1373
C	Coolmine Road / Dellwood Road (J7)	Coolmine Road North	228	2	230	270	0	270
		Dellwood Road	214	22	236	200	10	210
		Coolmine Road South	257	3	260	196	2	198
		Overall	700	27	727	666	12	678
C	Carpenterstown Road / Carpenterstown Park / Riverwood Distributor Road (J8)	Carpenterstown Road North	201	23	224	275	10	285
		Carpenterstown Park East	277	1	278	390	6	396
		Carpenterstown Road South	543	13	556	359	3	362
		Riverwood Distributor Road	420	22	398	153	1	154
		Overall	1419	59	1478	1177	20	1197

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			LV	HV	Total	LV	HV	Total
C	Carpenterstown Road / Diswellstown Road (J9)	Carpenterstown Road North	502	18	520	324	18	342
		Carpenters Road East	396	2	398	449	1	450
		Diswellstown Road	385	7	392	228	1	229
		Access Road	216	4	220	169	1	170
		Overall	1499	31	1530	1172	20	1192
C	Blanchardstown Road / Clonsilla Road / Diswellstown Road (J10)	Blanchardstown Road South	732	17	749	742	26	768
		Clonsilla Road East	284	5	289	574	0	574
		Diswellstown Road	831	8	839	826	5	831
		Clonsilla Road West	720	7	727	233	1	234
		Overall	2567	36	2603	2375	32	2407
C	Diswellstown Road / School Access (J11)	Diswellstown Road North	693	20	713	772	24	796
		Diswellstown Road East	512	8	520	360	4	364
		Unnamed Road	479	3	482	594	2	596
		School Access	143	0	143	35	3	38
		Overall	1829	30	1859	1760	34	1794
C	Riverwood Distributor Road / Diswellstown Road / Fernleigh Drive (J12)	Riverwood Distributor Road	260	3	263	246	5	251
		Diswellstown Road South	209	2	211	123	0	123
		Fernleigh Drive	152	2	154	117	1	118
		Diswellstown Road North	387	15	402	532	25	557
		Overall	1007	23	1030	1079	31	1048
C	Bothar Bhaile an Phoirtearaigh / Rugged Lane (J13)	Bothar Bhaile an Phoirtearaigh East	310	3	313	486	1	487
		Rugged Lane	0	0	0	0	0	0
		Bothar Bhaile an Phoirtearaigh West	540	4	544	393	2	395
		Overall	849	8	857	878	3	881
C	Diswellstown Road / Bothar Bhaile an Phoirtearaigh (J14)	Diswellstown Road	430	7	437	403	1	404
		Bothar Bhaile an Phoirtearaigh East	199	0	199	414	1	415
		Bothar Bhaile an Phoirtearaigh West	540	4	544	393	2	395
		Overall	1169	11	1180	1210	4	1214
C	Clonsilla Road / Shelerin Road (J15)	Shelerin Road	110	1	111	76	1	77
		Clonsilla Road East	211	1	212	404	1	405
		Clonsilla Road West	611	6	617	284	1	285
		Overall	932	8	940	763	3	766
C	Clonsilla Road / Clonsilla Link Road (J16)	Clonsilla Link Road	32	0	32	0	0	0
		Clonsilla Road East	174	1	175	420	1	421
		Clonsilla Road West	580	7	587	274	1	275
		Overall	786	8	794	694	3	697
C	R121 Larch Grove / R121 Clonsilla Road (J17)	Access	0	0	0	0	0	0
		R121 Larch Grove	145	0	145	181	1	182

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			LV	HV	Total	LV	HV	Total
		R121 Clonsilla Road	30	2	32	133	1	134
		Unnamed Road	540	5	545	166	0	0
		Overall	714	8	722	480	2	482
C	R121 / Porterstown Road (J18)	R121 North	98	1	99	43	0	43
		Porterstown Road	310	3	313	486	1	487
		Unnamed Road	8	0	8	3	0	3
		R121 West	534	5	539	491	3	494
		Overall	949	10	959	1023	4	1027
E	R121 / Barberstown (J19)	Barberstown Lane	123	0	123	32	0	32
		R121 East	331	3	334	514	1	515
		R121 South	329	5	334	512	3	515
		Overall	879	8	887	1030	4	1034
E	Unnamed Road (Barberstown) (J20)	Unnamed Road East	58	0	58	30	0	30
		Unnamed Road South	24	1	25	48	0	48
		Unnamed Road West	74	0	74	12	0	12
		Overall	157	1	158	90	0	90
E	Pike Bridge (L4)	Northbound	378	20	398	103	2	105
		Southbound	105	27	133	349	22	371
		Overall	484	47	531	453	24	477
E	R148 West (L5)	Eastbound	591	80	671	320	49	369
		Westbound	490	58	548	888	24	912
		Overall	1080	139	1219	1208	73	1281
E	R148 East (L6)	Eastbound	727	57	784	255	28	283
		Westbound	352	44	396	1069	23	1092
		Overall	1078	102	1180	1323	51	1374
E	R148 Leixlip (L7)	Eastbound	1261	57	1318	293	27	320
		Westbound	865	44	909	1106	23	1129
		Overall	2126	101	2227	1399	50	1449
E	R148 Luisa Bridge (L9)	Eastbound	258	23	281	833	21	854
		Westbound	886	23	909	206	18	224
		Overall	1144	46	1190	1039	38	1078
E	R148 Leixlip Confey (L10)	Northbound	222	4	226	673	6	679
		Southbound	400	4	404	560	5	565
		Overall	623	7	630	1233	11	1244
E	R148 Collins Rail Bridge (L11)	Northbound	224	30	254	781	10	791
		Southbound	586	0	586	0	381	381
		Overall	811	30	841	1162	10	1172
F	R148 (L1)	Eastbound	485	7	492	108	4	112
		Westbound	142	4	146	571	5	576
		Overall	626	12	638	679	9	688
F	Jackson's Bridge (L2)	Northbound	286	1	287	61	1	62

Zone	Junction / Link	Approach	AM Peak			PM Peak		
			LV	HV	Total	LV	HV	Total
		Southbound	118	2	120	336	0	336
		Overall	405	2	407	397	1	398
F	R148 (L3)	Eastbound	729	8	737	143	5	148
		Westbound	221	5	226	882	5	887
		Overall	950	13	963	1025	10	1035

## APPENDIX D. Bus Routes Affected By Works

## APPENDIX D. BUS ROUTES AFFECTED BY WORKS

Zone	ID	Road Bridges Affected By Construction	Future Affected Bus Routes	Current Affected Bus Routes	How Bus Route is Affected	Time Period Bus Route is Affected
A/B	OBO228	Sheriff Street Bridge	153 Mortons	41x Dublin Bus	Total road closure and traffic diverted along an alternative route during the period of the construction	18 Months
			30 Bus Eireann	53a Dublin Bus		
			32 Bus Eireann	153 Mortons		
			4 Bus Eireann	30 Bus Eireann		
			X20 Bus Eireann	32 Bus Eireann		
			23 Bus Eireann	4 Bus Eireann		
			X4 Bus Eireann	X20 Bus Eireann		
			X8 Bus Eireann	23 Bus Eireann		
			X12 Bus Eireann	X4 Bus Eireann		
			X2 Bus Eireann	X8 Bus Eireann		
			X30 Bus Eireann	X12 Bus Eireann		
			X1 Bus Eireann	X2 Bus Eireann		
			X2A Bus Eireann	X30 Bus Eireann		
			X5 Bus Eireann	X1 Bus Eireann		
			X5A Bus Eireann	X2A Bus Eireann		
			2 Bus Eireann	X5 Bus Eireann		
			20 Bus Eireann	X5A Bus Eireann		
			22 Bus Eireann	2 Bus Eireann		
L91 BusConnects	20 Bus Eireann					
	22 Bus Eireann					
A/B	OBD227	Strand – Connolly steel railway bridge	H1 SPINE BusConnects	130 Dublin Bus	see Outline TMP	3 Weeks
			H2 SPINE BusConnects	14 Dublin Bus		
			H3 SPINE BusConnects	14c Dublin Bus		
			D1 SPINE BusConnects	15 Dublin Bus		
			D2 SPINE BusConnects	27 Dublin Bus		
			D3 SPINE BusConnects	27a Dublin Bus		
			D4 SPINE BusConnects	27b Dublin Bus		
			D5 SPINE BusConnects	27x Dublin Bus		
			6 BusConnects	29a Dublin Bus		
			8 BusConnects	31 Dublin Bus		
			20 BusConnects	31a Dublin Bus		
			21 BusConnects	31b Dublin Bus		
10 BusConnects	32 Dublin Bus					

Zone	ID	Road Bridges Affected By Construction	Future Affected Bus Routes	Current Affected Bus Routes	How Bus Route is Affected	Time Period Bus Route is Affected
A/B	OBD227	Strand – Connolly steel railway bridge	58 BusConnects	32x Dublin Bus	see Outline TMP	3 Weeks
			X 78 BusConnects	42 Dublin Bus		
				43 Dublin Bus		
				53 Dublin Bus		
A/B	OBD226	Newcomen Bridge - N Strand Rd	H1 SPINE BusConnects	130 Dublin Bus	see Outline TMP	see Outline TMP
			H2 SPINE BusConnects	14 Dublin Bus		
			H3 SPINE BusConnects	14c Dublin Bus		
			D1 SPINE BusConnects	15 Dublin Bus		
			D2 SPINE BusConnects	27 Dublin Bus		
			D3 SPINE BusConnects	27a Dublin Bus		
			D4 SPINE BusConnects	27b Dublin Bus		
			D5 SPINE BusConnects	27x Dublin Bus		
			6 BusConnects	29a Dublin Bus		
			8 BusConnects	31 Dublin Bus		
			20 BusConnects	31a Dublin Bus		
			21 BusConnects	31b Dublin Bus		
			10 BusConnects	32 Dublin Bus		
			58 BusConnects	32x Dublin Bus		
			X 78 BusConnects	42 Dublin Bus		
	43 Dublin Bus					
	53 Dublin Bus					
A/B	OBD225	Clarke's Bridge - Summerhill Parade	73 BusConnects	123 Dublin Bus	see Outline TMP	see Outline TMP
A/B	OBD224	Clonliffe Bridge - Jones' Rd	No Routes	No Routes	see Outline TMP	see Outline TMP
A/B	OBD223	Binn's Bridge - Drumcondra Rd Lower	A1 SPINE BusConnects	1 Dublin Bus	see Outline TMP	see Outline TMP
			A2 SPINE BusConnects	11 Dublin Bus		
			A3 SPINE BusConnects	13 Dublin Bus		
			A4 SPINE BusConnects	16 Dublin Bus		
			F1 SPINE BusConnects	16c Dublin Bus		
			F2 SPINE BusConnects	16d Dublin Bus		

Zone	ID	Road Bridges Affected By Construction	Future Affected Bus Routes	Current Affected Bus Routes	How Bus Route is Affected	Time Period Bus Route is Affected
A/B	OBD223	Binn's Bridge - Drumcondra Rd Lower	F3 SPINE BusConnects	33 Dublin Bus	see Outline TMP	see Outline TMP
			22 BusConnects	33e Dublin Bus		
			19 BusConnects	40 Dublin Bus		
			X76 BusConnects	40b Dublin Bus		
			X77 BusConnects	40d Dublin Bus		
			X79 BusConnects	41 Dublin Bus		
			X83 BusConnects	41b Dublin Bus		
			X84 BusConnects	41c Dublin Bus		
			4 Bus Eireann	41d Dublin Bus		
			126 Bus Eireann	44 Dublin Bus		
			103X Bus Eireann	4 Bus Eireann		
			105X Bus Eireann	126 Bus Eireann		
			109X Bus Eireann	103X Bus Eireann		
			101 Bus Eireann	105X Bus Eireann		
			101N Bus Eireann	109X Bus Eireann		
			103 Bus Eireann	101 Bus Eireann		
			180 sro	101N Bus Eireann		
			842 sro	103 Bus Eireann		
			980 Collins	180 sro		
			740-A Wexfordbus	842 sro		
			740 Wexfordbus	980 Collins		
			900 Matthews	740-A Wexfordbus		
			901 Matthews	740 Wexfordbus		
904 Matthews	900 Matthews					
910 Matthews	901 Matthews					
932 McGinley	904 Matthews					
	910 Matthews					
	932 McGinley					
A/B	OBD222	Cross Guns Bridge	E1 SPINE BusConnects	105X Bus Eireann	see Outline TMP	see Outline TMP
			E2 SPINE BusConnects	109X Bus Eireann		
			23 BusConnects	103 Bus Eireann		
			24 BusConnects	140 Dublin Bus		
			105X Bus Eireann	155 Dublin Bus		
			109X Bus Eireann	4 Dublin Bus		
			103 Bus Eireann	40 Dublin Bus		
			180 sro	83 Dublin Bus		
			980 Collins	83a Dublin Bus		
				9 Dublin Bus		

Zone	ID	Road Bridges Affected By Construction	Future Affected Bus Routes	Current Affected Bus Routes	How Bus Route is Affected	Time Period Bus Route is Affected
A/B	OBD222	Cross Guns Bridge		180 sro	see Outline TMP	see Outline TMP
				980 Collins		
C	OBG5	Adjacent to Broombridge Bridge	N2 BusConnects	40e Dublin Bus	Total road closure and partial road closure with one open lane	15 Weeks and 19 Weeks partial
			L62 BusConnects			
C	OBG9	Old Navan Road rail bridge	No Routes	No Routes	Total road closure and partial road closure with one open lane	9 Weeks and 25 Weeks partial
C	OBG11	Adjacent to Castleknock Bridge	35 BusConnects	38 Dublin Bus	Total road closure	8 Weeks
			37 BusConnects			
E	OBG14	Cope Rail Bridge - R149	139 JJ Kavanagh	139 JJ Kavanagh	Total road closure and partial road closure with one open lane	10 Weeks
E	OBG16	Louisa Bridge	C3 BusConnects	66 Dublin Bus	Total road closure and partial road closure with one open lane	10 Weeks and 11 Weeks partial
			X26 BusConnects	66x Dublin Bus		
			767 Dualway	767 Dualway		
			139 JJ Kavanagh	139 JJ Kavanagh		

## APPENDIX E. Construction Table

## APPENDIX E. CONSTRUCTION TABLE

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
Connolly Station	North Dock	Refurbishment of the station station modification - capacity enhancement works (See section 5.5.15.1 of EIAR)	18 months Standard working hours 5.5 days per week. Track works involving operational tracks will be performed overnight.	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Works on platforms during daytime, some areas will be closed to passengers and train doors will not open at the specified locations Track works involving operational tracks will be performed during night-time possessions occurring throughout the 18 month period	N/a
OBO14A	Drumcondra Station Bridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	N/a	No impact on the railway service	N/a
OBO12A	Claude Road footbridge			No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	N/a	No impact on the railway service	N/a
OBO 11	Cross Guns (on Prospect Road Bridge) Along Loop line GSWR Branch North Wall to Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	5-6 months Standard working hours 5.5 days per week (for parapet modifications). Full weekend possessions and total closure for some specific activities.	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	Low
Glasnevin Traction Substation	On the ground of St Vincent's School	Construction of substation	6 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
Spencer Dock Station		Construction of the new Spencer Dock Station and the Permanent Way works in the area	39 months Standard working hours 5.5 days per week.	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Track works involving operational tracks will be performed during night-time possessions Spencer Dock track realignment (both vertical and horizontal) will require an extended closure of the current connection to the GSWR line of 2.5 weeks. The remaining works can be completed during normal working hours 5.5 days per week if Safe Working can be maintained. Where this is not possible works will be completed during weekday and weekend possessions.	Low
OBD228	Sheriff Street Bridge	Part of the bridge demolished during the construction of the Spencer Dock Station and later rebuilt	1.5 years construction period Standard working hours 5.5 days per week	1.5 years total road closure	Low	1.5 years pedestrian closure	Low	No impact on the railway service	N/a
Ramp Access	Sheriff Street	Enabling works - Access Ramp	4 months	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
	Next to Spencer Dock Station (between Sheriff Street and Docklands)	Construction of the ramp to serve the permanent compound at Docklands	4 months						
Spencer Dock Substation	Northeast of Dockland Station (existing) and car park, near railway junction	Construction of substation	6 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
OBO36 (GSRW Line)	Ossory Road Bridge Along the Loop Line – GSRW Branch North Wall to Glasnevin junction (MAY-MDC-TRK-SC00-DR-C-0001-C)	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	7 weeks (construction works for 3 weeks) MGWR Track Lowerings (4 months under extended line closure) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	The proposed civil and track works are located on the railway and will require the closure of this connection. Full weekend possessions	Low
OBO35 OBO35A	Railway bridge	OHLE modifications	Overnight seven days per week (preparatory works to be performed 24 hours per day seven days per week at construction compounds).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
OBD227	UB7 N. Strand – Connolly steel railway bridge	Modifications involving track lowering (vertical alignment) under bridge	3 weeks MGWR Track Lowering (extended line closure of the railway section required)	No impact on the road network	N/a	No impact on pedestrians/ cyclists	Low	Full weekend possessions The track work (including lowering of OBD227) from the west of OBD227 to the Structure C at Spencer Dock will require another 1 month closure.	Low
OBD227A	UBB1B Belfast line wrought iron railway bridge	Modifications involving track lowering (vertical alignment) under bridge	MGWR Track Lowering (extended line closure of the railway section required)	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	Low
OBD227B	UBB1H Connolly Wash Road concrete railway bridge	Modifications involving track lowering (vertical alignment) under bridge	MGWR Track Lowering (extended line closure of the railway section required)	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	Low
OBD226	Newcomen Bridge (road bridge) Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBD226A	North Strand Road footbridge bridge	Modifications involving track lowering (vertical alignment) under bridge Footbridge parapet modifications	MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
UBD233	Under bridge (circa 20m from the Royal Canal lifting bridge and overbridge)	Modifications involving track lowering (vertical alignment) under bridge	MGWR Track Lowerings (4 months under extended line closure)	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBD225	Clarke's Bridge Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	2 weeks MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBD224	Clonliffe Bridge Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
OBD223	Binn's Bridge Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week. (For parapet modifications)	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBD222	Cross Guns Basin (Westmorland Bridge) Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	5 week construction duration MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBD221	Maintenance Bridge at Glasnevin (4-2 Royal Canal Way) Along MGWR Branch, Docklands – Glasnevin junction	Modifications involving track lowering (vertical alignment) under bridge Overbridge with parapet modifications	5 week construction duration MGWR Track Lowering (extended line closure of the railway section required) Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions Track lowering on the MGWR line (from OBD226 Newcomen Bridge to OBD221 Glasnevin Maintenance Bridge) requires extended closure of this railway section for 10 weeks.	Low
OBG4A	Broombridge Station Footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	No impact on the railway service	N/a
OBG5	Adjacent to Broombridge Bridge	Arch Deck Reconstruction	40 weeks Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions	15 weeks of total road closure 19 weeks of partial road closure	Low	15 weeks of total pedestrian closure	Low	Full weekend possessions	Low
Ashtown Substation	Adjacent to Ashtown station from the east.	Construction of traction Substation (access route to connect to Martin Savage Park)	6 months (additional 6 weeks) Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
Ashtown Station	West of Ashtown	Station Modifications (See section 5.5.17.4)	3 months Standard working hours 5.5 days per week.	No impact on the road network	N/a	Pedestrian bridgeworks over tracks will be performed during night-time possessions	Low	Track works involving operational tracks will be performed overnight. (1 week closure of the railway for all of Zone C)	Low
Ashtown Level Crossing	West of Ashtown station	Permanent closure to level crossing and construction of replacement underpass	24 months Ashtown Road Realignment Works (Main Works - Standard working hours, 5.5 days per week. Works in public carriageway – In accordance with Local Authority restrictions on working hours) Overbridge Works (Night time possessions/Weekend possession)	Construction of an underpass - road replacement infrastructure for vehicular and non-vehicular users). The proposed design entails re-routing Ashtown Road along its old alignment (pre-Royal Canal) on Mill Lane and passing under both the railway and the Royal Canal.	Low	New pedestrian footbridge to Ashtown station	Low	No impact on the railway service	N/a
OBG6B	R102 Road (west of Navan Road Parkway Station)	Overbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact of railway service	N/a
OBG6C	N3 Road	Overbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact of railway service	N/a

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
OBG6D	Navan road interchange	Parapet heightening		No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact of railway service	N/a
OBG7A	M50 Roundabout/ Navan Road (bridge)	Modifications involving track lowering (vertical alignment) under bridge	5-6 months Full weekend possessions and total closure for some specific activities.	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	Low
OBG7C	M50 Roundabout	OHLE modification	Overnight seven days per week (preparatory works to be performed 24 hours per day seven days per week at construction compounds).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact of railway service	N/a
OBG9	Old Navan Road rail bridge Along Glasnevin to Clonsilla	Bridge deck lift Overbridge with parapet modifications	42 weeks Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions Standard working hours 5.5 days per week (for parapet modifications).	9 weeks total road closure and 25 weeks of partial road closure	Low	Pedestrian closure	Low	4 full weekends of rail closures and 2 weeks of weekday night time closures	Low
OBG11	Adjacent to Castleknock Bridge (formerly Granard Bridge)	Bridge deck reconstruction	40 weeks Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions	15 weeks total road closure and 19 weeks of partial road closure	Low	6 weeks of pedestrian closure	Low	Full weekend possessions	Low
OBG11A	Castleknock Station Footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	No impact on the railway service	N/a
OBG11C	Diswellstown Road Along Glasnevin to Clonsilla	Overbridge with parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
Castleknock Substation	Opposite Castleknock Station, of railway line on the northern border of Laurel Lodge Park (west of existing R806 Castleknock Road	Construction of Substation	5 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	Diversion of pedestrian route, temporary route established. It will be necessary to create a pedestrian and vehicular access to Castleknock substation from the existing R806 Castleknock Road.	N/a	No impact on the railway service	N/a
Coolmine Substation	400m east of Coolmine station (Sycamore Green, green area next to residential area)	Construction of Substation	3 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network (direct access can be provided via Maple Green)	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
Coolmine Station		Station modifications (see section 5.5.17.15) - Construction of new pedestrian bridge with lifts to replace existing bridge.	5 months Standard working hours 5.5 days per week.	No impact on the road network	N/a	Continued use of the existing footbridge while the new one is being constructed, maintaining the current passenger operation of the station. Pedestrian bridgeworks over tracks will be performed during night-time possessions	N/a	Track works involving operational tracks will be performed overnight.	N/a
Coolmine Level Crossing		Permanent closure of level crossing	9-12 months Roadway and Junction Works (Main Works – Standard working hours, 5.5 days per week. Works in public carriageway (requiring closure of lanes etc.) – in	The provision of the new bridge will facilitate the closure of the level crossing but would require <b>diversion of traffic to surrounding crossings of the railway.</b> Improvements are proposed to the surrounding highway network. Traffic analysis have been undertaken to identify the junctions that will require upgrading to	Low	Construction of new pedestrian and cyclist bridge over the railway and Royal Canal.	Low	No impact on the railway service	N/a

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
			accordance with Local Authority restrictions on working hours.) Bridge Works (Approach ramps - Standard working hours, 5.5 days per week. Bridge over rail line – Night time possessions/Weekend possession)	cater for increased traffic into the future: Diswellstown Road Junction, Porterstown Road Junction, Clonsilla Road Junction and Castleknock Road junction					
Porterstown Level Crossing	Porterstown Road between Coolmine and Clonsilla Stations	Permanent closure of level crossing	12-14 months <b>Bridge Works</b> (Approach ramps - Standard working hours, 5.5 days per week. Bridge over rail line – Night time possessions/Weekend possession.) <b>Roadway and Junction Works</b> (Main Works – Standard working hours, 5.5 days per week. Works in public carriageway (requiring closure of lanes etc.) – in accordance with Local Authority restrictions on working hours.)	Diversion of traffic to surrounding crossings of the railway. No improvements to the surrounding road network proposed. Localized reconfiguration of the road network at the level crossing is proposed to provide vehicle turning facilities and passenger drop off.	Low	Construction of new pedestrian and cyclist bridge over the railway and Royal Canal Pedestrian and cyclists counts undertaken as part of a previous study would indicate that a not insignificant number of pedestrian and cyclist use the proposed route during peak times. The journeys are likely from the residential area and St. Mochta's School to the north and St. Mochta's Football grounds and Scoil Cholim Community National School to the south. It is envisaged that the pedestrian and cyclists will utilize the proposed shared overbridge. Currently, pedestrian footpaths are provided on the western side of the Porterstown Road, however there are no formal cycling facilities.	Low	No impact on the railway service	N/a
Clonsilla Level Crossing		Permanent closure of level crossing	12-14 months Bridge Works (Approach ramps - Standard working hours 5.5 days per week. Bridge over rail line – Nighttime possessions/Weekend possession) Roadway and Junction Works Main Works – Standard working hours 5.5 days per week Works in public carriageway (requiring closure of lanes etc.) – in accordance with Local Authority restrictions on working hours.	Diversion of traffic to surrounding crossings of the railway. No improvements to the surrounding road network are proposed. Localised reconfiguration of the carriageway in the vicinity of the level crossing will be required to facilitate the proposed overbridge and provide adequate turning facilities for vehicles.	Low	Construction of new pedestrian and cyclist bridge over the railway and Royal Canal. To provide a buffer between the overbridge parapet and stopping buses along L3015 Hansfield Road, northern side of the level crossing, the off-road segregated cycle track will be extended across Clonsilla Road and join the existing cycle track further west. An island bus stop, in accordance with NTA guidance, will be provided. This provides a buffer between the overbridge parapet and buses. To ensure continuity in design, the existing bus stop on the north side of the road will also become an island bus stop. The pedestrian crossing will be upgraded to a Toucan Crossing to facilitate cyclist movements at the junction. On the southern side, a mini roundabout and drop off spaces will be provided to facilitate passenger drop offs at the station and vehicle turn around. The entrance to Beech Park Allotments will be altered to accommodate the revised carriageway layout	Low	No impact on the railway service	N/a
OBG12	Clonsilla Station Footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	No impact on the railway service	N/a
OBG12C	Clonsilla Station Platform footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	No impact on the railway service	N/a
Clonsilla Station Siding		Changes to horizontal alignment	1.5 months Standard working hours 5.5 days per week	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service, running line very close, if Safe Working Area (reference IE Rule Book) is not achieved, works must be carried out during weekday and weekend possessions.	

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
Hansfield Substation	South of Hansfield station (on eastern side)	General Linear works - Construction of a substation. Construction of pedestrian and vehicular access route from the substation to Barberstown Lane North.	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
Hansfield Station		Construction of a pedestrian bridge between platforms		No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
OBCN286	under Barnhill bridge	Modifications involving track lowering (vertical alignment) under bridge	4 weeks Full weekend possessions and total closure for some specific activities (Works occurring outside of normal hours of assessment)	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	low
OBCN287	Stirling Road Bridge	OHLE modifications	Overnight seven days per week (preparatory works to be performed 24 hours per day seven days per week at construction compounds).	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
OBCN290	Dunboyne Bridge	Modifications involving track lowering (vertical alignment) under bridge	3 weeks Full weekend possessions and total closure for some specific activities (Works occurring outside of normal hours of assessment)	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/ cyclists	N/a	Full weekend possessions	Low
OBCN290A	Dunboyne Bridge footbridge	Modifications involving track lowering (vertical alignment) under bridge Footbridge parapet modifications	Full weekend possessions and total closure for some specific activities	Site set up, transportation of machinery and materials via HGVs	N/a	Amendments are only required on the sidewalls of the walkways along the tracks. Limited space for walkways during the modification phase	Low	No impact on the railway service	N/a
Dunboyne Substation	North of the railway line to the west of Dunboyne station	Construction of a substation	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
OBCN291	Dunboyne Station Footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks. Limited space for walkways during the modification phase	Low	No impact on the railway service	N/a
M3 Parkway Substation		General Linear works - Construction of a substation	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No impact on the railway service	N/a
OBCN295A	M3 Parkway Station footbridge	Footbridge parapet modifications	Standard working hours 5.5 days per week (for parapet modifications).	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks. Parts of existing bicycle park lands will be used.	Low	No impact on the railway service	N/a
M3 Parkway Siding	North of M3 Parkway Station	Changes to horizontal alignment	3 months Standard working hours 5.5 days per week	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	No Impact on the railway service, siding very close, if Safe Working Area is not achieved, works must be carried out during weekday and weekend possessions. Also, there are houses nearby, if the maximum noise levels are compliant, works could be done overnight.	N/a

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
Barberstown Level Crossing	South of Hansfield Station	Permanent closure of level crossing	12-24 months Bridge Works (Approach ramps - Standard working hours 5.5 days per week. Bridge over rail line – Night time possessions/Weekend possession) Roadway and Junction Works (Main Works – Standard working hours 5.5 days per week. Works in public carriageway (requiring closure of lanes etc.) – in accordance with Local Authority restrictions on working hours.	No impact on the road network	N/a	No impact on pedestrians/cyclists	N/a	Full weekend possessions	Low
OBG13	Adjacent to Colins Rail Bridge	Modifications involving track lowering (vertical alignment) under bridge Overbridge parapet modifications	9 weeks Full weekend possessions and total closure for some specific activities. (Works occurring outside of normal hours of assessment) Standard working hours 5.5 days per week (for parapet modifications).	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/cyclists	N/a	Full weekend possessions	Low
OBG14	Cope Rail Bridge, east of Leixlip Confey Station	Arch Deck Reconstruction Parapet Heightening	40 weeks Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions	15 weeks total road closure and 19 weeks partial closure During the reconstruction of the bridge deck, the road access to the bridge will be closed. Therefore, until the construction is completed, passing traffic must be diverted. OBG14 traffic diversion during construction the shortest path between bridge access points is shown. Traffic will have to cross the railway track and the Royal canal using the Laraghcon road. In addition, it is planned to use R148 and R149 main roads to connect with Laraghcon road. Road closed traffic signs will be required in order to inform drivers of the diversion.	Low (Temporary)	Pedestrian closure Pedestrians will use Leixlip Confey station footbridge, which will give them access to a temporary ramp over the canal.	Low	4 full weekends of possession and 2 weeks of night closure working on railway	Low
OBG14A	footbridge located inside Leixlip Confey Station	Parapet Heightening	46 weeks (during the same period as the OBG14) Standard working hours 5.5 days per week (For parapet modifications).	No impact on the road network	N/a	No impact on pedestrians/cyclists	N/a	No impact on the railway service	N/a
Leixlip Confey Substation	South of the railway line near Leixlip Confey on the western side.	General Linear works - Construction of a substation	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	Some impact for cars using the existing car park	Low	The footprint of the existing parking area will be partially impacted by the substation, impacting all the existing parking spaces. Alternative parking spaces (19 spaces) will be provided west of the substation.	Low	No impact on the railway service	N/a
OBG15A	Leixlip Station footbridge (Louisa Bridge station)			No impact on the road network	N/a	No impact on pedestrians/cyclists	N/a	No impact on the railway service	N/a
OBG16	Louisa Bridge (west of Louisa Bridge Station)	Flat Deck Lifting Parapet modification	42 weeks Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions	9 weeks total road closure and 25 weeks of partial closure During the lifting of the bridge deck, the road access to the bridge will be closed. Therefore, until the construction is over, passing traffic must be diverted. OBG16 traffic diversion during construction the	Low	Pedestrian closures	Low	4 full weekends of possession and 2 weeks of night closure working on railway	Low

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
			Standard working hours 5.5 days per week (for parapet modifications)	shortest path between bridge access points is shown. Traffic will have to cross the railway track and the Royal canal using the R449 road. In addition, it is planned to use R148 and Green Ln main to connect with R449. Road closed traffic signs will be required in order to inform drivers with enough time in advance.					
Blakestown Level Crossing		Permanent closure of the level crossing.	Standard working hours 5.5 days per week.	Vehicular bridge proposed Although lightly trafficked, closure of the crossing to vehicular traffic would result in a detour of approximately 8km. construction of a new road bridge with pedestrian and cycle facilities which crosses the Dublin to Sligo railway and the Royal canal approximately 200 west of the existing level crossing. The proposals include for the construction of approach roads on raised embankment which tie into the proposed Barnhill to Ongar Road scheme to the north and to the existing road network south of the railway.		Pedestrian bridge is proposed south of the existing Barberstown level crossing to transit over the railway line and the Royal Canal.		No impact on the railway service	N/a
Blakestown Substation	near Deey Bridge	General Linear works - Construction of a traction substation	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	It will be necessary to create access to the substation from the existing road.	N/a	No impact on pedestrians/cyclists	N/a	No impact on the railway service	N/a
OBG18	Pike Bridge	Modifications involving track lowering (vertical alignment) under bridge Overbridge parapet modifications	11 weeks Standard working hours 5.5 days per week. (For parapet modifications)	Site set up, transportation of machinery and materials via HGVs	N/a	No impact on pedestrians/cyclists	N/a	Full weekend possessions	Low
OBG20	Maynooth Station	Footbridge parapet modifications	26 weeks Standard working hours 5.5 days per week. (For parapet modifications)	No impact on the road network	N/a	Amendments are only required on the sidewalls of the walkways along the tracks.	Low	No impact on the railway service	N/a
Maynooth Substation	car parking area of Maynooth station at the south of the railway, opposite the canal and near R406.	General Linear works - Construction of a substation	7.5 months Standard working hours 5.5 days per week / Overnight for some activities	The existing road access will be displaced towards the south. (9 parking areas will be impacted)	Low	Existing pedestrian footbridge ramp will be reconstructed and diverted behind the substation, granting people with impaired mobility access to the station. The pedestrian walkway rerouted (see <b>Error! Reference source not found.</b> )		No impact on the railway service	N/a
Maynooth Station Siding		Changes to horizontal alignment (sliding west of the station, improvements from single track to the depot to twin track)	1 month (siding) 16 months (Maynooth -Depot Track Doubling) Standard working hours 5.5 days per week	No impact on the road network	N/a	No impact on pedestrians/ cyclists	N/a	Maynooth Siding No impact on the railway service, running line very close, if Safe Working Area is not achieved, works must be carried out during weekday and weekend possessions. Maynooth Track Doubling Weekend and night-time possessions	N/a  Low

Type of work	Location	Works Proposed	Duration/ working hours	Road Impact	Impact Rating	Pedestrian / Cyclist Impact	Impact Rating	Railway Impact	Impact Rating
OBG23 OBG23A	Jackson's Bridge	Construction of offline track and a new bridge (New access road (L5041) to the depot)	5 months Standard working hours 5.5 days per week. Bridgeworks over tracks to be performed overnight and during full weekend possessions Track connection works – Night-time possessions / weekend possession 47 weeks	L5041 diversion, the proposed realignment of the existing tracks south of Jackson Bridge will sever the L5041 south of Jackson Bridge. (Sever connection to R148)  The proposal to divert the L5041 approximately 850 meters to the west and use the new OBG23A bridge to cross over the tracks and canal and connect to the R148 road removes the impact on Jacksons' Bridge and reduces the road embankments within the flood plain.  South of the rail line and depot the L5041 diversion begins with a T-junction south of Jacksons bridge and heads west with an 8 m section of the carriageway (0.5 m hard strip on each side and two 3.5 m lanes) and grass verges on both sides of the road. The severed section of the L5041 north of the junction will provide local access to lands.	Low	No impact on pedestrians/cyclists	N/a	No major impact on railway operation is expected (Railway realignment off-line around the OBG23, as part of the section Maynooth-Depot, except the rail connections to the existing railway) Night-time possessions/weekend possession 2 weekend of total rail service closure (week 28-29) 2 week of night closure (week 31-32)	Low
UBG22A UBG22C	Over Lyreen River	Construction of pedestrian and cycle underpass	5 months	No impact on the road network	N/a	No impact on pedestrians/cyclists	N/a	No impact on railway service	N/a
CCE Compound (DEPOT)			30 months Standard working hours 5.5 days per week. Track connection works overnight.	No impact on the road network	N/a	No impact on pedestrians/cyclists	N/a	No impact on the railway service (except the rail link to the mainline)	N/a

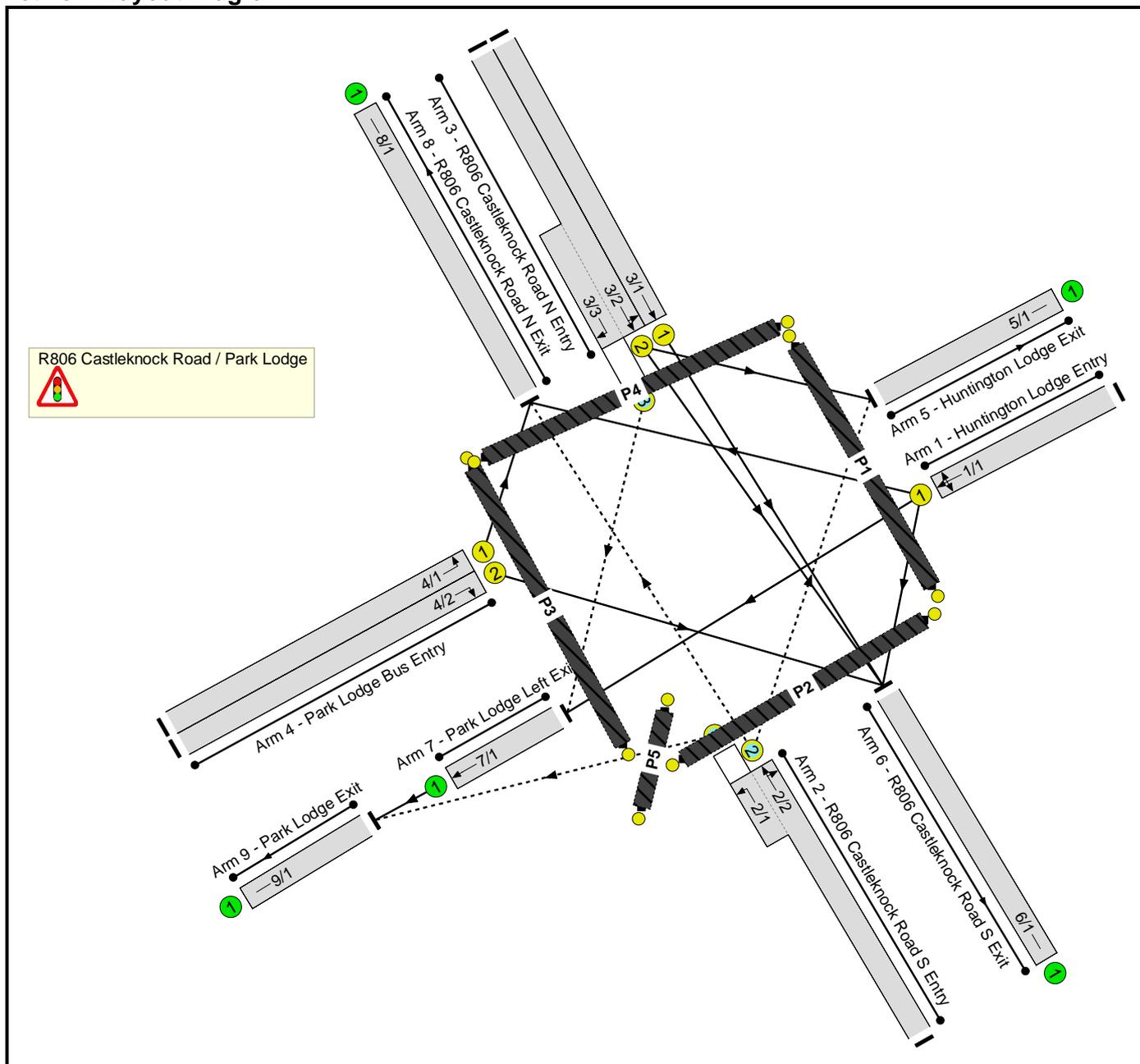
## APPENDIX F. Junction Modelling

Full Input Data And Results  
**Full Input Data And Results**

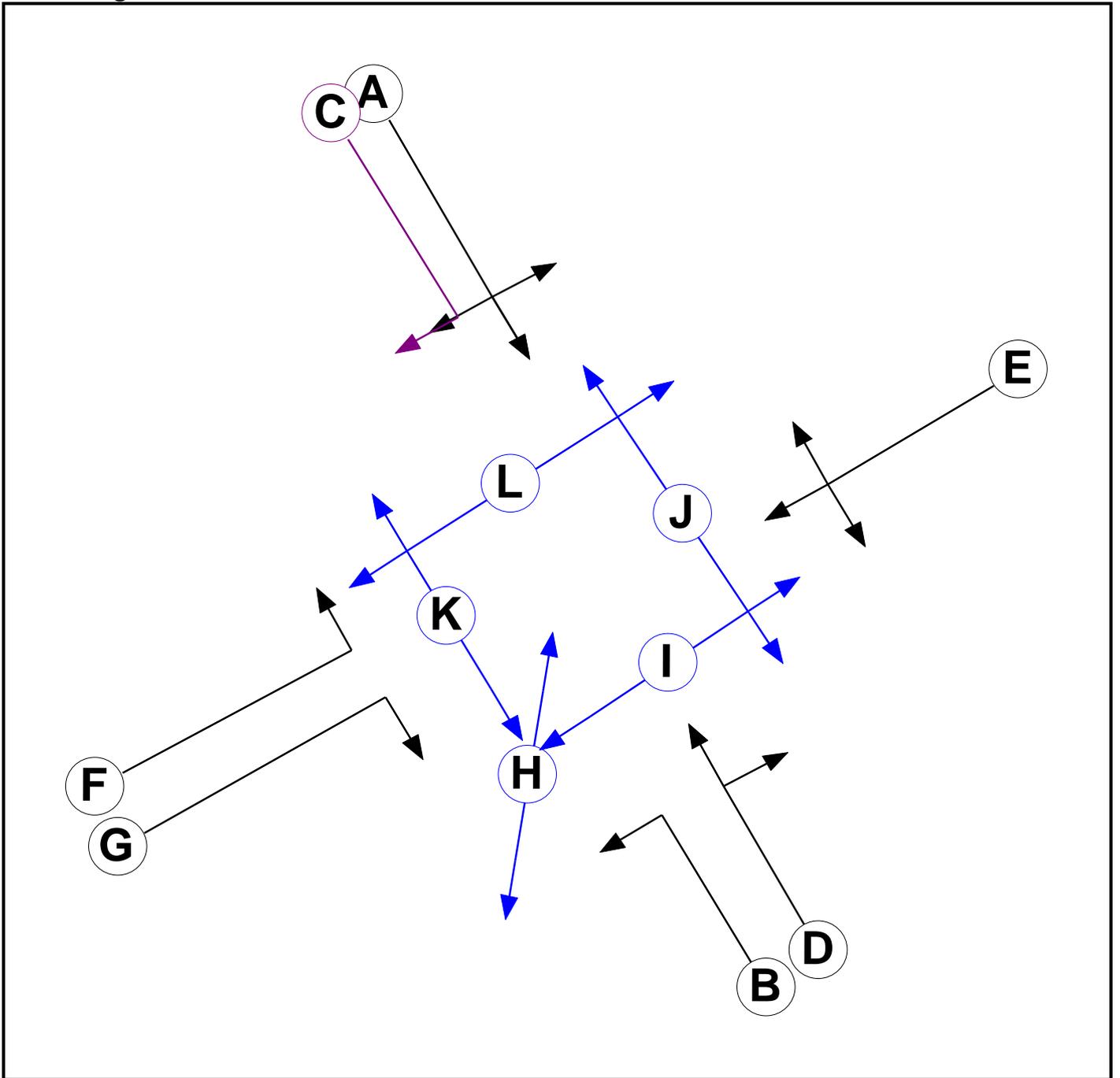
**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	R806 Castleknock Road / Park Lodge
<b>Date Started:</b>	25/11/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction5_Base_DM V2.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Ind. Arrow	A	4	4
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7
H	Pedestrian		5	5
I	Pedestrian		5	5
J	Pedestrian		5	5
K	Pedestrian		5	5
L	Pedestrian		5	5

**Phase Intergreens Matrix**

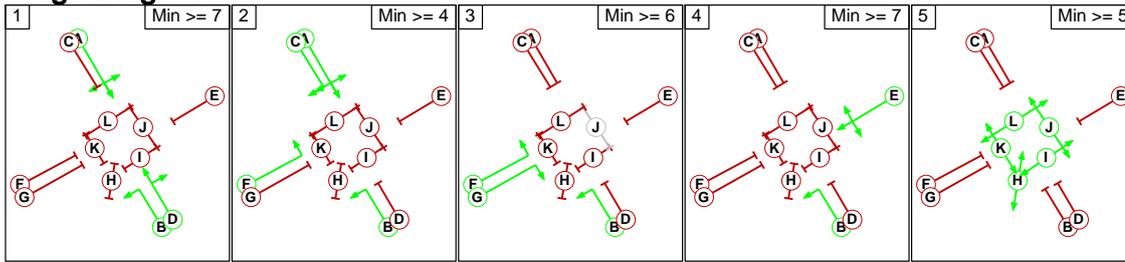
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A	-	-	-	6	-	5	-	8	7	8	5	
	B	-	-	-	-	-	-	5	-	-	-	-	
	C	-	-	6	6	-	5	-	-	-	8	5	
	D	-	-	5	5	5	5	-	5	7	-	8	
	E	5	-	5	5	5	5	-	6	5	7	8	
	F	-	-	5	5	5	-	-	-	-	5	7	
	G	5	-	5	5	5	-	-	7	-	5	-	
	H	-	7	-	-	-	-	-	-	-	-	-	
	I	13	-	-	13	13	-	13	-	-	-	-	
	J	7	-	-	7	7	-	-	-	-	-	-	
	K	12	-	12	-	12	12	12	-	-	-	-	
	L	14	-	14	14	14	14	-	-	-	-	-	

**Phases in Stage**

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

# Full Input Data And Results

## Stage Diagram



## Phase Delays

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

## Prohibited Stage Change

		To Stage				
		1	2	3	4	5
From Stage	1		5	5	6	8
	2	6		5	6	8
	3	5	5		5	7
	4	5	5	5		8
	5	14	14	14	14	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: R806 Castleknock Road / Park Lodge											
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)
2/1 (R806 Castleknock Road S Entry)	9/1 (Left)	715	0	7/1	0.22	All	2.00	-	0.50	2	2.00
2/2 (R806 Castleknock Road S Entry)	5/1 (Right)	1439	0	3/1	1.09	All	-	-	-	-	-
				3/2	1.09	All					
	8/1 (Ahead)	1439	0	3/1	1.09	All					
3/3 (R806 Castleknock Road N Entry)	7/1 (Right)	1439	0	3/2	1.09	All					
				2/2	1.09	All	3.00	-	0.50	3	3.00

Full Input Data And Results

**Lane Input Data**

Junction: R806 Castleknock Road / Park Lodge												
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 (Huntington Lodge Entry)	U	E	2	3	2.6	Geom	-	3.25	0.00	Y	Arm 6 Left	8.00
											Arm 7 Ahead	Inf
											Arm 8 Right	18.00
2/1 (R806 Castleknock Road S Entry)	O	B	2	3	4.5	Geom	-	4.00	0.00	Y	Arm 9 Left	Inf
2/2 (R806 Castleknock Road S Entry)	O	D	2	3	50.4	Geom	-	3.00	0.00	Y	Arm 5 Right Arm 8 Ahead	10.00 Inf
3/1 (R806 Castleknock Road N Entry)	U	A	2	3	7.1	Geom	-	3.25	0.00	Y	Arm 6 Ahead	Inf
3/2 (R806 Castleknock Road N Entry)	U	A	2	3	43.8	Geom	-	3.00	0.00	Y	Arm 5 Left Arm 6 Ahead	9.00 Inf
3/3 (R806 Castleknock Road N Entry)	O	A C	2	3	8.0	Geom	-	3.00	0.00	Y	Arm 7 Right	20.00
4/1 (Park Lodge Bus Entry)	U	F	2	3	27.8	Geom	-	3.00	0.00	Y	Arm 8 Left	12.00
4/2 (Park Lodge Bus Entry)	U	G	2	3	27.8	Geom	-	3.00	0.00	Y	Arm 6 Right	12.00
5/1 (Huntington Lodge Exit)	U		2	3	2.6	Inf	-	-	-	-	-	-
6/1 (R806 Castleknock Road S Exit)	U		2	3	50.4	Inf	-	-	-	-	-	-
7/1 (Park Lodge Left Exit)	U		2	3	27.8	Inf	-	-	-	-	-	-
8/1 (R806 Castleknock Road N Exit)	U		2	3	43.8	Inf	-	-	-	-	-	-
9/1 (Park Lodge Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base AM Peak'	08:00	09:00	01:00	
2: 'Base PM Peak'	17:00	18:00	01:00	
3: 'DM 2028 AM Peak'	08:00	09:00	01:00	
4: 'DM 2028 PM Peak'	17:00	18:00	01:00	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 1: Base Year AM Peak
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	227
2/2 (with short)	441(In) 214(Out)
3/1	0
3/2 (with short)	496(In) 430(Out)
3/3 (short)	66
4/1	406
4/2	426
5/1	0
6/1	856
7/1	66
8/1	620
9/1	293

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 2: 'Base Year PM Peak'** (FG2: 'Base PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 2: Base Year PM Peak
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	319
2/2 (with short)	744(In) 425(Out)
3/1	0
3/2 (with short)	744(In) 439(Out)
3/3 (short)	305
4/1	145
4/2	211
5/1	0
6/1	650
7/1	305
8/1	570
9/1	624

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
				Arm 5 Right	10.00	0.0 %		
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 6 Ahead	Inf	0.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 3: 'DM 2028 AM Peak'** (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: DM 2028 AM Peak
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	486
2/2 (with short)	921(In) 435(Out)
3/1	0
3/2 (with short)	532(In) 467(Out)
3/3 (short)	65
4/1	413
4/2	286
5/1	0
6/1	753
7/1	65
8/1	848
9/1	551

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
				Arm 5 Right	10.00	0.0 %		
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 6 Ahead	Inf	0.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 4: 'DM 2028 PM Peak'** (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 4: DM 2028 PM Peak
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	367
2/2 (with short)	841(In) 474(Out)
3/1	0
3/2 (with short)	1069(In) 807(Out)
3/3 (short)	262
4/1	102
4/2	146
5/1	0
6/1	953
7/1	262
8/1	576
9/1	629

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 5: 'Base Year AM Peak (alt peds)' (FG1: 'Base AM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 5: Base Year AM Peak (alt peds)
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	227
2/2 (with short)	441(In) 214(Out)
3/1	0
3/2 (with short)	496(In) 430(Out)
3/3 (short)	66
4/1	406
4/2	426
5/1	0
6/1	856
7/1	66
8/1	620
9/1	293

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 6: 'Base Year PM Peak (alt peds)' (FG2: 'Base PM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 6: Base Year PM Peak (alt ped)
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	319
2/2 (with short)	744(In) 425(Out)
3/1	0
3/2 (with short)	744(In) 439(Out)
3/3 (short)	305
4/1	145
4/2	211
5/1	0
6/1	650
7/1	305
8/1	570
9/1	624

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 7: 'DM 2028 AM Peak (alt peds)' (FG3: 'DM 2028 AM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	-
Tot.	-	

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 7: DM 2028 AM Peak (alt ped)
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	486
2/2 (with short)	921(In) 435(Out)
3/1	0
3/2 (with short)	532(In) 467(Out)
3/3 (short)	65
4/1	413
4/2	286
5/1	0
6/1	753
7/1	65
8/1	848
9/1	551

Full Input Data And Results

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 8: 'DM 2028 PM Peak (alt peds)' (FG4: 'DM 2028 PM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

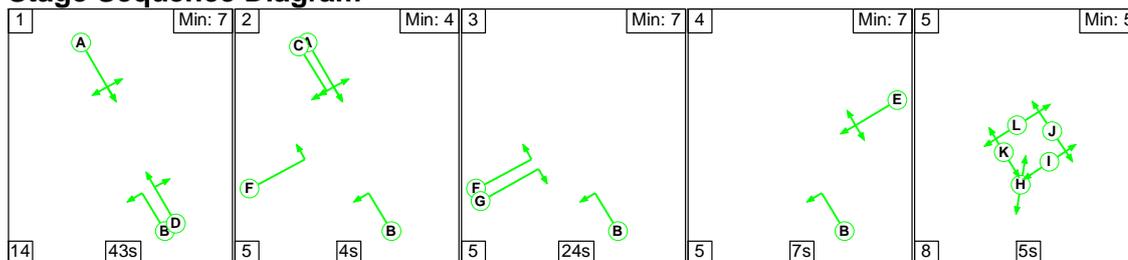
Lane	Scenario 8: DM 2028 PM Peak (alt ped)
<b>Junction: R806 Castleknock Road / Park Lodge</b>	
1/1	0
2/1 (short)	367
2/2 (with short)	841(In) 474(Out)
3/1	0
3/2 (with short)	1069(In) 807(Out)
3/3 (short)	262
4/1	102
4/2	146
5/1	0
6/1	953
7/1	262
8/1	576
9/1	629

**Lane Saturation Flows**

Junction: R806 Castleknock Road / Park Lodge								
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 (Huntington Lodge Entry)	3.25	0.00	Y	Arm 6 Left	8.00	0.0 %	1940	1940
				Arm 7 Ahead	Inf	0.0 %		
				Arm 8 Right	18.00	0.0 %		
2/1 (R806 Castleknock Road S Entry)	4.00	0.00	Y	Arm 9 Left	Inf	100.0 %	2015	2015
2/2 (R806 Castleknock Road S Entry)	3.00	0.00	Y	Arm 5 Right	10.00	0.0 %	1915	1915
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R806 Castleknock Road N Entry)	3.25	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1940	1940
3/2 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 5 Left	9.00	0.0 %	1915	1915
				Arm 6 Ahead	Inf	100.0 %		
3/3 (R806 Castleknock Road N Entry)	3.00	0.00	Y	Arm 7 Right	20.00	100.0 %	1781	1781
4/1 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 8 Left	12.00	100.0 %	1702	1702
4/2 (Park Lodge Bus Entry)	3.00	0.00	Y	Arm 6 Right	12.00	100.0 %	1702	1702
5/1 (Huntington Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R806 Castleknock Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Park Lodge Left Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (R806 Castleknock Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (Park Lodge Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

**Stage Sequence Diagram**

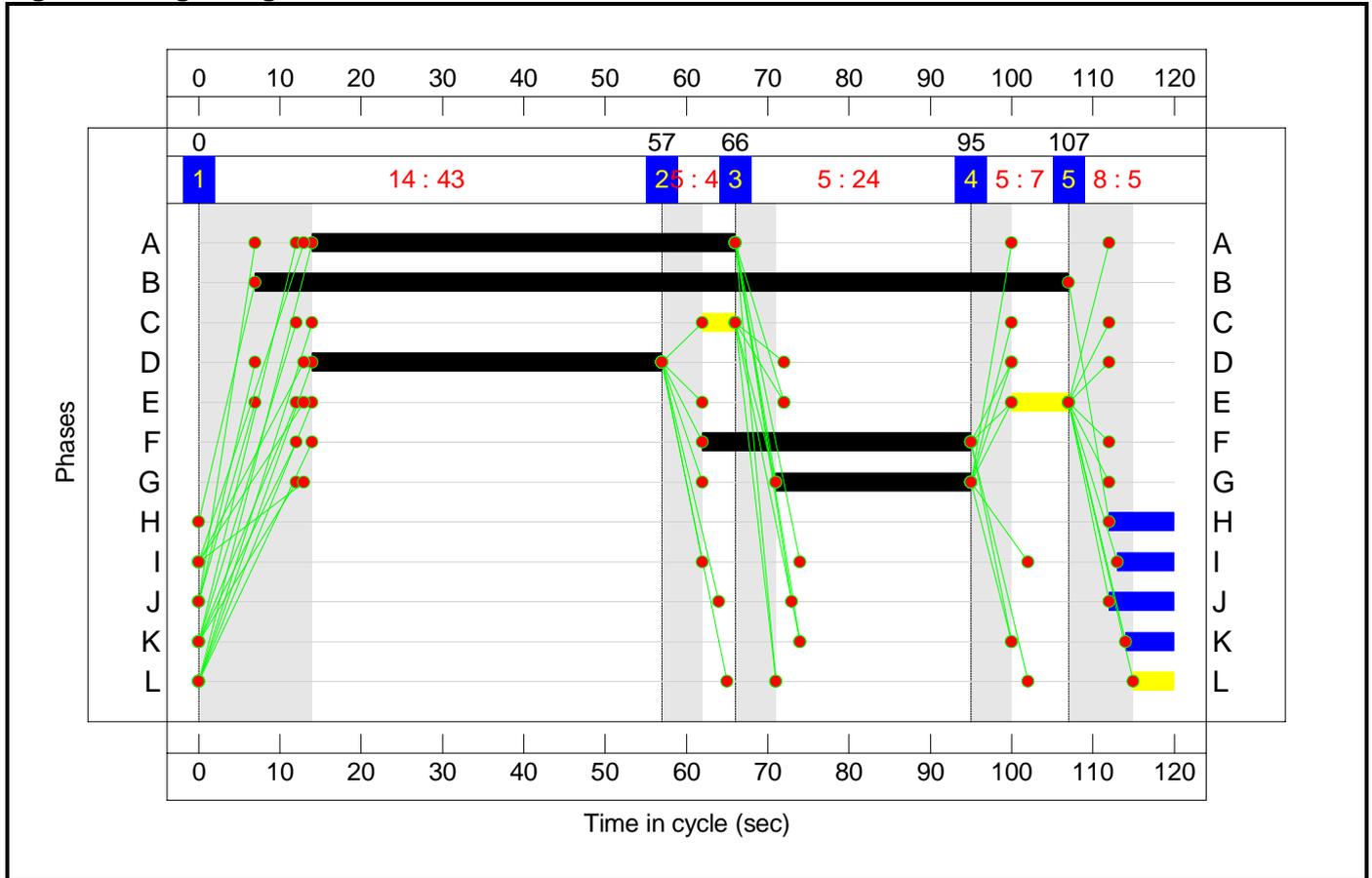


# Full Input Data And Results

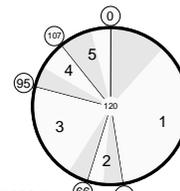
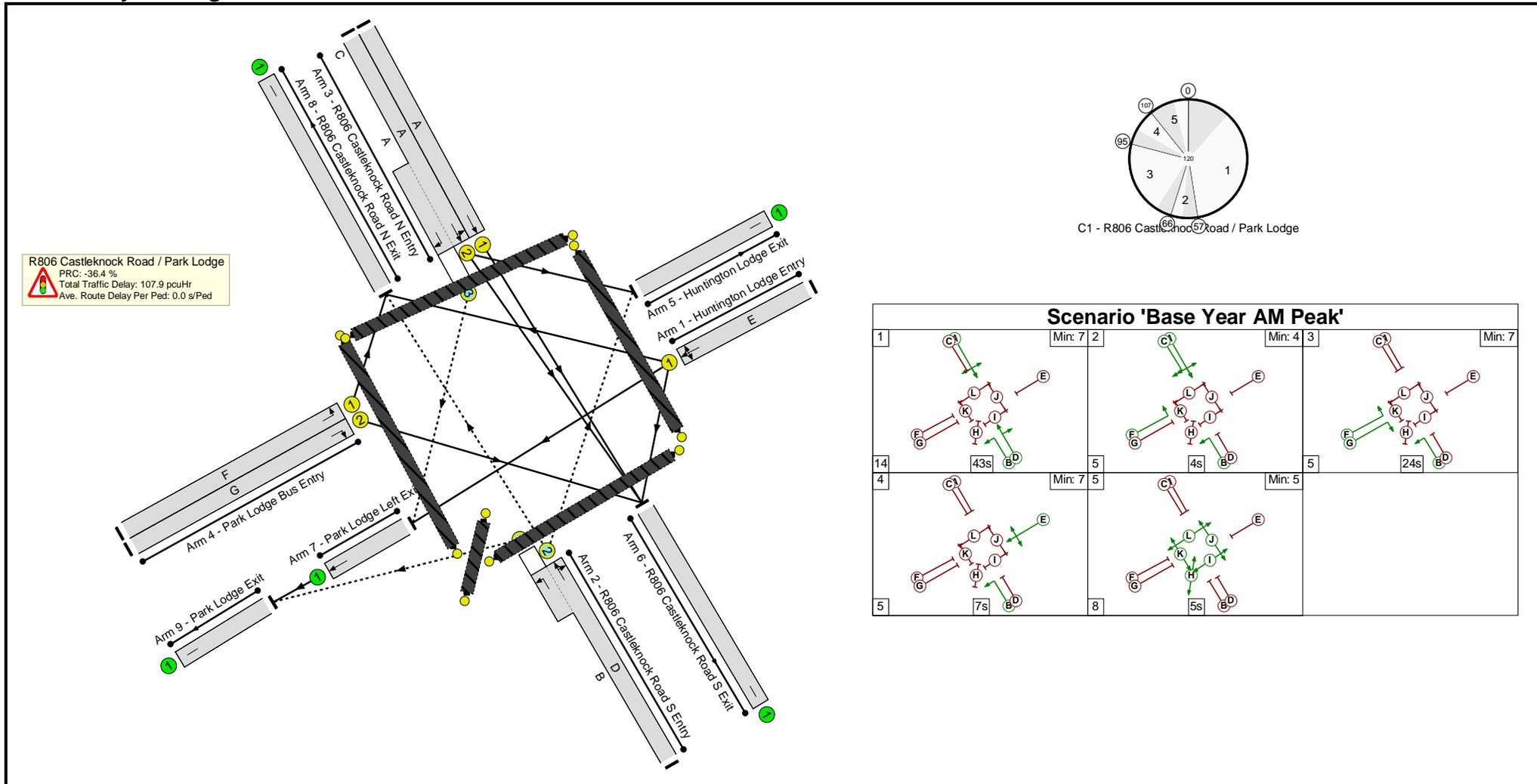
## Stage Timings

Stage	1	2	3	4	5
Duration	43	4	24	7	5
Change Point	0	57	66	95	107

## Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**



**Scenario 'Base Year AM Peak'**

1	Min: 7	2	Min: 4	3	Min: 7
14	43s	5	4s	5	24s
4	Min: 7	5	Min: 5		
5	7s	8	5s		

The table displays traffic flow scenarios for 'Base Year AM Peak'. Each cell contains a diagram of the network layout with traffic flow directions and volumes. The diagrams are labeled with letters A through L and numbers 1 through 5. The table also includes minimum values and delay times (e.g., 43s, 4s, 24s, 7s, 5s) for various scenarios.

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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	122.8%
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	122.8%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		1	7	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		1	43:100	-	441	1915:2015	174+185	122.8 : 122.8%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		1	52	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	1	52	4	496	1915:1781	761+117	56.5 : 56.5%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		1	33	-	406	1702	482	84.2%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		1	24	-	426	1702	355	120.1%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	66	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

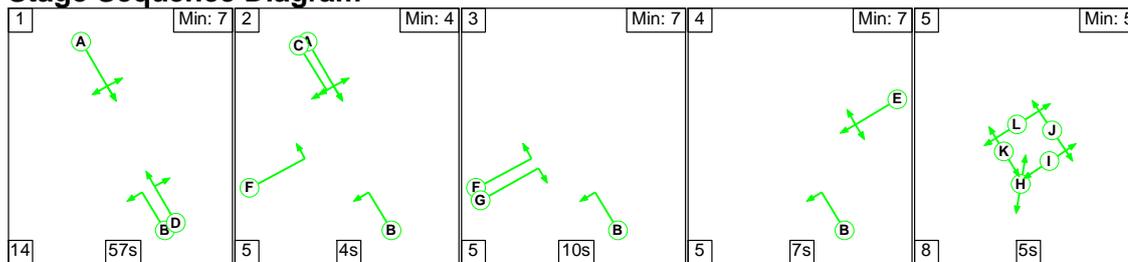
### Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	<b>788</b>	<b>4</b>	<b>2</b>	<b>22.7</b>	<b>85.0</b>	<b>0.1</b>	<b>107.9</b>	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	<b>788</b>	<b>4</b>	<b>2</b>	<b>22.7</b>	<b>85.0</b>	<b>0.1</b>	<b>107.9</b>	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	441	364	728	0	0	6.2	43.4	0.1	49.8	406.4	12.8	43.4	56.2
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	496	496	60	4	2	3.3	0.6	0.0	3.9	28.4	10.8	0.6	11.4
4/1	406	406	-	-	-	4.6	2.5	-	7.1	62.6	12.6	2.5	15.1
4/2	426	355	-	-	-	8.7	38.5	-	47.2	398.6	16.6	38.5	55.1
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	785	785	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	256	256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge				PRC for Signalled Lanes (%): -36.4		Total Delay for Signalled Lanes (pcuHr): 107.94		Cycle Time (s): 120		PRC Over All Lanes (%): -36.4		Total Delay Over All Lanes(pcuHr): 107.94	

Full Input Data And Results

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

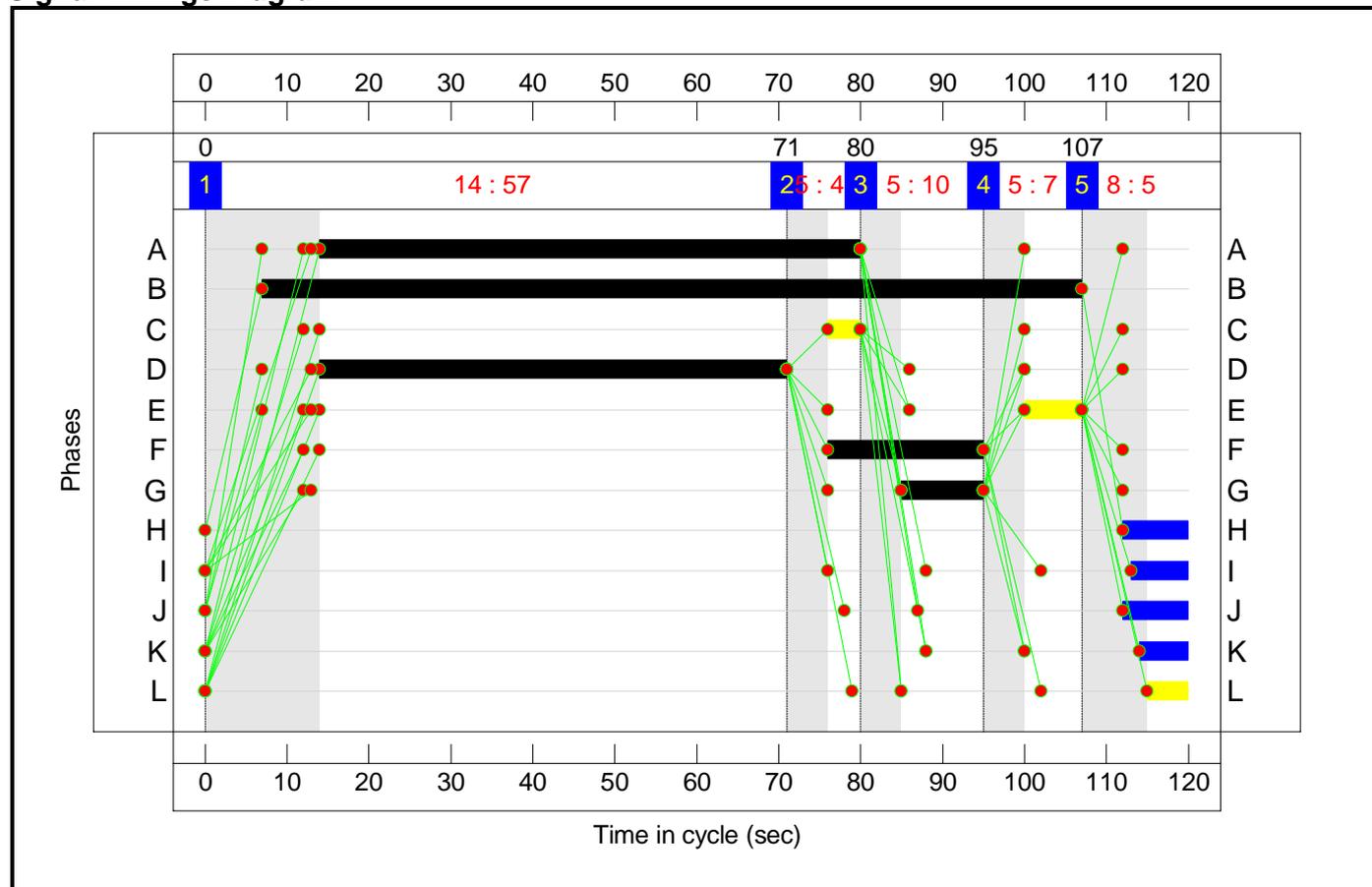
Stage Sequence Diagram



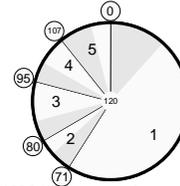
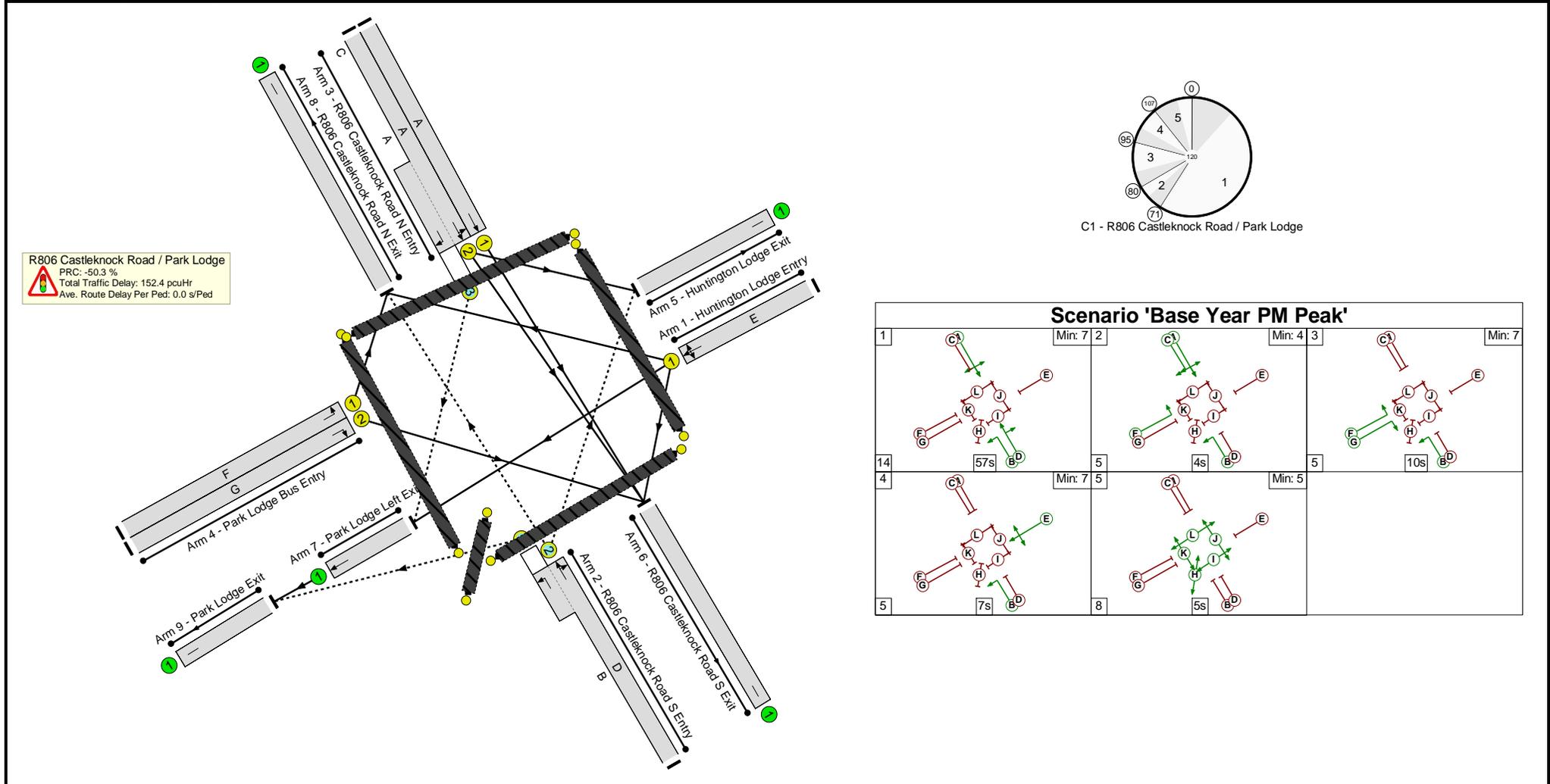
Stage Timings

Stage	1	2	3	4	5
Duration	57	4	10	7	5
Change Point	0	71	80	95	107

Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**



C1 - R806 Castleknock Road / Park Lodge

**Scenario 'Base Year PM Peak'**

1	Min: 7	2	Min: 4	3	Min: 7
14	57s	5	4s	5	10s
4	Min: 7	5	Min: 5		
5	7s	8	5s		

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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	135.2%
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	135.2%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		1	7	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		1	57:100	-	744	1915:2015	318+239	133.7 : 133.7%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		1	66	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	1	66	4	744	1915:1781	715+497	61.4 : 61.4%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		1	19	-	145	1702	284	51.1%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		1	10	-	211	1702	156	135.2%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	624	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

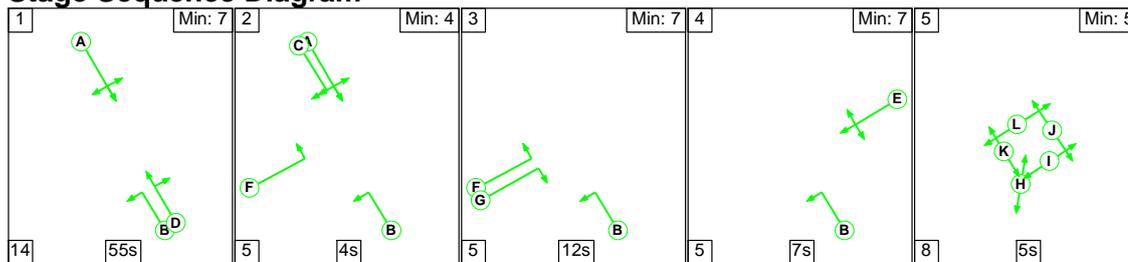
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	1393	18	8	25.9	126.3	0.2	152.4	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	1393	18	8	25.9	126.3	0.2	152.4	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	744	557	1113	0	0	15.0	95.7	0.2	110.9	536.4	35.9	95.7	131.6
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	744	744	280	18	8	3.1	0.8	0.1	3.9	18.9	8.8	0.8	9.6
4/1	145	145	-	-	-	1.8	0.5	-	2.4	58.4	4.4	0.5	4.9
4/2	211	156	-	-	-	6.0	29.3	-	35.3	602.1	9.4	29.3	38.7
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	463	463	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	544	544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge				PRC for Signalled Lanes (%):	-50.3	Total Delay for Signalled Lanes (pcuHr):		152.40	Cycle Time (s):		120		
				PRC Over All Lanes (%):	-50.3	Total Delay Over All Lanes(pcuHr):		152.40					

Full Input Data And Results

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

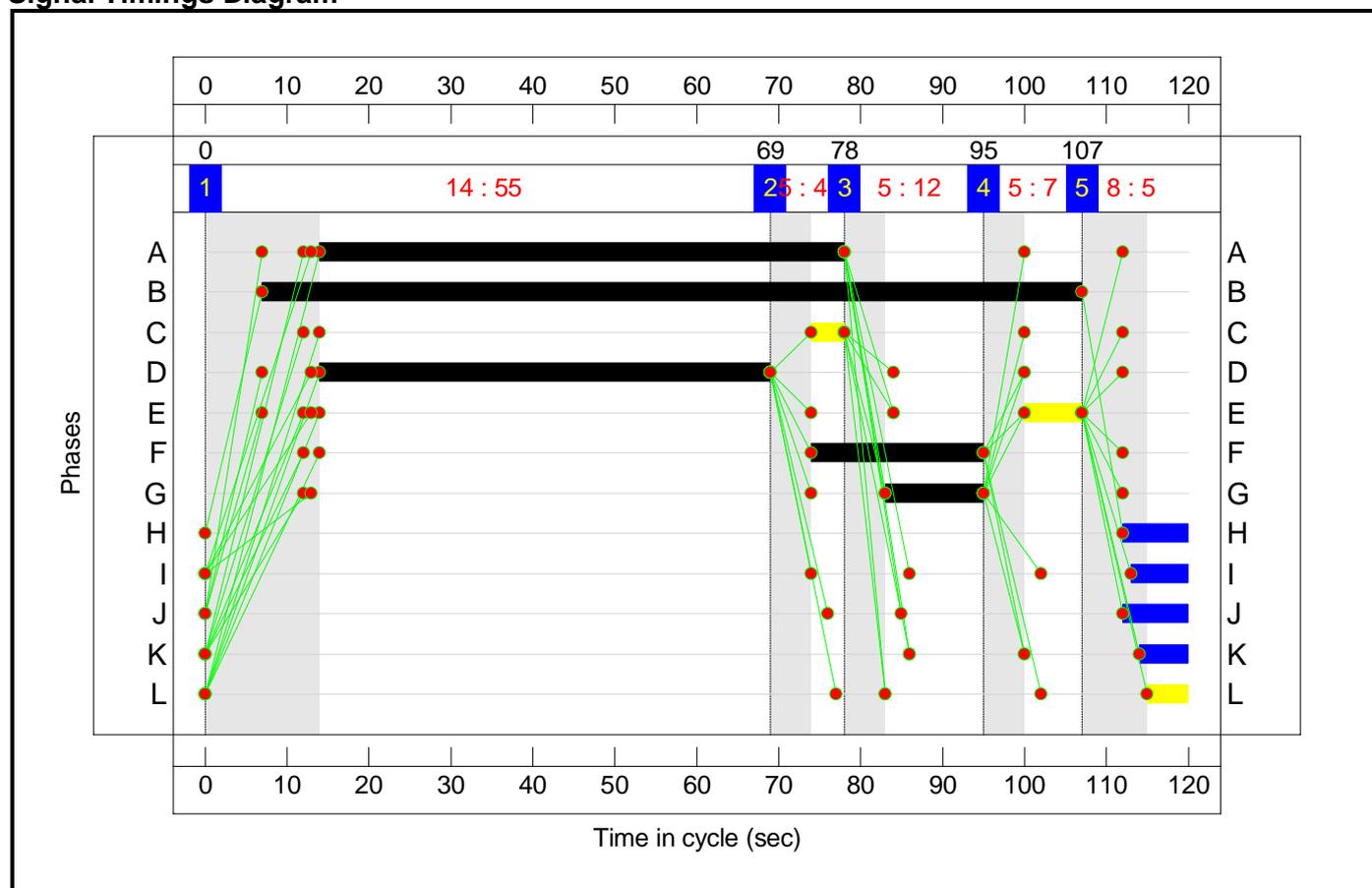
Stage Sequence Diagram



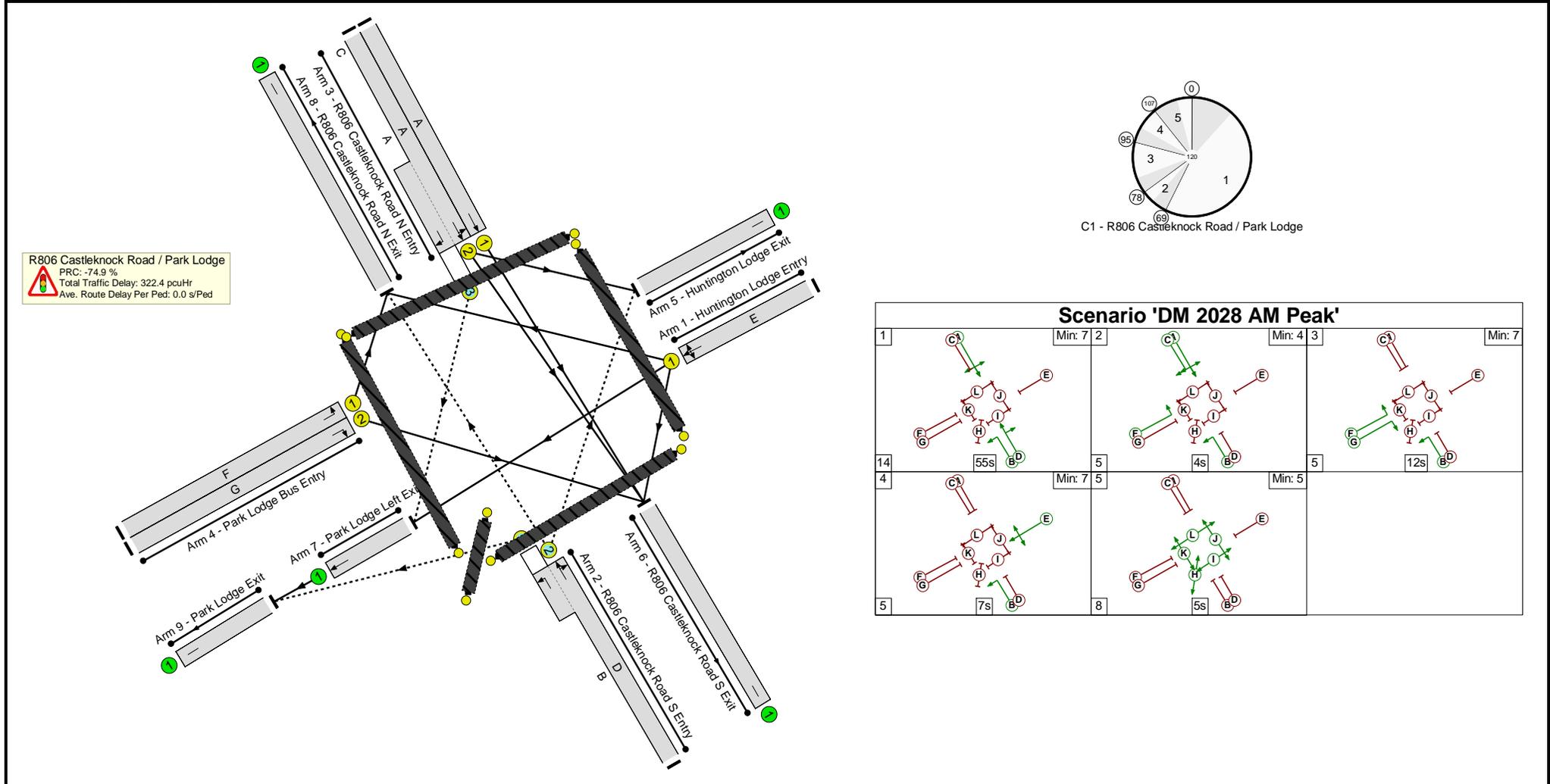
Stage Timings

Stage	1	2	3	4	5
Duration	55	4	12	7	5
Change Point	0	69	78	95	107

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	157.4%
<b>R806 Castleknock Road / Park Lodge</b>	-	-	N/A	-	-		-	-	-	-	-	-	157.4%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		1	7	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		1	55:100	-	921	1915:2015	276+309	157.4 : 157.4%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		1	64	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	1	64	4	532	1915:1781	934+130	50.0 : 50.0%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		1	21	-	413	1702	312	132.4%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		1	12	-	286	1702	184	155.1%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	753	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	551	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

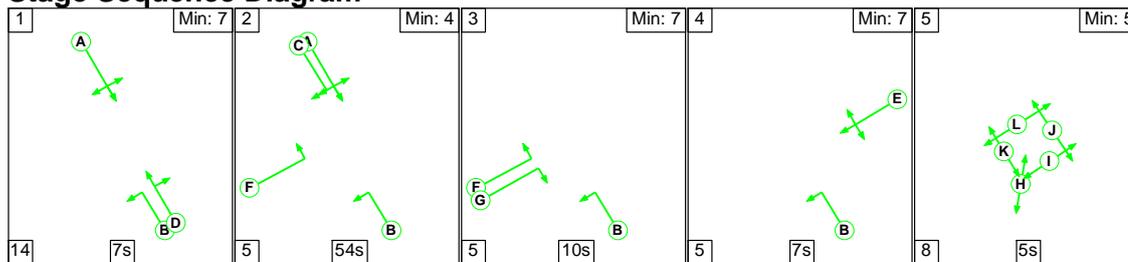
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	1230	4	2	47.4	274.5	0.5	322.4	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	1230	4	2	47.4	274.5	0.5	322.4	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	921	585	1170	0	0	24.1	169.4	0.5	194.0	758.3	47.6	169.4	217.0
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	532	532	60	4	2	2.4	0.5	0.0	2.9	19.7	9.7	0.5	10.2
4/1	413	312	-	-	-	10.8	52.5	-	63.2	551.1	18.0	52.5	70.4
4/2	286	184	-	-	-	10.1	52.2	-	62.3	783.9	14.6	52.2	66.7
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	588	588	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	374	374	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge		PRC for Signalled Lanes (%):		-74.9		Total Delay for Signalled Lanes (pcuHr):		322.40		Cycle Time (s): 120			
		PRC Over All Lanes (%):		-74.9		Total Delay Over All Lanes (pcuHr):		322.40					

Full Input Data And Results

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

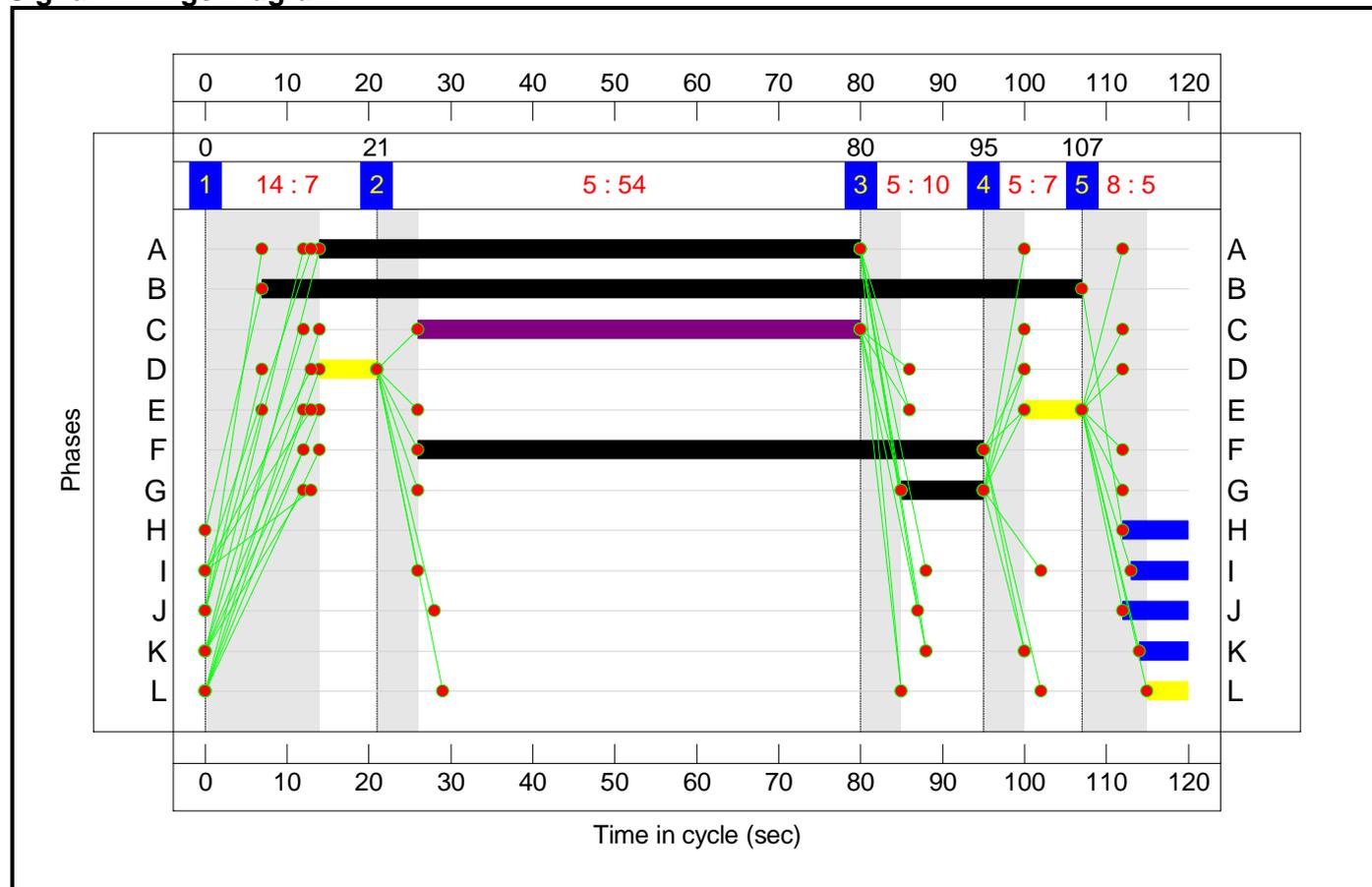
Stage Sequence Diagram



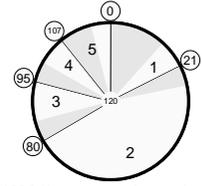
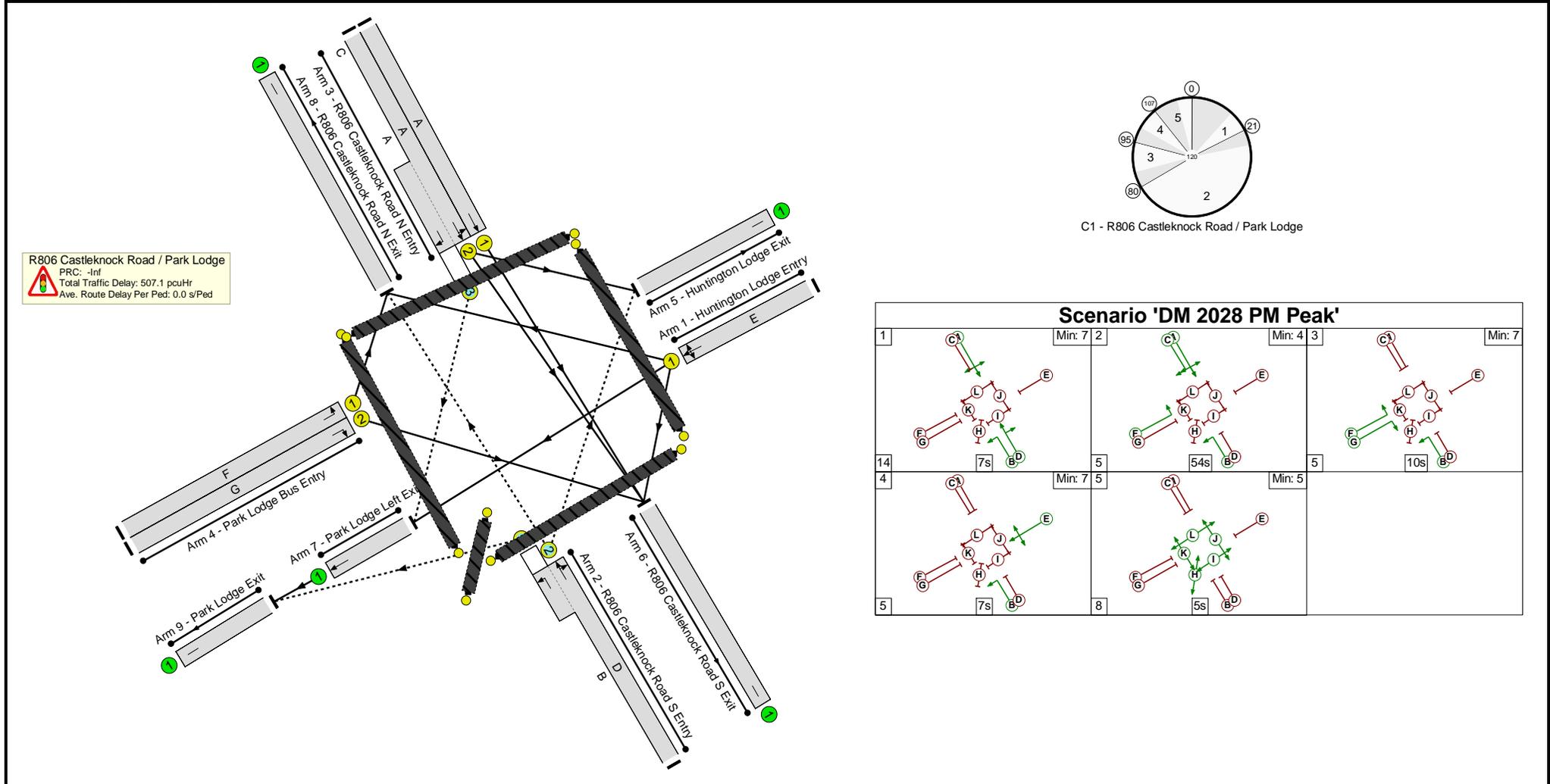
Stage Timings

Stage	1	2	3	4	5
Duration	7	54	10	7	5
Change Point	0	21	80	95	107

Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**



C1 - R806 Castleknock Road / Park Lodge

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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	Inf %
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	Inf %
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		1	7	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		1	7:100	-	841	1915:2015	0+0	Inf : Inf %
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		1	66	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	1	66	54	1069	1915:1781	855+278	94.4 : 94.4%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		1	69	-	102	1702	993	10.3%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		1	10	-	146	1702	156	93.6%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	953	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	262	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

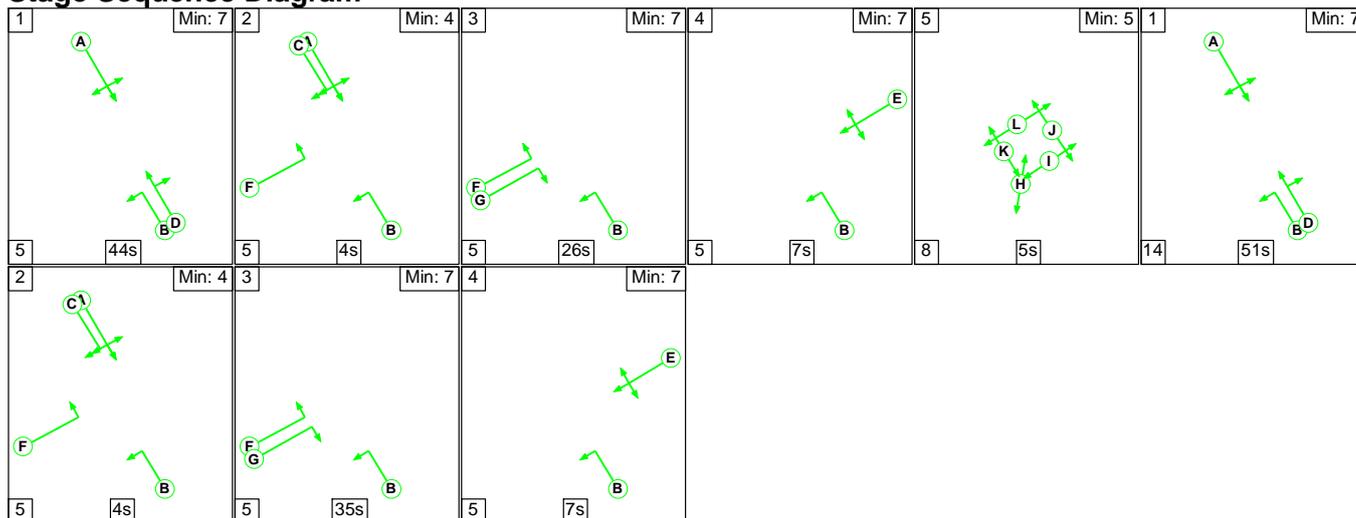
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	6	-	0	-	0	0.0%	
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	5	-	0	-	0	0.0%	
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H	1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	80	175	7	75.1	432.0	0.0	507.1	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	80	175	7	75.1	432.0	0.0	507.1	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	841	0	0	0	0	65.9	421.0	0.0	486.9	2084.2	79.7	421.0	500.7
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	1069	1069	80	175	7	6.7	6.9	0.0	13.6	45.7	30.1	6.9	37.0
4/1	102	102	-	-	-	0.3	0.1	-	0.4	13.1	1.5	0.1	1.6
4/2	146	146	-	-	-	2.2	4.0	-	6.2	153.7	4.8	4.0	8.9
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	953	953	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	102	102	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge			PRC for Signalled Lanes (%): -Inf		PRC Over All Lanes (%): -Inf		Total Delay for Signalled Lanes (pcuHr): 507.07		Total Delay Over All Lanes(pcuHr): 507.07		Cycle Time (s): 120		

Full Input Data And Results

Scenario 5: 'Base Year AM Peak (alt peds)' (FG1: 'Base AM Peak', Plan 2: 'Peds every other')

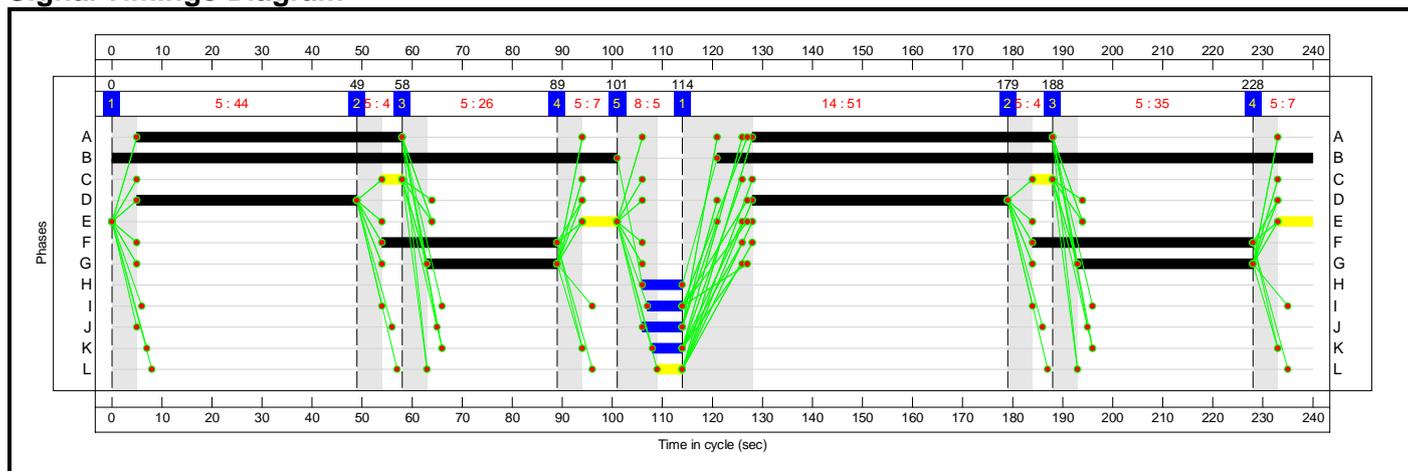
Stage Sequence Diagram



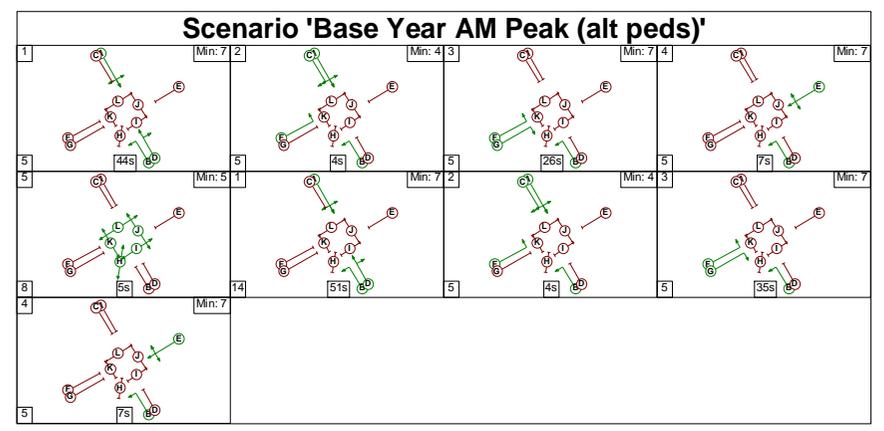
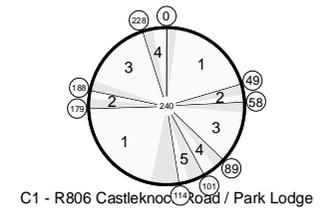
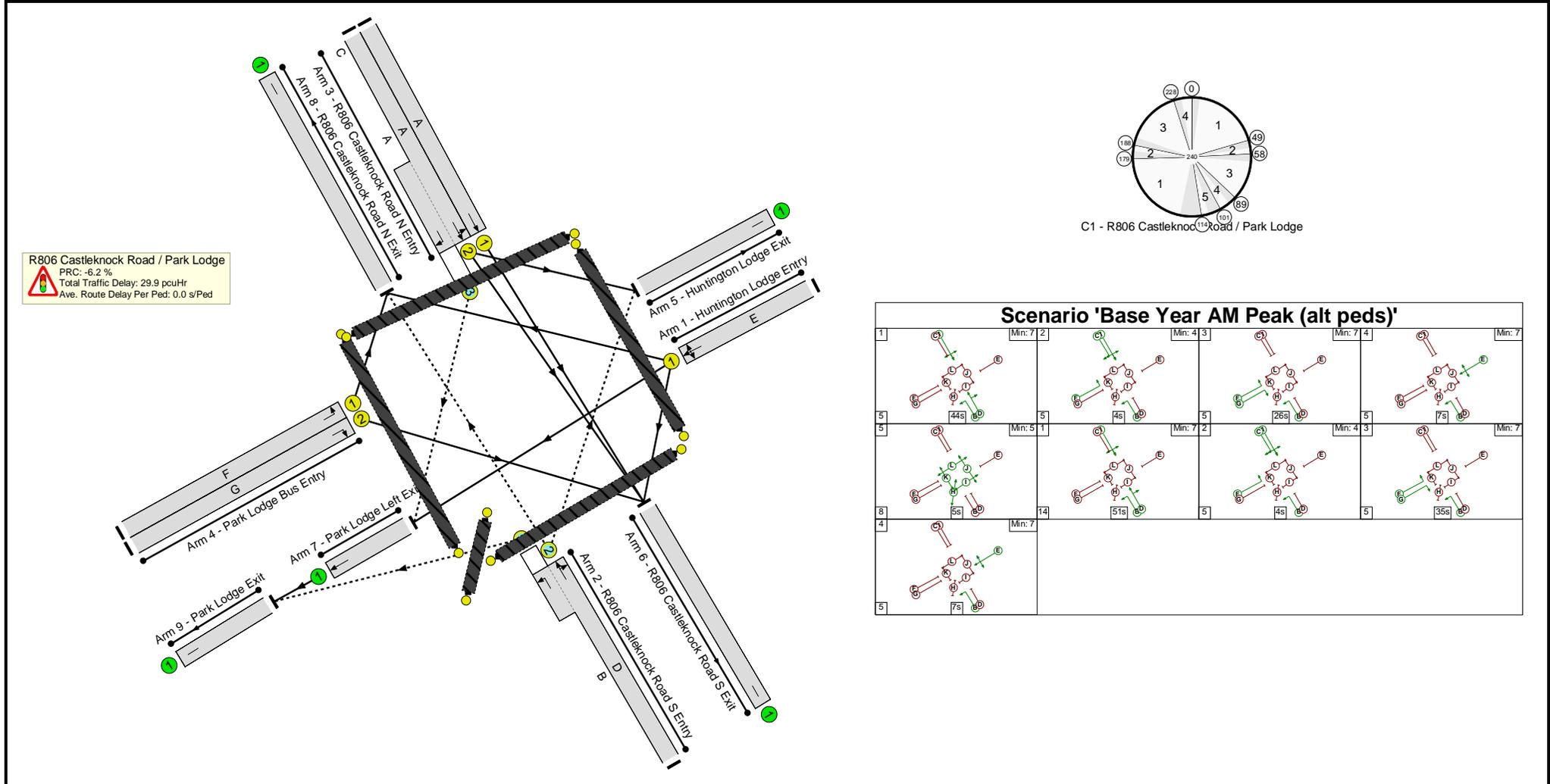
Stage Timings

Stage	1	2	3	4	5	1	2	3	4
Duration	44	4	26	7	5	51	4	35	7
Change Point	0	49	58	89	101	114	179	188	228

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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	95.6%
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	95.6%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		2	14	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		2:1	95:220	-	441	1915:2015	224+237	95.6 : 95.6%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		2	113	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	2	113	8	496	1915:1781	822+126	52.3 : 52.3%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		2	79	-	406	1702	574	70.7%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		2	61	-	426	1702	447	95.4%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	66	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

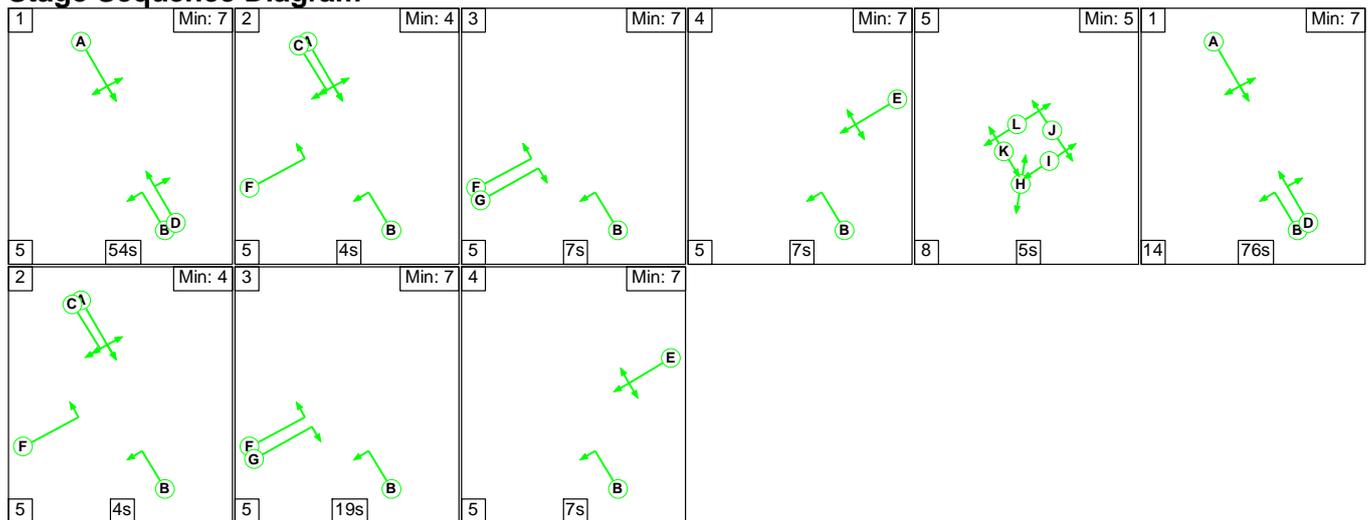
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	6	-	0	-	0	0.0%		
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	5	-	0	-	0	0.0%		
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H	1	8	-	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)	
<b>Network: DART West Junction Modelling</b>	-	-	942	4	2	15.2	14.7	0.0	29.9	-	-	-	-	
<b>R806 Castleknock Road / Park Lodge</b>	-	-	942	4	2	15.2	14.7	0.0	29.9	-	-	-	-	
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
2/2+2/1	441	441	882	0	0	3.0	6.6	0.0	9.6	78.7	9.9	6.6	16.5	
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	
3/2+3/3	496	496	60	4	2	2.9	0.5	0.0	3.4	24.8	11.2	0.5	11.7	
4/1	406	406	-	-	-	4.0	1.2	-	5.2	46.3	13.9	1.2	15.1	
4/2	426	426	-	-	-	5.3	6.4	-	11.6	98.4	16.2	6.4	22.6	
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
7/1	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
8/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
9/1	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
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 - R806 Castleknock Road / Park Lodge			PRC for Signalled Lanes (%): -6.2		Total Delay for Signalled Lanes (pcuHr): 29.93		Cycle Time (s): 240		PRC Over All Lanes (%): -6.2		Total Delay Over All Lanes(pcuHr): 29.93			

Full Input Data And Results

**Scenario 6: 'Base Year PM Peak (alt peds)'** (FG2: 'Base PM Peak', Plan 2: 'Peds every other')

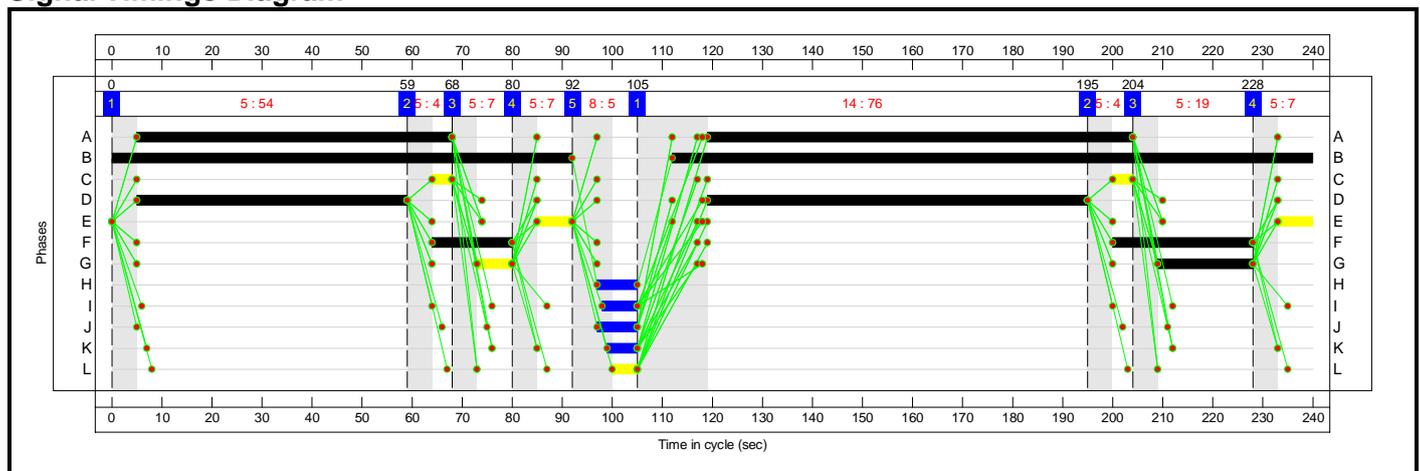
**Stage Sequence Diagram**



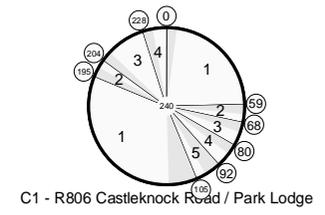
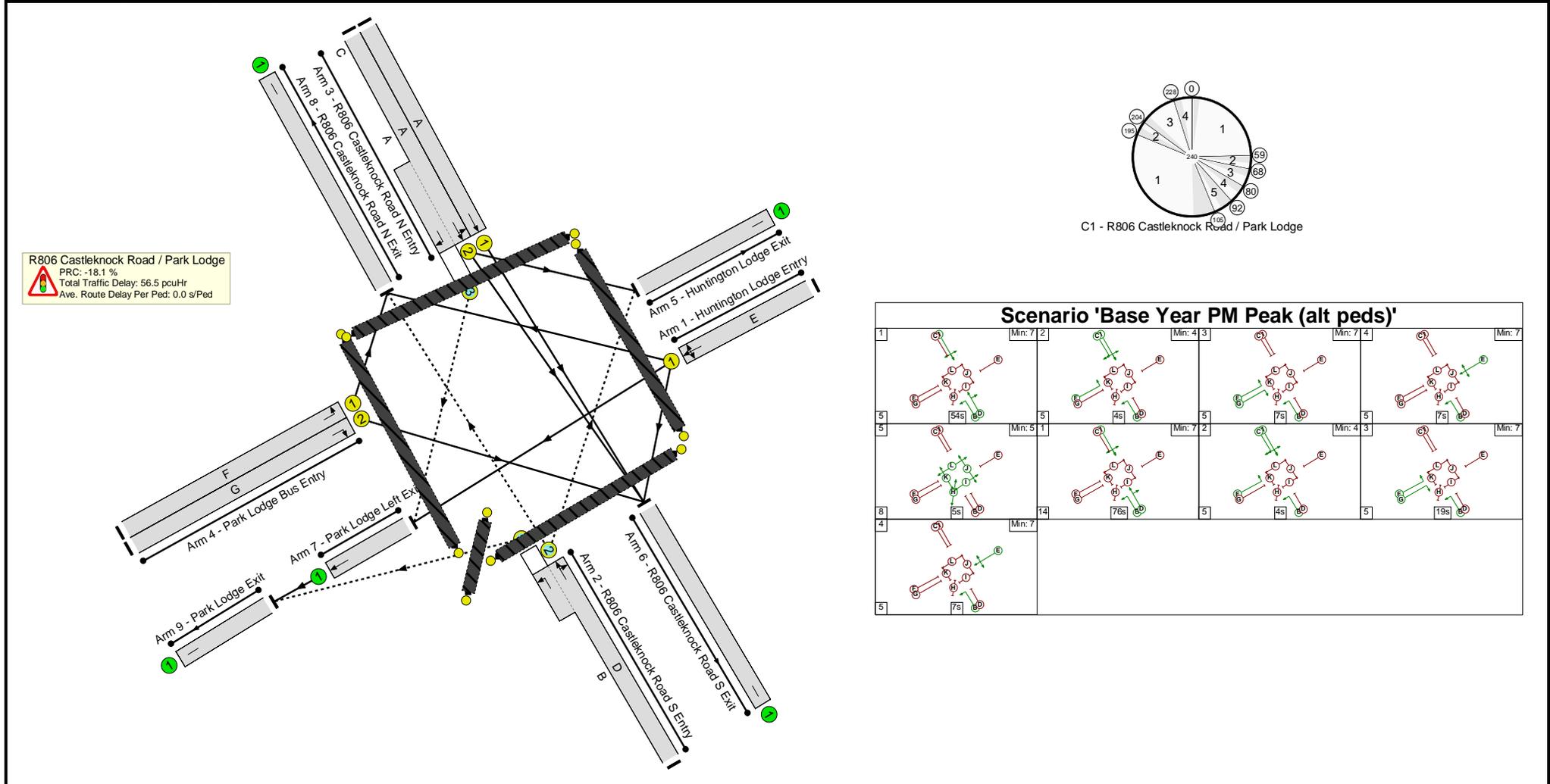
**Stage Timings**

Stage	1	2	3	4	5	1	2	3	4
Duration	54	4	7	7	5	76	4	19	7
Change Point	0	59	68	80	92	105	195	204	228

**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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	106.3%
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	106.3%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		2	14	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		2:1	130:220	-	744	1915:2015	404+303	105.2 : 105.2%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		2	148	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	2	148	8	744	1915:1781	738+513	59.5 : 59.5%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		2	44	-	145	1702	326	44.4%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		2	26	-	211	1702	199	106.3%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	624	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

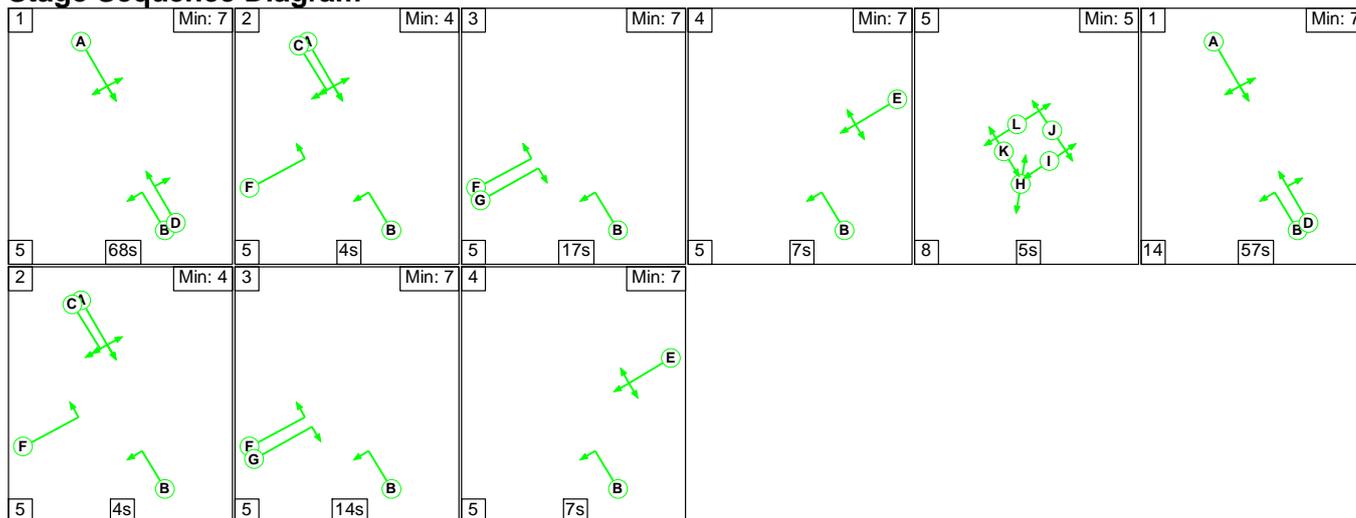
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	1695	18	8	18.4	37.7	0.4	56.5	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	1695	18	8	18.4	37.7	0.4	56.5	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	744	708	1415	0	0	8.9	25.5	0.4	34.8	168.5	28.8	25.5	54.3
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	744	744	280	18	8	2.2	0.7	0.0	3.0	14.5	7.8	0.7	8.5
4/1	145	145	-	-	-	1.8	0.4	-	2.2	55.0	5.2	0.4	5.6
4/2	211	199	-	-	-	5.4	11.0	-	16.4	280.1	11.4	11.0	22.4
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	549	549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	608	608	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge		PRC for Signalled Lanes (%):		-18.1		Total Delay for Signalled Lanes (pcuHr):		56.46		Cycle Time (s): 240			
		PRC Over All Lanes (%):		-18.1		Total Delay Over All Lanes(pcuHr):		56.46					

Full Input Data And Results

Scenario 7: 'DM 2028 AM Peak (alt peds)' (FG3: 'DM 2028 AM Peak', Plan 2: 'Peds every other')

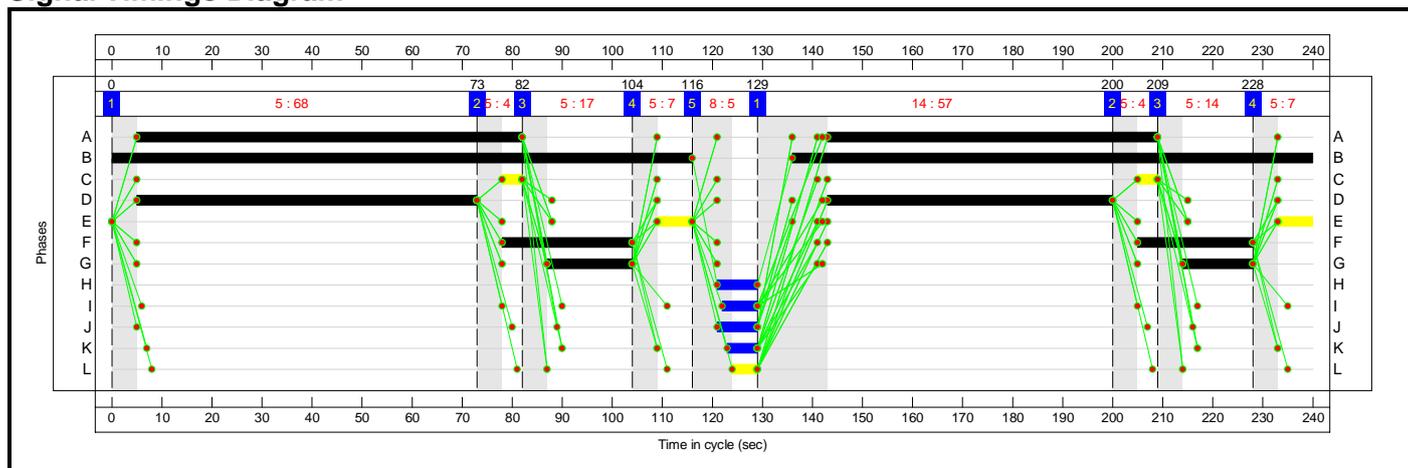
Stage Sequence Diagram



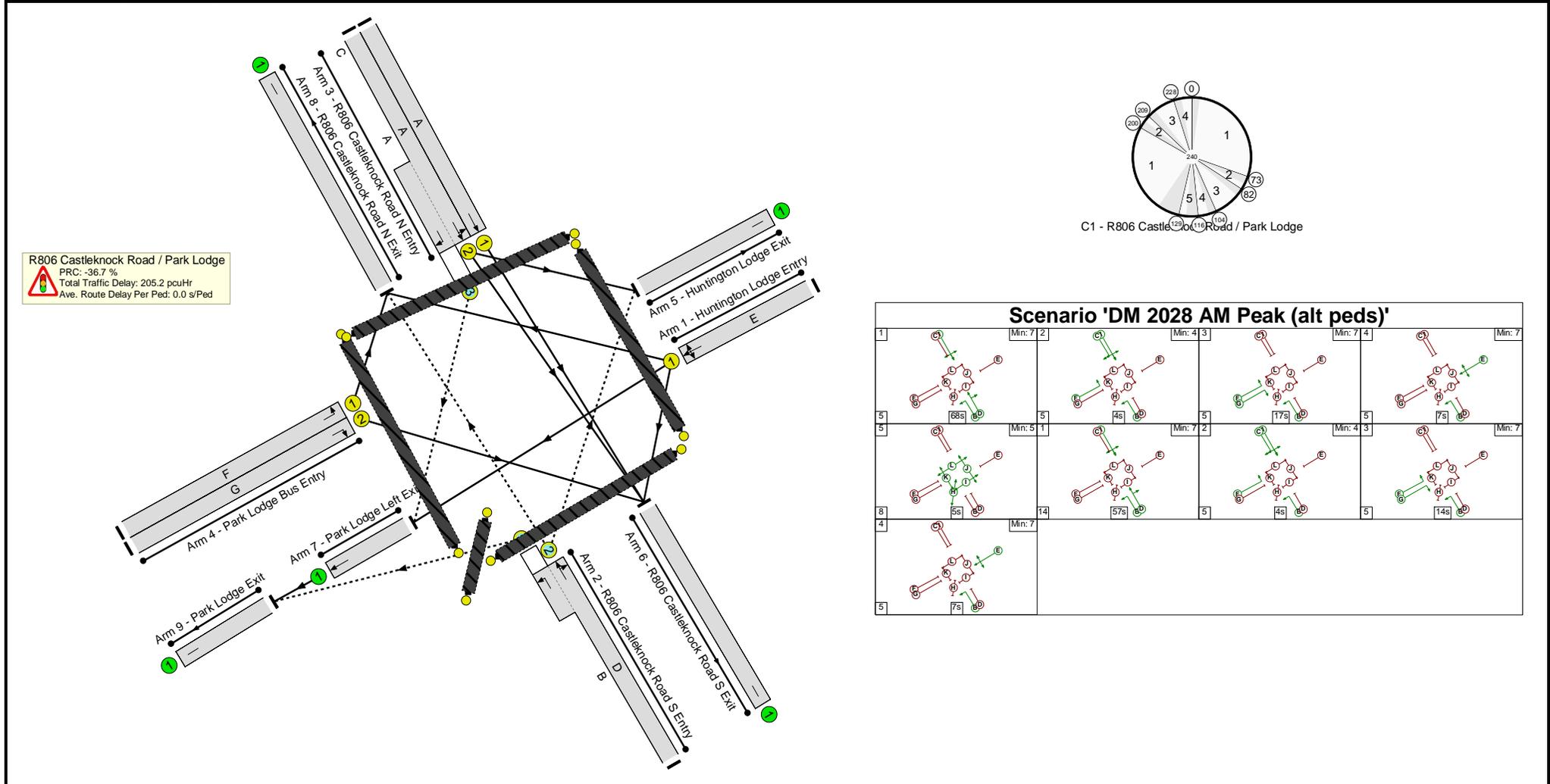
Stage Timings

Stage	1	2	3	4	5	1	2	3	4
Duration	68	4	17	7	5	57	4	14	7
Change Point	0	73	82	104	116	129	200	209	228

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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	123.1%
R806 Castleknock Road / Park Lodge	-	-	N/A	-	-		-	-	-	-	-	-	123.1%
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		2	14	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		2:1	125:220	-	921	1915:2015	354+395	123.1 : 123.1%
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		2	143	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	2	143	8	532	1915:1781	1038+144	45.0 : 45.0%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		2	49	-	413	1702	362	114.2%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		2	31	-	286	1702	234	122.2%
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	753	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	551	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

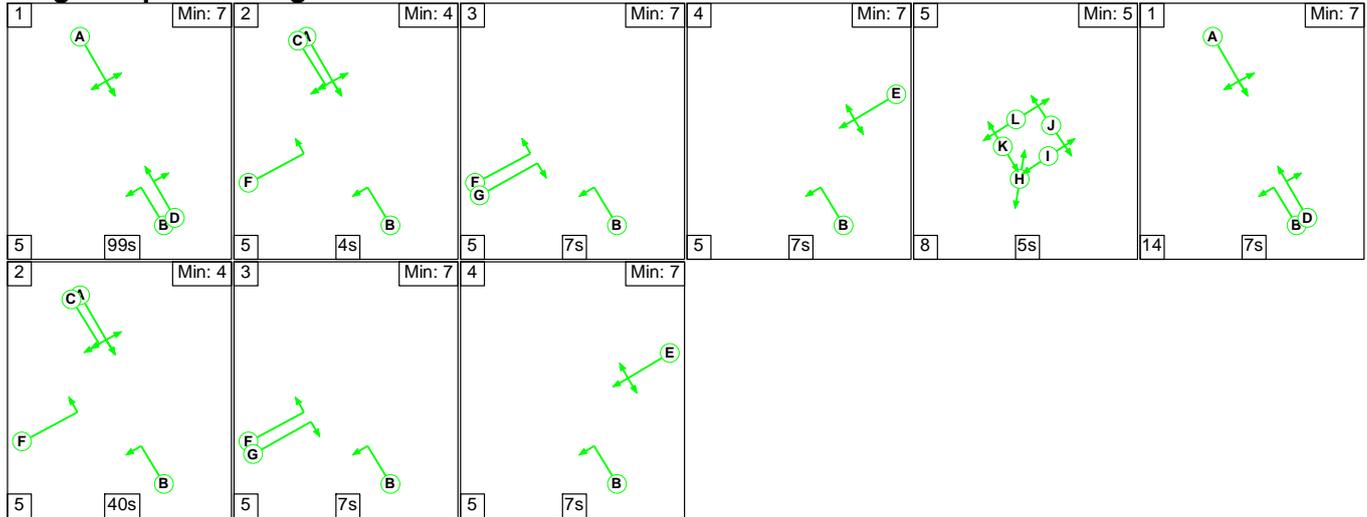
Full Input Data And Results

Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	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)
<b>Network: DART West Junction Modelling</b>	-	-	1557	4	2	57.5	147.0	0.7	205.2	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	1557	4	2	57.5	147.0	0.7	205.2	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	921	748	1497	0	0	32.3	88.9	0.7	121.9	476.6	79.9	88.9	168.8
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	532	532	60	4	2	1.9	0.4	0.0	2.3	15.8	10.7	0.4	11.1
4/1	413	362	-	-	-	12.3	29.2	-	41.5	361.9	21.1	29.2	50.3
4/2	286	234	-	-	-	11.0	28.5	-	39.5	496.6	16.8	28.5	45.3
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	701	701	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	715	715	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge			PRC for Signalled Lanes (%):		-36.7	Total Delay for Signalled Lanes (pcuHr):		205.23	Cycle Time (s):		240		
			PRC Over All Lanes (%):		-36.7	Total Delay Over All Lanes(pcuHr):		205.23					

Full Input Data And Results

Scenario 8: 'DM 2028 PM Peak (alt peds)' (FG4: 'DM 2028 PM Peak', Plan 2: 'Peds every other')

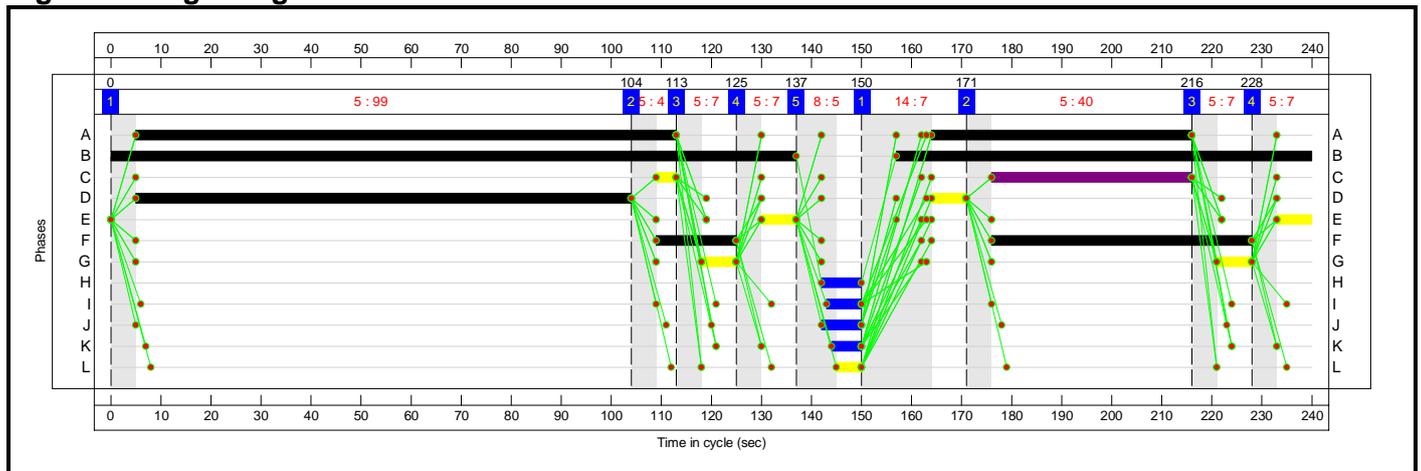
Stage Sequence Diagram



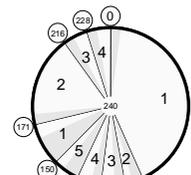
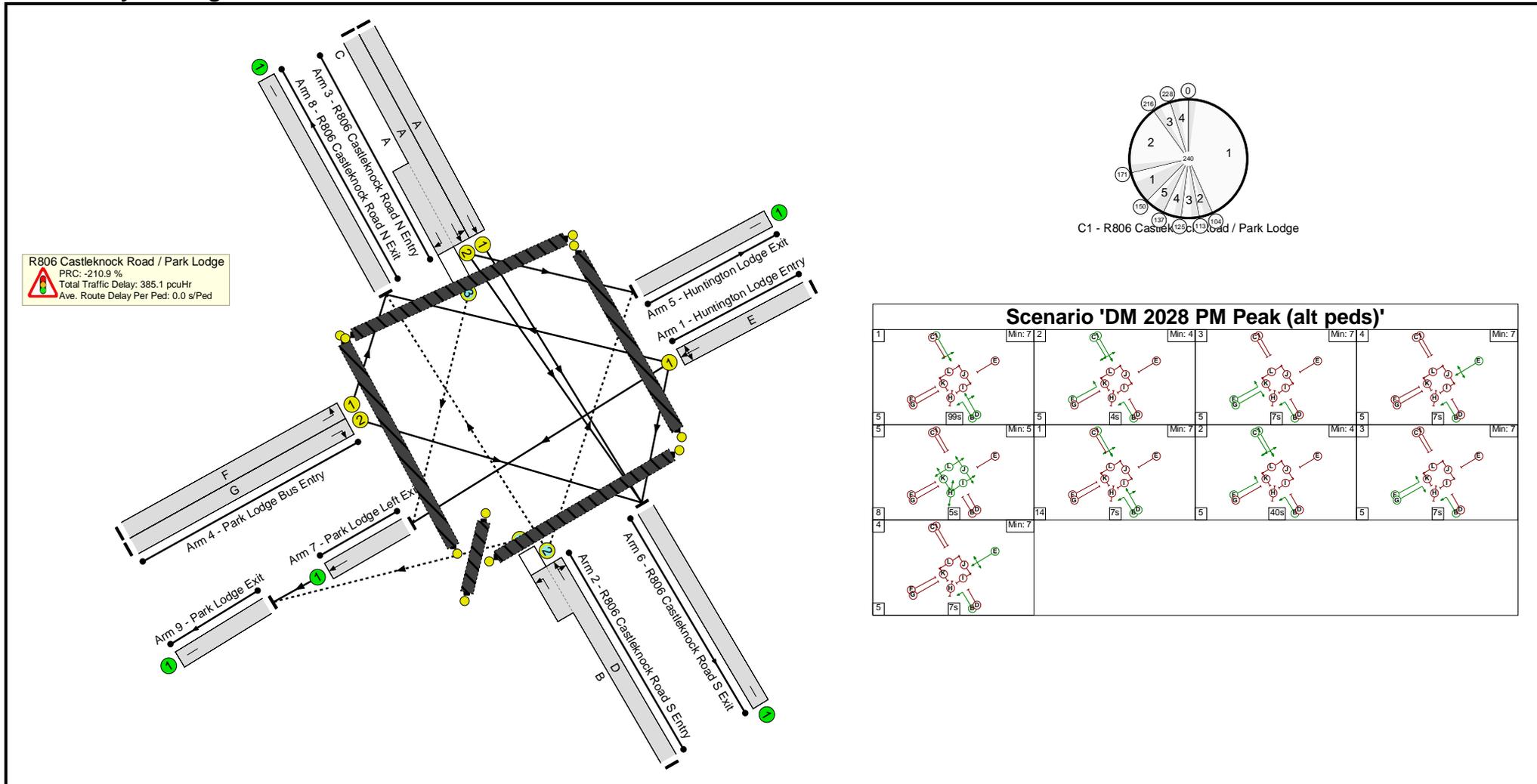
Stage Timings

Stage	1	2	3	4	5	1	2	3	4
Duration	99	4	7	7	5	7	40	7	7
Change Point	0	104	113	125	137	150	171	216	228

Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**



C1 - R806 Castleknock Road / Park Lodge

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>279.8%</b>
<b>R806 Castleknock Road / Park Lodge</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>279.8%</b>
1/1	Huntington Lodge Entry Left Ahead Right	U	N/A	N/A	E		2	14	-	0	1940	129	0.0%
2/2+2/1	R806 Castleknock Road S Entry Right Ahead Left	O	N/A	N/A	D B		2:1	106:220	-	841	1915:2015	169+131	<b>279.8 : 279.8%</b>
3/1	R806 Castleknock Road N Entry Ahead	U	N/A	N/A	A		2	160	-	0	1940	-	-
3/2+3/3	R806 Castleknock Road N Entry Left Ahead Right	U+O	N/A	N/A	A	C	2	160	44	1069	1915:1781	1021+331	79.1 : 79.1%
4/1	Park Lodge Bus Entry Left	U	N/A	N/A	F		2	68	-	102	1702	496	20.5%
4/2	Park Lodge Bus Entry Right	U	N/A	N/A	G		2	14	-	146	1702	113	<b>128.7%</b>
5/1	Huntington Lodge Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
6/1	R806 Castleknock Road S Exit	U	N/A	N/A	-		-	-	-	953	Inf	Inf	0.0%
7/1	Park Lodge Left Exit Ahead	U	N/A	N/A	-		-	-	-	262	Inf	Inf	0.0%
8/1	R806 Castleknock Road N Exit	U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
9/1	Park Lodge Exit	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	J		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%

### Full Input Data And Results

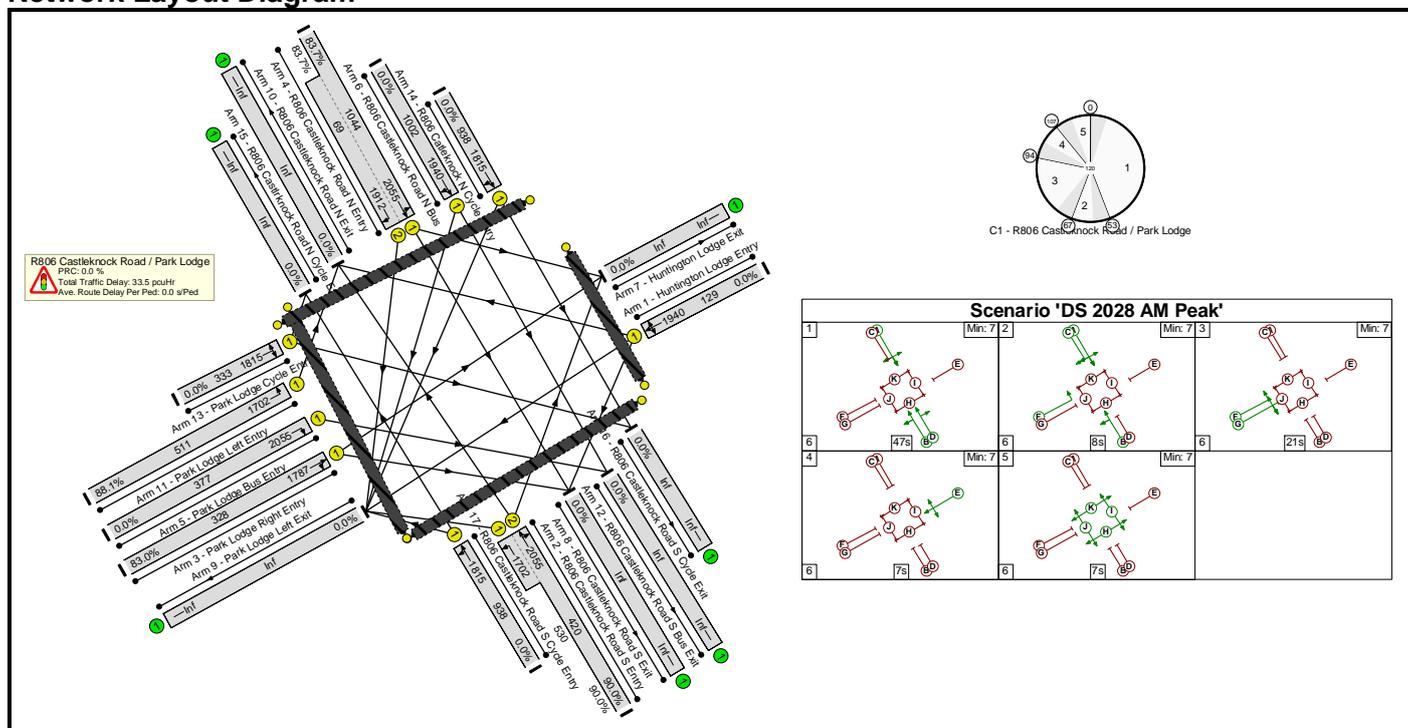
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	6	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	5	-	0	-	0	0.0%
Ped Link: P5	Unnamed Ped Link	-	N/A	-	H		1	8	-	0	-	0	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (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)
<b>Network: DART West Junction Modelling</b>	-	-	<b>781</b>	<b>73</b>	<b>9</b>	<b>93.9</b>	<b>291.2</b>	<b>0.0</b>	<b>385.1</b>	-	-	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	<b>781</b>	<b>73</b>	<b>9</b>	<b>93.9</b>	<b>291.2</b>	<b>0.0</b>	<b>385.1</b>	-	-	-	-
1/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2+2/1	841	301	601	0	0	81.8	271.0	0.0	352.8	1510.3	103.7	271.0	374.7
3/1	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2+3/3	1069	1069	180	73	9	3.8	1.9	0.0	5.7	19.1	28.0	1.9	29.9
4/1	102	102	-	-	-	1.1	0.1	-	1.2	42.0	3.6	0.1	3.7
4/2	146	113	-	-	-	7.2	18.3	-	25.4	627.3	9.9	18.3	28.2
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	920	920	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	393	393	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
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 - R806 Castleknock Road / Park Lodge			PRC for Signalled Lanes (%): -210.9		PRC Over All Lanes (%): -210.9		Total Delay for Signalled Lanes (pcuHr): 385.12		Total Delay Over All Lanes(pcuHr): 385.12		Cycle Time (s): 240		

Basic Results Summary  
**Basic Results Summary**

**User and Project Details**

<b>Project:</b>	DART
<b>Title:</b>	DART West Junction Modelling
<b>Location:</b>	R806 Castleknock Road / Park Lodge
<b>Date Started:</b>	25/11/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction5_Base_DS.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**Scenario 1: 'DS 2028 AM Peak' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')**  
**Network Layout Diagram**



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	90.0%	0	0	0	33.5	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	-		-	-	-	-	-	-	90.0%	0	0	0	33.5	-	-
1/1	Huntington Lodge Entry Left Ahead Right	U	E		1	7	-	0	1940	129	0.0%	-	-	-	0.0	0.0	0.0
2/2+2/1	R806 Castleknock Road S Entry Right Left Ahead	U	D B		1	47:61	-	855	2055:1702	420+530	90.0 : 90.0%	-	-	-	10.1	42.4	23.2
3/1	Park Lodge Right Entry Ahead Right	U	G		1	21	-	272	1787	328	83.0%	-	-	-	5.8	77.1	11.0
4/1+4/2	R806 Castleknock Road N Entry Left Ahead Right	U	A C		1	61:8	-	931	2055:1912	1044+69	83.7 : 83.7%	-	-	-	9.3	35.8	27.1
5/1	Park Lodge Bus Entry Right	U	G		1	21	-	0	2055	377	0.0%	-	-	-	0.0	0.0	0.0
6/1	R806 Castleknock Road N Bus Right Ahead	U	A		1	61	-	0	1940	1002	0.0%	-	-	-	0.0	0.0	0.0
11/1	Park Lodge Left Entry Left	U	F		1	35	-	450	1702	511	88.1%	-	-	-	8.3	66.7	17.6
13/1	Park Lodge Cycle Entry Left Right	U	G		1	21	-	0	1815	333	0.0%	-	-	-	0.0	0.0	0.0

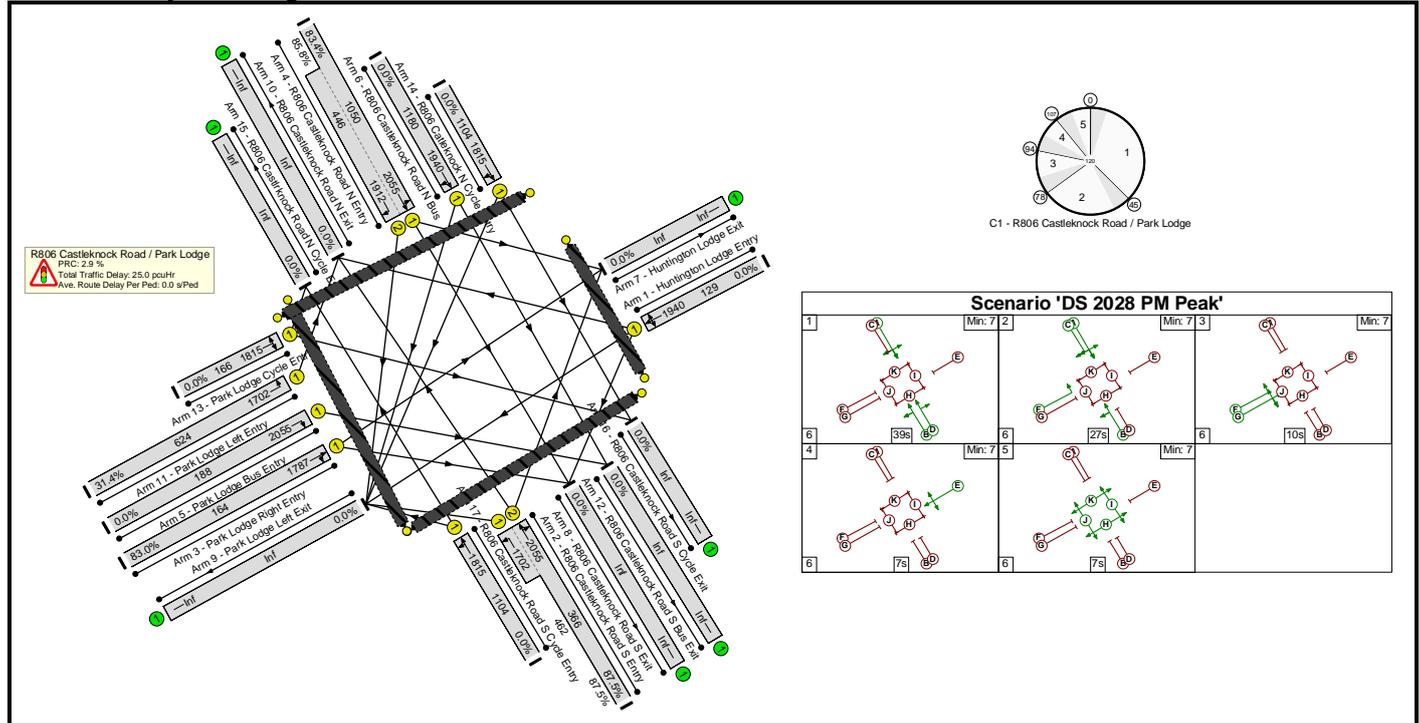
Basic Results Summary

14/1	R806 Castleknock N Cycle Entry Right Ahead	U	A	1	61	-	0	1815	938	0.0%	-	-	-	0.0	0.0	0.0
17/1	R806 Castleknock Road S Cycle Entry Left Ahead	U	B	1	61	-	0	1815	938	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	I	1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	H	1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	J	1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	K	1	7	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - R806 Castleknock Road / Park Lodge				PRC for Signalled Lanes (%):		0.0		Total Delay for Signalled Lanes (pcuHr):		33.49		Cycle Time (s): 120				
				PRC Over All Lanes (%):		0.0		Total Delay Over All Lanes(pcuHr):		33.49						

Basic Results Summary

Scenario 2: 'DS 2028 PM Peak' (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	87.5%	0	0	0	25.0	-	-
<b>R806 Castleknock Road / Park Lodge</b>	-	-	-		-	-	-	-	-	-	87.5%	0	0	0	25.0	-	-
1/1	Huntington Lodge Entry Left Ahead Right	U	E		1	7	-	0	1940	129	0.0%	-	-	-	0.0	0.0	0.0
2/2+2/1	R806 Castleknock Road S Entry Right Left Ahead	U	D B		1	39:72	-	724	2055:1702	366+462	87.5 : 87.5%	-	-	-	7.9	39.4	18.4
3/1	Park Lodge Right Entry Ahead Right	U	G		1	10	-	136	1787	164	83.0%	-	-	-	4.1	109.7	6.5
4/1+4/2	R806 Castleknock Road N Entry Left Ahead Right	U	A C		1	72:27	-	1258	2055:1912	1050+446	83.4 : 85.8%	-	-	-	11.2	32.0	22.3
5/1	Park Lodge Bus Entry Right	U	G		1	10	-	0	2055	188	0.0%	-	-	-	0.0	0.0	0.0
6/1	R806 Castleknock Road N Bus Right Ahead	U	A		1	72	-	0	1940	1180	0.0%	-	-	-	0.0	0.0	0.0
11/1	Park Lodge Left Entry Left	U	F		1	43	-	196	1702	624	31.4%	-	-	-	1.7	31.4	4.9
13/1	Park Lodge Cycle Entry Left Right	U	G		1	10	-	0	1815	166	0.0%	-	-	-	0.0	0.0	0.0

Basic Results Summary

14/1	R806 Castleknock N Cycle Entry Right Ahead	U	A		1	72	-	0	1815	1104	0.0%	-	-	-	0.0	0.0	0.0
17/1	R806 Castleknock Road S Cycle Entry Left Ahead	U	B		1	72	-	0	1815	1104	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	I		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	H		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	J		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	K		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - R806 Castleknock Road / Park Lodge					PRC for Signalled Lanes (%):		2.9	Total Delay for Signalled Lanes (pcuHr):		24.95	Cycle Time (s):		120				
					PRC Over All Lanes (%):		2.9	Total Delay Over All Lanes(pcuHr):		24.95							

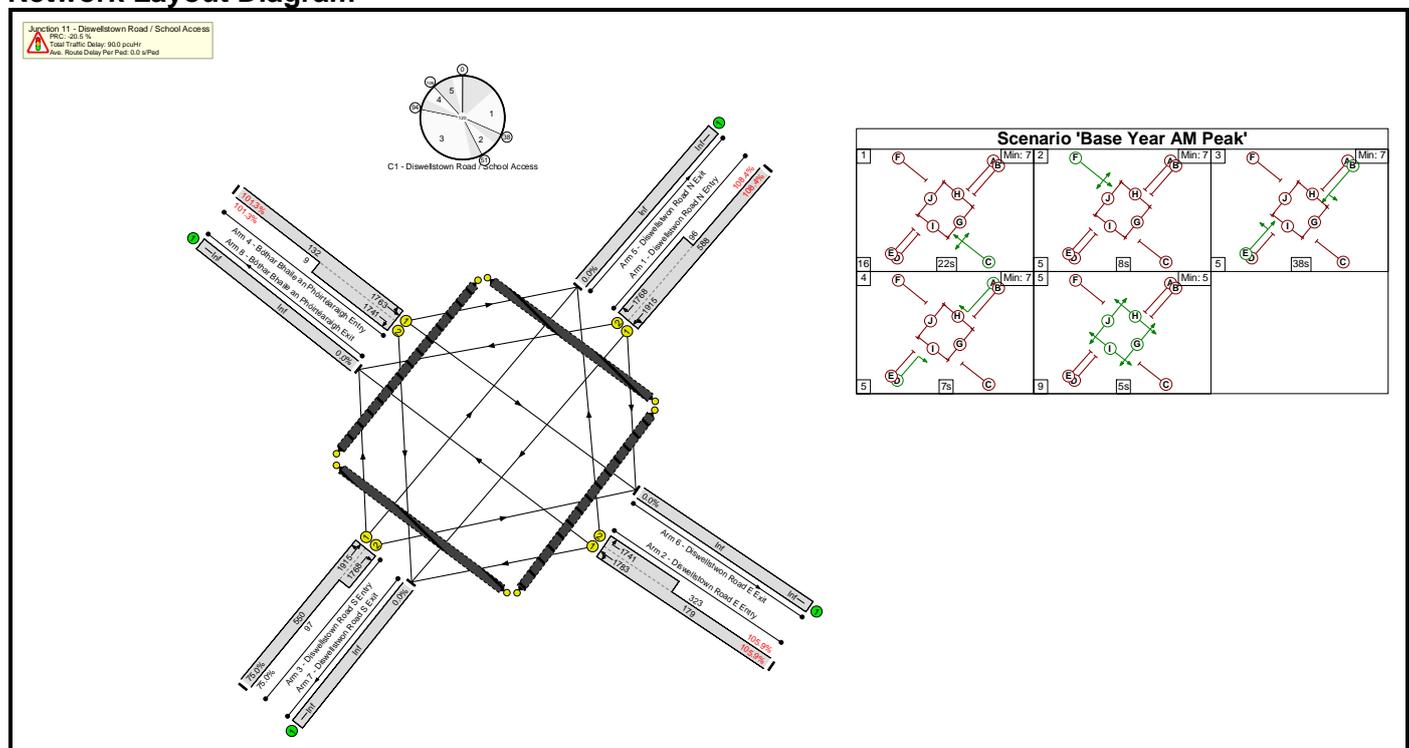
Basic Results Summary  
**Basic Results Summary**

**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Diswellstown Road / School Access
<b>Date Started:</b>	11/09/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction11_Base_DM V2.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

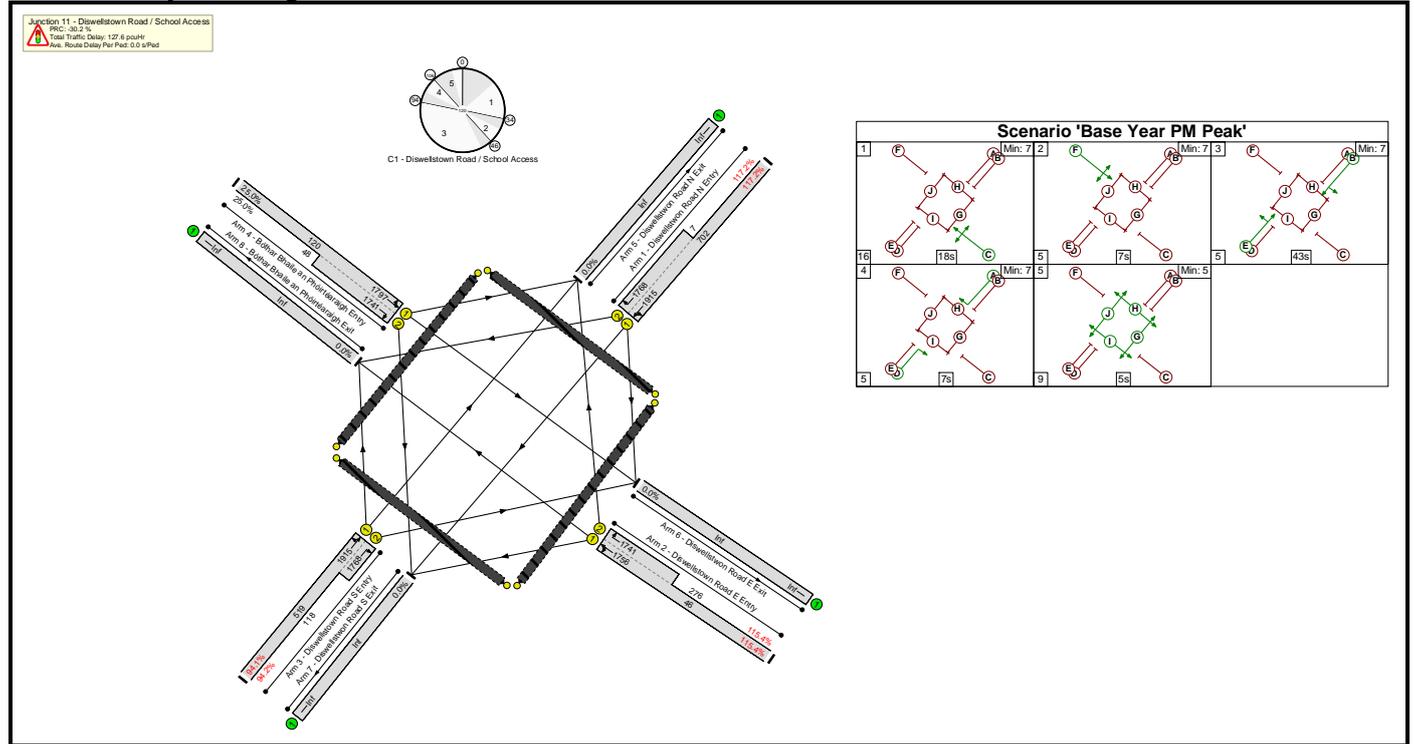
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	108.4%	0	0	0	90.0	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	108.4%	0	0	0	90.0	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		1	38:7	-	741	1915:1768	588+96	108.4 : 108.4%	-	-	-	45.0	218.8	60.9
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	22	-	531	1783:1741	179+323	105.9 : 105.9%	-	-	-	29.6	200.4	35.1
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	38:7	-	486	1915:1768	550+97	75.0 : 75.0%	-	-	-	6.6	49.2	14.9
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	8	-	143	1763:1741	132+9	101.3 : 101.3%	-	-	-	8.8	220.6	11.0
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-20.5		Total Delay for Signalled Lanes (pcuHr):			90.01		Cycle Time (s): 120				
				PRC Over All Lanes (%):		-20.5		Total Delay Over All Lanes(pcuHr):			90.01						

Basic Results Summary

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

Network Layout Diagram



Basic Results Summary

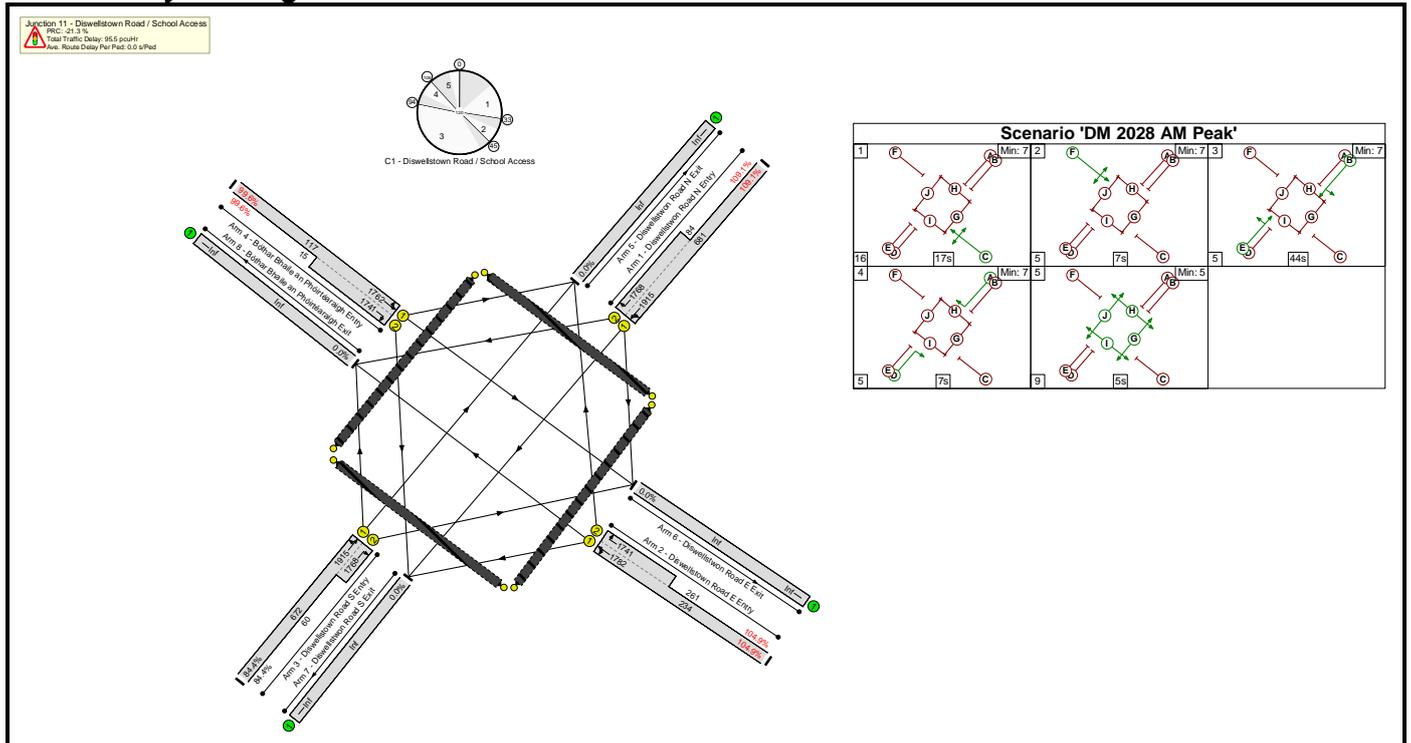
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	117.2%	0	0	0	127.6	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	117.2%	0	0	0	127.6	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		1	43:7	-	831	1915:1768	702+7	117.2 : 117.2%	-	-	-	78.6	340.6	98.2
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	18	-	371	1756:1741	46+276	115.4 : 115.4%	-	-	-	35.9	348.8	41.1
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	43:7	-	599	1915:1768	519+118	94.1 : 94.2%	-	-	-	12.3	73.9	22.7
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	7	-	42	1797:1741	120+48	25.0 : 25.0%	-	-	-	0.8	67.3	1.1
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-30.2		Total Delay for Signalled Lanes (pcuHr):		127.64		Cycle Time (s): 120					
				PRC Over All Lanes (%):		-30.2		Total Delay Over All Lanes(pcuHr):		127.64							

Basic Results Summary

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

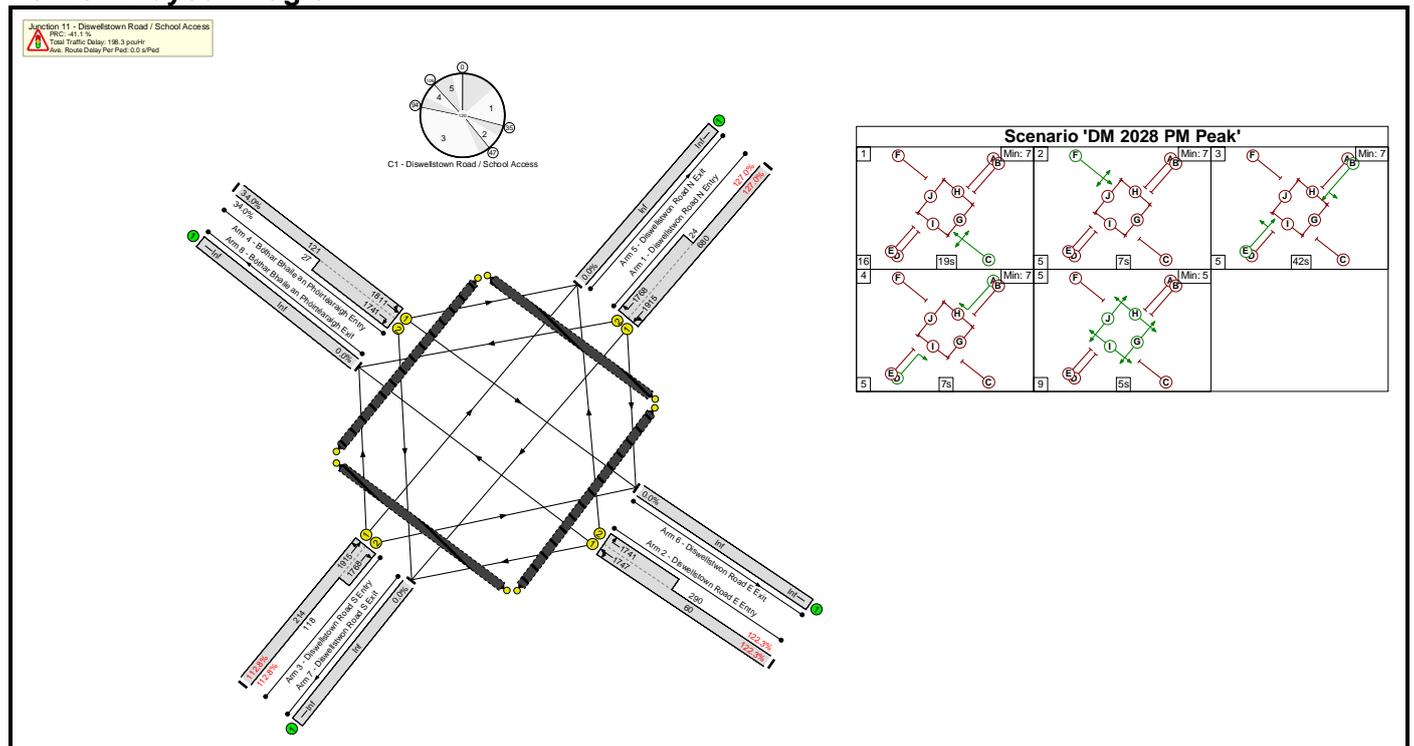
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	109.1%	0	0	0	95.5	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	109.1%	0	0	0	95.5	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		1	44:7	-	835	1915:1768	681+84	109.1 : 109.1%	-	-	-	52.1	224.6	71.2
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	17	-	520	1782:1741	234+261	104.9 : 104.9%	-	-	-	27.1	187.7	28.6
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	44:7	-	618	1915:1768	672+60	84.4 : 84.4%	-	-	-	8.7	50.5	20.9
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	7	-	132	1762:1741	117+15	99.6 : 99.6%	-	-	-	7.7	208.7	9.5
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-21.3		Total Delay for Signalled Lanes (pcuHr):			95.52		Cycle Time (s): 120				
				PRC Over All Lanes (%):		-21.3		Total Delay Over All Lanes(pcuHr):			95.52						

Basic Results Summary

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

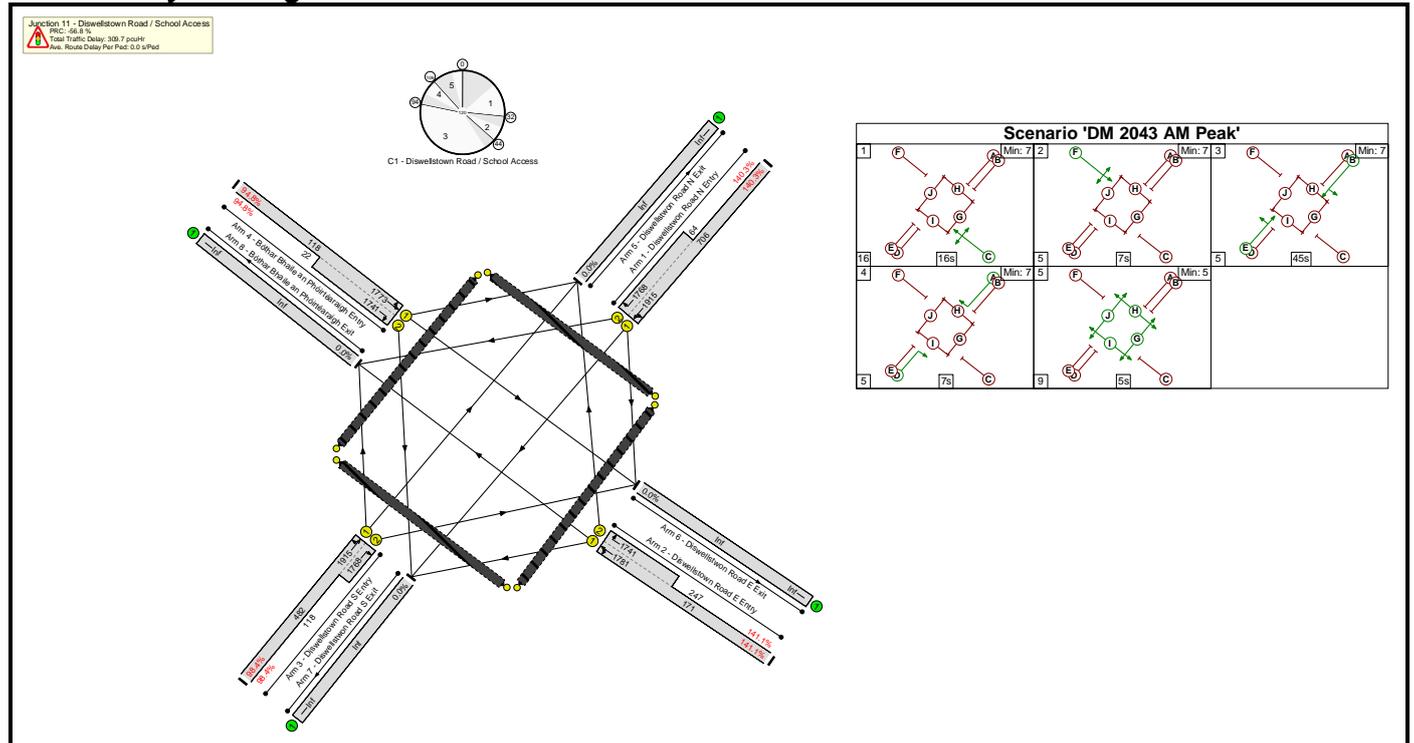
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	127.0%	0	0	0	198.3	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	127.0%	0	0	0	198.3	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		1	42:7	-	894	1915:1768	680+24	127.0 : 127.0%	-	-	-	115.6	465.7	135.6
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	19	-	429	1747:1741	60+290	122.3 : 122.3%	-	-	-	52.2	437.7	57.8
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	42:7	-	374	1915:1768	214+118	112.8 : 112.8%	-	-	-	29.5	284.4	31.6
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	7	-	50	1811:1741	121+27	34.0 : 34.0%	-	-	-	1.0	71.8	1.6
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-41.1		Total Delay for Signalled Lanes (pcuHr):		198.35		Cycle Time (s): 120					
				PRC Over All Lanes (%):		-41.1		Total Delay Over All Lanes(pcuHr):		198.35							

Basic Results Summary

Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

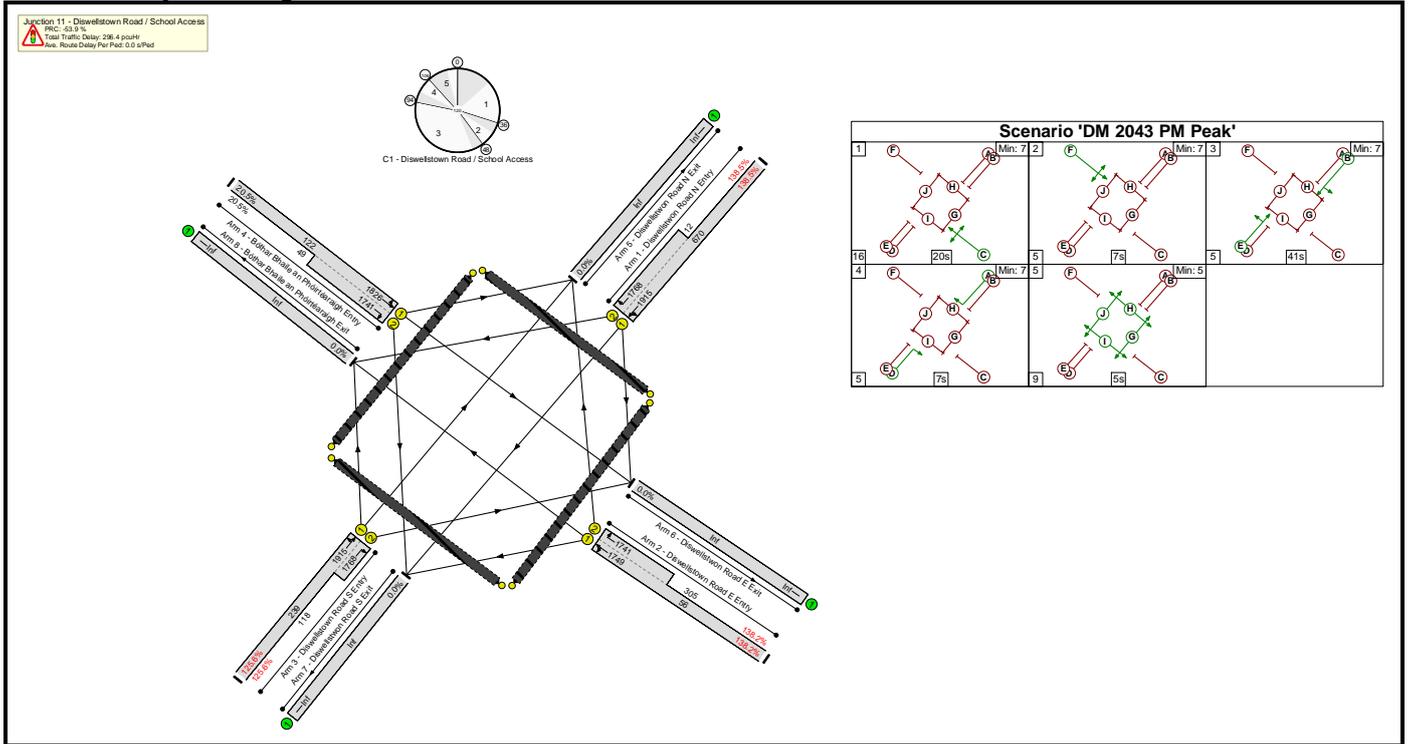
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	141.1%	0	0	0	309.7	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	141.1%	0	0	0	309.7	-	-
1/1+1/2	Diswellstwon Road N Entry Left Ahead Right	U	B A		1	45:7	-	1080	1915:1768	706+64	140.3 : 140.3%	-	-	-	182.5	608.4	205.4
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	16	-	589	1781:1741	171+247	141.1 : 141.1%	-	-	-	105.0	641.7	107.7
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	45:7	-	590	1915:1768	482+118	98.4 : 98.4%	-	-	-	15.9	97.1	25.7
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	7	-	133	1773:1741	118+22	94.8 : 94.8%	-	-	-	6.3	169.4	7.9
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-56.8		Total Delay for Signalled Lanes (pcuHr):		309.70		Cycle Time (s): 120					
				PRC Over All Lanes (%):		-56.8		Total Delay Over All Lanes(pcuHr):		309.70							

Basic Results Summary

Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

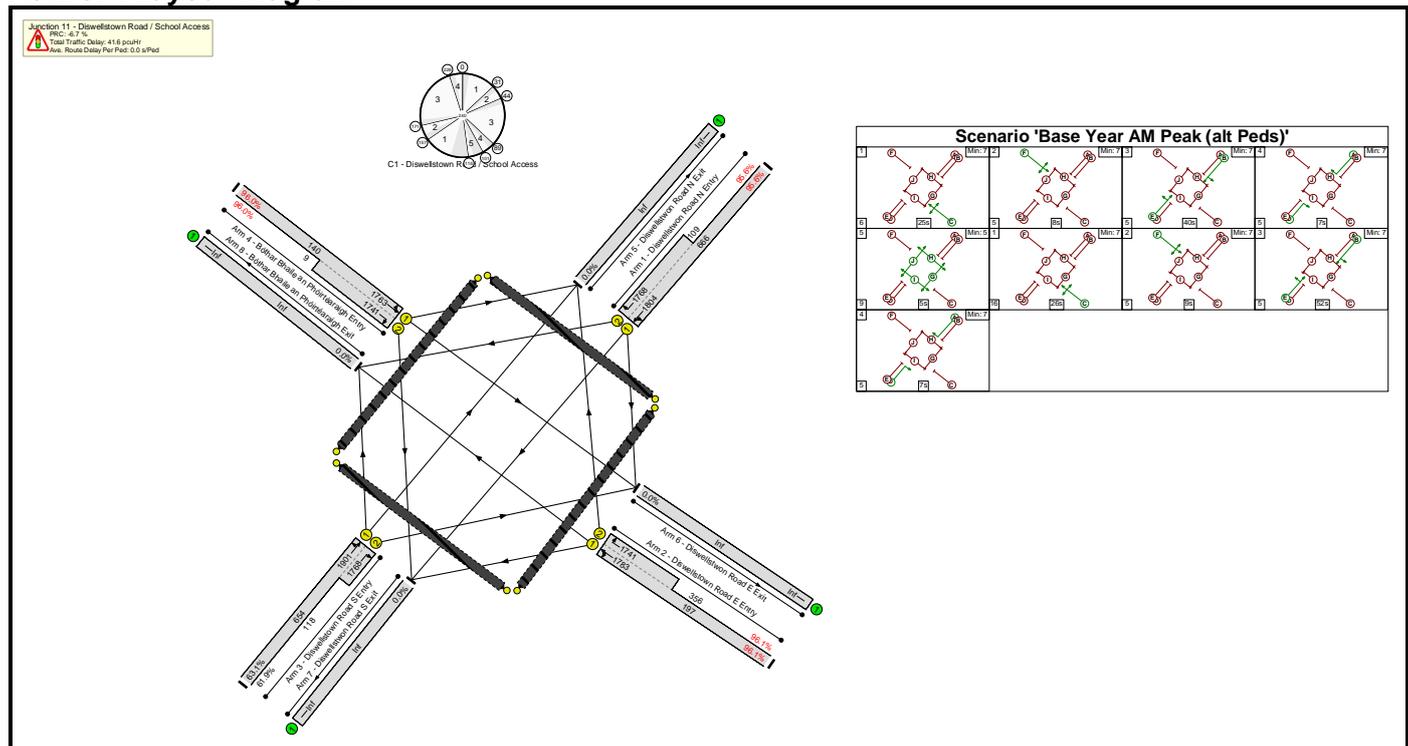
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	138.5%	0	0	0	296.4	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	138.5%	0	0	0	296.4	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		1	41:7	-	945	1915:1768	670+12	138.5 : 138.5%	-	-	-	155.4	591.9	175.8
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		1	20	-	499	1749:1741	56+305	138.2 : 138.2%	-	-	-	85.5	617.2	91.5
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		1	41:7	-	448	1915:1768	239+118	125.6 : 125.6%	-	-	-	54.9	440.8	61.0
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		1	7	-	35	1826:1741	122+49	20.5 : 20.5%	-	-	-	0.6	66.2	0.9
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-53.9		Total Delay for Signalled Lanes (pcuHr):		296.42		Cycle Time (s): 120					
				PRC Over All Lanes (%):		-53.9		Total Delay Over All Lanes(pcuHr):		296.42							

Basic Results Summary

**Scenario 7: 'Base Year AM Peak (alt Peds)'** (FG1: 'Base AM Peak', Plan 2: 'Peds every other')

**Network Layout Diagram**



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	96.1%	0	0	0	41.6	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	96.1%	0	0	0	41.6	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		2	92:14	-	741	1804:1768	666+109	95.6 : 95.6%	-	-	-	15.6	75.7	34.0
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	51	-	531	1783:1741	197+356	96.1 : 96.1%	-	-	-	13.8	93.7	20.4
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	92:14	-	486	1901:1768	654+118	63.1 : 61.9%	-	-	-	5.4	39.9	15.2
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	17	-	143	1763:1741	140+9	96.0 : 96.0%	-	-	-	6.9	172.7	9.4
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-6.7		Total Delay for Signalled Lanes (pcuHr):			41.64		Cycle Time (s): 240				
				PRC Over All Lanes (%):		-6.7		Total Delay Over All Lanes(pcuHr):			41.64						



Basic Results Summary

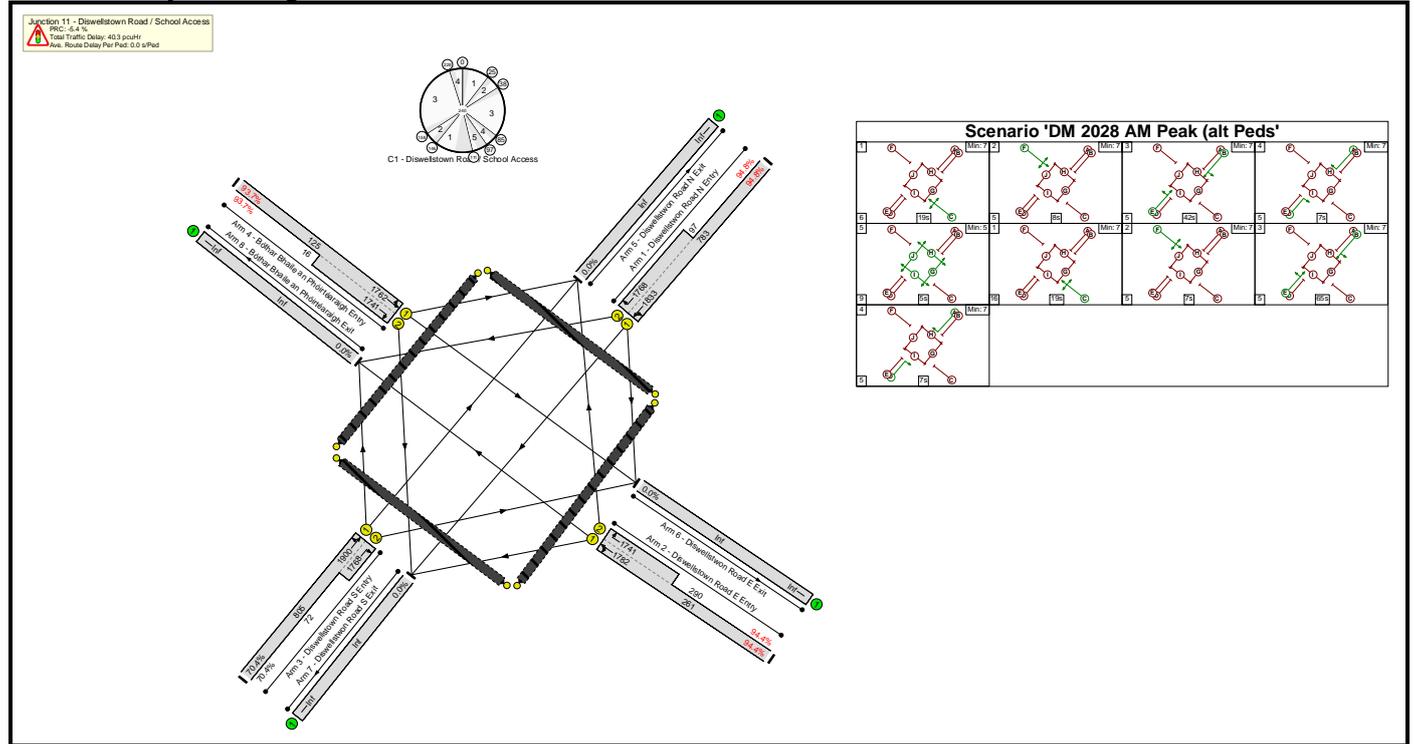
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-	-	-	-	-	-	-	-	102.8%	0	0	0	61.9	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-	-	-	-	-	-	-	-	102.8%	0	0	0	61.9	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		2	105:14	-	831	1795:1768	800+8	102.8 : 102.8%	-	-	-	31.9	138.3	60.0
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	41	-	371	1756:1741	52+312	101.9 : 101.9%	-	-	-	17.5	169.4	23.5
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	105:14	-	599	1913:1768	518+118	94.2 : 94.2%	-	-	-	11.7	70.2	23.4
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	14	-	42	1797:1741	120+48	25.0 : 25.0%	-	-	-	0.8	67.3	1.1
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-14.3		Total Delay for Signalled Lanes (pcuHr):		61.85		Cycle Time (s):		240			
				PRC Over All Lanes (%):		-14.3		Total Delay Over All Lanes(pcuHr):		61.85							

Basic Results Summary

Scenario 9: 'DM 2028 AM Peak (alt Peds)' (FG3: 'DM 2028 AM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

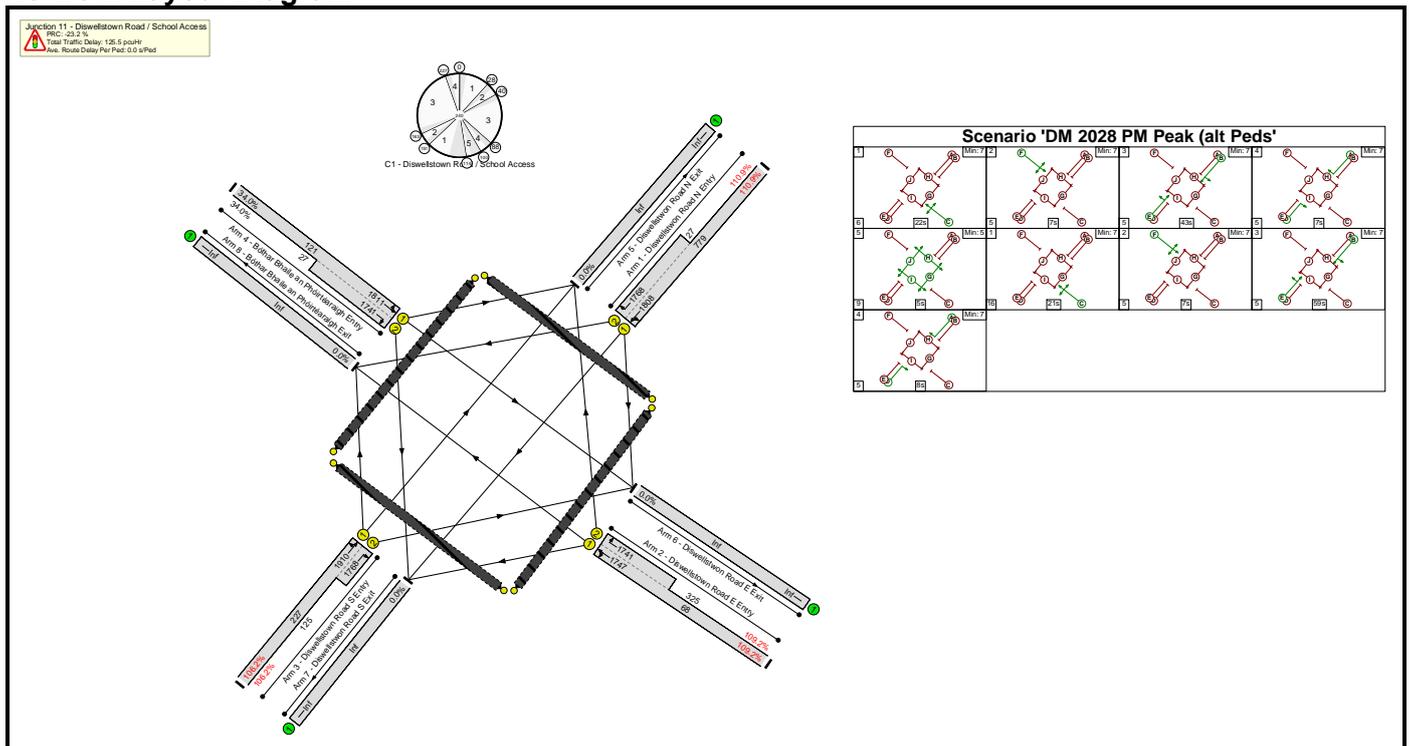
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)				
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	94.8%	0	0	0	40.3	-	-				
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	94.8%	0	0	0	40.3	-	-				
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		2	107:14	-	835	1833:1768	783+97	94.8 : 94.8%	-	-	-	15.0	64.7	36.9				
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	38	-	520	1782:1741	261+290	94.4 : 94.4%	-	-	-	13.1	91.0	15.1				
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	107:14	-	618	1900:1768	805+72	70.4 : 70.4%	-	-	-	6.2	35.9	20.0				
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	15	-	132	1762:1741	125+16	93.7 : 93.7%	-	-	-	6.0	162.8	7.8				
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-				
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-				
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-				
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-				
C1 - Diswellstown Road / School Access		PRC for Signalled Lanes (%):		-5.4		Total Delay for Signalled Lanes (pcuHr):		40.28		Cycle Time (s):		240		PRC Over All Lanes (%):		-5.4		Total Delay Over All Lanes(pcuHr):		40.28	

Basic Results Summary

Scenario 10: 'DM 2028 PM Peak (alt Peds' (FG4: 'DM 2028 PM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-	-	-	-	-	-	-	-	110.9%	0	0	0	125.5	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-	-	-	-	-	-	-	-	110.9%	0	0	0	125.5	-	-
1/1+1/2	Diswellstown Road N Entry Left Ahead Right	U	B A		2	102:15	-	894	1808:1768	779+27	110.9 : 110.9%	-	-	-	69.0	277.8	96.9
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	43	-	429	1747:1741	68+325	109.2 : 109.2%	-	-	-	33.9	284.8	41.4
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	102:15	-	374	1910:1768	227+125	106.2 : 106.2%	-	-	-	21.6	208.0	24.8
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	14	-	50	1811:1741	121+27	34.0 : 34.0%	-	-	-	1.0	71.8	1.6
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-23.2		Total Delay for Signalled Lanes (pcuHr):		125.52		Cycle Time (s):		240			
				PRC Over All Lanes (%):		-23.2		Total Delay Over All Lanes(pcuHr):		125.52							



Basic Results Summary

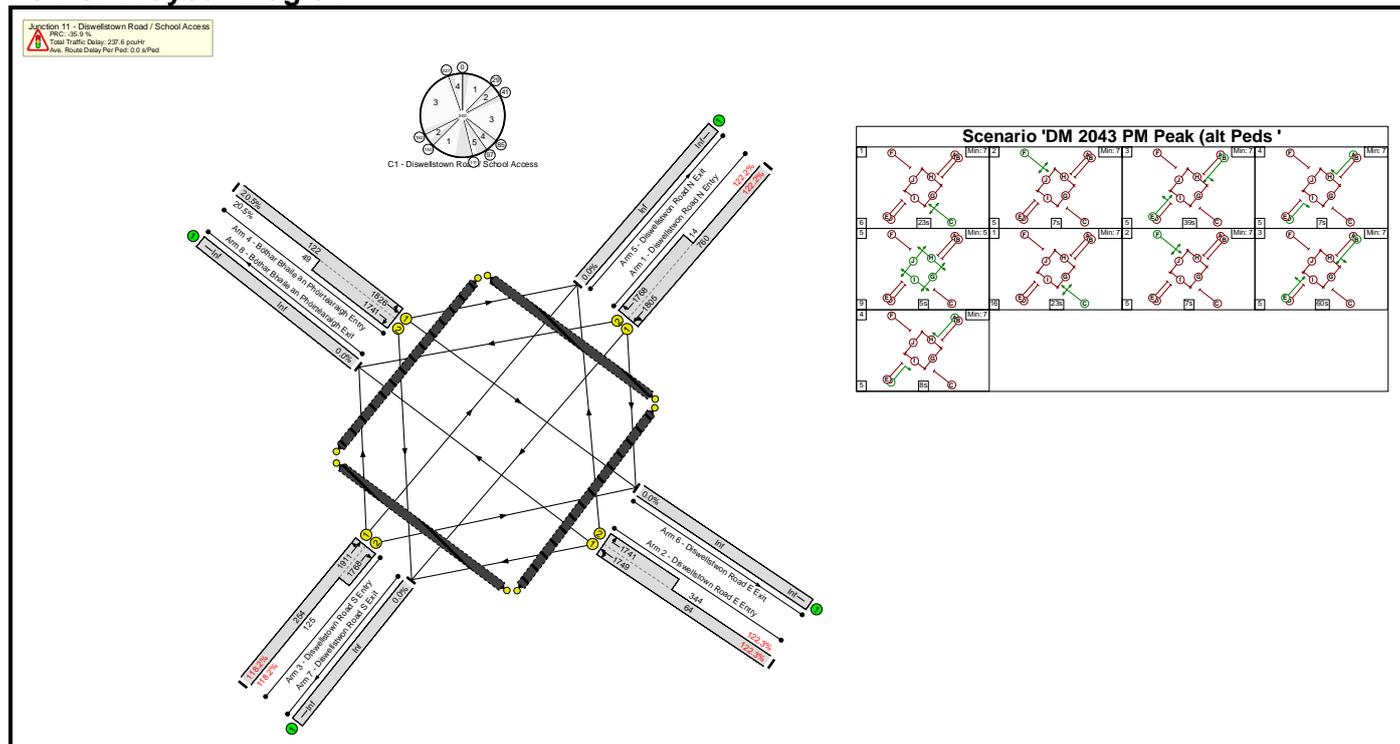
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-	-	-	-	-	-	-	-	123.0%	0	0	0	243.1	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-	-	-	-	-	-	-	-	123.0%	0	0	0	243.1	-	-
1/1+1/2	Diswellstwon Road N Entry Left Ahead Right	U	B A		2	109:14	-	1080	1809:1768	805+73	123.0 : 123.0%	-	-	-	140.3	467.8	176.0
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	37	-	589	1781:1741	196+283	123.0 : 123.0%	-	-	-	81.1	495.5	86.5
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	109:14	-	590	1901:1768	482+118	98.4 : 98.4%	-	-	-	15.5	94.3	26.5
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	14	-	133	1773:1741	118+22	94.8 : 94.8%	-	-	-	6.3	169.4	8.0
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-36.7		Total Delay for Signalled Lanes (pcuHr):		243.11		Cycle Time (s):		240			
				PRC Over All Lanes (%):		-36.7		Total Delay Over All Lanes(pcuHr):		243.11							

Basic Results Summary

Scenario 12: 'DM 2043 PM Peak (alt Peds ' (FG6: 'DM 2043 PM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

**Network Results**

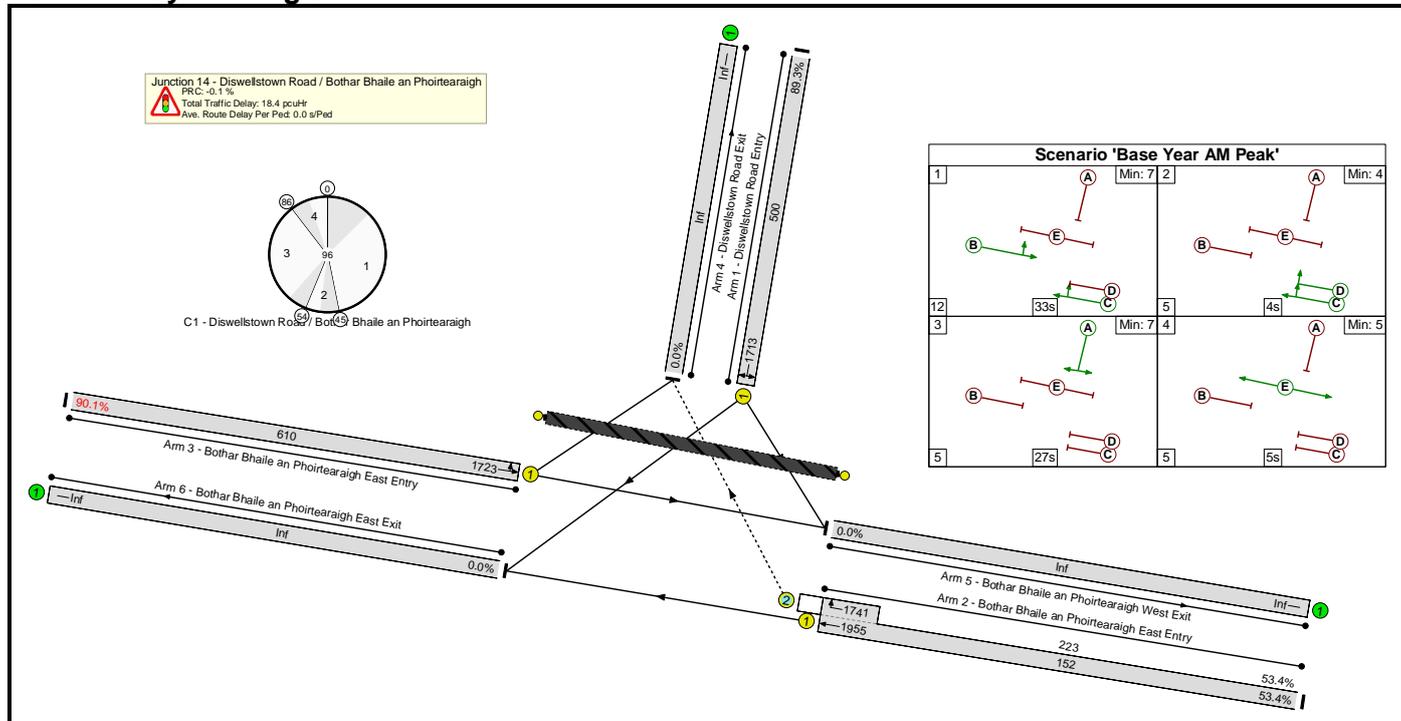
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	122.3%	0	0	0	237.6	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	-		-	-	-	-	-	-	122.3%	0	0	0	237.6	-	-
1/1+1/2	Diswellstwon Road N Entry Left Ahead Right	U	B A		2	99:15	-	945	1805:1768	760+14	122.2 : 122.2%	-	-	-	120.2	458.1	151.0
2/1+2/2	Diswellstown Road E Entry Right Left Ahead	U	C		2	46	-	499	1749:1741	64+344	122.3 : 122.3%	-	-	-	67.9	489.9	76.7
3/1+3/2	Diswellstown Road S Entry Ahead Right Left	U	E D		2	99:15	-	448	1911:1768	254+125	118.2 : 118.2%	-	-	-	48.8	392.2	58.0
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	F		2	14	-	35	1826:1741	122+49	20.5 : 20.5%	-	-	-	0.6	66.2	0.9
Ped Link: P1	Unnamed Ped Link	-	H		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	I		1	9	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	J		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / School Access				PRC for Signalled Lanes (%):		-35.9		Total Delay for Signalled Lanes (pcuHr):		237.59		Cycle Time (s): 240					
				PRC Over All Lanes (%):		-35.9		Total Delay Over All Lanes(pcuHr):		237.59							

Basic Results Summary  
**Basic Results Summary**

**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Diswellstown Road / Bothar Bhaile an Phoirtearaigh
<b>Date Started:</b>	28/10/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction14_Base_DM V2.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')



Basic Results Summary

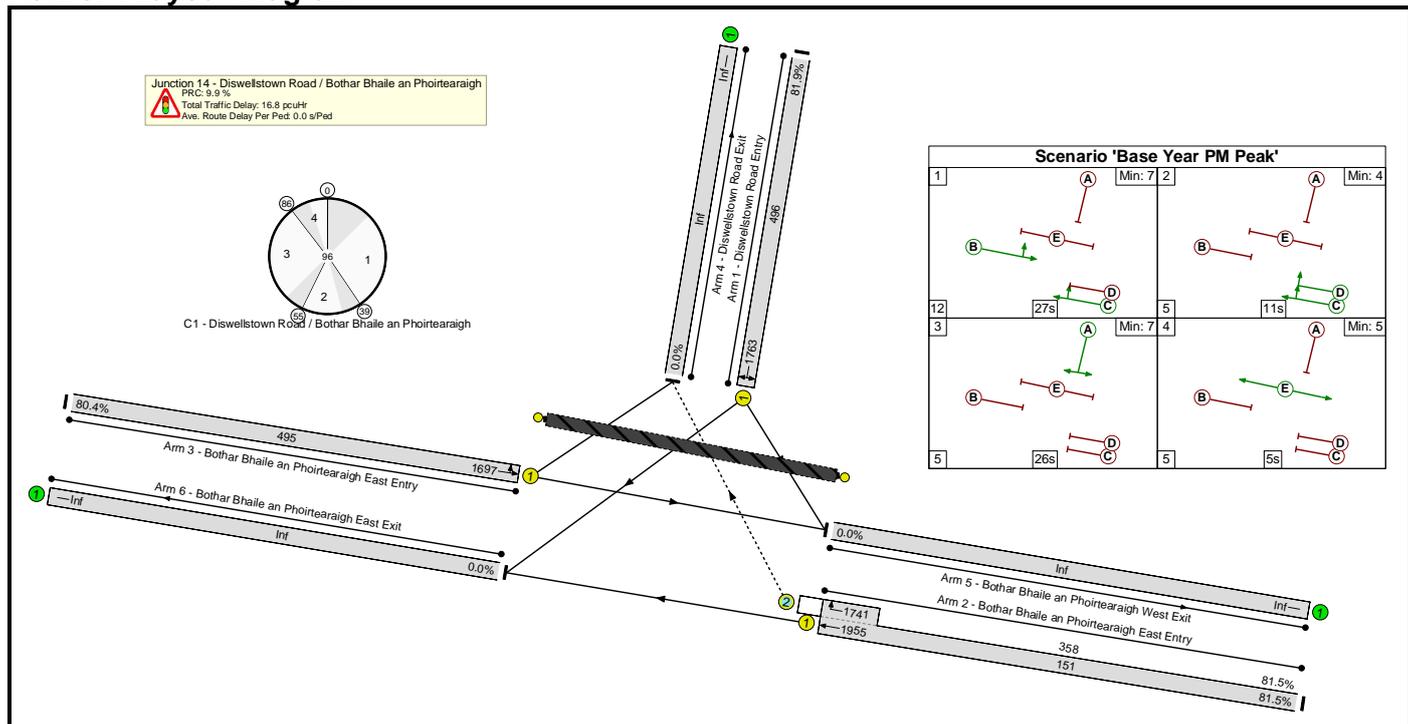
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	90.1%	43	74	2	18.4	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	90.1%	43	74	2	18.4	-	-
1/1	Diswellstown Road Entry Left Right	U	A		1	27	-	446	1713	500	89.3%	-	-	-	7.7	62.1	14.9
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	42	4	200	1955:1741	152+223	53.4 : 53.4%	43	74	2	2.2	40.2	2.4
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	33	-	550	1723	610	90.1%	-	-	-	8.5	55.8	17.9
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh    PRC for Signalled Lanes (%): -0.1    Total Delay for Signalled Lanes (pcuHr): 18.44    Cycle Time (s): 96 PRC Over All Lanes (%): -0.1    Total Delay Over All Lanes(pcuHr): 18.44																	

Basic Results Summary

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

Network Layout Diagram



Basic Results Summary

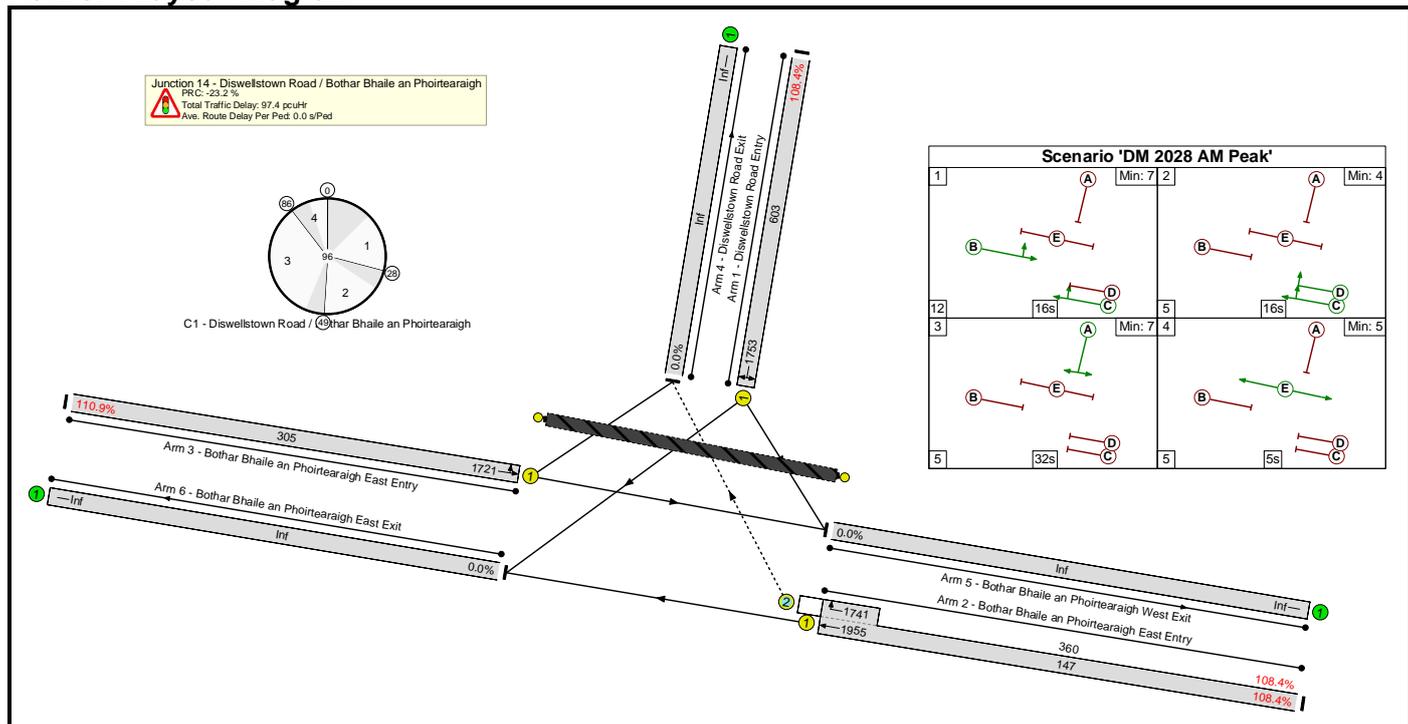
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)				
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	81.9%	73	210	9	16.8	-	-				
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	81.9%	73	210	9	16.8	-	-				
1/1	Diswellstown Road Entry Left Right	U	A		1	26	-	406	1763	496	81.9%	-	-	-	5.8	51.3	12.2				
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	43	11	415	1955:1741	151+358	81.5 : 81.5%	73	210	9	5.6	48.5	9.4				
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	27	-	398	1697	495	80.4%	-	-	-	5.5	49.3	11.7				
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-				
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh		PRC for Signalled Lanes (%):		9.9		Total Delay for Signalled Lanes (pcuHr):		16.84		Cycle Time (s):		96		PRC Over All Lanes (%):		9.9		Total Delay Over All Lanes(pcuHr):		16.84	

Basic Results Summary

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

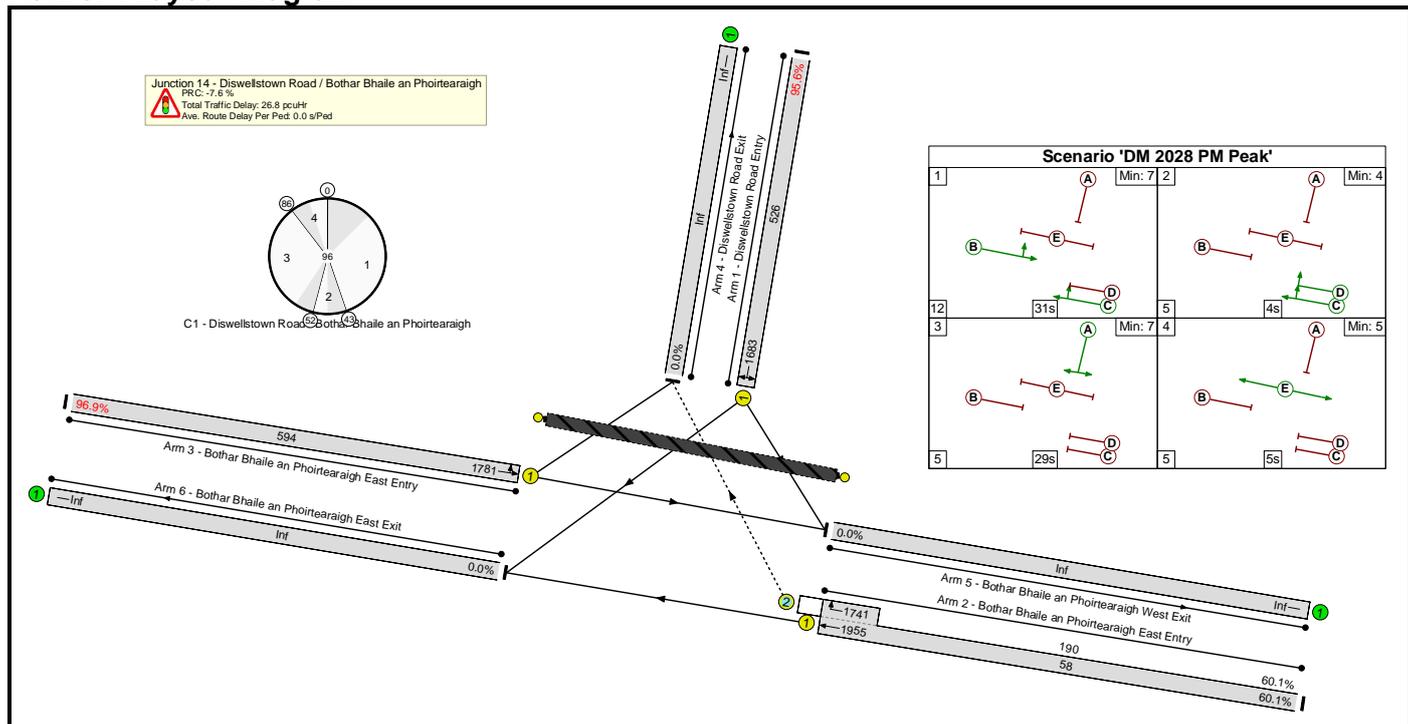
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)				
Network: DART West Junction Modelling	-	-	-		-	-	-	-	-	-	110.9%	0	285	75	97.4	-	-				
Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-	-	-		-	-	-	-	-	-	110.9%	0	285	75	97.4	-	-				
1/1	Diswellstown Road Entry Left Right	U	A		1	32	-	653	1753	603	108.4%	-	-	-	38.0	209.6	49.4				
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	37	16	549	1955:1741	147+360	108.4% : 108.4%	0	285	75	33.4	218.9	40.8				
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	16	-	338	1721	305	110.9%	-	-	-	26.0	276.7	30.6				
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-				
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh		PRC for Signalled Lanes (%):		-23.2		Total Delay for Signalled Lanes (pcuHr):		97.38		Cycle Time (s):		96		PRC Over All Lanes (%):		-23.2		Total Delay Over All Lanes(pcuHr):		97.38	

Basic Results Summary

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

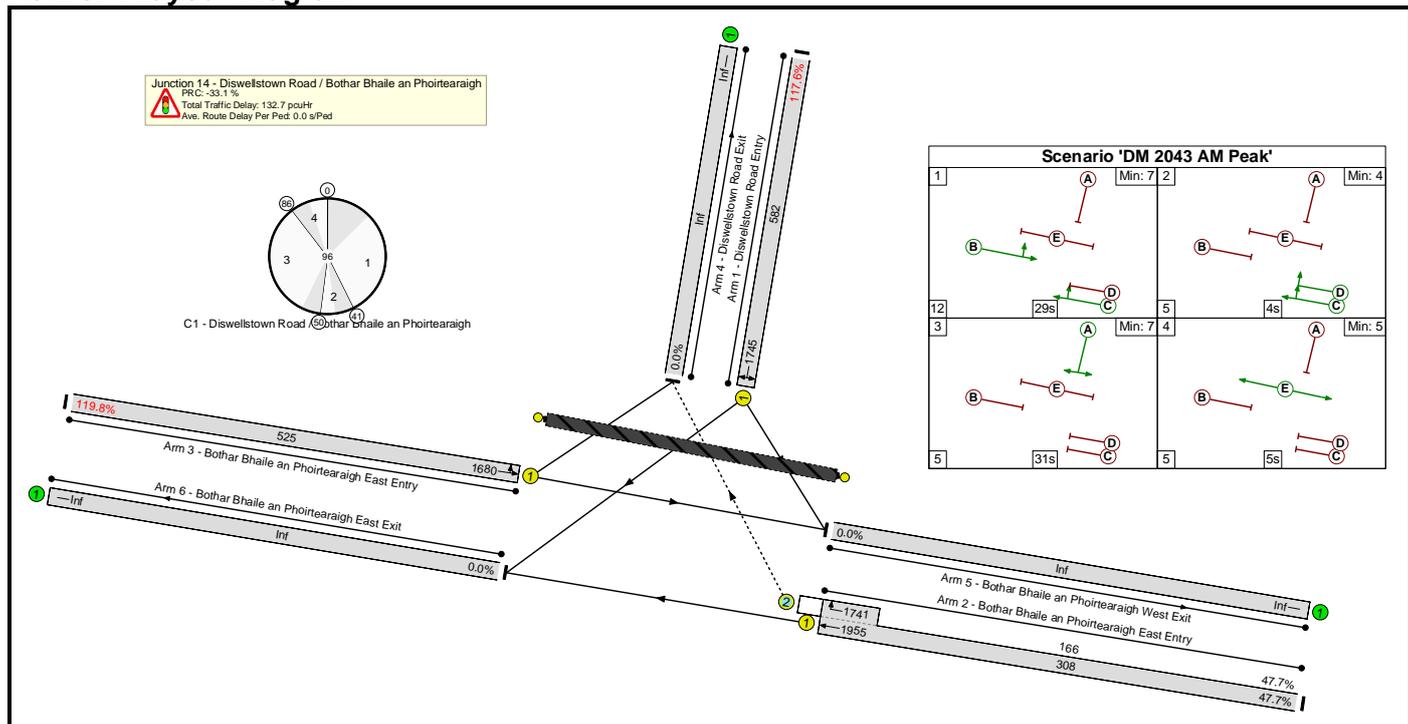
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	96.9%	10	102	2	26.8	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	96.9%	10	102	2	26.8	-	-
1/1	Diswellstown Road Entry Left Right	U	A		1	29	-	503	1683	526	95.6%	-	-	-	11.4	81.5	20.0
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	40	4	149	1955:1741	58+190	60.1 : 60.1%	10	102	2	2.2	53.9	2.6
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	31	-	575	1781	594	96.9%	-	-	-	13.2	82.8	23.2
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh    PRC for Signalled Lanes (%): -7.6    Total Delay for Signalled Lanes (pcuHr): 26.85    Cycle Time (s): 96 PRC Over All Lanes (%): -7.6    Total Delay Over All Lanes(pcuHr): 26.85																	

Basic Results Summary

Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

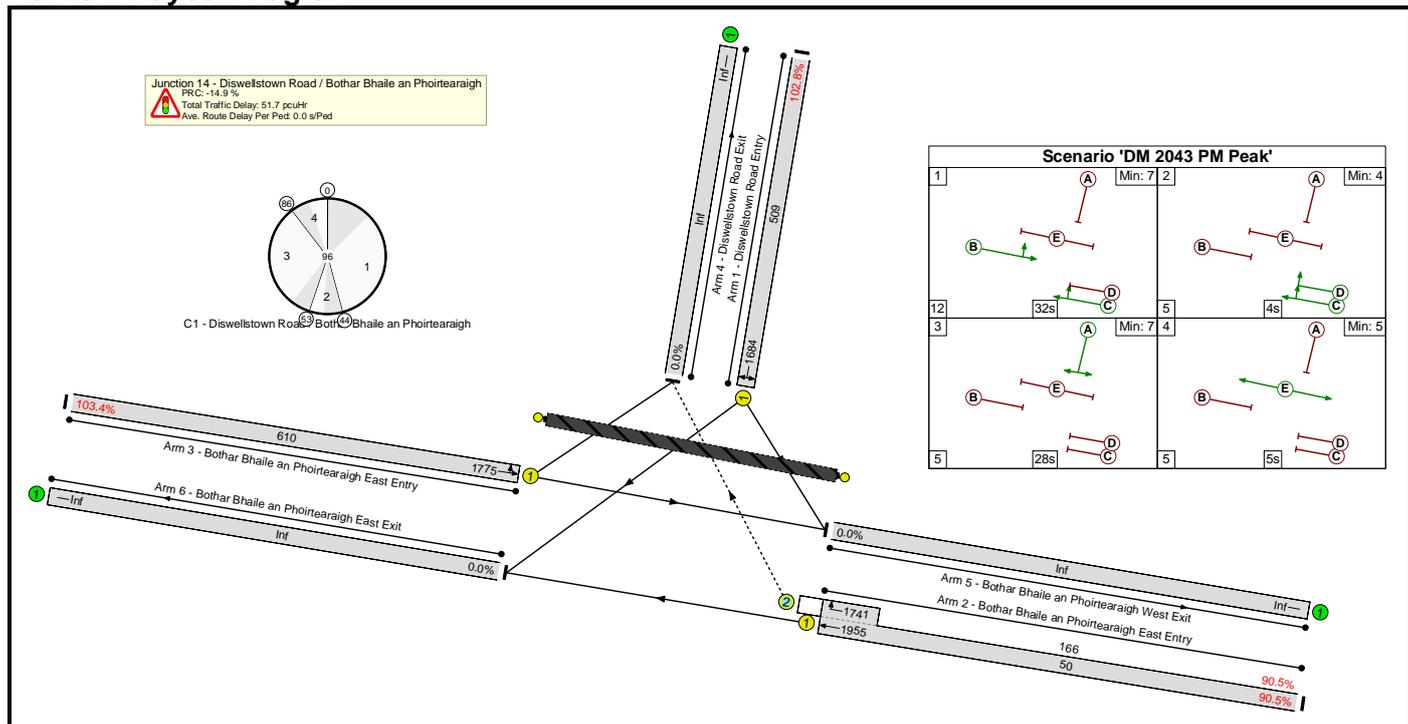
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	-		-	-	-	-	-	-	119.8%	0	77	2	132.7	-	-
Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-	-	-		-	-	-	-	-	-	119.8%	0	77	2	132.7	-	-
1/1	Diswellstown Road Entry Left Right	U	A		1	31	-	684	1745	582	117.6%	-	-	-	65.2	343.1	76.7
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	38	4	226	1955:1741	308+166	47.7 : 47.7%	0	77	2	2.1	33.7	2.9
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	29	-	629	1680	525	119.8%	-	-	-	65.4	374.1	74.4
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh			PRC for Signalled Lanes (%):		-33.1		Total Delay for Signalled Lanes (pcuHr):		132.66		Cycle Time (s):		96				
			PRC Over All Lanes (%):		-33.1		Total Delay Over All Lanes(pcuHr):		132.66								

Basic Results Summary

Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

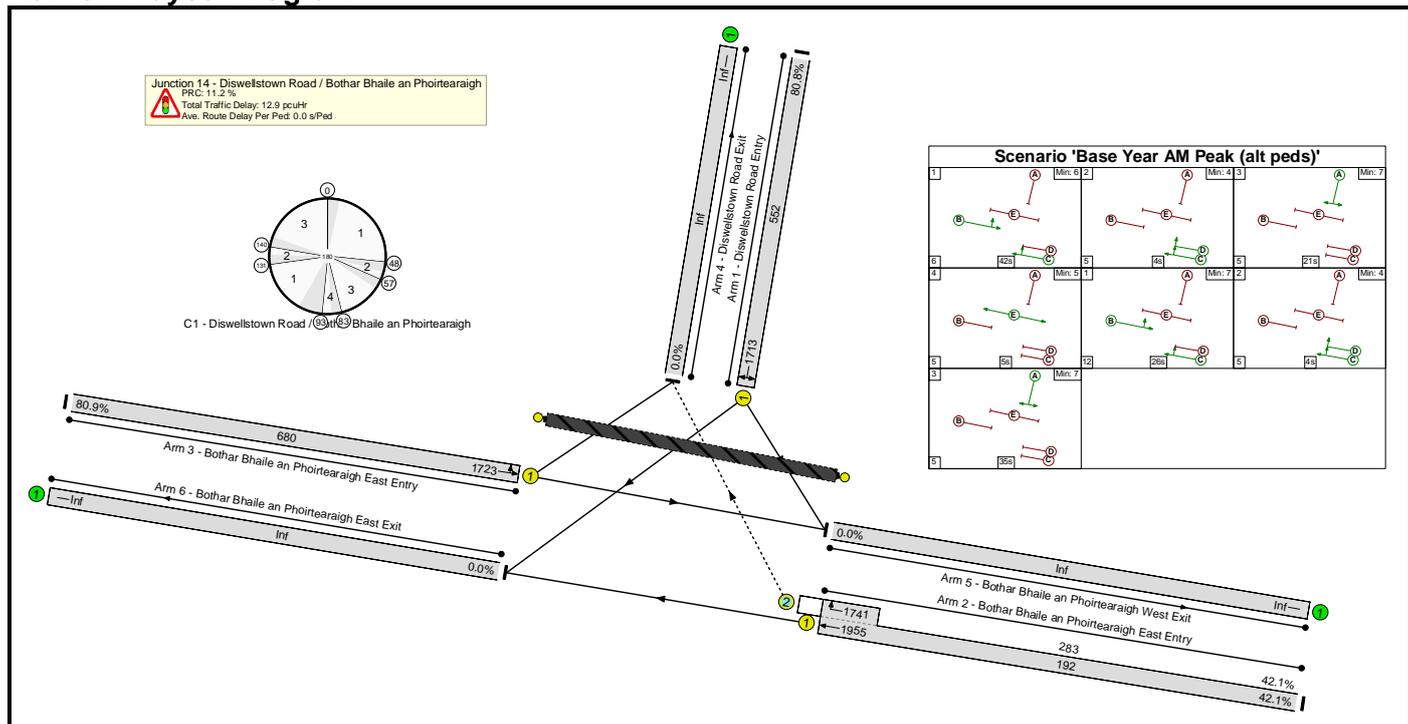
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	103.4%	0	105	45	51.7	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	103.4%	0	105	45	51.7	-	-
1/1	Diswellstown Road Entry Left Right	U	A		1	28	-	523	1684	509	102.8%	-	-	-	20.9	143.8	29.9
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	1	41	4	195	1955:1741	50+166	90.5 : 90.5%	0	105	45	5.6	103.0	7.5
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		1	32	-	631	1775	610	103.4%	-	-	-	25.3	144.2	36.2
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh			PRC for Signalled Lanes (%):		-14.9		Total Delay for Signalled Lanes (pcuHr):			51.73		Cycle Time (s):		96			
			PRC Over All Lanes (%):		-14.9		Total Delay Over All Lanes(pcuHr):			51.73							

Basic Results Summary

Scenario 7: 'Base Year AM Peak (alt peds)' (FG1: 'Base AM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

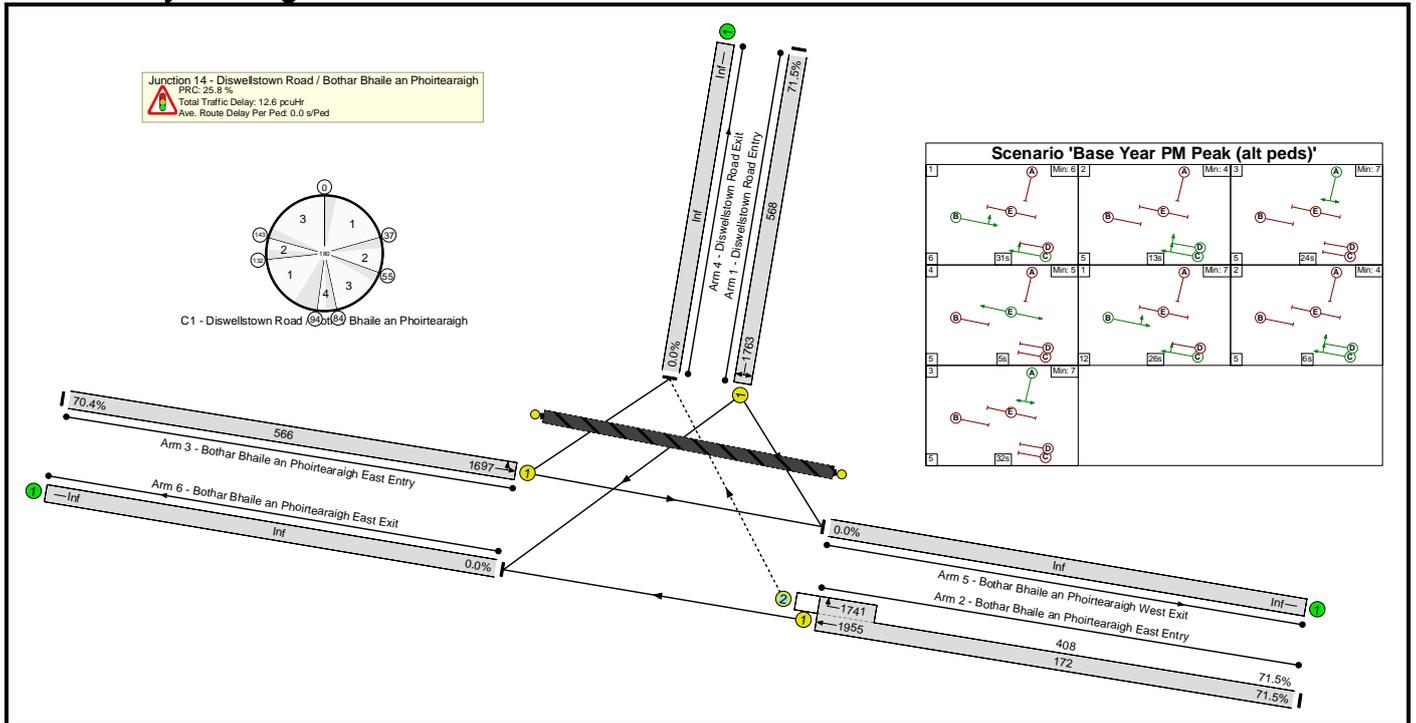
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	80.9%	61	55	3	12.9	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	80.9%	61	55	3	12.9	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	56	-	446	1713	552	80.8%	-	-	-	5.5	44.3	12.2
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	86	8	200	1955:1741	192+283	42.1 : 42.1%	61	55	3	1.7	30.4	2.0
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	69	-	550	1723	680	80.9%	-	-	-	5.8	37.7	14.6
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh    PRC for Signalled Lanes (%): 11.2    Total Delay for Signalled Lanes (pcuHr): 12.94    Cycle Time (s): 180 PRC Over All Lanes (%): 11.2    Total Delay Over All Lanes(pcuHr): 12.94																	

Basic Results Summary

Scenario 8: 'Base Year PM Peak (alt peds)' (FG2: 'Base PM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

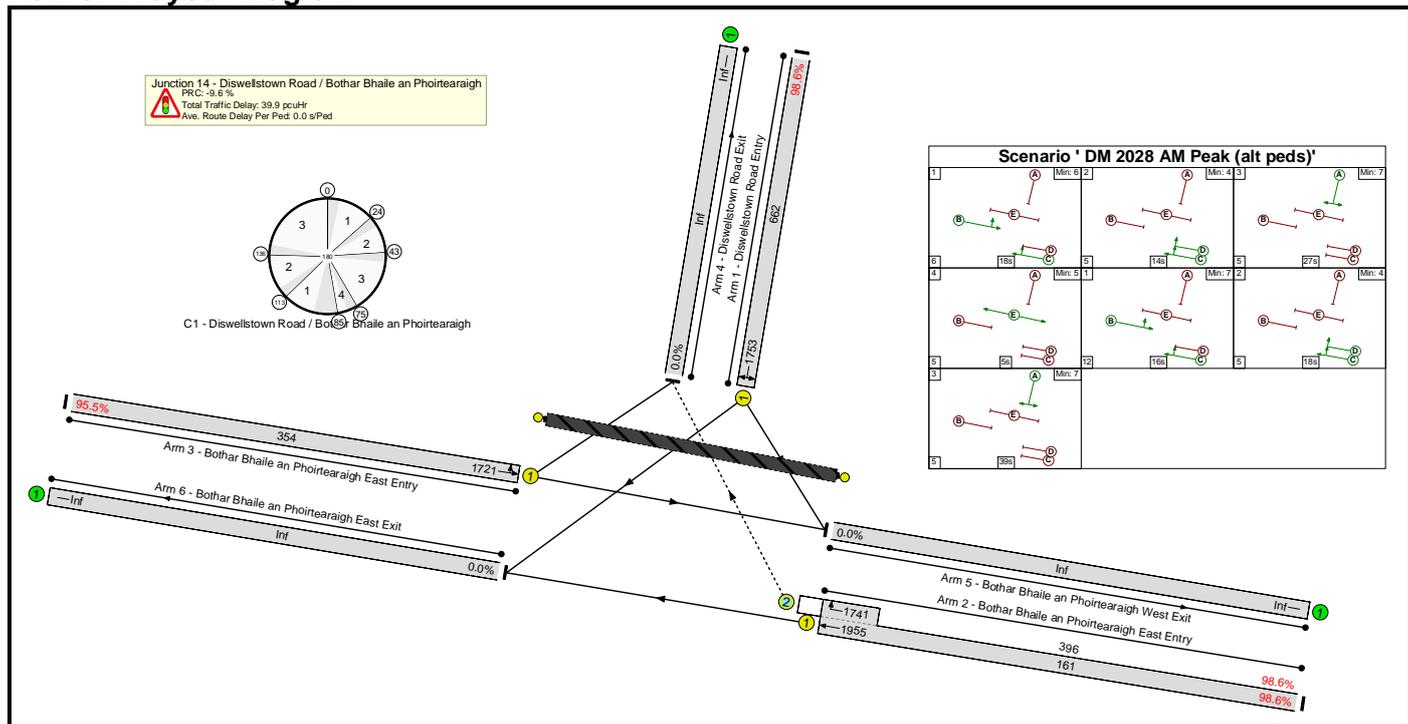
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	71.5%	128	123	41	12.6	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	71.5%	128	123	41	12.6	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	56	-	406	1763	568	71.5%	-	-	-	4.3	37.8	10.4
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	86	19	415	1955:1741	172+408	71.5 : 71.5%	128	123	41	4.2	36.3	8.3
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	58	-	398	1697	566	70.4%	-	-	-	4.1	37.2	10.9
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh						PRC for Signalled Lanes (%):	25.8	Total Delay for Signalled Lanes (pcuHr):			12.56	Cycle Time (s): 180					
						PRC Over All Lanes (%):	25.8	Total Delay Over All Lanes(pcuHr):			12.56						

Basic Results Summary

Scenario 9: 'DM 2028 AM Peak (alt peds)' (FG3: 'DM 2028 AM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

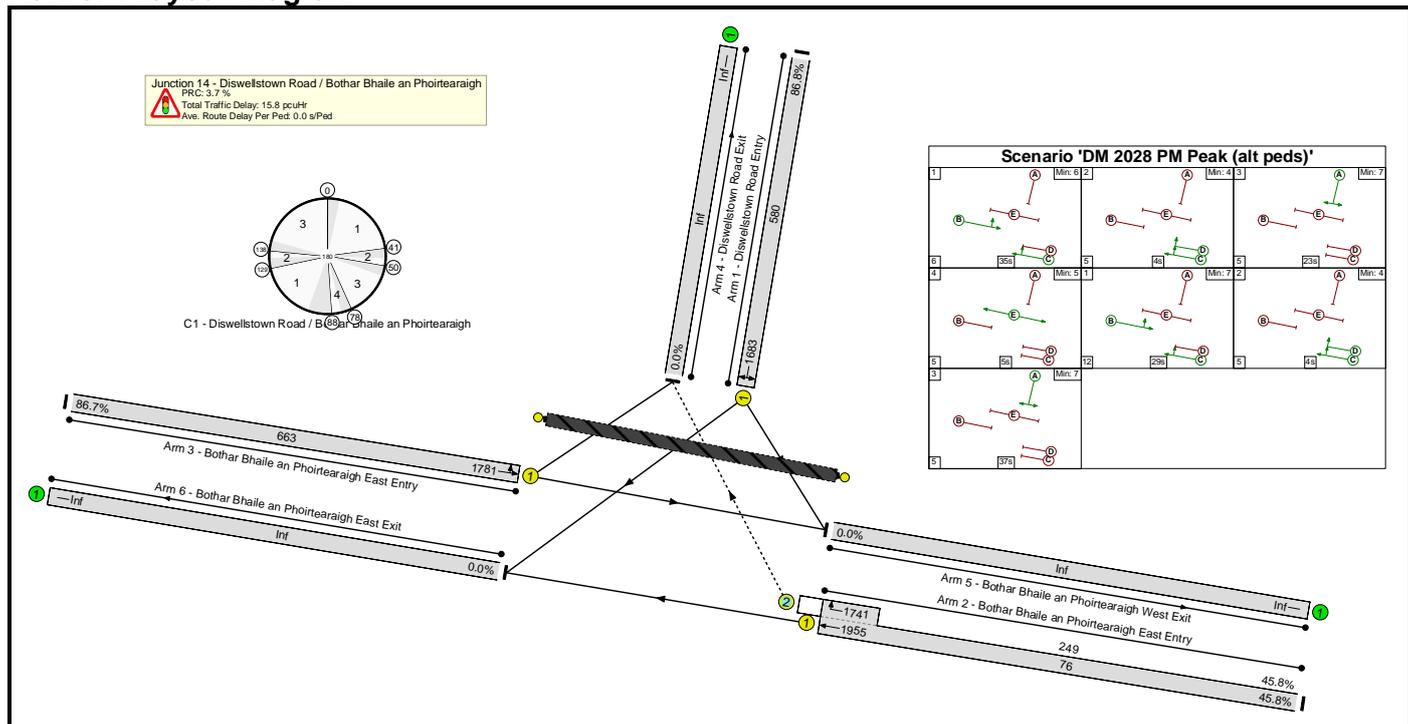
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	98.6%	12	304	74	39.9	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	98.6%	12	304	74	39.9	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	66	-	653	1753	662	98.6%	-	-	-	15.8	87.3	29.4
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	76	32	549	1955:1741	161+396	98.6 : 98.6%	12	304	74	14.6	95.7	21.8
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	35	-	338	1721	354	95.5%	-	-	-	9.5	101.1	14.6
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh    PRC for Signalled Lanes (%): -9.6    Total Delay for Signalled Lanes (pcuHr): 39.93    Cycle Time (s): 180 PRC Over All Lanes (%): -9.6    Total Delay Over All Lanes(pcuHr): 39.93																	

Basic Results Summary

Scenario 10: 'DM 2028 PM Peak (alt peds)' (FG4: 'DM 2028 PM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

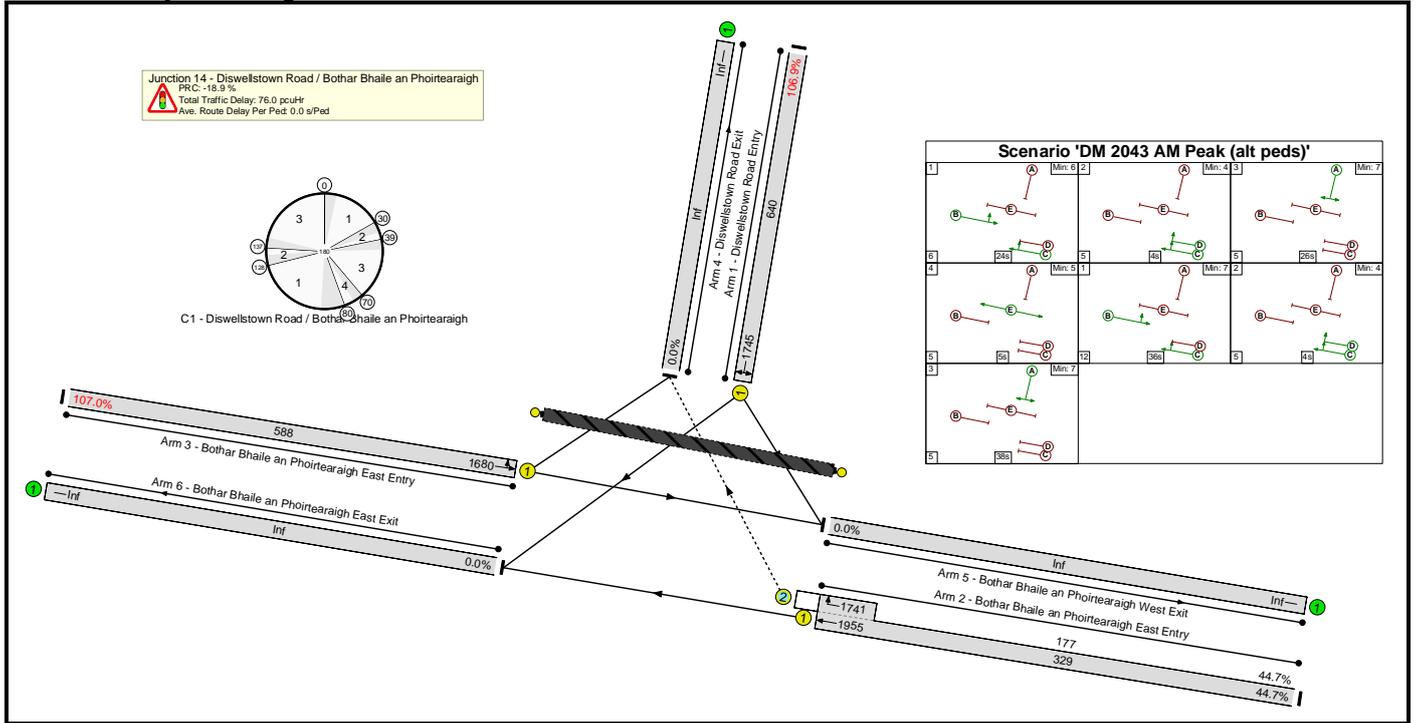
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	86.8%	57	54	3	15.8	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	86.8%	57	54	3	15.8	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	60	-	503	1683	580	86.8%	-	-	-	6.9	49.5	15.8
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	82	8	149	1955:1741	76+249	45.8 : 45.8%	57	54	3	1.7	40.1	2.1
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	65	-	575	1781	663	86.7%	-	-	-	7.2	45.4	16.6
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh							PRC for Signalled Lanes (%):	3.7	Total Delay for Signalled Lanes (pcuHr):			15.83	Cycle Time (s): 180				
							PRC Over All Lanes (%):	3.7	Total Delay Over All Lanes(pcuHr):			15.83					

Basic Results Summary

Scenario 11: 'DM 2043 AM Peak (alt peds)' (FG5: 'DM 2043 AM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

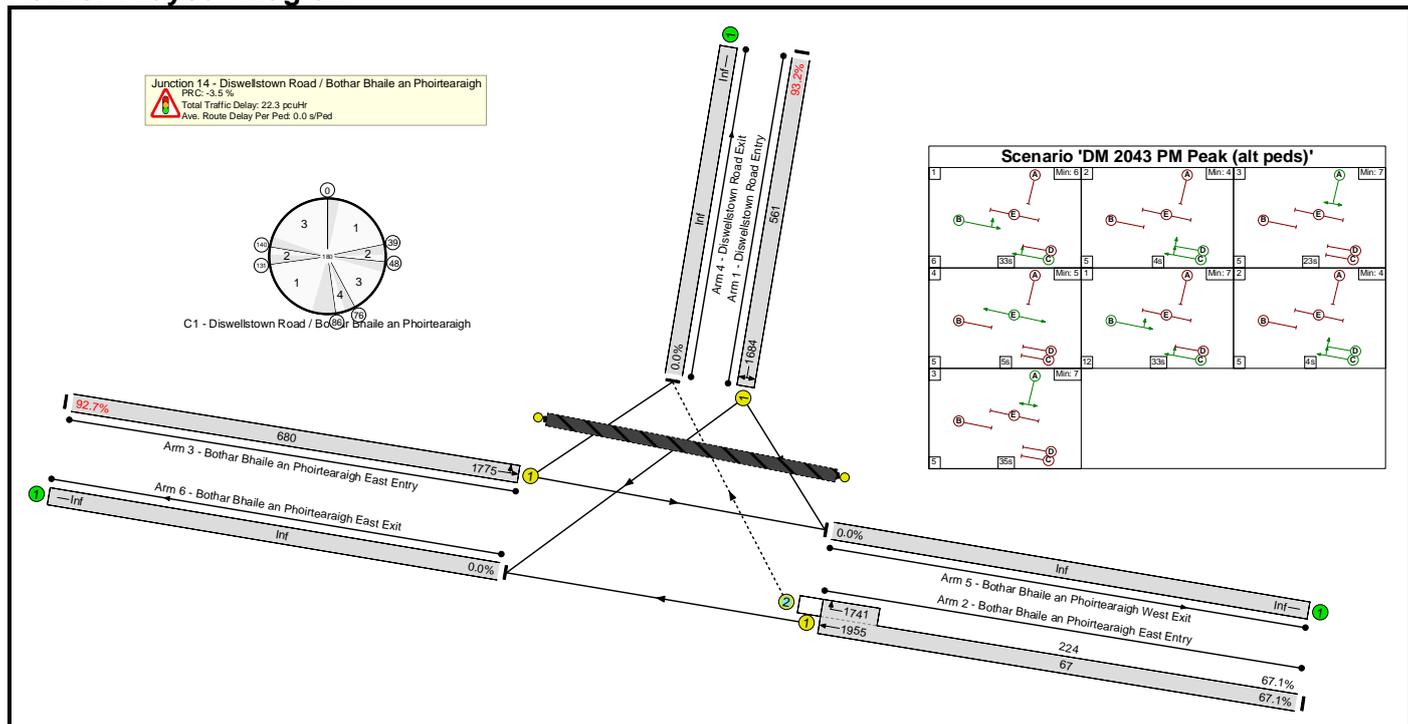
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	107.0%	0	77	2	76.0	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	107.0%	0	77	2	76.0	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	64	-	684	1745	640	106.9%	-	-	-	38.6	203.2	53.1
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	78	8	226	1955:1741	329+177	44.7 : 44.7%	0	77	2	1.9	29.8	2.7
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	61	-	629	1680	588	107.0%	-	-	-	35.5	203.3	47.8
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh			PRC for Signalled Lanes (%):		-18.9		Total Delay for Signalled Lanes (pcuHr):			76.02		Cycle Time (s): 180					
			PRC Over All Lanes (%):		-18.9		Total Delay Over All Lanes(pcuHr):			76.02							

Basic Results Summary

Scenario 12: 'DM 2043 PM Peak (alt peds)' (FG6: 'DM 2043 PM Peak', Plan 2: 'Peds every other')

Network Layout Diagram



Basic Results Summary

**Network Results**

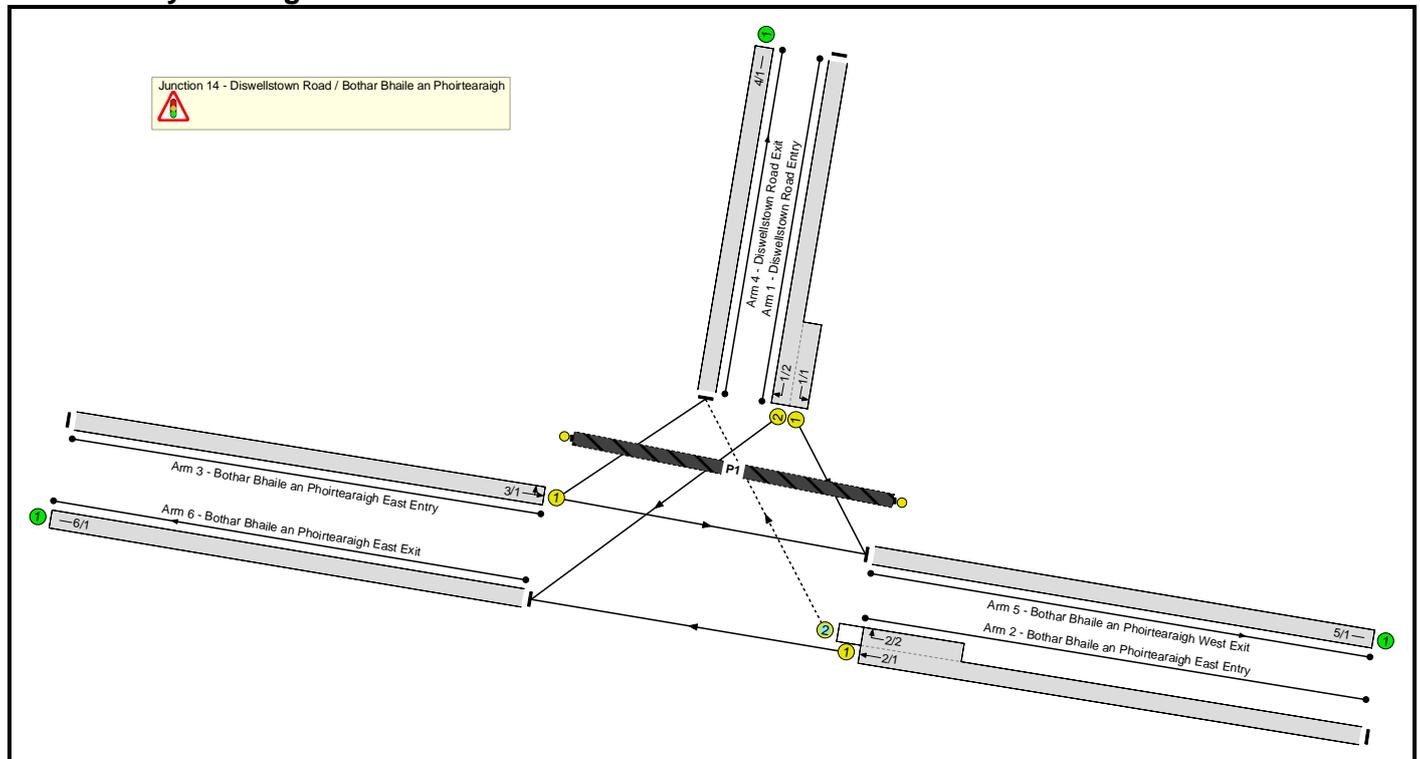
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	93.2%	32	104	14	22.3	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	-		-	-	-	-	-	-	93.2%	32	104	14	22.3	-	-
1/1	Diswellstown Road Entry Left Right	U	A		2	58	-	523	1684	561	93.2%	-	-	-	9.6	66.3	19.6
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	C	D	2	84	8	195	1955:1741	67+224	67.1 : 67.1%	32	104	14	2.8	51.0	4.7
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	B		2	67	-	631	1775	680	92.7%	-	-	-	9.9	56.6	20.9
Ped Link: P1	Diswellstown Road Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh    PRC for Signalled Lanes (%): -3.5    Total Delay for Signalled Lanes (pcuHr): 22.31    Cycle Time (s): 180 PRC Over All Lanes (%): -3.5    Total Delay Over All Lanes(pcuHr): 22.31																	

Full Input Data And Results  
**Full Input Data And Results**

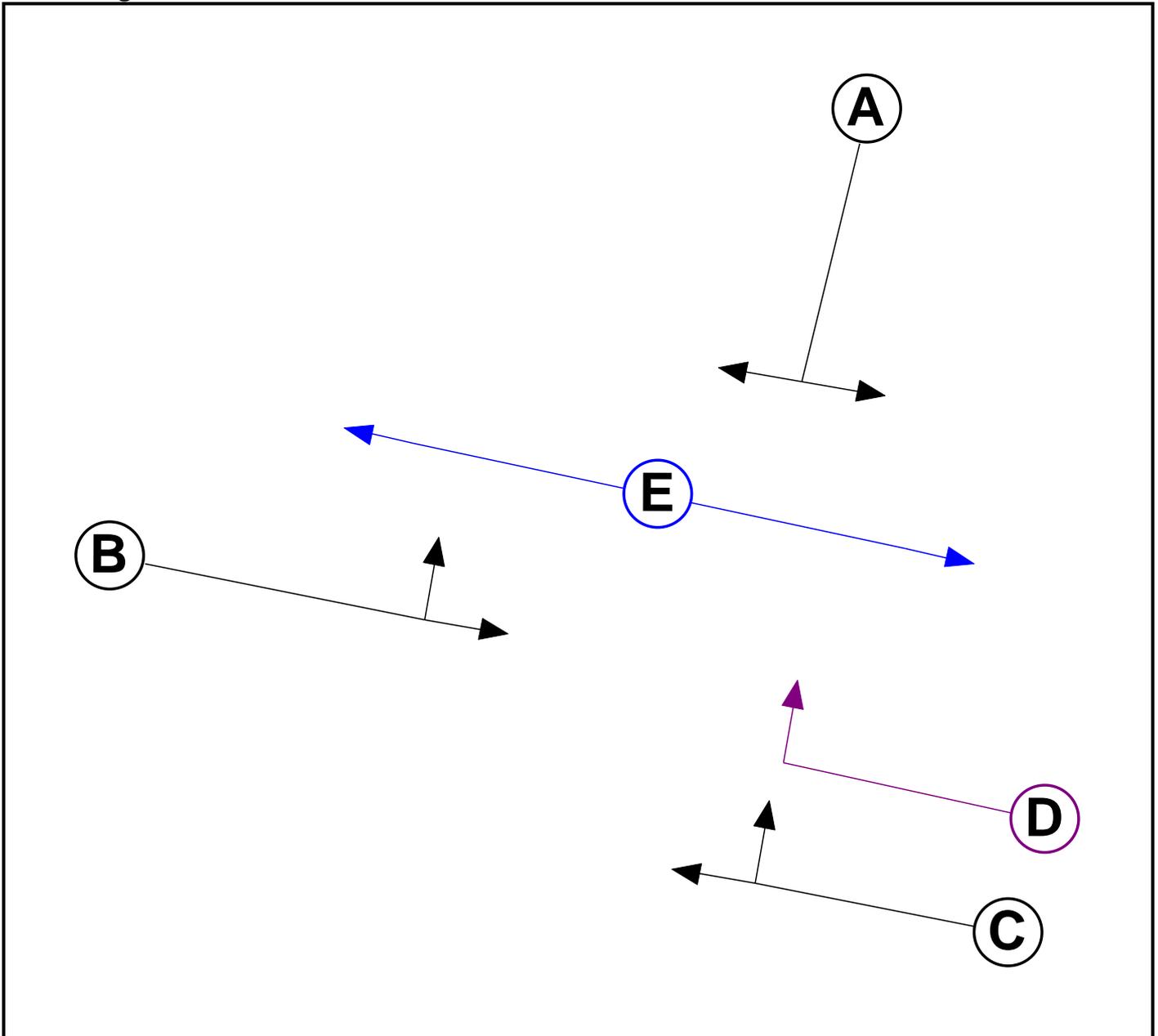
**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Diswellstown Road / Bothar Bhaile an Phoirtearaigh
<b>Date Started:</b>	28/10/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction14_DS V3.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Ind. Arrow	C	4	4
E	Pedestrian		5	5

Full Input Data And Results

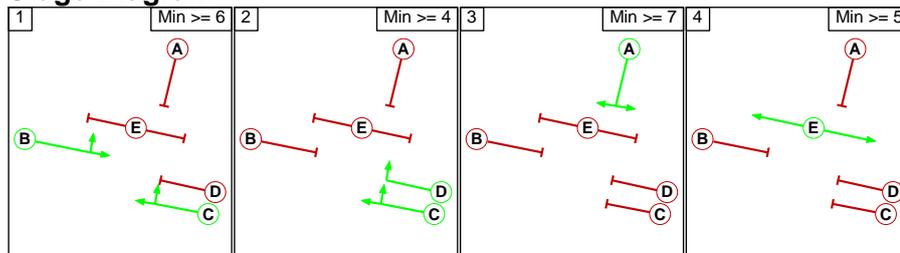
**Phase Intergrens Matrix**

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		5	6	6	5
	B	5		-	5	7
	C	5	-		-	8
	D	5	5	-		8
	E	12	12	12	12	

**Phases in Stage**

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

**Stage Diagram**



**Phase Delays**

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

**Prohibited Stage Change**

		To Stage			
		1	2	3	4
From Stage	1		5	5	8
	2	5		5	8
	3	6	6		5
	4	12	12	12	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh											
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)
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	4/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

**Lane Input Data**

Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh												
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 (Diswellstown Road Entry)	U	A	2	3	7.0	Geom	-	3.00	0.00	Y	Arm 5 Left	15.00
1/2 (Diswellstown Road Entry)	U	A	2	3	12.2	Geom	-	3.00	0.00	Y	Arm 6 Right	15.00
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	U	C	2	3	61.2	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	O	C D	2	3	8.3	Geom	-	3.00	0.00	Y	Arm 4 Right	15.00
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	U	B	2	3	173.9	Geom	-	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf
4/1 (Diswellstown Road Exit)	U		2	3	72.7	Inf	-	-	-	-	-	-
5/1 (Bothar Bhaile an Phoirtearaigh West Exit)	U		2	3	61.2	Inf	-	-	-	-	-	-
6/1 (Bothar Bhaile an Phoirtearaigh East Exit)	U		2	3	173.9	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS 2028 AM Peak'	08:00	09:00	01:00	
2: 'DS 2028 PM Peak'	17:00	18:00	01:00	
3: 'DS 2043 AM Peak'	08:00	09:00	01:00	
4: 'DS 2043 PM Peak'	17:00	18:00	01:00	

Scenario 1: 'DS 2028 AM Peak' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

Desired Flow :

Destination	
Origin	Tot.
Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 1: DS 2028 AM Peak
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	154
1/2 (with short)	673(In) 519(Out)
2/1 (with short)	492(In) 90(Out)
2/2 (short)	402
3/1	348
4/1	652
5/1	271
6/1	614

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	76.1 % 23.9 %	1699	1699
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 2: 'DS 2028 PM Peak'** (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 2: DS 2028 PM Peak
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	454
1/2 (with short)	617(In) 163(Out)
2/1 (with short)	183(In) 28(Out)
2/2 (short)	155
3/1	558
4/1	451
5/1	714
6/1	186

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	62.3 % 37.7 %	1735	1735
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 3: 'DS 2043 AM Peak'** (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 3: DS 2043 AM Peak
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	297
1/2 (with short)	779(In) 482(Out)
2/1 (with short)	156(In) 77(Out)
2/2 (short)	79
3/1	626
4/1	555
5/1	476
6/1	611

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	86.9 % 13.1 %	1673	1673
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 4: 'DS 2043 PM Peak'** (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 4: DS 2043 PM Peak
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	457
1/2 (with short)	627(In) 170(Out)
2/1 (with short)	221(In) 36(Out)
2/2 (short)	185
3/1	606
4/1	509
5/1	753
6/1	216

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	61.7 % 38.3 %	1736	1736
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 5: 'DS 2028 AM Peak (alt peds)' (FG1: 'DS 2028 AM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 5: DS 2028 AM Peak (alt peds)
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	154
1/2 (with short)	673(In) 519(Out)
2/1 (with short)	492(In) 90(Out)
2/2 (short)	402
3/1	348
4/1	652
5/1	271
6/1	614

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	76.1 % 23.9 %	1699	1699
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 6: 'DS 2028 PM Peak (alt peds)' (FG2: 'DS 2028 PM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 6: DS 2028 PM Peak (alt peds)
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	454
1/2 (with short)	617(In) 163(Out)
2/1 (with short)	183(In) 28(Out)
2/2 (short)	155
3/1	558
4/1	451
5/1	714
6/1	186

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	62.3 % 37.7 %	1735	1735
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 7: 'DS 2043 AM Peak (alt peds)' (FG3: 'DS 2043 AM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 7: DS 2043 AM Peak (alt peds)
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	297
1/2 (with short)	779(In) 482(Out)
2/1 (with short)	156(In) 77(Out)
2/2 (short)	79
3/1	626
4/1	555
5/1	476
6/1	611

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	86.9 % 13.1 %	1673	1673
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 8: ' DS 2043 PM Peak (alt peds)' (FG4: 'DS 2043 PM Peak', Plan 2: 'Peds every other')**

**Traffic Flows, Desired**

**Desired Flow :**

		Destination
Origin	Tot.	-
	Tot.	-

**Traffic Lane Flows**

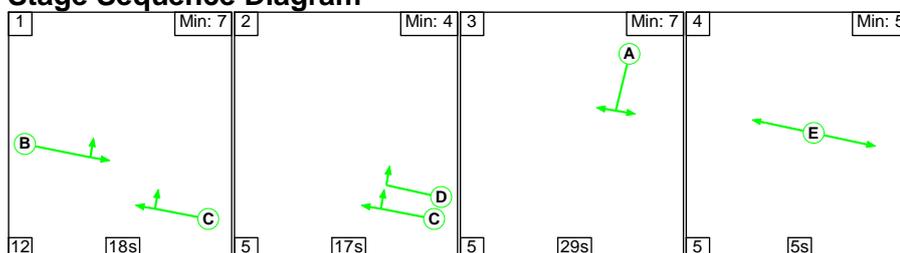
Lane	Scenario 8: DS 2043 PM Peak (alt peds)
<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	
1/1 (short)	457
1/2 (with short)	627(In) 170(Out)
2/1 (with short)	221(In) 36(Out)
2/2 (short)	185
3/1	606
4/1	509
5/1	753
6/1	216

**Lane Saturation Flows**

<b>Junction: Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>								
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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 5 Left	15.00	100.0 %	1741	1741
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/2 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Right	15.00	100.0 %	1741	1741
3/1 (Bothar Bhaile an Phoirtearaigh East Entry)	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	9.00 Inf	61.7 % 38.3 %	1736	1736
4/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Bothar Bhaile an Phoirtearaigh West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Bothar Bhaile an Phoirtearaigh East Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 1: 'DS 2028 AM Peak' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')**

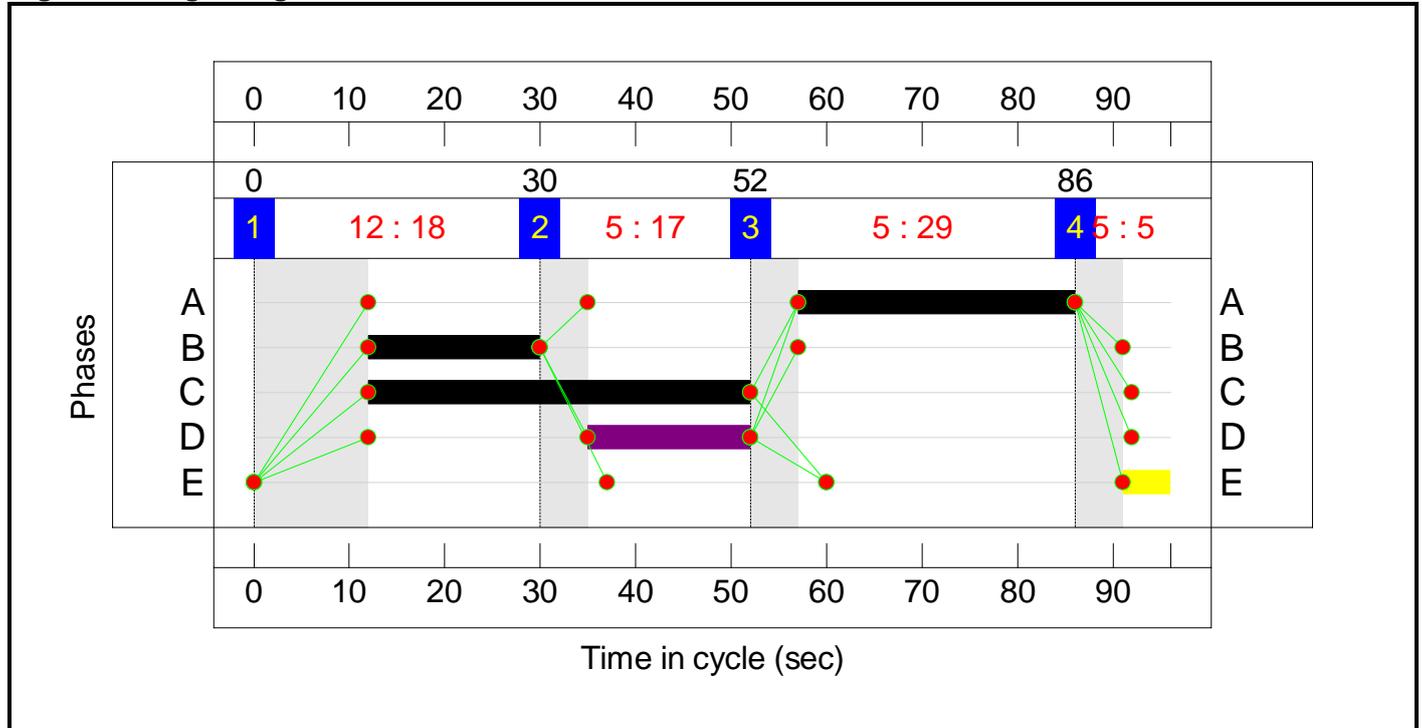
**Stage Sequence Diagram**



**Stage Timings**

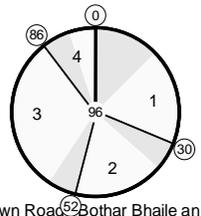
Stage	1	2	3	4
Duration	18	17	29	5
Change Point	0	30	52	86

**Signal Timings Diagram**

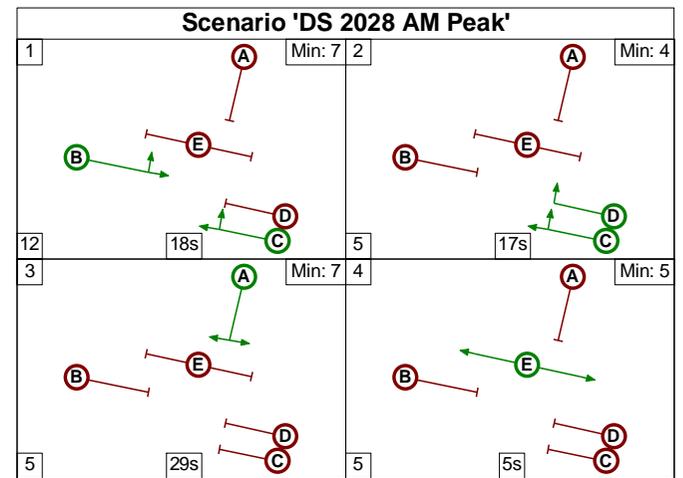
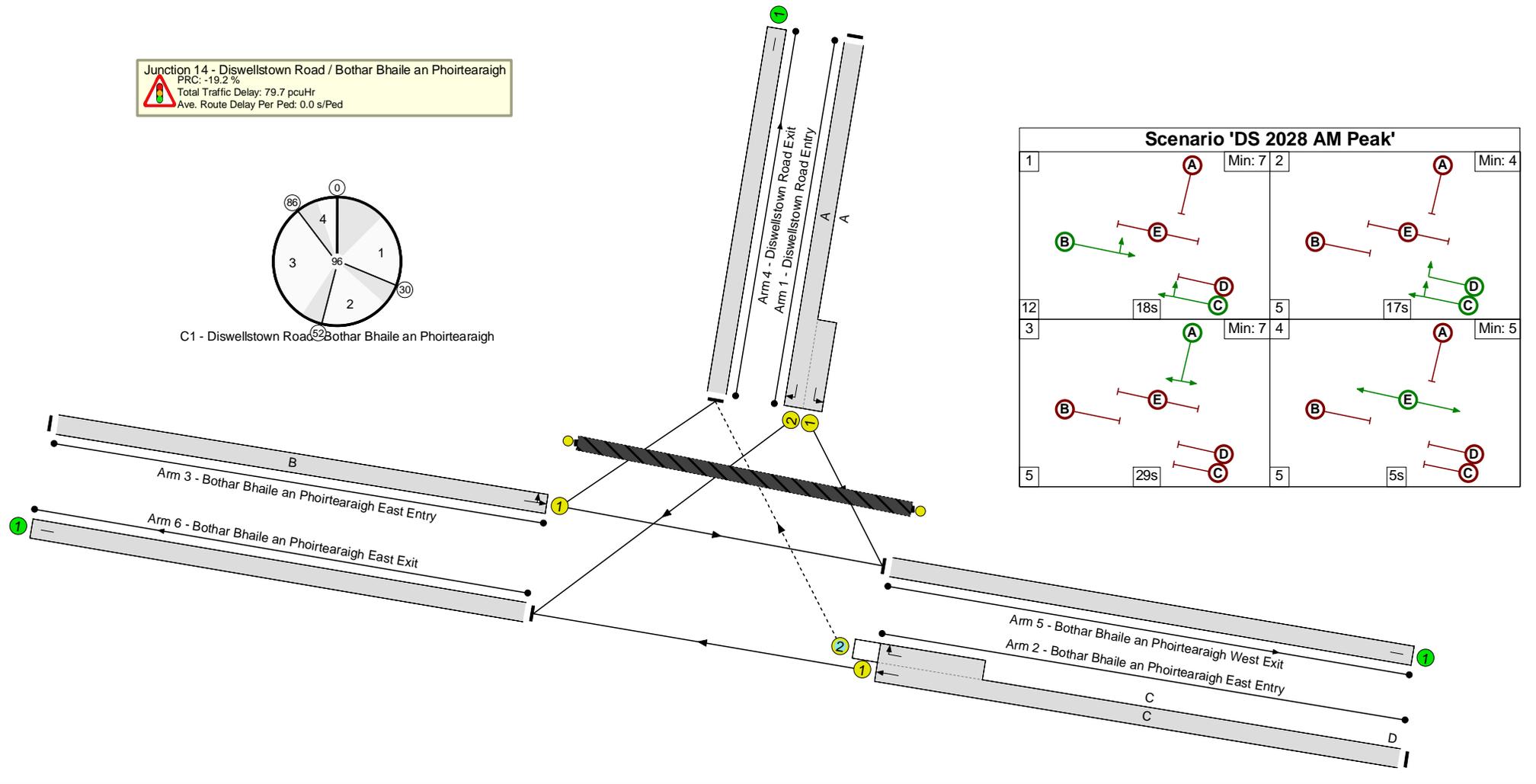


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -19.2 %  
 Total Traffic Delay: 79.7 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>107.3%</b>
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>107.3%</b>
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		1	29	-	673	1741:1741	486+144	106.7 : 106.7%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	1	40	17	492	1915:1741	84+375	107.3 : 107.3%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		1	18	-	348	1699	336	103.5%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	652	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	271	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	614	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

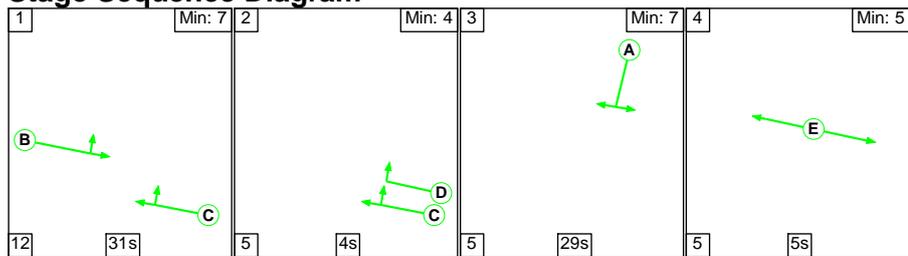
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	300	75	16.8	62.3	0.6	79.7	-	-	-	-
Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-	-	0	300	75	16.8	62.3	0.6	79.7	-	-	-	-
1/2+1/1	673	631	-	-	-	7.3	27.4	-	34.7	185.4	18.3	27.4	45.7
2/1+2/2	492	463	0	300	75	5.3	22.2	0.6	28.1	205.3	10.6	22.2	32.8
3/1	348	336	-	-	-	4.3	12.7	-	17.0	175.7	9.6	12.7	22.3
4/1	617	617	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh			PRC for Signalled Lanes (%): -19.2		Total Delay for Signalled Lanes (pcuHr): 79.70		PRC Over All Lanes (%): -19.2		Total Delay Over All Lanes(pcuHr): 79.70		Cycle Time (s): 96		

Full Input Data And Results

Scenario 2: 'DS 2028 PM Peak' (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

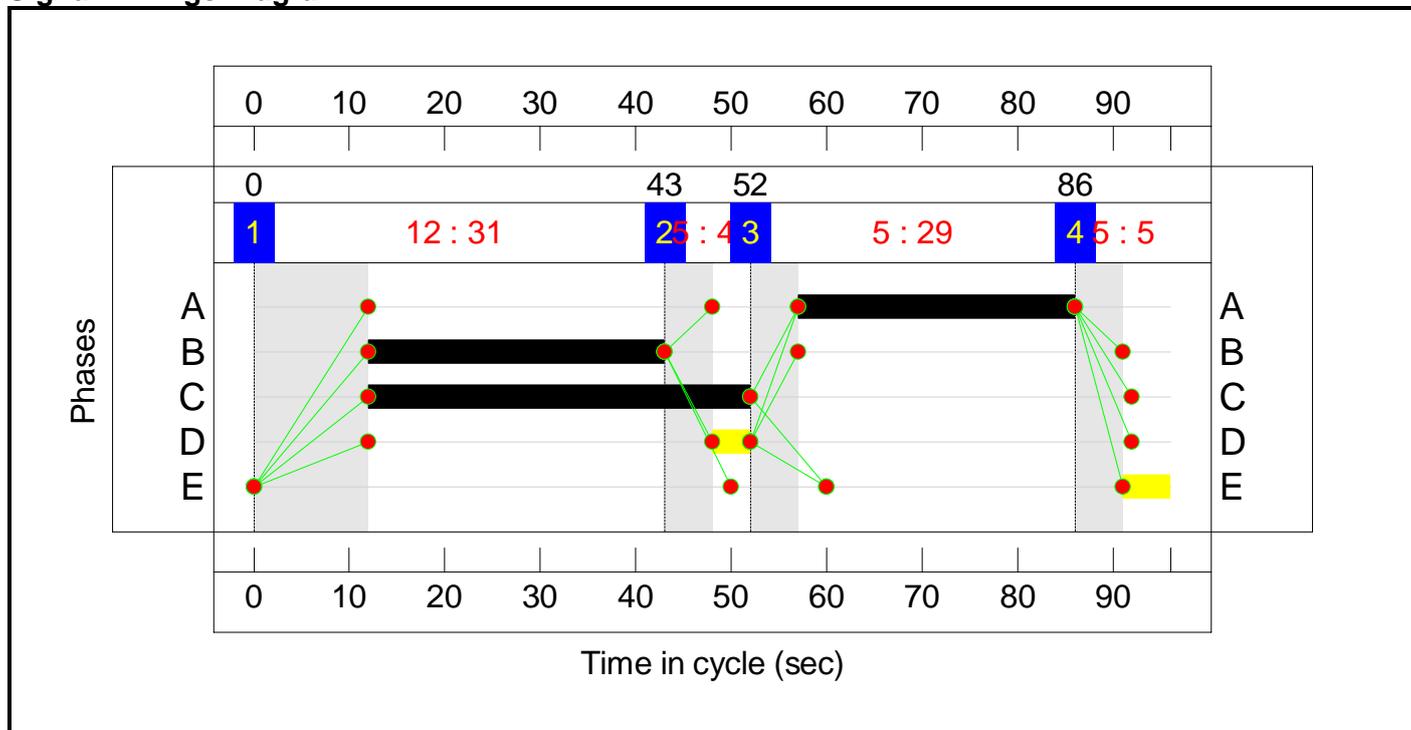
Stage Sequence Diagram



Stage Timings

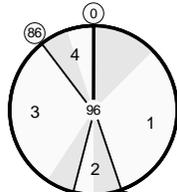
Stage	1	2	3	4
Duration	31	4	29	5
Change Point	0	43	52	86

Signal Timings Diagram

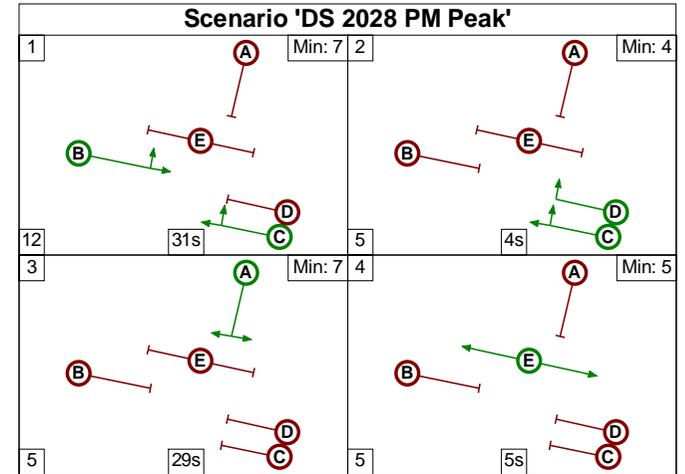
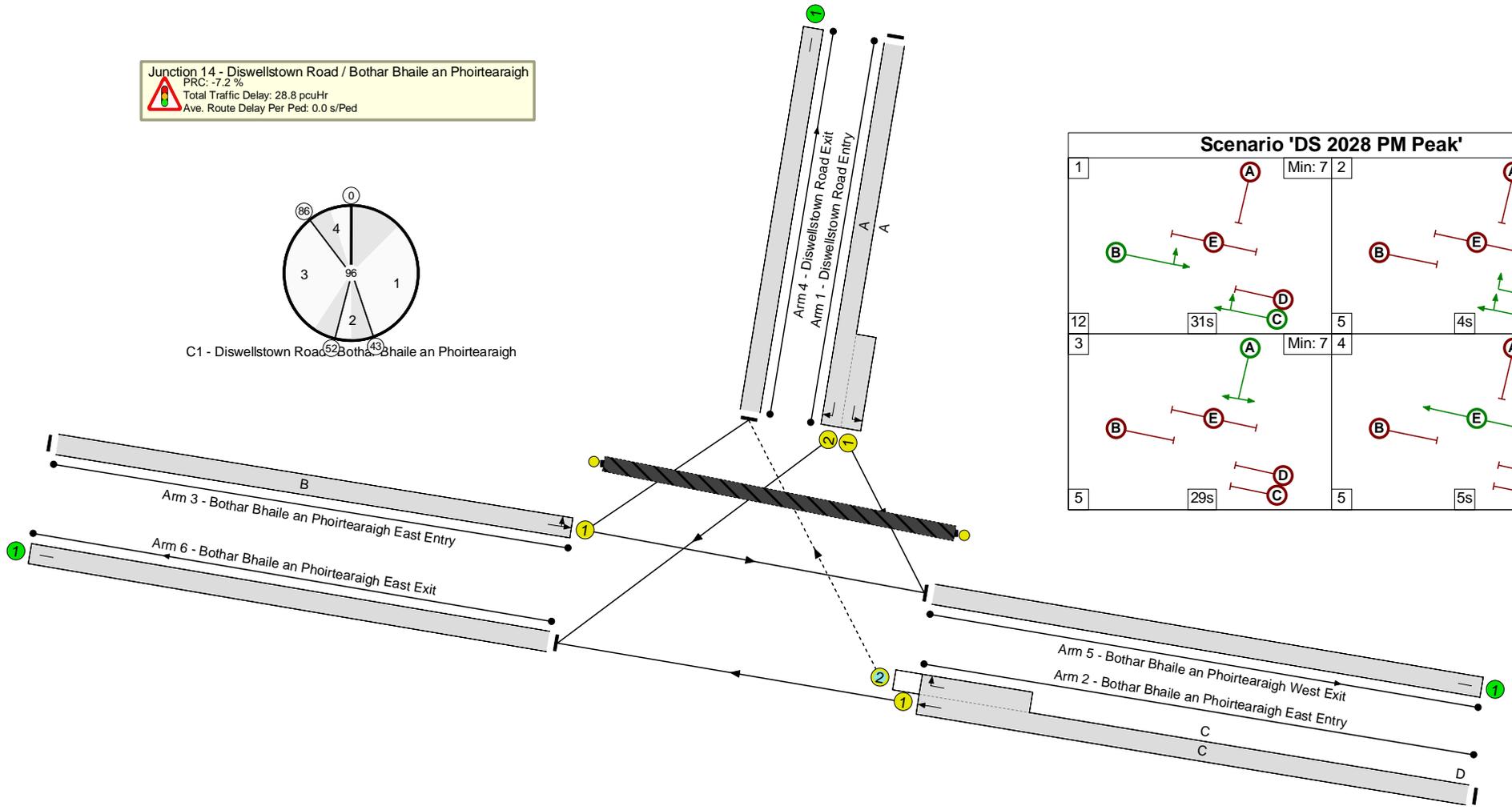


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -7.2 %  
 Total Traffic Delay: 28.8 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	96.5%
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	96.5%
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		1	29	-	617	1741:1741	171+476	95.4 : 95.4%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	1	40	4	183	1915:1741	35+192	80.7 : 80.7%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		1	31	-	558	1735	578	96.5%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	714	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

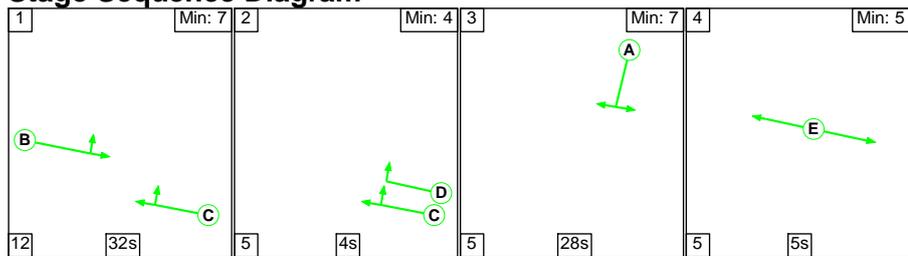
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	12	105	38	11.4	16.7	0.7	28.8	-	-	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	12	105	38	11.4	16.7	0.7	28.8	-	-	-	-
1/2+1/1	617	617	-	-	-	5.2	7.0	-	12.2	71.4	13.4	7.0	20.4
2/1+2/2	183	183	12	105	38	1.3	1.9	0.7	3.9	76.9	4.0	1.9	5.9
3/1	558	558	-	-	-	4.9	7.8	-	12.6	81.6	14.6	7.8	22.3
4/1	451	451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	714	714	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                        PRC for Signalled Lanes (%): -7.2                        Total Delay for Signalled Lanes (pcuHr): 28.80                        Cycle Time (s): 96 PRC Over All Lanes (%): -7.2                        Total Delay Over All Lanes(pcuHr): 28.80													

Full Input Data And Results

Scenario 3: 'DS 2043 AM Peak' (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

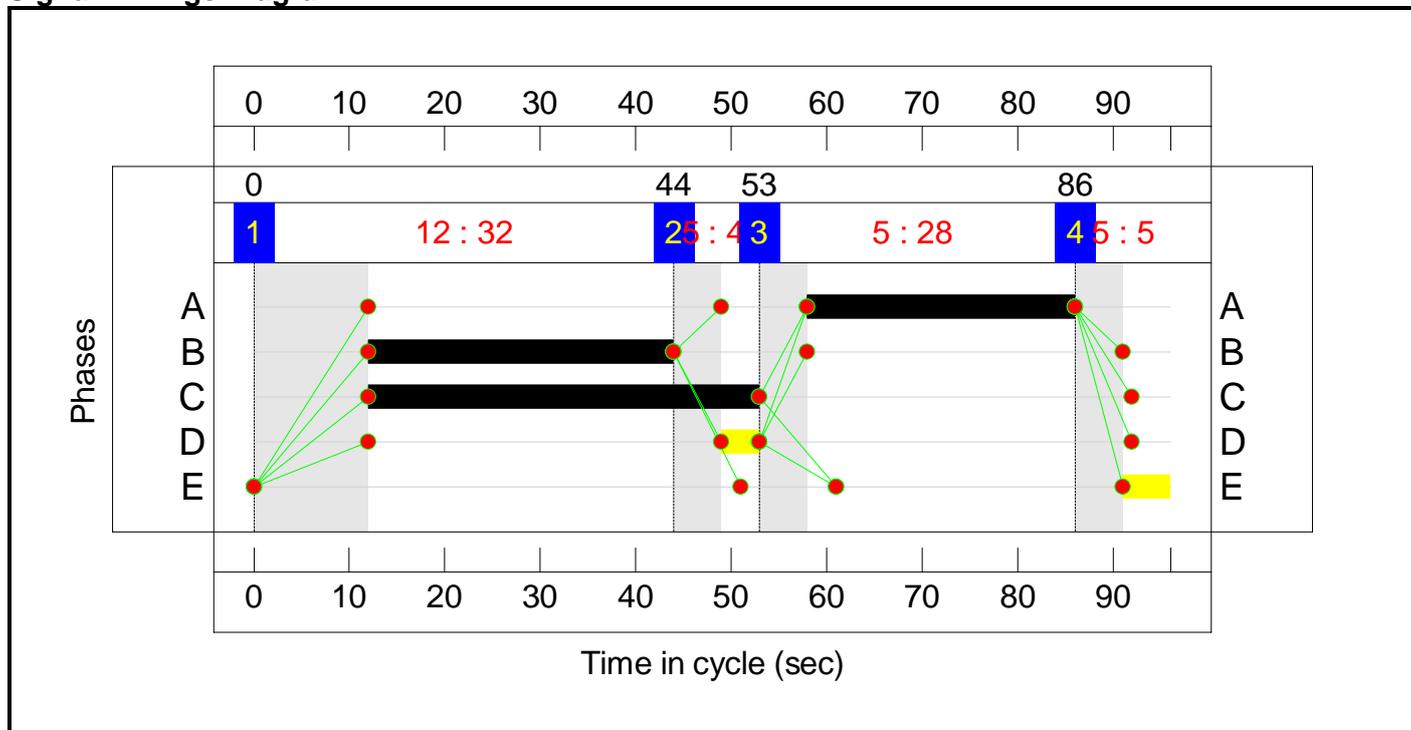
Stage Sequence Diagram



Stage Timings

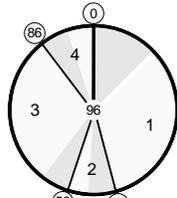
Stage	1	2	3	4
Duration	32	4	28	5
Change Point	0	44	53	86

Signal Timings Diagram

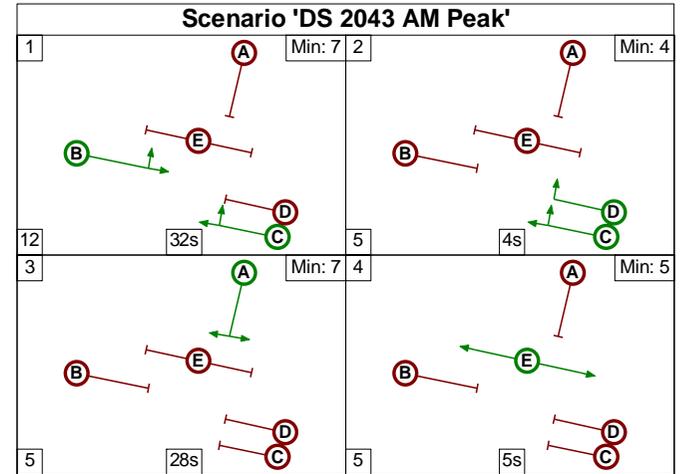
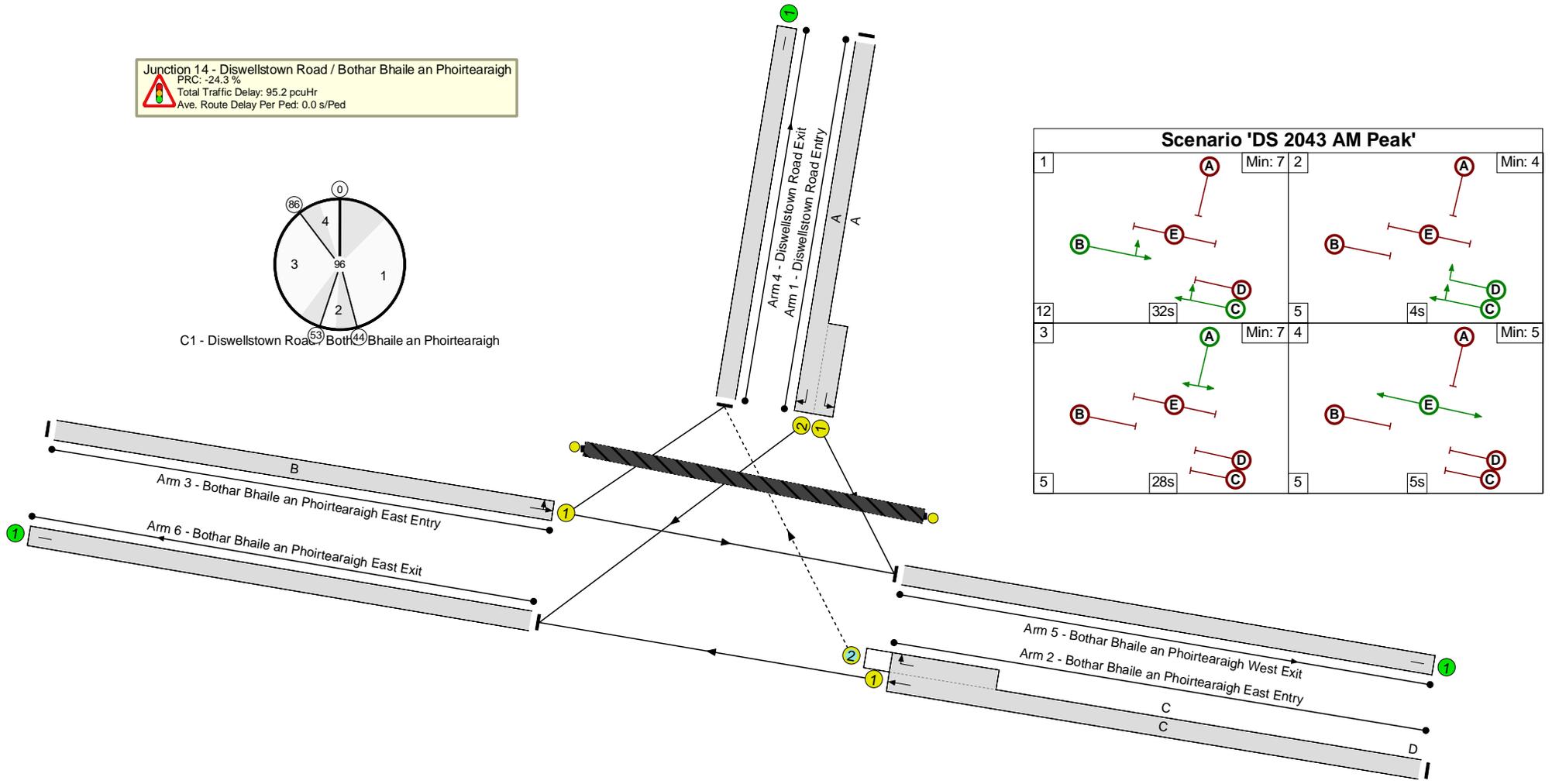


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -24.3 %  
 Total Traffic Delay: 95.2 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>111.9%</b>
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>111.9%</b>
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		1	28	-	779	1741:1741	431+265	111.9 : 111.9%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	1	41	4	156	1915:1741	161+166	47.7 : 47.7%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		1	32	-	626	1673	575	108.9%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	555	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	476	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	611	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

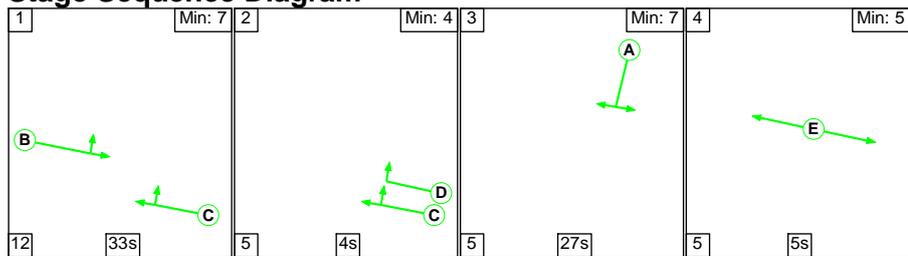
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	77	2	18.0	76.7	0.6	95.2	-	-	-	-
Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-	-	0	77	2	18.0	76.7	0.6	95.2	-	-	-	-
1/2+1/1	779	696	-	-	-	9.5	45.6	-	55.1	254.8	20.2	45.6	65.8
2/1+2/2	156	156	0	77	2	0.7	0.5	0.6	1.7	39.4	1.2	0.5	1.7
3/1	626	575	-	-	-	7.8	30.6	-	38.3	220.5	18.1	30.6	48.6
4/1	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	555	555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                          PRC for Signalled Lanes (%): -24.3                          Total Delay for Signalled Lanes (pcuHr): 95.19                          Cycle Time (s): 96 PRC Over All Lanes (%): -24.3                          Total Delay Over All Lanes(pcuHr): 95.19													

Full Input Data And Results

Scenario 4: 'DS 2043 PM Peak' (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

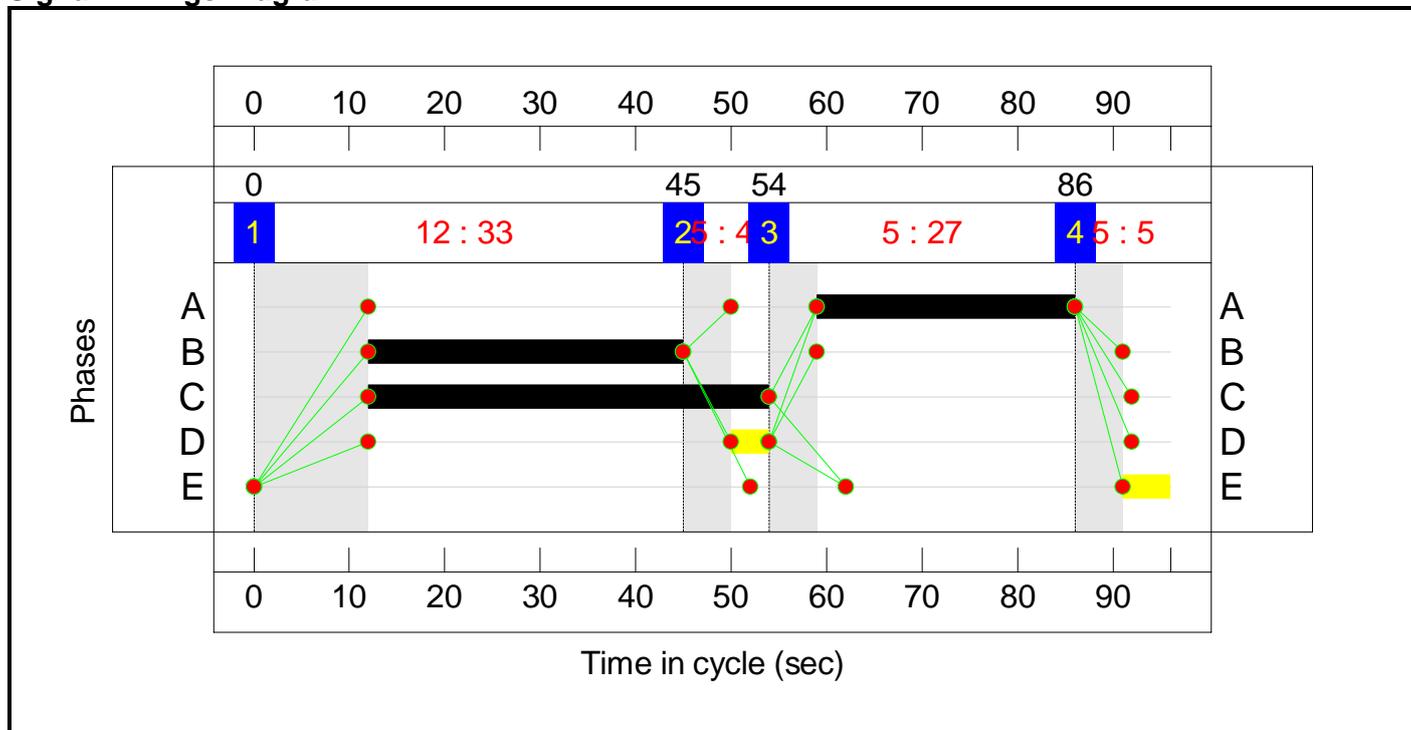
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	33	4	27	5
Change Point	0	45	54	86

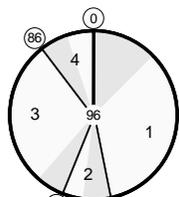
Signal Timings Diagram



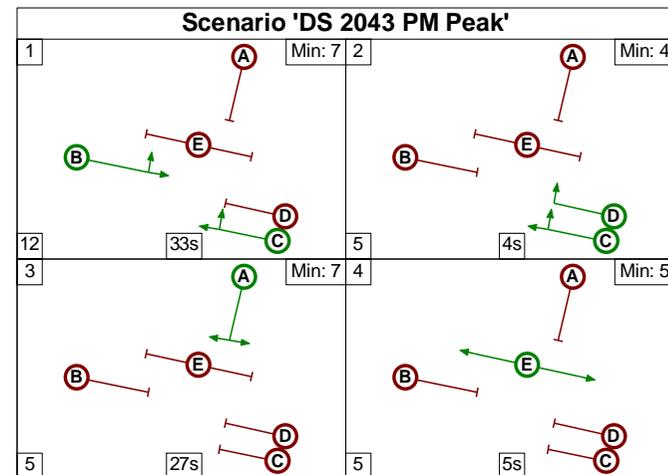
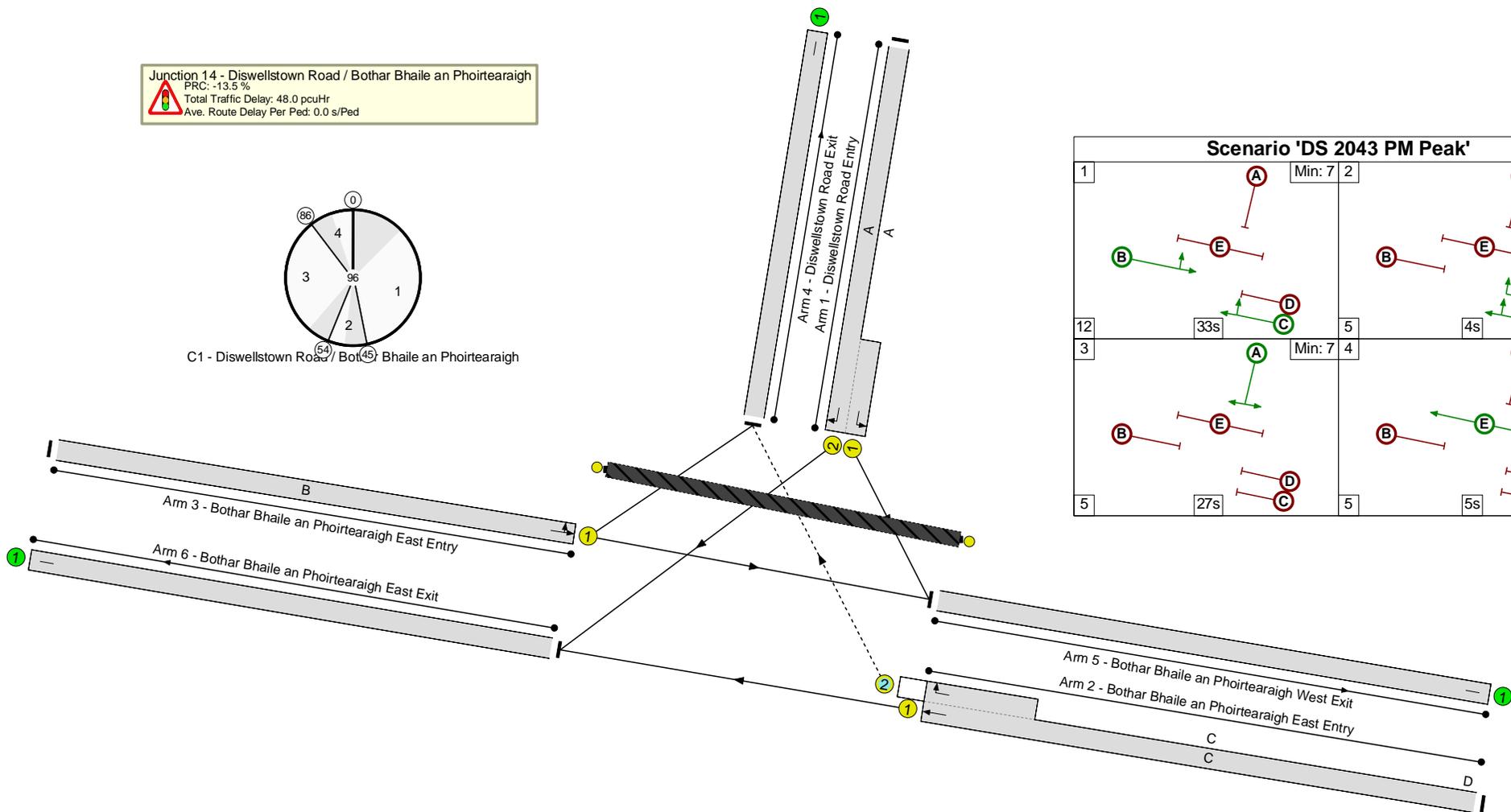
# Full Input Data And Results

## Network Layout Diagram

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -13.5 %  
 Total Traffic Delay: 48.0 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	102.1%
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	102.1%
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		1	27	-	627	1741:1741	166+448	102.1% : 102.1%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	1	42	4	221	1915:1741	36+184	100.6% : 100.6%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		1	33	-	606	1736	615	98.6%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	753	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	216	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

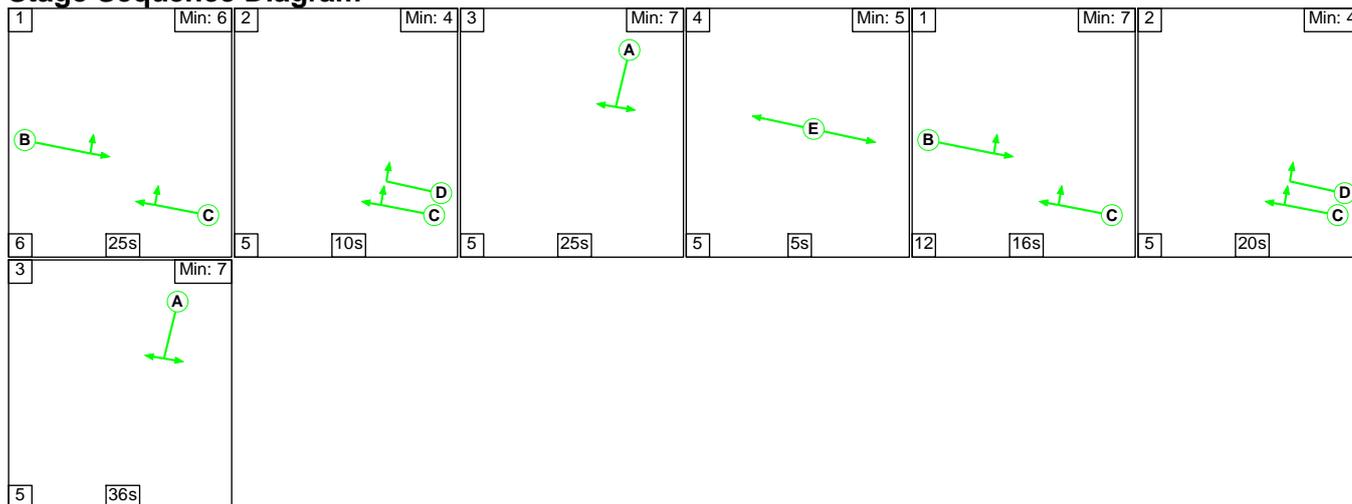
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	5	105	74	12.9	34.3	0.8	48.0	-	-	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	5	105	74	12.9	34.3	0.8	48.0	-	-	-	-
1/2+1/1	627	614	-	-	-	6.0	16.2	-	22.2	127.5	14.8	16.2	31.0
2/1+2/2	221	220	5	105	74	1.7	7.8	0.8	10.3	167.7	5.0	7.8	12.8
3/1	606	606	-	-	-	5.2	10.3	-	15.5	91.9	16.0	10.3	26.3
4/1	508	508	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	743	743	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	212	212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                          PRC for Signalled Lanes (%): -13.5                          Total Delay for Signalled Lanes (pcuHr): 47.98                          Cycle Time (s): 96 PRC Over All Lanes (%): -13.5                          Total Delay Over All Lanes(pcuHr): 47.98													

Full Input Data And Results

Scenario 5: 'DS 2028 AM Peak (alt peds)' (FG1: 'DS 2028 AM Peak', Plan 2: 'Peds every other')

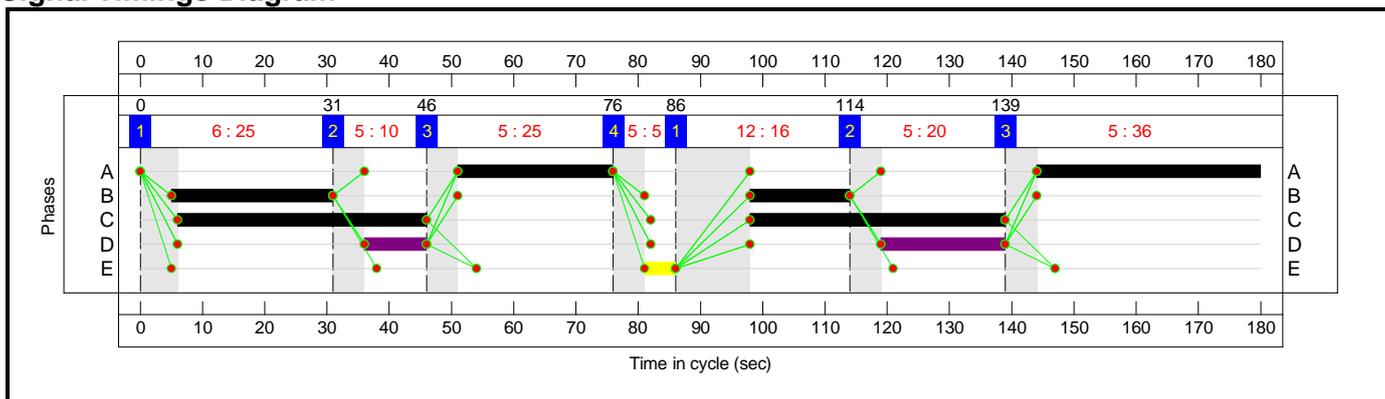
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	1	2	3
Duration	25	10	25	5	16	20	36
Change Point	0	31	46	76	86	114	139

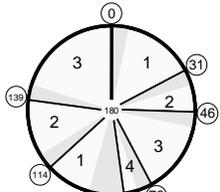
Signal Timings Diagram



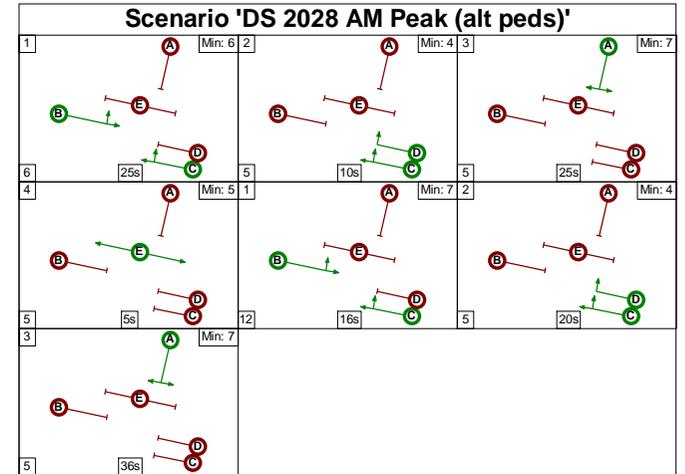
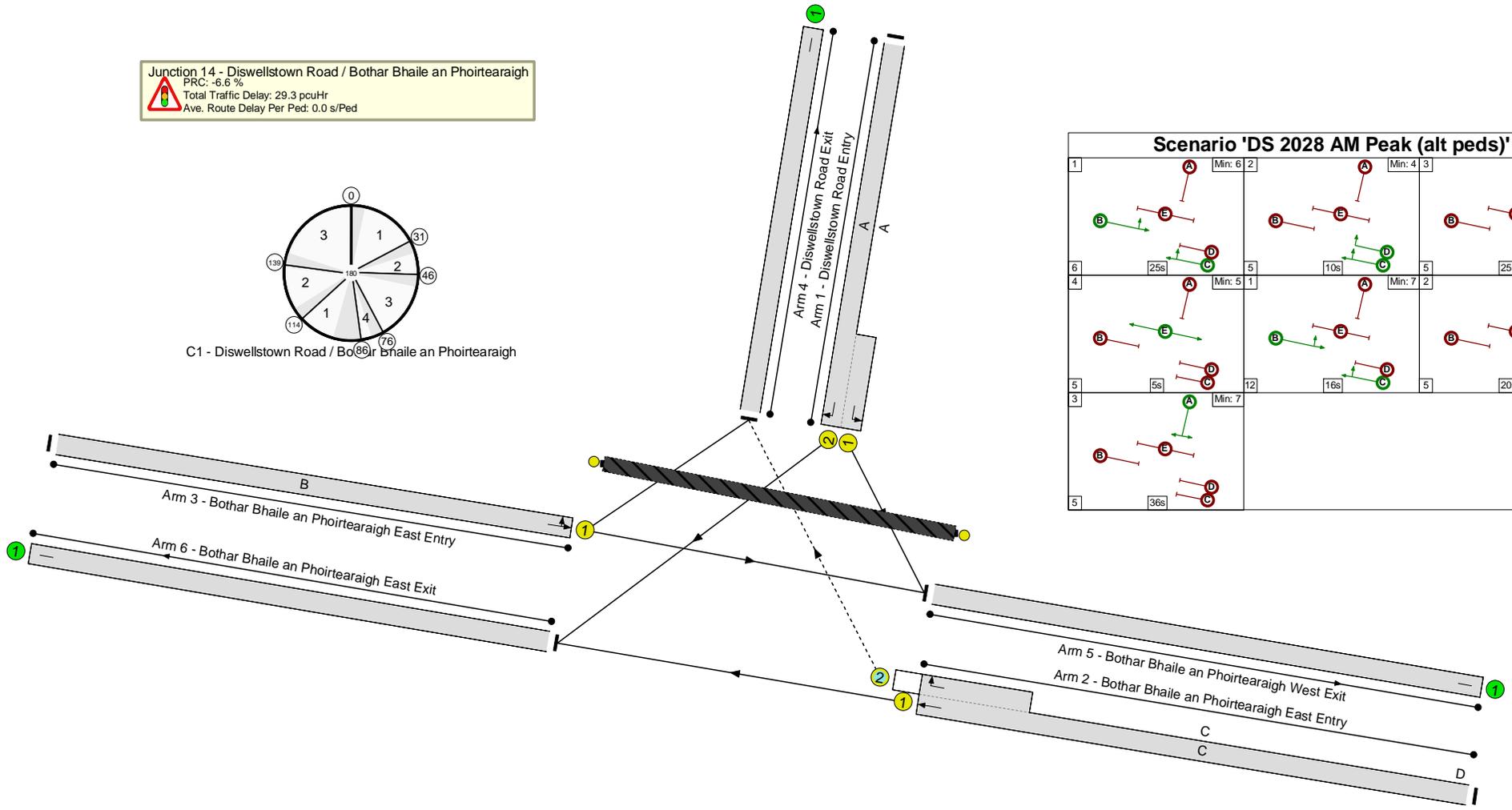
# Full Input Data And Results

## Network Layout Diagram

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -6.6 %  
 Total Traffic Delay: 29.3 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	95.9%
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	95.9%
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		2	61	-	673	1741:1741	541+161	95.9 : 95.9%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	2	81	30	492	1915:1741	94+421	95.6 : 95.6%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		2	42	-	348	1699	415	83.8%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	652	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	271	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	614	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

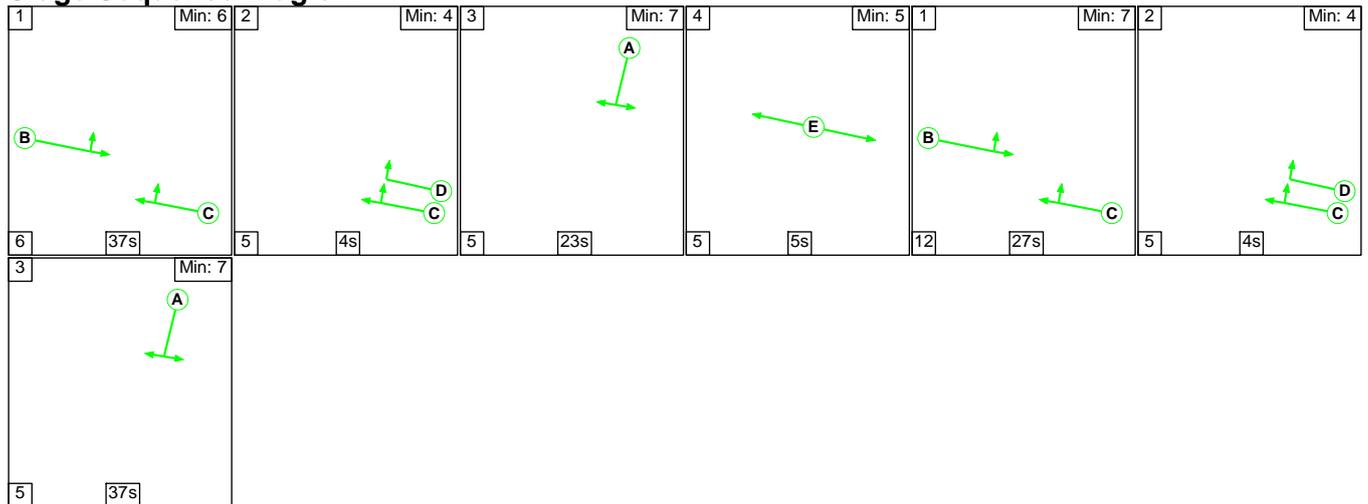
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	53	288	61	11.8	16.9	0.6	29.3	-	-	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	53	288	61	11.8	16.9	0.6	29.3	-	-	-	-
1/2+1/1	673	673	-	-	-	5.2	7.7	-	12.8	68.6	16.8	7.7	24.5
2/1+2/2	492	492	53	288	61	3.5	6.8	0.6	10.9	80.1	10.1	6.8	16.8
3/1	348	348	-	-	-	3.1	2.4	-	5.5	57.3	8.5	2.4	10.9
4/1	652	652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	614	614	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                          PRC for Signalled Lanes (%): -6.6                          Total Delay for Signalled Lanes (pcuHr): 29.30                          Cycle Time (s): 180 PRC Over All Lanes (%): -6.6                          Total Delay Over All Lanes(pcuHr): 29.30													

Full Input Data And Results

Scenario 6: 'DS 2028 PM Peak (alt peds)' (FG2: 'DS 2028 PM Peak', Plan 2: 'Peds every other')

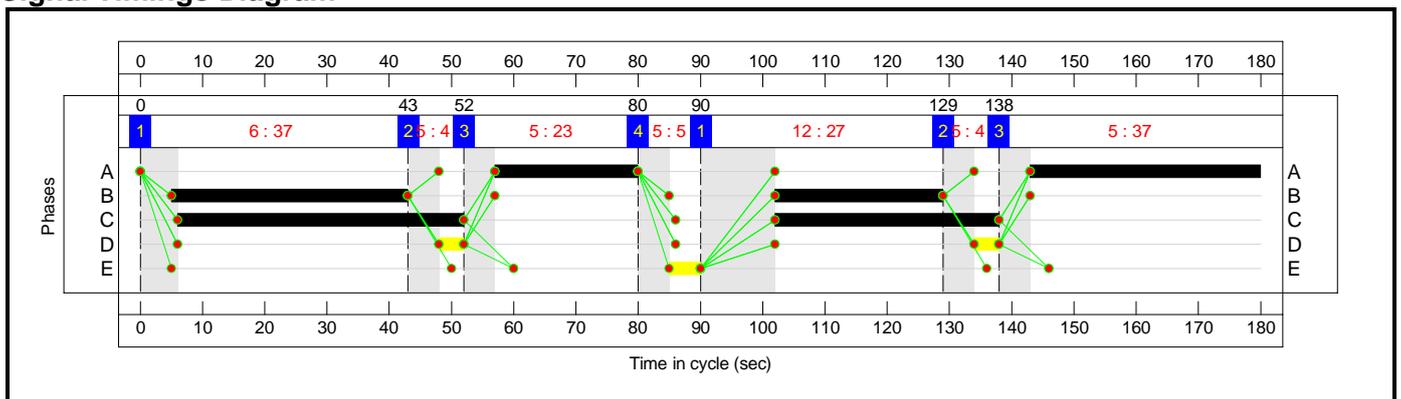
Stage Sequence Diagram



Stage Timings

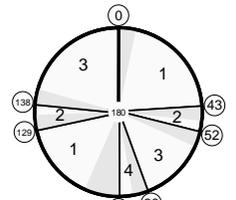
Stage	1	2	3	4	1	2	3
Duration	37	4	23	5	27	4	37
Change Point	0	43	52	80	90	129	138

Signal Timings Diagram

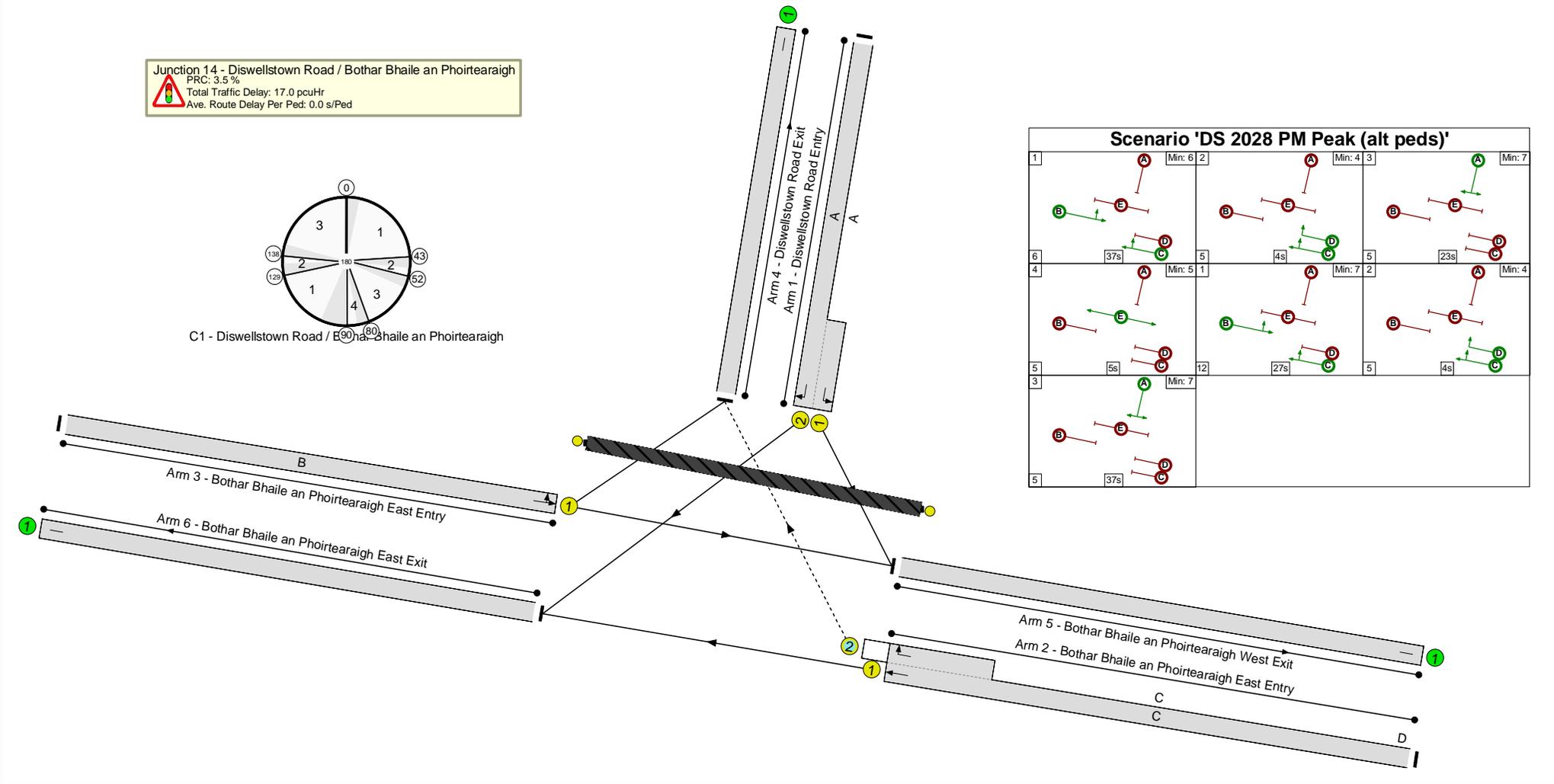


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: 3.5 %  
 Total Traffic Delay: 17.0 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



**Scenario 'DS 2028 PM Peak (alt peds)'**

1	Min: 6	2	Min: 4	3	Min: 7
6	37s	5	4s	5	23s
4	Min: 5	1	Min: 7	2	Min: 4
5	5s	12	27s	5	4s
3	Min: 7				
5	37s				

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>87.0%</b>
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>87.0%</b>
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		2	60	-	617	1741:1741	187+522	87.0 : 87.0%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	2	82	8	183	1915:1741	45+251	61.8 : 61.8%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		2	65	-	558	1735	646	86.4%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	714	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

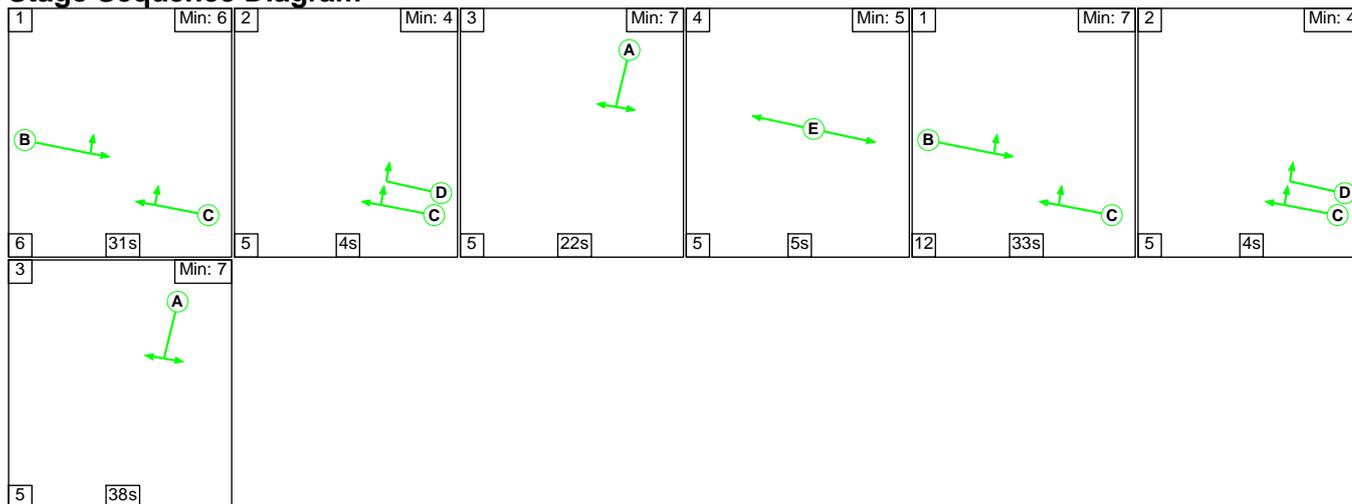
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	59	77	19	9.4	6.9	0.7	17.0	-	-	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	59	77	19	9.4	6.9	0.7	17.0	-	-	-	-
1/2+1/1	617	617	-	-	-	4.4	3.1	-	7.5	44.0	12.4	3.1	15.5
2/1+2/2	183	183	59	77	19	1.0	0.8	0.7	2.5	48.3	3.6	0.8	4.4
3/1	558	558	-	-	-	4.1	3.0	-	7.0	45.4	13.2	3.0	16.2
4/1	451	451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	714	714	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                        PRC for Signalled Lanes (%): 3.5                        Total Delay for Signalled Lanes (pcuHr): 17.02                        Cycle Time (s): 180 PRC Over All Lanes (%): 3.5                        Total Delay Over All Lanes(pcuHr): 17.02													

Full Input Data And Results

Scenario 7: 'DS 2043 AM Peak (alt peds)' (FG3: 'DS 2043 AM Peak', Plan 2: 'Peds every other')

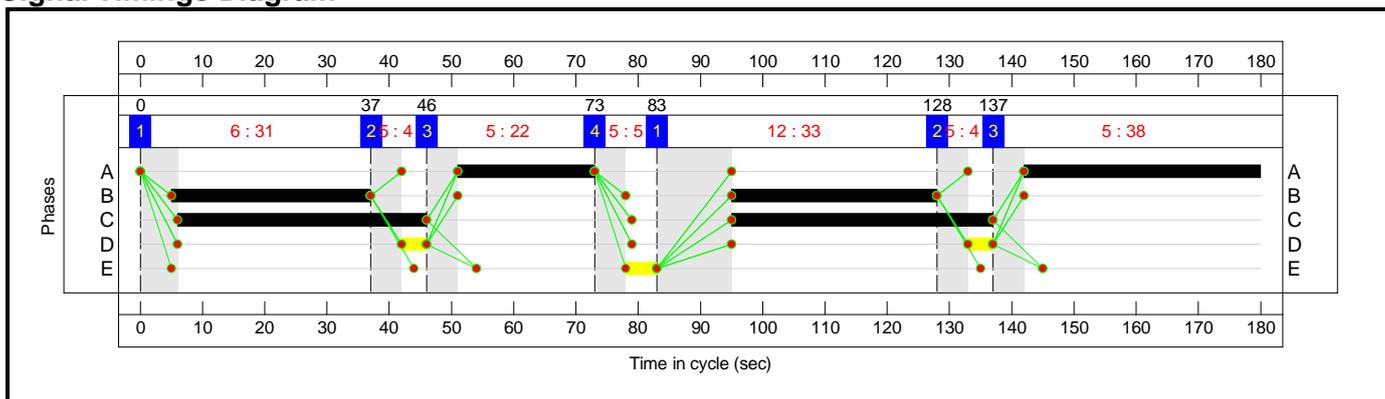
Stage Sequence Diagram



Stage Timings

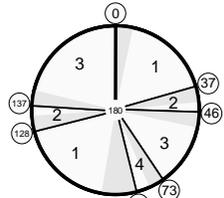
Stage	1	2	3	4	1	2	3
Duration	31	4	22	5	33	4	38
Change Point	0	37	46	73	83	128	137

Signal Timings Diagram

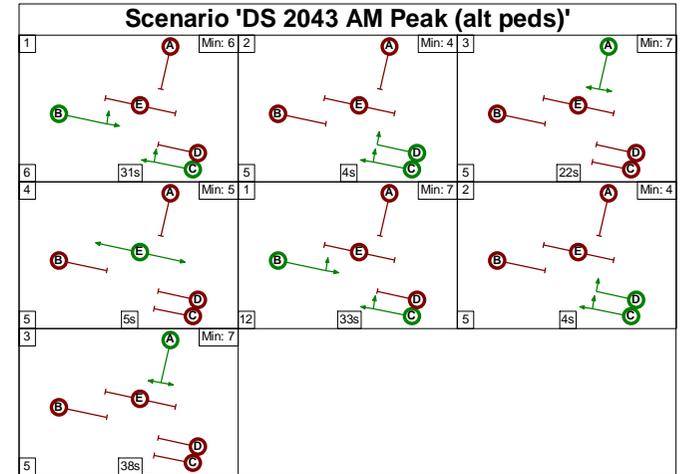
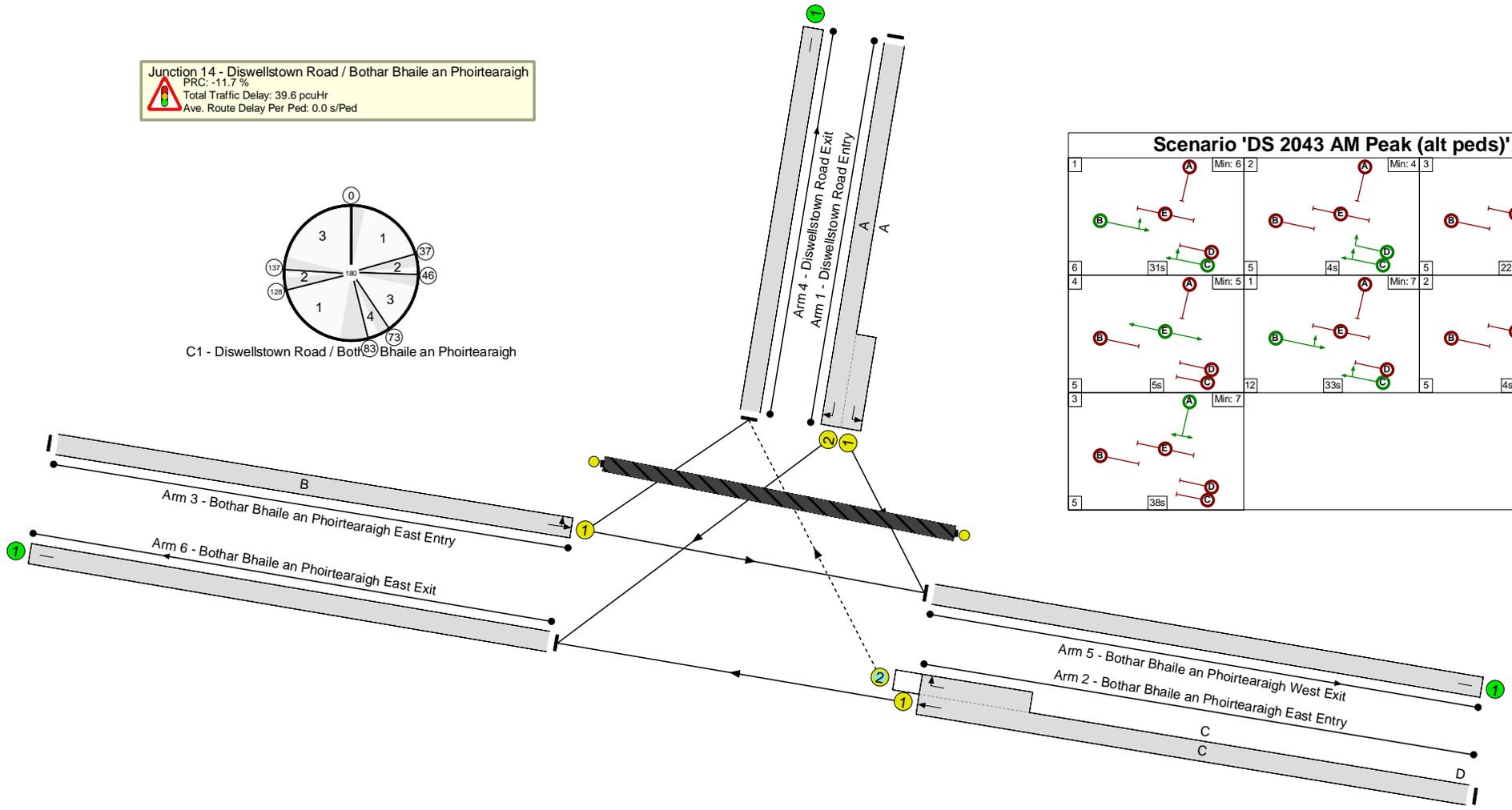


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -11.7 %  
 Total Traffic Delay: 39.6 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>100.5%</b>
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>100.5%</b>
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		2	60	-	779	1741:1741	483+298	99.7 : 99.7%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	2	82	8	156	1915:1741	172+177	44.7 : 44.7%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		2	65	-	626	1673	623	100.5%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	555	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	476	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	611	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

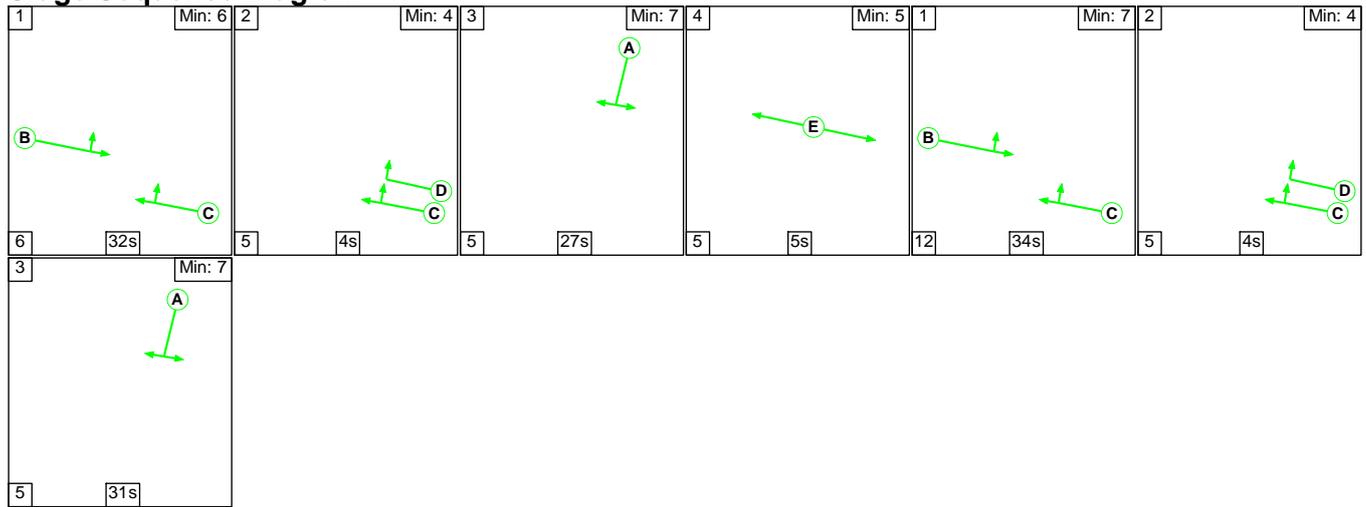
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	77	2	11.9	27.1	0.6	39.6	-	-	-	-
Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh	-	-	0	77	2	11.9	27.1	0.6	39.6	-	-	-	-
1/2+1/1	779	779	-	-	-	6.1	13.4	-	19.5	90.0	18.8	13.4	32.1
2/1+2/2	156	156	0	77	2	0.6	0.4	0.6	1.5	35.4	1.1	0.4	1.5
3/1	626	623	-	-	-	5.2	13.4	-	18.6	106.9	16.2	13.4	29.5
4/1	552	552	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	475	475	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	611	611	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                          PRC for Signalled Lanes (%): -11.7                          Total Delay for Signalled Lanes (pcuHr): 39.59                          Cycle Time (s): 180 PRC Over All Lanes (%): -11.7                          Total Delay Over All Lanes(pcuHr): 39.59													

Full Input Data And Results

Scenario 8: ' DS 2043 PM Peak (alt peds)' (FG4: 'DS 2043 PM Peak', Plan 2: 'Peds every other')

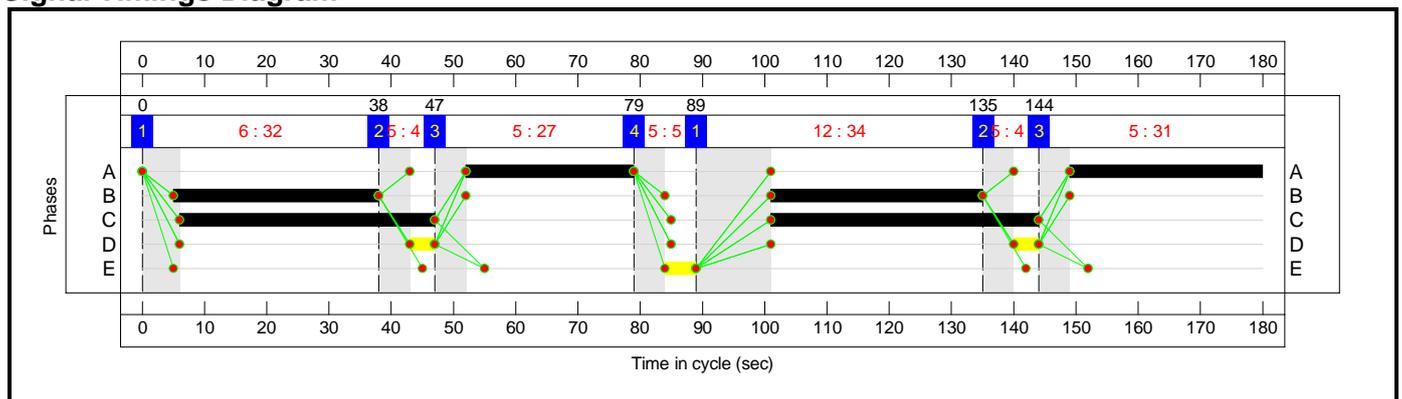
Stage Sequence Diagram



Stage Timings

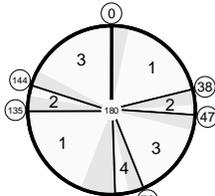
Stage	1	2	3	4	1	2	3
Duration	32	4	27	5	34	4	31
Change Point	0	38	47	79	89	135	144

Signal Timings Diagram

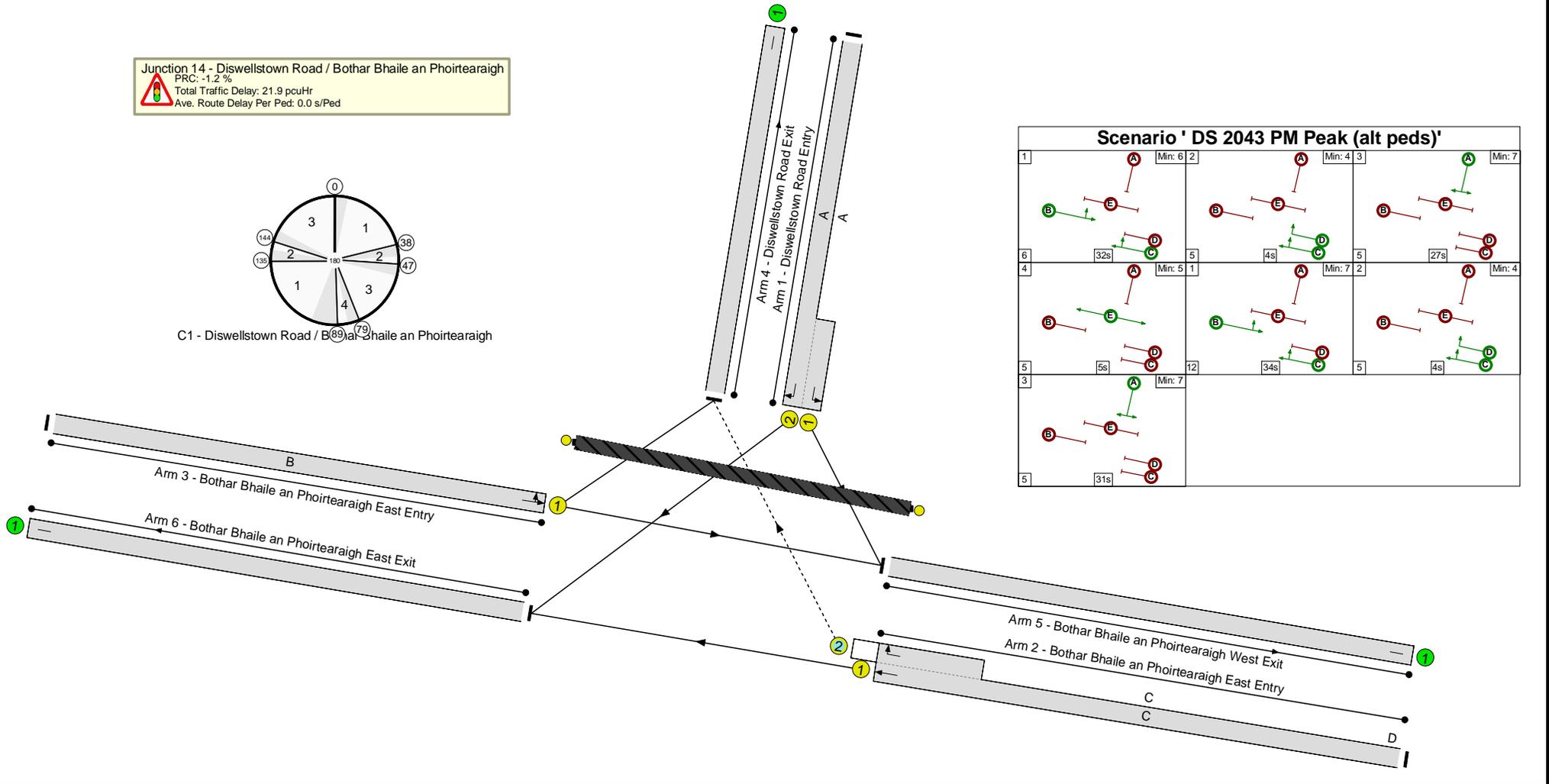


Full Input Data And Results  
**Network Layout Diagram**

Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh  
 PRC: -1.2 %  
 Total Traffic Delay: 21.9 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh



**Scenario ' DS 2043 PM Peak (alt peds)'**

1	Min: 6	2	Min: 4	3	Min: 7
6	32s	5	4s	5	27s
4	Min: 5	1	Min: 7	2	Min: 4
5	5s	12	34s	5	4s
3	Min: 7				
5	31s				

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	91.1%
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	N/A	-	-		-	-	-	-	-	-	91.1%
1/2+1/1	Diswellstown Road Entry Left Right	U	N/A	N/A	A		2	58	-	627	1741:1741	188+506	90.4 : 90.4%
2/1+2/2	Bothar Bhaile an Phoirtearaigh East Entry Right Ahead	U+O	N/A	N/A	C	D	2	84	8	221	1915:1741	45+232	79.9 : 79.9%
3/1	Bothar Bhaile an Phoirtearaigh East Entry Left Ahead	U	N/A	N/A	B		2	67	-	606	1736	665	91.1%
4/1	Diswellstown Road Exit	U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
5/1	Bothar Bhaile an Phoirtearaigh West Exit	U	N/A	N/A	-		-	-	-	753	Inf	Inf	0.0%
6/1	Bothar Bhaile an Phoirtearaigh East Exit	U	N/A	N/A	-		-	-	-	216	Inf	Inf	0.0%
Ped Link: P1	Diswellstown Road Ped Link	-	N/A	-	E		1	5	-	0	-	0	0.0%

Full Input Data And Results

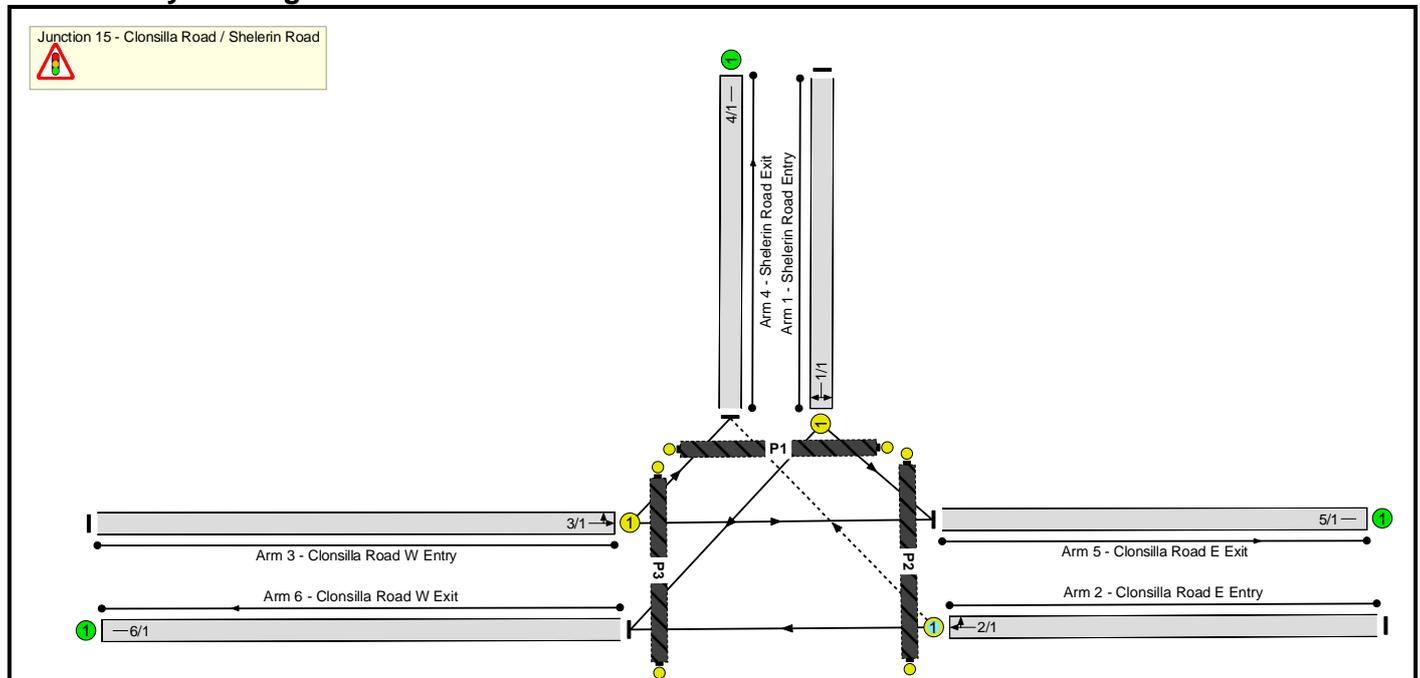
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	40	107	39	10.6	10.5	0.8	21.9	-	-	-	-
<b>Junction 14 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh</b>	-	-	40	107	39	10.6	10.5	0.8	21.9	-	-	-	-
1/2+1/1	627	627	-	-	-	4.8	4.2	-	8.9	51.3	14.5	4.2	18.6
2/1+2/2	221	221	40	107	39	1.4	1.9	0.8	4.0	65.4	4.9	1.9	6.8
3/1	606	606	-	-	-	4.5	4.4	-	8.9	53.0	16.0	4.4	20.4
4/1	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	753	753	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	216	216	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / Bothar Bhaile an Phoirtearaigh                        PRC for Signalled Lanes (%): -1.2                        Total Delay for Signalled Lanes (pcuHr): 21.88                        Cycle Time (s): 180 PRC Over All Lanes (%): -1.2                        Total Delay Over All Lanes(pcuHr): 21.88													

Full Input Data And Results  
**Full Input Data And Results**

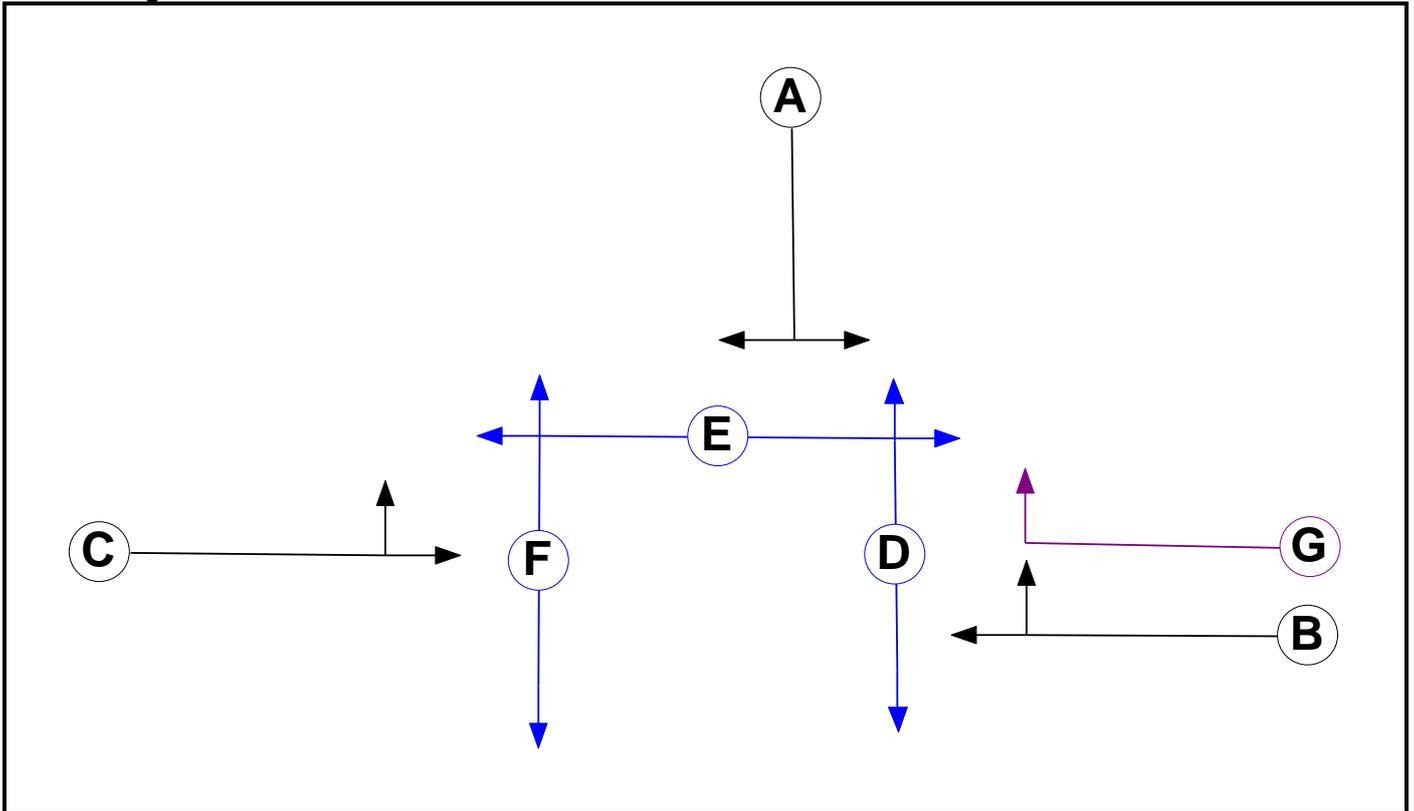
**User and Project Details**

<b>Project:</b>	DART
<b>Title:</b>	DART West Junction Modelling
<b>Location:</b>	Clonsilla Road / Shelerin Road
<b>Date Started:</b>	17/11/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction15_Base_DM_DS V3.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Pedestrian		5	5
E	Pedestrian		5	5
F	Pedestrian		5	5
G	Ind. Arrow	B	4	4

## Full Input Data And Results

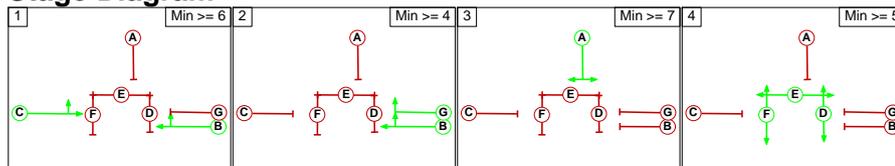
### Phase Intergrens Matrix

		Starting Phase						
		A	B	C	D	E	F	G
Terminating Phase	A		6	5	8	5	9	5
	B	5		-	5	8	8	-
	C	5	-		8	7	5	5
	D	10	10	10		-	-	10
	E	12	12	12	-		-	12
	F	9	9	9	-	-		-
	G	5	-	5	5	8	-	

### Phases in Stage

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

### Stage Diagram



### Phase Delays

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

### Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1		5	5	8
	2	5		5	8
	3	6	X		9
	4	12	12	12	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Junction 15 - Clonsilla Road / Shelerin 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)
2/1 (Clonsilla Road E Entry)	4/1 (Right)	1439	0	3/1	1.09	All	-	-	-	-	-

Full Input Data And Results

**Lane Input Data**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	U	A	2	3	74.8	Geom	-	3.50	0.00	Y	Arm 5 Left	13.00
											Arm 6 Right	15.00
2/1 (Clonsilla Road E Entry)	O	B G	2	3	67.1	Geom	-	4.00	0.00	Y	Arm 4 Right	Inf
											Arm 6 Ahead	Inf
3/1 (Clonsilla Road W Entry)	U	C	2	3	104.9	Geom	-	4.00	0.00	Y	Arm 4 Left	10.00
											Arm 5 Ahead	Inf
4/1 (Shelerin Road Exit)	U		2	3	74.8	Inf	-	-	-	-	-	-
5/1 (Clonsilla Road E Exit)	U		2	3	67.1	Inf	-	-	-	-	-	-
6/1 (Clonsilla Road W Exit)	U		2	3	104.9	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base AM Peak'	08:00	09:00	01:00	
2: 'Base PM Peak'	17:00	18:00	01:00	
3: 'DM 2028 AM Peak'	08:00	09:00	01:00	
4: 'DM 2028 PM Peak'	17:00	18:00	01:00	
5: 'DM 2043 AM Peak'	08:00	09:00	01:00	
6: 'DM 2043 PM Peak'	17:00	18:00	01:00	
7: 'DS 2028 AM Peak'	08:00	09:00	01:00	
8: 'DS 2028 PM Peak'	17:00	18:00	01:00	
9: 'DS 2043 AM Peak'	08:00	09:00	01:00	
10: 'DS 2043 PM Peak'	17:00	18:00	01:00	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
		Tot.
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 1: Base Year AM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	113
2/1	214
3/1	626
4/1	41
5/1	625
6/1	285

**Lane Saturation Flows**

<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>								
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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	36.6 %	1777	1777
				Arm 6 Right	15.00	63.4 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	6.6 %	1995	1995
				Arm 5 Ahead	Inf	93.4 %		
4/1 (Shelerin Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 2: 'Base Year PM Peak'** (FG2: 'Base PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

Desired Flow :

Origin	Destination	
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 2: Base Year PM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	77
2/1	407
3/1	287
4/1	73
5/1	220
6/1	478

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	7.8 %	1784	1784
				Arm 6 Right	15.00	92.2 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	25.4 %	1941	1941
				Arm 5 Ahead	Inf	74.6 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 3: 'DM 2028 AM Peak'** (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

Desired Flow :

Origin	Destination	
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: DM 2028 AM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	120
2/1	332
3/1	662
4/1	46
5/1	655
6/1	413

**Lane Saturation Flows**

<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>								
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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	32.5 %	1778	1778
				Arm 6 Right	15.00	67.5 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	6.9 %	1994	1994
				Arm 5 Ahead	Inf	93.1 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 4: DM 2028 PM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	19
2/1	290
3/1	275
4/1	76
5/1	199
6/1	309

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	0.0 %	1786	1786
				Arm 6 Right	15.00	100.0 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	27.6 %	1935	1935
				Arm 5 Ahead	Inf	72.4 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 5: 'DM 2043 AM Peak'** (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 5: DM 2043 AM Peak
Junction: Junction 15 - Clonsilla Road / Shelerin Road	
1/1	161
2/1	237
3/1	790
4/1	93
5/1	764
6/1	331

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	41.6 %	1776	1776
				Arm 6 Right	15.00	58.4 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	11.8 %	1980	1980
				Arm 5 Ahead	Inf	88.2 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 6: 'DM 2043 PM Peak'** (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 6: DM 2043 PM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	21
2/1	391
3/1	310
4/1	85
5/1	225
6/1	412

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	0.0 %	1786	1786
				Arm 6 Right	15.00	100.0 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	27.4 %	1935	1935
				Arm 5 Ahead	Inf	72.6 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 7: 'DS 2028 AM Peak'** (FG7: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 7: DS 2028 AM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	261
2/1	330
3/1	689
4/1	35
5/1	700
6/1	545

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	17.6 %	1782	1782
				Arm 6 Right	15.00	82.4 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	5.1 %	2000	2000
				Arm 5 Ahead	Inf	94.9 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 8: 'DS 2028 PM Peak'** (FG8: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 8: DS 2028 PM Peak
Junction: Junction 15 - Clonsilla Road / Shelerin Road	
1/1	15
2/1	320
3/1	327
4/1	38
5/1	289
6/1	335

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	0.0 %	1786	1786
				Arm 6 Right	15.00	100.0 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	11.6 %	1980	1980
				Arm 5 Ahead	Inf	88.4 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 9: 'DS 2043 AM Peak'** (FG9: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 9: DS 2043 AM Peak
<b>Junction: Junction 15 - Clonsilla Road / Shelerin Road</b>	
1/1	335
2/1	340
3/1	774
4/1	178
5/1	699
6/1	572

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	30.7 %	1779	1779
				Arm 6 Right	15.00	69.3 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	23.0 %	1948	1948
				Arm 5 Ahead	Inf	77.0 %		
4/1 (Shelerin Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 10: 'DS 2043 PM Peak'** (FG10: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

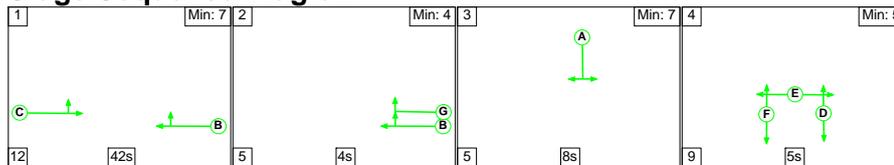
Lane	Scenario 10: DS 2043 PM Peak
Junction: Junction 15 - Clonsilla Road / Shelerin Road	
1/1	23
2/1	369
3/1	380
4/1	41
5/1	339
6/1	392

**Lane Saturation Flows**

Junction: Junction 15 - Clonsilla Road / Shelerin 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 (Shelerin Road Entry)	3.50	0.00	Y	Arm 5 Left	13.00	0.0 %	1786	1786
				Arm 6 Right	15.00	100.0 %		
2/1 (Clonsilla Road E Entry)	4.00	0.00	Y	Arm 4 Right	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	100.0 %		
3/1 (Clonsilla Road W Entry)	4.00	0.00	Y	Arm 4 Left	10.00	10.8 %	1983	1983
				Arm 5 Ahead	Inf	89.2 %		
4/1 (Shelerin Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

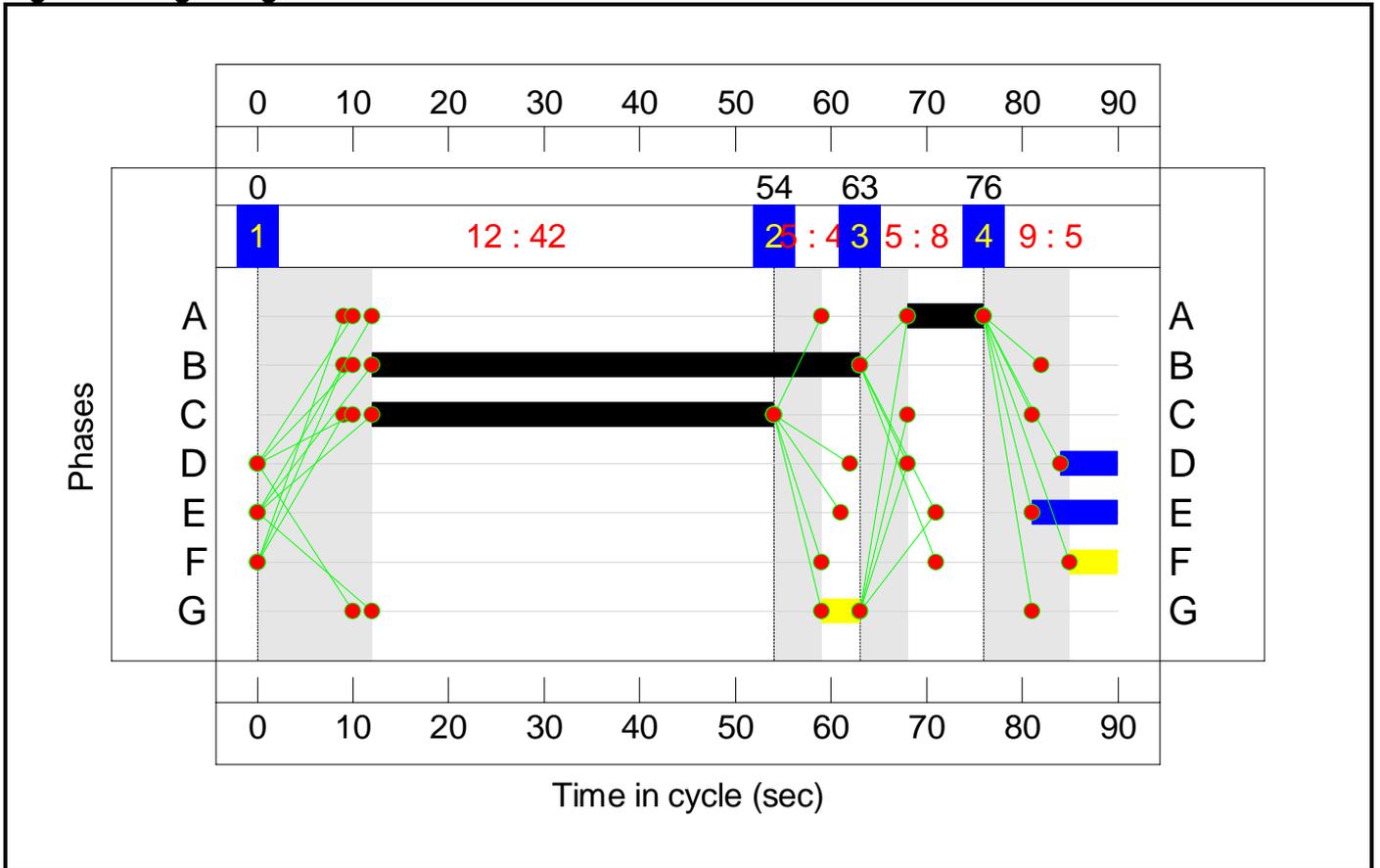
**Stage Sequence Diagram**



**Stage Timings**

Stage	1	2	3	4
Duration	42	4	8	5
Change Point	0	54	63	76

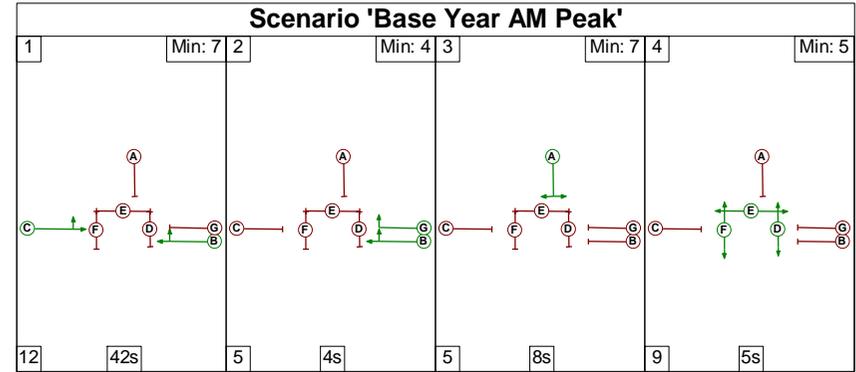
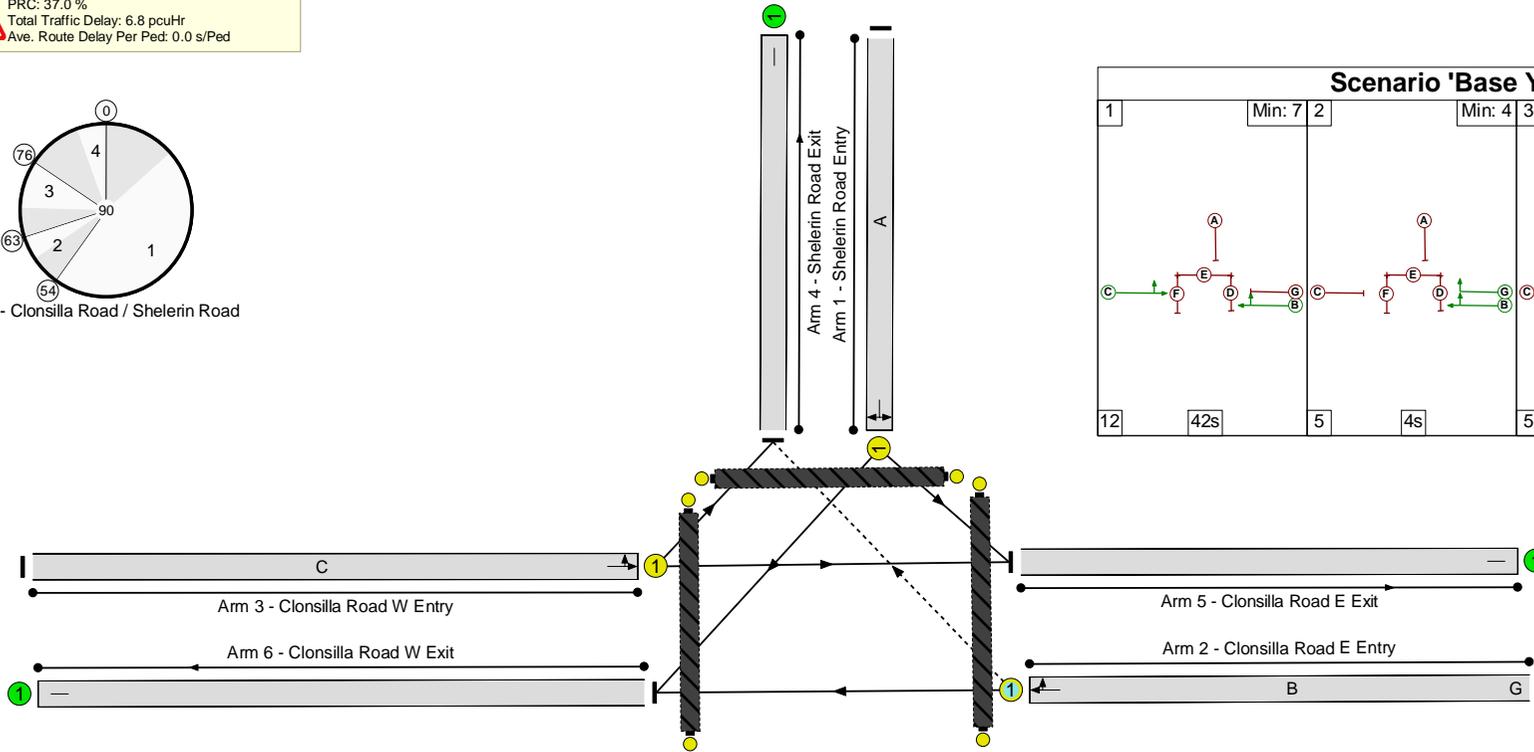
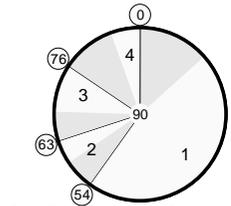
**Signal Timings Diagram**



# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 37.0 %  
 Total Traffic Delay: 6.8 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.7%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.7%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	8	-	113	1777	178	63.6%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	51	4	214	2015	1164	18.4%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	42	-	626	1995	953	65.7%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	41	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	285	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

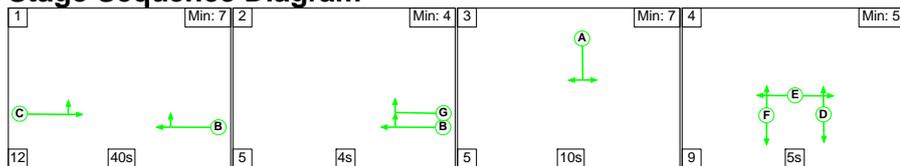
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	4.9	1.9	0.0	6.8	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	4.9	1.9	0.0	6.8	-	-	-	-
1/1	113	113	-	-	-	1.2	0.9	-	2.1	66.1	2.7	0.9	3.6
2/1	214	214	0	0	0	0.5	0.1	-	0.6	10.9	2.5	0.1	2.6
3/1	626	626	-	-	-	3.1	1.0	-	4.1	23.4	11.8	1.0	12.8
4/1	41	41	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	625	625	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	285	285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		37.0	Total Delay for Signalled Lanes (pcuHr):			6.78	Cycle Time (s): 90			
			PRC Over All Lanes (%):		37.0	Total Delay Over All Lanes(pcuHr):			6.78				

Full Input Data And Results

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

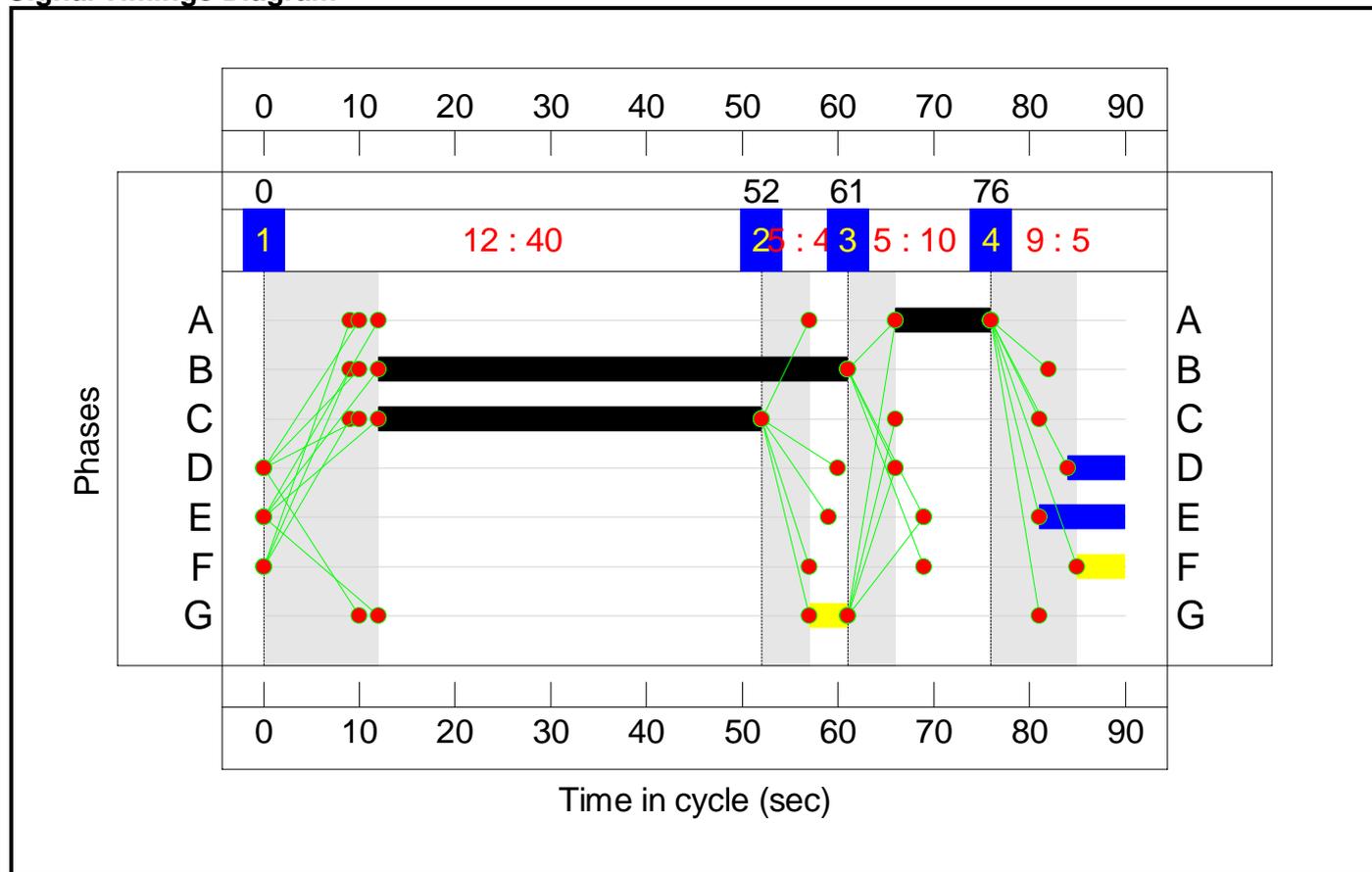
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	40	4	10	5
Change Point	0	52	61	76

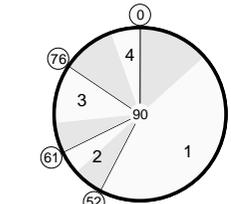
Signal Timings Diagram



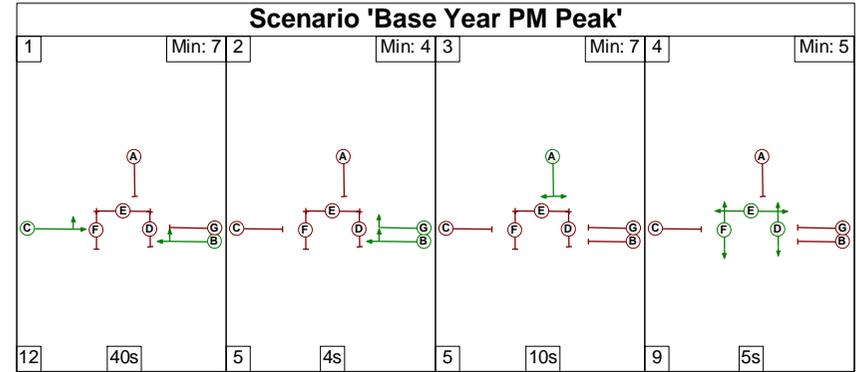
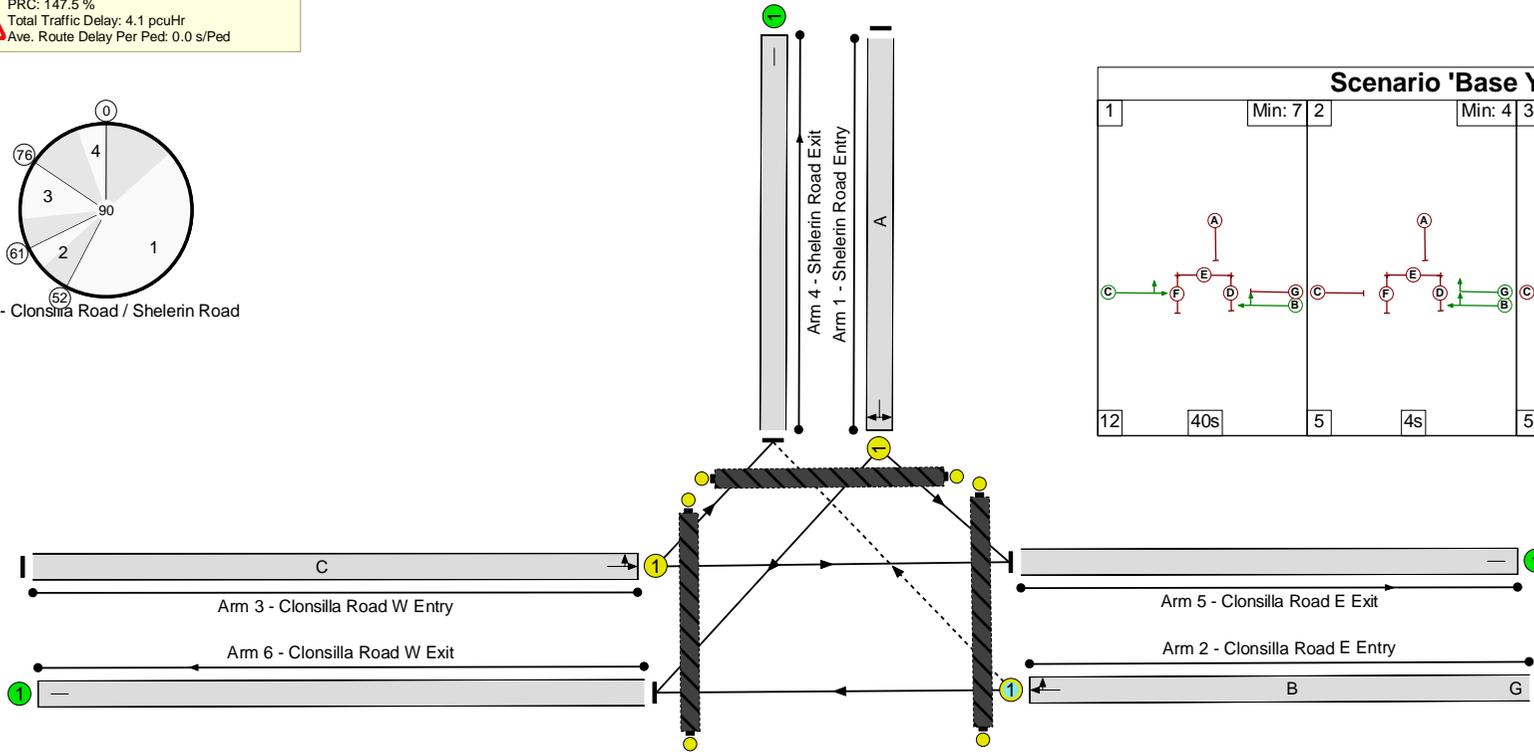
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 147.5 %  
 Total Traffic Delay: 4.1 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	36.4%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	36.4%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	10	-	77	1784	218	35.3%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	49	4	407	2015	1119	36.4%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	40	-	287	1941	884	32.5%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	73	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

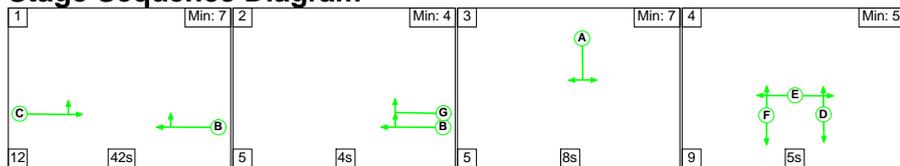
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	3.3	0.8	0.0	4.1	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	3.3	0.8	0.0	4.1	-	-	-	-
1/1	77	77	-	-	-	0.8	0.3	-	1.0	49.0	1.8	0.3	2.0
2/1	407	407	0	0	0	1.3	0.3	-	1.5	13.7	5.7	0.3	5.9
3/1	287	287	-	-	-	1.2	0.2	-	1.5	18.7	4.5	0.2	4.8
4/1	73	73	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		147.5	Total Delay for Signalled Lanes (pcuHr):		4.08	Cycle Time (s): 90				
			PRC Over All Lanes (%):		147.5	Total Delay Over All Lanes(pcuHr):		4.08					

Full Input Data And Results

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

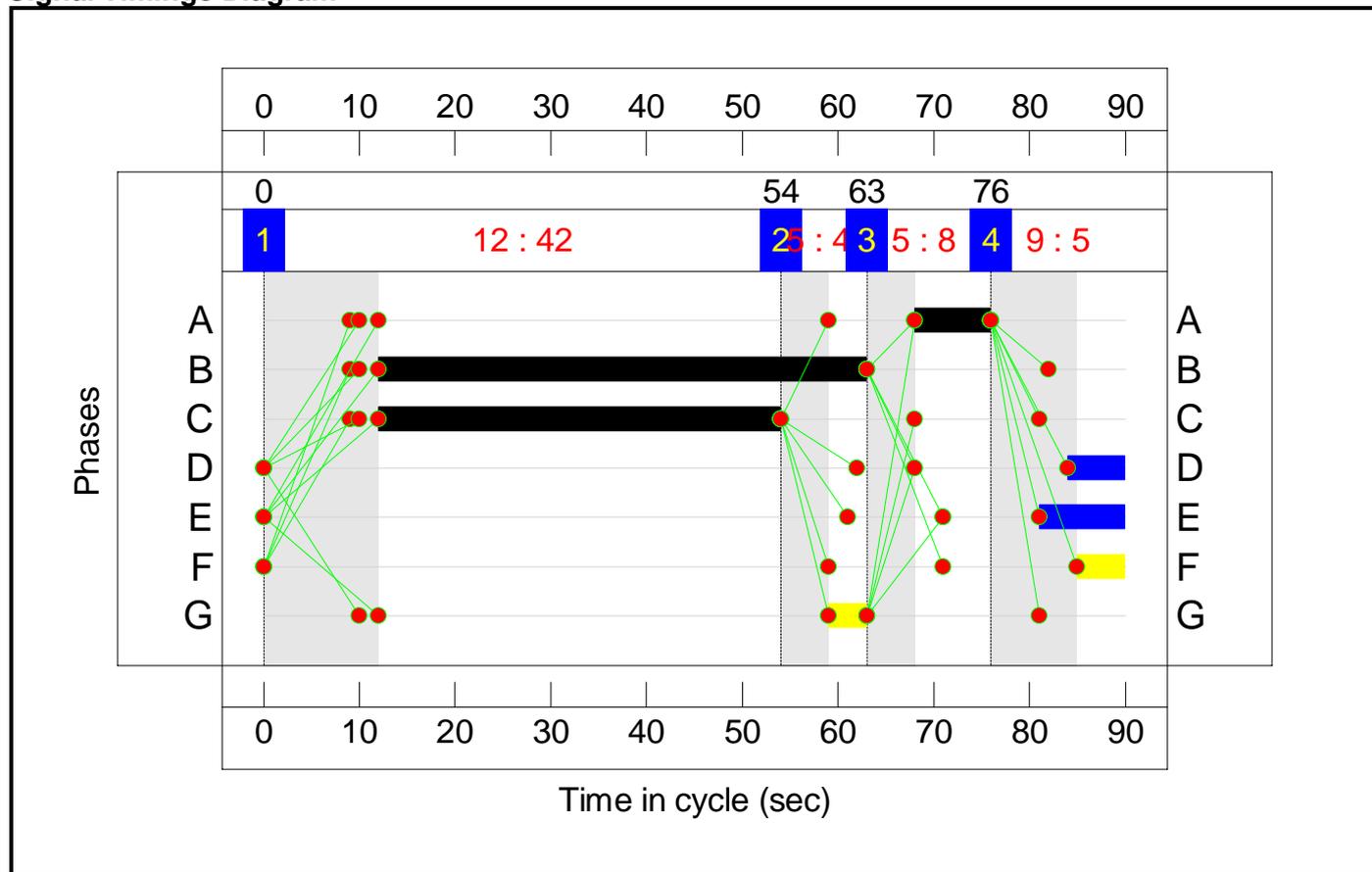
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	42	4	8	5
Change Point	0	54	63	76

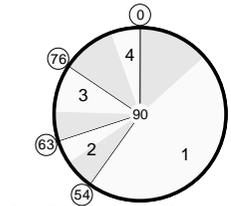
Signal Timings Diagram



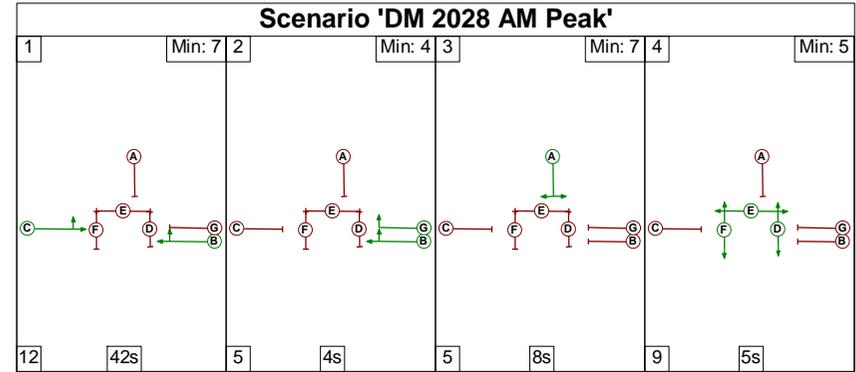
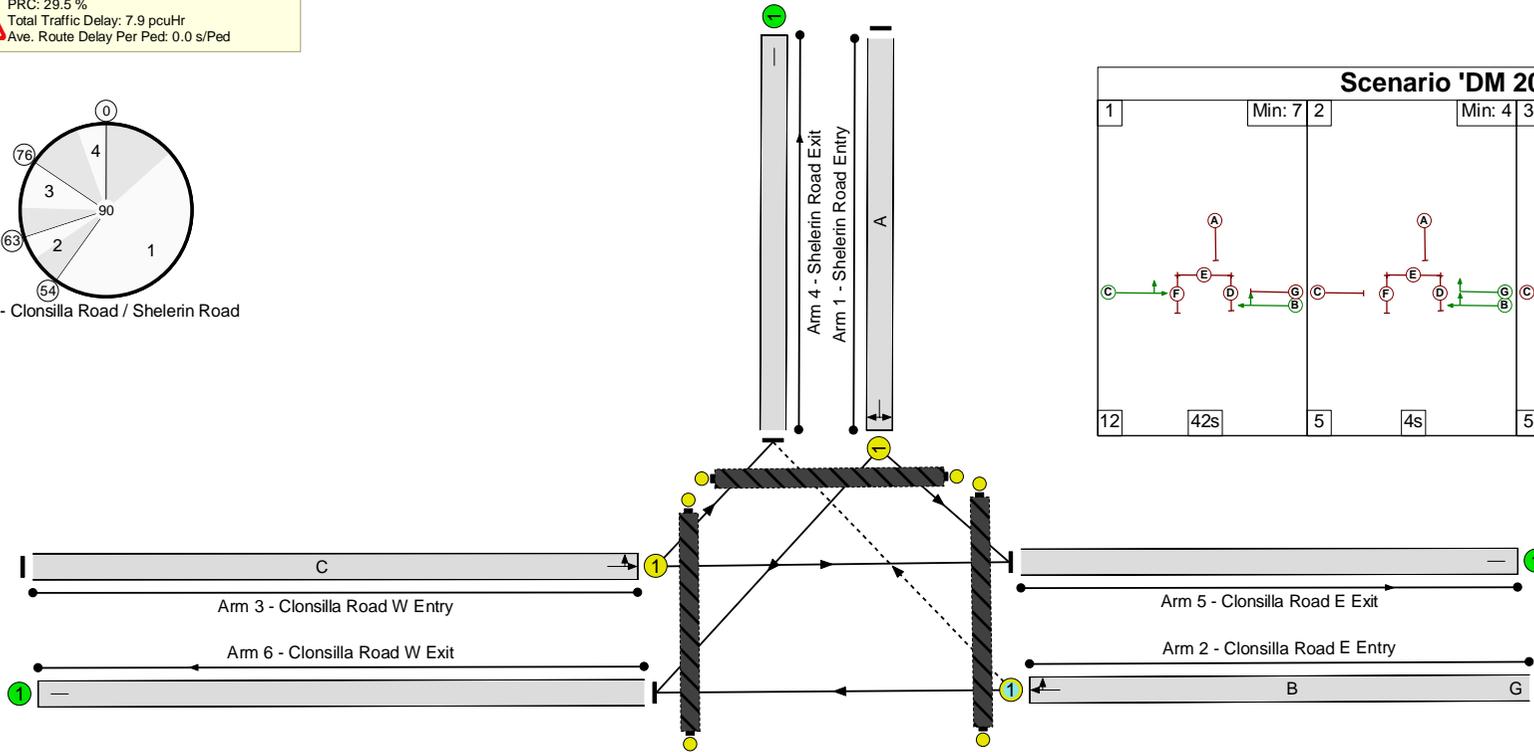
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 29.5%  
 Total Traffic Delay: 7.9 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.5%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.5%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	8	-	120	1778	178	67.5%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	51	4	332	2015	1164	28.5%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	42	-	662	1994	953	69.5%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	46	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	655	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

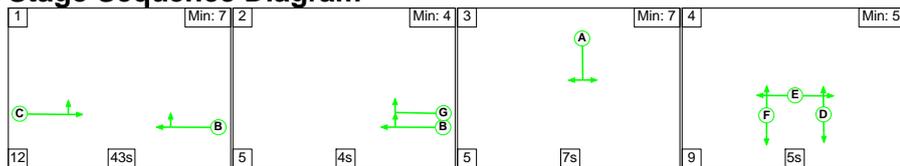
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	5.6	2.3	0.0	7.9	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	5.6	2.3	0.0	7.9	-	-	-	-
1/1	120	120	-	-	-	1.3	1.0	-	2.3	69.2	2.9	1.0	3.9
2/1	332	332	0	0	0	0.9	0.2	-	1.1	11.8	4.1	0.2	4.3
3/1	662	662	-	-	-	3.4	1.1	-	4.5	24.5	12.9	1.1	14.0
4/1	46	46	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	655	655	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		29.5	Total Delay for Signalled Lanes (pcuHr):		7.90	Cycle Time (s): 90				
			PRC Over All Lanes (%):		29.5	Total Delay Over All Lanes(pcuHr):		7.90					

Full Input Data And Results

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

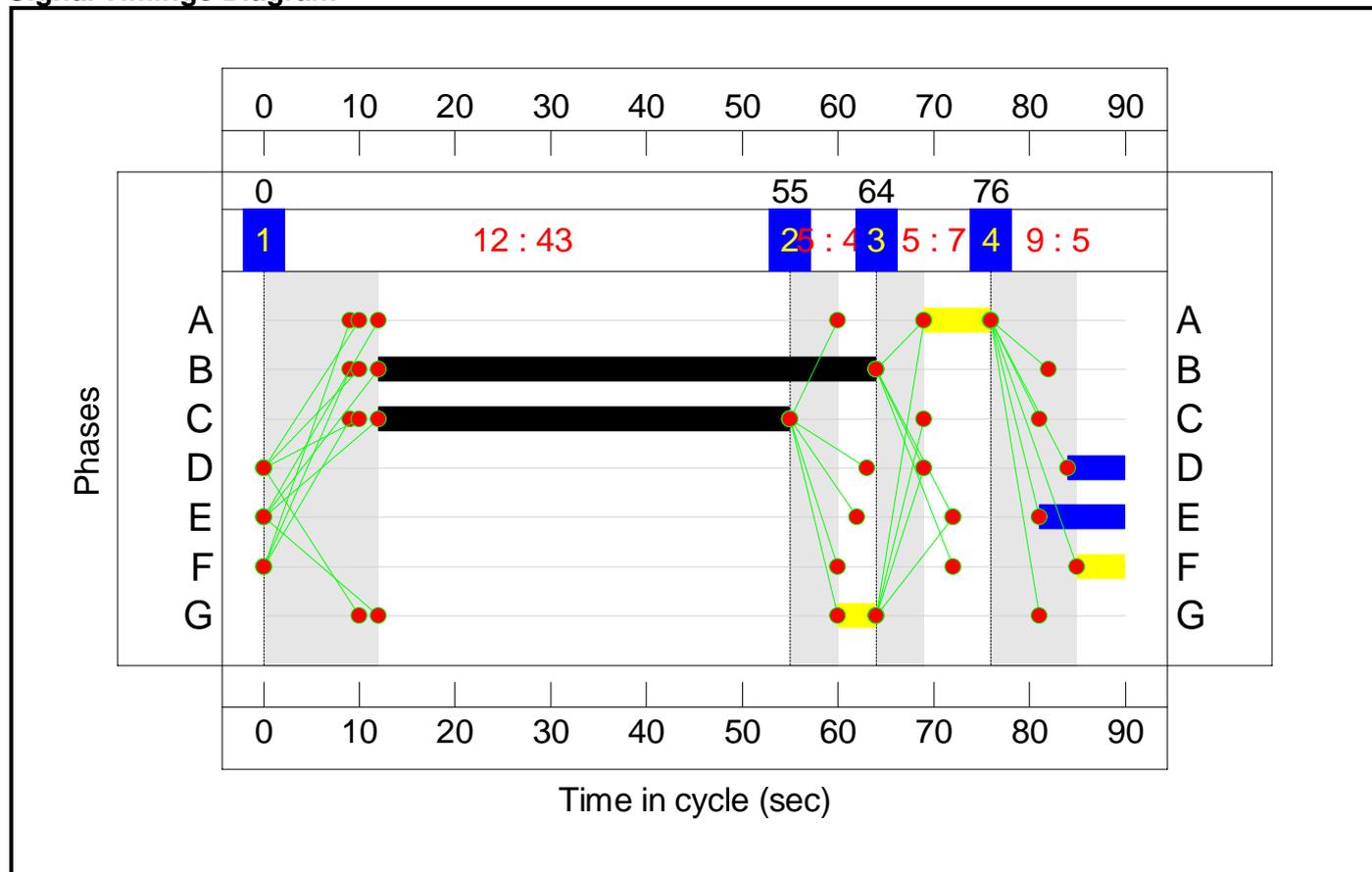
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	43	4	7	5
Change Point	0	55	64	76

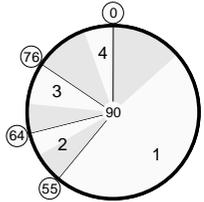
Signal Timings Diagram



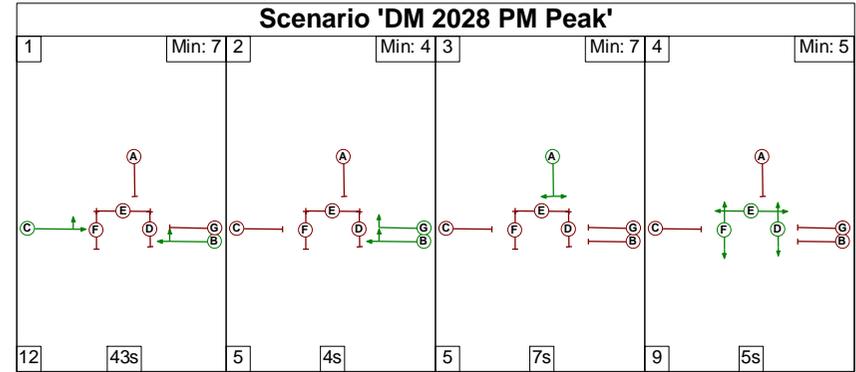
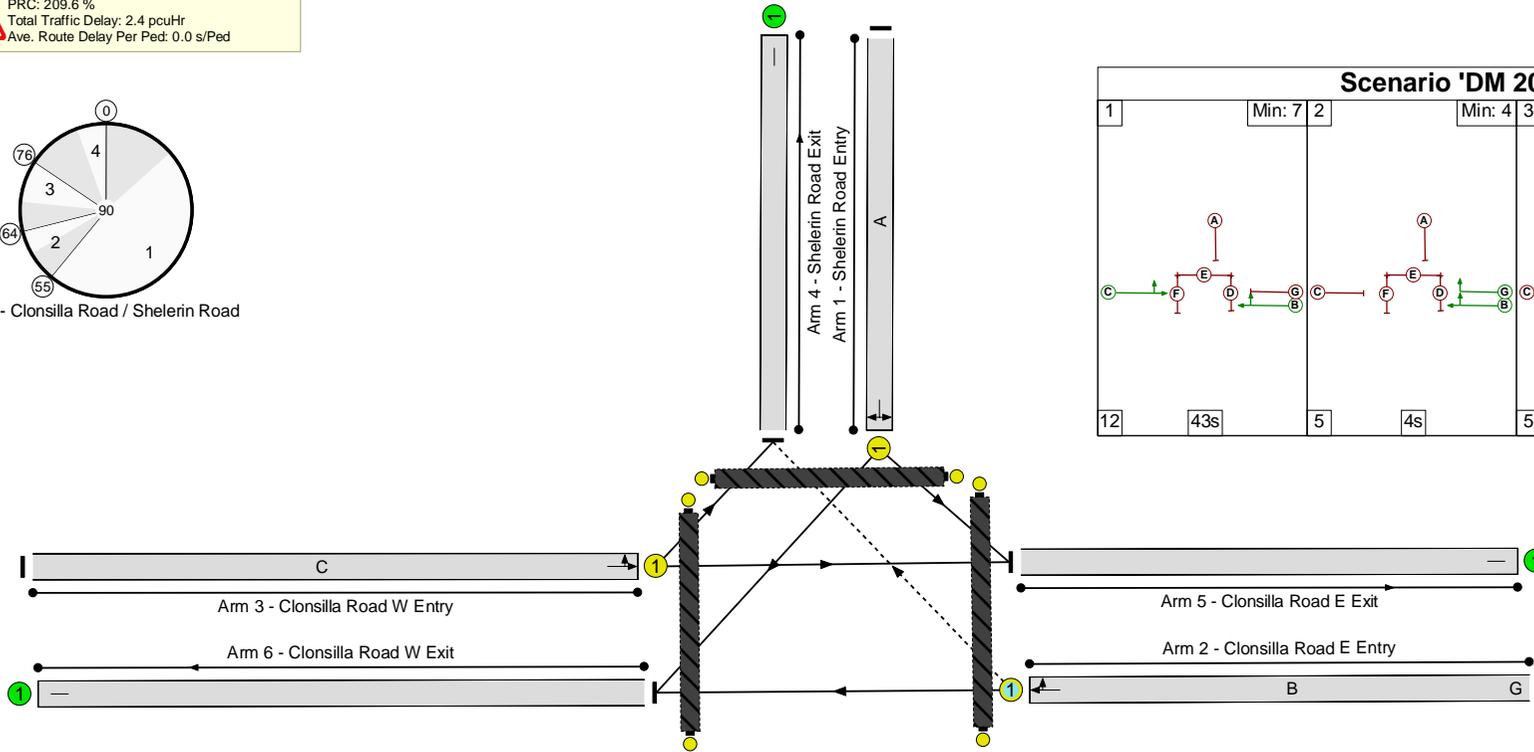
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 209.6 %  
 Total Traffic Delay: 2.4 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	29.1%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	29.1%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	7	-	19	1786	159	12.0%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	52	4	290	2015	1187	24.4%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	43	-	275	1935	946	29.1%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	76	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	309	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

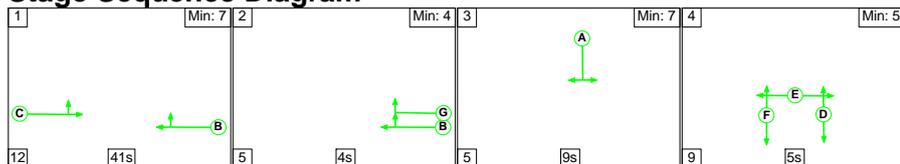
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	2.0	0.4	0.0	2.4	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	2.0	0.4	0.0	2.4	-	-	-	-
1/1	19	19	-	-	-	0.2	0.1	-	0.3	50.7	0.4	0.1	0.5
2/1	290	290	0	0	0	0.7	0.2	-	0.9	10.9	3.5	0.2	3.6
3/1	275	275	-	-	-	1.0	0.2	-	1.3	16.4	4.0	0.2	4.3
4/1	76	76	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	309	309	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		209.6	Total Delay for Signalled Lanes (pcuHr):		2.40	Cycle Time (s): 90				
			PRC Over All Lanes (%):		209.6	Total Delay Over All Lanes(pcuHr):		2.40					

Full Input Data And Results

Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

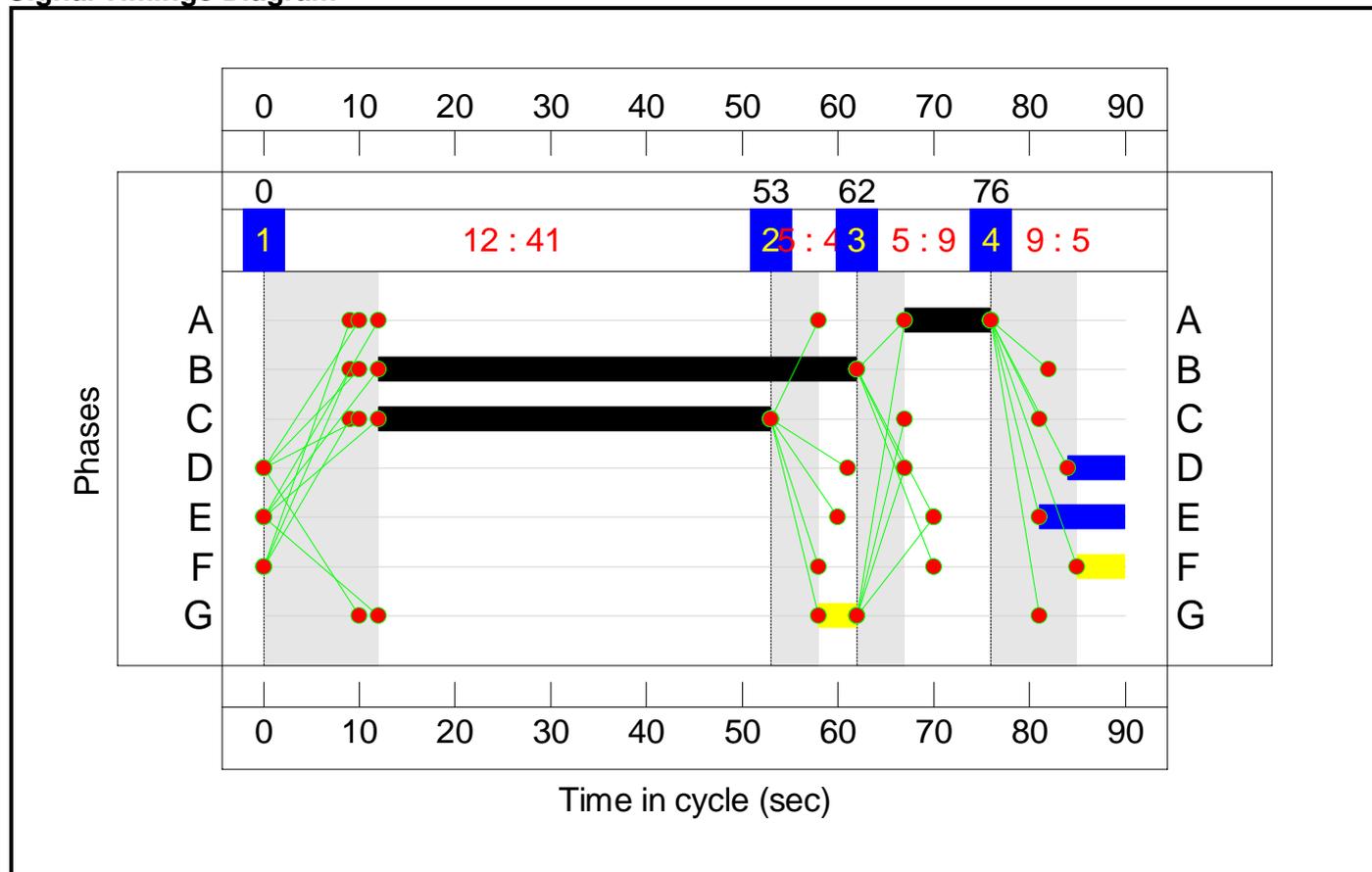
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	41	4	9	5
Change Point	0	53	62	76

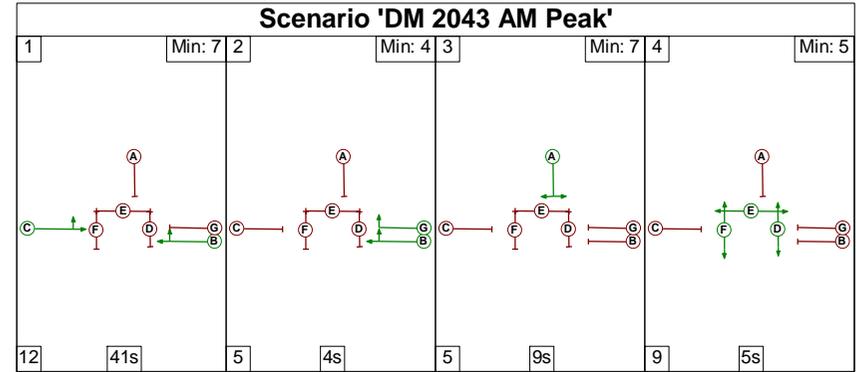
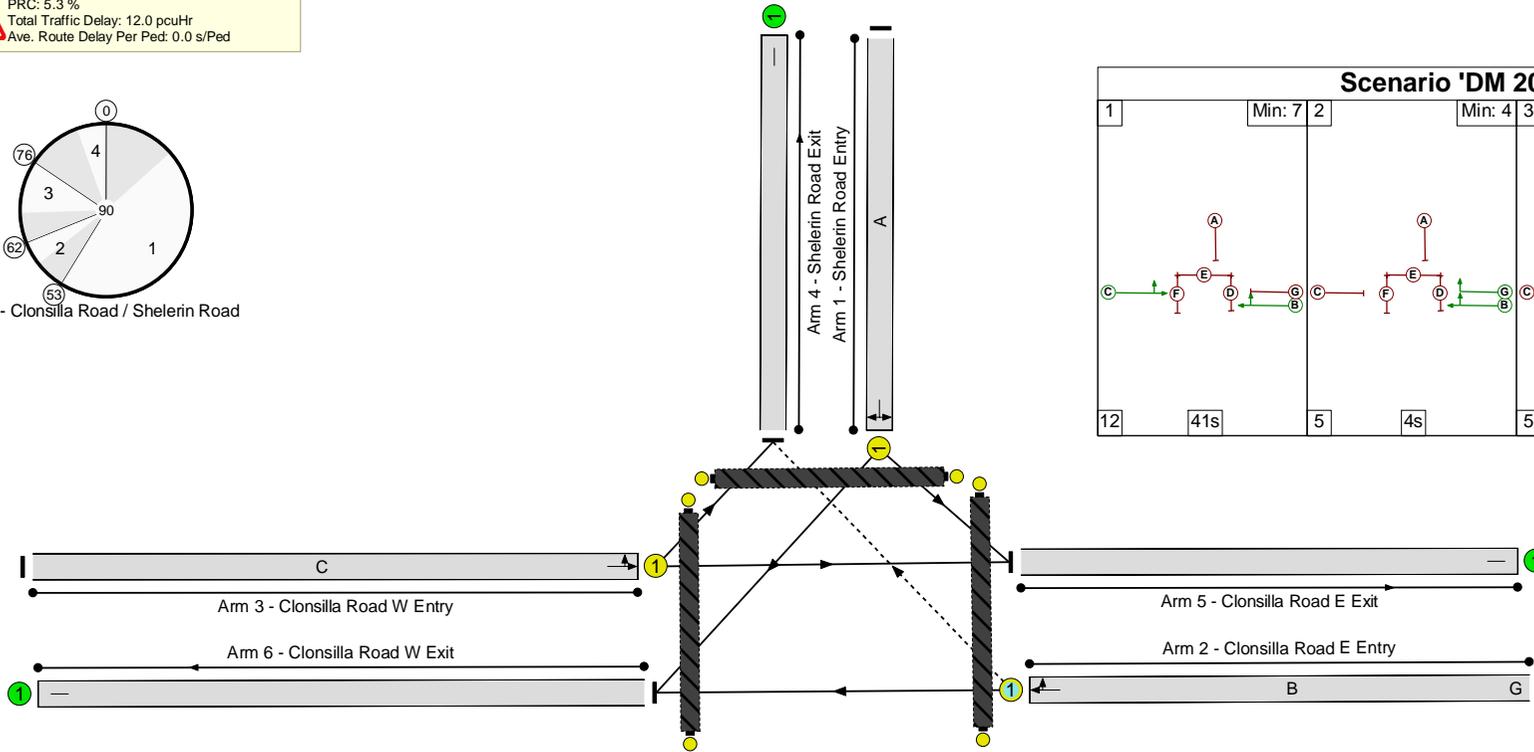
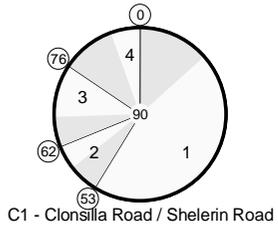
Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 5.3 %  
 Total Traffic Delay: 12.0 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	85.5%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	85.5%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	9	-	161	1776	197	81.6%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	50	4	237	2015	1142	20.8%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	41	-	790	1980	924	85.5%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	93	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	331	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

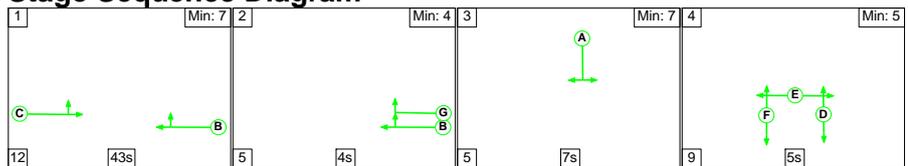
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	7.1	5.0	0.0	12.0	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	7.1	5.0	0.0	12.0	-	-	-	-
1/1	161	161	-	-	-	1.7	2.0	-	3.7	83.7	3.9	2.0	5.9
2/1	237	237	0	0	0	0.6	0.1	-	0.8	11.6	2.9	0.1	3.0
3/1	790	790	-	-	-	4.7	2.8	-	7.5	34.2	17.3	2.8	20.2
4/1	93	93	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	331	331	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		5.3	Total Delay for Signalled Lanes (pcuHr):		12.01	Cycle Time (s): 90				
			PRC Over All Lanes (%):		5.3	Total Delay Over All Lanes(pcuHr):		12.01					

Full Input Data And Results

Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

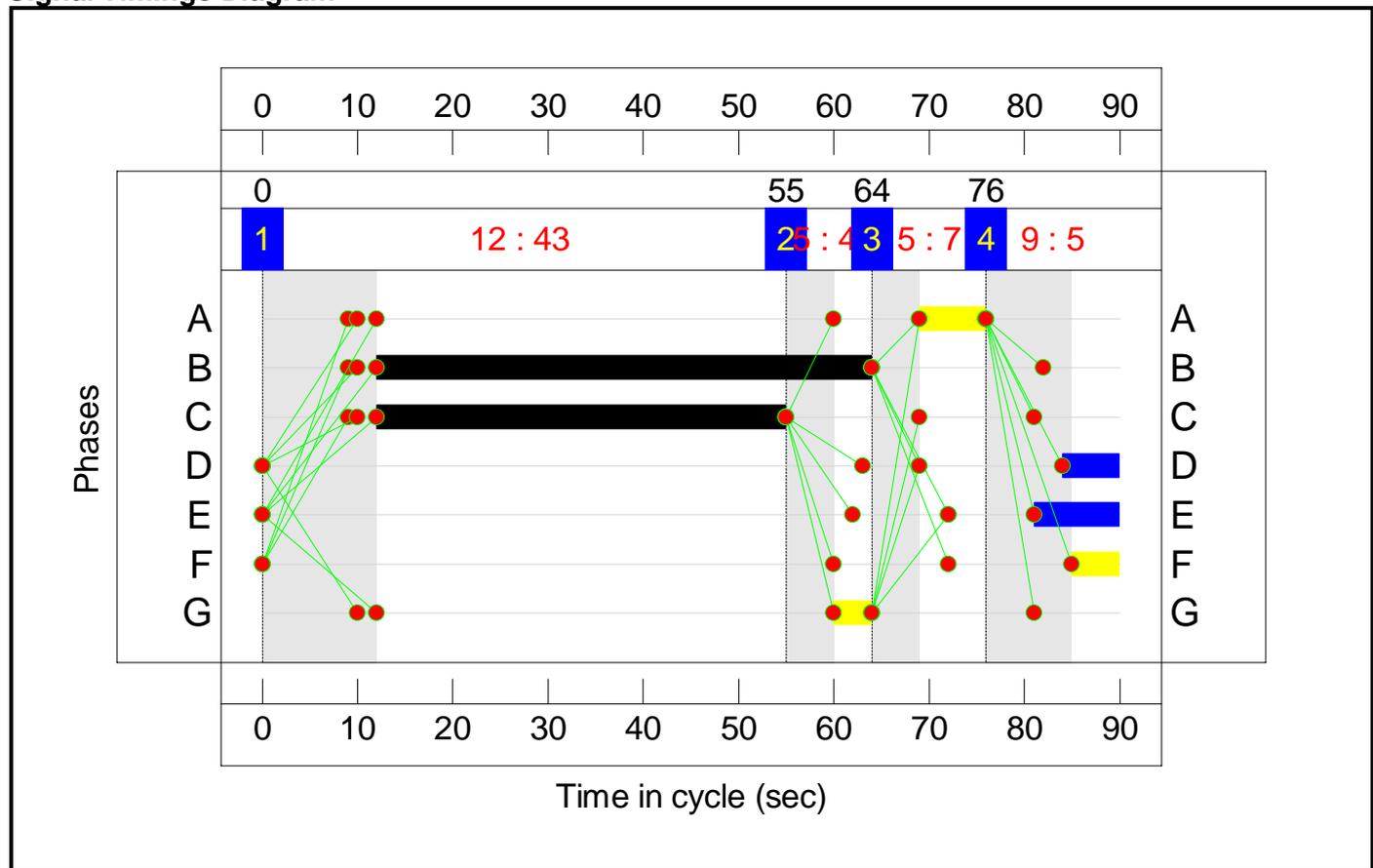
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	43	4	7	5
Change Point	0	55	64	76

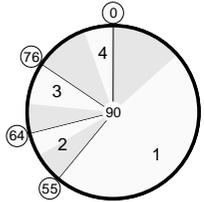
Signal Timings Diagram



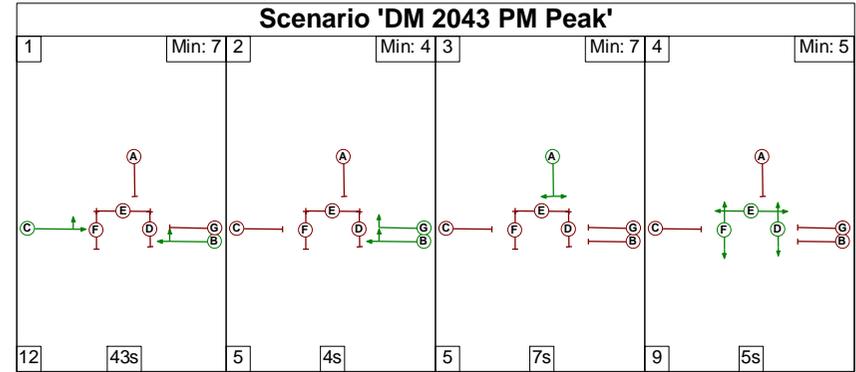
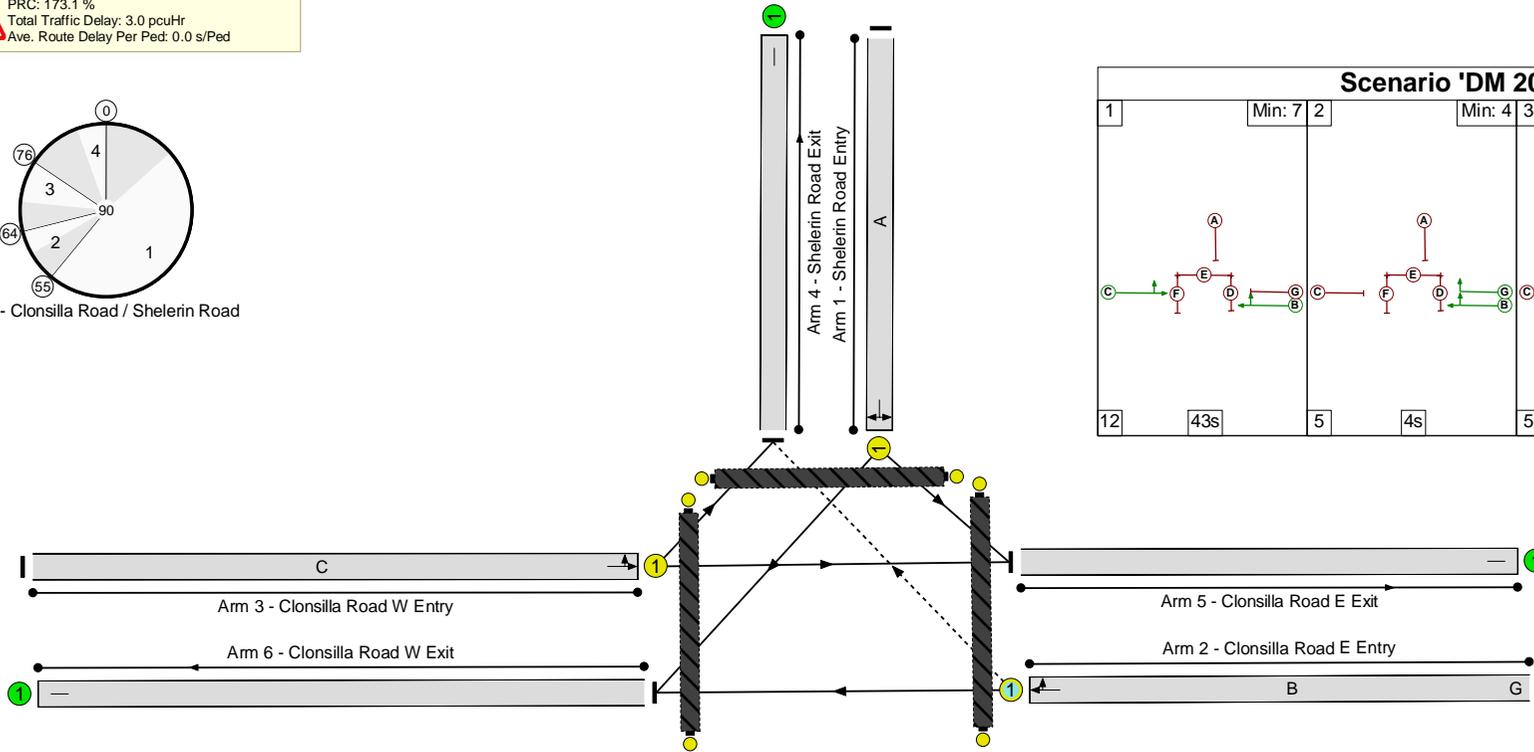
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 173.1 %  
 Total Traffic Delay: 3.0 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.0%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.0%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	7	-	21	1786	159	13.2%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	52	4	391	2015	1187	33.0%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	43	-	310	1935	946	32.8%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	85	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

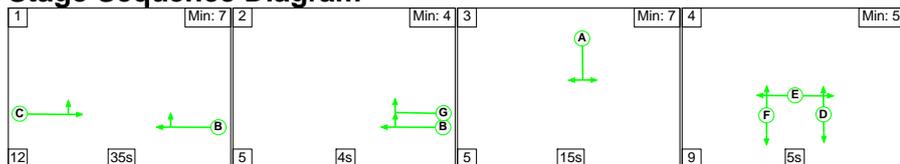
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	2.5	0.6	0.0	3.0	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	2.5	0.6	0.0	3.0	-	-	-	-
1/1	21	21	-	-	-	0.2	0.1	-	0.3	50.9	0.5	0.1	0.6
2/1	391	391	0	0	0	1.0	0.2	-	1.3	11.7	4.9	0.2	5.1
3/1	310	310	-	-	-	1.2	0.2	-	1.4	16.8	4.6	0.2	4.9
4/1	85	85	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		173.1	Total Delay for Signalled Lanes (pcuHr):		3.02	Cycle Time (s): 90				
			PRC Over All Lanes (%):		173.1	Total Delay Over All Lanes(pcuHr):		3.02					

Full Input Data And Results

Scenario 7: 'DS 2028 AM Peak' (FG7: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

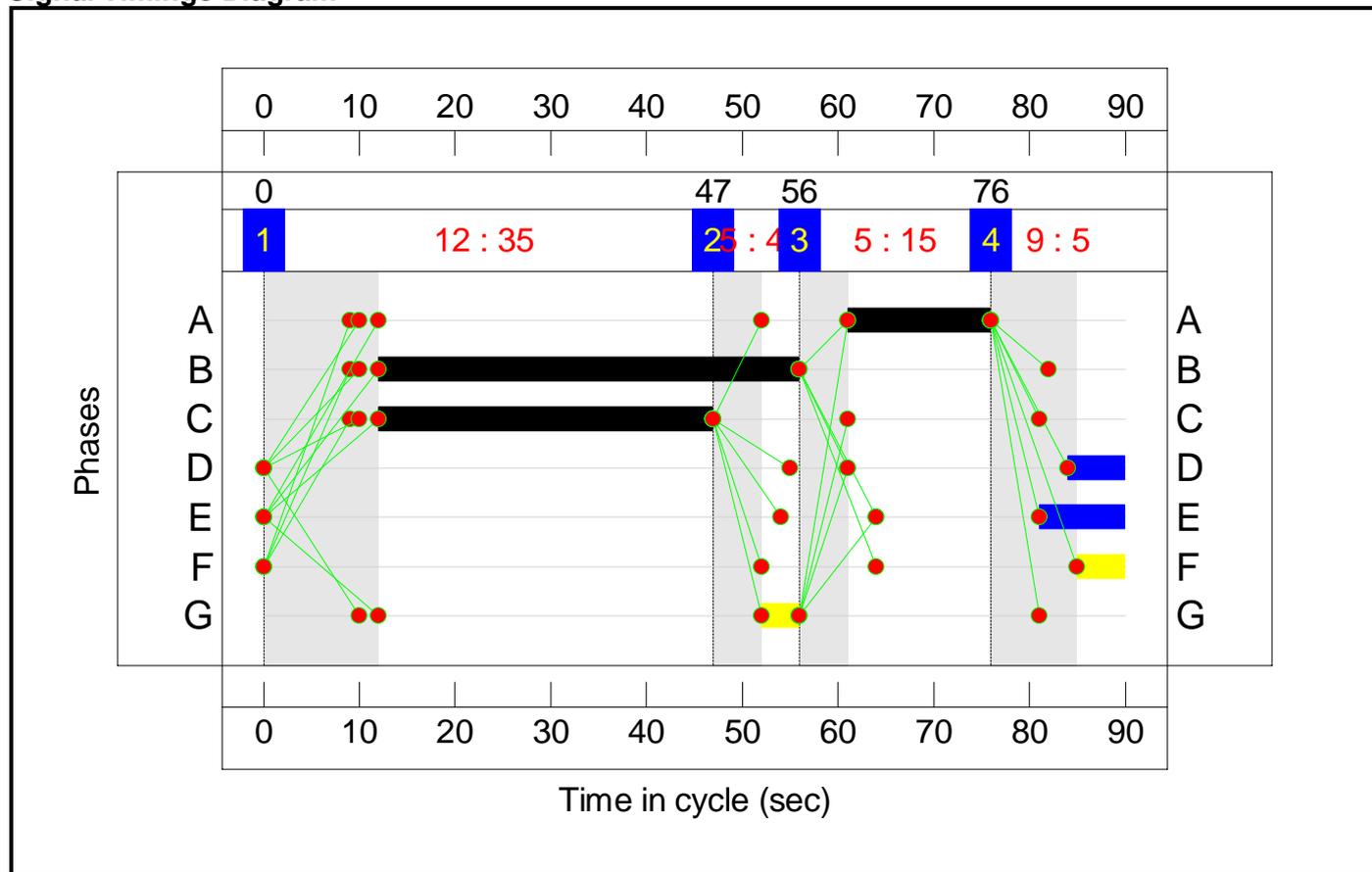
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	35	4	15	5
Change Point	0	47	56	76

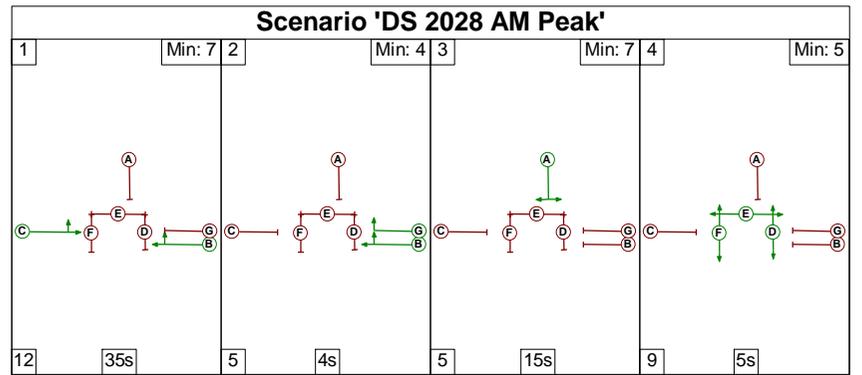
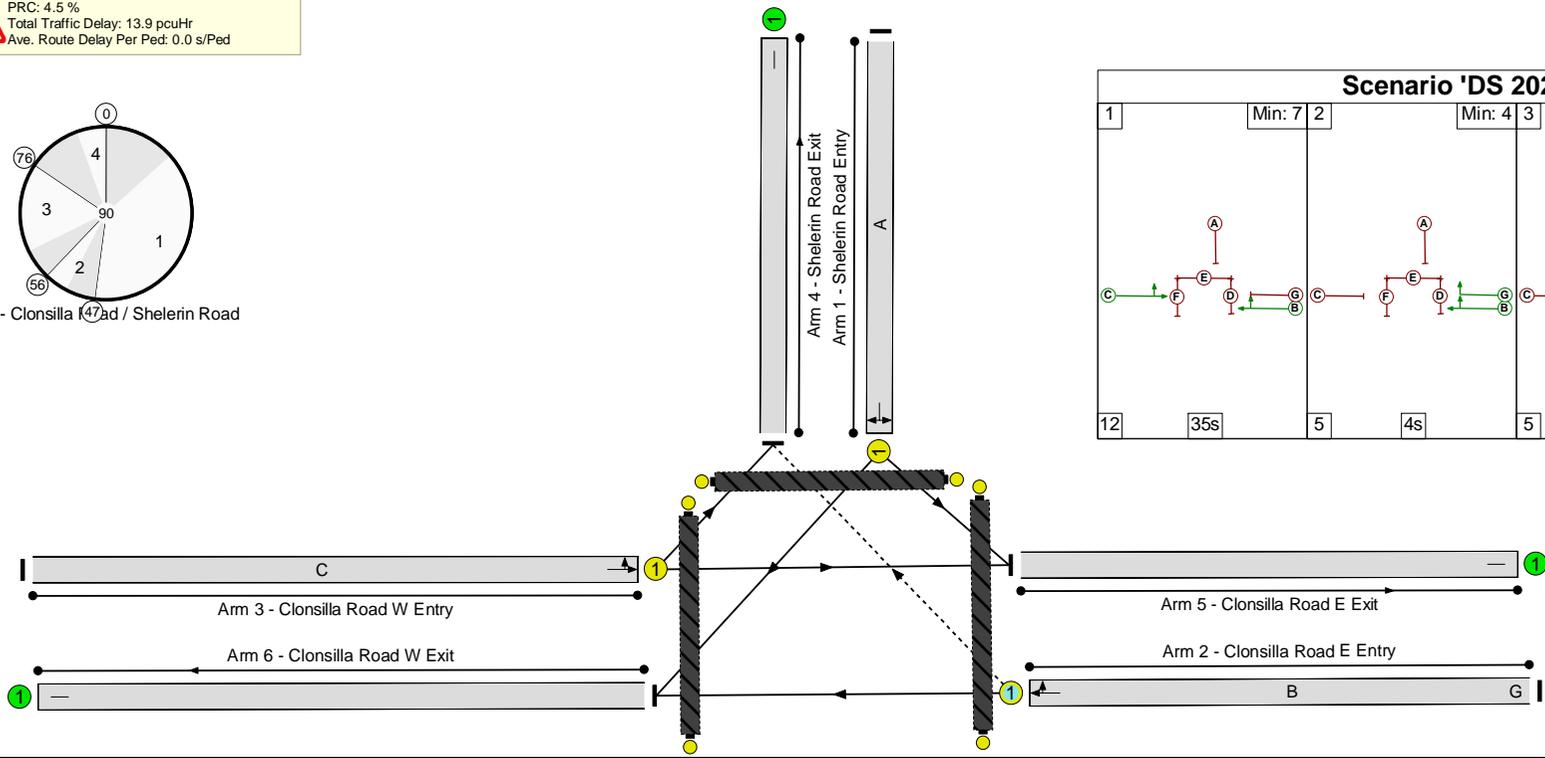
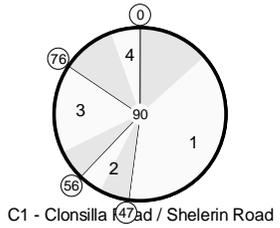
Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 4.5 %  
 Total Traffic Delay: 13.9 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	86.1%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	86.1%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	15	-	261	1782	317	82.4%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	44	4	330	2015	1007	32.8%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	35	-	689	2000	800	86.1%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	35	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	700	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

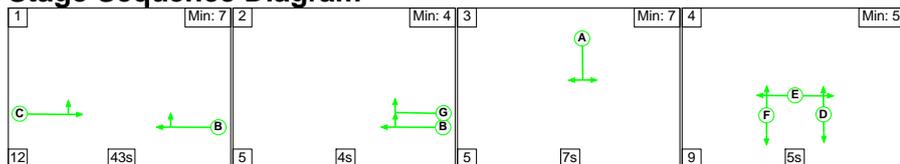
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	8.5	5.4	0.0	13.9	-	-	-	-
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	0	0	0	8.5	5.4	0.0	13.9	-	-	-	-
1/1	261	261	-	-	-	2.6	2.2	-	4.8	65.6	6.2	2.2	8.4
2/1	330	330	0	0	0	1.2	0.2	-	1.5	16.1	4.9	0.2	5.1
3/1	689	689	-	-	-	4.7	2.9	-	7.7	40.1	15.7	2.9	18.6
4/1	35	35	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	700	700	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	545	545	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		4.5	Total Delay for Signalled Lanes (pcuHr):		13.91	Cycle Time (s): 90				
			PRC Over All Lanes (%):		4.5	Total Delay Over All Lanes(pcuHr):		13.91					

Full Input Data And Results

Scenario 8: 'DS 2028 PM Peak' (FG8: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

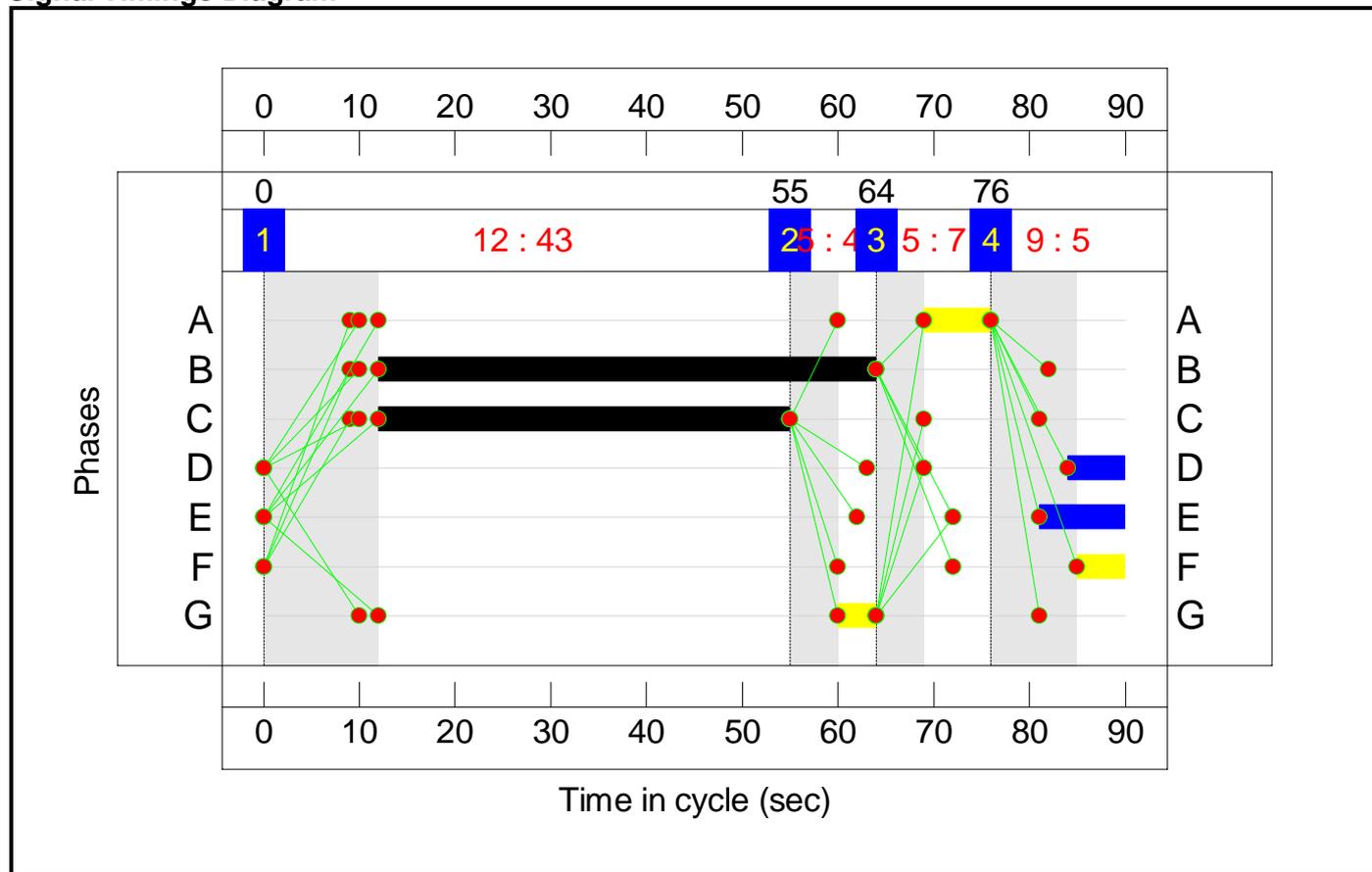
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	43	4	7	5
Change Point	0	55	64	76

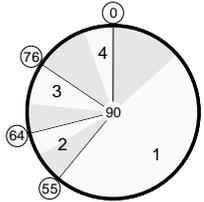
Signal Timings Diagram



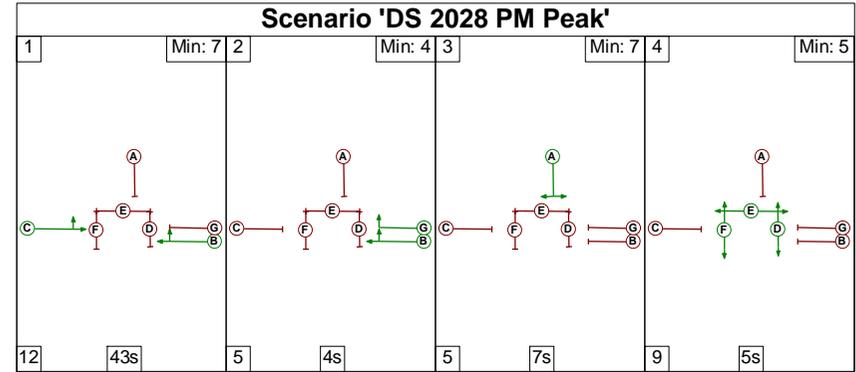
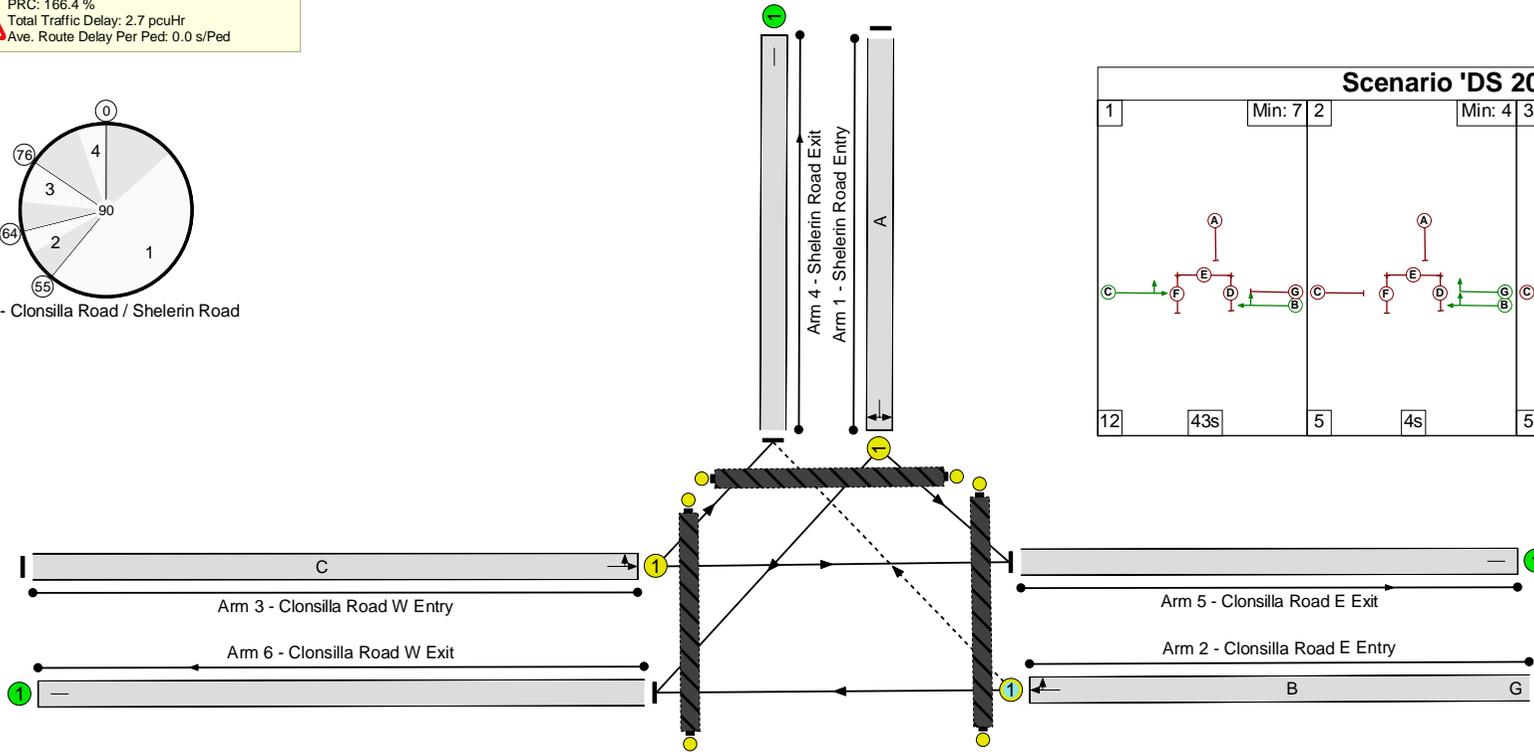
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 166.4 %  
 Total Traffic Delay: 2.7 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.8%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.8%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	7	-	15	1786	159	9.4%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	52	4	320	2015	1187	27.0%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	43	-	327	1980	968	33.8%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	38	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	289	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	335	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

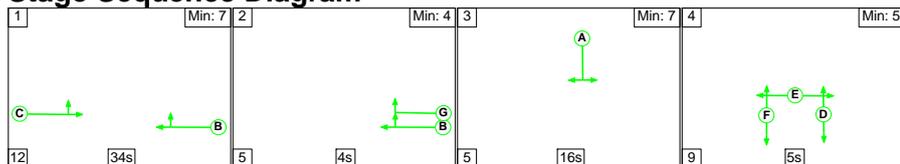
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	2.2	0.5	0.0	2.7	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	2.2	0.5	0.0	2.7	-	-	-	-
1/1	15	15	-	-	-	0.2	0.1	-	0.2	50.3	0.3	0.1	0.4
2/1	320	320	0	0	0	0.8	0.2	-	1.0	11.1	3.8	0.2	4.0
3/1	327	327	-	-	-	1.3	0.3	-	1.5	16.9	5.0	0.3	5.3
4/1	38	38	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	289	289	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	335	335	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		166.4	Total Delay for Signalled Lanes (pcuHr):		2.73	Cycle Time (s): 90				
			PRC Over All Lanes (%):		166.4	Total Delay Over All Lanes(pcuHr):		2.73					

Full Input Data And Results

Scenario 9: 'DS 2043 AM Peak' (FG9: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

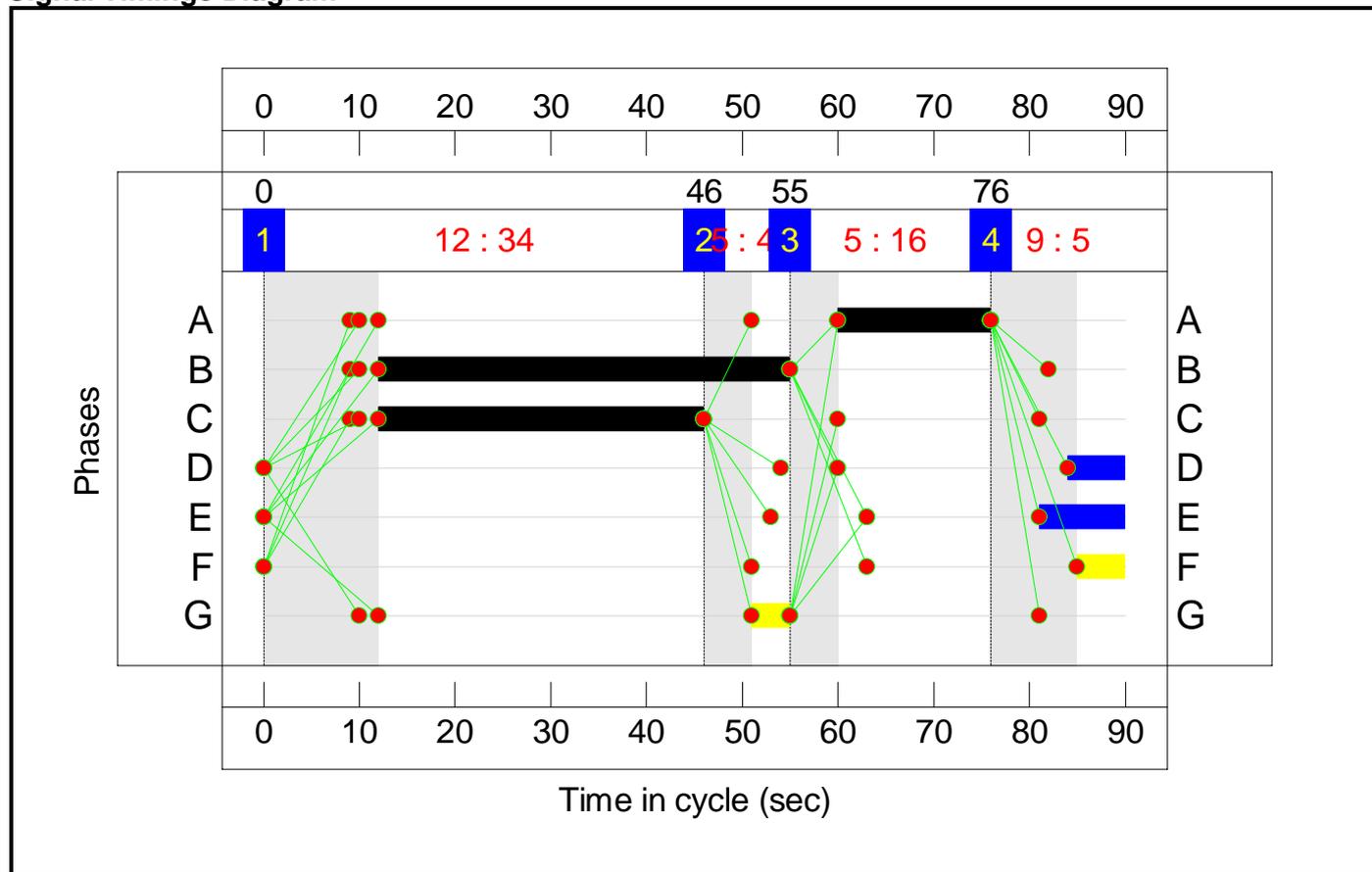
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	34	4	16	5
Change Point	0	46	55	76

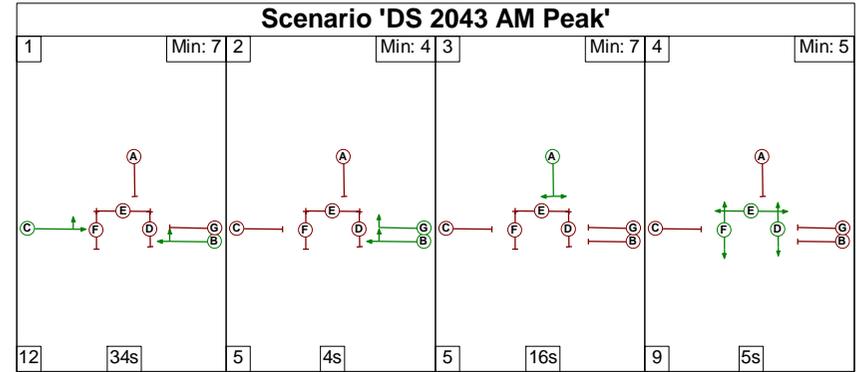
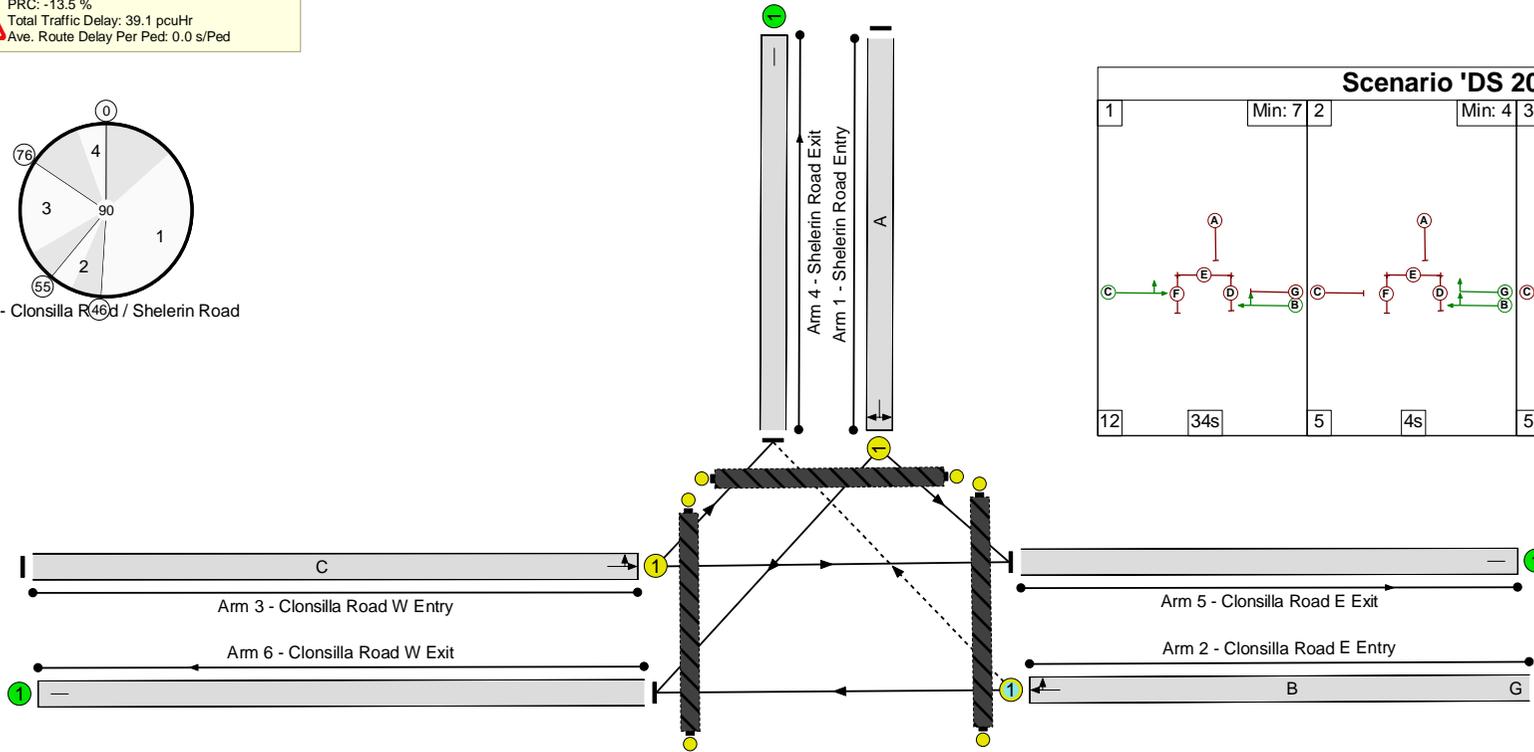
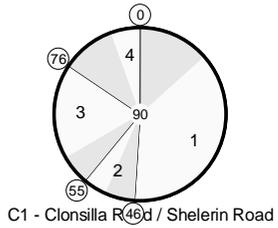
Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: -13.5 %  
 Total Traffic Delay: 39.1 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	102.2%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	102.2%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	16	-	335	1779	336	99.7%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	43	4	340	2015	985	34.5%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	34	-	774	1948	758	102.2%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	699	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	572	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

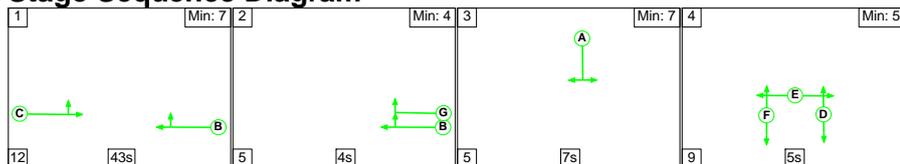
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	11.3	27.8	0.0	39.1	-	-	-	-
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	0	0	0	11.3	27.8	0.0	39.1	-	-	-	-
1/1	335	335	-	-	-	3.4	8.9	-	12.3	132.1	8.3	8.9	17.2
2/1	340	340	0	0	0	1.3	0.3	-	1.6	16.9	5.2	0.3	5.5
3/1	774	758	-	-	-	6.6	18.6	-	25.2	117.3	19.8	18.6	38.4
4/1	174	174	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	686	686	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	572	572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		-13.5	Total Delay for Signalled Lanes (pcuHr):		39.10	Cycle Time (s): 90				
			PRC Over All Lanes (%):		-13.5	Total Delay Over All Lanes(pcuHr):		39.10					

Full Input Data And Results

Scenario 10: 'DS 2043 PM Peak' (FG10: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

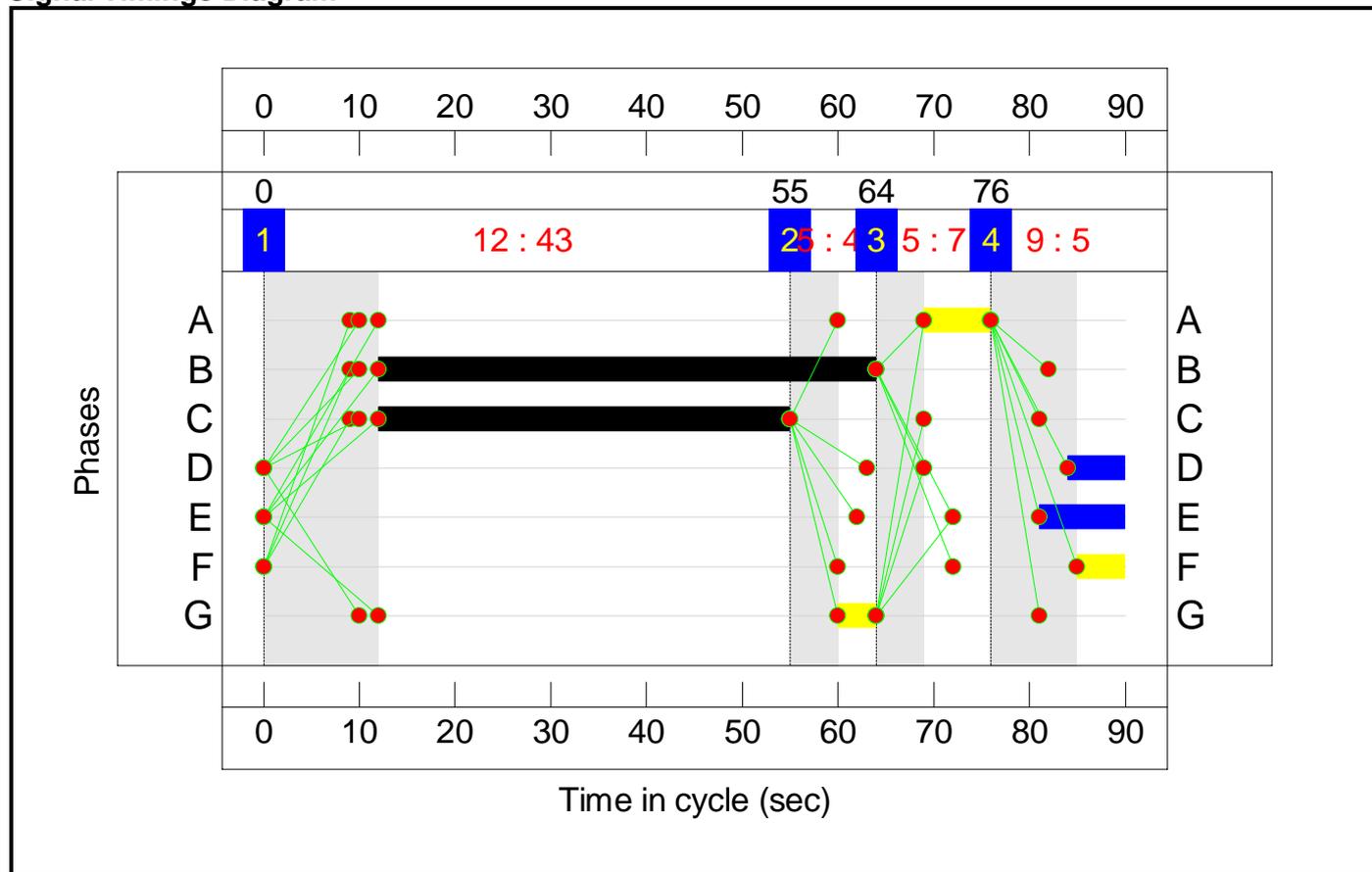
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	43	4	7	5
Change Point	0	55	64	76

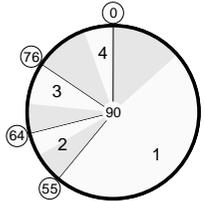
Signal Timings Diagram



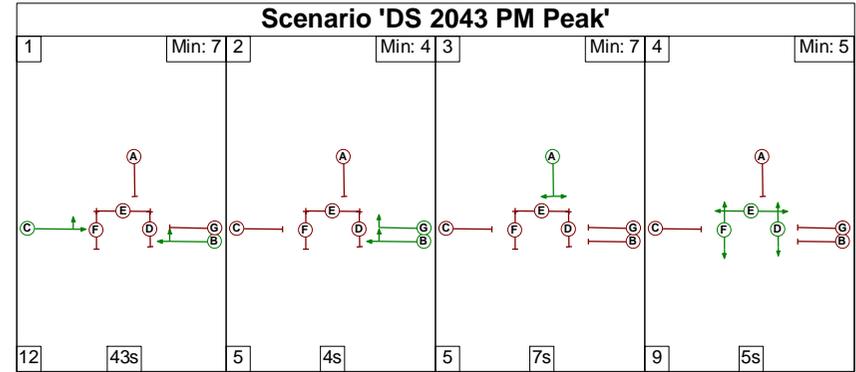
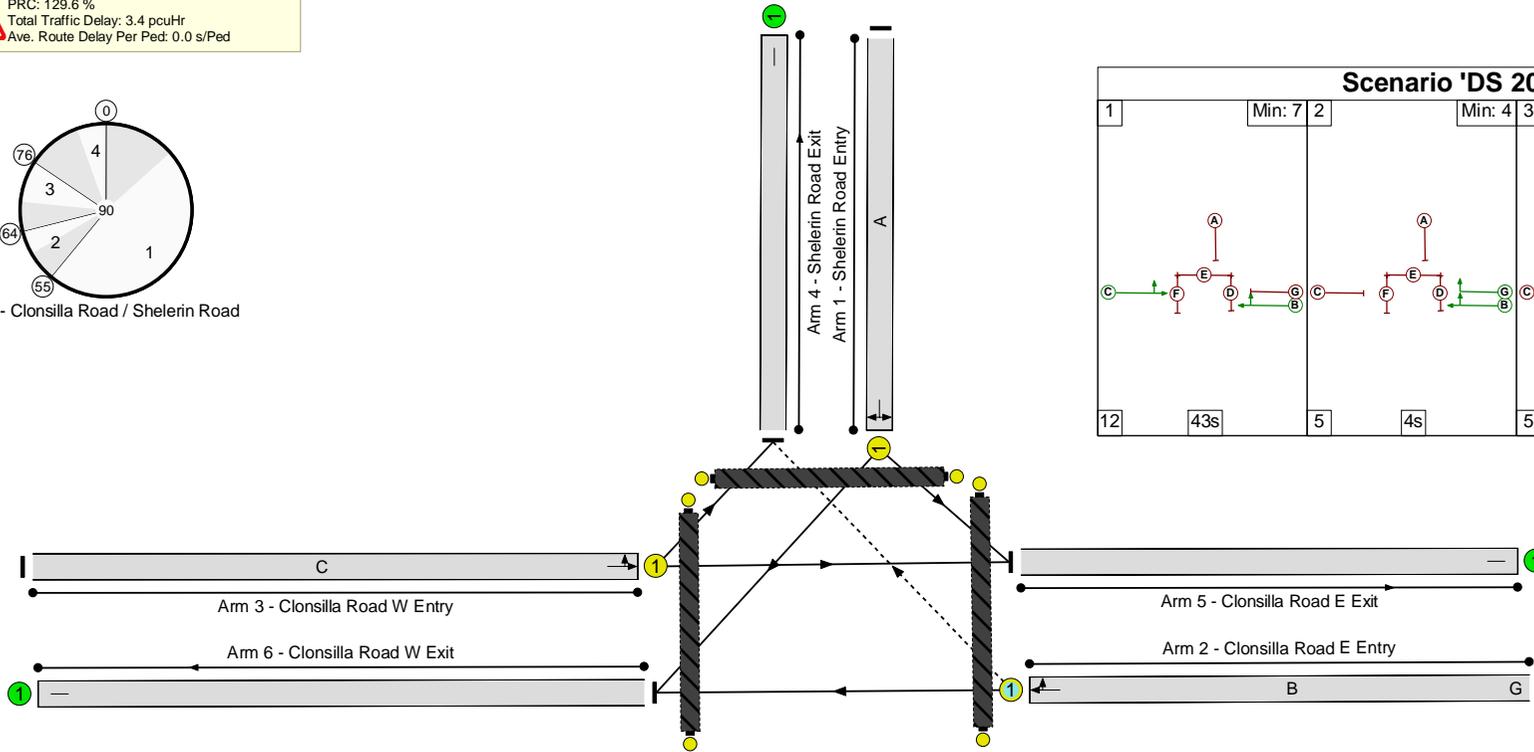
# Full Input Data And Results

## Network Layout Diagram

Junction 15 - Clonsilla Road / Shelerin Road  
 PRC: 129.6 %  
 Total Traffic Delay: 3.4 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Shelerin Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	39.2%
<b>Junction 15 - Clonsilla Road / Shelerin Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	39.2%
1/1	Shelerin Road Entry Left Right	U	N/A	N/A	A		1	7	-	23	1786	159	14.5%
2/1	Clonsilla Road E Entry Right Ahead	O	N/A	N/A	B	G	1	52	4	369	2015	1187	31.1%
3/1	Clonsilla Road W Entry Left Ahead	U	N/A	N/A	C		1	43	-	380	1983	969	39.2%
4/1	Shelerin Road Exit	U	N/A	N/A	-		-	-	-	41	Inf	Inf	0.0%
5/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	339	Inf	Inf	0.0%
6/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	9	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	F		1	5	-	0	-	0	0.0%

Full Input Data And Results

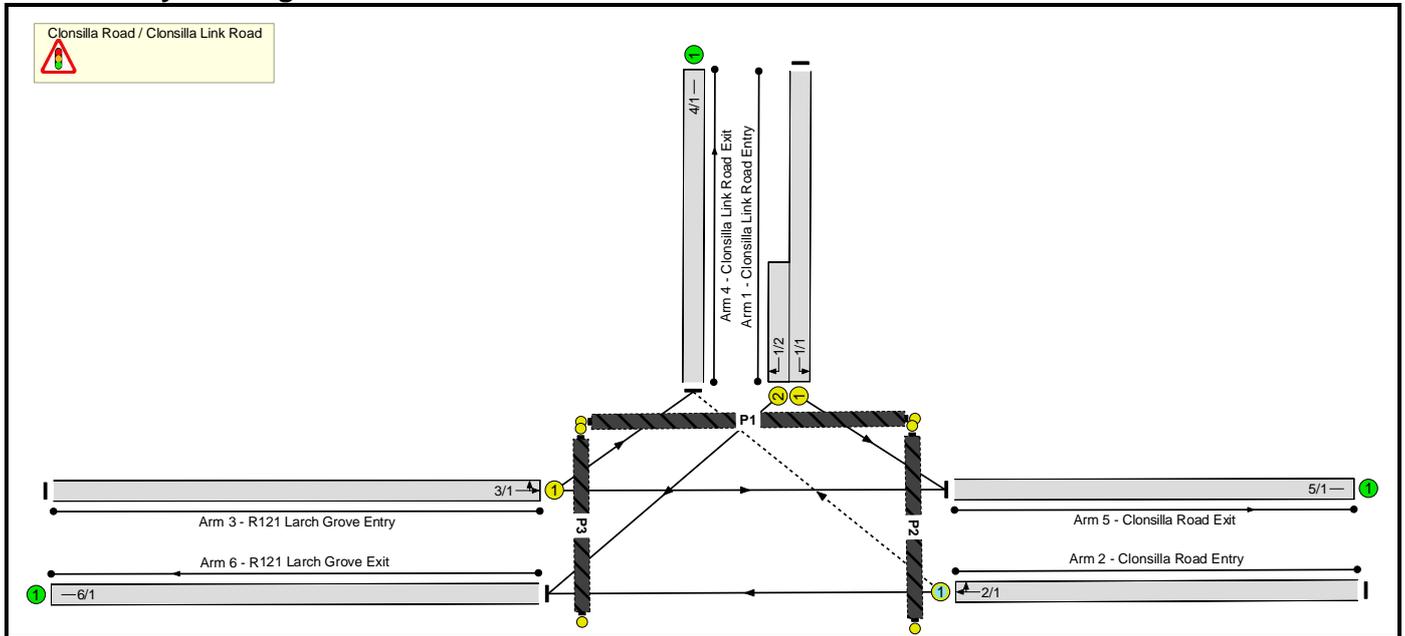
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	0	0	0	2.7	0.6	0.0	3.4	-	-	-	-
Junction 15 - Clonsilla Road / Shelerin Road	-	-	0	0	0	2.7	0.6	0.0	3.4	-	-	-	-
1/1	23	23	-	-	-	0.2	0.1	-	0.3	51.1	0.5	0.1	0.6
2/1	369	369	0	0	0	1.0	0.2	-	1.2	11.5	4.6	0.2	4.8
3/1	380	380	-	-	-	1.5	0.3	-	1.9	17.6	5.9	0.3	6.2
4/1	41	41	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	339	339	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Shelerin Road			PRC for Signalled Lanes (%):		129.6	Total Delay for Signalled Lanes (pcuHr):		3.36	Cycle Time (s): 90				
			PRC Over All Lanes (%):		129.6	Total Delay Over All Lanes(pcuHr):		3.36					

Full Input Data And Results  
**Full Input Data And Results**

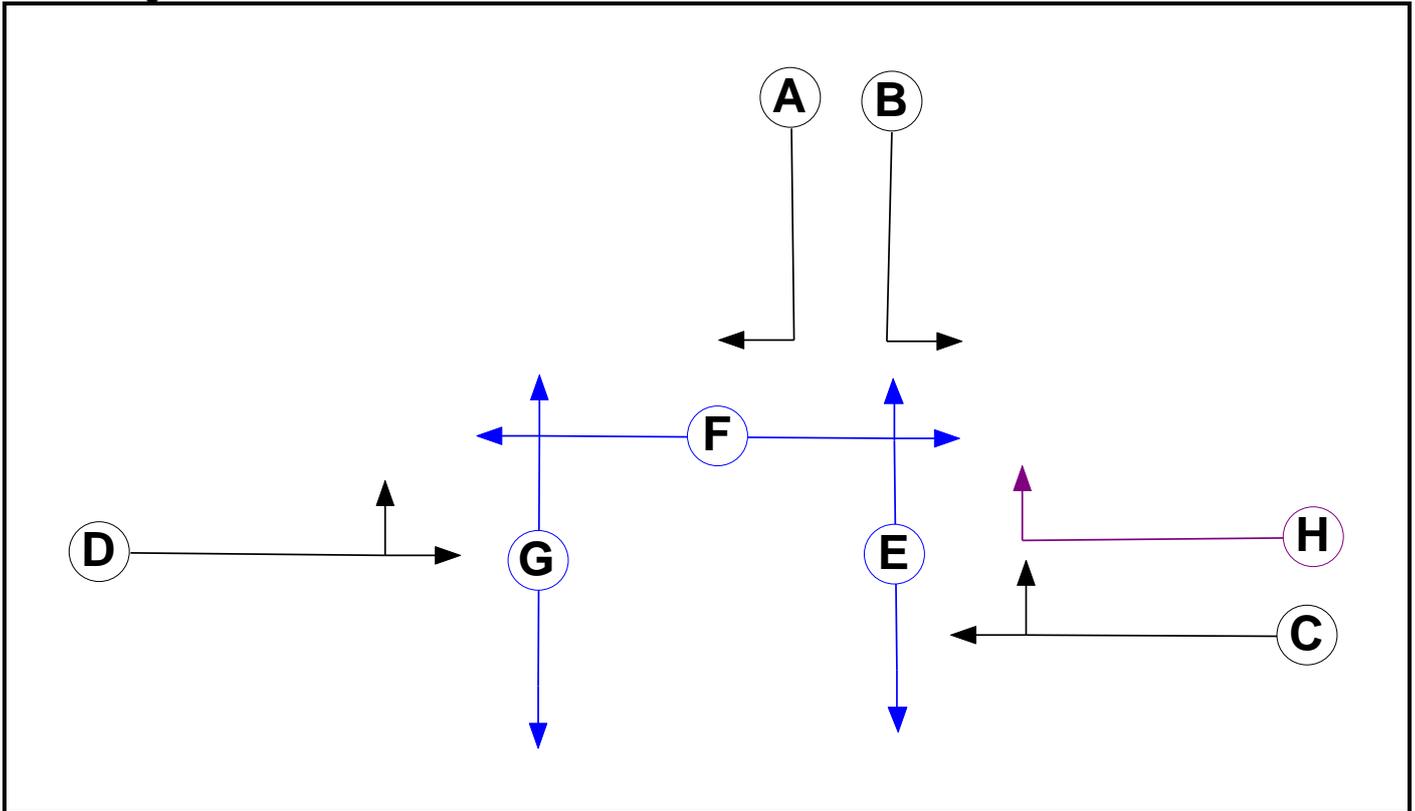
**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Clonsilla Road / Clonsilla Link Road
<b>Date Started:</b>	17/11/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction16_Base_DM_DS V3.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Pedestrian		5	5
F	Pedestrian		5	5
G	Pedestrian		5	5
H	Ind. Arrow	C	4	4

## Full Input Data And Results

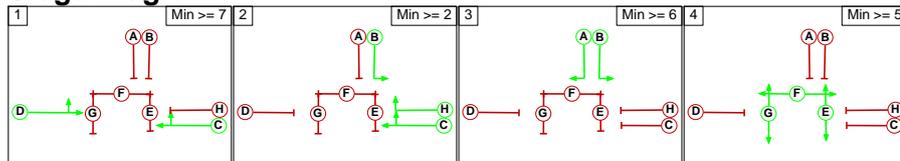
### Phase Intergrens Matrix

		Starting Phase							
		A	B	C	D	E	F	G	H
Terminating Phase	A	-	-	5	5	-	5	8	5
	B	-	-	-	5	6	5	-	-
	C	5	-	-	-	5	7	8	-
	D	6	7	-	-	9	7	5	5
	E	-	8	8	8	-	-	-	8
	F	14	14	14	14	-	-	-	14
	G	8	-	8	8	-	-	-	-
	H	5	-	-	5	5	8	-	-

### Phases in Stage

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

### Stage Diagram



### Phase Delays

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

### Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1	-	7	7	9
	2	5	-	5	8
	3	5	5	-	8
	4	14	14	14	-

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Clonsilla Road / Clonsilla Link 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)
2/1 (Clonsilla Road Entry)	4/1 (Right)	1439	0	3/1	1.09	All	-	-	-	-	-

Full Input Data And Results

**Lane Input Data**

Junction: Clonsilla Road / Clonsilla Link 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 (Clonsilla Link Road Entry)	U	B	2	3	96.0	Geom	-	3.00	0.00	Y	Arm 5 Left	10.00
1/2 (Clonsilla Link Road Entry)	U	A	2	3	8.7	Geom	-	3.00	0.00	Y	Arm 6 Right	15.00
2/1 (Clonsilla Road Entry)	O	C H	2	3	104.9	Geom	-	3.50	0.00	Y	Arm 4 Right Arm 6 Ahead	18.00 Inf
3/1 (R121 Larch Grove Entry)	U	D	2	3	41.7	Geom	-	3.00	0.00	Y	Arm 4 Left Arm 5 Ahead	10.00 Inf
4/1 (Clonsilla Link Road Exit)	U		2	3	95.1	Inf	-	-	-	-	-	-
5/1 (Clonsilla Road Exit)	U		2	3	104.9	Inf	-	-	-	-	-	-
6/1 (R121 Larch Grove Exit)	U		2	3	41.7	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base AM Peak'	08:00	09:00	01:00	
2: 'Base PM Peak'	17:00	18:00	01:00	
3: 'DM 2028 AM Peak'	08:00	09:00	01:00	
4: 'DM 2028 PM Peak'	17:00	18:00	01:00	
5: 'DM 2043 AM Peak'	08:00	09:00	01:00	
6: 'DM 2043 PM Peak'	17:00	18:00	01:00	
7: 'DS 2028 AM Peak'	08:00	09:00	01:00	
8: 'DS 2028 PM Peak'	17:00	18:00	01:00	
9: 'DS 2043 AM Peak'	08:00	09:00	01:00	
10: 'DS 2043 PM Peak'	17:00	18:00	01:00	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

Desired Flow :

Origin	Destination	
		Tot.
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 1: Base Year AM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	32(In) 0(Out)
1/2 (short)	32
2/1	176
3/1	597
4/1	0
5/1	597
6/1	208

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.0 %	1965	1965
				Arm 6 Ahead	Inf	100.0 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.0 %	1915	1915
				Arm 5 Ahead	Inf	100.0 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 2: 'Base Year PM Peak'** (FG2: 'Base PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 2: Base Year PM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	0(In) 0(Out)
1/2 (short)	0
2/1	423
3/1	277
4/1	188
5/1	265
6/1	247

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	0.0 %	1915	1915
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	41.6 %	1899	1899
				Arm 6 Ahead	Inf	58.4 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	4.3 %	1903	1903
				Arm 5 Ahead	Inf	95.7 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 3: 'DM 2028 AM Peak'** (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: DM 2028 AM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	11(In) 0(Out)
1/2 (short)	11
2/1	285
3/1	626
4/1	0
5/1	626
6/1	296

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>									
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915	
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741	
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.0 %	1965	1965	
				Arm 6 Ahead	Inf	100.0 %			
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.0 %	1915	1915	
				Arm 5 Ahead	Inf	100.0 %			
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow							Inf	Inf

**Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 4: DM 2028 PM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	0(In) 0(Out)
1/2 (short)	0
2/1	265
3/1	267
4/1	98
5/1	264
6/1	170

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	0.0 %	1915	1915
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	35.8 %	1908	1908
				Arm 6 Ahead	Inf	64.2 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	1.1 %	1912	1912
				Arm 5 Ahead	Inf	98.9 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 5: DM 2043 AM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	48(In) 0(Out)
1/2 (short)	48
2/1	274
3/1	814
4/1	1
5/1	814
6/1	321

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.4 %	1964	1964
				Arm 6 Ahead	Inf	99.6 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.0 %	1915	1915
				Arm 5 Ahead	Inf	100.0 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 6: DM 2043 PM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	0(In) 0(Out)
1/2 (short)	0
2/1	345
3/1	312
4/1	95
5/1	302
6/1	260

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>									
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915	
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	0.0 %	1915	1915	
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	24.6 %	1925	1925	
				Arm 6 Ahead	Inf	75.4 %			
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	3.2 %	1906	1906	
				Arm 5 Ahead	Inf	96.8 %			
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow							Inf	Inf

**Scenario 7: 'DS 2028 AM Peak' (FG7: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 7: DS 2028 AM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	4(In) 0(Out)
1/2 (short)	4
2/1	436
3/1	659
4/1	0
5/1	659
6/1	440

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.0 %	1965	1965
				Arm 6 Ahead	Inf	100.0 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.0 %	1915	1915
				Arm 5 Ahead	Inf	100.0 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 8: 'DS 2028 PM Peak'** (FG8: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 8: DS 2028 PM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	0(In) 0(Out)
1/2 (short)	0
2/1	281
3/1	309
4/1	2
5/1	308
6/1	280

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	0.0 %	1915	1915
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.4 %	1964	1964
				Arm 6 Ahead	Inf	99.6 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.3 %	1914	1914
				Arm 5 Ahead	Inf	99.7 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 9: 'DS 2043 AM Peak'** (FG9: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 9: DS 2043 AM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	4(In) 0(Out)
1/2 (short)	4
2/1	468
3/1	731
4/1	0
5/1	731
6/1	472

**Lane Saturation Flows**

<b>Junction: Clonsilla Road / Clonsilla Link Road</b>								
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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.0 %	1965	1965
				Arm 6 Ahead	Inf	100.0 %		
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.0 %	1915	1915
				Arm 5 Ahead	Inf	100.0 %		
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 10: 'DS 2043 PM Peak' (FG10: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	Tot.
	Tot.	-

Full Input Data And Results

**Traffic Lane Flows**

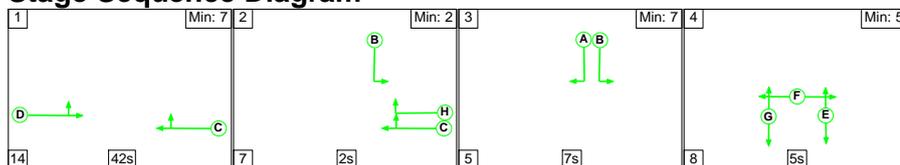
Lane	Scenario 10: DS 2043 PM Peak
<b>Junction: Clonsilla Road / Clonsilla Link Road</b>	
1/1 (with short)	0(In) 0(Out)
1/2 (short)	0
2/1	317
3/1	370
4/1	1
5/1	369
6/1	317

**Lane Saturation Flows**

Junction: Clonsilla Road / Clonsilla Link 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 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 5 Left	10.00	0.0 %	1915	1915	
1/2 (Clonsilla Link Road Entry)	3.00	0.00	Y	Arm 6 Right	15.00	0.0 %	1915	1915	
2/1 (Clonsilla Road Entry)	3.50	0.00	Y	Arm 4 Right	18.00	0.0 %	1965	1965	
				Arm 6 Ahead	Inf	100.0 %			
3/1 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 4 Left	10.00	0.3 %	1914	1914	
				Arm 5 Ahead	Inf	99.7 %			
4/1 (Clonsilla Link Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
5/1 (Clonsilla Road Exit Lane 1)	Infinite Saturation Flow							Inf	Inf
6/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow							Inf	Inf

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')

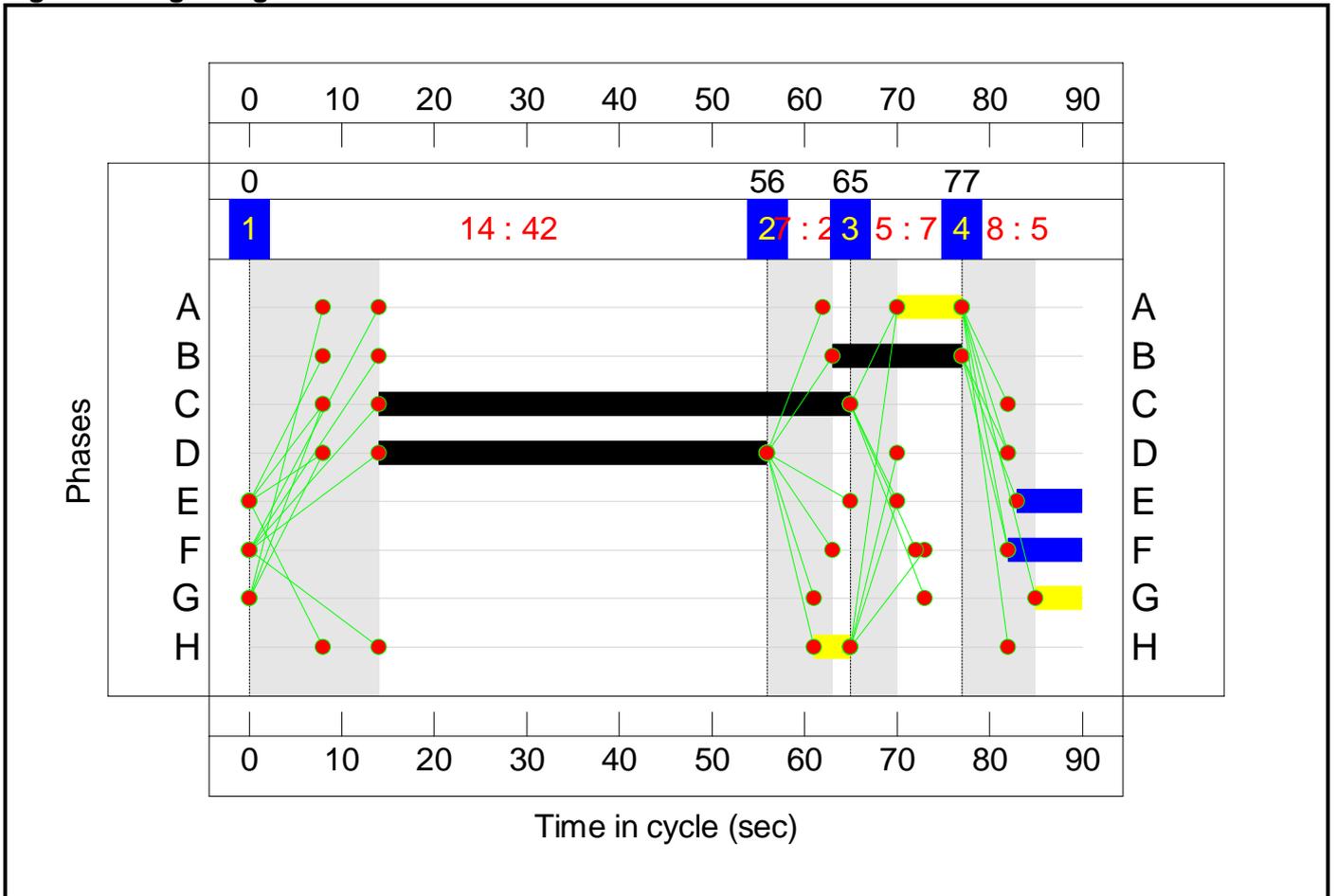
**Stage Sequence Diagram**



**Stage Timings**

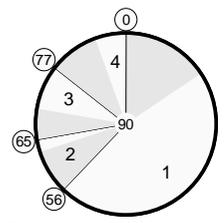
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

### Signal Timings Diagram

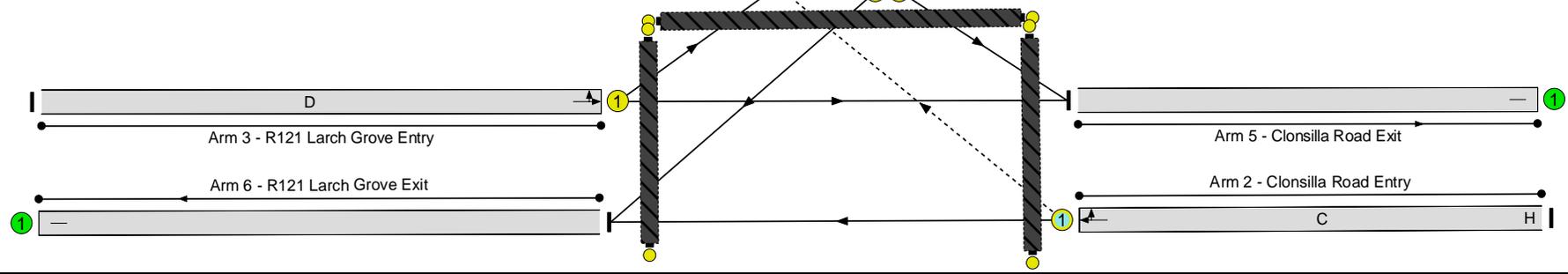
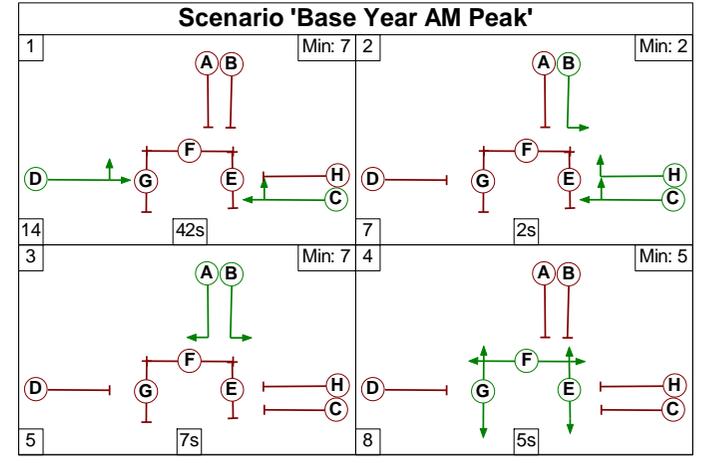
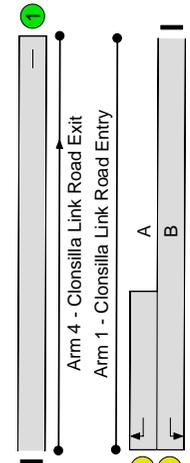


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 37.9 %  
 Total Traffic Delay: 4.9 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.2%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.2%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	32	1915:1741	0+155	0.0 : 20.7%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	176	1965	1135	15.5%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	597	1915	915	65.2%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	597	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	208	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

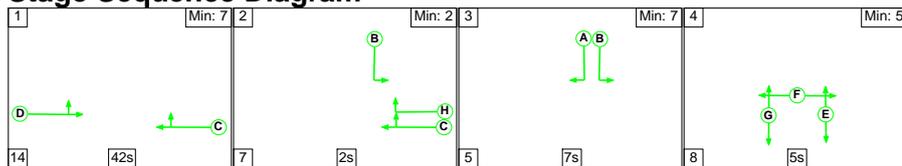
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	3.7	1.2	0.0	4.9	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	0	0	0	3.7	1.2	0.0	4.9	-	-	-	-
1/1+1/2	32	32	-	-	-	0.3	0.1	-	0.5	52.8	0.7	0.1	0.9
2/1	176	176	0	0	0	0.4	0.1	-	0.5	10.7	2.0	0.1	2.1
3/1	597	597	-	-	-	3.0	0.9	-	3.9	23.5	11.3	0.9	12.2
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		37.9	Total Delay for Signalled Lanes (pcuHr):		4.88	Cycle Time (s): 90				
			PRC Over All Lanes (%):		37.9	Total Delay Over All Lanes(pcuHr):		4.88					

Full Input Data And Results

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

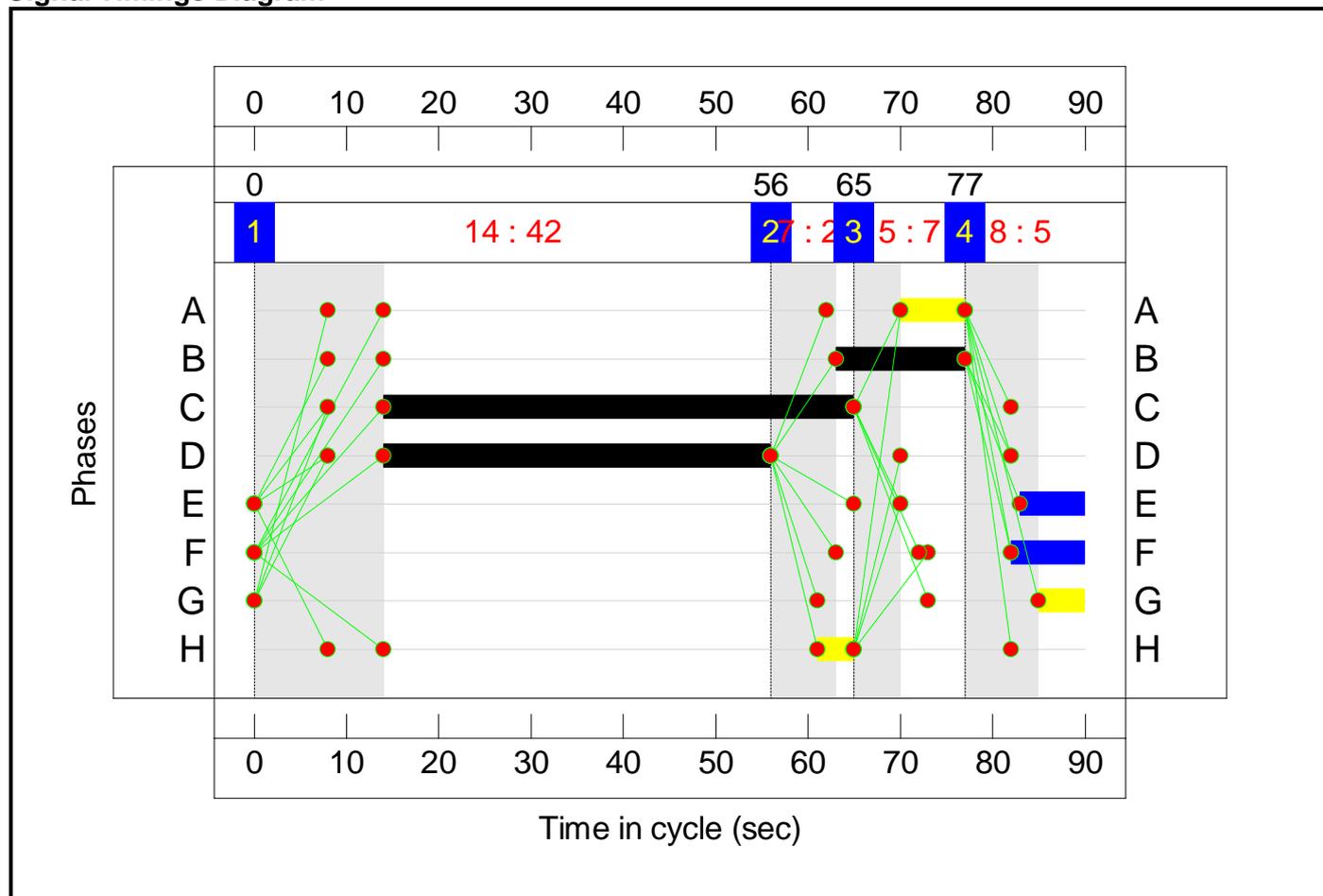
Stage Sequence Diagram



Stage Timings

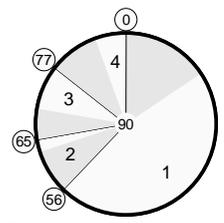
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

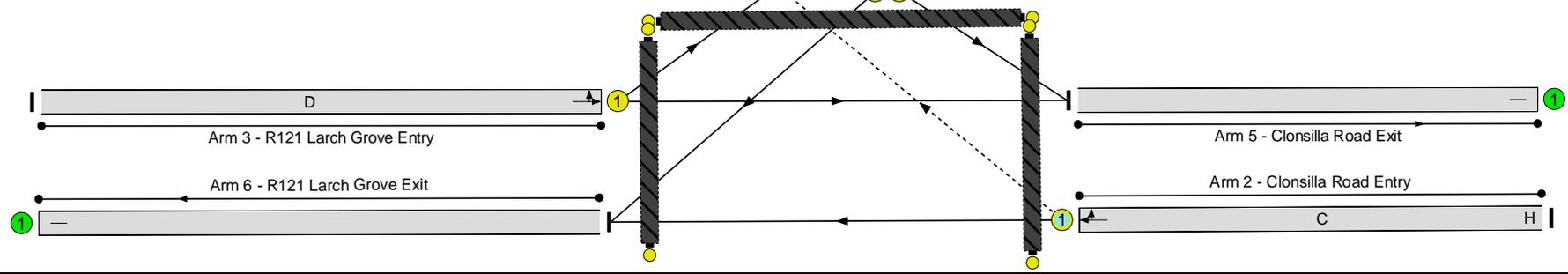
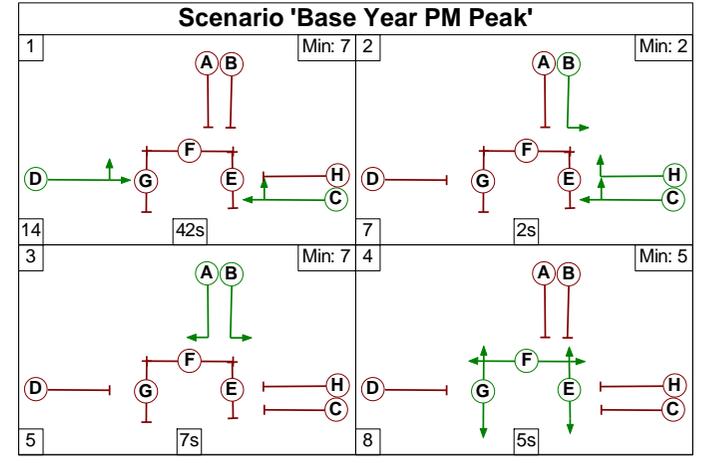
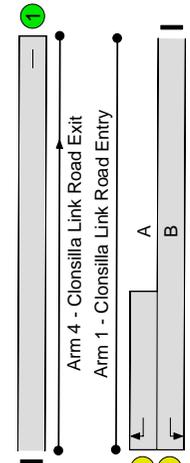


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 58.5 %  
 Total Traffic Delay: 3.8 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	56.8%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	56.8%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	0	1915:1915	170+170	0.0 : 0.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	423	1899	745	56.8%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	277	1903	909	30.5%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	188	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	265	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	247	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

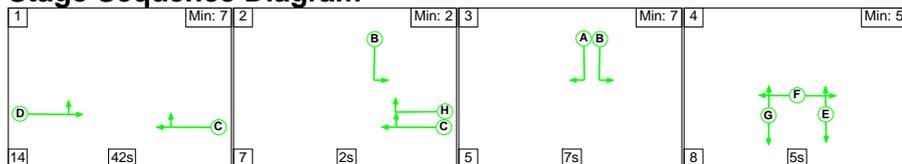
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: DART West Junction Modelling	-	-	353	70	0	2.9	0.9	0.0	3.8	-	-	-	-
Clonsilla Road / Clonsilla Link Road	-	-	353	70	0	2.9	0.9	0.0	3.8	-	-	-	-
1/1+1/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	423	423	353	70	0	1.8	0.7	-	2.5	21.1	7.4	0.7	8.1
3/1	277	277	-	-	-	1.1	0.2	-	1.3	17.2	4.2	0.2	4.5
4/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	265	265	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	247	247	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):	58.5	Total Delay for Signalled Lanes (pcuHr):			3.81	Cycle Time (s):		90		
			PRC Over All Lanes (%):	58.5	Total Delay Over All Lanes(pcuHr):			3.81					

Full Input Data And Results

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

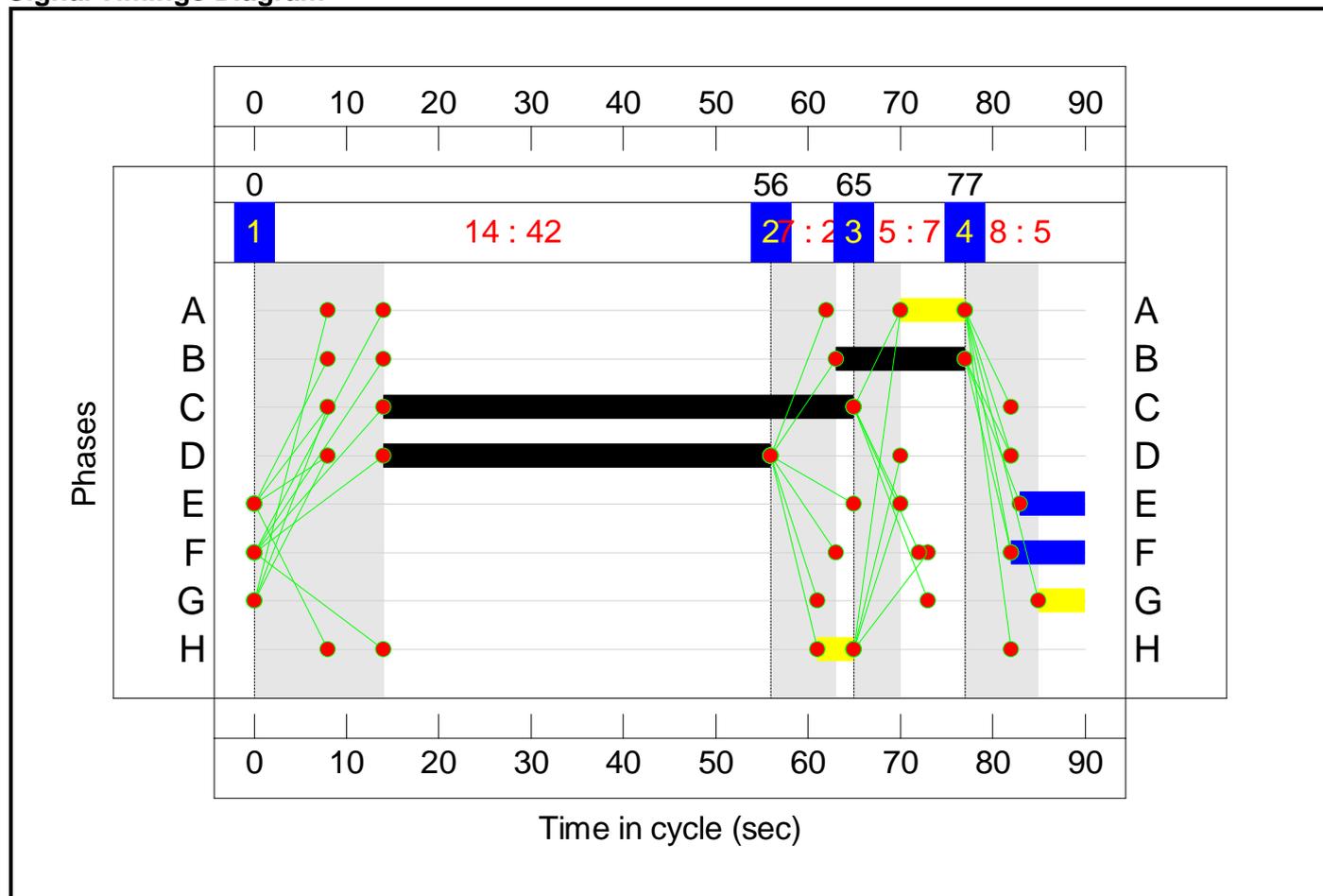
Stage Sequence Diagram



Stage Timings

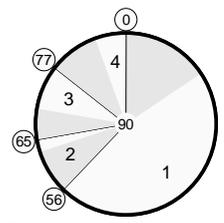
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

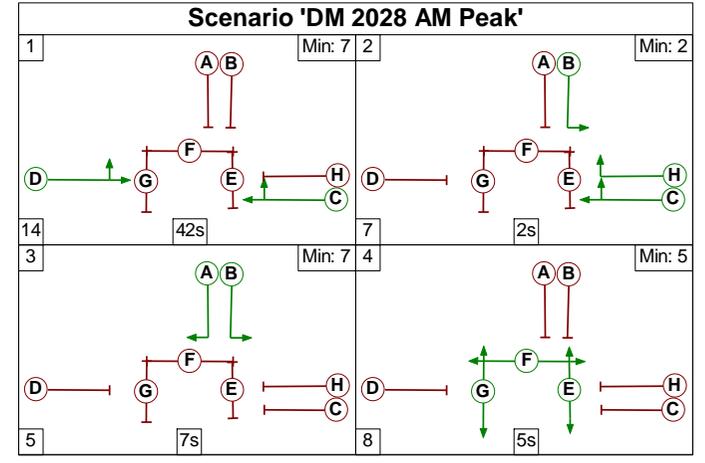
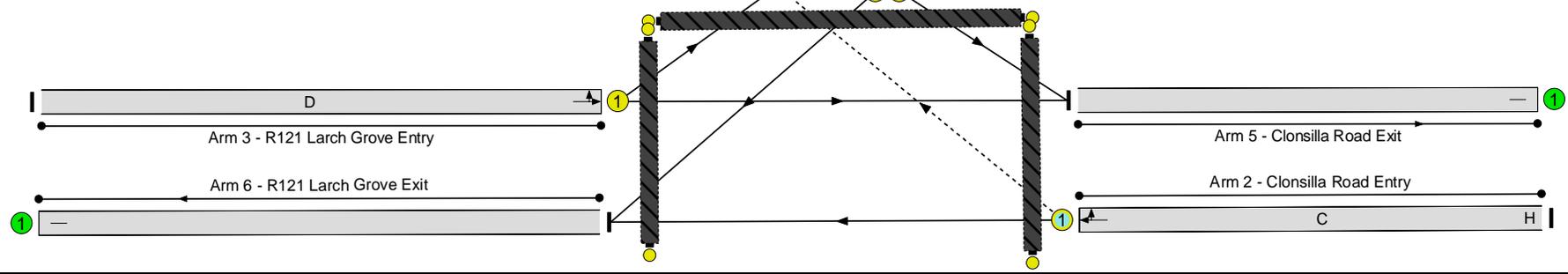
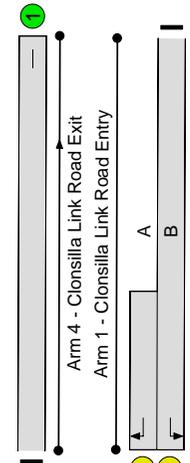


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 31,5 %  
 Total Traffic Delay: 5,3 pcuHr  
 Ave. Route Delay Per Ped: 0,0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	68.4%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	68.4%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	11	1915:1741	0+155	0.0 : 7.1%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	285	1965	1135	25.1%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	626	1915	915	68.4%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	626	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

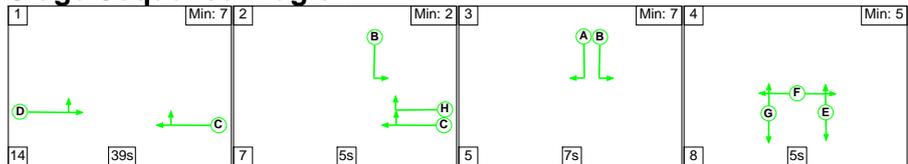
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	4.0	1.3	0.0	5.3	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	0	0	0	4.0	1.3	0.0	5.3	-	-	-	-
1/1+1/2	11	11	-	-	-	0.1	0.0	-	0.2	50.3	0.3	0.0	0.3
2/1	285	285	0	0	0	0.7	0.2	-	0.9	11.5	3.5	0.2	3.7
3/1	626	626	-	-	-	3.2	1.1	-	4.2	24.4	12.0	1.1	13.1
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	626	626	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		31.5	Total Delay for Signalled Lanes (pcuHr):			5.31	Cycle Time (s): 90			
			PRC Over All Lanes (%):		31.5	Total Delay Over All Lanes(pcuHr):			5.31				

Full Input Data And Results

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

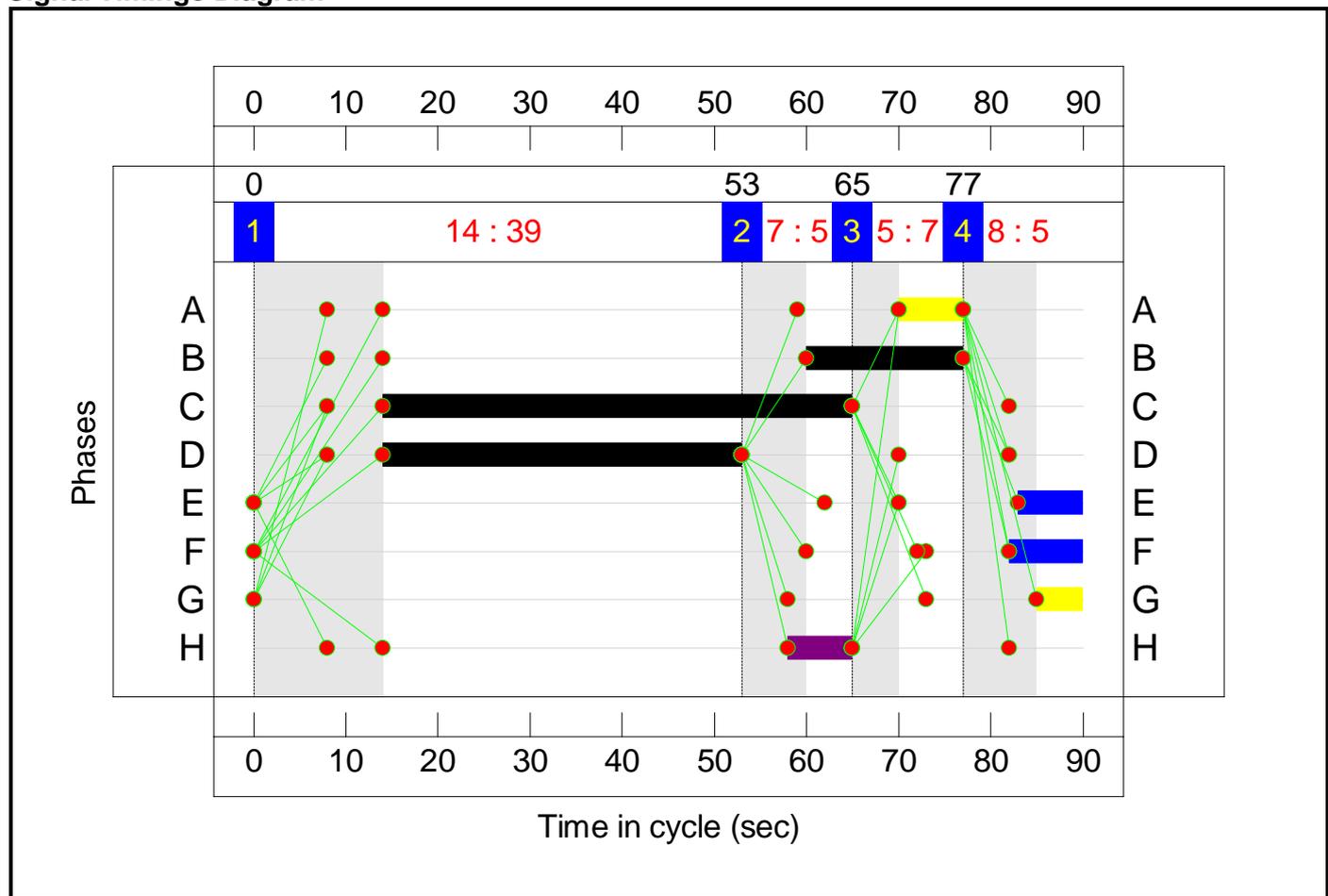
Stage Sequence Diagram



Stage Timings

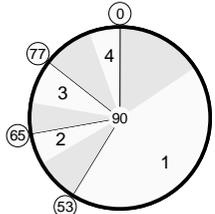
Stage	1	2	3	4
Duration	39	5	7	5
Change Point	0	53	65	77

Signal Timings Diagram

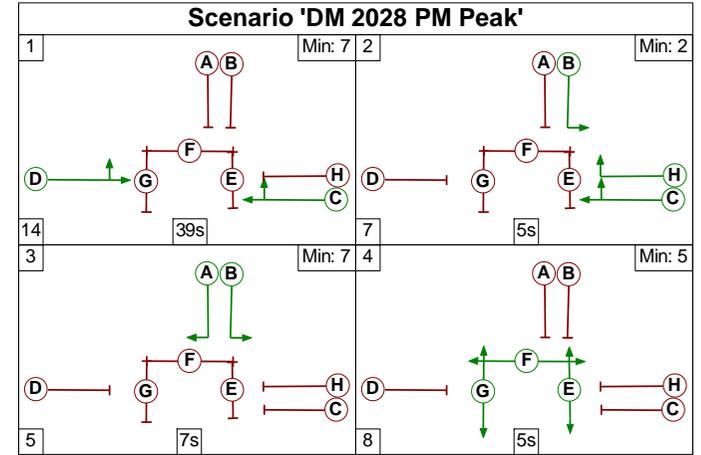
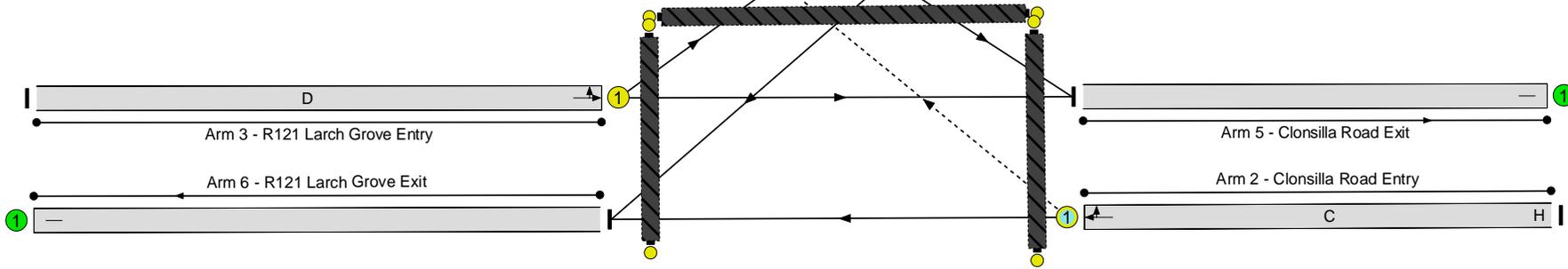
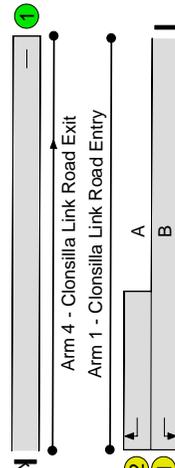


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 163.0 %  
 Total Traffic Delay: 2.6 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	34.2%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	34.2%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	17:7	-	0	1915:1915	170+170	0.0 : 0.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	7	265	1908	774	34.2%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	39	-	267	1912	850	31.4%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	98	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	264	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	170	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

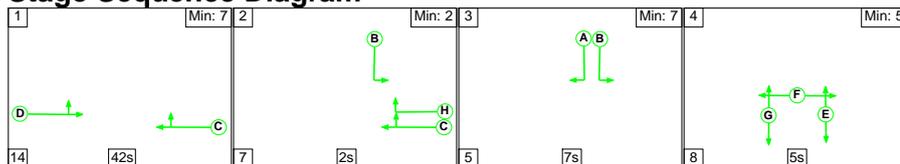
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	198	67	0	2.2	0.5	0.0	2.6	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	198	67	0	2.2	0.5	0.0	2.6	-	-	-	-
1/1+1/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	265	265	198	67	0	1.0	0.3	-	1.2	16.5	4.0	0.3	4.3
3/1	267	267	-	-	-	1.2	0.2	-	1.4	19.2	4.3	0.2	4.5
4/1	98	98	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	264	264	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	170	170	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):	163.0	Total Delay for Signalled Lanes (pcuHr):			2.64	Cycle Time (s):		90		
			PRC Over All Lanes (%):	163.0	Total Delay Over All Lanes(pcuHr):			2.64					

Full Input Data And Results

Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

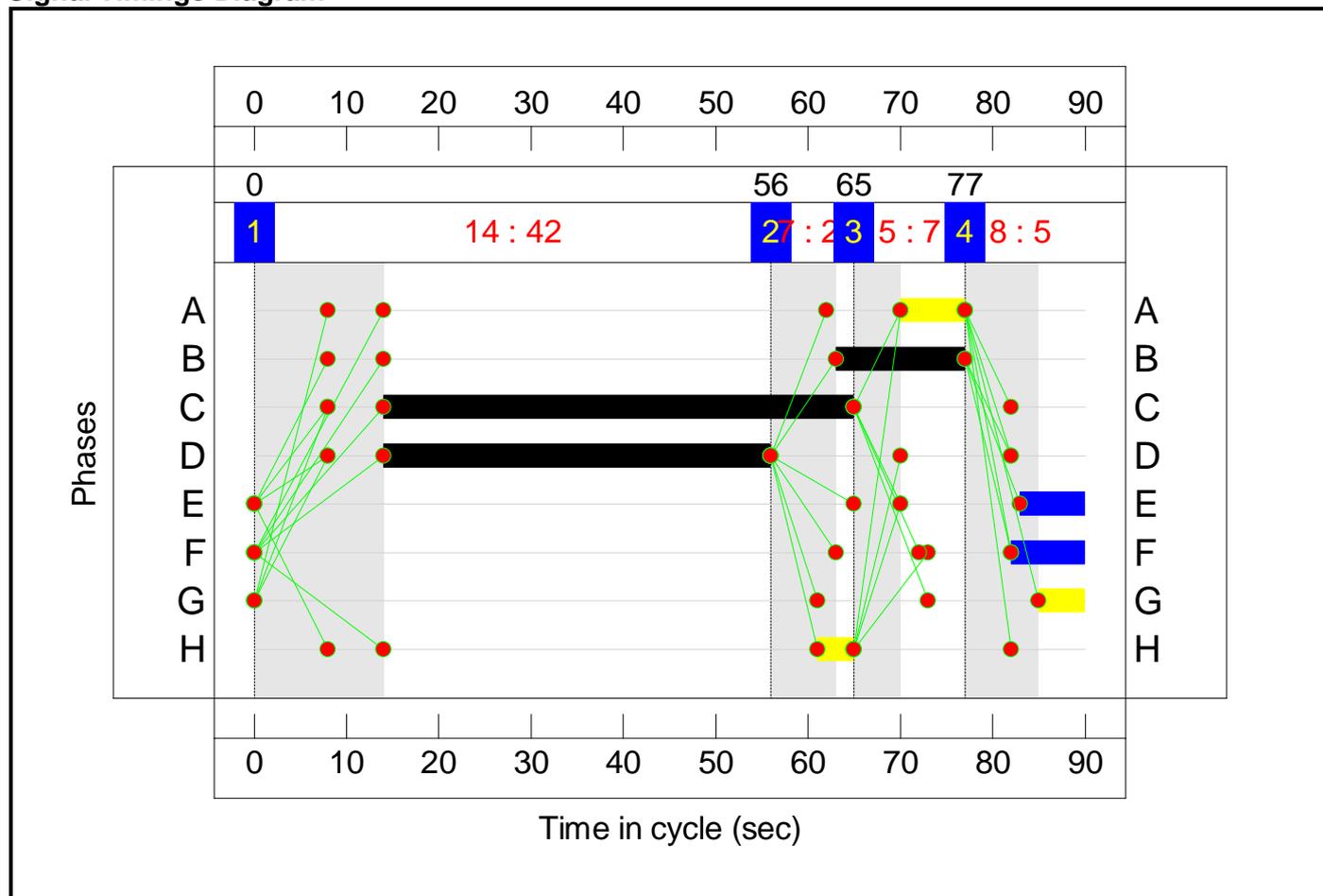
Stage Sequence Diagram



Stage Timings

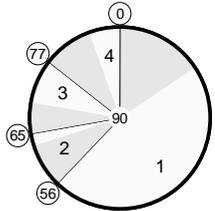
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

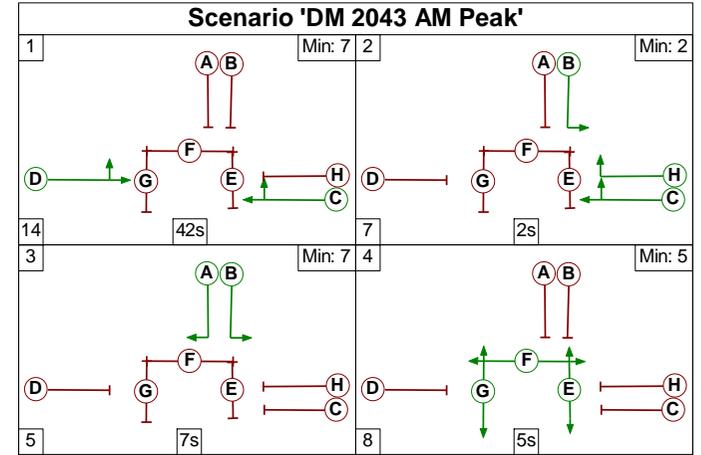
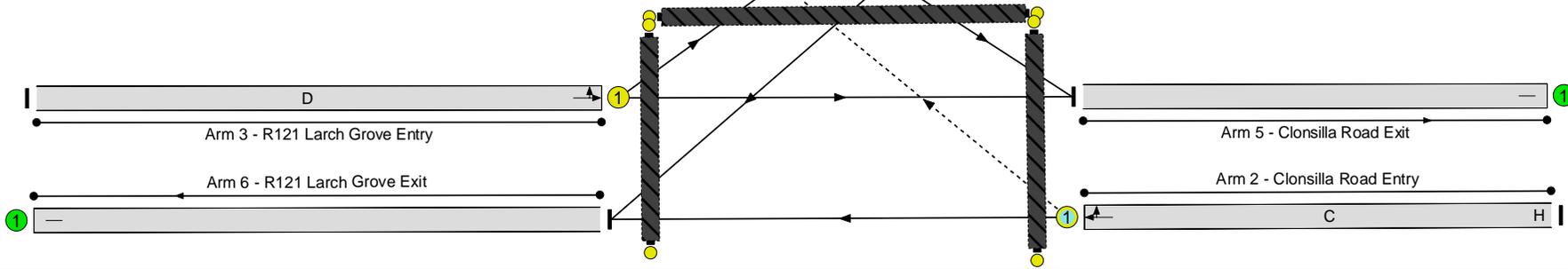
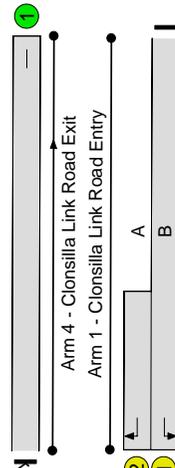


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 1.2 %  
 Total Traffic Delay: 12.9 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	89.0%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	89.0%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	48	1915:1741	0+155	0.0 : 31.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	274	1964	369	74.2%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	814	1915	915	89.0%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	1	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

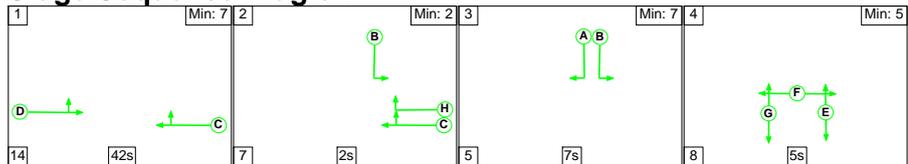
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	173	101	0	7.5	5.4	0.0	12.9	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	173	101	0	7.5	5.4	0.0	12.9	-	-	-	-
1/1+1/2	48	48	-	-	-	0.5	0.2	-	0.7	55.2	1.1	0.2	1.3
2/1	274	274	173	101	0	2.2	1.4	-	3.6	47.3	6.4	1.4	7.8
3/1	814	814	-	-	-	4.8	3.8	-	8.6	37.9	18.3	3.8	22.1
4/1	1	1	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		1.2	Total Delay for Signalled Lanes (pcuHr):		12.91	Cycle Time (s): 90				
			PRC Over All Lanes (%):		1.2	Total Delay Over All Lanes(pcuHr):		12.91					

Full Input Data And Results

Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

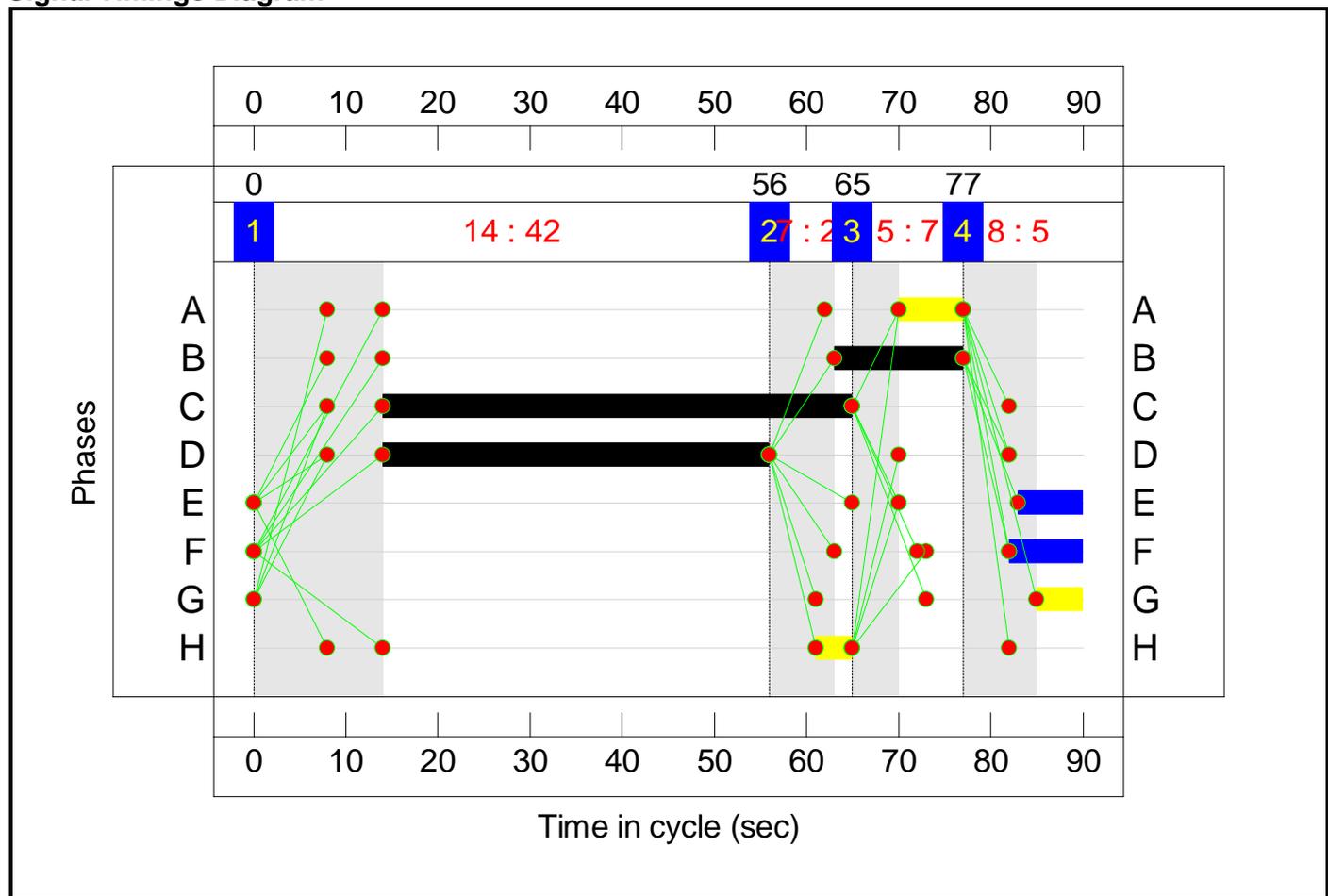
Stage Sequence Diagram



Stage Timings

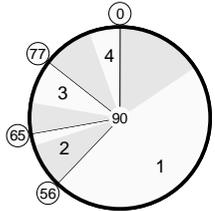
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

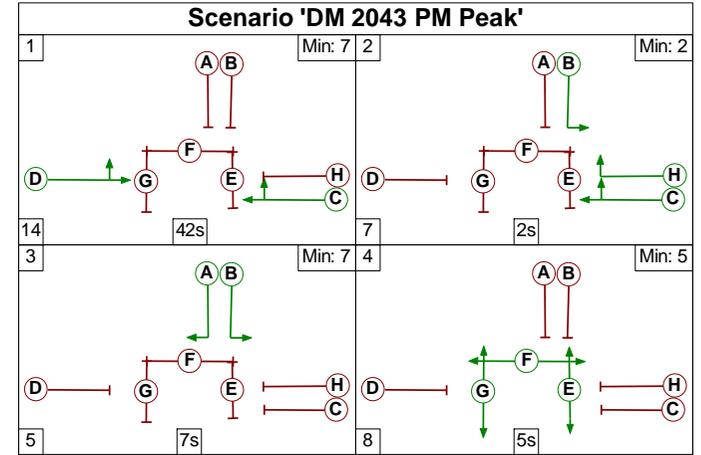
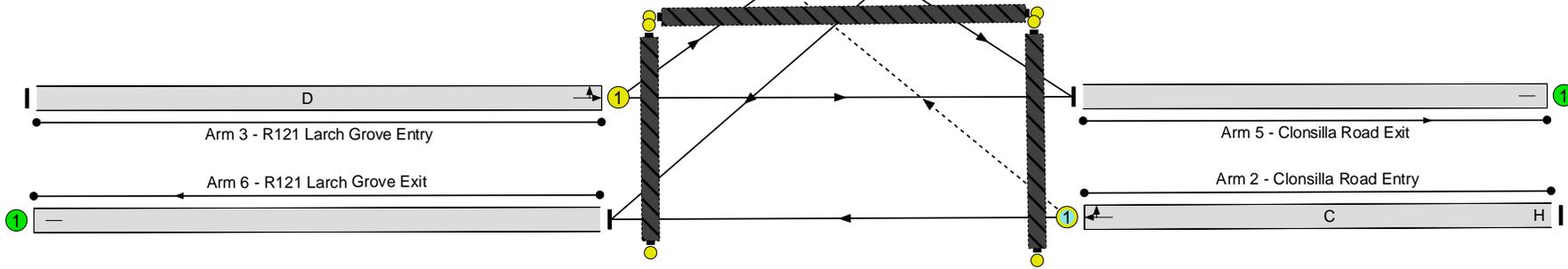
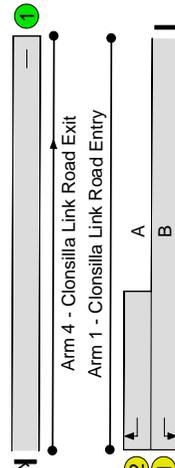


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 105.7 %  
 Total Traffic Delay: 3.3 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	43.7%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	43.7%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	0	1915:1915	170+170	0.0 : 0.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	345	1925	789	43.7%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	312	1906	911	34.3%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	95	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	260	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

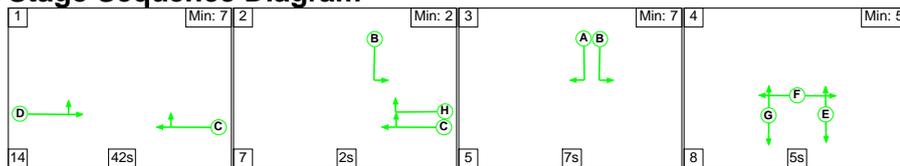
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	279	66	0	2.7	0.6	0.0	3.3	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	279	66	0	2.7	0.6	0.0	3.3	-	-	-	-
1/1+1/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	345	345	279	66	0	1.4	0.4	-	1.8	18.6	5.7	0.4	6.0
3/1	312	312	-	-	-	1.3	0.3	-	1.5	17.7	4.9	0.3	5.1
4/1	95	95	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	260	260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):	105.7	Total Delay for Signalled Lanes (pcuHr):			3.31	Cycle Time (s): 90				
			PRC Over All Lanes (%):	105.7	Total Delay Over All Lanes(pcuHr):			3.31					

Full Input Data And Results

Scenario 7: 'DS 2028 AM Peak' (FG7: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

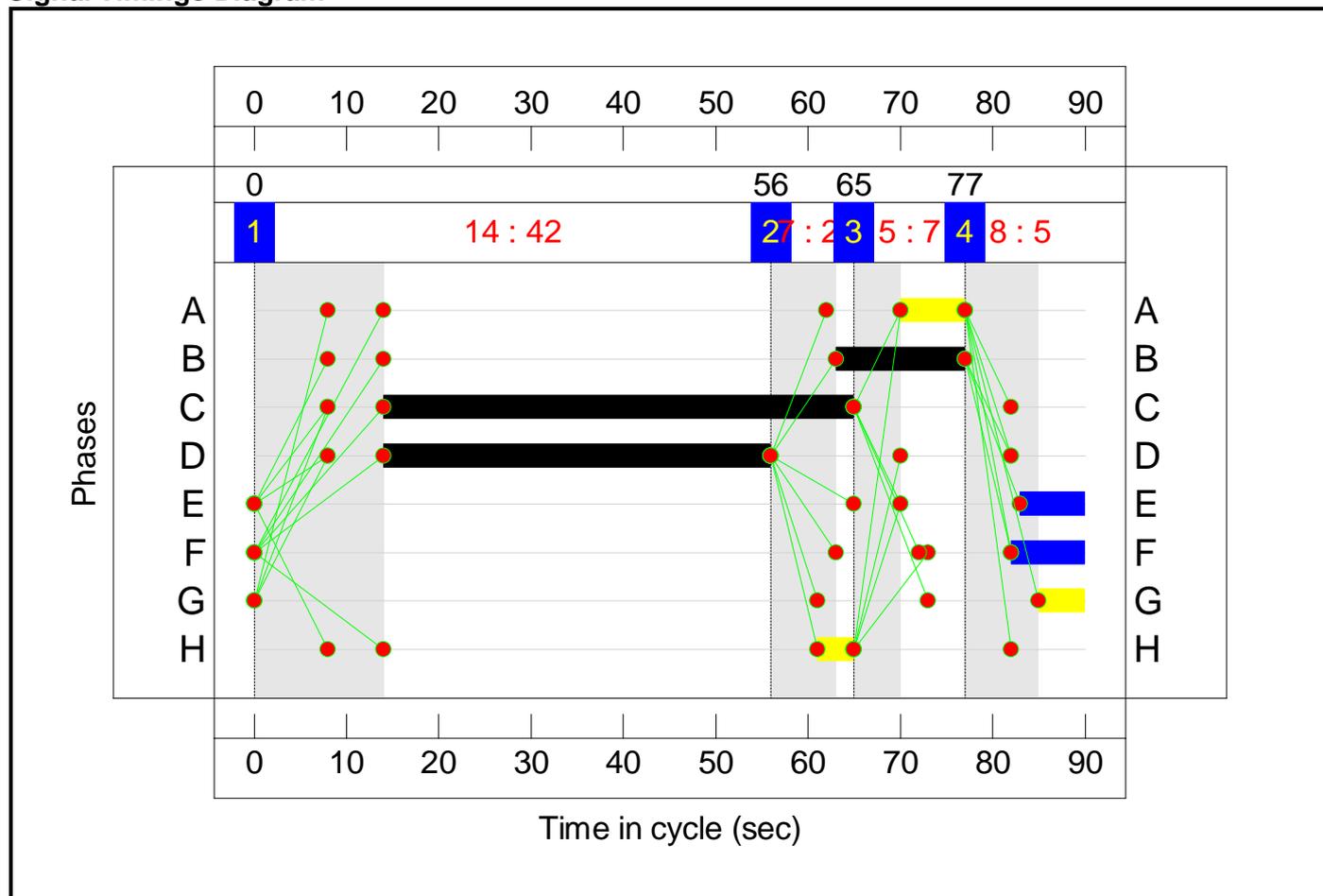
Stage Sequence Diagram



Stage Timings

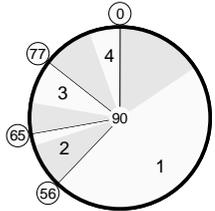
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

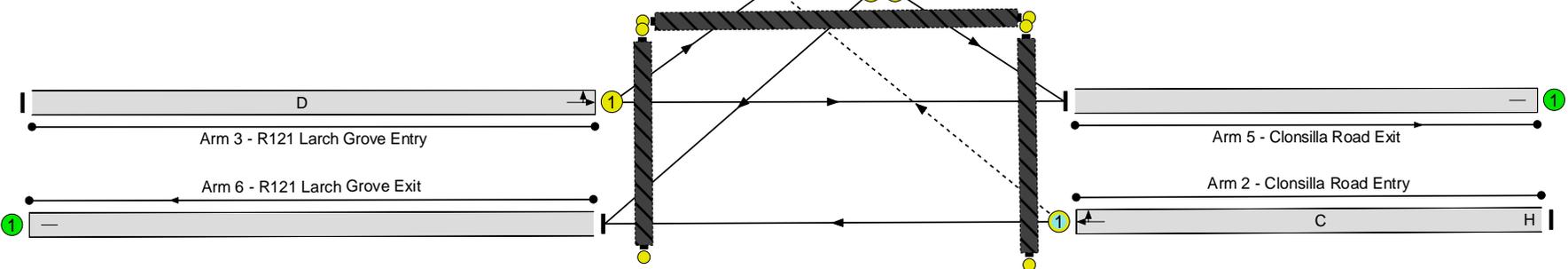
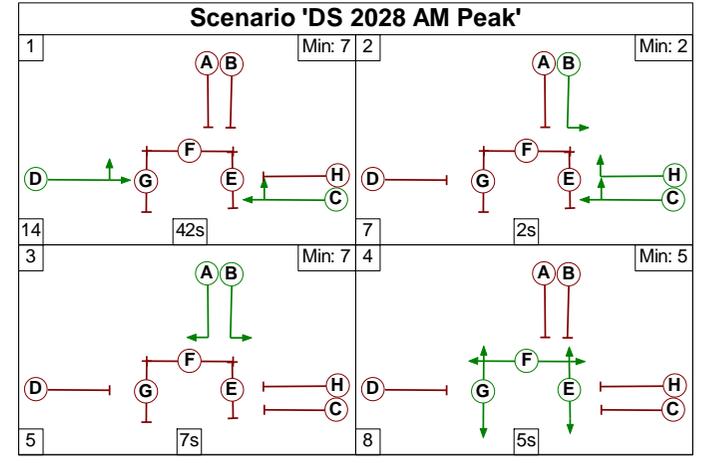
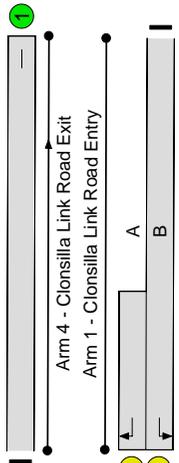


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 25.0 %  
 Total Traffic Delay: 6.3 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	72.0%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	72.0%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	4	1915:1741	0+155	0.0 : 2.6%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	436	1965	1135	38.4%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	659	1915	915	72.0%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	659	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	440	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

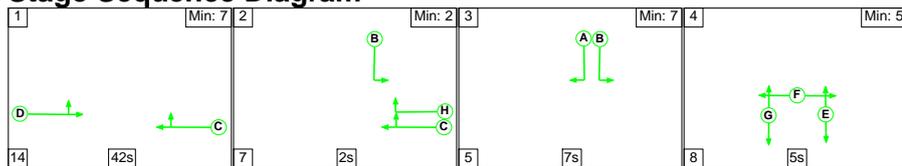
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	4.7	1.6	0.0	6.3	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	0	0	0	4.7	1.6	0.0	6.3	-	-	-	-
1/1+1/2	4	4	-	-	-	0.0	0.0	-	0.1	49.7	0.1	0.0	0.1
2/1	436	436	0	0	0	1.2	0.3	-	1.6	12.9	5.8	0.3	6.1
3/1	659	659	-	-	-	3.4	1.3	-	4.7	25.7	13.0	1.3	14.3
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	659	659	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		25.0	Total Delay for Signalled Lanes (pcuHr):		6.32	Cycle Time (s): 90				
			PRC Over All Lanes (%):		25.0	Total Delay Over All Lanes(pcuHr):		6.32					

Full Input Data And Results

Scenario 8: 'DS 2028 PM Peak' (FG8: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

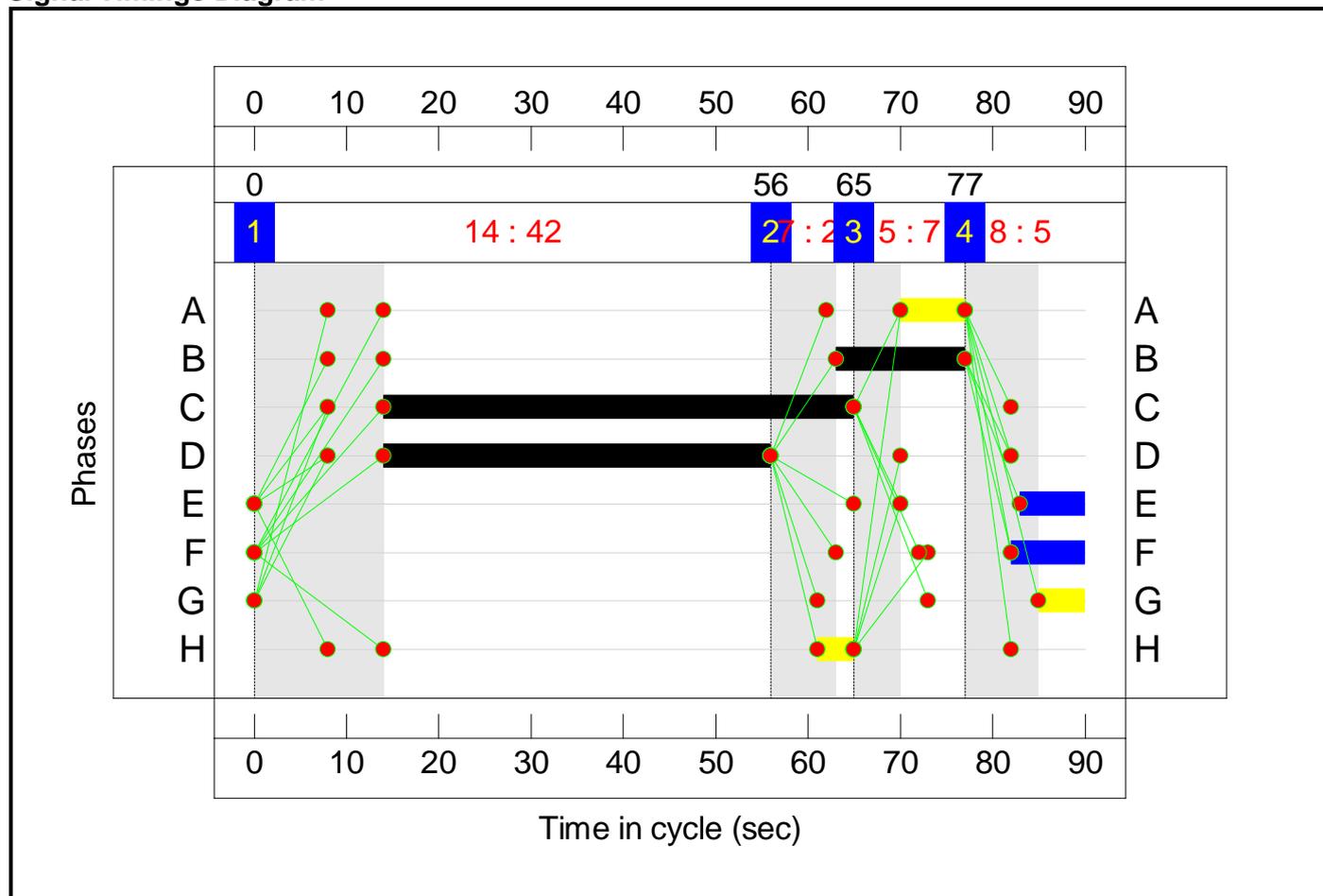
Stage Sequence Diagram



Stage Timings

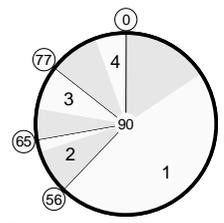
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

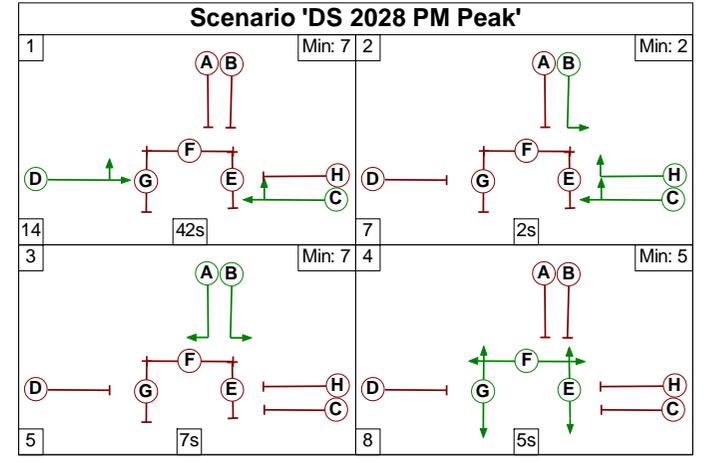
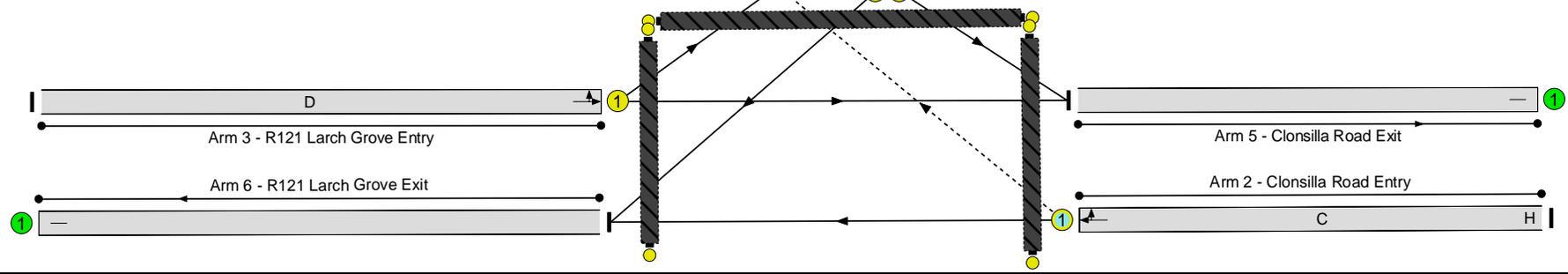
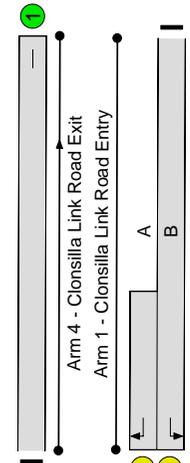


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 166.3 %  
 Total Traffic Delay: 2.7 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.8%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	33.8%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	0	1915:1915	170+170	0.0 : 0.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	281	1964	936	30.0%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	309	1914	914	33.8%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	308	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	280	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

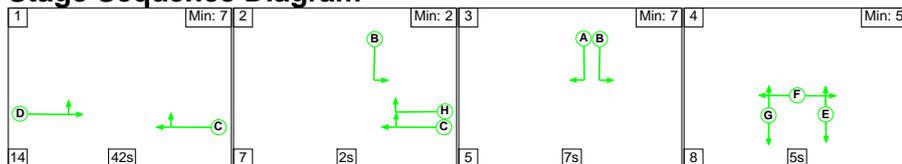
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	216	65	0	2.3	0.5	0.0	2.7	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	216	65	0	2.3	0.5	0.0	2.7	-	-	-	-
1/1+1/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	281	281	216	65	0	1.0	0.2	-	1.2	15.7	4.2	0.2	4.4
3/1	309	309	-	-	-	1.3	0.3	-	1.5	17.6	4.8	0.3	5.1
4/1	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	308	308	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	280	280	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):	166.3	Total Delay for Signalled Lanes (pcuHr):			2.74	Cycle Time (s):		90		
			PRC Over All Lanes (%):	166.3	Total Delay Over All Lanes(pcuHr):			2.74					

Full Input Data And Results

Scenario 9: 'DS 2043 AM Peak' (FG9: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

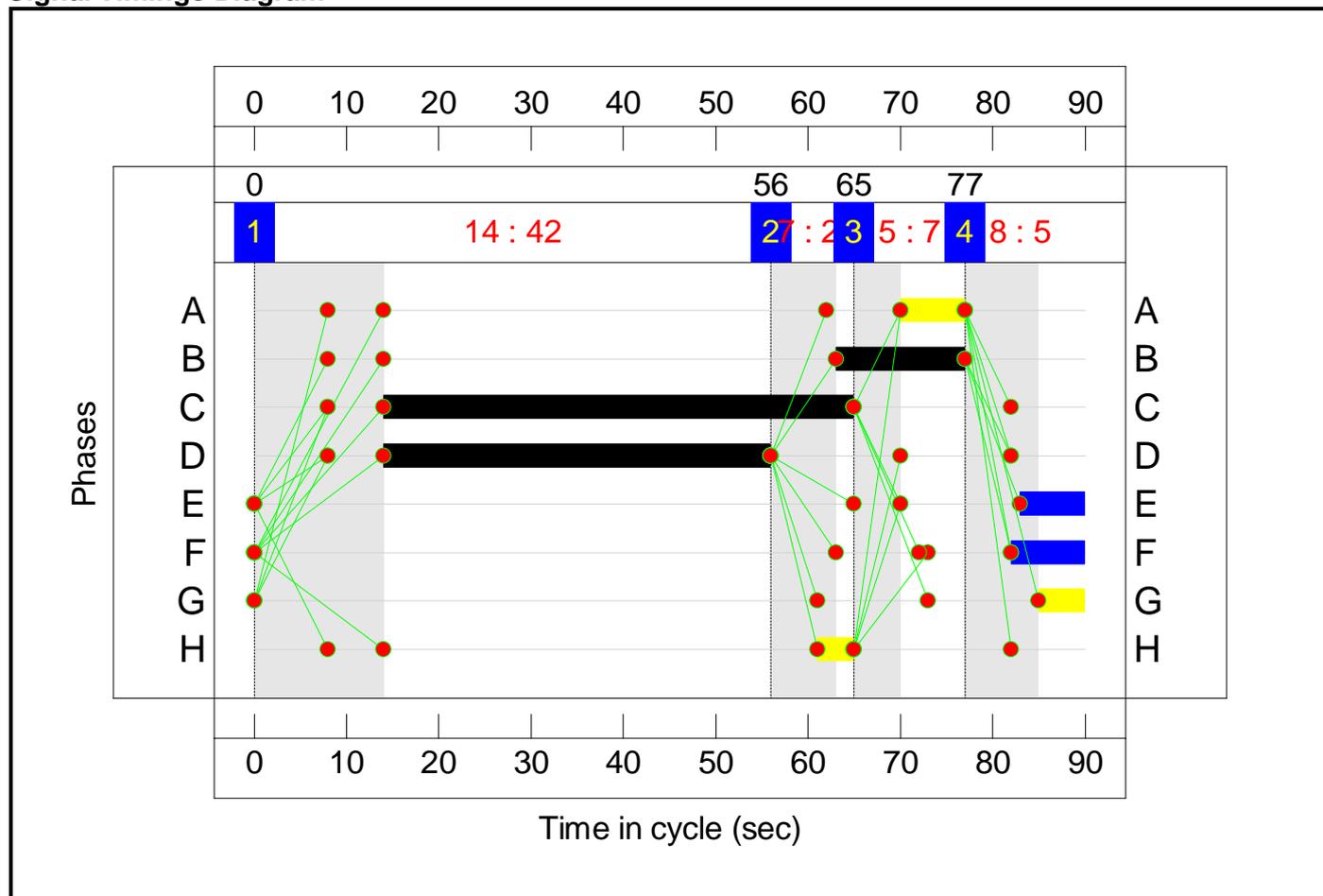
Stage Sequence Diagram



Stage Timings

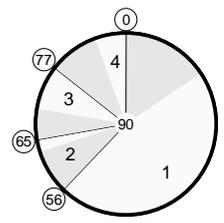
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

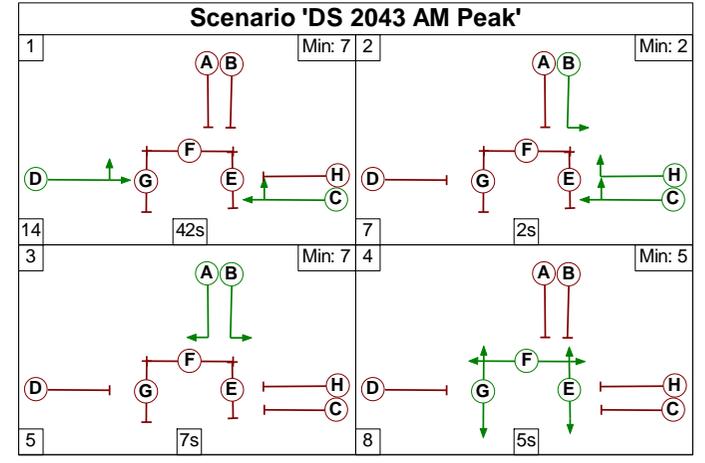
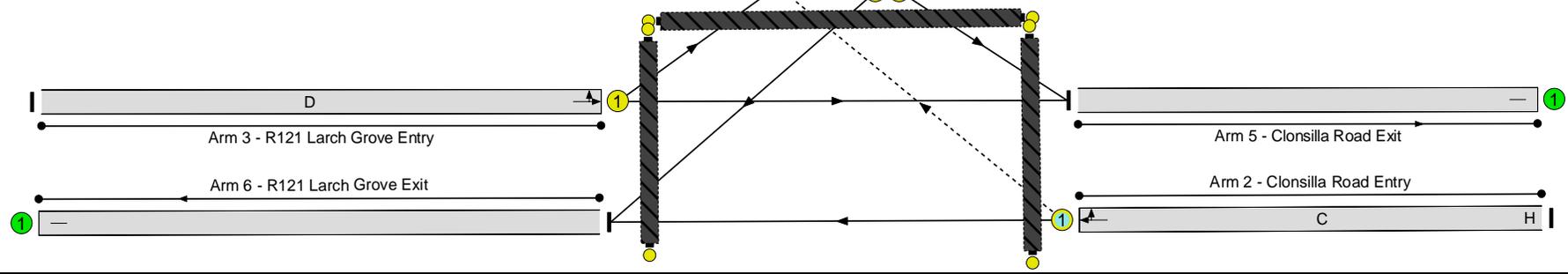
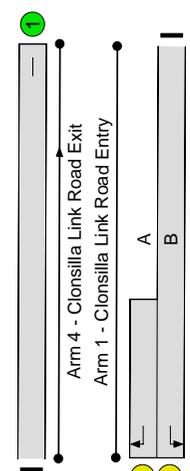


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 12.6 %  
 Total Traffic Delay: 7.8 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	79.9%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	79.9%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	4	1915:1741	0+155	0.0 : 2.6%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	468	1965	1135	41.2%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	731	1915	915	79.9%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	472	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

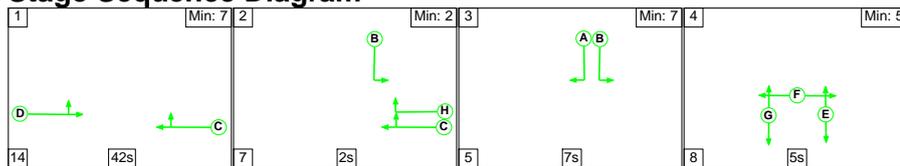
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	5.4	2.3	0.0	7.8	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	0	0	0	5.4	2.3	0.0	7.8	-	-	-	-
1/1+1/2	4	4	-	-	-	0.0	0.0	-	0.1	49.7	0.1	0.0	0.1
2/1	468	468	0	0	0	1.4	0.4	-	1.7	13.2	6.4	0.4	6.7
3/1	731	731	-	-	-	4.0	1.9	-	6.0	29.4	15.4	1.9	17.4
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	731	731	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	472	472	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		12.6	Total Delay for Signalled Lanes (pcuHr):			7.75	Cycle Time (s): 90			
			PRC Over All Lanes (%):		12.6	Total Delay Over All Lanes(pcuHr):			7.75				

Full Input Data And Results

Scenario 10: 'DS 2043 PM Peak' (FG10: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

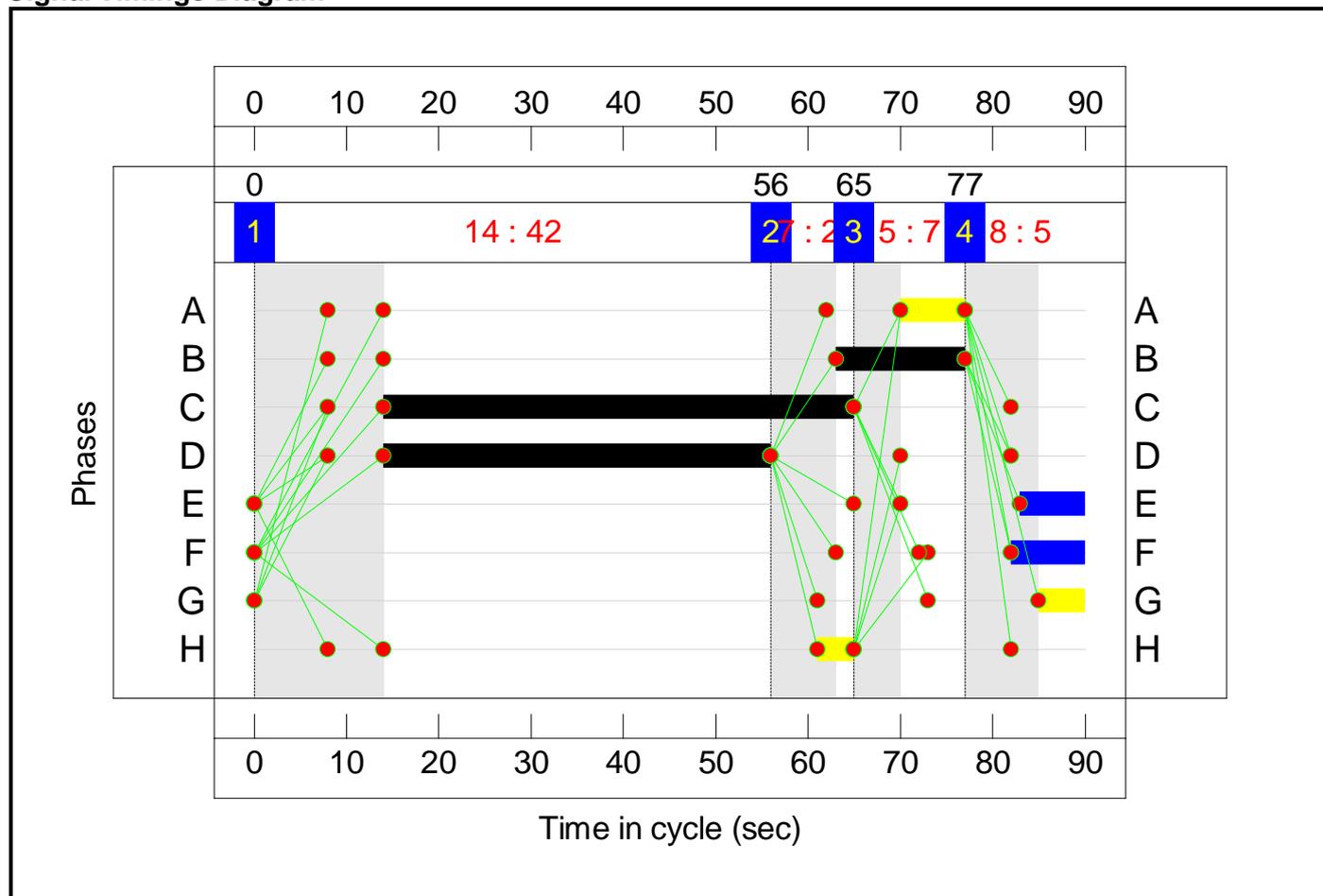
Stage Sequence Diagram



Stage Timings

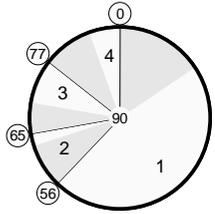
Stage	1	2	3	4
Duration	42	2	7	5
Change Point	0	56	65	77

Signal Timings Diagram

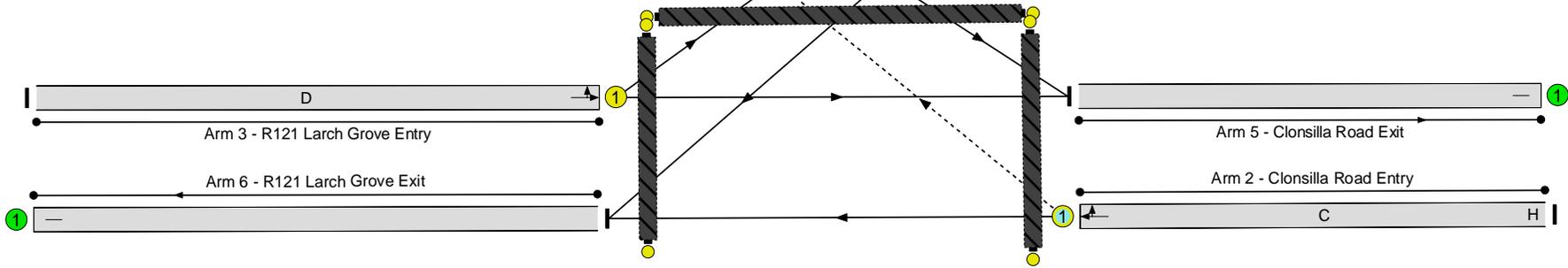
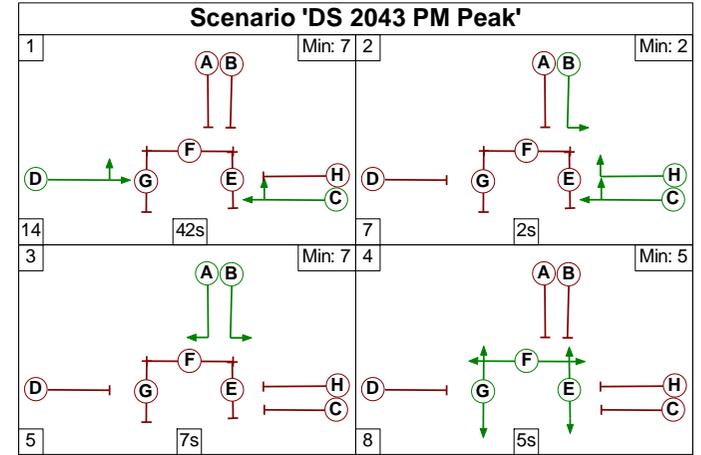
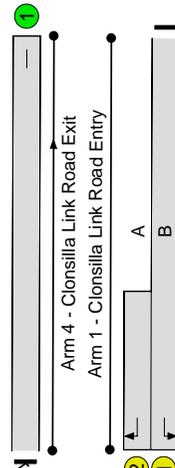


# Full Input Data And Results Network Layout Diagram

Clonsilla Road / Clonsilla Link Road  
 PRC: 122.4 %  
 Total Traffic Delay: 2.9 pcuHr  
 Ave. Route Delay Per Ped: 0.0 s/Ped



C1 - Clonsilla Road / Clonsilla Link Road



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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	40.5%
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	40.5%
1/1+1/2	Clonsilla Link Road Entry Left Right	U	N/A	N/A	B A		1	14:7	-	0	1915:1915	170+170	0.0 : 0.0%
2/1	Clonsilla Road Entry Right Ahead	O	N/A	N/A	C	H	1	51	4	317	1965	1135	27.9%
3/1	R121 Larch Grove Entry Left Ahead	U	N/A	N/A	D		1	42	-	370	1914	914	40.5%
4/1	Clonsilla Link Road Exit	U	N/A	N/A	-		-	-	-	1	Inf	Inf	0.0%
5/1	Clonsilla Road Exit	U	N/A	N/A	-		-	-	-	369	Inf	Inf	0.0%
6/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	317	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	E		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	5	-	0	-	0	0.0%

Full Input Data And Results

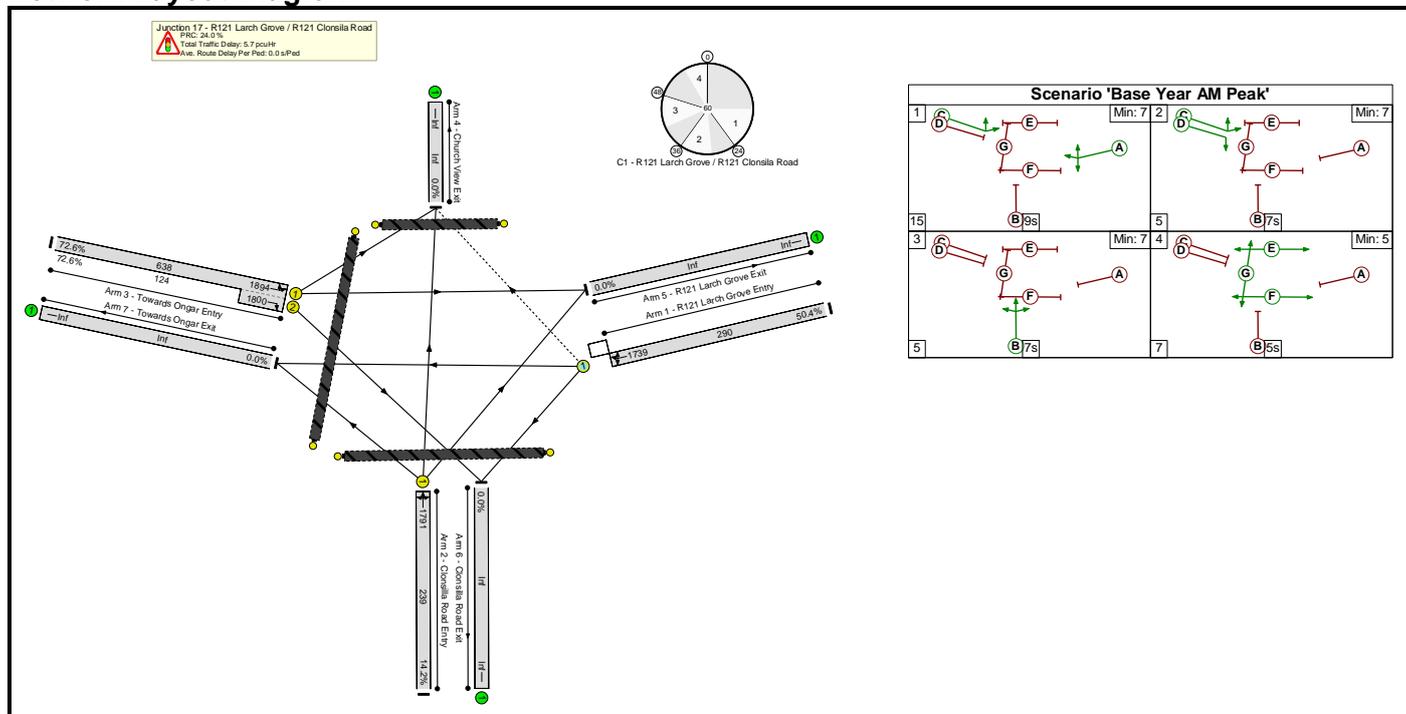
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	2.4	0.5	0.0	2.9	-	-	-	-
<b>Clonsilla Road / Clonsilla Link Road</b>	-	-	0	0	0	2.4	0.5	0.0	2.9	-	-	-	-
1/1+1/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	317	317	0	0	0	0.8	0.2	-	1.0	11.8	4.0	0.2	4.2
3/1	370	370	-	-	-	1.6	0.3	-	1.9	18.5	6.0	0.3	6.3
4/1	1	1	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	369	369	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	317	317	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Clonsilla Road / Clonsilla Link Road			PRC for Signalled Lanes (%):		122.4	Total Delay for Signalled Lanes (pcuHr):		2.94	Cycle Time (s):		90		
			PRC Over All Lanes (%):		122.4	Total Delay Over All Lanes(pcuHr):		2.94					

Basic Results Summary  
**Basic Results Summary**

**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	R121 Larch Grove / R121 Clonsila Road
<b>Date Started:</b>	11/09/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction17_Base_DM V2.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**Scenario 1: 'Base Year AM Peak'** (FG1: 'Base AM Peak', Plan 1: 'Network Control Plan 1')



Basic Results Summary

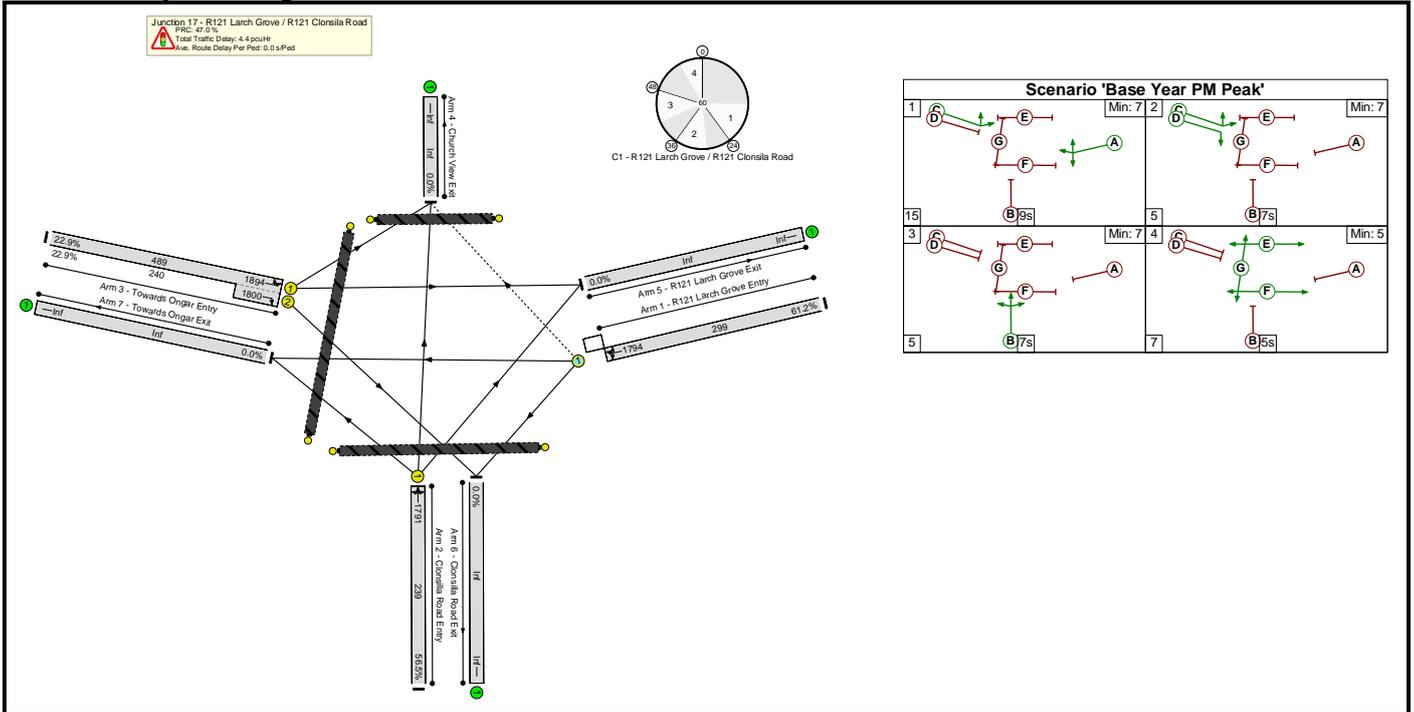
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	72.6%	0	0	0	5.7	-	-	
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	72.6%	0	0	0	5.7	-	-	
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	9	-	146	1739	290	50.4%	0	0	0	1.4	35.2	2.7	
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	34	1791	239	14.2%	-	-	-	0.3	31.8	0.6	
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:7	-	553	1894:1800	638+124	72.6 : 72.6%	-	-	-	4.0	25.7	8.0	
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
C1 - R121 Larch Grove / R121 Clonsila Road							PRC for Signalled Lanes (%):	24.0	Total Delay for Signalled Lanes (pcuHr):				5.68	Cycle Time (s): 60				
							PRC Over All Lanes (%):	24.0	Total Delay Over All Lanes(pcuHr):				5.68					

Basic Results Summary

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

Network Layout Diagram



Basic Results Summary

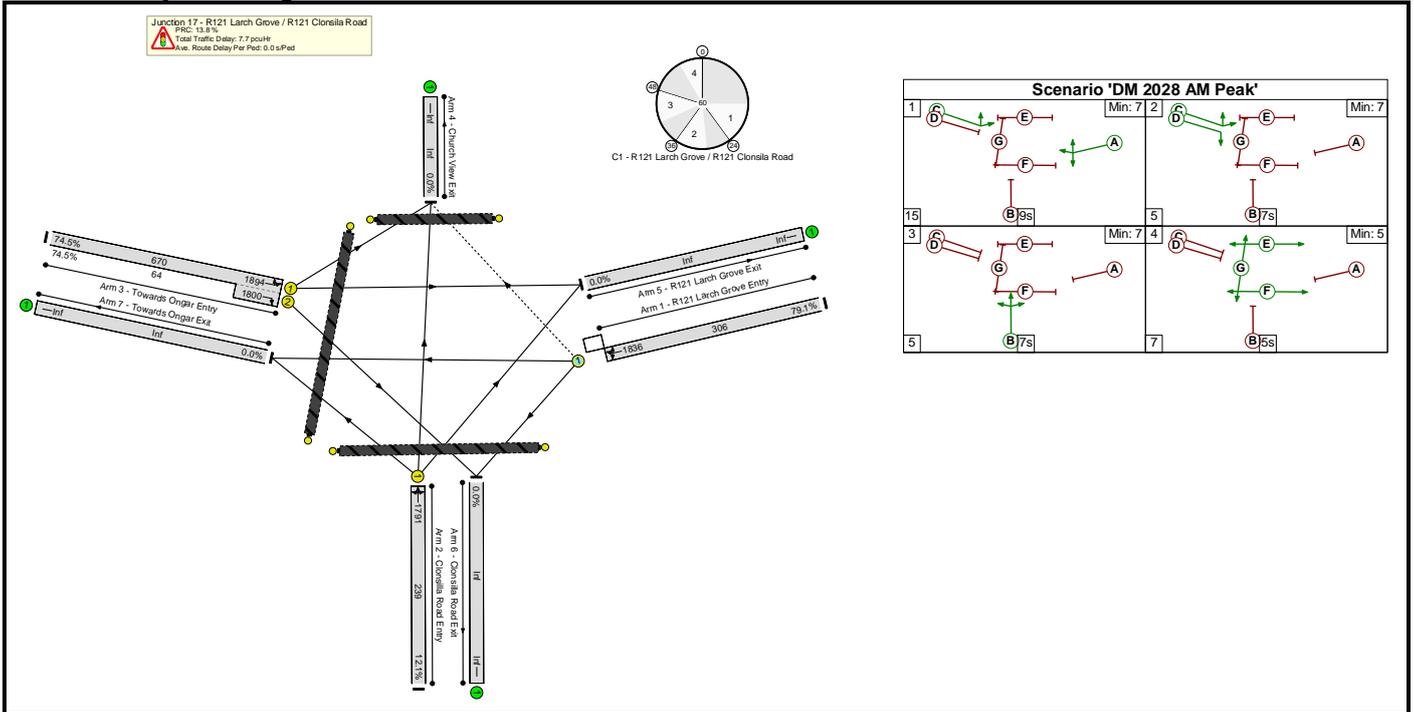
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	61.2%	0	0	0	4.4	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	61.2%	0	0	0	4.4	-	-
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	9	-	183	1794	299	61.2%	0	0	0	2.0	38.5	3.6
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	135	1791	239	56.5%	-	-	-	1.6	41.5	2.7
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:7	-	167	1894:1800	489+240	22.9 : 22.9%	-	-	-	0.9	19.5	1.4
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road				PRC for Signalled Lanes (%):		47.0	Total Delay for Signalled Lanes (pcuHr):		4.42	Cycle Time (s):		60					
				PRC Over All Lanes (%):		47.0	Total Delay Over All Lanes(pcuHr):		4.42								

Basic Results Summary

Scenario 3: 'DM 2028 AM Peak' (FG3: 'DM 2028 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

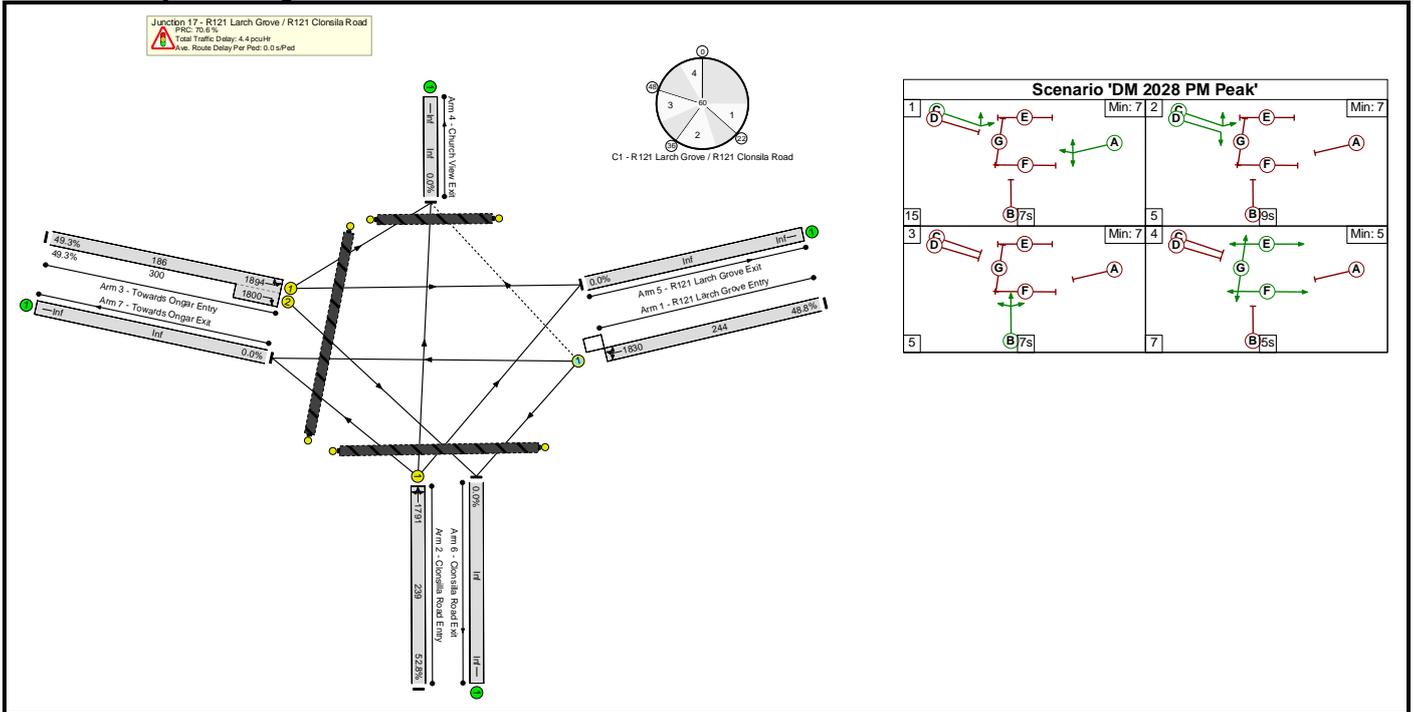
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	79.1%	0	0	0	7.7	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	79.1%	0	0	0	7.7	-	-
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	9	-	242	1836	306	79.1%	0	0	0	3.4	50.6	5.6
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	29	1791	239	12.1%	-	-	-	0.3	31.5	0.5
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:7	-	547	1894:1800	670+64	74.5 : 74.5%	-	-	-	4.0	26.4	8.7
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road				PRC for Signalled Lanes (%):		13.8		Total Delay for Signalled Lanes (pcuHr):				7.67		Cycle Time (s): 60			
				PRC Over All Lanes (%):		13.8		Total Delay Over All Lanes(pcuHr):				7.67					

Basic Results Summary

Scenario 4: 'DM 2028 PM Peak' (FG4: 'DM 2028 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

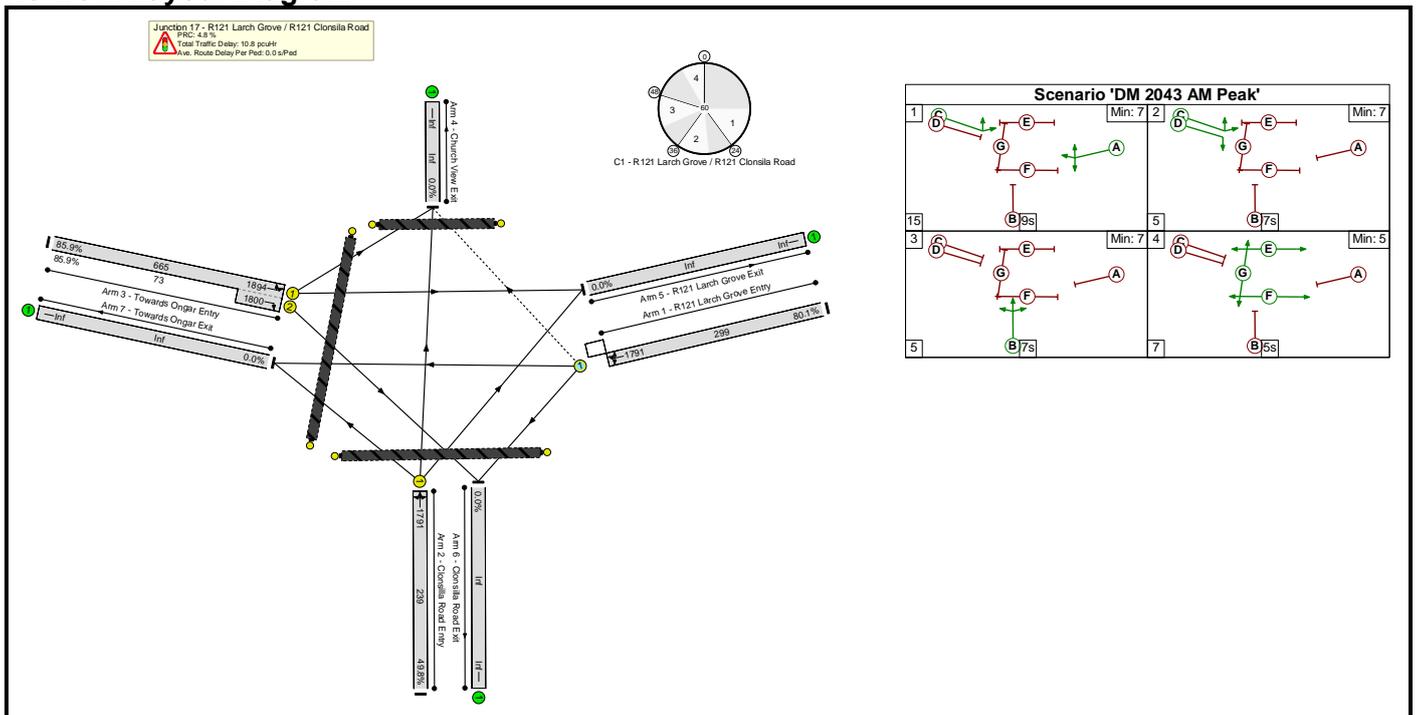
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	52.8%	0	0	0	4.4	-	-	
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	52.8%	0	0	0	4.4	-	-	
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	7	-	119	1830	244	48.8%	0	0	0	1.3	38.4	2.3	
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	126	1791	239	52.8%	-	-	-	1.4	40.0	2.5	
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:9	-	240	1894:1800	186+300	49.3 : 49.3%	-	-	-	1.7	26.1	2.7	
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
C1 - R121 Larch Grove / R121 Clonsila Road				PRC for Signalled Lanes (%):		70.6		Total Delay for Signalled Lanes (pcuHr):				4.41		Cycle Time (s): 60				
				PRC Over All Lanes (%):		70.6		Total Delay Over All Lanes(pcuHr):				4.41						

Basic Results Summary

Scenario 5: 'DM 2043 AM Peak' (FG5: 'DM 2043 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

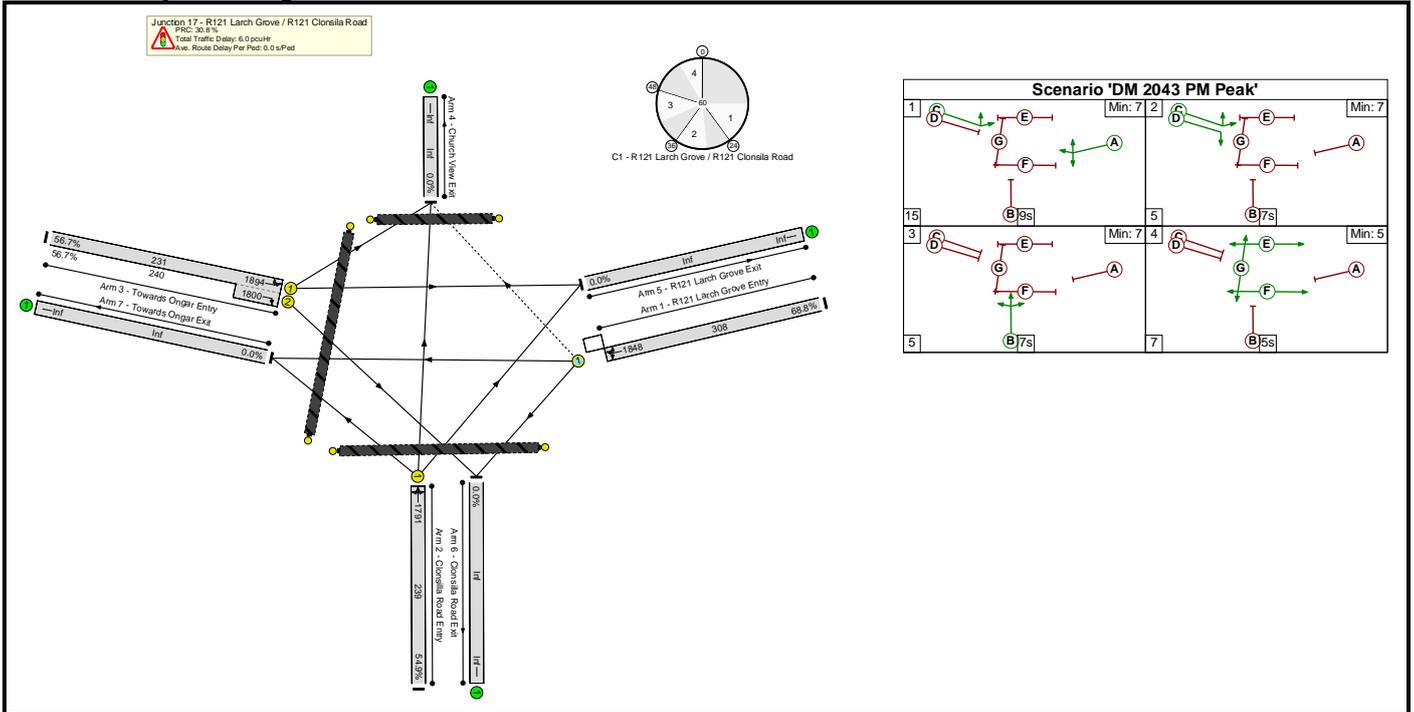
**Network Results**

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	85.9%	0	0	0	10.8	-	-	
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	85.9%	0	0	0	10.8	-	-	
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	9	-	239	1791	299	80.1%	0	0	0	3.5	52.5	5.7	
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	119	1791	239	49.8%	-	-	-	1.3	39.1	2.3	
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:7	-	634	1894:1800	665+73	85.9 : 85.9%	-	-	-	6.0	34.3	12.0	
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
C1 - R121 Larch Grove / R121 Clonsila Road				PRC for Signalled Lanes (%): 4.8			PRC Over All Lanes (%): 4.8			Total Delay for Signalled Lanes (pcuHr): 10.81			Total Delay Over All Lanes(pcuHr): 10.81			Cycle Time (s): 60		

Basic Results Summary

Scenario 6: 'DM 2043 PM Peak' (FG6: 'DM 2043 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

**Network Results**

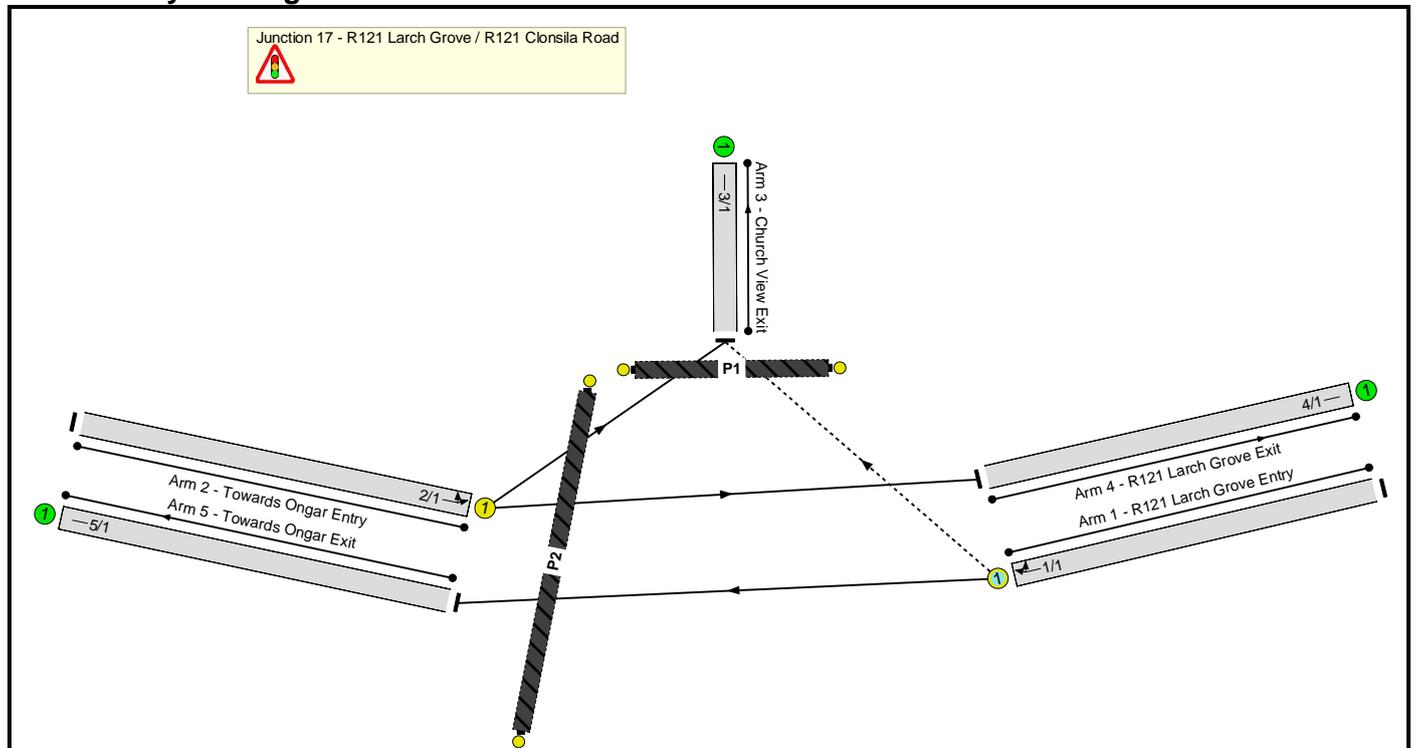
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)	
<b>Network: DART West Junction Modelling</b>	-	-	-		-	-	-	-	-	-	68.8%	0	0	0	6.0	-	-	
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	-		-	-	-	-	-	-	68.8%	0	0	0	6.0	-	-	
1/1	R121 Larch Grove Entry Right Left Ahead	O	A		1	9	-	212	1848	308	68.8%	0	0	0	2.5	41.9	4.4	
2/1	Clonsilla Road Entry Ahead Right Left	U	B		1	7	-	131	1791	239	54.9%	-	-	-	1.5	40.8	2.6	
3/1+3/2	Towards Ongar Entry Left Ahead Right	U	C D		1	21:7	-	267	1894:1800	231+240	56.7 : 56.7%	-	-	-	2.0	27.5	2.8	
Ped Link: P1	Unnamed Ped Link	-	E		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P2	Unnamed Ped Link	-	F		1	7	-	0	-	0	0.0%	-	-	-	-	-	-	
Ped Link: P3	Unnamed Ped Link	-	G		1	5	-	0	-	0	0.0%	-	-	-	-	-	-	
C1 - R121 Larch Grove / R121 Clonsila Road							PRC for Signalled Lanes (%):	30.8	Total Delay for Signalled Lanes (pcuHr):			5.99	Cycle Time (s): 60					
							PRC Over All Lanes (%):	30.8	Total Delay Over All Lanes(pcuHr):			5.99						

Full Input Data And Results  
**Full Input Data And Results**

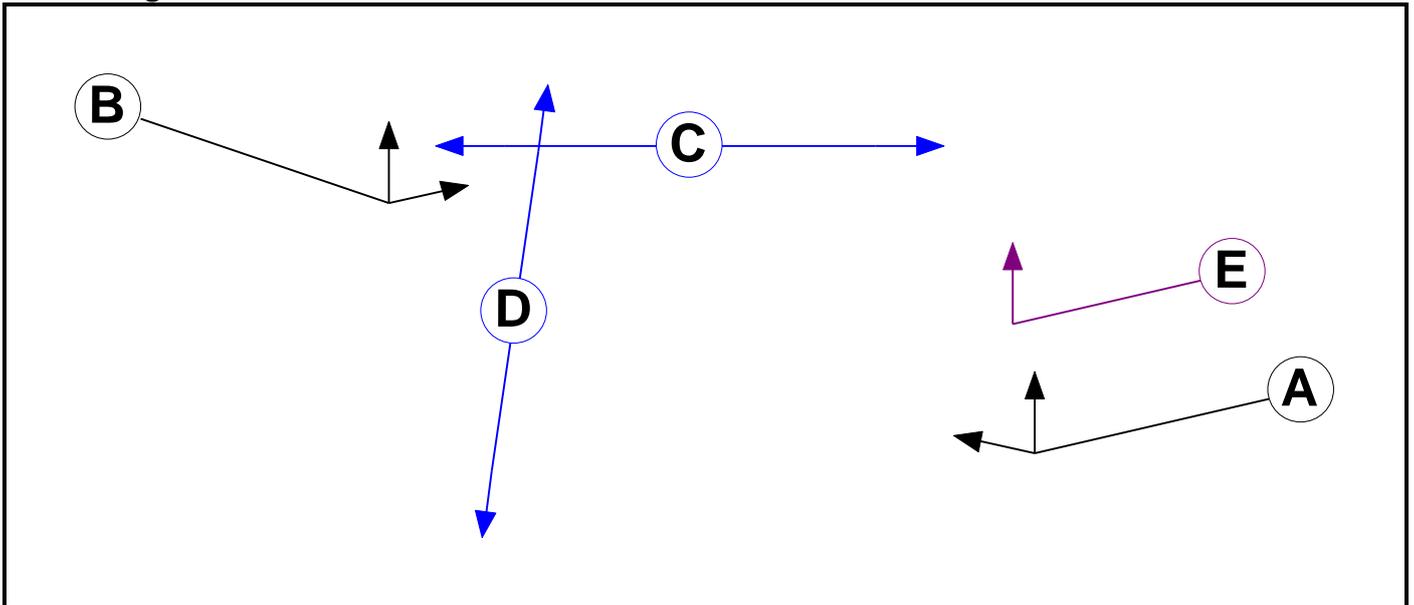
**User and Project Details**

<b>Project:</b>	DART
<b>Title:</b>	DART West Junction Modelling
<b>Location:</b>	R121 Larch Grove / R121 Clonsila Road
<b>Date Started:</b>	11/09/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction17_DS V3.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Pedestrian		5	5
D	Pedestrian		5	5
E	Ind. Arrow	A	4	4

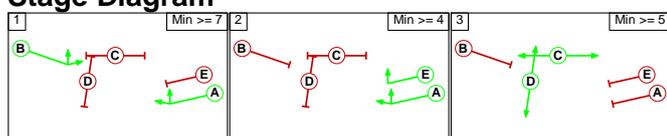
**Phase Intergreens Matrix**

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

**Phases in Stage**

Stage No.	Phases in Stage
1	A B
2	A E
3	C D

**Stage Diagram**



## Full Input Data And Results

### Phase Delays

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

### Prohibited Stage Change

	To Stage			
From Stage		1	2	3
	1		5	8
	2	5		8
	3	9	X	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (R121 Larch Grove Entry)	3/1 (Right)	1439	0	2/1	1.09	All	-	-	-	-	-

Full Input Data And Results

**Lane Input Data**

Junction: Junction 17 - R121 Larch Grove / R121 Clonsila 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 (R121 Larch Grove Entry)	O	A E	2	3	45.2	Geom	-	3.00	0.00	Y	Arm 3 Right	Inf
											Arm 5 Ahead	80.00
2/1 (Towards Ongar Entry)	U	B	2	3	173.9	Geom	-	3.20	0.00	Y	Arm 3 Left	8.00
											Arm 4 Ahead	70.00
3/1 (Church View Exit)	U		2	3	7.0	Inf	-	-	-	-	-	-
4/1 (R121 Larch Grove Exit)	U		2	3	45.2	Inf	-	-	-	-	-	-
5/1 (Towards Ongar Exit)	U		2	3	173.9	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS 2028 AM Peak'	08:00	09:00	01:00	
2: 'DS 2028 PM Peak'	17:00	18:00	01:00	
3: 'DS 2043 AM Peak'	08:00	09:00	01:00	
4: 'DS 2043 PM Peak'	17:00	18:00	01:00	

**Scenario 1: 'DS 2028 AM Peak'** (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination	
	Tot.	-
	Tot.	-

**Traffic Lane Flows**

Lane	Scenario 1: DS 2028 AM Peak
	Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road
1/1	484
2/1	564
3/1	0
4/1	564
5/1	484

**Lane Saturation Flows**

Junction: Junction 17 - R121 Larch Grove / R121 Clonsila 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 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 3 Right	Inf	0.0 %	1880	1880
				Arm 5 Ahead	80.00	100.0 %		
2/1 (Towards Ongar Entry)	3.20	0.00	Y	Arm 3 Left	8.00	0.0 %	1894	1894
				Arm 4 Ahead	70.00	100.0 %		
3/1 (Church View Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Towards Ongar Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

**Scenario 2: 'DS 2028 PM Peak'** (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 2: DS 2028 PM Peak
Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road	
1/1	243
2/1	225
3/1	0
4/1	225
5/1	243

**Lane Saturation Flows**

Junction: Junction 17 - R121 Larch Grove / R121 Clonsila 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 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 3 Right	Inf	0.0 %	1880	1880
				Arm 5 Ahead	80.00	100.0 %		
2/1 (Towards Ongar Entry)	3.20	0.00	Y	Arm 3 Left	8.00	0.0 %	1894	1894
				Arm 4 Ahead	70.00	100.0 %		
3/1 (Church View Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/1 (R121 Larch Grove Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (Towards Ongar Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 3: 'DS 2043 AM Peak'** (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

**Traffic Lane Flows**

Lane	Scenario 3: DS 2043 AM Peak
<b>Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	
1/1	508
2/1	640
3/1	0
4/1	640
5/1	508

**Lane Saturation Flows**

<b>Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>								
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 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 3 Right	Inf	0.0 %	1880	1880
				Arm 5 Ahead	80.00	100.0 %		
2/1 (Towards Ongar Entry)	3.20	0.00	Y	Arm 3 Left	8.00	0.0 %	1894	1894
				Arm 4 Ahead	70.00	100.0 %		
3/1 (Church View Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
4/1 (R121 Larch Grove Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Towards Ongar Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 4: 'DS 2043 PM Peak'** (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination	
Origin	Tot.	Tot.
		-

Full Input Data And Results

**Traffic Lane Flows**

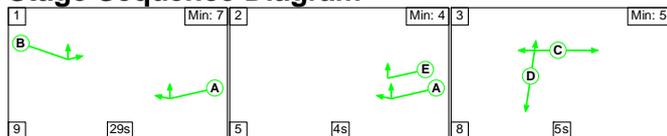
Lane	Scenario 4: DS 2043 PM Peak
<b>Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	
1/1	282
2/1	285
3/1	0
4/1	285
5/1	282

**Lane Saturation Flows**

<b>Junction: Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>								
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 (R121 Larch Grove Entry)	3.00	0.00	Y	Arm 3 Right Arm 5 Ahead	Inf 80.00	0.0 % 100.0 %	1880	1880
2/1 (Towards Ongar Entry)	3.20	0.00	Y	Arm 3 Left Arm 4 Ahead	8.00 70.00	0.0 % 100.0 %	1894	1894
3/1 (Church View Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
4/1 (R121 Larch Grove Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/1 (Towards Ongar Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

**Scenario 1: 'DS 2028 AM Peak' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')**

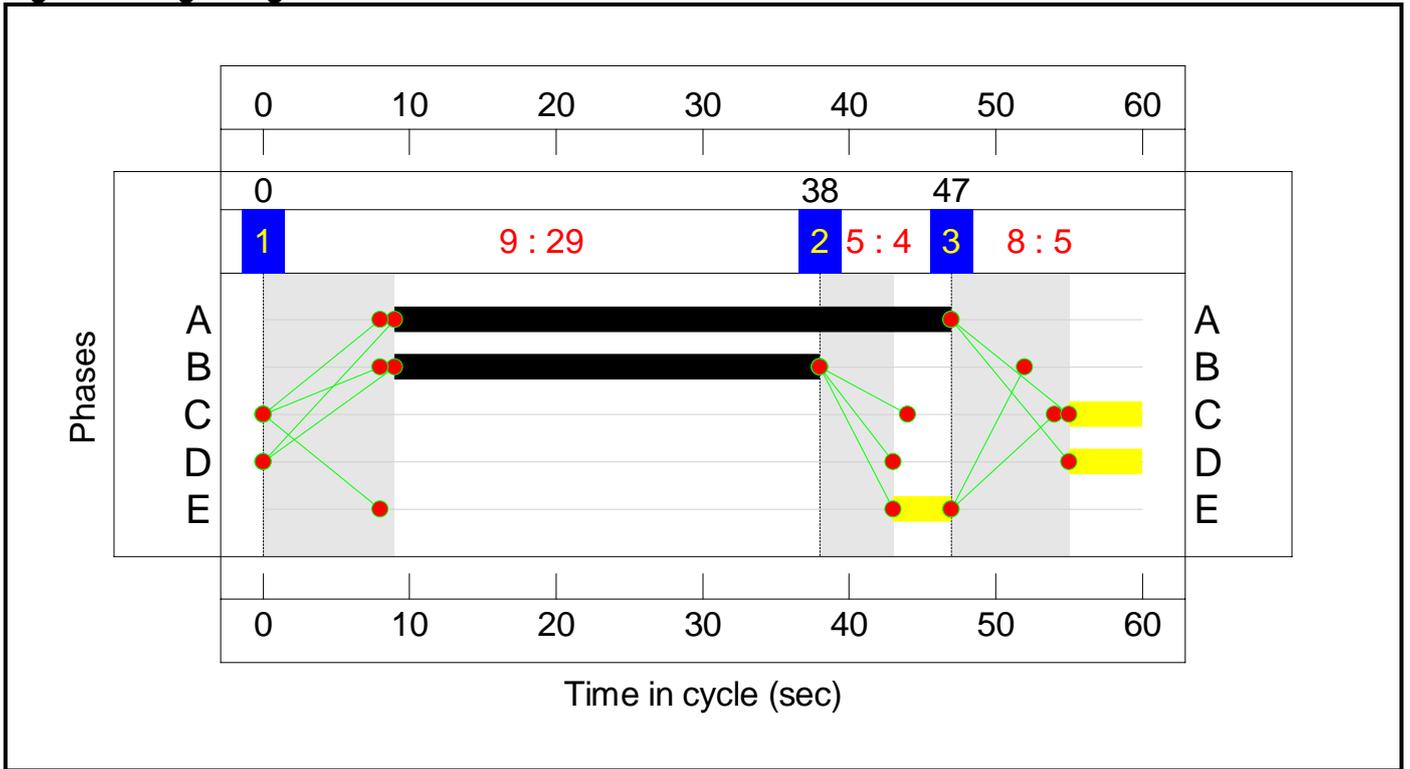
**Stage Sequence Diagram**



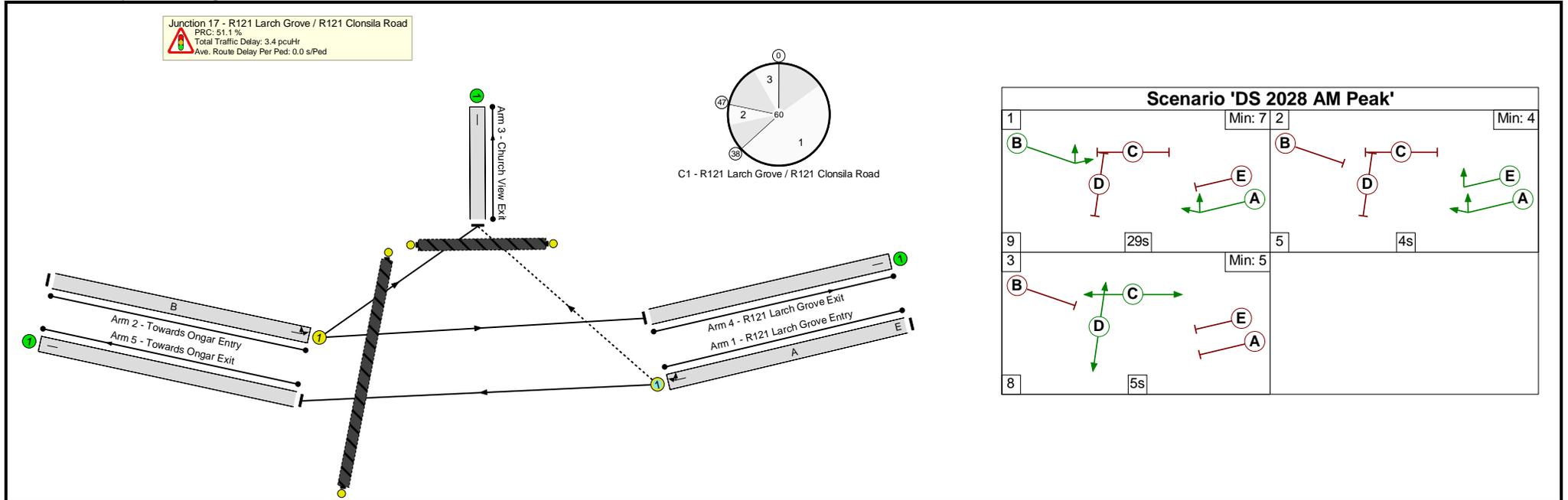
**Stage Timings**

Stage	1	2	3
Duration	29	4	5
Change Point	0	38	47

### 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>59.6%</b>
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>59.6%</b>
1/1	R121 Larch Grove Entry Right Ahead	O	N/A	N/A	A	E	1	38	4	484	1880	1222	39.6%
2/1	Towards Ongar Entry Left Ahead	U	N/A	N/A	B		1	29	-	564	1894	947	59.6%
3/1	Church View Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
5/1	Towards Ongar Exit	U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	C		1	5	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	5	-	0	-	0	0.0%

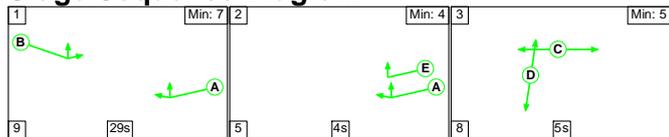
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	2.3	1.1	0.0	3.4	-	-	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	0	0	0	2.3	1.1	0.0	3.4	-	-	-	-
1/1	484	484	0	0	0	0.7	0.3	-	1.0	7.4	3.8	0.3	4.1
2/1	564	564	-	-	-	1.7	0.7	-	2.4	15.4	6.6	0.7	7.3
3/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road			PRC for Signalled Lanes (%):		51.1	Total Delay for Signalled Lanes (pcuHr):		3.40	Cycle Time (s): 60				
			PRC Over All Lanes (%):		51.1	Total Delay Over All Lanes(pcuHr):		3.40					

Full Input Data And Results

Scenario 2: 'DS 2028 PM Peak' (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

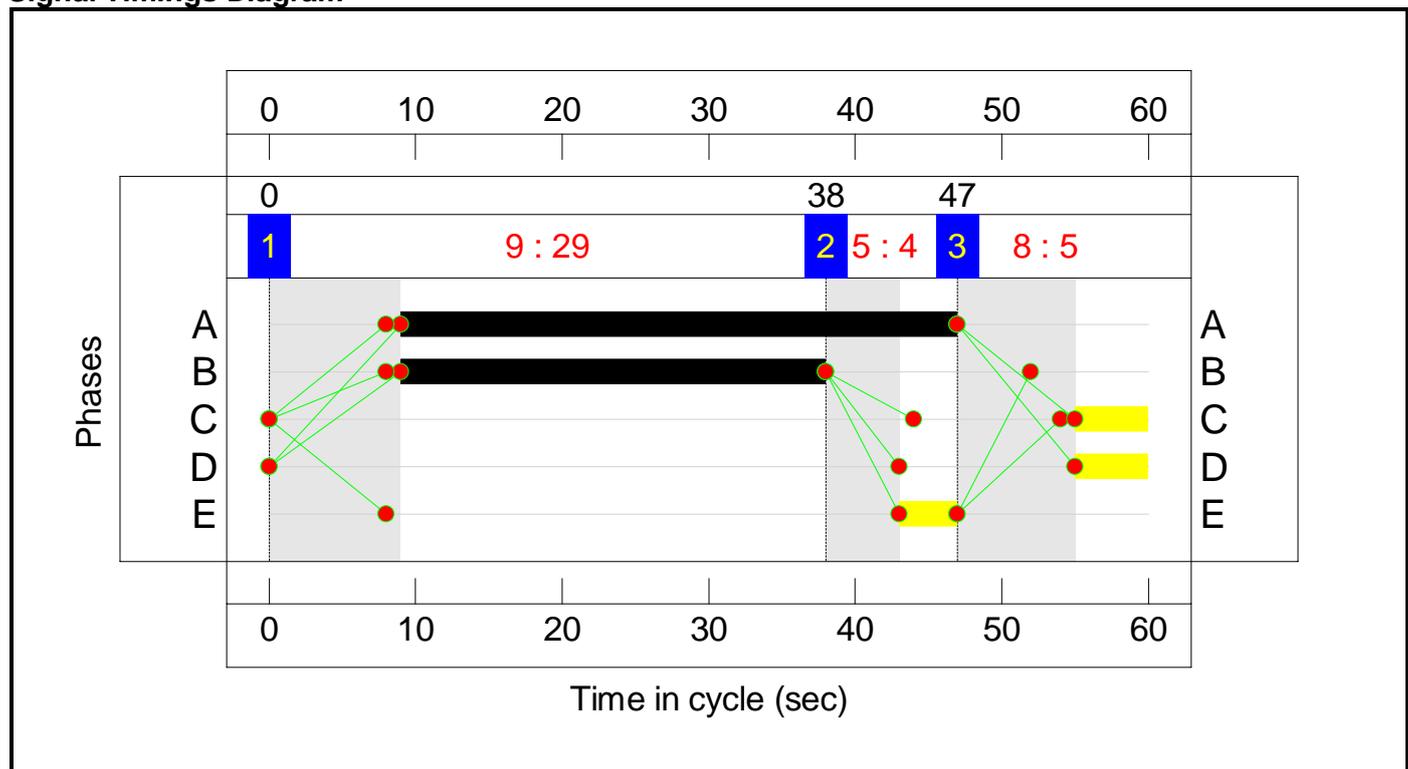
Stage Sequence Diagram



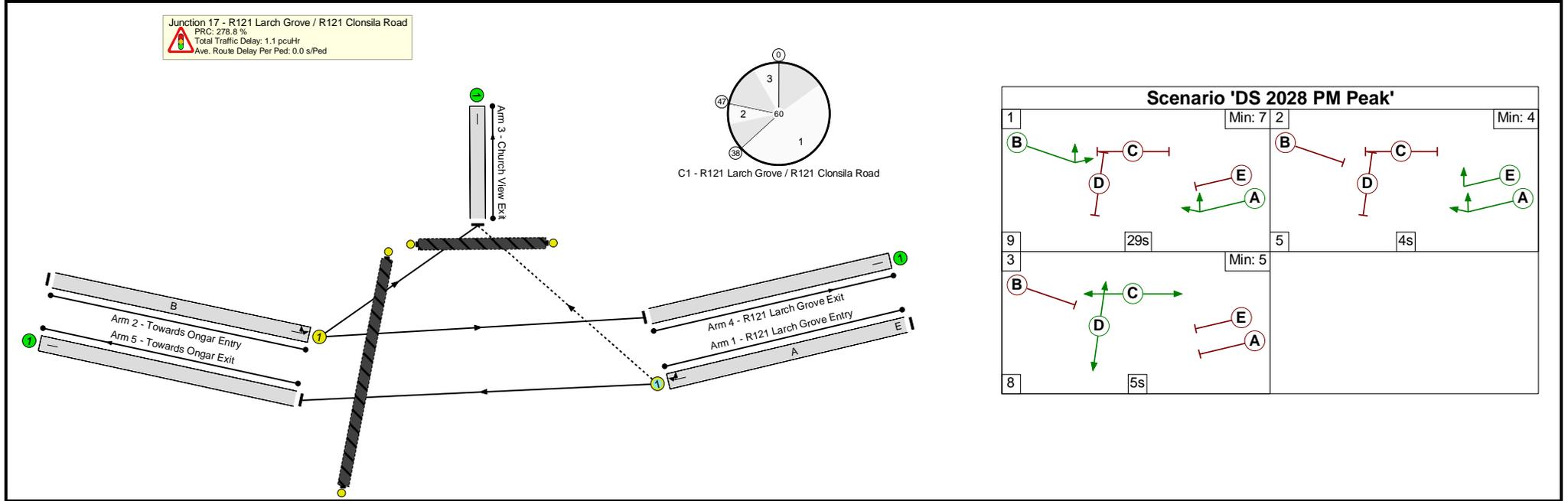
Stage Timings

Stage	1	2	3
Duration	29	4	5
Change Point	0	38	47

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>23.8%</b>
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>23.8%</b>
1/1	R121 Larch Grove Entry Right Ahead	O	N/A	N/A	A	E	1	38	4	243	1880	1222	19.9%
2/1	Towards Ongar Entry Left Ahead	U	N/A	N/A	B		1	29	-	225	1894	947	23.8%
3/1	Church View Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
5/1	Towards Ongar Exit	U	N/A	N/A	-		-	-	-	243	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	C		1	5	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	5	-	0	-	0	0.0%

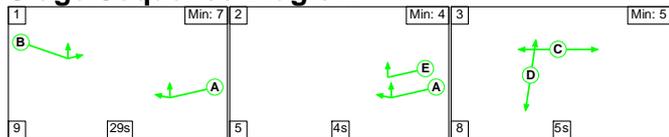
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	0.8	0.3	0.0	1.1	-	-	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	0	0	0	0.8	0.3	0.0	1.1	-	-	-	-
1/1	243	243	0	0	0	0.3	0.1	-	0.4	6.1	1.6	0.1	1.7
2/1	225	225	-	-	-	0.5	0.2	-	0.7	11.0	2.1	0.2	2.3
3/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	243	243	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road			PRC for Signalled Lanes (%):		278.8	Total Delay for Signalled Lanes (pcuHr):		1.10	Cycle Time (s): 60				
			PRC Over All Lanes (%):		278.8	Total Delay Over All Lanes(pcuHr):		1.10					

Full Input Data And Results

Scenario 3: 'DS 2043 AM Peak' (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

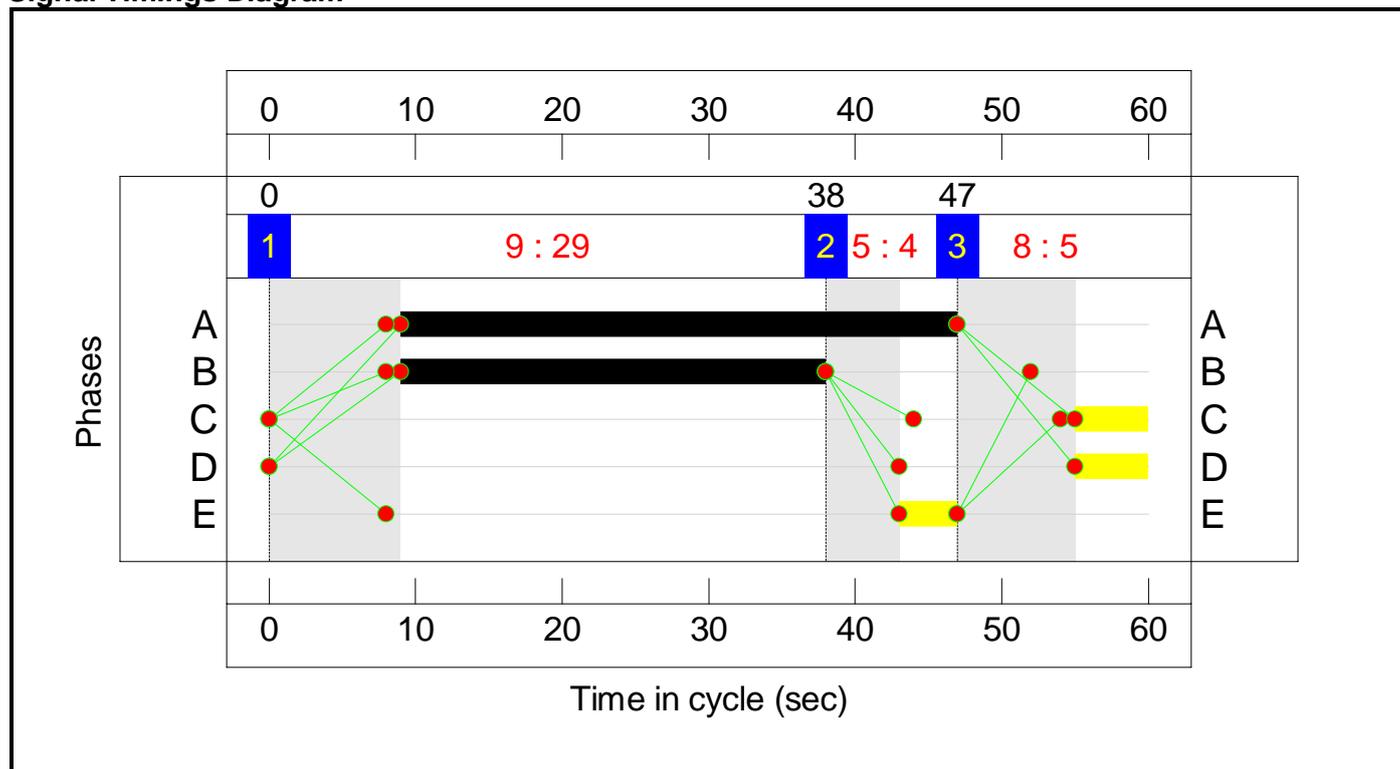
Stage Sequence Diagram



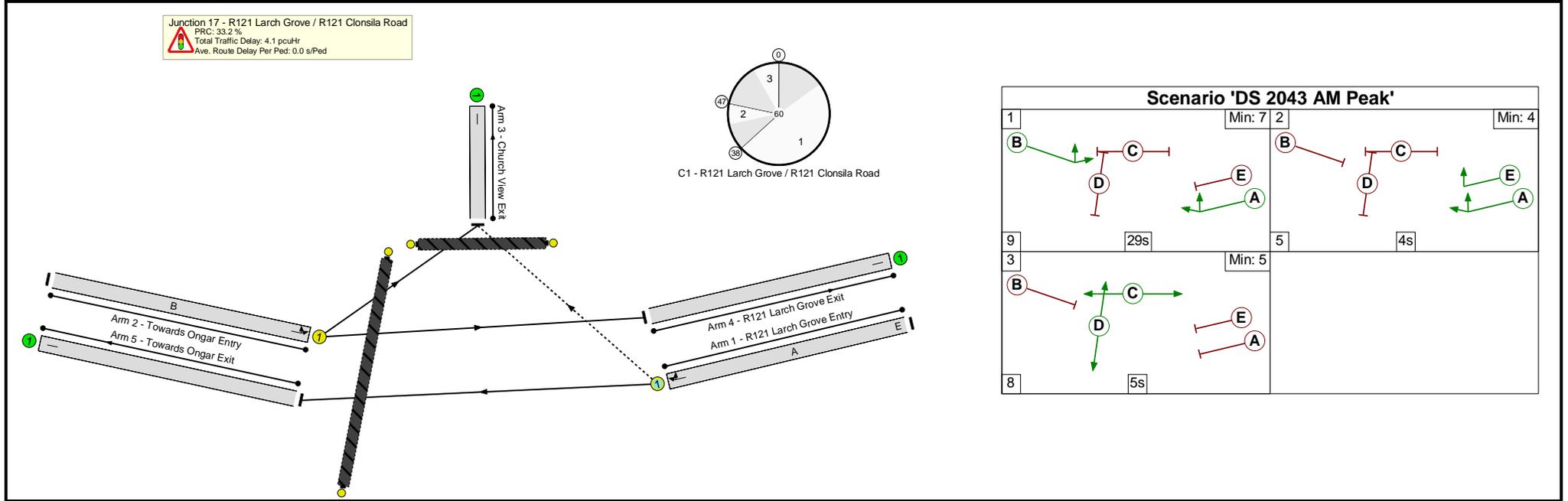
Stage Timings

Stage	1	2	3
Duration	29	4	5
Change Point	0	38	47

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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>67.6%</b>
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>67.6%</b>
1/1	R121 Larch Grove Entry Right Ahead	O	N/A	N/A	A	E	1	38	4	508	1880	1222	41.6%
2/1	Towards Ongar Entry Left Ahead	U	N/A	N/A	B		1	29	-	640	1894	947	67.6%
3/1	Church View Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	640	Inf	Inf	0.0%
5/1	Towards Ongar Exit	U	N/A	N/A	-		-	-	-	508	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	C		1	5	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	5	-	0	-	0	0.0%

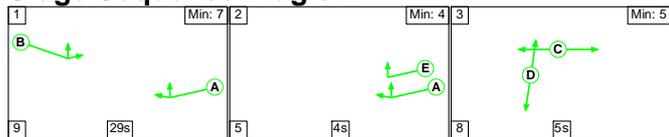
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	2.7	1.4	0.0	4.1	-	-	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	0	0	0	2.7	1.4	0.0	4.1	-	-	-	-
1/1	508	508	0	0	0	0.7	0.4	-	1.1	7.6	4.0	0.4	4.3
2/1	640	640	-	-	-	2.0	1.0	-	3.0	17.2	8.0	1.0	9.0
3/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	640	640	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	508	508	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road			PRC for Signalled Lanes (%):		33.2	Total Delay for Signalled Lanes (pcuHr):		4.12	Cycle Time (s): 60				
			PRC Over All Lanes (%):		33.2	Total Delay Over All Lanes(pcuHr):		4.12					

Full Input Data And Results

**Scenario 4: 'DS 2043 PM Peak'** (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

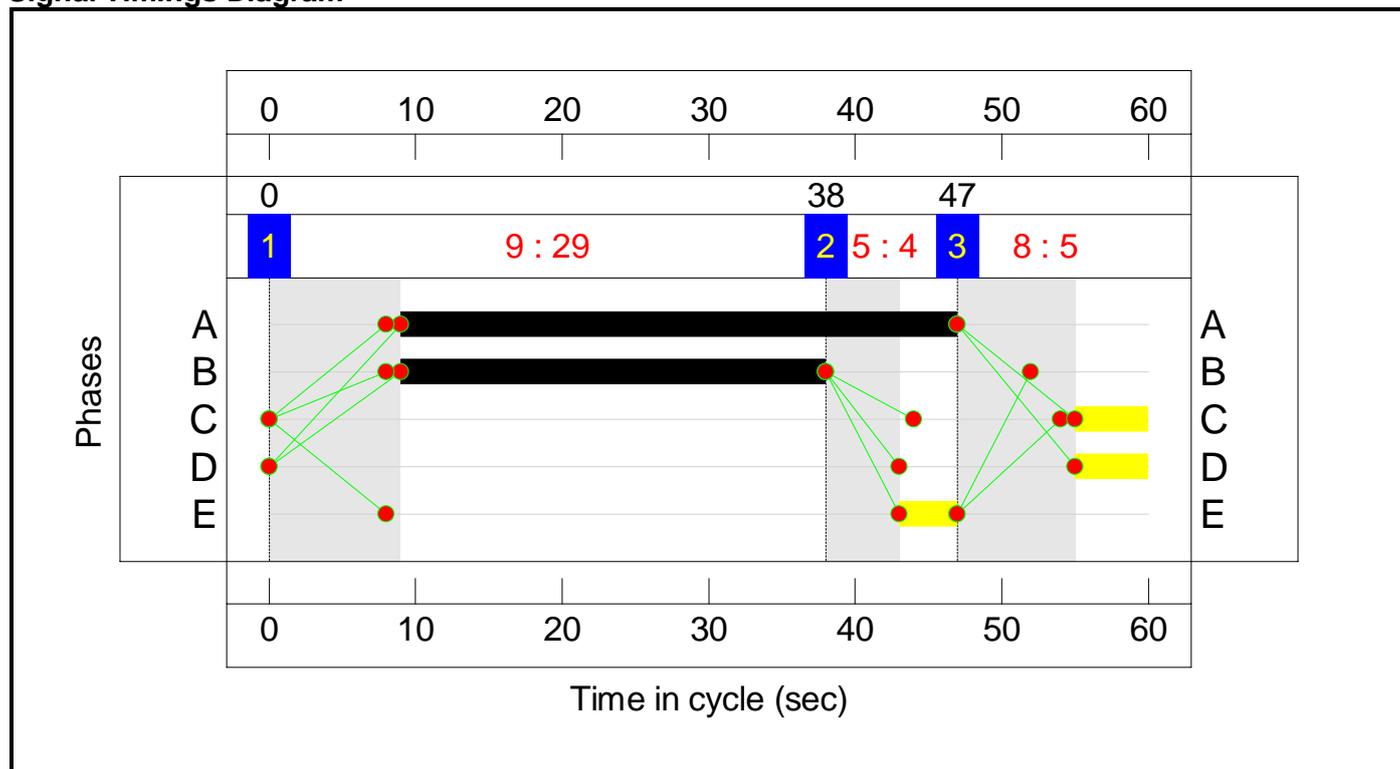
**Stage Sequence Diagram**



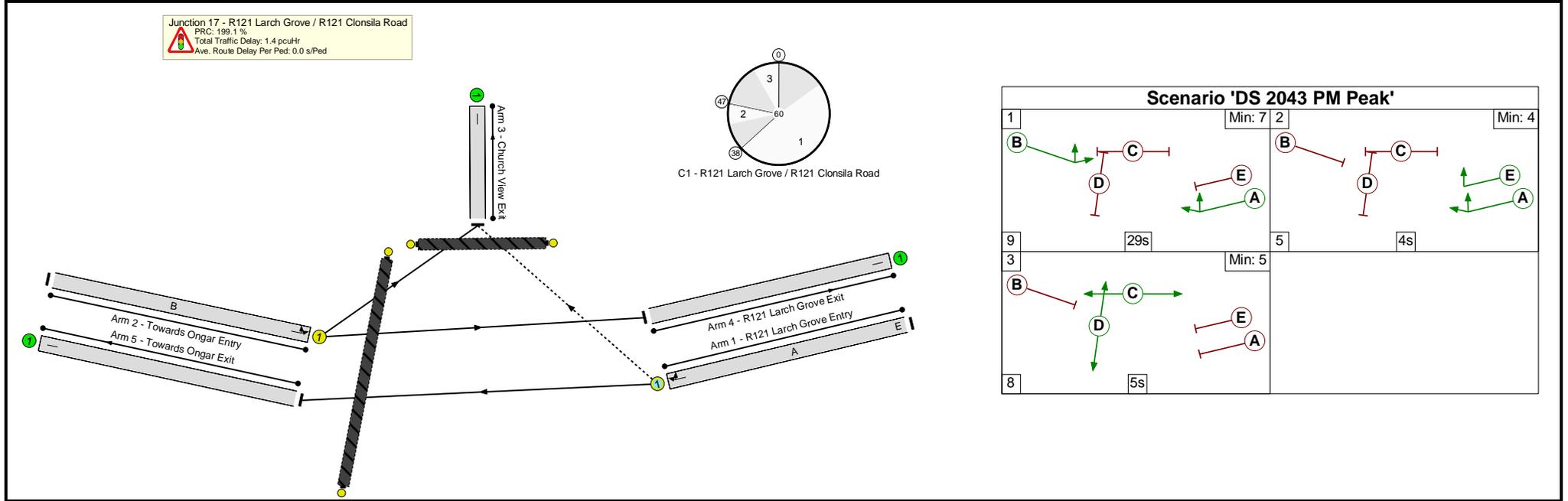
**Stage Timings**

Stage	1	2	3
Duration	29	4	5
Change Point	0	38	47

**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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	30.1%
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	30.1%
1/1	R121 Larch Grove Entry Right Ahead	O	N/A	N/A	A	E	1	38	4	282	1880	1222	23.1%
2/1	Towards Ongar Entry Left Ahead	U	N/A	N/A	B		1	29	-	285	1894	947	30.1%
3/1	Church View Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/1	R121 Larch Grove Exit	U	N/A	N/A	-		-	-	-	285	Inf	Inf	0.0%
5/1	Towards Ongar Exit	U	N/A	N/A	-		-	-	-	282	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	C		1	5	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	D		1	5	-	0	-	0	0.0%

Full Input Data And Results

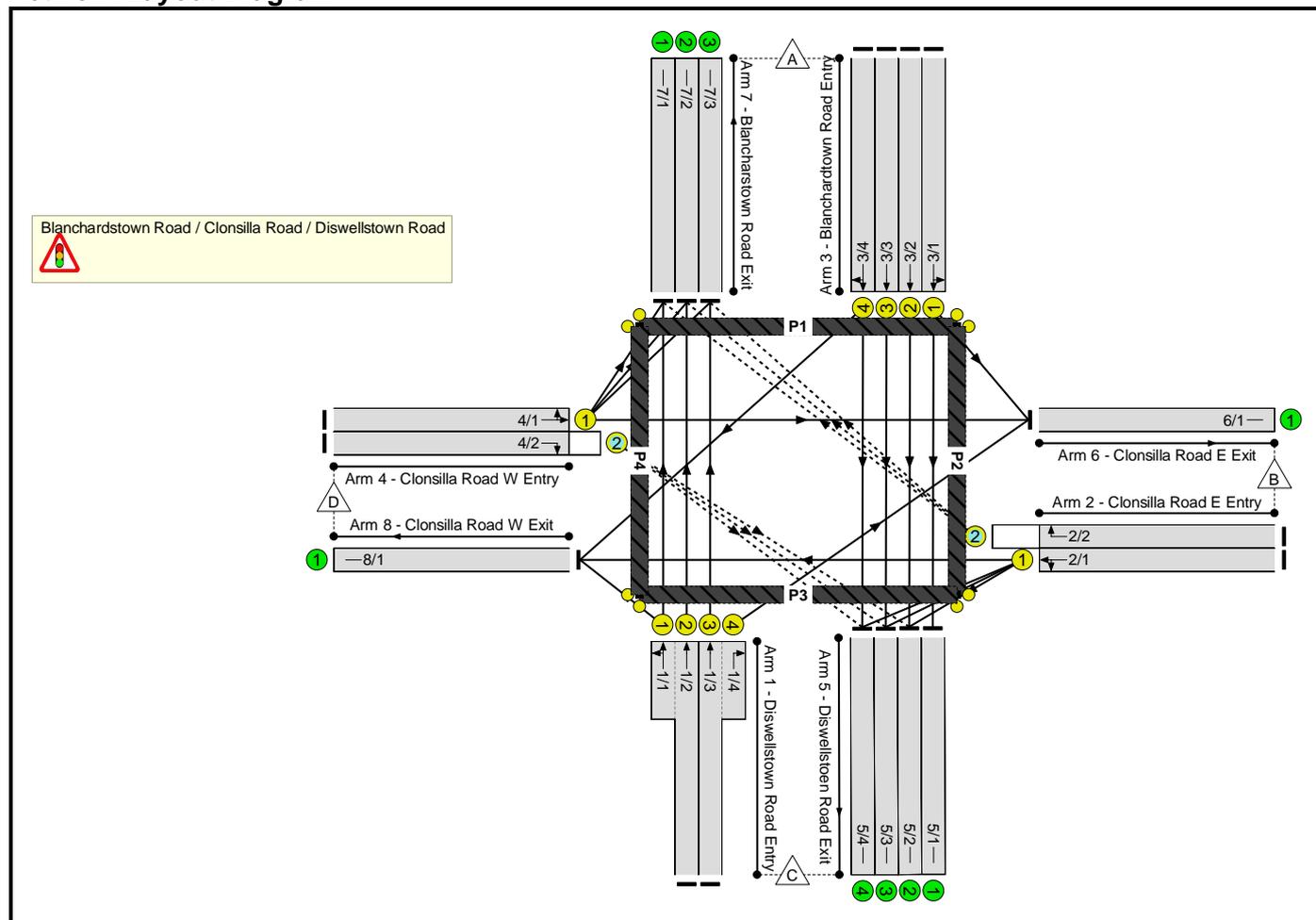
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	1.0	0.4	0.0	1.4	-	-	-	-
<b>Junction 17 - R121 Larch Grove / R121 Clonsila Road</b>	-	-	0	0	0	1.0	0.4	0.0	1.4	-	-	-	-
1/1	282	282	0	0	0	0.3	0.1	-	0.5	6.2	1.9	0.1	2.0
2/1	285	285	-	-	-	0.7	0.2	-	0.9	11.6	2.8	0.2	3.0
3/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	285	285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	282	282	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - R121 Larch Grove / R121 Clonsila Road			PRC for Signalled Lanes (%): 199.1		Total Delay for Signalled Lanes (pcuHr): 1.40		Cycle Time (s): 60						
			PRC Over All Lanes (%): 199.1		Total Delay Over All Lanes(pcuHr): 1.40								

Full Input Data And Results  
**Full Input Data And Results**

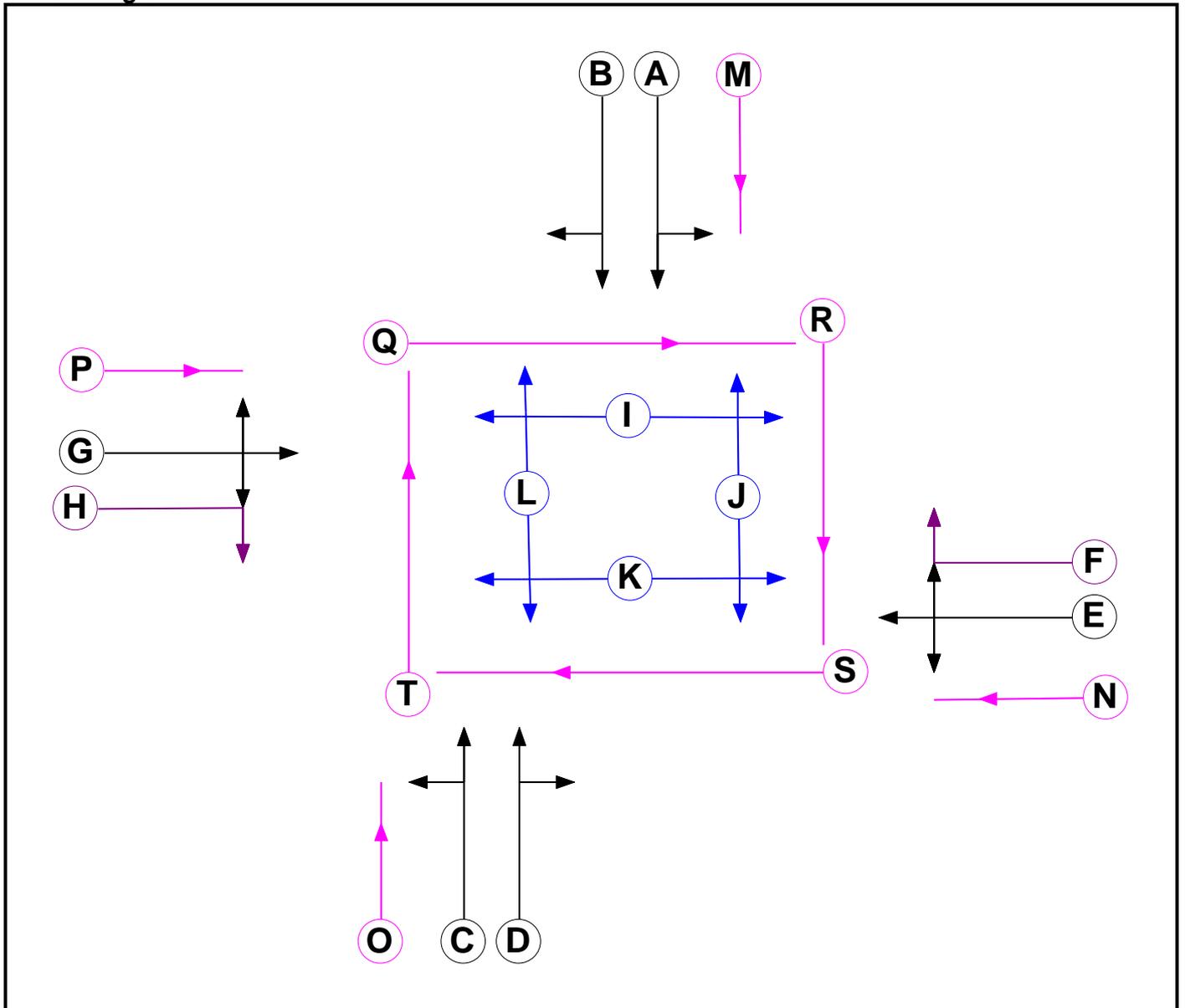
**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Blanchardstown Road / Clonsilla Road / Diswellstown Road
<b>Date Started:</b>	11/16/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction10_DS_Option C_v1.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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		-9999	7
B	Traffic		-9999	7
C	Traffic		-9999	7
D	Traffic		-9999	7
E	Traffic		-9999	7
F	Ind. Arrow	E	-9999	4
G	Traffic		-9999	7
H	Ind. Arrow	G	-9999	4
I	Pedestrian		-9999	5
J	Pedestrian		-9999	5
K	Pedestrian		-9999	5
L	Pedestrian		-9999	5
M	Cycle		-9999	7
N	Cycle		-9999	7
O	Cycle		-9999	7
P	Cycle		-9999	7
Q	Cycle		-9999	7
R	Cycle		-9999	7
S	Cycle		-9999	7
T	Cycle		-9999	7

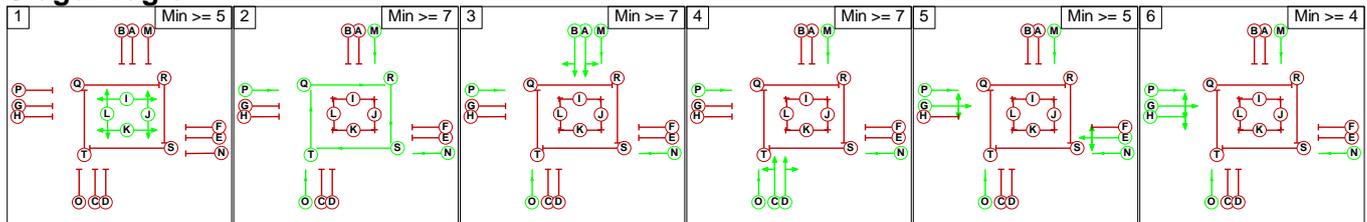
**Phase Intergrens Matrix**

		Starting Phase																			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Terminating Phase	A	-	-	-	5	6	5	5	5	5	8	8	-	-	-	-	-	5	7	8	-
	B	-	-	5	6	6	5	6	6	5	-	8	8	-	-	-	-	5	-	9	7
	C	-	5	-	-	5	5	7	6	9	-	5	9	-	-	-	-	8	-	5	7
	D	5	5	-	-	5	5	7	6	9	9	5	-	-	-	-	-	8	8	5	-
	E	5	5	5	5	-	-	-	5	9	6	8	8	-	-	-	-	9	5	7	7
	F	5	5	5	5	-	-	6	-	9	6	-	-	-	-	-	-	9	5	-	-
	G	5	5	5	5	-	5	-	-	7	8	9	5	-	-	-	-	6	7	8	5
	H	5	5	5	5	6	-	-	-	-	-	9	5	-	-	-	-	-	-	-	5
	I	16	16	16	16	16	16	16	-	-	-	-	-	16	-	-	16	-	-	-	16
	J	15	-	-	15	15	15	15	-	-	-	-	-	15	15	-	-	15	-	-	-
	K	15	15	15	15	15	-	15	15	-	-	-	-	15	15	-	-	15	-	-	-
	L	-	16	16	-	16	-	16	16	-	-	-	-	-	-	16	16	-	-	16	-
	M	-	-	-	-	-	-	-	-	5	7	-	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	5	7	-	-	-	-	-	-	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	5	8	-	-	-	-	-	-	-	-
	P	-	-	-	-	-	-	-	-	7	-	-	5	-	-	-	-	-	-	-	-
	Q	5	5	5	5	5	5	5	-	-	9	-	-	-	-	-	-	-	-	-	-
	R	5	-	-	5	5	5	5	-	-	-	9	-	-	-	-	-	-	-	-	-
	S	5	5	5	5	5	-	5	-	-	-	-	9	-	-	-	-	-	-	-	-
	T	-	5	5	-	5	-	6	6	9	-	-	-	-	-	-	-	-	-	-	-

**Phases in Stage**

Stage No.	Phases in Stage
1	IJKL
2	MNOPQRST
3	ABMNOP
4	CDMNOP
5	EGMNOP
6	GHMNOP

**Stage Diagram**



Full Input Data And Results

**Phase Delays**

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	Q	Gaining absolute	16	16
1	2	R	Gaining absolute	16	16
5	1	J	Gaining absolute	9	9
5	1	L	Gaining absolute	9	9
5	1	N	Losing	2	2
5	1	P	Losing	2	2

**Prohibited Stage Change**

		To Stage					
		1	2	3	4	5	6
From Stage	1		16	16	16	16	16
	2	9		5	5	6	6
	3	8	9		6	6	6
	4	9	8	5		7	X
	5	9	9	5	5		5
	6	9	8	5	5	6	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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)
2/2 (Clonsilla Road E Entry)	7/1 (Right)	1439	0	4/1	1.09	All	3.00	-	0.50	3	2.00
	7/2 (Right)	1439	0	4/1	1.09	All					
	7/3 (Right)	1439	0	4/1	1.09	All					
4/2 (Clonsilla Road W Entry)	5/2 (Right)	1439	0	2/1	1.09	All	2.00	-	0.50	2	2.00
	5/3 (Right)	1439	0	2/1	1.09	All					
	5/4 (Right)	1439	0	2/1	1.09	All					

Full Input Data And Results

**Lane Input Data**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	U	C	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 7 Ahead	124.00
											Arm 8 Left	7.50
1/2 (Diswellstown Road Entry)	U	C	2	3	139.1	Geom	-	3.00	0.00	Y	Arm 7 Ahead	124.00
1/3 (Diswellstown Road Entry)	U	D	2	3	139.1	Geom	-	3.00	0.00	Y	Arm 7 Ahead	124.00
1/4 (Diswellstown Road Entry)	U	D	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 6 Right	7.50
2/1 (Clonsilla Road E Entry)	U	E	2	3	25.2	Geom	-	3.00	0.00	Y	Arm 5 Left	7.50
											Arm 8 Ahead	Inf
2/2 (Clonsilla Road E Entry)	O	E F	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Right	16.00
3/1 (Blanchardstown Road Entry)	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Left	7.50
3/2 (Blanchardstown Road Entry)	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
3/3 (Blanchardstown Road Entry)	U	A	2	3	50.4	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
3/4 (Blanchardstown Road Entry)	U	B	2	3	12.3	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Right	10.00
4/1 (Clonsilla Road W Entry)	U	G	2	3	65.2	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Left	7.50
4/2 (Clonsilla Road W Entry)	O	G H	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	10.00
5/1 (Diswellstoen Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Diswellstoen Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/3 (Diswellstoen Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

**Full Input Data And Results**

5/4 (Diswellstoen Road Exit)	U		2	3	139.1	Inf	-	-	-	-	-	-
6/1 (Clonsilla Road E Exit)	U		2	3	25.2	Inf	-	-	-	-	-	-
7/1 (Blancharstown Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2 (Blancharstown Road Exit)	U		2	3	51.5	Inf	-	-	-	-	-	-
7/3 (Blancharstown Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Clonsilla Road W Exit)	U		2	3	65.2	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS 2028 AM Peak'	08:00	09:00	01:00	
2: 'DS 2028 PM Peak'	17:00	18:00	01:00	
3: 'DS 2043 AM Peak'	08:00	09:00	01:00	
4: 'DS 2043 PM Peak'	17:00	18:00	01:00	

**Scenario 1: 'DS 2028 AM Peak (120)' (FG1: 'DS 2028 AM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	131	606	0	737
	B	37	0	258	129	424
	C	833	181	0	230	1244
	D	363	288	132	0	783
	Tot.	1233	600	996	359	3188

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 1: DS 2028 AM Peak (120)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	291
1/2 (with short)	664(In) 373(Out)
1/3 (with short)	580(In) 399(Out)
1/4 (short)	181
2/1	387
2/2	37
3/1	164
3/2	191
3/3	191
3/4	191
4/1	651
4/2	132
5/1	33
5/2	321
5/3	321
5/4	321
6/1	600
7/1	194
7/2	507
7/3	532
8/1	359

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	21.0 %	1650	1650
				Arm 8 Left	7.50	79.0 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	66.7 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	33.3 %	1690	1690
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	20.1 %	1651	1651
				Arm 6 Left	7.50	79.9 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	44.2 %	1723	1723
				Arm 7 Left	7.50	55.8 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 2: 'DS 2028 PM Peak (120)'** (FG2: 'DS 2028 PM Peak', Plan 1: 'With Seperate RT Stage')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	29	712	39	780
	B	142	0	341	248	731
	C	491	111	0	121	723
	D	74	147	111	0	332
	Tot.	707	287	1164	408	2566

**Traffic Lane Flows**

Lane	Scenario 2: DS 2028 PM Peak (120)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	143
1/2 (with short)	381(In) 238(Out)
1/3 (with short)	342(In) 231(Out)
1/4 (short)	111
2/1	589
2/2	142
3/1	192
3/2	198
3/3	198
3/4	192
4/1	221
4/2	111
5/1	163
5/2	349
5/3	348
5/4	304
6/1	287
7/1	94
7/2	310
7/3	303
8/1	408

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	15.4 %	1635	1635
				Arm 8 Left	7.50	84.6 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.9 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.1 %	1716	1716
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.9 %	1859	1859
				Arm 6 Left	7.50	15.1 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.7 %	1858	1858
				Arm 8 Right	10.00	20.3 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	66.5 %	1795	1795
				Arm 7 Left	7.50	33.5 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 3: 'DS 2043 AM Peak (120)'** (FG3: 'DS 2043 AM Peak', Plan 1: 'With Seperate RT Stage')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	24	850	0	874
	B	36	0	289	162	487
	C	864	52	0	205	1121
	D	195	360	206	0	761
	Tot.	1095	436	1345	367	3243

**Traffic Lane Flows**

Lane	Scenario 3: DS 2043 AM Peak (120)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	258
1/2 (with short)	623(In) 365(Out)
1/3 (with short)	498(In) 446(Out)
1/4 (short)	52
2/1	451
2/2	36
3/1	215
3/2	219
3/3	219
3/4	221
4/1	555
4/2	206
5/1	191
5/2	384
5/3	385
5/4	385
6/1	436
7/1	130
7/2	442
7/3	523
8/1	367

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	20.5 %	1649	1649
				Arm 8 Left	7.50	79.5 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	64.1 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	35.9 %	1697	1697
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	88.8 %	1873	1873
				Arm 6 Left	7.50	11.2 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	64.9 %	1789	1789
				Arm 7 Left	7.50	35.1 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 4: 'DS 2043 PM Peak (120)' (FG4: 'DS 2043 PM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	30	694	39	763
	B	138	0	369	276	783
	C	540	134	0	134	808
	D	80	163	141	0	384
	Tot.	758	327	1204	449	2738

**Traffic Lane Flows**

Lane	Scenario 4: DS 2043 PM Peak (120)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	214
1/2 (with short)	442(In) 228(Out)
1/3 (with short)	366(In) 232(Out)
1/4 (short)	134
2/1	645
2/2	138
3/1	188
3/2	193
3/3	194
3/4	188
4/1	243
4/2	141
5/1	158
5/2	363
5/3	364
5/4	319
6/1	327
7/1	153
7/2	300
7/3	305
8/1	449

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	37.4 %	1695	1695
				Arm 8 Left	7.50	62.6 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.2 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.8 %	1718	1718
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.0 %	1856	1856
				Arm 6 Left	7.50	16.0 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.3 %	1857	1857
				Arm 8 Right	10.00	20.7 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	67.1 %	1797	1797
				Arm 7 Left	7.50	32.9 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 5: 'DS 2028 AM Peak (150)' (FG1: 'DS 2028 AM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	131	606	0	737
	B	37	0	258	129	424
	C	833	181	0	230	1244
	D	363	288	132	0	783
	Tot.	1233	600	996	359	3188

**Traffic Lane Flows**

Lane	Scenario 5: DS 2028 AM Peak (150)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	279
1/2 (with short)	650(In) 371(Out)
1/3 (with short)	594(In) 413(Out)
1/4 (short)	181
2/1	387
2/2	37
3/1	165
3/2	190
3/3	190
3/4	192
4/1	651
4/2	132
5/1	34
5/2	320
5/3	320
5/4	322
6/1	600
7/1	182
7/2	505
7/3	546
8/1	359

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	17.6 %	1641	1641
				Arm 8 Left	7.50	82.4 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	66.7 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	33.3 %	1690	1690
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	20.6 %	1653	1653
				Arm 6 Left	7.50	79.4 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	44.2 %	1723	1723
				Arm 7 Left	7.50	55.8 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 6: 'DS 2028 PM Peak (150)' (FG2: 'DS 2028 PM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	29	712	39	780
	B	142	0	341	248	731
	C	491	111	0	121	723
	D	74	147	111	0	332
	Tot.	707	287	1164	408	2566

**Traffic Lane Flows**

Lane	Scenario 6: DS 2028 PM Peak (150)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	146
1/2 (with short)	378(In) 232(Out)
1/3 (with short)	345(In) 234(Out)
1/4 (short)	111
2/1	589
2/2	142
3/1	192
3/2	198
3/3	198
3/4	192
4/1	221
4/2	111
5/1	163
5/2	349
5/3	348
5/4	304
6/1	287
7/1	97
7/2	304
7/3	306
8/1	408

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	17.1 %	1640	1640
				Arm 8 Left	7.50	82.9 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.9 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.1 %	1716	1716
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.9 %	1859	1859
				Arm 6 Left	7.50	15.1 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.7 %	1858	1858
				Arm 8 Right	10.00	20.3 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	66.5 %	1795	1795
				Arm 7 Left	7.50	33.5 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 7: 'DS 2043 AM Peak (150)' (FG3: 'DS 2043 AM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	24	850	0	874
	B	36	0	289	162	487
	C	864	52	0	205	1121
	D	195	360	206	0	761
	Tot.	1095	436	1345	367	3243

**Traffic Lane Flows**

Lane	Scenario 7: DS 2043 AM Peak (150)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	244
1/2 (with short)	601(In) 357(Out)
1/3 (with short)	520(In) 468(Out)
1/4 (short)	52
2/1	451
2/2	36
3/1	215
3/2	219
3/3	220
3/4	220
4/1	555
4/2	206
5/1	191
5/2	384
5/3	386
5/4	384
6/1	436
7/1	116
7/2	434
7/3	545
8/1	367

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	16.0 %	1637	1637
				Arm 8 Left	7.50	84.0 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	64.1 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	35.9 %	1697	1697
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	88.8 %	1873	1873
				Arm 6 Left	7.50	11.2 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	64.9 %	1789	1789
				Arm 7 Left	7.50	35.1 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 8: 'DS 2043 PM Peak (150)' (FG4: 'DS 2043 PM Peak', Plan 1: 'With Seperate RT Stage')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	30	694	39	763
	B	138	0	369	276	783
	C	540	134	0	134	808
	D	80	163	141	0	384
	Tot.	758	327	1204	449	2738

**Traffic Lane Flows**

Lane	Scenario 8: DS 2043 PM Peak (150)
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	206
1/2 (with short)	436(In) 230(Out)
1/3 (with short)	372(In) 238(Out)
1/4 (short)	134
2/1	645
2/2	138
3/1	188
3/2	193
3/3	194
3/4	188
4/1	243
4/2	141
5/1	158
5/2	363
5/3	364
5/4	319
6/1	327
7/1	145
7/2	302
7/3	311
8/1	449

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	35.0 %	1688	1688
				Arm 8 Left	7.50	65.0 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.2 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.8 %	1718	1718
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.0 %	1856	1856
				Arm 6 Left	7.50	16.0 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.3 %	1857	1857
				Arm 8 Right	10.00	20.7 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	67.1 %	1797	1797
				Arm 7 Left	7.50	32.9 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 9: 'DS 2028 AM Peak (120) - Traffic Only ' (FG1: 'DS 2028 AM Peak', Plan 3: 'Traffic Only')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	131	606	0	737
	B	37	0	258	129	424
	C	833	181	0	230	1244
	D	363	288	132	0	783
	Tot.	1233	600	996	359	3188

**Traffic Lane Flows**

Lane	Scenario 9: DS 2028 AM Peak (120) - Traffic Only
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	290
1/2 (with short)	657(In) 367(Out)
1/3 (with short)	587(In) 406(Out)
1/4 (short)	181
2/1	387
2/2	37
3/1	160
3/2	193
3/3	192
3/4	192
4/1	651
4/2	132
5/1	29
5/2	323
5/3	322
5/4	322
6/1	600
7/1	193
7/2	501
7/3	539
8/1	359

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	20.7 %	1649	1649
				Arm 8 Left	7.50	79.3 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	66.7 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	33.3 %	1690	1690
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	18.1 %	1646	1646
				Arm 6 Left	7.50	81.9 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	44.2 %	1723	1723
				Arm 7 Left	7.50	55.8 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 10: 'DS 2028 PM Peak (120) - Traffic Only' (FG2: 'DS 2028 PM Peak', Plan 3: 'Traffic Only')**  
**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
		A	B	C	D	Tot.
Origin	A	0	29	712	39	780
	B	142	0	341	248	731
	C	491	111	0	121	723
	D	74	147	111	0	332
	Tot.	707	287	1164	408	2566

**Traffic Lane Flows**

Lane	Scenario 10: DS 2028 PM Peak (120) - Traffic Only
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	191
1/2 (with short)	404(In) 213(Out)
1/3 (with short)	319(In) 208(Out)
1/4 (short)	111
2/1	589
2/2	142
3/1	191
3/2	199
3/3	199
3/4	191
4/1	221
4/2	111
5/1	162
5/2	350
5/3	349
5/4	303
6/1	287
7/1	142
7/2	285
7/3	280
8/1	408

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	36.6 %	1693	1693
				Arm 8 Left	7.50	63.4 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.9 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.1 %	1716	1716
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.8 %	1859	1859
				Arm 6 Left	7.50	15.2 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.6 %	1858	1858
				Arm 8 Right	10.00	20.4 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	66.5 %	1795	1795
				Arm 7 Left	7.50	33.5 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)				Infinite Saturation Flow			Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)				Infinite Saturation Flow			Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 11: 'DS 2043 AM Peak (120) - Traffic Only' (FG3: 'DS 2043 AM Peak', Plan 3: 'Traffic Only')**  
**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	24	850	0	874	
B	36	0	289	162	487	
C	864	52	0	205	1121	
D	195	360	206	0	761	
Tot.	1095	436	1345	367	3243	

**Traffic Lane Flows**

Lane	Scenario 11: DS 2043 AM Peak (120) - Traffic Only
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	279
1/2 (with short)	621(In) 342(Out)
1/3 (with short)	500(In) 448(Out)
1/4 (short)	52
2/1	451
2/2	36
3/1	214
3/2	220
3/3	220
3/4	220
4/1	555
4/2	206
5/1	190
5/2	385
5/3	386
5/4	384
6/1	436
7/1	151
7/2	419
7/3	525
8/1	367

Full Input Data And Results

**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	26.5 %	1665	1665
				Arm 8 Left	7.50	73.5 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	64.1 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	35.9 %	1697	1697
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	88.8 %	1873	1873
				Arm 6 Left	7.50	11.2 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
				Arm 8 Right	10.00	0.0 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	64.9 %	1789	1789
				Arm 7 Left	7.50	35.1 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

**Scenario 12: 'DS 2043 PM Peak (120) - Traffic Only'** (FG4: 'DS 2043 PM Peak', Plan 3: 'Traffic Only')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	30	694	39	763	
B	138	0	369	276	783	
C	540	134	0	134	808	
D	80	163	141	0	384	
Tot.	758	327	1204	449	2738	

**Traffic Lane Flows**

Lane	Scenario 12: DS 2043 PM Peak (120) - Traffic Only
<b>Junction: Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	
1/1 (short)	207
1/2 (with short)	446(In) 239(Out)
1/3 (with short)	362(In) 228(Out)
1/4 (short)	134
2/1	645
2/2	138
3/1	188
3/2	193
3/3	194
3/4	188
4/1	243
4/2	141
5/1	158
5/2	363
5/3	364
5/4	319
6/1	327
7/1	146
7/2	311
7/3	301
8/1	449

Full Input Data And Results

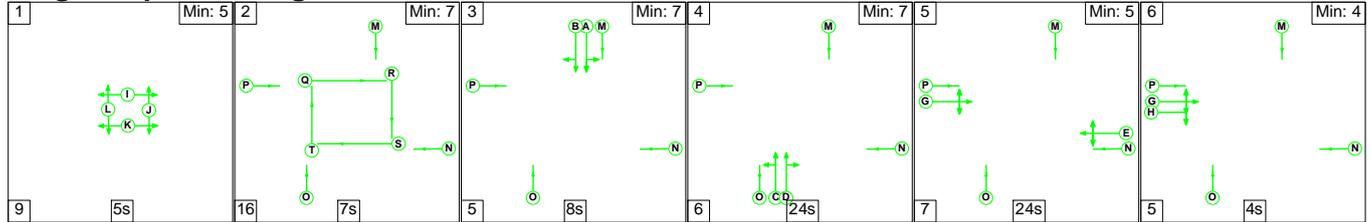
**Lane Saturation Flows**

Junction: Blanchardstown Road / Clonsilla Road / Diswellstown 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 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	35.3 %	1689	1689
				Arm 8 Left	7.50	64.7 %		
1/2 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/3 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 7 Ahead	124.00	100.0 %	1892	1892
1/4 (Diswellstown Road Entry)	3.00	0.00	Y	Arm 6 Right	7.50	100.0 %	1596	1596
				Arm 5 Left	7.50	57.2 %		
2/1 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 8 Ahead	Inf	42.8 %	1718	1718
2/2 (Clonsilla Road E Entry)	3.00	0.00	Y	Arm 7 Right	16.00	100.0 %	1751	1751
3/1 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	84.0 %	1856	1856
				Arm 6 Left	7.50	16.0 %		
3/2 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/3 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/4 (Blanchardstown Road Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	79.3 %	1857	1857
				Arm 8 Right	10.00	20.7 %		
4/1 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 6 Ahead	Inf	67.1 %	1797	1797
				Arm 7 Left	7.50	32.9 %		
4/2 (Clonsilla Road W Entry)	3.00	0.00	Y	Arm 5 Right	10.00	100.0 %	1665	1665
5/1 (Diswellstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/3 (Diswellstown Road Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/4 (Diswellstown Road Exit Lane 4)	Infinite Saturation Flow						Inf	Inf
6/1 (Clonsilla Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Blanchardstown Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/2 (Blanchardstown Road Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

7/3 (Blancharstown Road Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
8/1 (Clonsilla Road W Exit Lane 1)	Infinite Saturation Flow	Inf	Inf

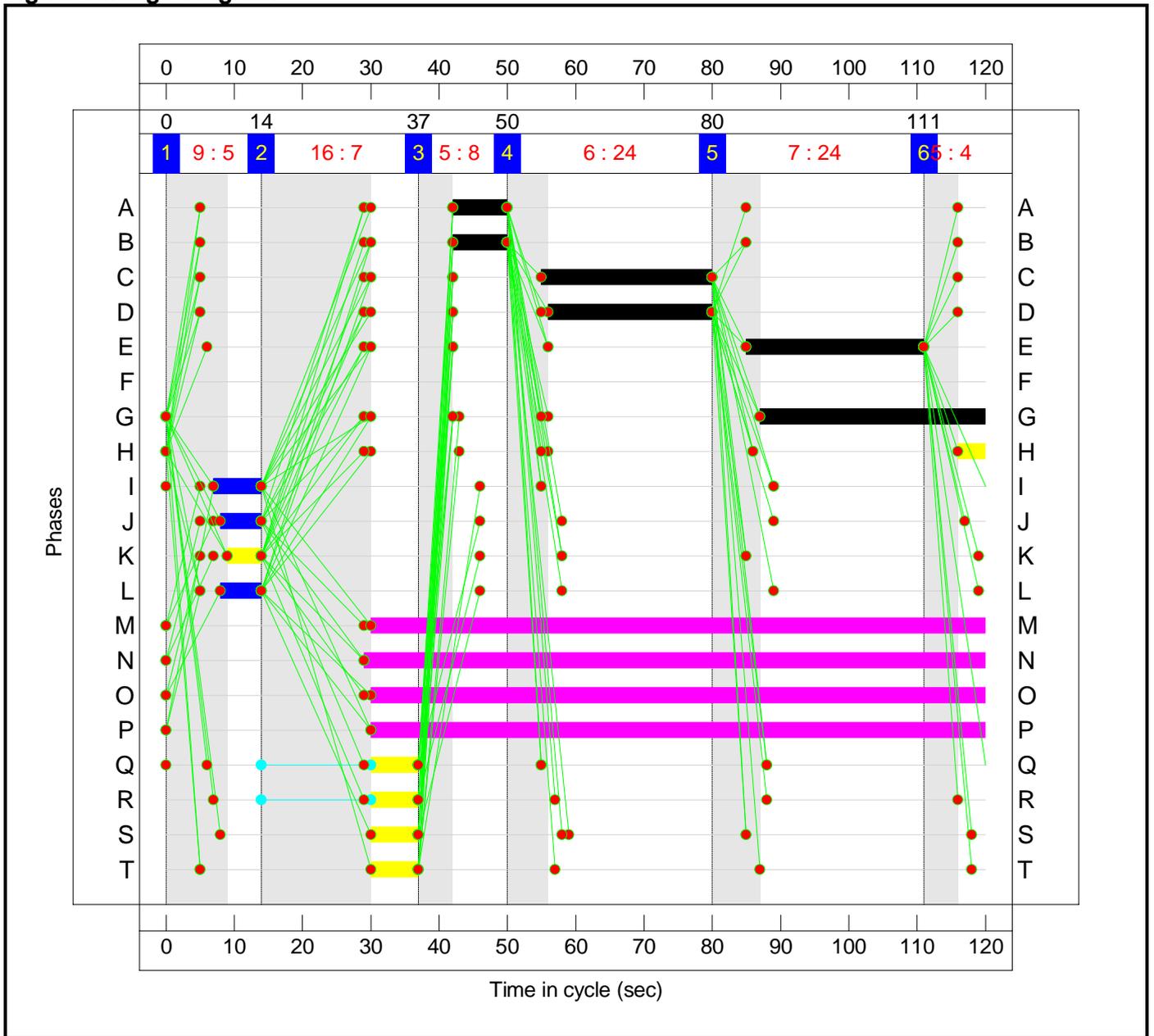
Scenario 1: 'DS 2028 AM Peak (120)' (FG1: 'DS 2028 AM Peak', Plan 1: 'With Separate RT Stage')



Stage Timings

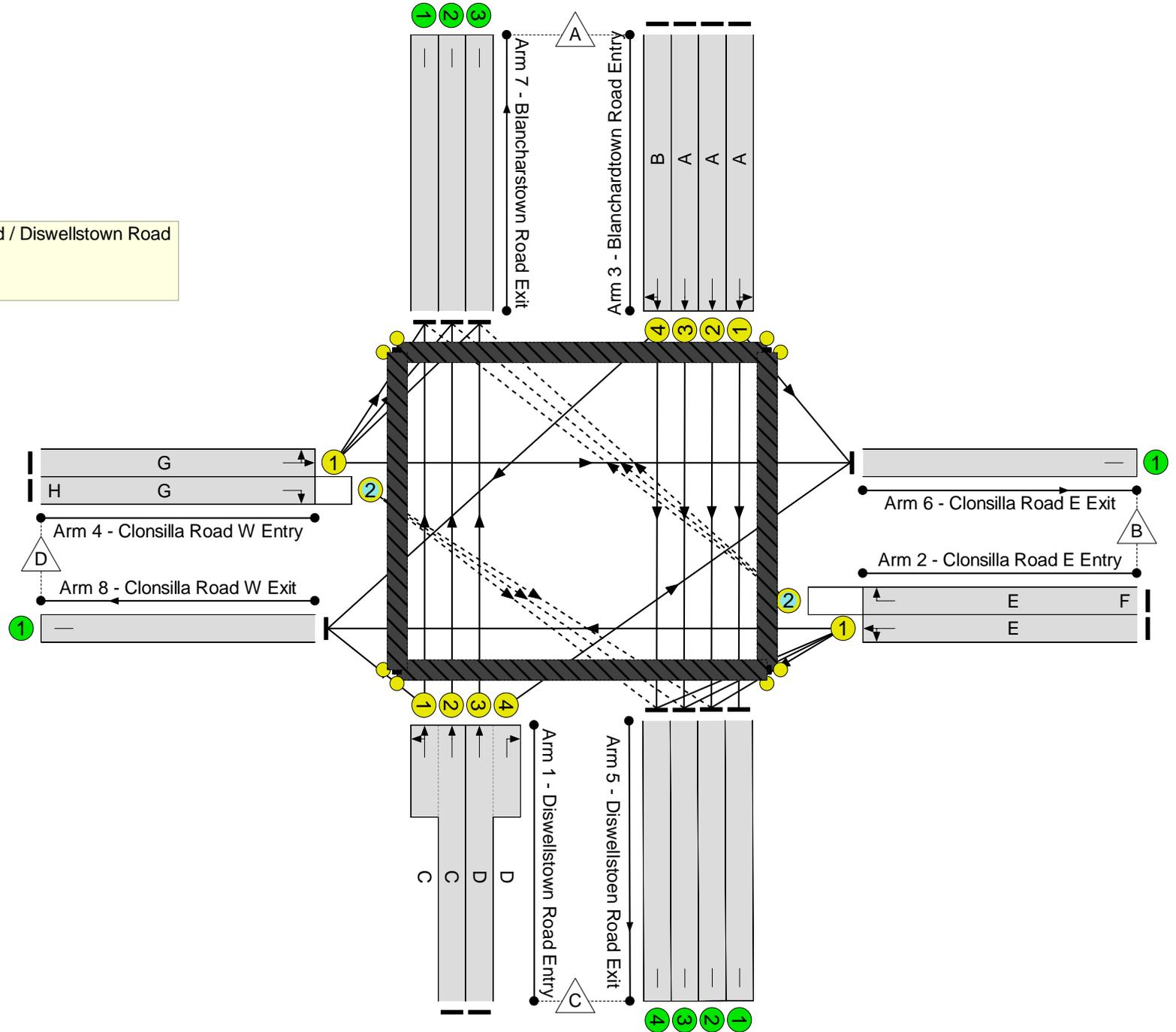
Stage	1	2	3	4	5	6
Duration	5	7	8	24	24	4
Change Point	0	14	37	50	80	111

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -48.2 %  
 Total Traffic Delay: 432.4 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	133.4%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	133.4%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	25	-	664	1892:1650	283+221	131.7 : 131.7%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	24	-	580	1892:1596	304+138	131.3 : 131.3%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	26	-	387	1690	380	101.8%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	26	0	37	1751	89	41.5%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	8	-	164	1651	124	132.4%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	8	-	191	1915	144	133.0%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	8	-	191	1915	144	133.0%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	8	-	191	1915	144	133.0%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	33	-	651	1723	488	133.4%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	33	4	132	1665	129	102.0%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	33	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	507	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	532	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	359	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



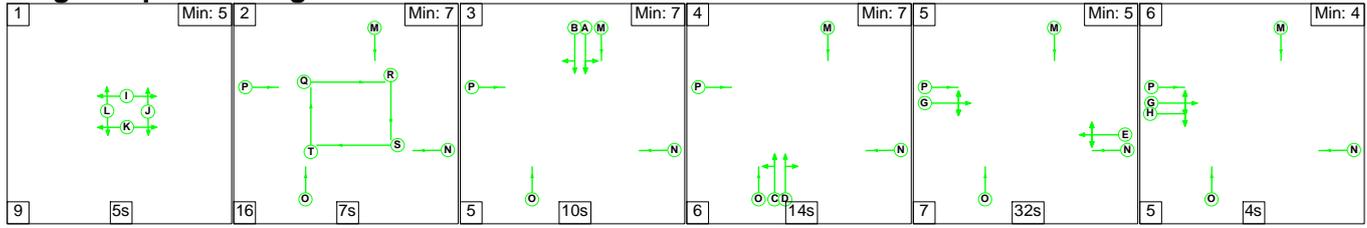
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-48.2	Total Delay for Signalled Lanes (pcuHr):	432.40	Cycle Time (s):	120
	PRC Over All Lanes (%):	-48.2	Total Delay Over All Lanes(pcuHr):	432.40		

Full Input Data And Results

Scenario 2: 'DS 2028 PM Peak (120)' (FG2: 'DS 2028 PM Peak', Plan 1: 'With Seperate RT Stage')

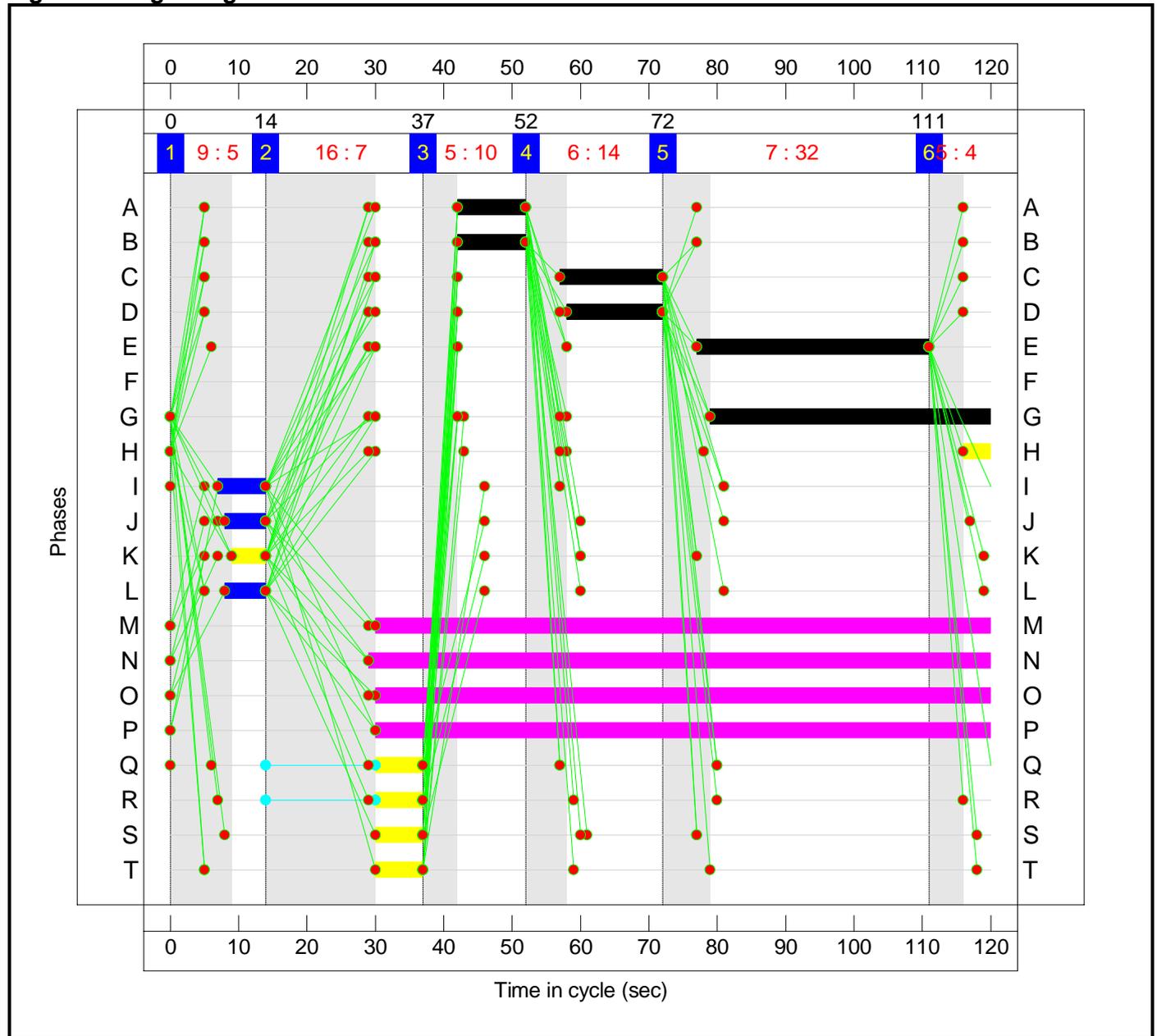
Stage Sequence Diagram



Stage Timings

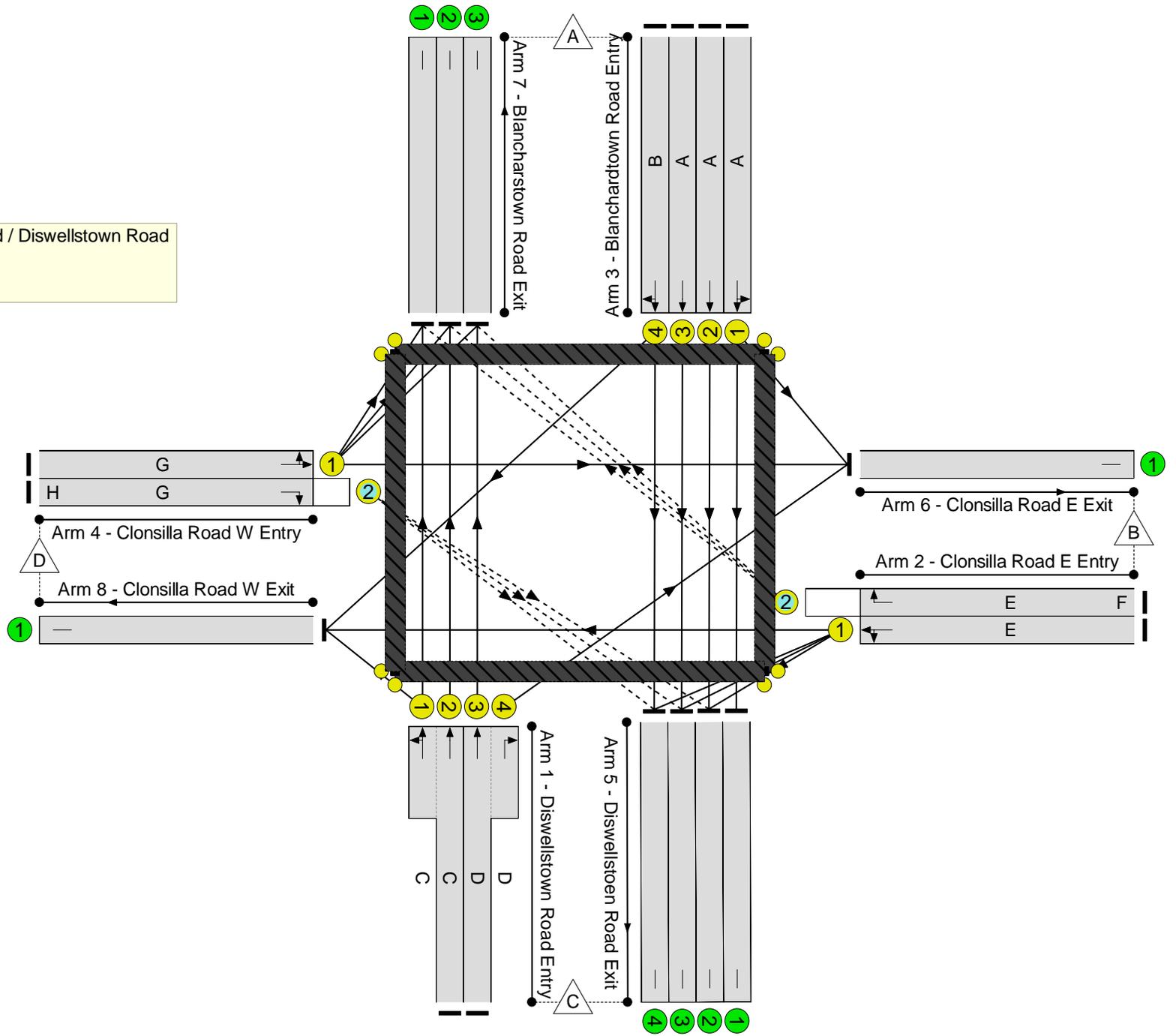
Stage	1	2	3	4	5	6
Duration	5	7	10	14	32	4
Change Point	0	14	37	52	72	111

Signal Timings Diagram



# Full Input Data And Results

**Blanchardstown Road / Clonsilla Road / Diswellstown Road**  
 PRC: -30.8 %  
 Total Traffic Delay: 212.6 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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	117.7%
Blanchardstown Road / Clonsilla Road / Diswellstown Road	-	-	N/A	-	-		-	-	-	-	-	-	117.7%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	15	-	381	1892:1635	206+124	115.6 : 115.6%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	14	-	342	1892:1596	200+96	115.4 : 115.4%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	34	-	589	1716	501	117.7%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	34	0	142	1751	290	49.0%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	10	-	192	1859	170	112.7%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	10	-	198	1915	176	112.8%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	10	-	198	1915	176	112.8%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	10	-	192	1858	170	112.7%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	41	-	221	1795	628	35.2%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	41	4	111	1665	129	85.8%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	349	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	287	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	94	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	310	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	408	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



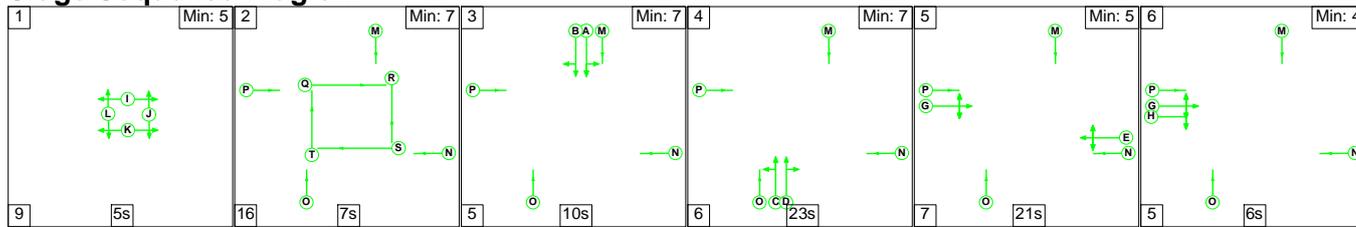
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-30.8	Total Delay for Signalled Lanes (pcuHr):	212.62	Cycle Time (s):	120
	PRC Over All Lanes (%):	-30.8	Total Delay Over All Lanes(pcuHr):	212.62		

Full Input Data And Results

Scenario 3: 'DS 2043 AM Peak (120)' (FG3: 'DS 2043 AM Peak', Plan 1: 'With Seperate RT Stage')

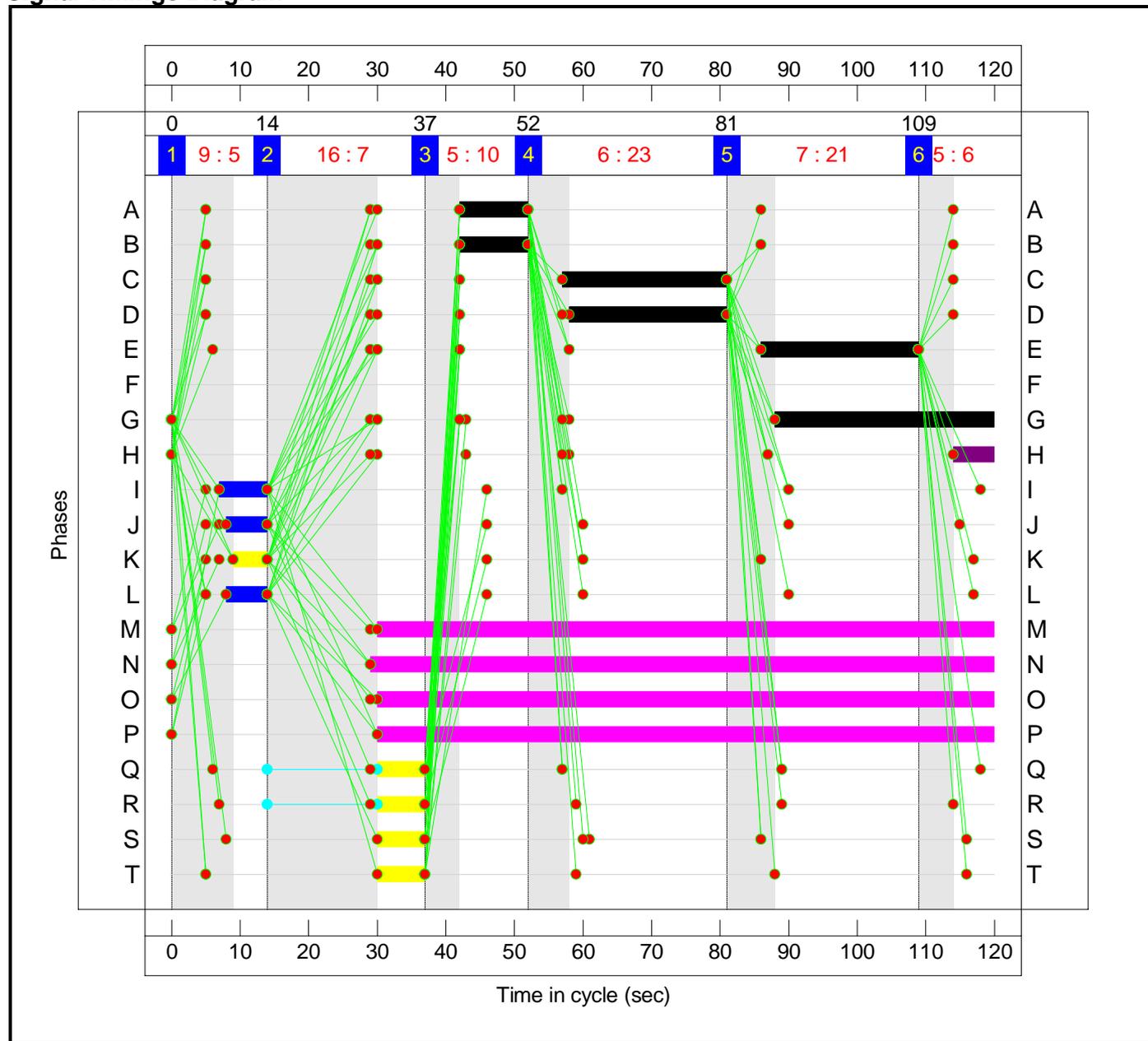
Stage Sequence Diagram



Stage Timings

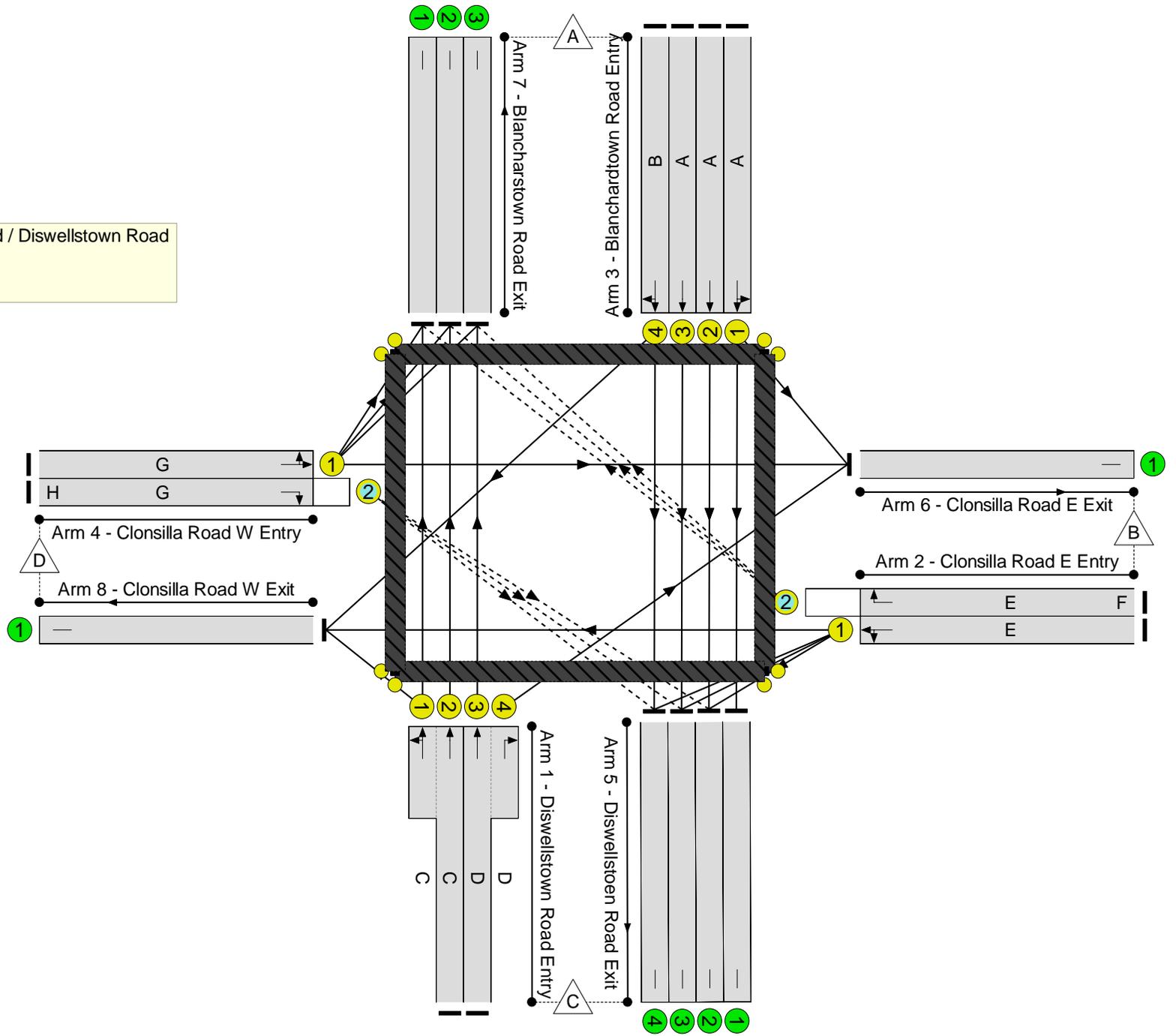
Stage	1	2	3	4	5	6
Duration	5	7	10	23	21	6
Change Point	0	14	37	52	81	109

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -47.6 %  
 Total Traffic Delay: 430.7 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	132.9%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	132.9%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	24	-	623	1892:1649	281+198	130.1 : 130.1%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	23	-	498	1892:1596	344+40	129.7 : 129.7%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	23	-	451	1697	339	132.9%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	23	0	36	1751	89	40.4%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	10	-	215	1873	172	125.2%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	10	-	219	1915	176	124.8%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	10	-	219	1915	176	124.8%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	10	-	221	1915	176	125.9%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	32	-	555	1789	492	112.8%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	32	6	206	1665	157	131.1%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	191	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%

### Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	130	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	523	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	367	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



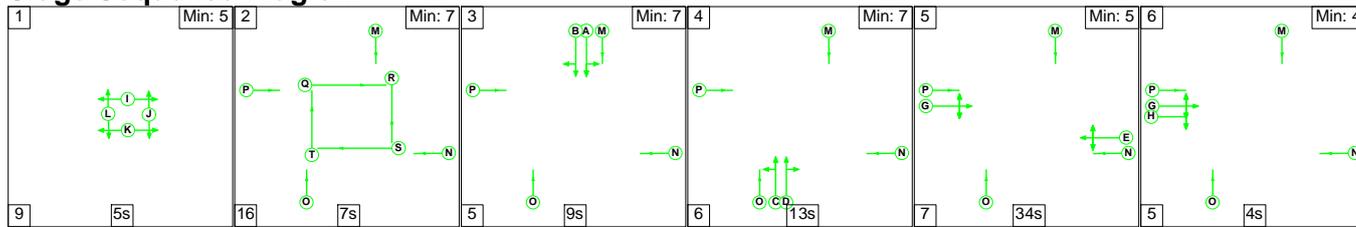
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-47.6	Total Delay for Signalled Lanes (pcuHr):	430.73	Cycle Time (s):	120
	PRC Over All Lanes (%):	-47.6	Total Delay Over All Lanes(pcuHr):	430.73		

Full Input Data And Results

Scenario 4: 'DS 2043 PM Peak (120)' (FG4: 'DS 2043 PM Peak', Plan 1: 'With Seperate RT Stage')

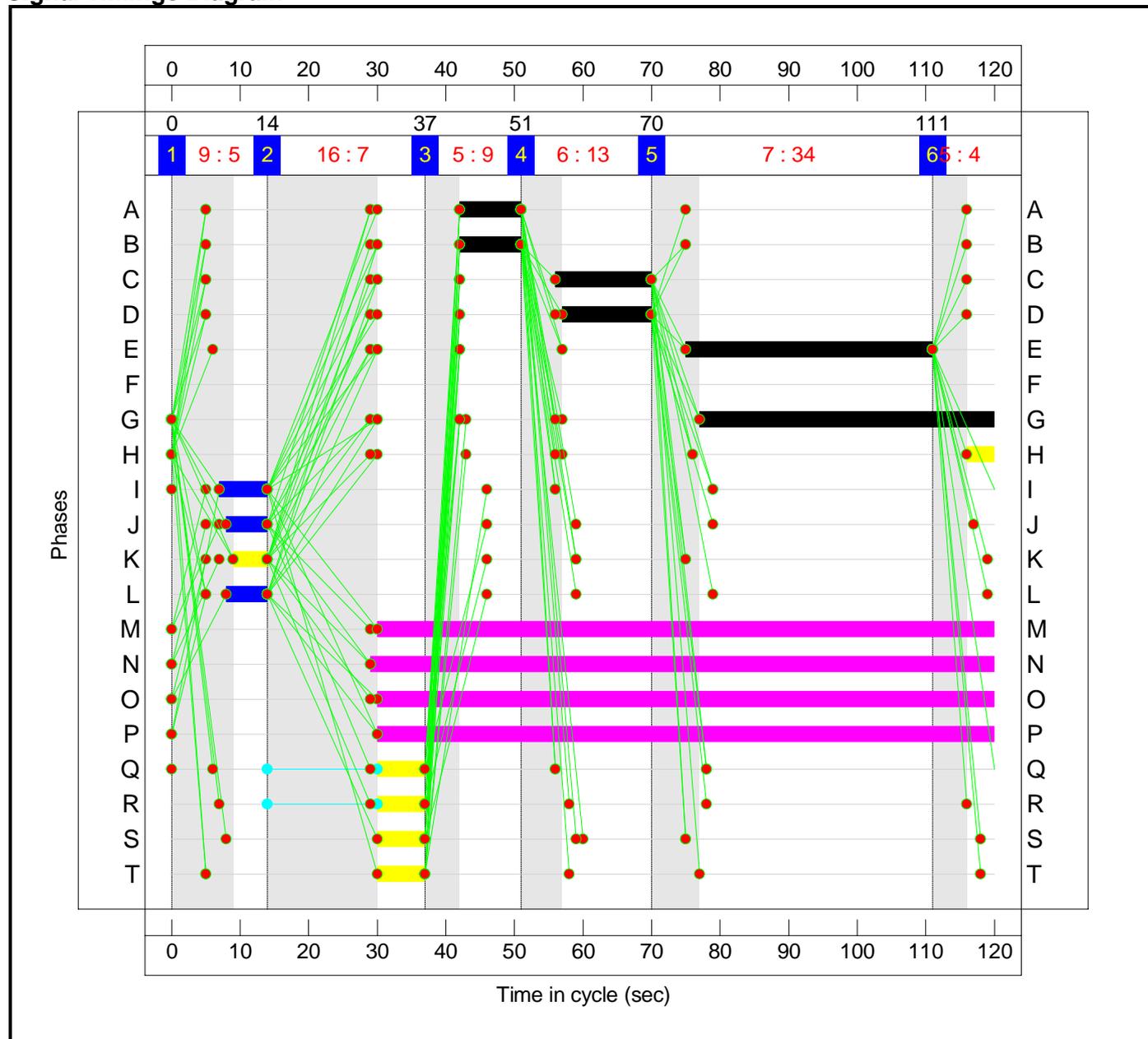
Stage Sequence Diagram



Stage Timings

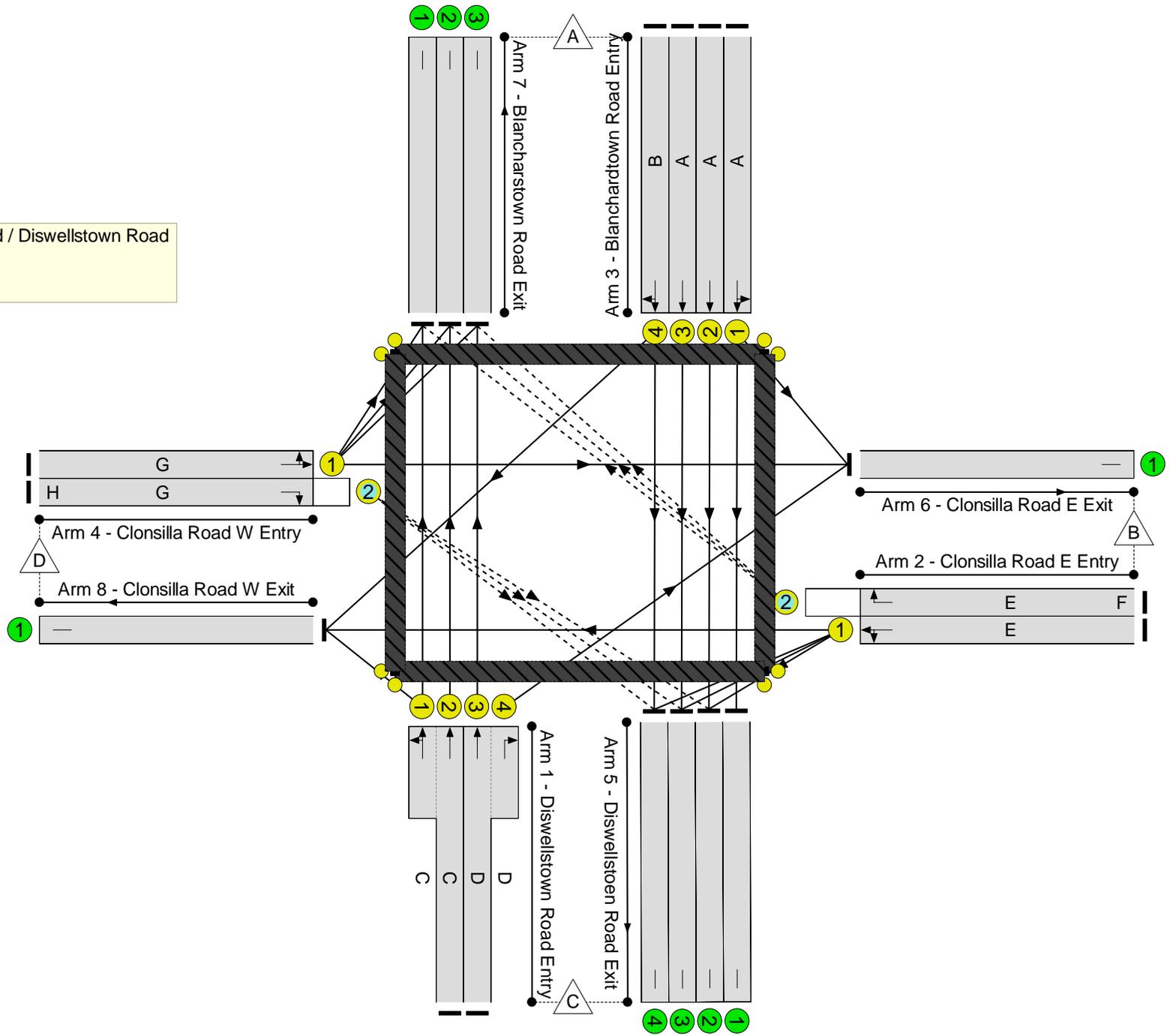
Stage	1	2	3	4	5	6
Duration	5	7	9	13	34	4
Change Point	0	14	37	51	70	111

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -37.5 %  
 Total Traffic Delay: 285.5 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: DART West Junction Modelling	-	-	N/A	-	-		-	-	-	-	-	-	123.8%
Blanchardstown Road / Clonsilla Road / Diswellstown Road	-	-	N/A	-	-		-	-	-	-	-	-	123.8%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	14	-	442	1892:1695	188+177	121.0 : 121.0%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	13	-	366	1892:1596	187+108	123.8 : 123.8%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	36	-	645	1718	530	121.8%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	36	0	138	1751	295	46.7%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	9	-	188	1856	155	121.6%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	9	-	193	1915	160	120.9%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	9	-	194	1915	160	121.6%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	9	-	188	1857	155	121.5%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	43	-	243	1797	659	36.9%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	43	4	141	1665	129	109.0%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	363	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%

### Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	327	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	153	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	300	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



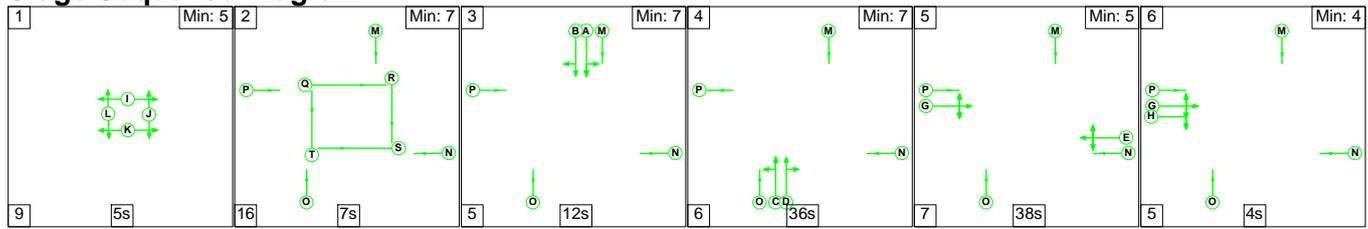
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-37.5	Total Delay for Signalled Lanes (pcuHr):	285.47	Cycle Time (s):	120
	PRC Over All Lanes (%):	-37.5	Total Delay Over All Lanes(pcuHr):	285.47		

Full Input Data And Results

Scenario 5: 'DS 2028 AM Peak (150)' (FG1: 'DS 2028 AM Peak', Plan 1: 'With Seperate RT Stage')

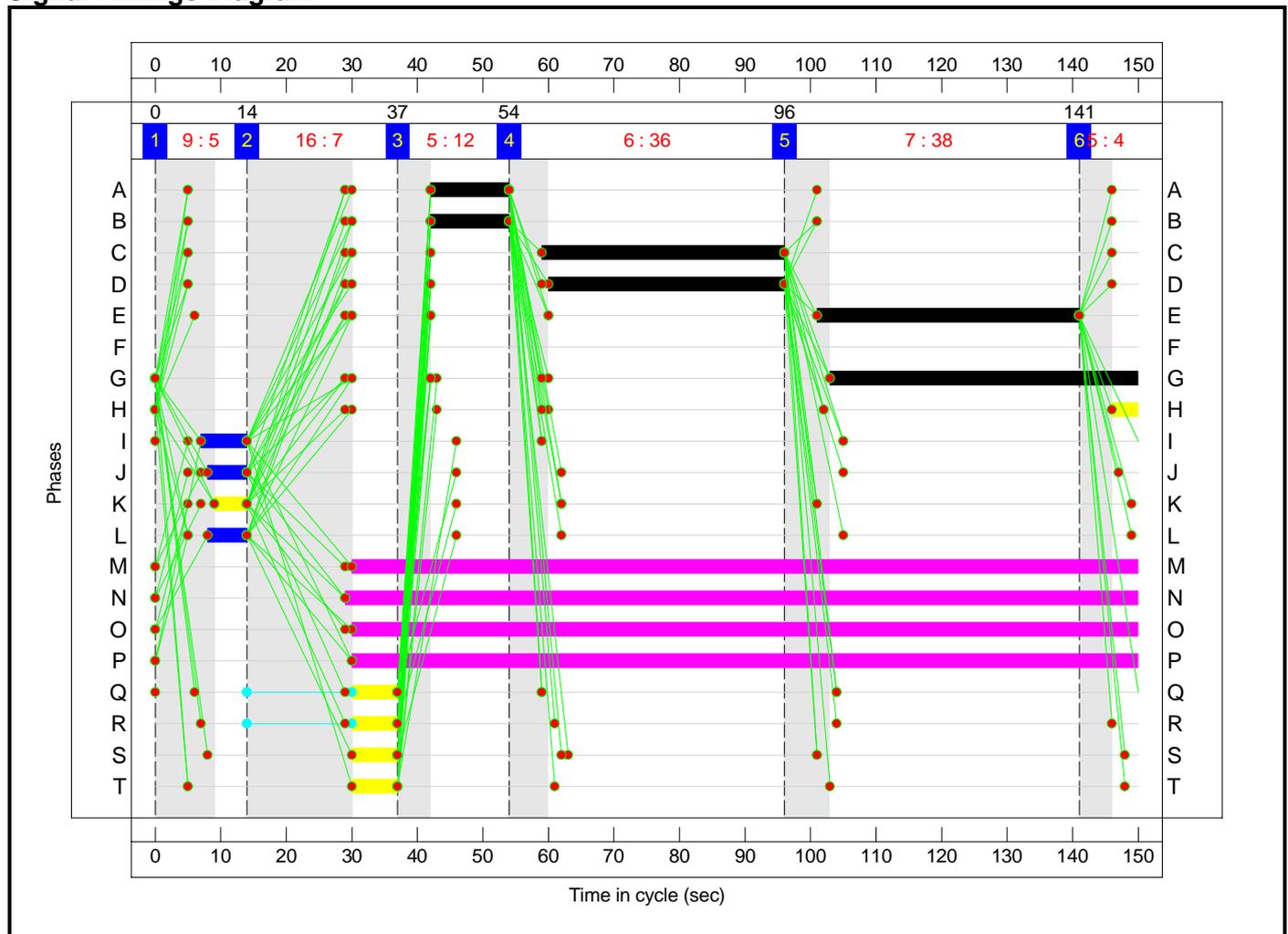
Stage Sequence Diagram



Stage Timings

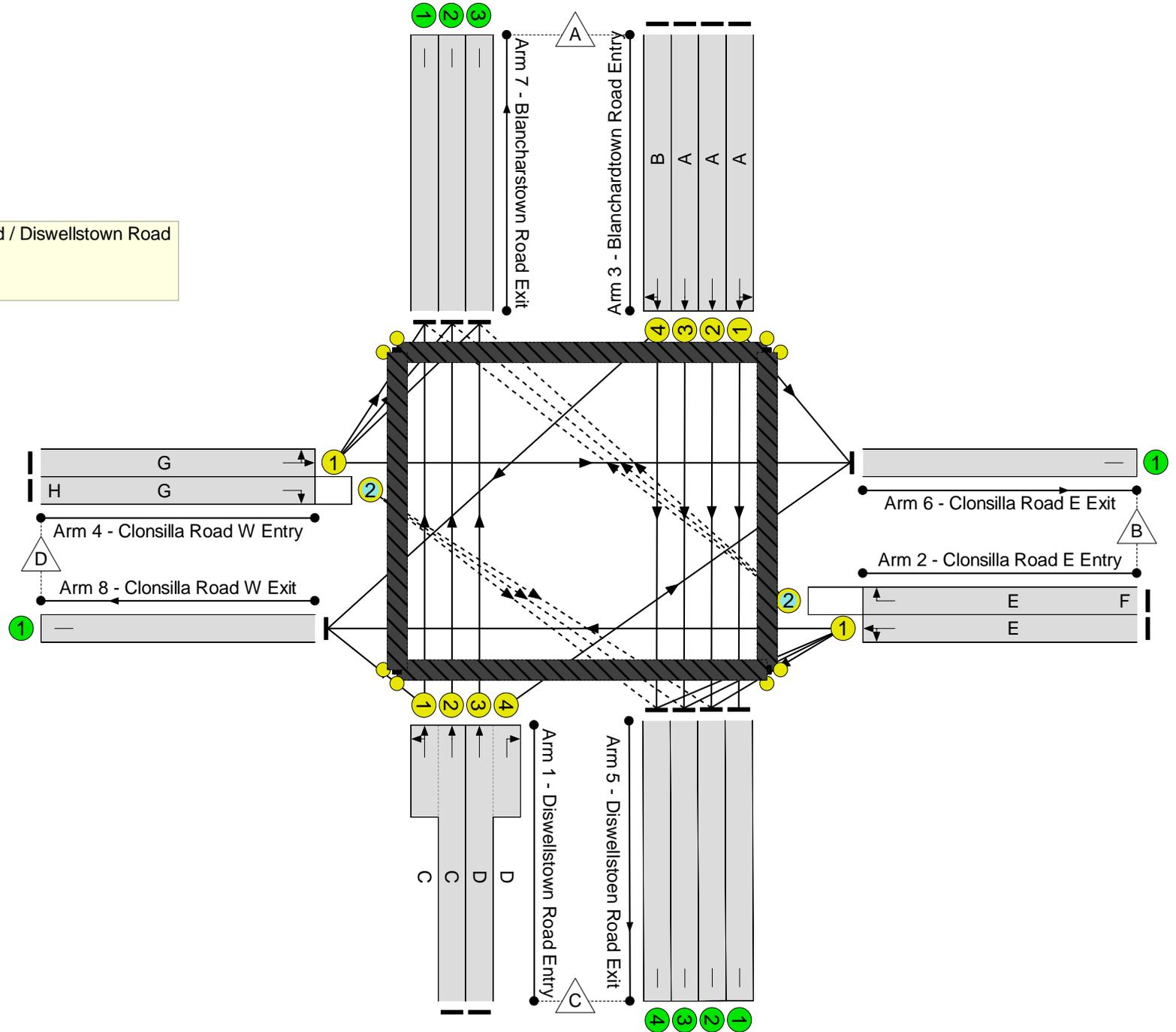
Stage	1	2	3	4	5	6
Duration	5	7	12	36	38	4
Change Point	0	14	37	54	96	141

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -33.4 %  
 Total Traffic Delay: 306.0 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	120.0%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	120.0%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	37	-	650	1892:1641	309+232	120.0 : 120.0%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	36	-	594	1892:1596	344+151	120.0 : 120.0%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	40	-	387	1690	462	83.8%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	40	0	37	1751	71	51.9%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	12	-	165	1653	143	115.2%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	12	-	190	1915	166	114.5%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	12	-	190	1915	166	114.5%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	12	-	192	1915	166	115.7%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	47	-	651	1723	551	118.1%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	47	4	132	1665	183	72.1%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	320	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	320	Inf	Inf	0.0%

### Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	182	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	505	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	359	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



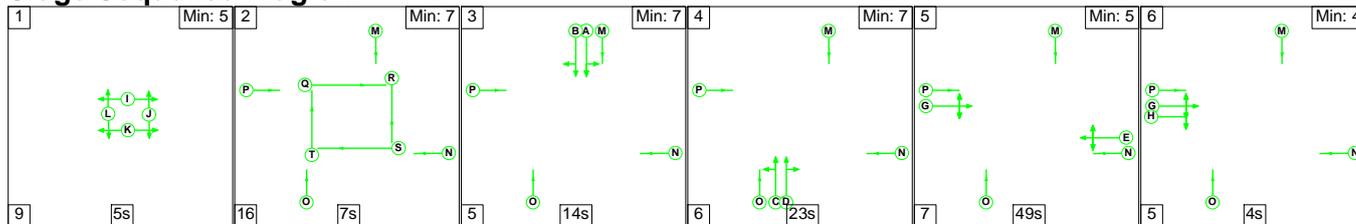
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-33.4	Total Delay for Signalled Lanes (pcuHr):	305.97	Cycle Time (s):	150
	PRC Over All Lanes (%):	-33.4	Total Delay Over All Lanes(pcuHr):	305.97		

Full Input Data And Results

Scenario 6: 'DS 2028 PM Peak (150)' (FG2: 'DS 2028 PM Peak', Plan 1: 'With Seperate RT Stage')

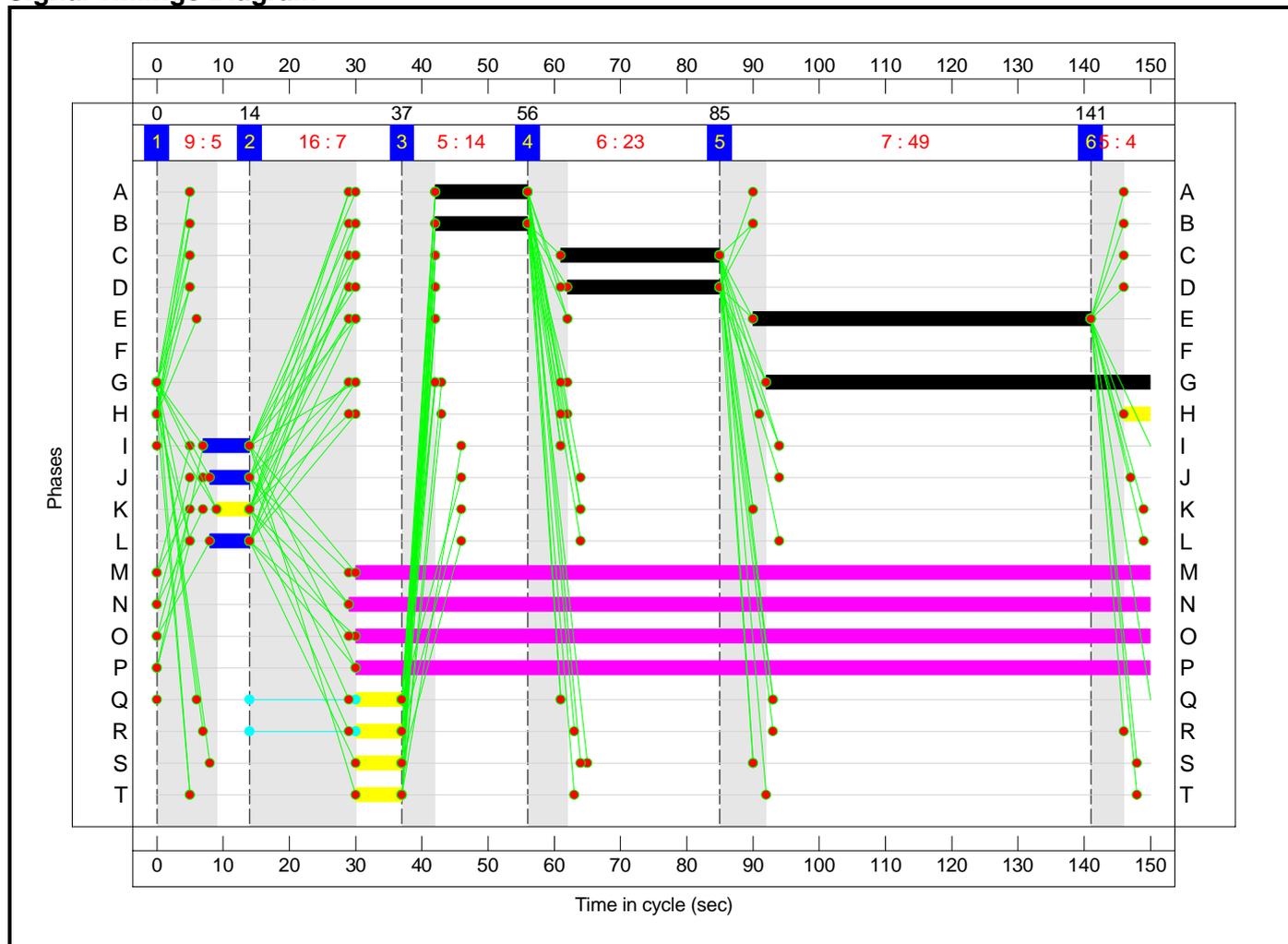
Stage Sequence Diagram



Stage Timings

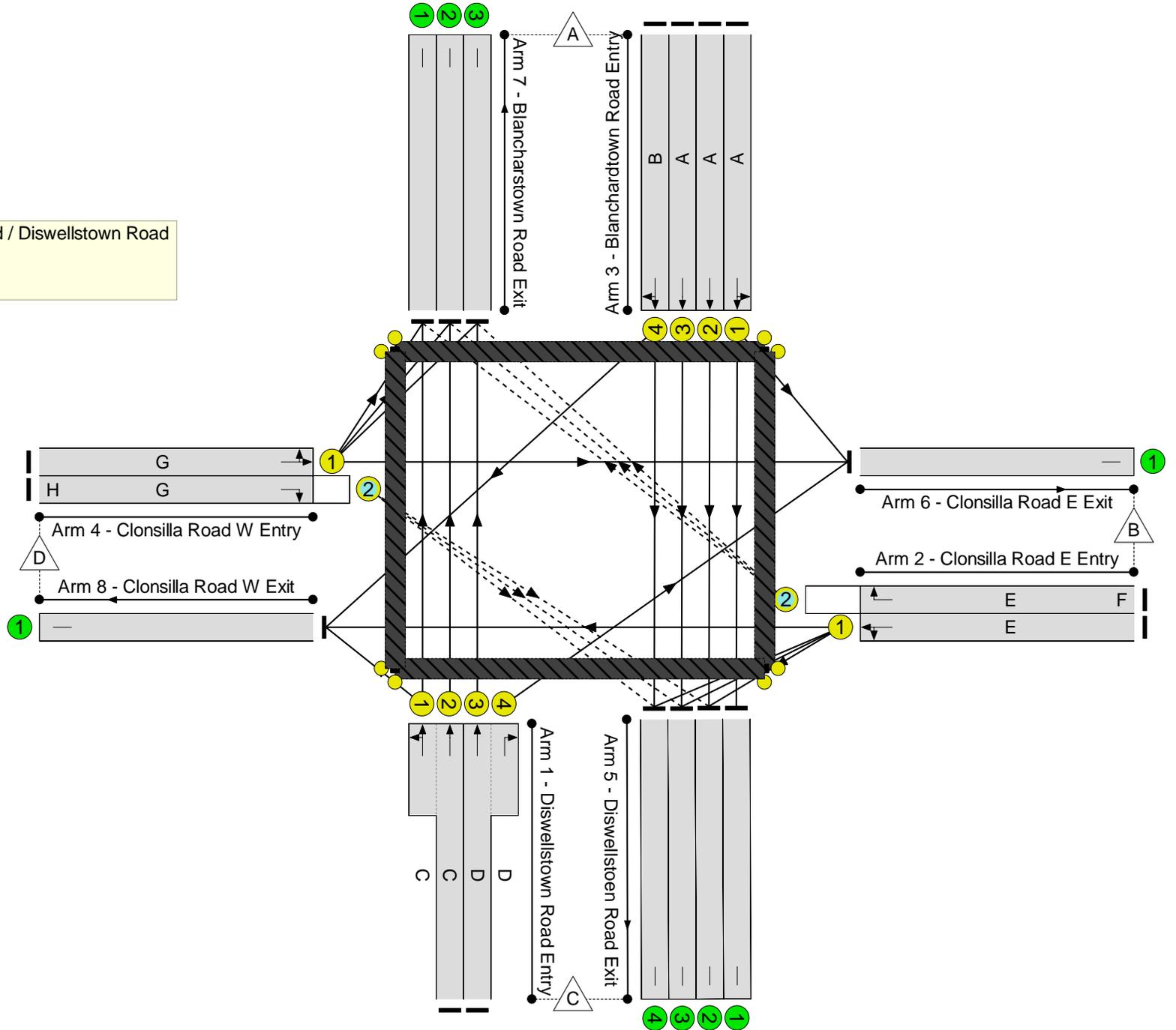
Stage	1	2	3	4	5	6
Duration	5	7	14	23	49	4
Change Point	0	14	37	56	85	141

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -14.9 %  
 Total Traffic Delay: 114.3 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	103.4%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	103.4%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	24	-	378	1892:1640	230+145	101.0 : 101.0%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	23	-	345	1892:1596	233+111	100.4 : 100.4%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	51	-	589	1716	595	99.0%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	51	0	142	1751	352	40.4%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	14	-	192	1859	186	103.3%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	14	-	198	1915	191	103.4%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	14	-	198	1915	191	103.4%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	14	-	192	1858	186	103.3%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	58	-	221	1795	706	31.3%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	58	4	111	1665	115	96.9%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	349	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%

### Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	287	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	97	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	306	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	408	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



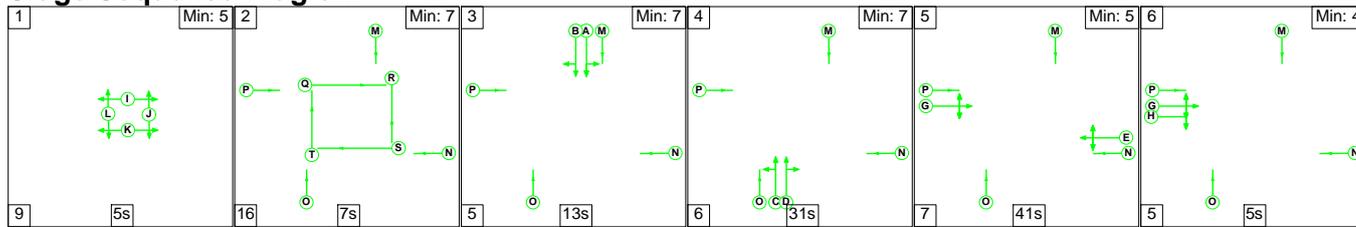
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-14.9	Total Delay for Signalled Lanes (pcuHr):	114.30	Cycle Time (s):	150
	PRC Over All Lanes (%):	-14.9	Total Delay Over All Lanes(pcuHr):	114.30		

Full Input Data And Results

Scenario 7: 'DS 2043 AM Peak (150)' (FG3: 'DS 2043 AM Peak', Plan 1: 'With Seperate RT Stage')

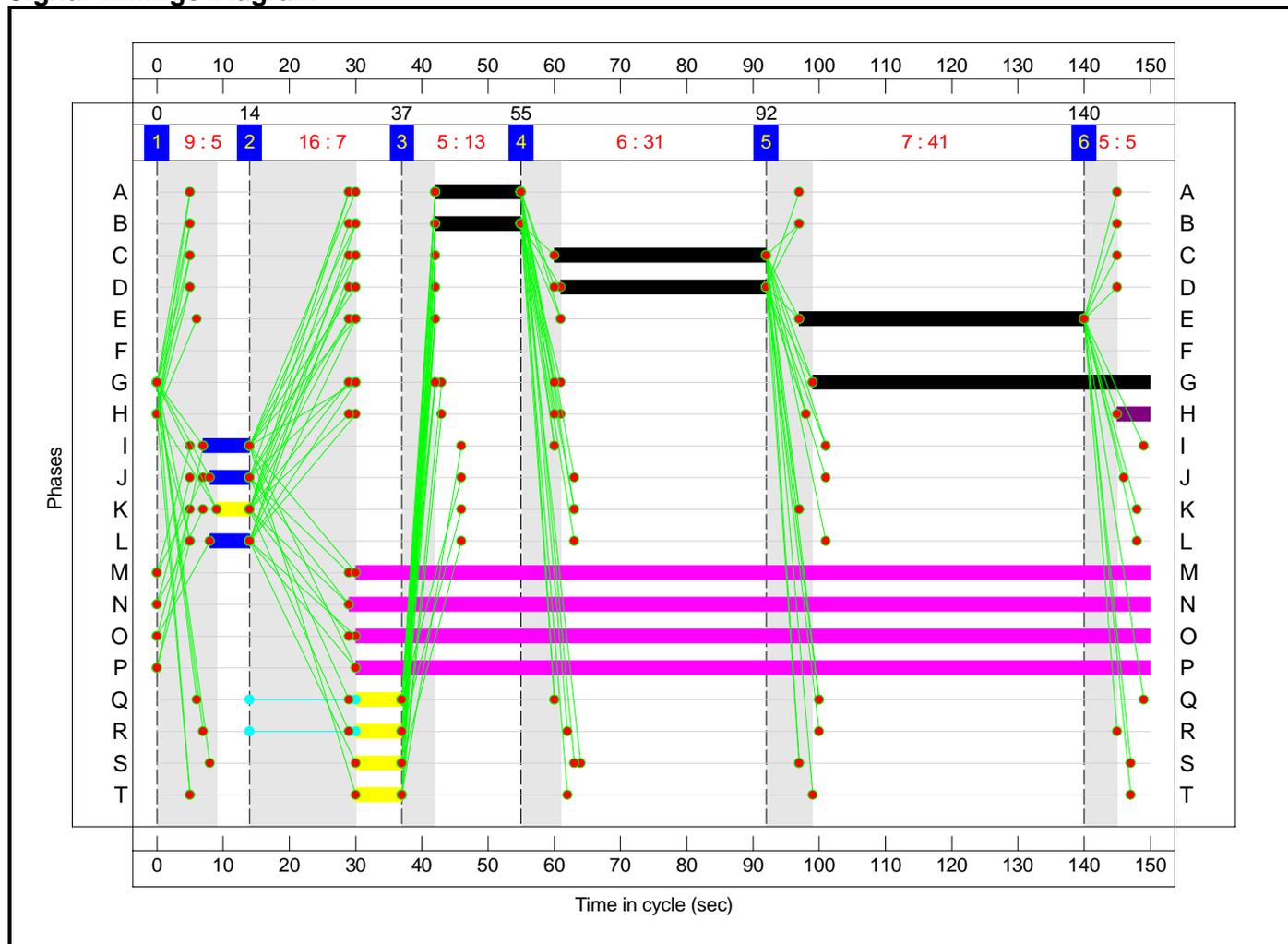
Stage Sequence Diagram



Stage Timings

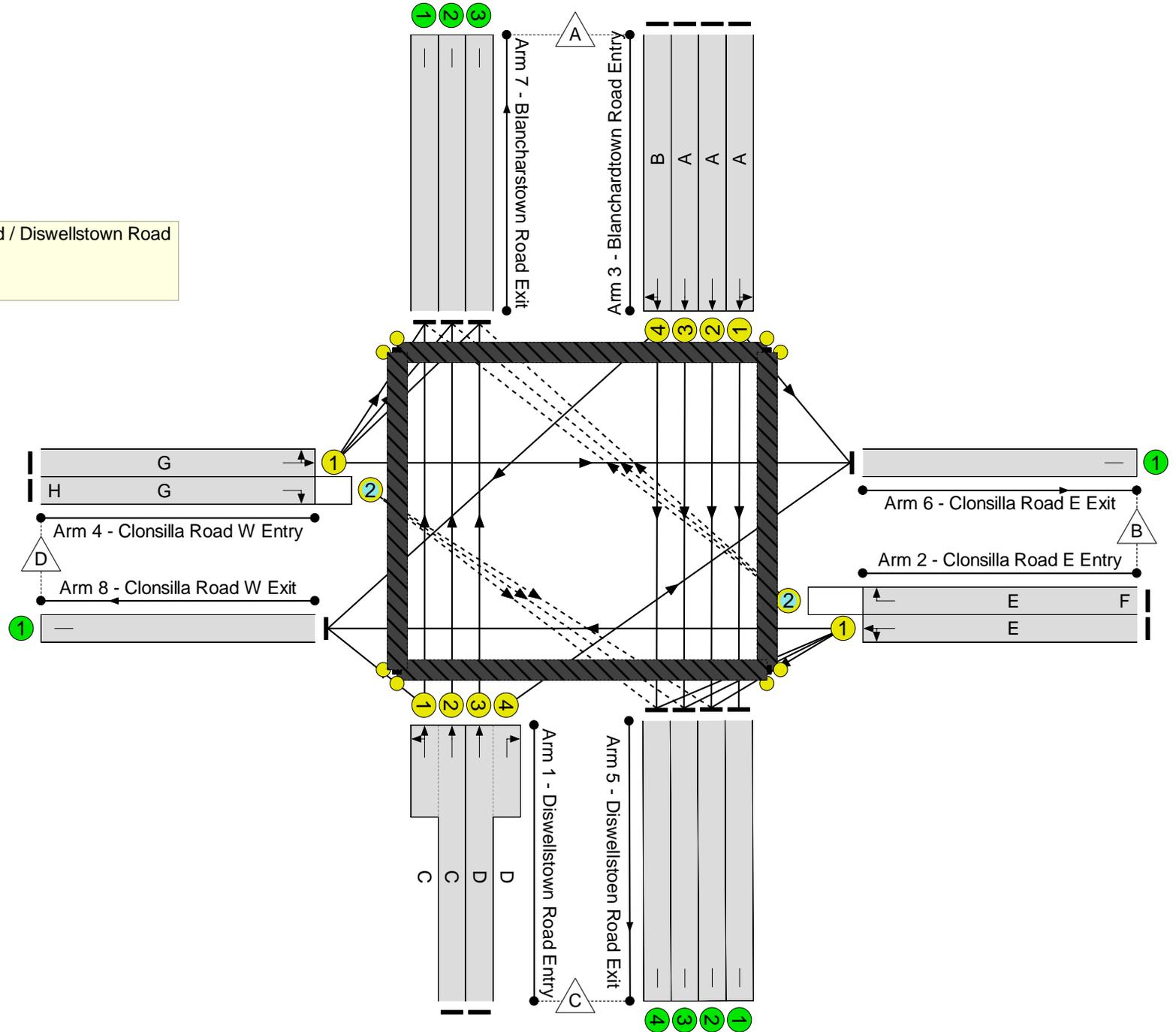
Stage	1	2	3	4	5	6
Duration	5	7	13	31	41	5
Change Point	0	14	37	55	92	140

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -42.4 %  
 Total Traffic Delay: 326.0 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	128.2%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	128.2%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	32	-	601	1892:1637	282+193	126.6 : 126.6%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	31	-	520	1892:1596	365+41	128.2 : 128.2%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	43	-	451	1697	498	90.6%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	43	0	36	1751	72	50.0%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	13	-	215	1873	175	123.0%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	13	-	219	1915	179	122.5%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	13	-	220	1915	179	123.1%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	13	-	220	1915	179	123.1%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	51	-	555	1789	620	89.5%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	51	5	206	1665	171	120.2%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	191	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	386	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	116	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	367	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



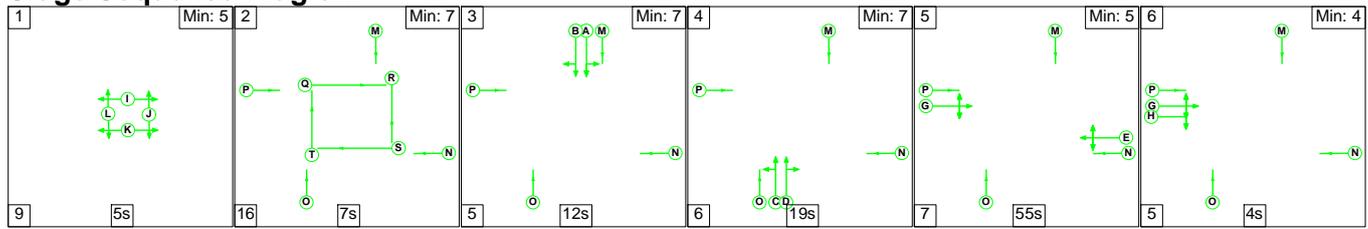
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-42.4	Total Delay for Signalled Lanes (pcuHr):	326.00	Cycle Time (s):	150
	PRC Over All Lanes (%):	-42.4	Total Delay Over All Lanes(pcuHr):	326.00		

Full Input Data And Results

Scenario 8: 'DS 2043 PM Peak (150)' (FG4: 'DS 2043 PM Peak', Plan 1: 'With Seperate RT Stage')

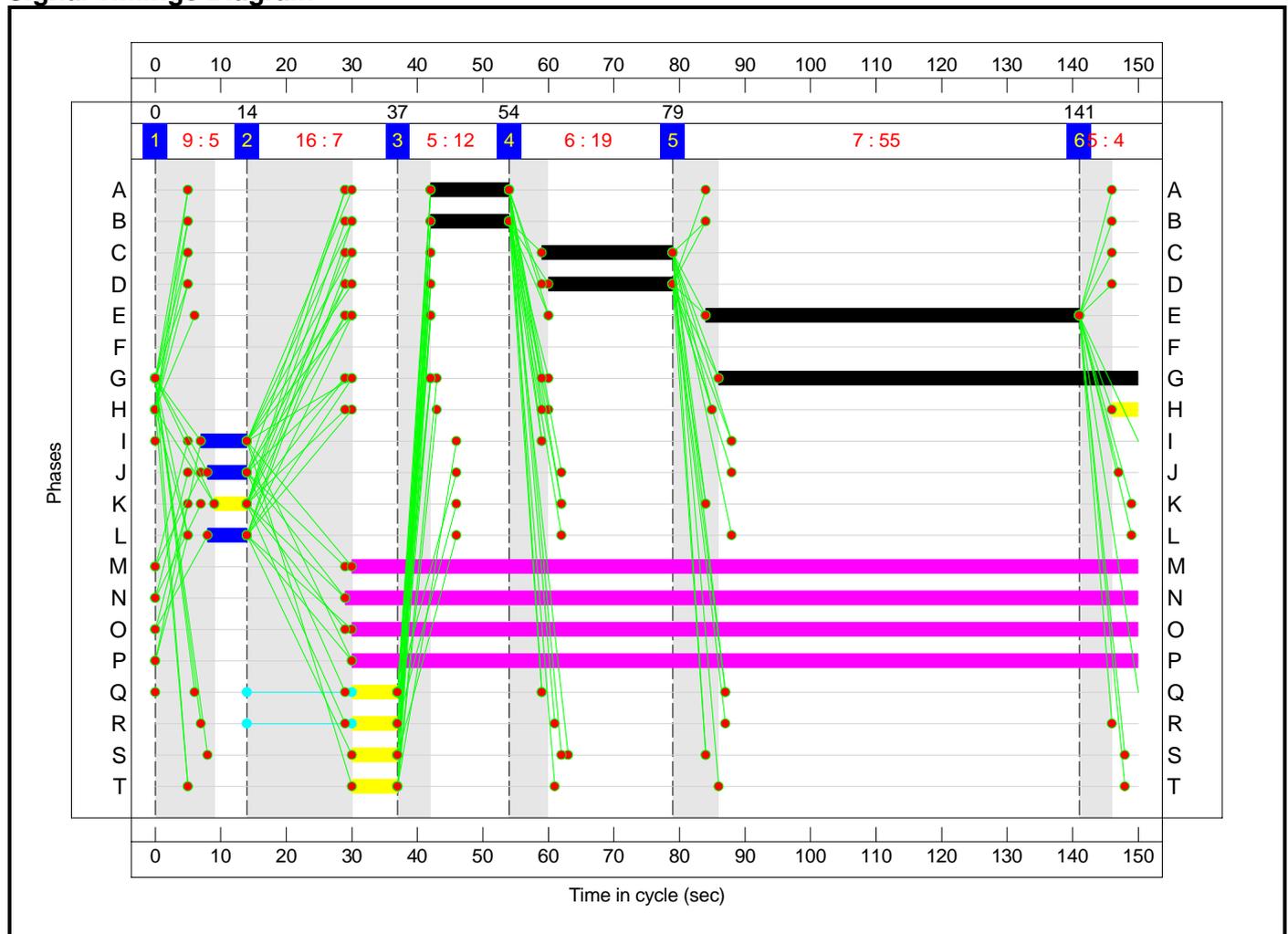
Stage Sequence Diagram



Stage Timings

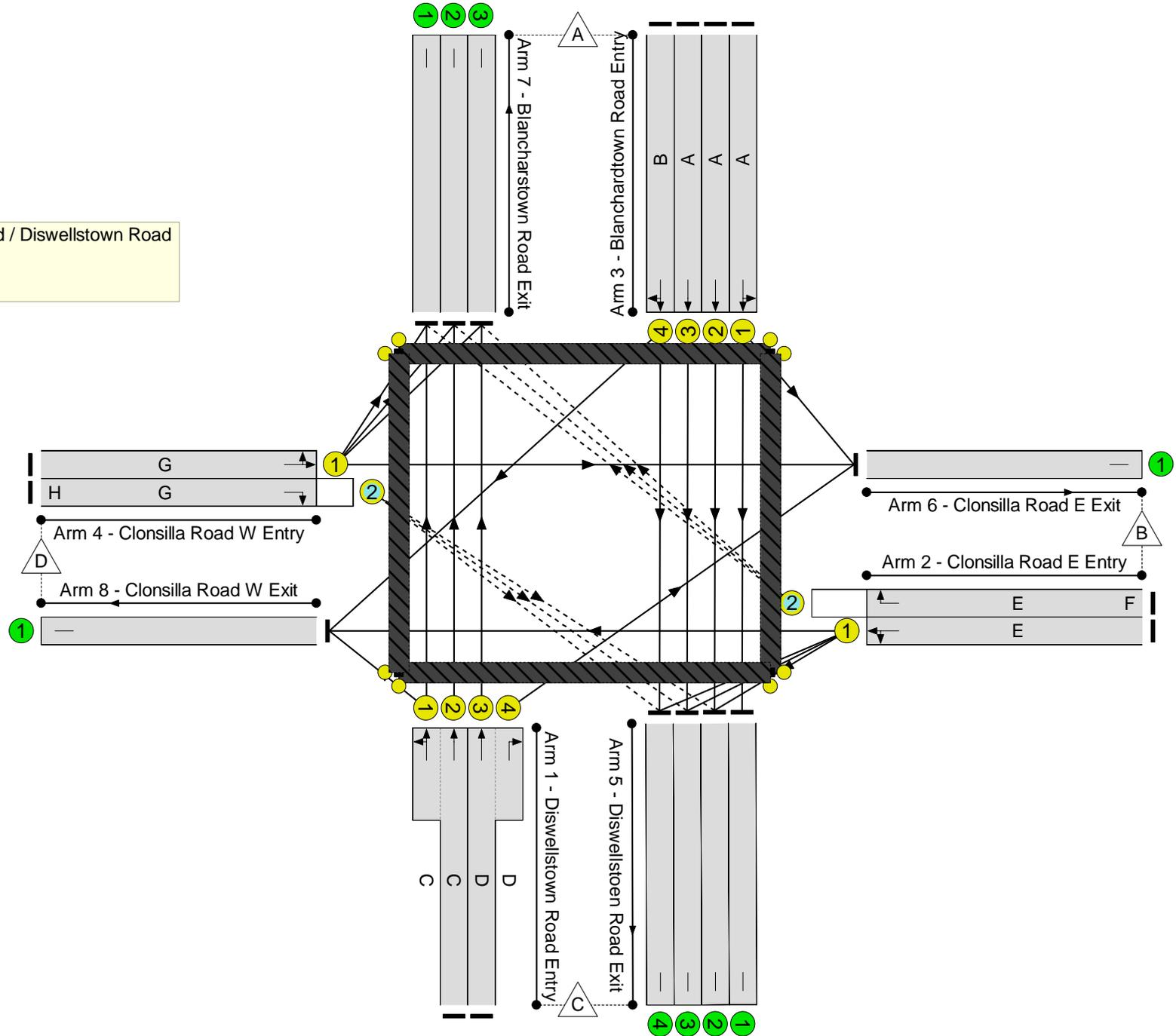
Stage	1	2	3	4	5	6
Duration	5	7	12	19	55	4
Change Point	0	14	37	54	79	141

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -35.2 %  
 Total Traffic Delay: 220.0 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	121.6%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	121.6%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	20	-	436	1892:1688	189+169	121.5 : 121.5%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	19	-	372	1892:1596	196+110	121.6 : 121.6%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	57	-	645	1718	664	97.1%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	57	0	138	1751	390	35.4%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	12	-	188	1856	161	116.9%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	12	-	193	1915	166	116.3%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	12	-	194	1915	166	116.9%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	12	-	188	1857	161	116.8%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	64	-	243	1797	779	31.2%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	64	4	141	1665	137	103.1%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	363	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	327	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	145	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	311	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	6	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	5	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	6	-	0	-	0	0.0%



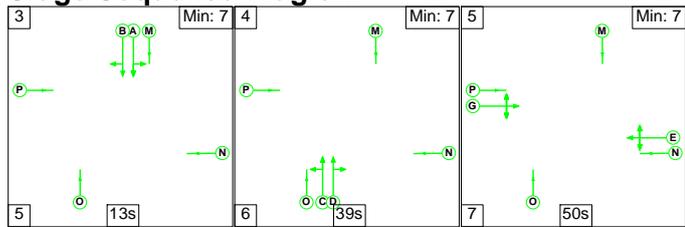
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-35.2	Total Delay for Signalled Lanes (pcuHr):	219.98	Cycle Time (s):	150
	PRC Over All Lanes (%):	-35.2	Total Delay Over All Lanes(pcuHr):	219.98		

Full Input Data And Results

Scenario 9: 'DS 2028 AM Peak (120) - Traffic Only' (FG1: 'DS 2028 AM Peak', Plan 3: 'Traffic Only')

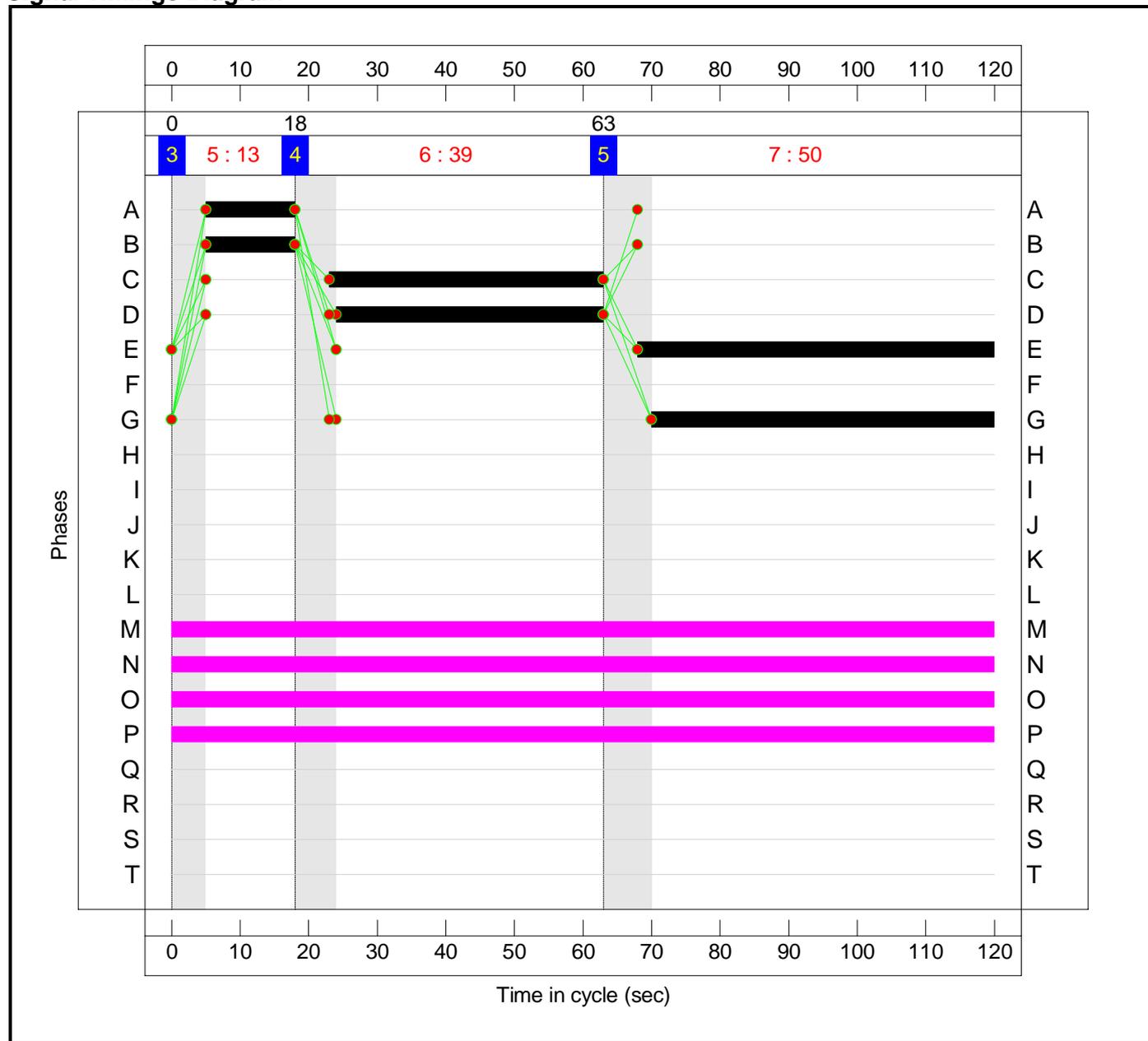
Stage Sequence Diagram



Stage Timings

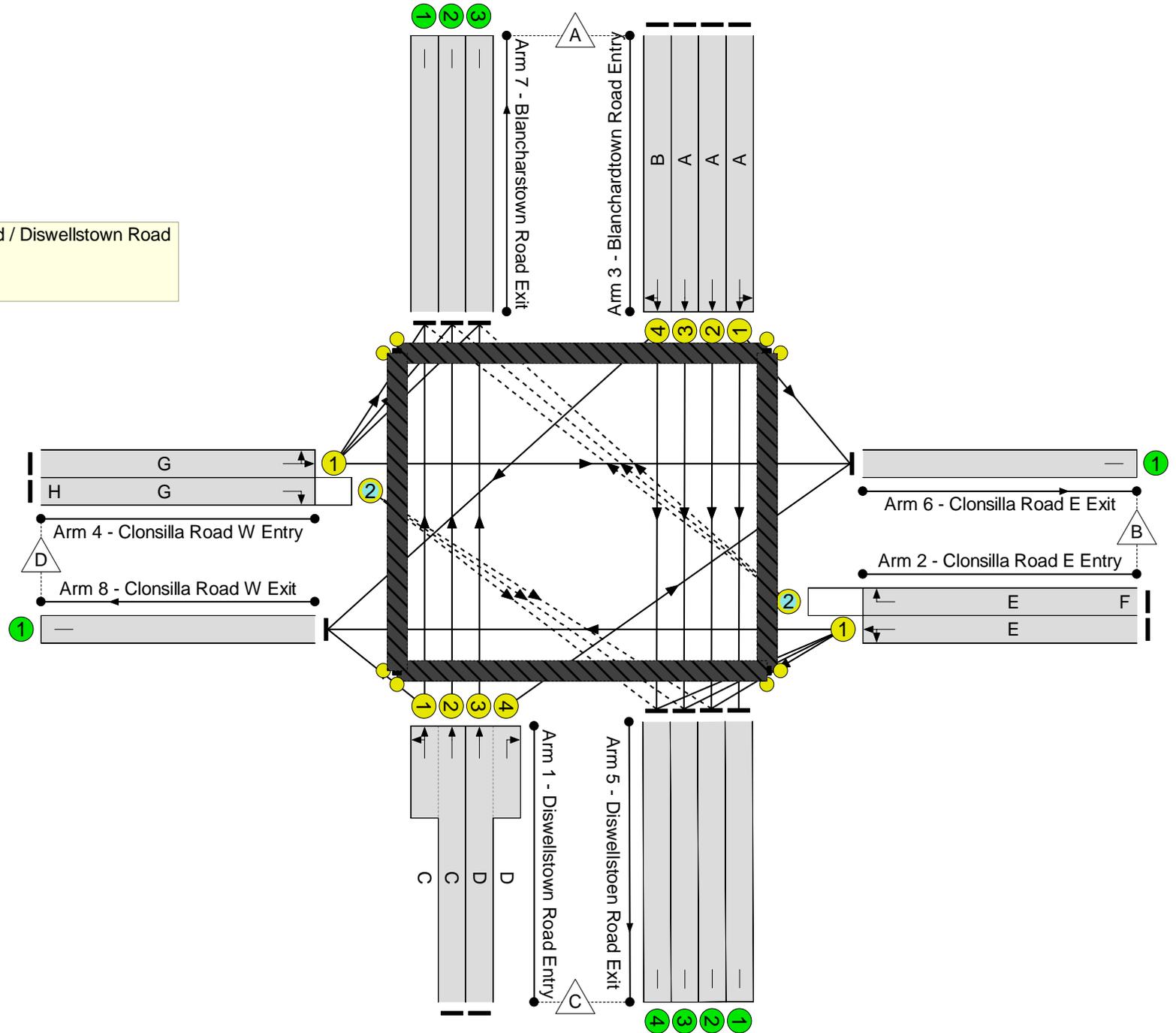
Stage	3	4	5
Duration	13	39	50
Change Point	0	18	63

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: -0.4 %  
 Total Traffic Delay: 55.6 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	90.3%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	90.3%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	40	-	657	1892:1649	406+321	90.3 : 90.3%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	39	-	587	1892:1596	459+205	88.4 : 88.4%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	52	-	387	1690	746	51.8%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	52	0	37	1751	133	27.9%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	13	-	160	1646	192	83.3%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	13	-	193	1915	223	86.4%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	13	-	192	1915	223	85.9%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	13	-	192	1915	223	85.9%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	50	-	651	1723	732	88.9%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	50	0	132	1665	323	40.9%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	29	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	323	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%

### Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	193	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	501	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	539	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	359	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		0	0	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		0	0	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		0	0	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		0	0	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	169	0	0	32.4	22.5	0.7	55.6	-	-	-	-
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	169	0	0	32.4	22.5	0.7	55.6	-	-	-	-
1/2+1/1	657	657	-	-	-	6.4	4.2	-	10.5	57.7	16.5	4.2	20.7
1/3+1/4	587	587	-	-	-	5.9	3.5	-	9.3	57.3	16.0	3.5	19.5
2/1	387	387	-	-	-	2.6	0.5	-	3.1	29.3	9.2	0.5	9.8
2/2	37	37	37	0	0	0.2	0.2	0.3	0.7	71.9	0.7	0.2	0.9
3/1	160	160	-	-	-	2.3	2.2	-	4.5	101.3	5.2	2.2	7.4
3/2	193	193	-	-	-	2.8	2.7	-	5.5	102.3	6.3	2.7	9.0
3/3	192	192	-	-	-	2.8	2.6	-	5.4	101.1	6.2	2.6	8.9
3/4	192	192	-	-	-	2.8	2.6	-	5.4	101.1	6.2	2.6	8.9
4/1	651	651	-	-	-	5.8	3.7	-	9.4	52.2	19.9	3.7	23.6
4/2	132	132	132	0	0	1.0	0.3	0.4	1.7	45.6	3.4	0.3	3.8
5/1	29	29	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	323	323	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	600	600	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	193	193	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	501	501	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/3	539	539	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	359	359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P2	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf

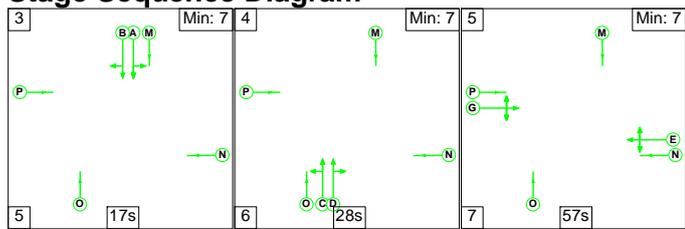
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	-0.4	Total Delay for Signalled Lanes (pcuHr):	55.64	Cycle Time (s):	120
	PRC Over All Lanes (%):	-0.4	Total Delay Over All Lanes(pcuHr):	55.64		

Full Input Data And Results

Scenario 10: 'DS 2028 PM Peak (120) - Traffic Only' (FG2: 'DS 2028 PM Peak', Plan 3: 'Traffic Only')

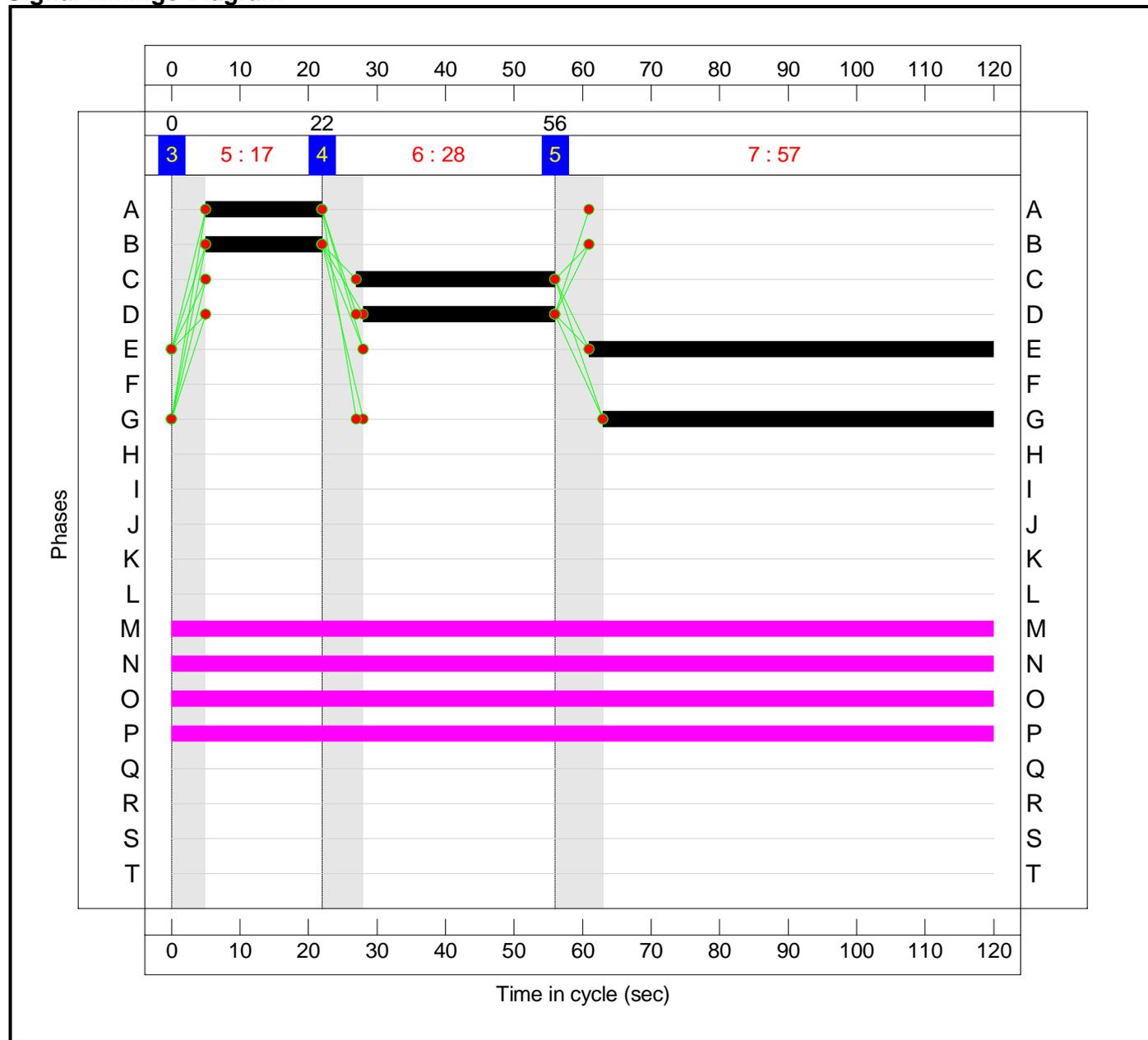
Stage Sequence Diagram



Stage Timings

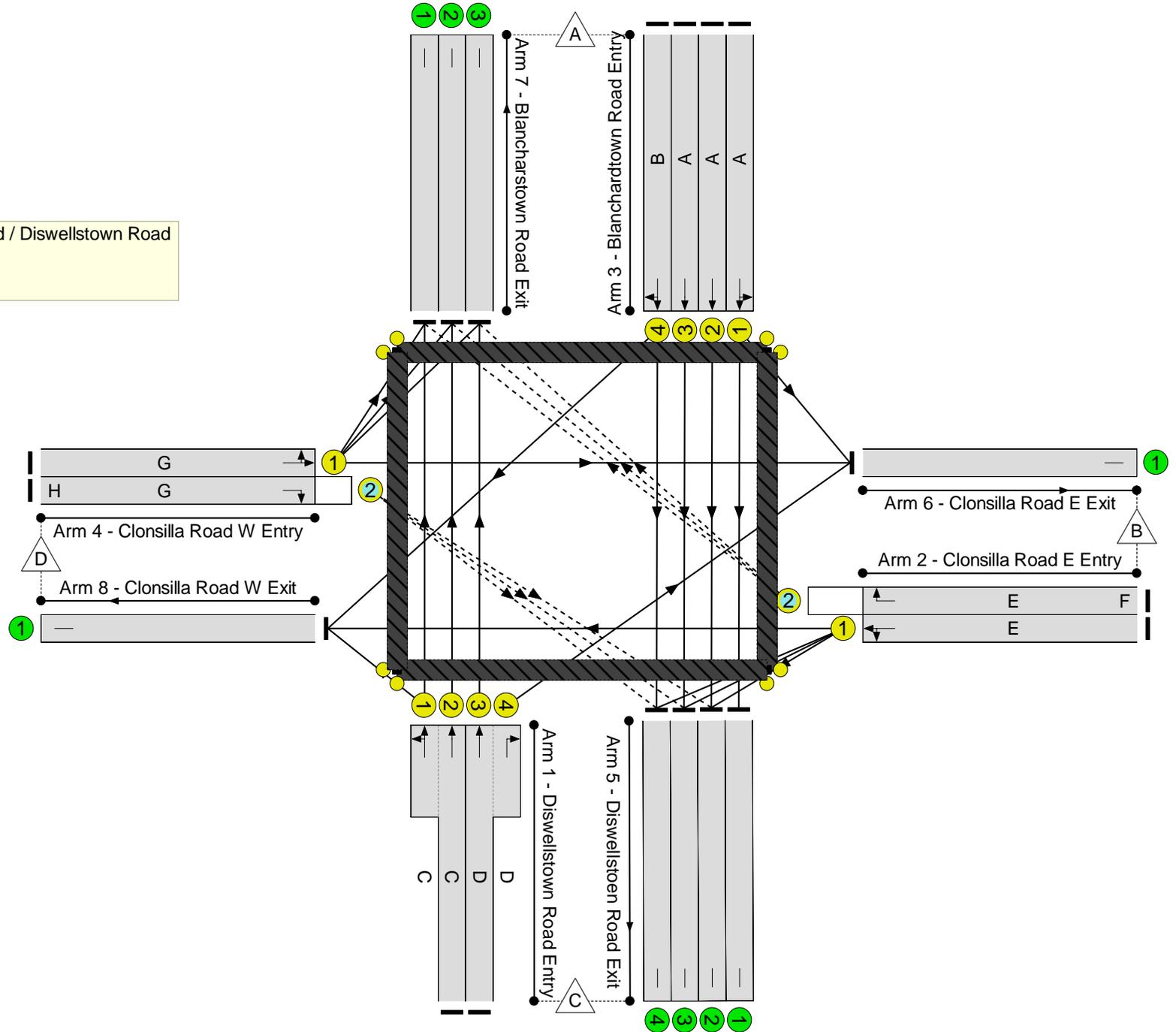
Stage	3	4	5
Duration	17	28	57
Change Point	0	22	56

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: 29.9 %  
 Total Traffic Delay: 33.3 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.3%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.3%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	29	-	404	1892:1693	308+276	69.3 : 69.3%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	28	-	319	1892:1596	333+178	62.4 : 62.4%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	59	-	589	1716	858	68.6%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	59	0	142	1751	559	25.4%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	17	-	191	1859	279	68.5%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	17	-	199	1915	287	69.3%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	17	-	199	1915	287	69.3%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	17	-	191	1858	279	68.5%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	57	-	221	1795	868	25.5%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	57	0	111	1665	236	47.1%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	350	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	349	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	287	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	142	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	285	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	280	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	408	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		0	0	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		0	0	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		0	0	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		0	0	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	252	0	1	24.4	8.1	0.9	33.3	-	-	-	-
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	252	0	1	24.4	8.1	0.9	33.3	-	-	-	-
1/2+1/1	404	404	-	-	-	4.3	1.1	-	5.4	48.3	7.2	1.1	8.3
1/3+1/4	319	319	-	-	-	3.4	0.8	-	4.2	47.8	6.5	0.8	7.4
2/1	589	589	-	-	-	3.7	1.1	-	4.8	29.5	14.9	1.1	16.0
2/2	142	142	141	0	1	0.6	0.2	0.3	1.1	27.5	2.6	0.2	2.7
3/1	191	191	-	-	-	2.6	1.1	-	3.6	68.3	6.0	1.1	7.1
3/2	199	199	-	-	-	2.7	1.1	-	3.8	68.3	6.2	1.1	7.3
3/3	199	199	-	-	-	2.7	1.1	-	3.8	68.3	6.2	1.1	7.3
3/4	191	191	-	-	-	2.6	1.1	-	3.6	68.4	6.0	1.1	7.1
4/1	221	221	-	-	-	1.1	0.2	-	1.3	21.1	4.3	0.2	4.5
4/2	111	111	111	0	0	0.7	0.4	0.6	1.7	54.9	3.0	0.4	3.5
5/1	162	162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	349	349	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	287	287	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	142	142	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	285	285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/3	280	280	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	408	408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P2	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf

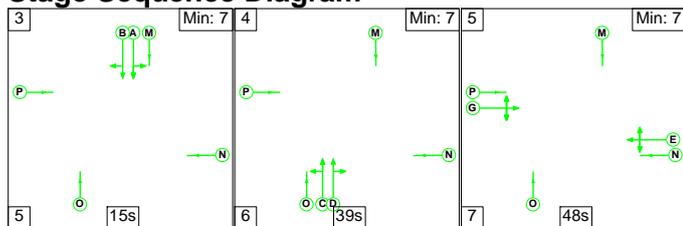
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	29.9	Total Delay for Signalled Lanes (pcuHr):	33.34	Cycle Time (s):	120
	PRC Over All Lanes (%):	29.9	Total Delay Over All Lanes(pcuHr):	33.34		

Full Input Data And Results

Scenario 11: 'DS 2043 AM Peak (120) - Traffic Only' (FG3: 'DS 2043 AM Peak', Plan 3: 'Traffic Only')

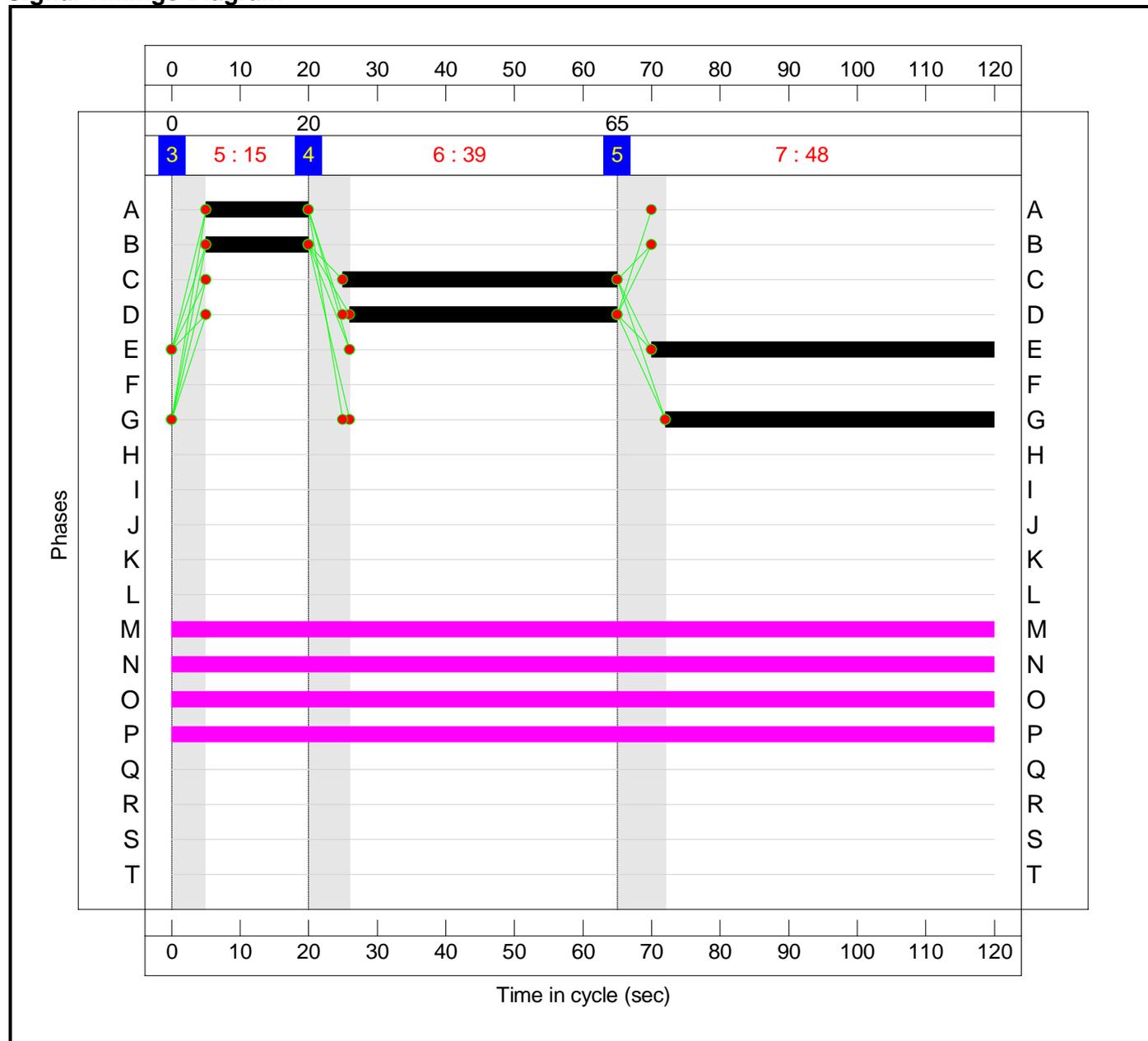
Stage Sequence Diagram



Stage Timings

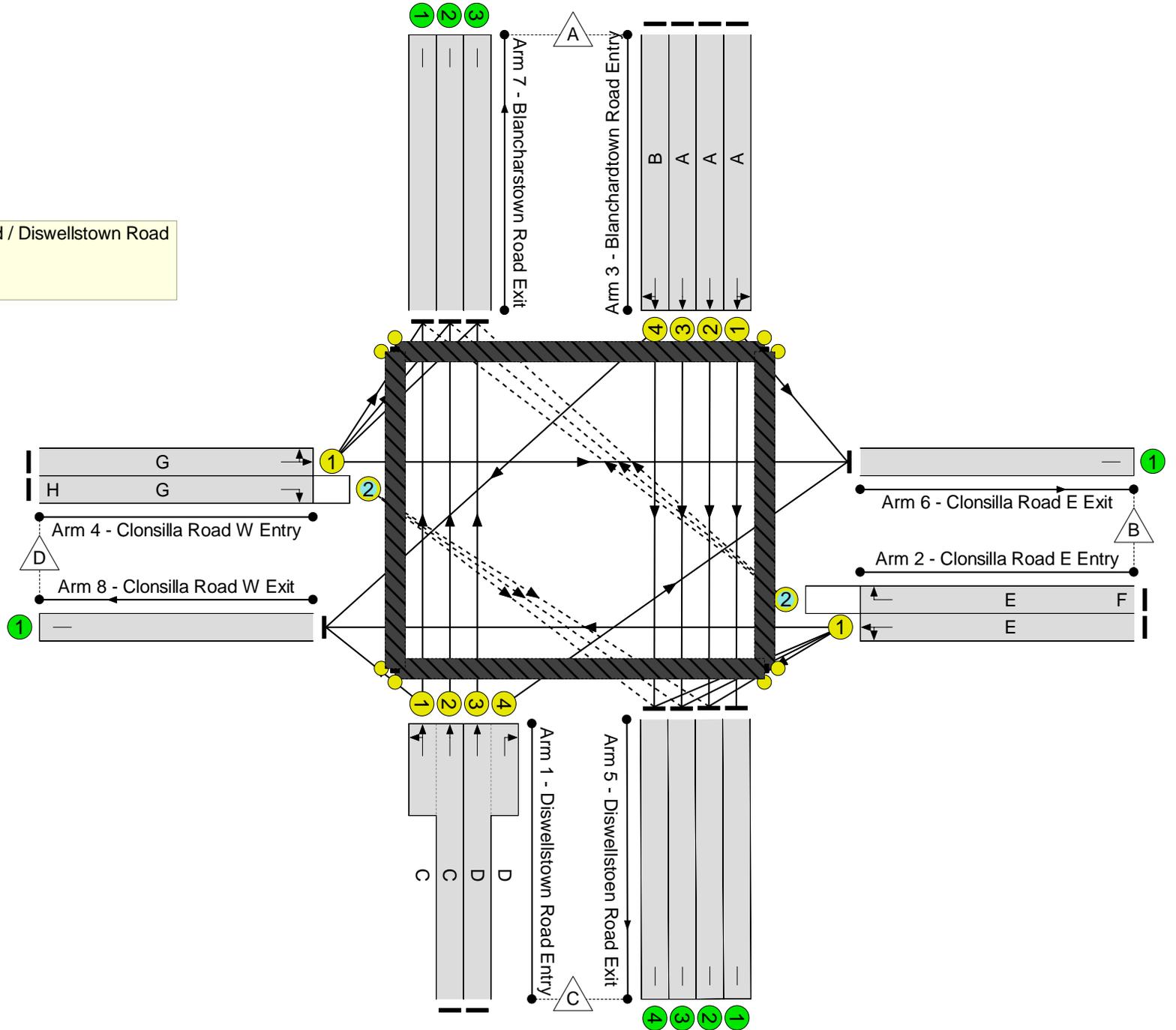
Stage	3	4	5
Duration	15	39	48
Change Point	0	20	65

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: 4.5 %  
 Total Traffic Delay: 54.2 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	86.2%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	86.2%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	40	-	621	1892:1665	404+329	84.7 : 84.7%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	39	-	500	1892:1596	566+66	79.2 : 79.2%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	50	-	451	1697	721	62.5%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	50	0	36	1751	194	18.5%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	15	-	214	1873	250	85.7%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	15	-	220	1915	255	86.2%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	15	-	220	1915	255	86.2%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	15	-	220	1915	255	86.2%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	48	-	555	1789	731	76.0%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	48	0	206	1665	249	82.6%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	190	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	386	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	151	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	419	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	525	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	367	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		0	0	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		0	0	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		0	0	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		0	0	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	241	0	1	33.5	19.9	0.9	54.2	-	-	-	-
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	241	0	1	33.5	19.9	0.9	54.2	-	-	-	-
1/2+1/1	621	621	-	-	-	5.8	2.6	-	8.5	49.1	14.6	2.6	17.2
1/3+1/4	500	500	-	-	-	5.0	1.8	-	6.8	49.0	14.4	1.8	16.3
2/1	451	451	-	-	-	3.4	0.8	-	4.2	33.6	11.7	0.8	12.5
2/2	36	36	36	0	0	0.2	0.1	0.3	0.6	56.7	0.7	0.1	0.8
3/1	214	214	-	-	-	3.0	2.6	-	5.6	94.8	7.0	2.6	9.6
3/2	220	220	-	-	-	3.1	2.7	-	5.8	95.1	7.1	2.7	9.9
3/3	220	220	-	-	-	3.1	2.7	-	5.8	95.1	7.1	2.7	9.9
3/4	220	220	-	-	-	3.1	2.7	-	5.8	95.1	7.1	2.7	9.9
4/1	555	555	-	-	-	4.7	1.6	-	6.2	40.5	15.7	1.6	17.3
4/2	206	206	205	0	1	2.1	2.2	0.6	4.8	84.7	6.4	2.2	8.6
5/1	190	190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	385	385	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	386	386	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	151	151	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	419	419	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/3	525	525	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	367	367	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P2	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf

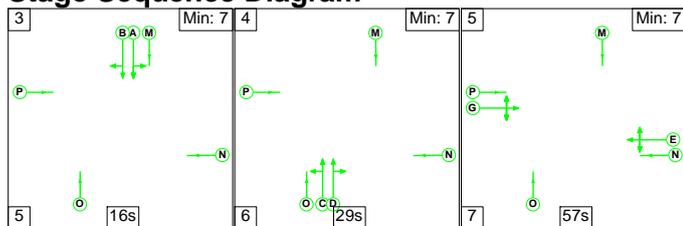
## Full Input Data And Results

C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	4.5	Total Delay for Signalled Lanes (pcuHr):	54.23	Cycle Time (s):	120
	PRC Over All Lanes (%):	4.5	Total Delay Over All Lanes(pcuHr):	54.23		

Full Input Data And Results

Scenario 12: 'DS 2043 PM Peak (120) - Traffic Only' (FG4: 'DS 2043 PM Peak', Plan 3: 'Traffic Only')

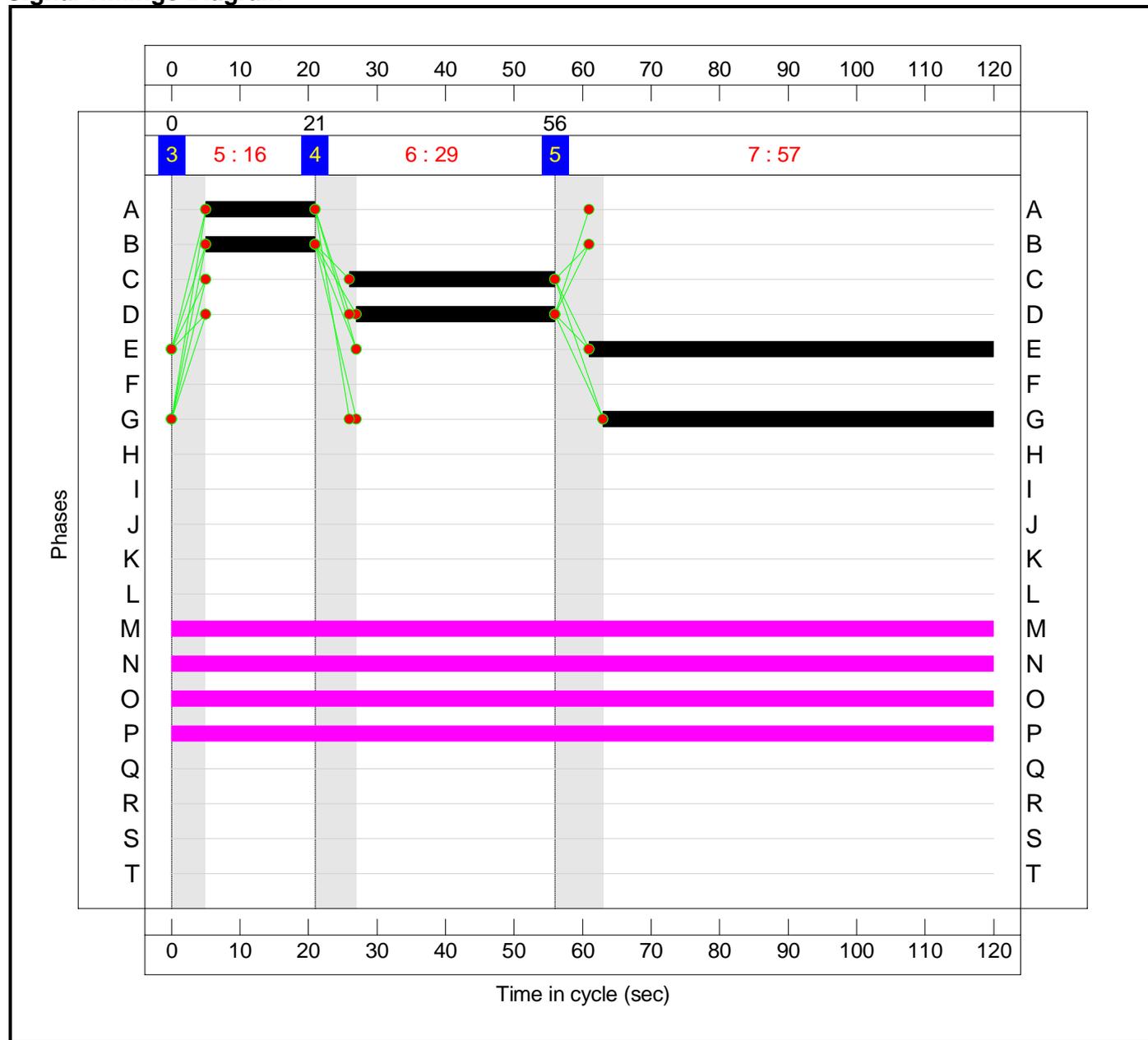
Stage Sequence Diagram



Stage Timings

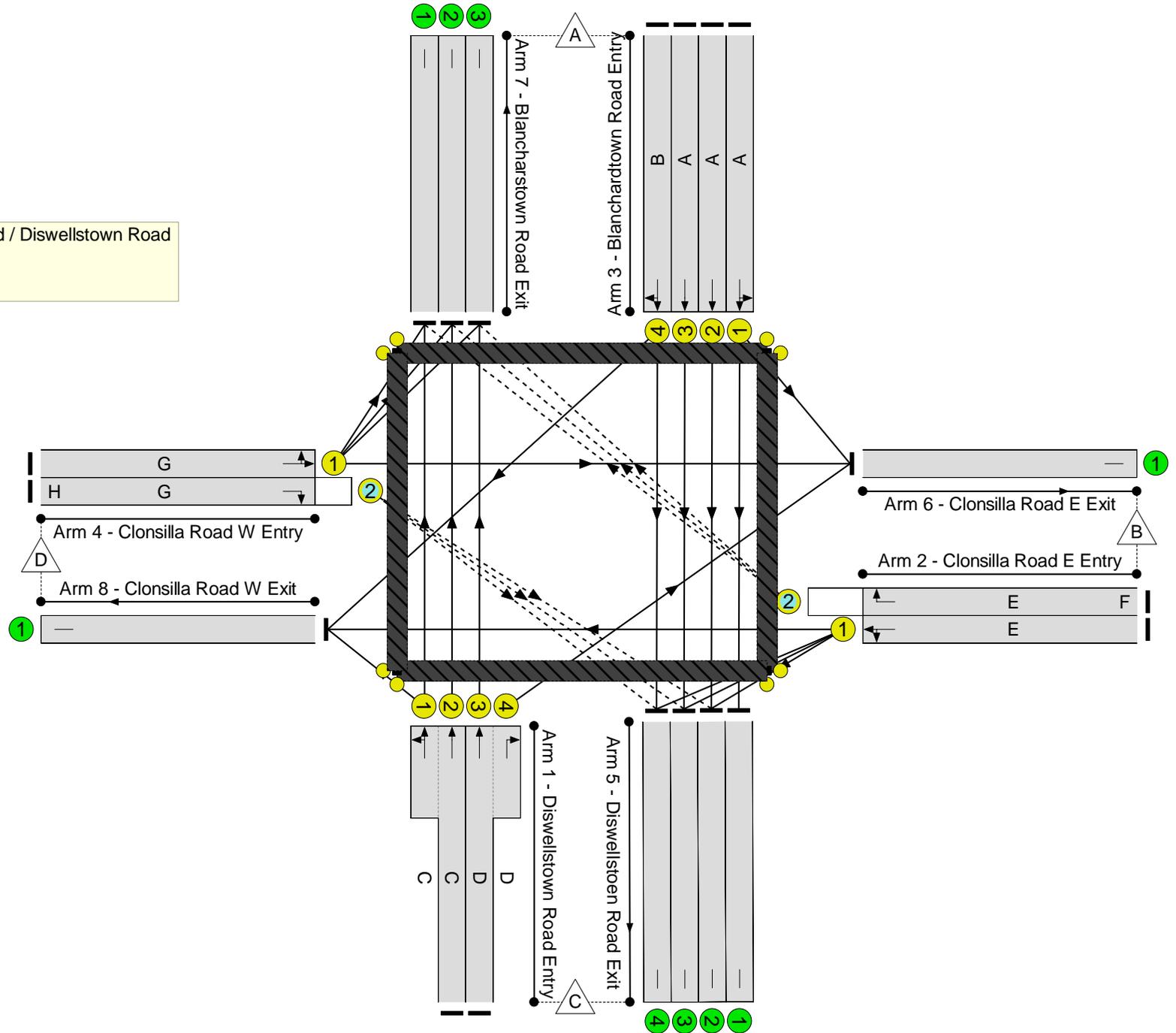
Stage	3	4	5
Duration	16	29	57
Change Point	0	21	56

Signal Timings Diagram



Full Input Data And Results

Blanchardstown Road / Clonsilla Road / Diswellstown Road  
 PRC: 19.8 %  
 Total Traffic Delay: 37.9 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	75.1%
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	75.1%
1/2+1/1	Diswellstown Road Entry Ahead Left	U	N/A	N/A	C		1	30	-	446	1892:1689	318+275	75.1 : 75.1%
1/3+1/4	Diswellstown Road Entry Right Ahead	U	N/A	N/A	D		1	29	-	362	1892:1596	336+197	67.9 : 67.9%
2/1	Clonsilla Road E Entry Left Ahead	U	N/A	N/A	E		1	59	-	645	1718	859	75.1%
2/2	Clonsilla Road E Entry Right	O	N/A	N/A	E	F	1	59	0	138	1751	540	25.6%
3/1	Blanchardstown Road Entry Ahead Left	U	N/A	N/A	A		1	16	-	188	1856	263	71.5%
3/2	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	16	-	193	1915	271	71.1%
3/3	Blanchardstown Road Entry Ahead	U	N/A	N/A	A		1	16	-	194	1915	271	71.5%
3/4	Blanchardstown Road Entry Ahead Right	U	N/A	N/A	B		1	16	-	188	1857	263	71.5%
4/1	Clonsilla Road W Entry Ahead Left	U	N/A	N/A	G		1	57	-	243	1797	869	28.0%
4/2	Clonsilla Road W Entry Right	O	N/A	N/A	G	H	1	57	0	141	1665	194	72.6%
5/1	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%
5/2	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	363	Inf	Inf	0.0%
5/3	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%

Full Input Data And Results

5/4	Diswellstoen Road Exit	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
6/1	Clonsilla Road E Exit	U	N/A	N/A	-		-	-	-	327	Inf	Inf	0.0%
7/1	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	146	Inf	Inf	0.0%
7/2	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	311	Inf	Inf	0.0%
7/3	Blancharstown Road Exit	U	N/A	N/A	-		-	-	-	301	Inf	Inf	0.0%
8/1	Clonsilla Road W Exit	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		0	0	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		0	0	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		0	0	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		0	0	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	278	0	1	26.3	10.5	1.1	37.9	-	-	-	-
<b>Blanchardstown Road / Clonsilla Road / Diswellstown Road</b>	-	-	278	0	1	26.3	10.5	1.1	37.9	-	-	-	-
1/2+1/1	446	446	-	-	-	4.8	1.5	-	6.2	50.3	8.8	1.5	10.3
1/3+1/4	362	362	-	-	-	3.9	1.0	-	4.9	48.8	7.6	1.0	8.7
2/1	645	645	-	-	-	4.3	1.5	-	5.8	32.3	17.2	1.5	18.7
2/2	138	138	137	0	1	0.6	0.2	0.3	1.1	28.3	2.5	0.2	2.7
3/1	188	188	-	-	-	2.6	1.2	-	3.8	72.5	6.0	1.2	7.2
3/2	193	193	-	-	-	2.6	1.2	-	3.8	71.5	6.1	1.2	7.3
3/3	194	194	-	-	-	2.7	1.2	-	3.9	71.8	6.1	1.2	7.4
3/4	188	188	-	-	-	2.6	1.2	-	3.8	72.4	6.0	1.2	7.2
4/1	243	243	-	-	-	1.3	0.2	-	1.4	21.4	4.8	0.2	5.0
4/2	141	141	141	0	0	1.1	1.3	0.8	3.1	79.9	4.3	1.3	5.5
5/1	158	158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	363	363	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	364	364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	319	319	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	327	327	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	311	311	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/3	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	449	449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P2	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf

## Full Input Data And Results

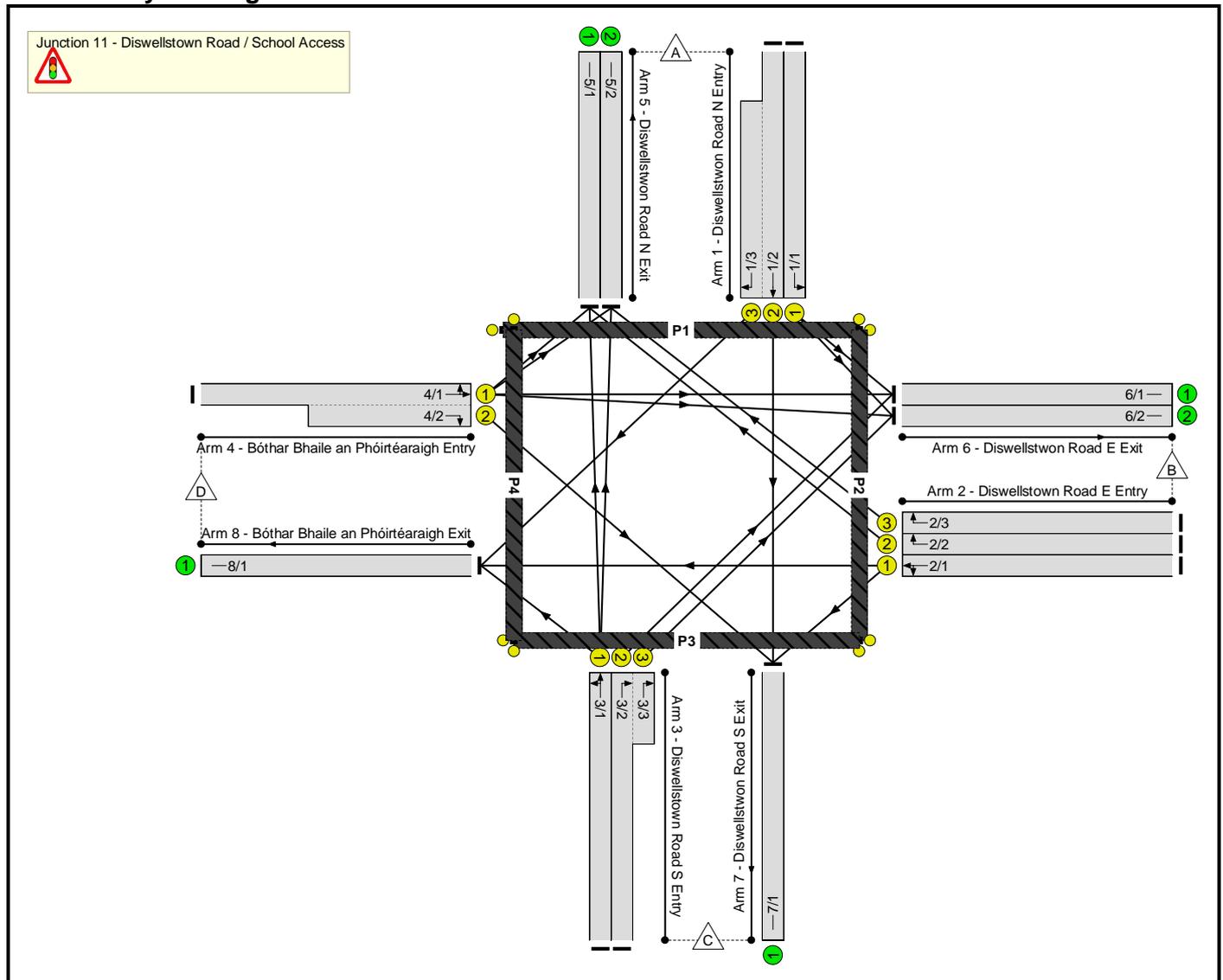
C1 - Blanchardstown Road / Clonsilla Road / Diswellstown Road	PRC for Signalled Lanes (%):	19.8	Total Delay for Signalled Lanes (pcuHr):	37.86	Cycle Time (s):	120
	PRC Over All Lanes (%):	19.8	Total Delay Over All Lanes(pcuHr):	37.86		

Full Input Data And Results  
**Full Input Data And Results**

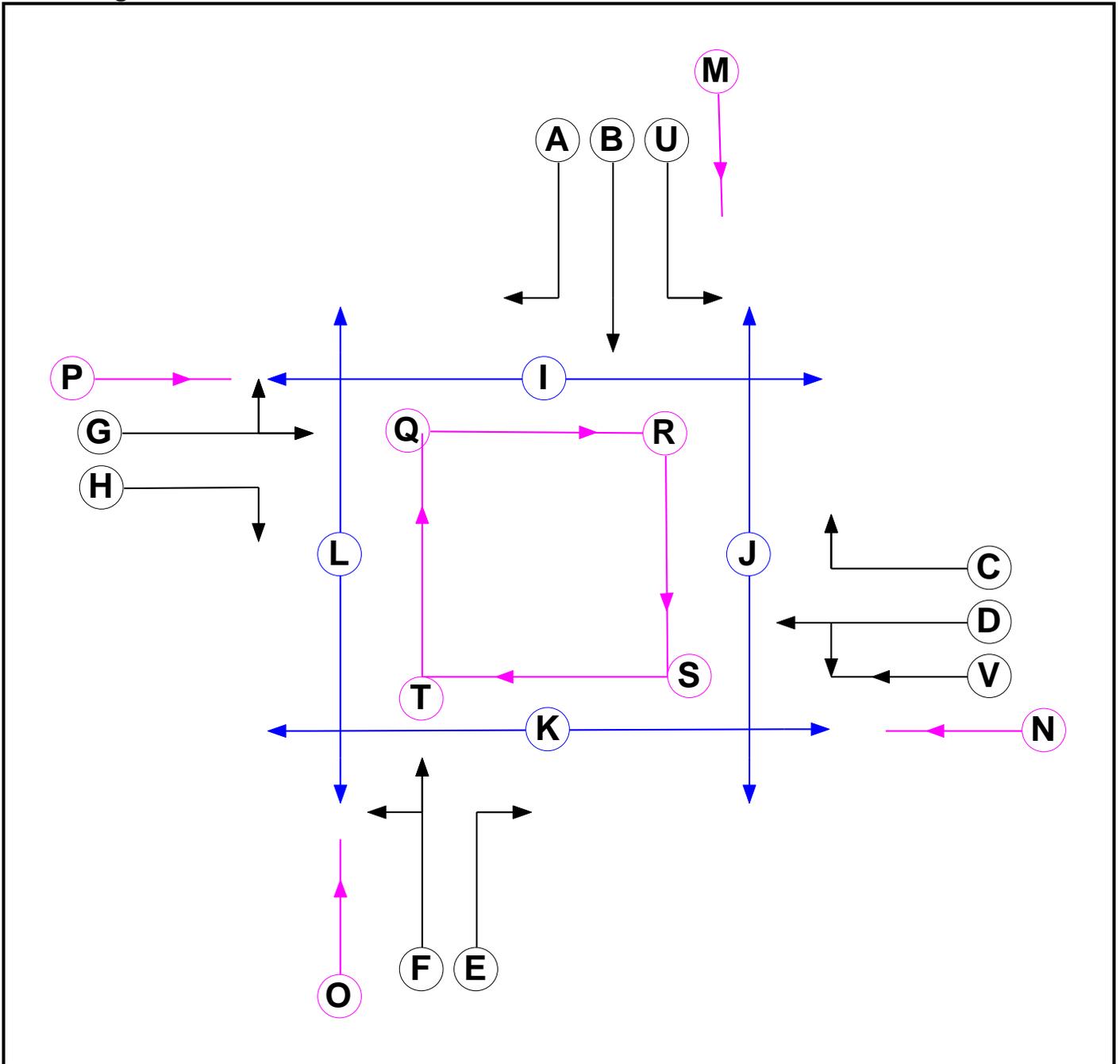
**User and Project Details**

<b>Project:</b>	<b>DART</b>
<b>Title:</b>	<b>DART West Junction Modelling</b>
<b>Location:</b>	Diswellstown Road / School Access
<b>Date Started:</b>	11/09/2021
<b>Additional detail:</b>	
<b>File name:</b>	DART_Junction11_DS_Option C_v1.lsg3x
<b>Author:</b>	Vishnu BVJ
<b>Company:</b>	AECOM
<b>Address:</b>	

**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	Traffic		7	7
H	Traffic		7	7
I	Pedestrian		7	7
J	Pedestrian		7	7
K	Pedestrian		7	7
L	Pedestrian		7	7
M	Cycle		7	7
N	Cycle		7	7
O	Cycle		7	7
P	Cycle		7	7
Q	Cycle		7	7
R	Cycle		7	7
S	Cycle		7	7
T	Cycle		7	7
U	Traffic		7	7
V	Traffic		7	7

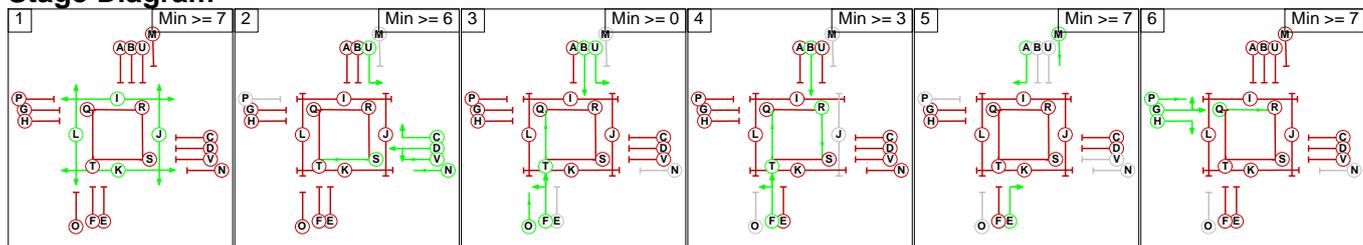
**Phase Intergrens Matrix**

		Starting Phase																					
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Terminating Phase	A	-	-	5	5	-	7	5	5	5	-	-	12	-	-	-	-	5	-	-	10	-	-
	B	-	-	5	5	-	-	5	5	5	-	9	-	-	-	-	-	5	-	8	-	-	6
	C	5	5	-	5	5	6	-	12	5	-	-	-	-	-	-	-	10	5	-	-	-	-
	D	5	5	-	-	5	6	-	5	-	5	-	9	-	-	-	-	-	5	-	9	-	-
	E	-	-	6	5	-	5	5	-	11	5	-	-	-	-	-	-	-	9	5	-	-	-
	F	5	-	5	5	-	-	5	5	9	-	5	9	-	-	-	-	9	-	5	-	-	-
	G	5	5	5	-	5	5	-	-	10	9	-	5	-	-	-	-	-	8	-	5	6	-
	H	5	5	-	5	6	5	-	-	-	-	5	11	-	-	-	-	-	-	9	5	-	6
	I	19	19	19	-	-	19	19	-	-	-	-	-	19	-	-	19	-	-	-	19	19	-
	J	-	-	20	20	20	-	20	-	-	-	-	20	20	-	-	20	-	-	-	-	20	20
	K	-	18	-	-	18	18	-	18	-	-	-	-	-	18	18	-	-	18	-	-	-	18
	L	16	-	-	16	-	16	16	16	-	-	-	-	-	-	-	16	16	-	-	16	-	-
	M	-	-	-	-	-	-	-	-	5	8	-	-	-	-	-	-	-	5	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	5	9	-	-	-	-	-	-	-	5	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	5	8	-	-	-	-	-	-	5	-	-	-
	P	-	-	-	-	-	-	-	-	9	-	-	5	-	-	-	-	-	-	-	5	-	-
	Q	5	5	5	-	-	5	-	-	-	11	-	-	7	-	-	-	-	-	-	-	5	-
	R	-	-	5	5	5	-	5	-	-	-	11	-	-	7	-	-	-	-	-	9	5	-
	S	-	5	-	-	5	5	-	5	-	-	-	10	-	-	7	-	-	-	-	-	-	-
	T	5	-	-	5	-	-	5	5	11	-	-	-	-	-	-	6	-	-	-	-	-	-
	U	-	-	-	-	-	-	5	-	5	8	-	-	-	-	-	-	-	5	5	-	-	-
V	-	5	-	-	-	-	-	5	-	5	9	-	-	-	-	-	-	-	5	-	-	-	

**Phases in Stage**

Stage No.	Phases in Stage
1	IJKL
2	CDNSUV
3	BFOTU
4	BFRT
5	AEM
6	GHPQ

**Stage Diagram**



Full Input Data And Results

**Phase Delays**

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	I	Losing	1	1
1	2	J	Losing	0	0
1	2	K	Losing	2	2
3	5	A	Gaining absolute	8	8
3	5	F	Losing	3	3
3	5	T	Losing	3	3
6	1	G	Losing	1	1
6	1	I	Gaining absolute	11	11
6	1	K	Gaining absolute	11	11
6	1	P	Losing	2	2

**Prohibited Stage Change**

		To Stage					
		1	2	3	4	5	6
From Stage	1	█	20	20	19	20	20
	2	12	█	9	9	5	10
	3	11	8	█	5	8	9
	4	11	9	9	█	5	9
	5	12	6	10	10	█	5
	6	11	9	6	8	7	█

Full Input Data And Results

**Give-Way Lane Input Data**

**Junction: Junction 11 - Diswellstown Road / School Access**

There are no Opposed Lanes in this Junction

Full Input Data And Results

**Lane Input Data**

Junction: Junction 11 - Diswellstown Road / School Access												
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 (Diswellstown Road N Entry)	U	U	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 6 Left	13.00
1/2 (Diswellstown Road N Entry)	U	B	2	3	139.3	Geom	-	3.20	0.00	Y	Arm 7 Ahead	Inf
1/3 (Diswellstown Road N Entry)	U	A	2	3	13.9	Geom	-	3.20	0.00	Y	Arm 8 Right	18.00
2/1 (Diswellstown Road E Entry)	U	D	2	3	8.7	Geom	-	3.20	0.00	Y	Arm 7 Left	Inf
											Arm 8 Ahead	Inf
2/2 (Diswellstown Road E Entry)	U	C	2	3	28.0	Geom	-	3.20	0.00	Y	Arm 5 Right	15.00
2/3 (Diswellstown Road E Entry)	U	C	2	3	28.0	Geom	-	3.20	0.00	N	Arm 5 Right	15.00
3/1 (Diswellstown Road S Entry)	U	F	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 5 Ahead	Inf
3/2 (Diswellstown Road S Entry)	U	E	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 8 Left	13.00
3/3 (Diswellstown Road S Entry)	U	E	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 6 Right	7.50
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	U	G	2	3	15.5	Geom	-	3.20	0.00	Y	Arm 5 Left	16.00
											Arm 6 Ahead	Inf
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	U	H	2	3	11.3	Geom	-	3.20	0.00	Y	Arm 7 Right	15.00
5/1 (Diswellstown Road N Exit)	U		2	3	13.9	Inf	-	-	-	-	-	-
5/2 (Diswellstown Road N Exit)	U		2	3	139.3	Inf	-	-	-	-	-	-
6/1 (Diswellstown Road E Exit)	U		2	3	28.0	Inf	-	-	-	-	-	-
6/2 (Diswellstown Road E Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

7/1 (Diswellstwon Road S Exit)	U		2	3	68.5	Inf	-	-	-	-	-	-
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit)	U		2	3	15.5	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS 2028 AM Peak'	08:00	09:00	01:00	
2: 'DS 2028 PM Peak'	17:00	18:00	01:00	
3: 'DS 2043 AM Peak'	08:00	09:00	01:00	
4: 'DS 2043 PM Peak'	17:00	18:00	01:00	

Scenario 1: 'DS 2028 AM Peak (120s)' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	363	470	99	932
	B	555	0	190	68	813
	C	568	64	0	35	667
	D	113	10	12	0	135
	Tot.	1236	437	672	202	2547

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 1: DS 2028 AM Peak (120s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	363
1/2 (with short)	569(In) 470(Out)
1/3 (short)	99
2/1	258
2/2	268
2/3	287
3/1	603
3/2 (with short)	64(In) 32(Out)
3/3 (short)	32
4/1 (with short)	135(In) 123(Out)
4/2 (short)	12
5/1	608
5/2	628
6/1	218
6/2	219
7/1	672
8/1	202

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	73.6 %	1935	1935
				Arm 8 Ahead	Inf	26.4 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	94.2 %	1922	1922
				Arm 8 Left	13.00	5.8 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	91.9 %	1782	1782
				Arm 6 Ahead	Inf	8.1 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 2: 'DS 2028 PM Peak (120s)'** (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	539	534	31	1104	
B	338	0	69	3	410	
C	368	136	0	8	512	
D	16	7	15	0	38	
Tot.	722	682	618	42	2064	

**Traffic Lane Flows**

Lane	Scenario 2: DS 2028 PM Peak (120s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	539
1/2 (with short)	565(In) 534(Out)
1/3 (short)	31
2/1	72
2/2	159
2/3	179
3/1	376
3/2 (with short)	136(In) 68(Out)
3/3 (short)	68
4/1 (with short)	38(In) 23(Out)
4/2 (short)	15
5/1	351
5/2	371
6/1	340
6/2	342
7/1	618
8/1	42

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	95.8 %	1935	1935
				Arm 8 Ahead	Inf	4.2 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	97.9 %	1930	1930
				Arm 8 Left	13.00	2.1 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	69.6 %	1817	1817
				Arm 6 Ahead	Inf	30.4 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 3: 'DS 2043 AM Peak (120s)'** (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	589	580	113	1282	
B	542	0	181	65	788	
C	465	108	0	29	602	
D	110	12	17	0	139	
Tot.	1117	709	778	207	2811	

**Traffic Lane Flows**

Lane	Scenario 3: DS 2043 AM Peak (120s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	589
1/2 (with short)	693(In) 580(Out)
1/3 (short)	113
2/1	246
2/2	261
2/3	281
3/1	494
3/2 (with short)	108(In) 54(Out)
3/3 (short)	54
4/1 (with short)	139(In) 122(Out)
4/2 (short)	17
5/1	548
5/2	569
6/1	354
6/2	355
7/1	778
8/1	207

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	73.6 %	1935	1935
				Arm 8 Ahead	Inf	26.4 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	94.1 %	1922	1922
				Arm 8 Left	13.00	5.9 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	90.2 %	1784	1784
				Arm 6 Ahead	Inf	9.8 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 4: 'DS 2043 PM Peak (120s)'** (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	562	544	35	1141	
B	400	0	72	3	475	
C	393	158	0	7	558	
D	18	12	11	0	41	
Tot.	811	732	627	45	2215	

**Traffic Lane Flows**

Lane	Scenario 4: DS 2043 PM Peak (120s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	562
1/2 (with short)	579(In) 544(Out)
1/3 (short)	35
2/1	75
2/2	189
2/3	211
3/1	400
3/2 (with short)	158(In) 79(Out)
3/3 (short)	79
4/1 (with short)	41(In) 30(Out)
4/2 (short)	11
5/1	394
5/2	417
6/1	366
6/2	366
7/1	627
8/1	45

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	96.0 %	1935	1935
				Arm 8 Ahead	Inf	4.0 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	98.3 %	1931	1931
				Arm 8 Left	13.00	1.8 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	60.0 %	1832	1832
				Arm 6 Ahead	Inf	40.0 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 5: 'DS 2028 AM Peak (150s)'** (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	363	470	99	932	
B	555	0	190	68	813	
C	568	64	0	35	667	
D	113	10	12	0	135	
Tot.	1236	437	672	202	2547	

**Traffic Lane Flows**

Lane	Scenario 5: DS 2028 AM Peak (150s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	363
1/2 (with short)	569(In) 470(Out)
1/3 (short)	99
2/1	258
2/2	268
2/3	287
3/1	603
3/2 (with short)	64(In) 32(Out)
3/3 (short)	32
4/1 (with short)	135(In) 123(Out)
4/2 (short)	12
5/1	608
5/2	628
6/1	218
6/2	219
7/1	672
8/1	202

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	73.6 %	1935	1935
				Arm 8 Ahead	Inf	26.4 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	94.2 %	1922	1922
				Arm 8 Left	13.00	5.8 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	91.9 %	1782	1782
				Arm 6 Ahead	Inf	8.1 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 6: 'DS 2028 PM Peak (150s)'** (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	539	534	31	1104	
B	338	0	69	3	410	
C	368	136	0	8	512	
D	16	7	15	0	38	
Tot.	722	682	618	42	2064	

**Traffic Lane Flows**

Lane	Scenario 6: DS 2028 PM Peak (150s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	539
1/2 (with short)	565(In) 534(Out)
1/3 (short)	31
2/1	72
2/2	159
2/3	179
3/1	376
3/2 (with short)	136(In) 68(Out)
3/3 (short)	68
4/1 (with short)	38(In) 23(Out)
4/2 (short)	15
5/1	351
5/2	371
6/1	340
6/2	342
7/1	618
8/1	42

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	95.8 %	1935	1935
				Arm 8 Ahead	Inf	4.2 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	97.9 %	1930	1930
				Arm 8 Left	13.00	2.1 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	69.6 %	1817	1817
				Arm 6 Ahead	Inf	30.4 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 7: 'DS 2043 AM Peak (150s)'** (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	589	580	113	1282	
B	542	0	181	65	788	
C	465	108	0	29	602	
D	110	12	17	0	139	
Tot.	1117	709	778	207	2811	

**Traffic Lane Flows**

Lane	Scenario 7: DS 2043 AM Peak (150s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	589
1/2 (with short)	693(In) 580(Out)
1/3 (short)	113
2/1	246
2/2	261
2/3	281
3/1	494
3/2 (with short)	108(In) 54(Out)
3/3 (short)	54
4/1 (with short)	139(In) 122(Out)
4/2 (short)	17
5/1	548
5/2	569
6/1	354
6/2	355
7/1	778
8/1	207

Full Input Data And Results

**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	73.6 %	1935	1935
				Arm 8 Ahead	Inf	26.4 %		
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	94.1 %	1922	1922
				Arm 8 Left	13.00	5.9 %		
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	90.2 %	1784	1784
				Arm 6 Ahead	Inf	9.8 %		
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

**Scenario 8: 'DS 2043 PM Peak (150s)'** (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	562	544	35	1141	
B	400	0	72	3	475	
C	393	158	0	7	558	
D	18	12	11	0	41	
Tot.	811	732	627	45	2215	

**Traffic Lane Flows**

Lane	Scenario 8: DS 2043 PM Peak (150s)
<b>Junction: Junction 11 - Diswellstown Road / School Access</b>	
1/1	562
1/2 (with short)	579(In) 544(Out)
1/3 (short)	35
2/1	75
2/2	189
2/3	211
3/1	400
3/2 (with short)	158(In) 79(Out)
3/3 (short)	79
4/1 (with short)	41(In) 30(Out)
4/2 (short)	11
5/1	394
5/2	417
6/1	366
6/2	366
7/1	627
8/1	45

Full Input Data And Results

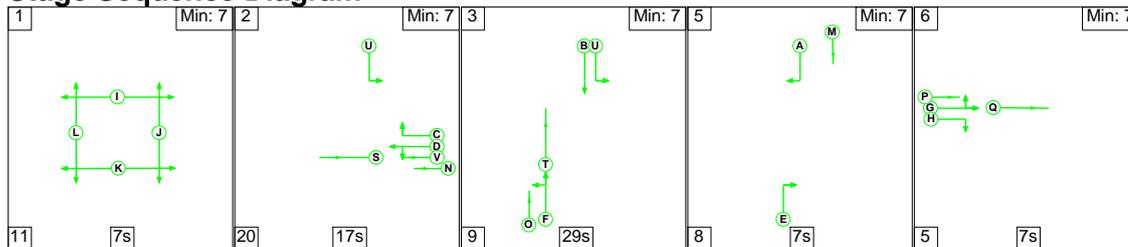
**Lane Saturation Flows**

Junction: Junction 11 - Diswellstown Road / School Access								
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 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 6 Left	13.00	100.0 %	1735	1735
1/2 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1935	1935
1/3 (Diswellstwon Road N Entry)	3.20	0.00	Y	Arm 8 Right	18.00	100.0 %	1786	1786
2/1 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 7 Left	Inf	96.0 %	1935	1935
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 8 Ahead	Inf	4.0 %	1935	1935
2/2 (Diswellstown Road E Entry)	3.20	0.00	Y	Arm 5 Right	15.00	100.0 %	1759	1759
2/3 (Diswellstown Road E Entry)	3.20	0.00	N	Arm 5 Right	15.00	100.0 %	1886	1886
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 5 Ahead	Inf	98.3 %	1931	1931
3/1 (Diswellstown Road S Entry)	3.20	0.00	Y	Arm 8 Left	13.00	1.8 %	1931	1931
3/2 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
3/3 (Diswellstown Road S Entry)	3.25	0.00	Y	Arm 6 Right	7.50	100.0 %	1617	1617
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 5 Left	16.00	60.0 %	1832	1832
4/1 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 6 Ahead	Inf	40.0 %	1832	1832
4/2 (Bóthar Bhaile an Phóirtéaraigh Entry)	3.20	0.00	Y	Arm 7 Right	15.00	100.0 %	1759	1759
5/1 (Diswellstwon Road N Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
5/2 (Diswellstwon Road N Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
6/1 (Diswellstwon Road E Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
6/2 (Diswellstwon Road E Exit Lane 2)				Infinite Saturation Flow			Inf	Inf
7/1 (Diswellstwon Road S Exit Lane 1)				Infinite Saturation Flow			Inf	Inf
8/1 (Bóthar Bhaile an Phóirtéaraigh Exit Lane 1)				Infinite Saturation Flow			Inf	Inf

Full Input Data And Results

Scenario 1: 'DS 2028 AM Peak (120s)' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

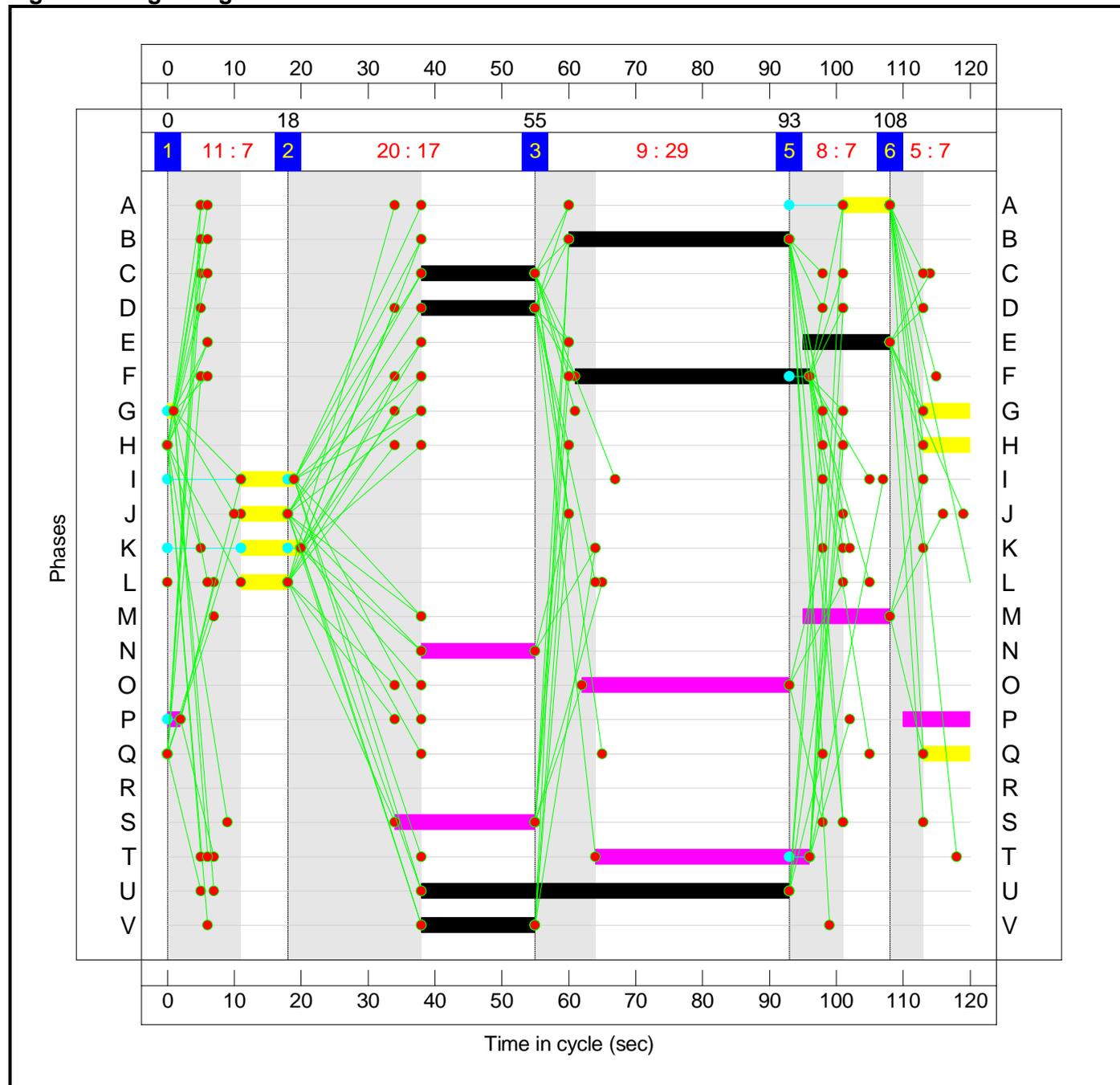
Stage Sequence Diagram



Stage Timings

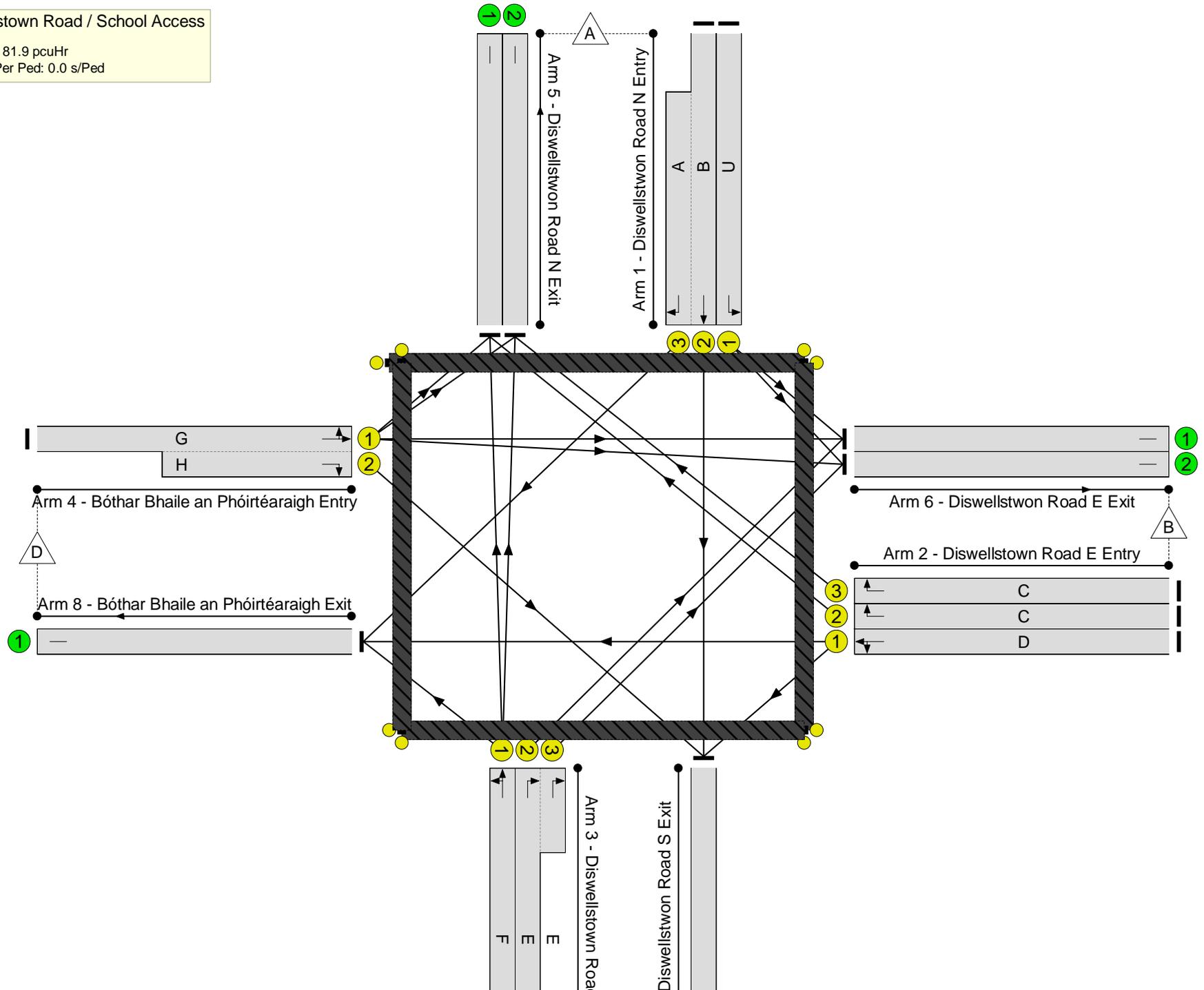
Stage	1	2	3	5	6
Duration	7	17	29	7	7
Change Point	0	18	55	93	108

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: -16.2 %  
 Total Traffic Delay: 81.9 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	104.6%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	104.6%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	55	-	363	1735	810	44.8%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	33:7	-	569	1935:1786	537+119	87.6 : 83.1%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	17	-	258	1935	290	88.9%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	17	-	268	1759	264	101.6%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	17	-	287	1886	283	101.4%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	35	-	603	1922	577	104.6%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	64	1617:1617	170+170	18.8 : 18.8%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	135	1782:1759	134+13	92.0 : 92.0%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	608	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	628	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	219	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	672	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	7	-	0	-	0	0.0%

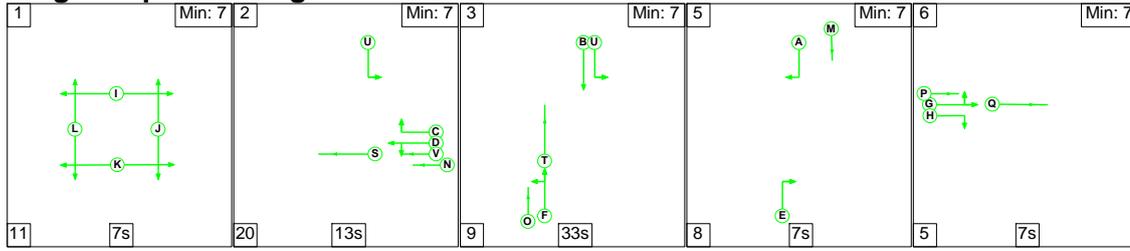
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	32.0	49.9	0.0	81.9	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	32.0	49.9	0.0	81.9	-	-	-	-
1/1	363	363	-	-	-	2.2	0.4	-	2.6	25.6	8.1	0.4	8.5
1/2+1/3	569	569	-	-	-	6.8	3.1	-	9.9	62.6	14.8	3.1	17.9
2/1	258	258	-	-	-	3.6	3.3	-	6.9	96.3	8.4	3.3	11.7
2/2	268	264	-	-	-	4.0	9.3	-	13.3	178.7	9.1	9.3	18.4
2/3	287	283	-	-	-	4.3	9.6	-	13.8	173.6	9.7	9.6	19.3
3/1	603	577	-	-	-	8.2	20.5	-	28.7	171.6	21.0	20.5	41.5
3/2+3/3	64	64	-	-	-	0.8	0.1	-	1.0	54.3	1.0	0.1	1.1
4/1+4/2	135	135	-	-	-	2.1	3.6	-	5.6	150.4	4.1	3.6	7.6
5/1	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	611	611	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	219	219	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	672	672	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / School Access			PRC for Signalled Lanes (%): -16.2		PRC Over All Lanes (%): -16.2		Total Delay for Signalled Lanes (pcuHr): 81.88		Total Delay Over All Lanes(pcuHr): 81.88		Cycle Time (s): 120		

Full Input Data And Results

Scenario 2: 'DS 2028 PM Peak (120s)' (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

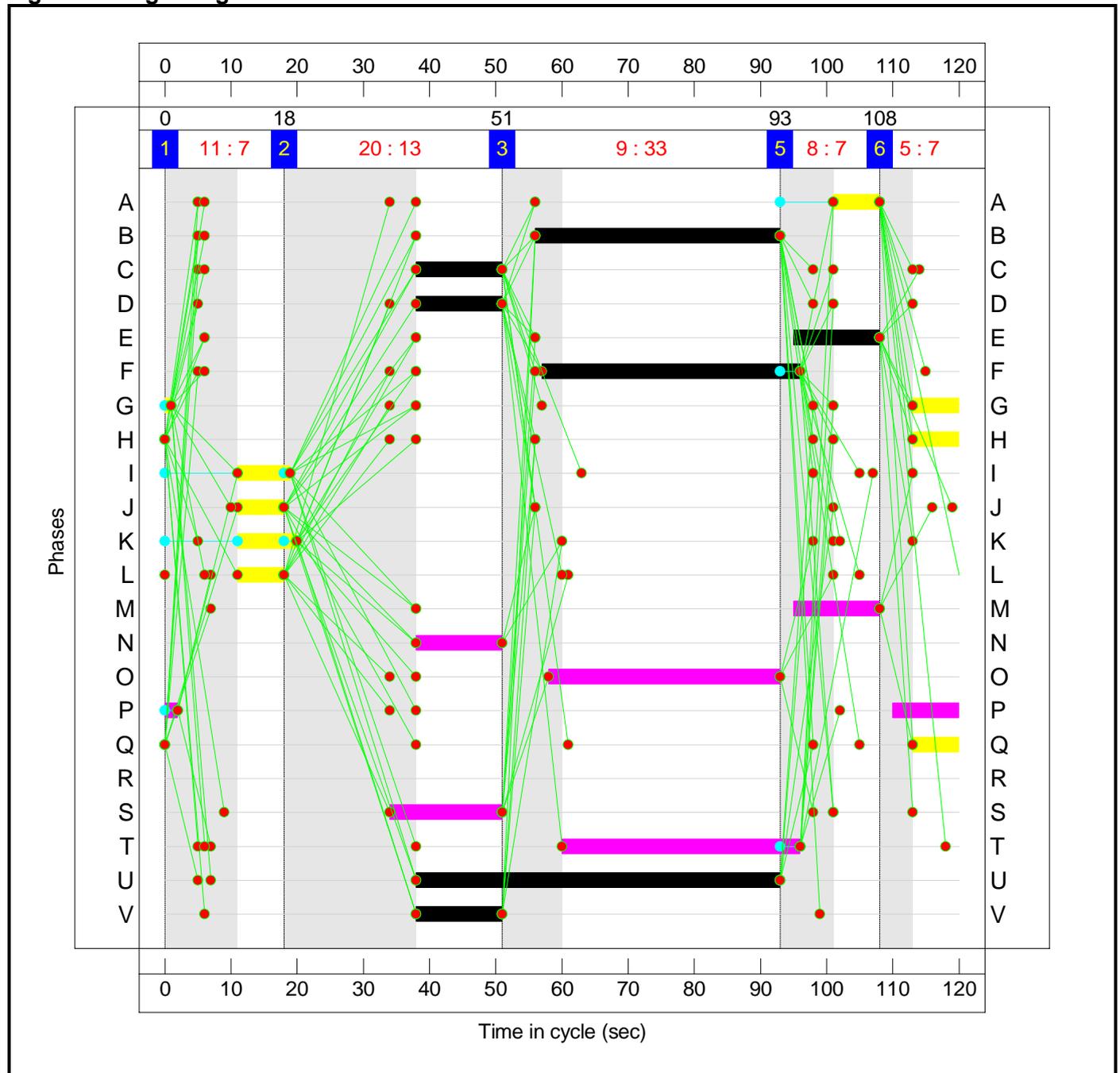
Stage Sequence Diagram



Stage Timings

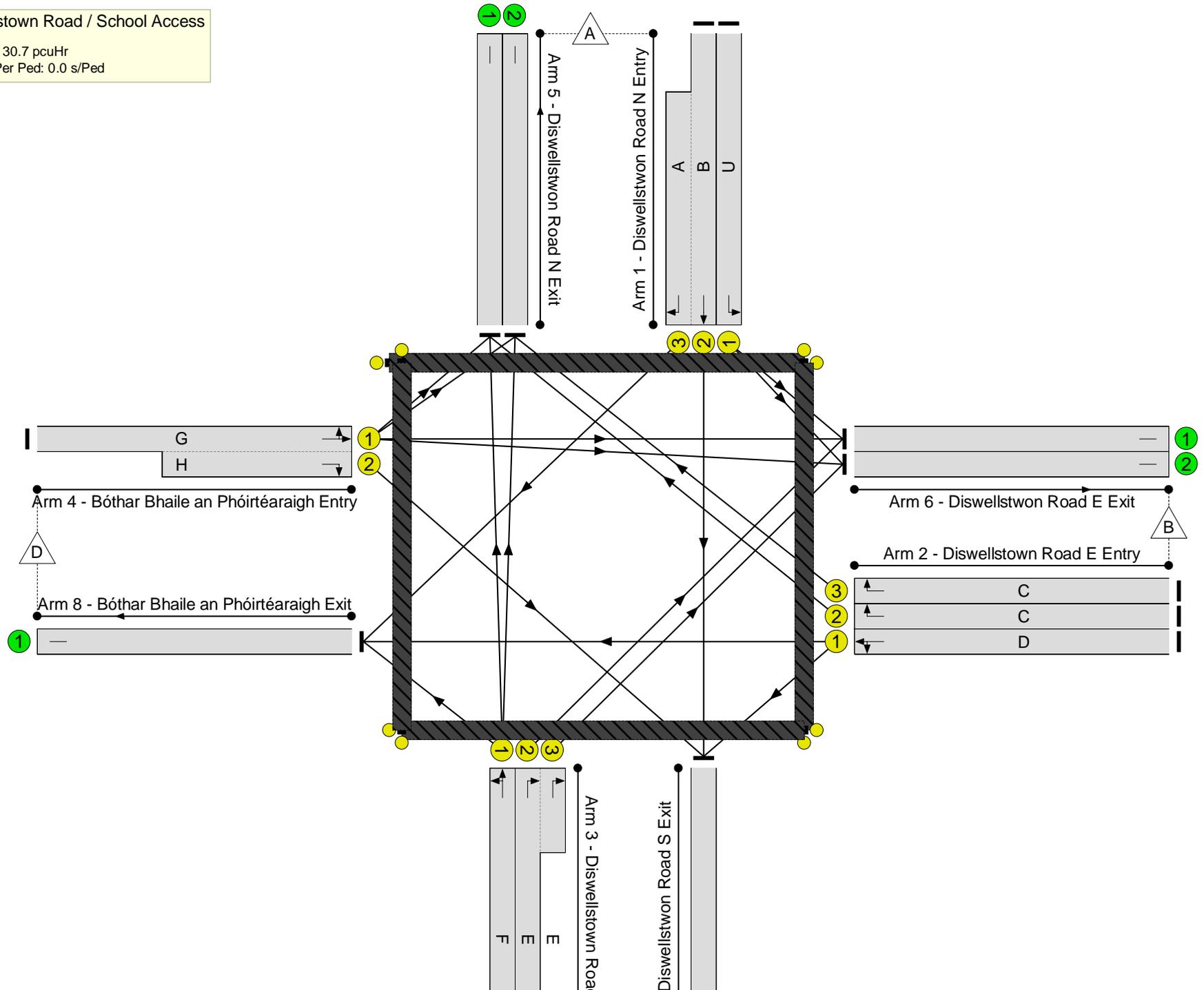
Stage	1	2	3	5	6
Duration	7	13	33	7	7
Change Point	0	18	51	93	108

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: 3.3 %  
 Total Traffic Delay: 30.7 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	87.1%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	87.1%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	55	-	539	1735	810	66.6%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	37:7	-	565	1935:1786	613+36	87.1 : 87.1%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	13	-	72	1935	226	31.9%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	13	-	159	1759	205	77.5%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	13	-	179	1886	220	81.4%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	39	-	376	1930	643	58.4%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	136	1617:1617	170+170	40.0 : 40.0%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	38	1817:1759	136+117	16.9 : 12.8%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	371	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	340	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	618	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-		-	-	-	42	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	7	-	0	-	0	0.0%

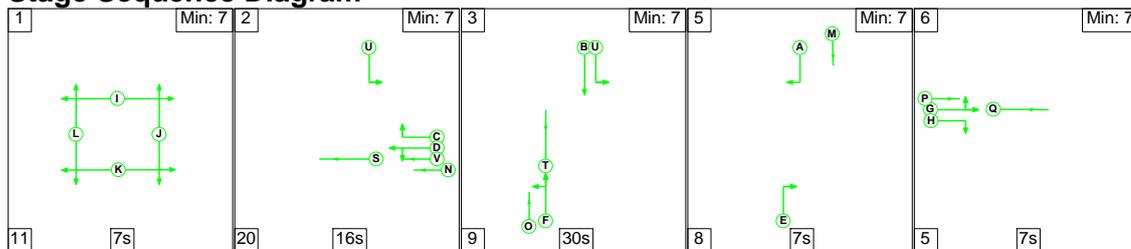
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	21.6	9.1	0.0	30.7	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	21.6	9.1	0.0	30.7	-	-	-	-
1/1	539	539	-	-	-	3.7	1.0	-	4.7	31.4	13.8	1.0	14.8
1/2+1/3	565	565	-	-	-	6.2	3.2	-	9.4	59.6	16.9	3.2	20.0
2/1	72	72	-	-	-	1.0	0.2	-	1.2	60.3	2.2	0.2	2.4
2/2	159	159	-	-	-	2.3	1.6	-	3.9	87.9	5.1	1.6	6.7
2/3	179	179	-	-	-	2.6	2.0	-	4.6	91.7	5.8	2.0	7.8
3/1	376	376	-	-	-	3.5	0.7	-	4.2	39.8	10.3	0.7	11.0
3/2+3/3	136	136	-	-	-	1.8	0.3	-	2.2	57.7	2.1	0.3	2.4
4/1+4/2	38	38	-	-	-	0.6	0.1	-	0.6	60.7	0.7	0.1	0.8
5/1	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	371	371	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	340	340	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	42	42	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / School Access		PRC for Signalled Lanes (%):		3.3		Total Delay for Signalled Lanes (pcuHr):		30.67		Cycle Time (s): 120			
		PRC Over All Lanes (%):		3.3		Total Delay Over All Lanes(pcuHr):		30.67					

Full Input Data And Results

Scenario 3: 'DS 2043 AM Peak (120s)' (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

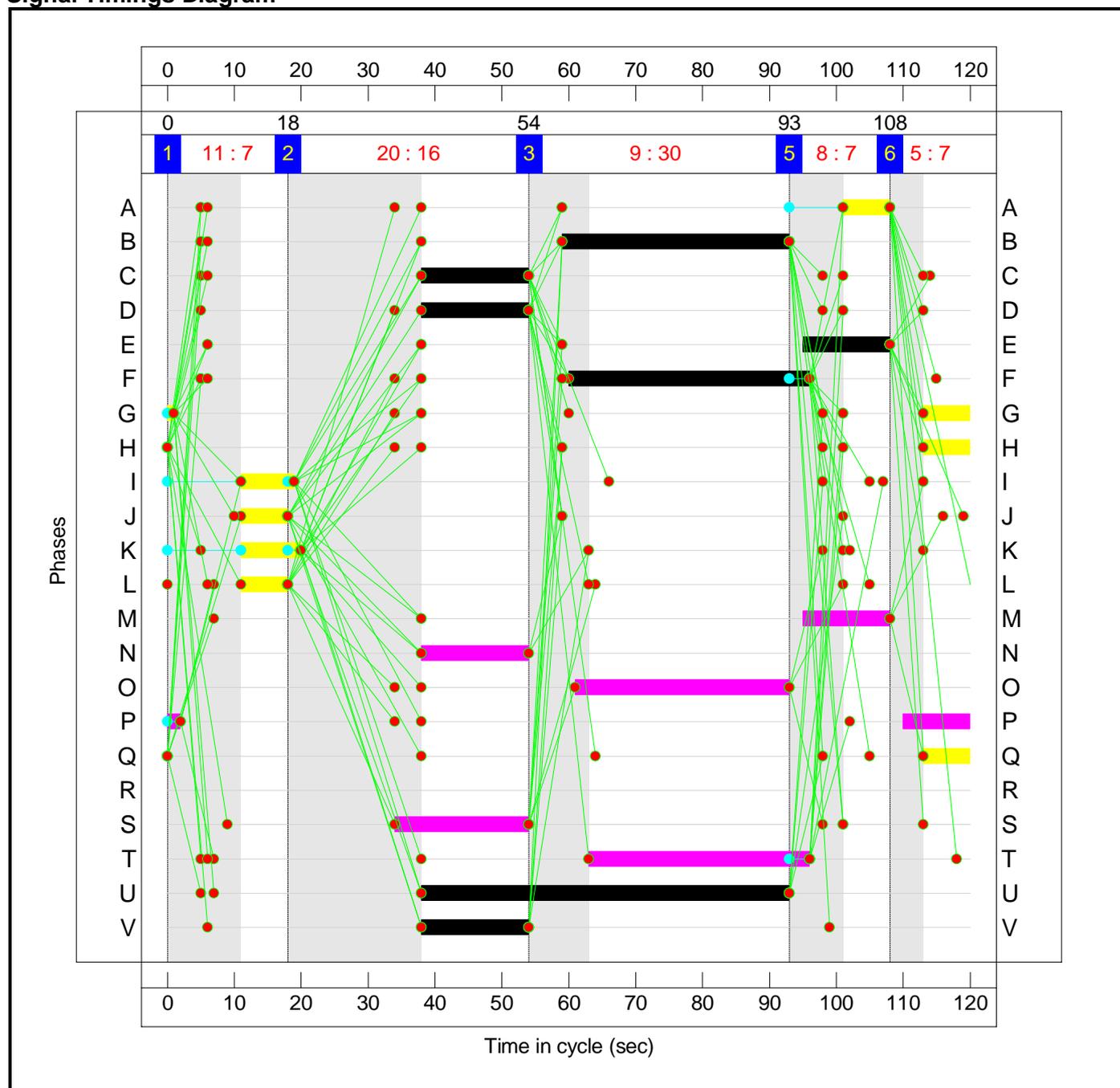
Stage Sequence Diagram



Stage Timings

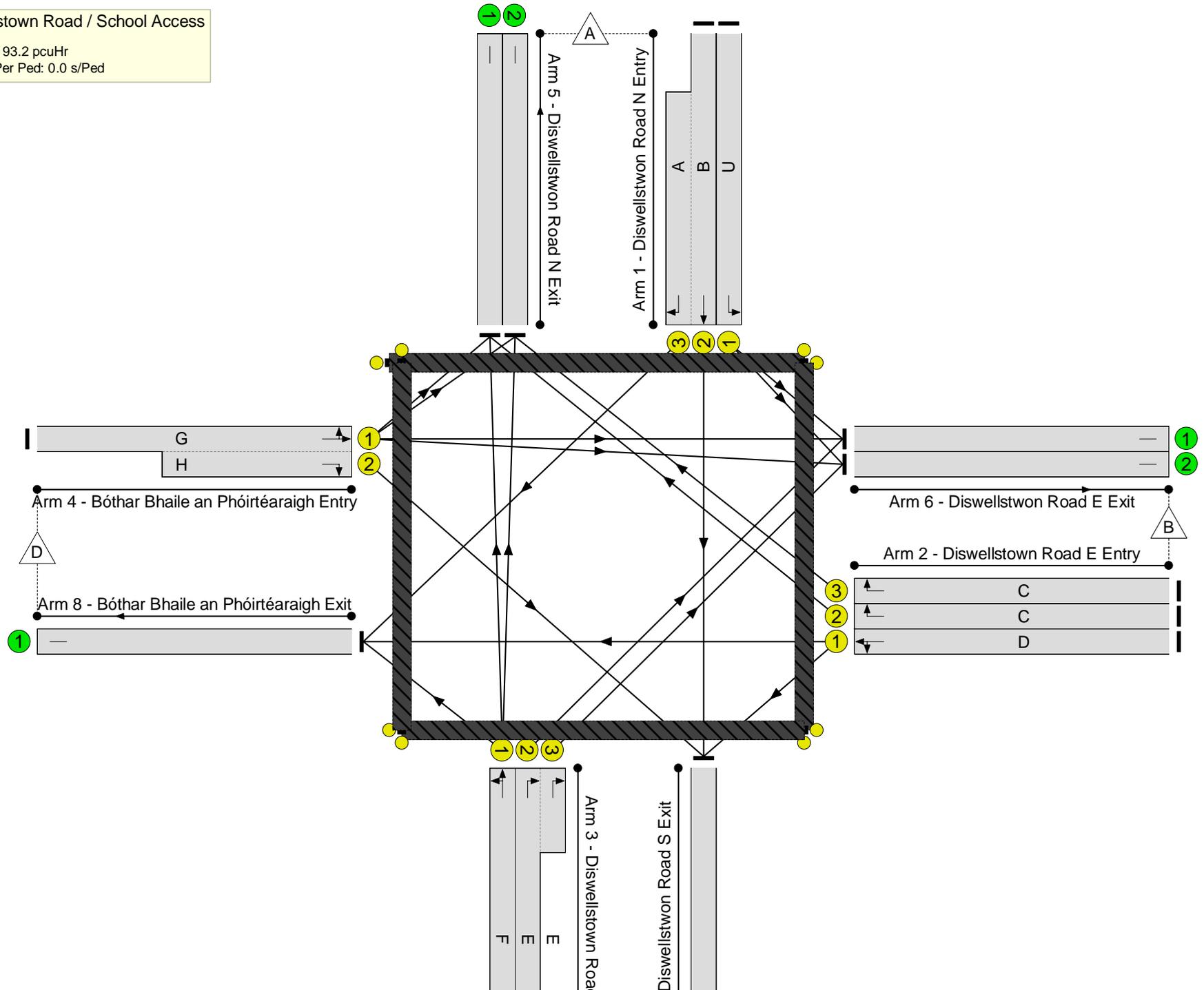
Stage	1	2	3	5	6
Duration	7	16	30	7	7
Change Point	0	18	54	93	108

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: -16.9 %  
 Total Traffic Delay: 93.2 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	105.2%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	105.2%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	55	-	589	1735	810	72.7%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	34:7	-	693	1935:1786	552+118	105.1 : 95.7%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	16	-	246	1935	274	89.7%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	16	-	261	1759	249	104.7%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	16	-	281	1886	267	105.2%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	36	-	494	1922	593	83.4%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	108	1617:1617	170+170	31.7 : 31.7%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	139	1784:1759	134+19	91.2 : 91.2%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	548	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	569	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	778	Inf	Inf	0.0%

### Full Input Data And Results

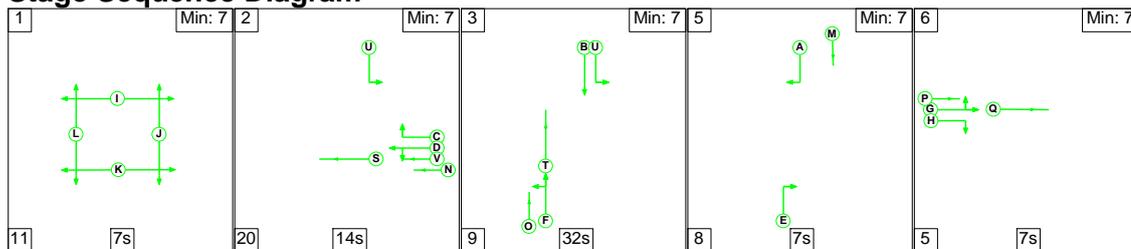
8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	7	-	0	-	0	0.0%



Full Input Data And Results

Scenario 4: 'DS 2043 PM Peak (120s)' (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

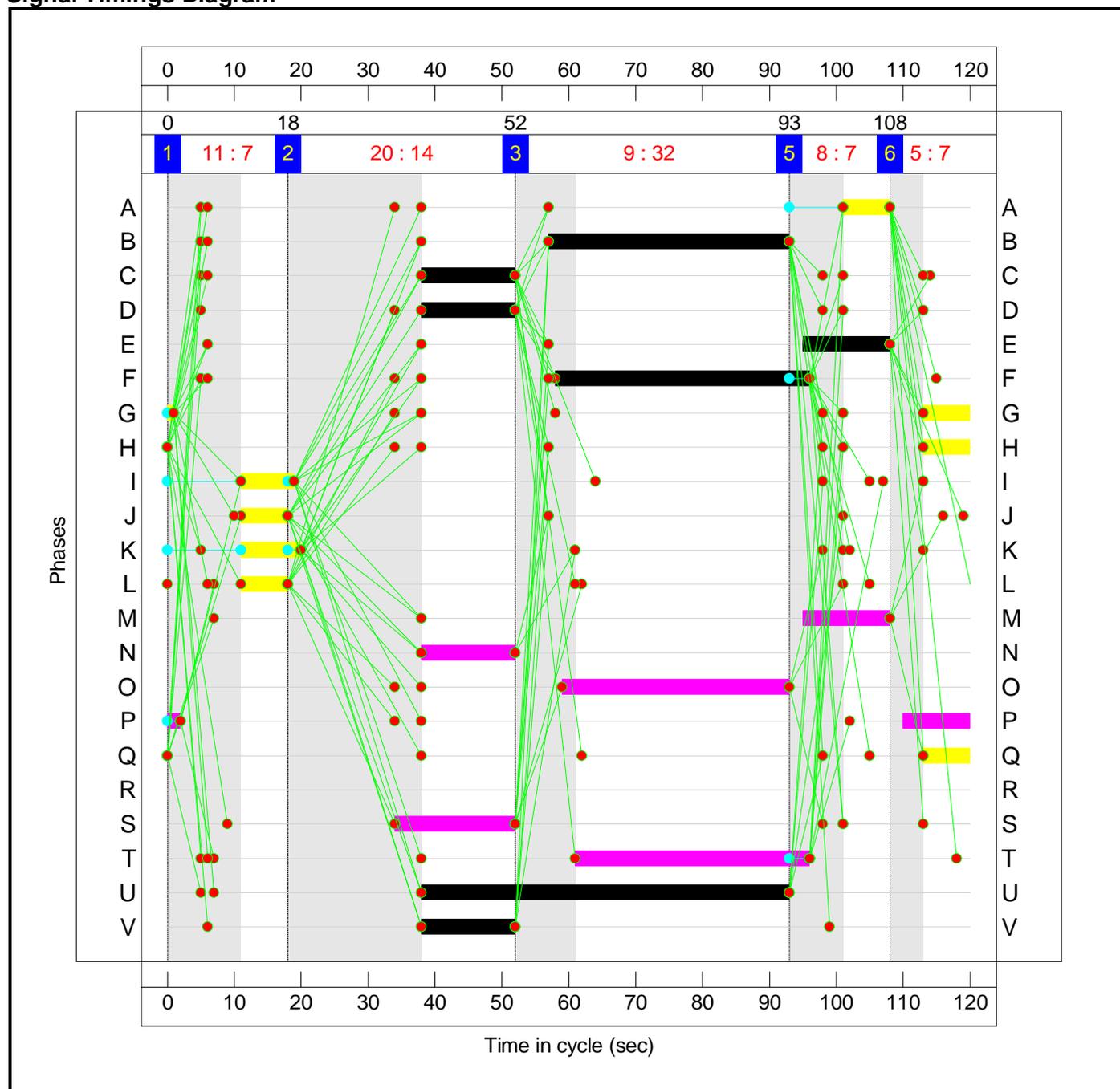
Stage Sequence Diagram



Stage Timings

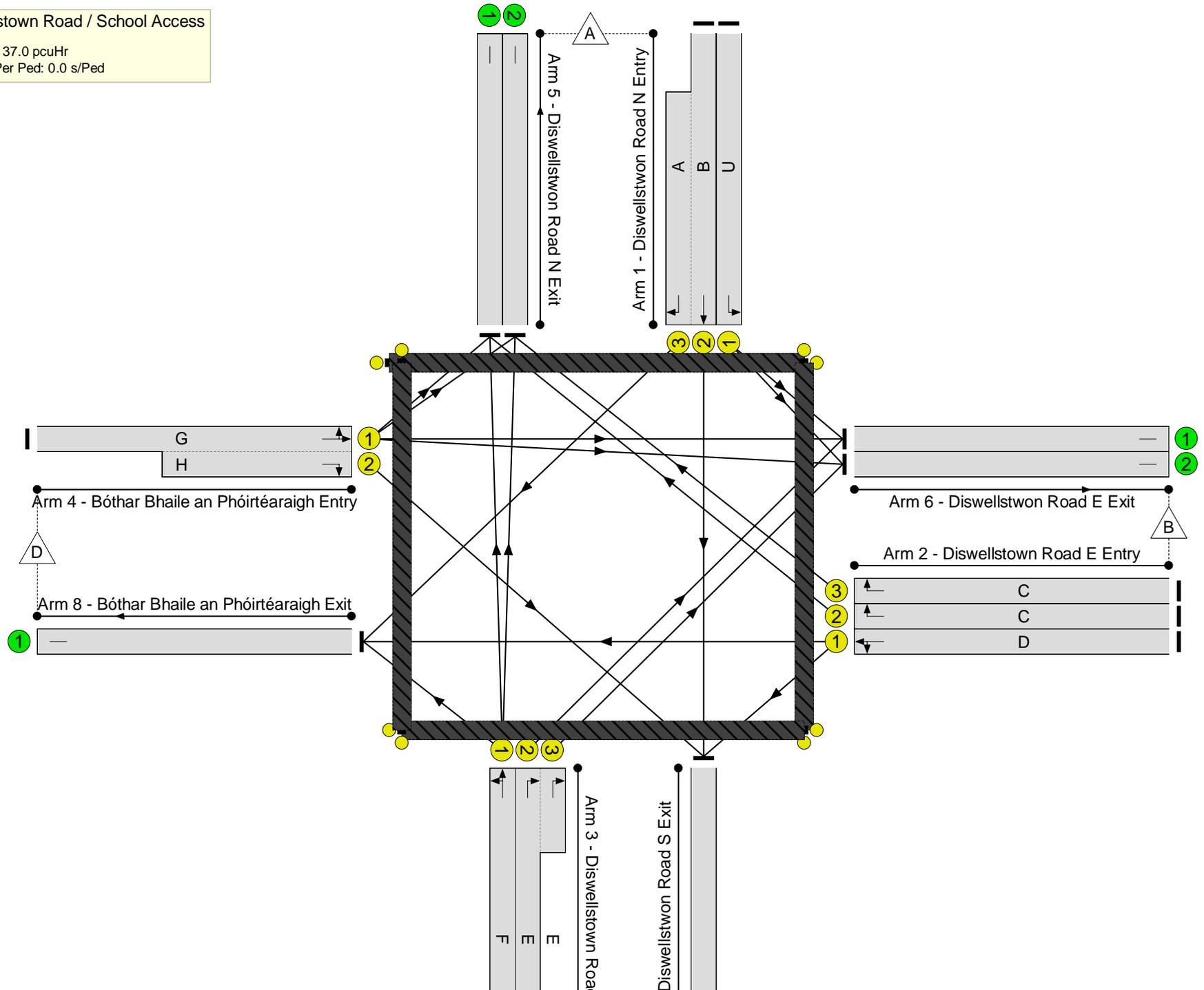
Stage	1	2	3	5	6
Duration	7	14	32	7	7
Change Point	0	18	52	93	108

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: -1.3 %  
 Total Traffic Delay: 37.0 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	91.2%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	91.2%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	55	-	562	1735	810	69.4%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	36:7	-	579	1935:1786	597+38	91.2 : 91.2%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	14	-	75	1935	242	31.0%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	14	-	189	1759	220	86.0%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	14	-	211	1886	236	89.5%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	38	-	400	1931	628	63.7%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	158	1617:1617	170+170	46.4 : 46.4%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	41	1832:1759	137+50	21.8 : 21.8%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	417	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	627	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-	-	-	-	45	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I	1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J	1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	23.8	13.2	0.0	37.0	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	23.8	13.2	0.0	37.0	-	-	-	-
1/1	562	562	-	-	-	3.9	1.1	-	5.1	32.4	14.7	1.1	15.8
1/2+1/3	579	579	-	-	-	6.6	4.5	-	11.0	68.5	17.4	4.5	21.9
2/1	75	75	-	-	-	1.0	0.2	-	1.2	58.6	2.3	0.2	2.5
2/2	189	189	-	-	-	2.7	2.6	-	5.3	101.3	6.1	2.6	8.8
2/3	211	211	-	-	-	3.0	3.4	-	6.4	109.0	6.9	3.4	10.3
3/1	400	400	-	-	-	3.8	0.9	-	4.7	42.3	11.3	0.9	12.2
3/2+3/3	158	158	-	-	-	2.2	0.4	-	2.6	59.1	2.4	0.4	2.9
4/1+4/2	41	41	-	-	-	0.6	0.1	-	0.7	64.6	0.9	0.1	1.1
5/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	417	417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	627	627	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	45	45	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - Diswellstown Road / School Access

PRC for Signalled Lanes (%): -1.3  
 PRC Over All Lanes (%): -1.3

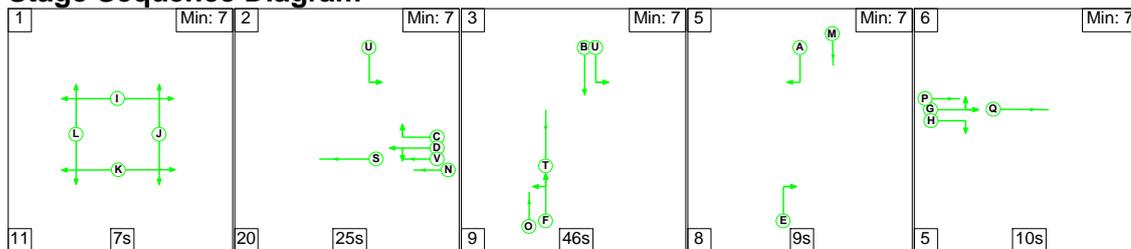
Total Delay for Signalled Lanes (pcuHr): 37.03  
 Total Delay Over All Lanes(pcuHr): 37.03

Cycle Time (s): 120

Full Input Data And Results

Scenario 5: 'DS 2028 AM Peak (150s)' (FG1: 'DS 2028 AM Peak', Plan 1: 'Network Control Plan 1')

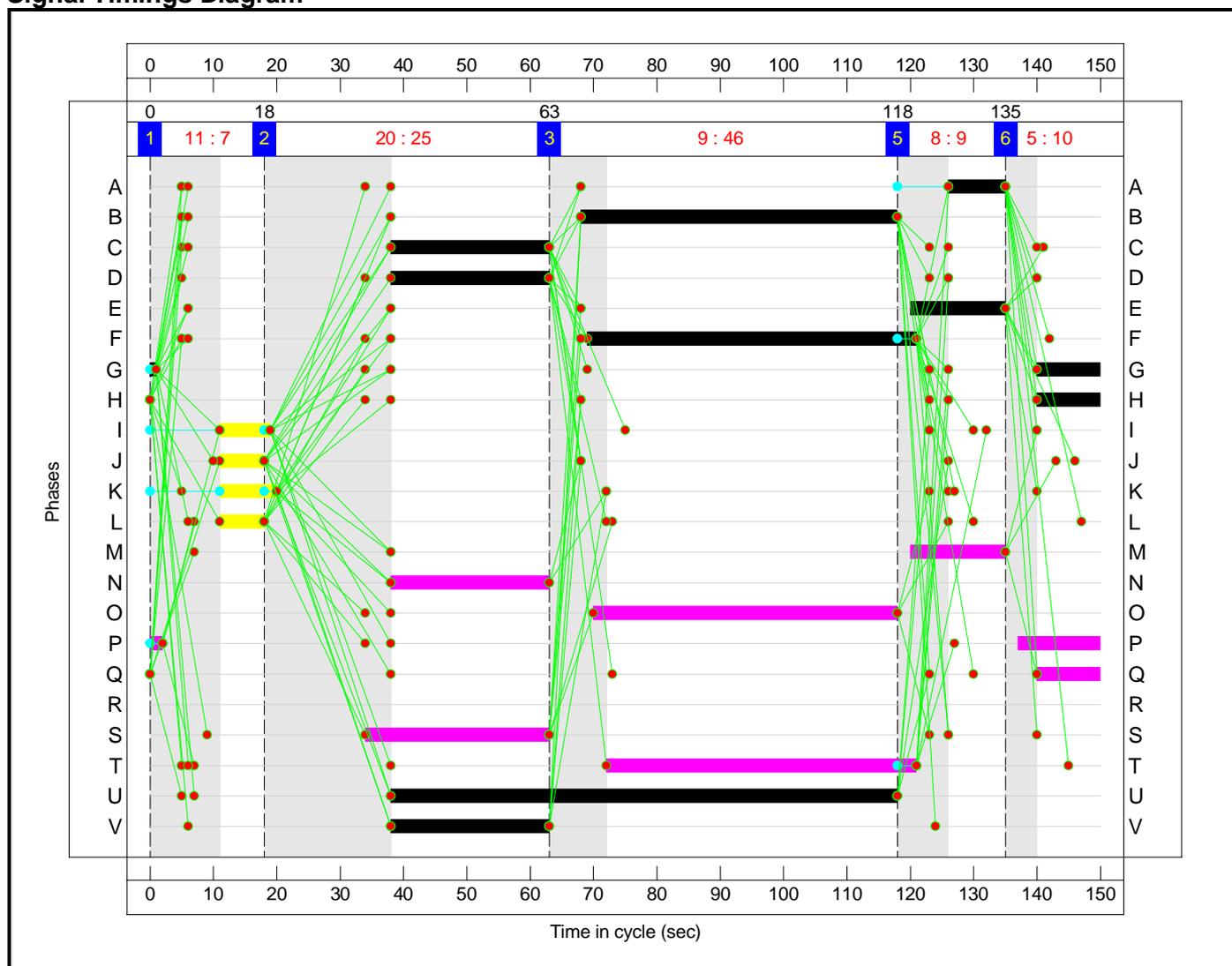
Stage Sequence Diagram



Stage Timings

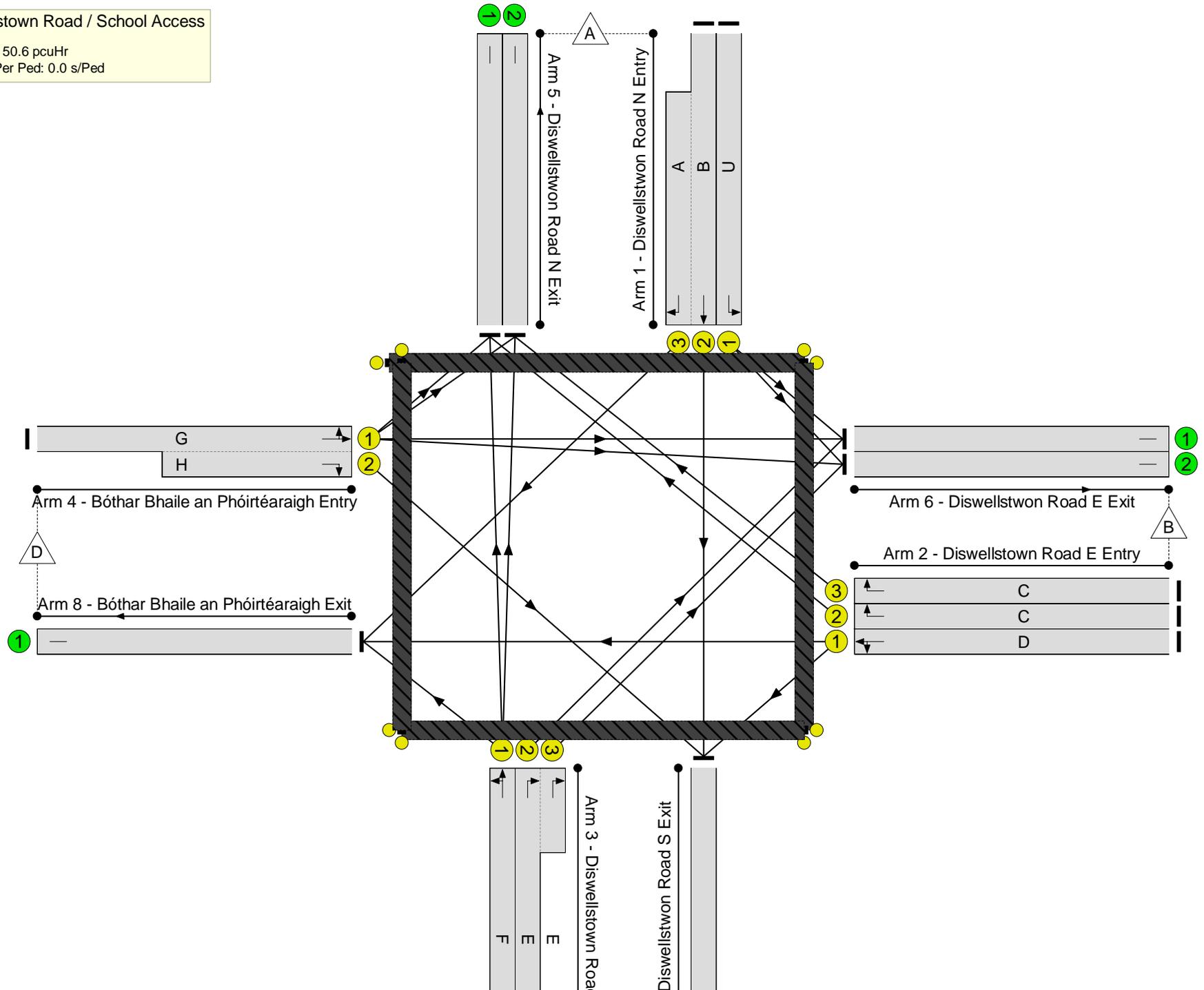
Stage	1	2	3	5	6
Duration	7	25	46	9	10
Change Point	0	18	63	118	135

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: 1.4 %  
 Total Traffic Delay: 50.6 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>88.8%</b>
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>88.8%</b>
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	80	-	363	1735	937	38.7%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	50:9	-	569	1935:1786	608+119	77.3 : 83.1%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	25	-	258	1935	335	76.9%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	25	-	268	1759	305	87.9%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	25	-	287	1886	327	87.8%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	52	-	603	1922	679	88.8%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	15	-	64	1617:1617	147+147	21.8 : 21.8%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	11:10	-	135	1782:1759	143+14	86.3 : 86.3%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	608	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	628	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	219	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	672	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-	-	-	-	202	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I	1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J	1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	34.4	16.2	0.0	50.6	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	34.4	16.2	0.0	50.6	-	-	-	-
1/1	363	363	-	-	-	2.0	0.3	-	2.3	23.2	8.8	0.3	9.1
1/2+1/3	569	569	-	-	-	7.5	1.8	-	9.3	58.8	17.8	1.8	19.5
2/1	258	258	-	-	-	4.2	1.6	-	5.8	81.5	10.2	1.6	11.8
2/2	268	268	-	-	-	4.5	3.1	-	7.6	102.2	10.9	3.1	14.0
2/3	287	287	-	-	-	4.8	3.1	-	7.9	99.5	11.6	3.1	14.8
3/1	603	603	-	-	-	7.7	3.6	-	11.3	67.3	23.6	3.6	27.2
3/2+3/3	64	64	-	-	-	1.1	0.1	-	1.2	68.9	1.2	0.1	1.3
4/1+4/2	135	135	-	-	-	2.5	2.5	-	5.1	135.7	5.1	2.5	7.6
5/1	608	608	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	628	628	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	219	219	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	672	672	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - Diswellstown Road / School Access

PRC for Signalled Lanes (%): 1.4  
 PRC Over All Lanes (%): 1.4

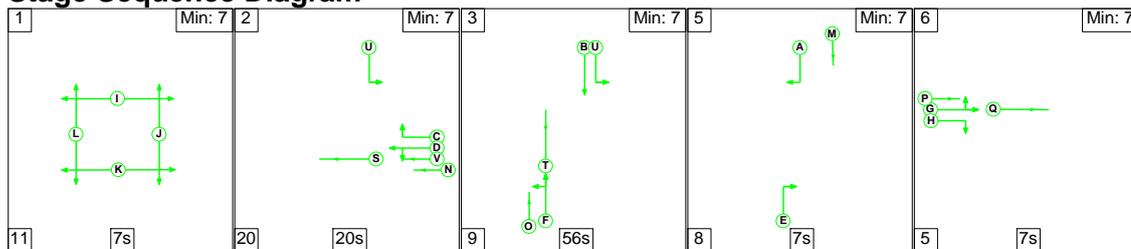
Total Delay for Signalled Lanes (pcuHr): 50.60  
 Total Delay Over All Lanes(pcuHr): 50.60

Cycle Time (s): 150

Full Input Data And Results

Scenario 6: 'DS 2028 PM Peak (150s)' (FG2: 'DS 2028 PM Peak', Plan 1: 'Network Control Plan 1')

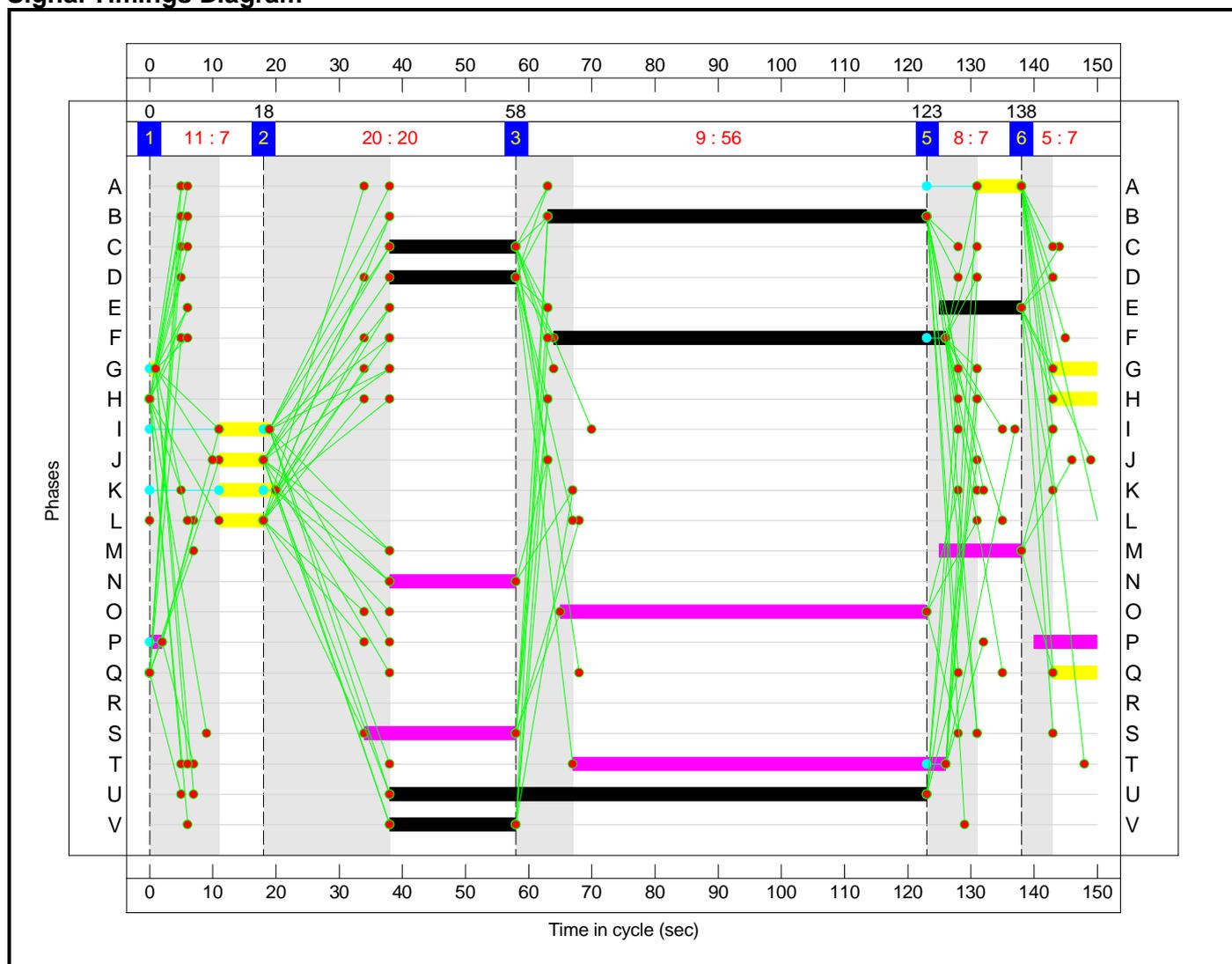
Stage Sequence Diagram



Stage Timings

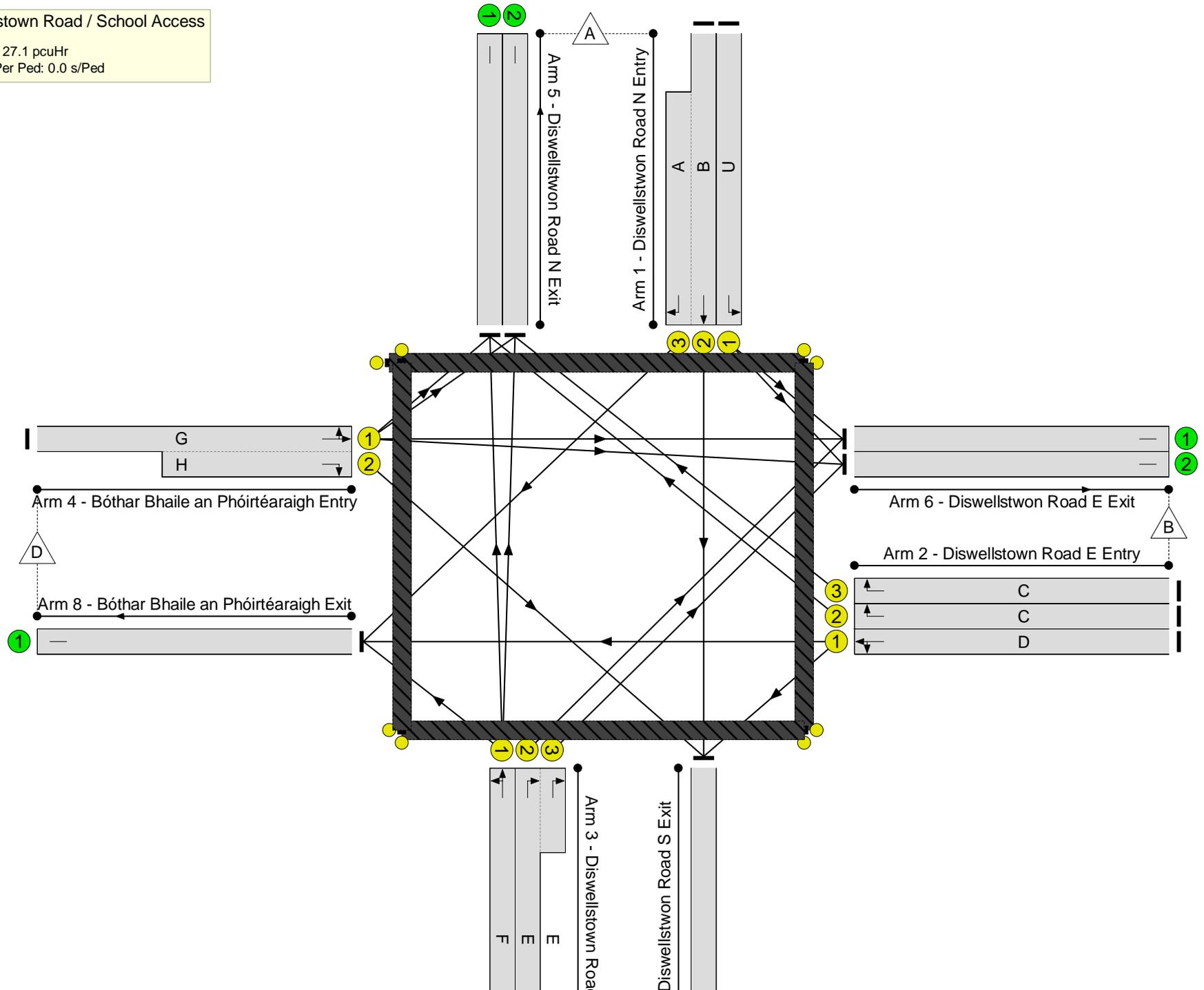
Stage	1	2	3	5	6
Duration	7	20	56	7	7
Change Point	0	18	58	123	138

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: 30.1 %  
 Total Traffic Delay: 27.1 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.2%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	69.2%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	85	-	539	1735	995	54.2%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	60:7	-	565	1935:1786	772+45	69.2 : 69.2%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	20	-	72	1935	271	26.6%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	20	-	159	1759	246	64.6%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	20	-	179	1886	264	67.8%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	62	-	376	1930	811	46.4%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	136	1617:1617	136+136	49.9 : 49.9%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	38	1817:1759	109+94	21.1 : 16.0%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	371	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	340	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	618	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-	-	-	-	42	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I	1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J	1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	22.3	4.8	0.0	27.1	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	22.3	4.8	0.0	27.1	-	-	-	-
1/1	539	539	-	-	-	3.0	0.6	-	3.6	23.7	13.8	0.6	14.4
1/2+1/3	565	565	-	-	-	6.0	1.1	-	7.1	45.3	18.3	1.1	19.5
2/1	72	72	-	-	-	1.2	0.2	-	1.3	66.6	2.7	0.2	2.8
2/2	159	159	-	-	-	2.7	0.9	-	3.6	81.2	6.2	0.9	7.1
2/3	179	179	-	-	-	3.0	1.0	-	4.1	82.0	7.1	1.0	8.1
3/1	376	376	-	-	-	3.3	0.4	-	3.7	35.5	11.3	0.4	11.7
3/2+3/3	136	136	-	-	-	2.4	0.5	-	2.9	77.5	2.7	0.5	3.2
4/1+4/2	38	38	-	-	-	0.7	0.1	-	0.8	78.3	0.9	0.1	1.0
5/1	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	371	371	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	340	340	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	42	42	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - Diswellstown Road / School Access

PRC for Signalled Lanes (%): 30.1  
 PRC Over All Lanes (%): 30.1

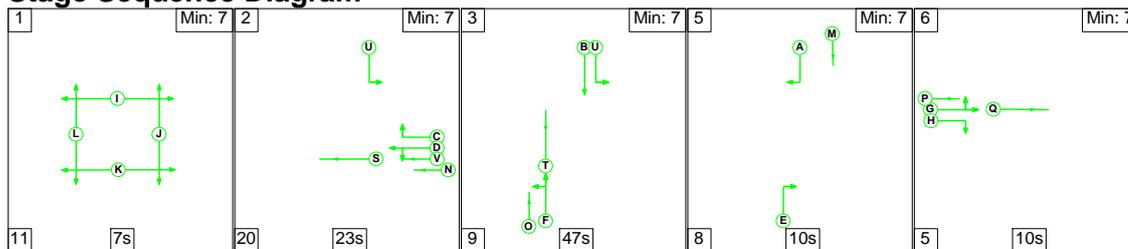
Total Delay for Signalled Lanes (pcuHr): 27.12  
 Total Delay Over All Lanes(pcuHr): 27.12

Cycle Time (s): 150

Full Input Data And Results

Scenario 7: 'DS 2043 AM Peak (150s)' (FG3: 'DS 2043 AM Peak', Plan 1: 'Network Control Plan 1')

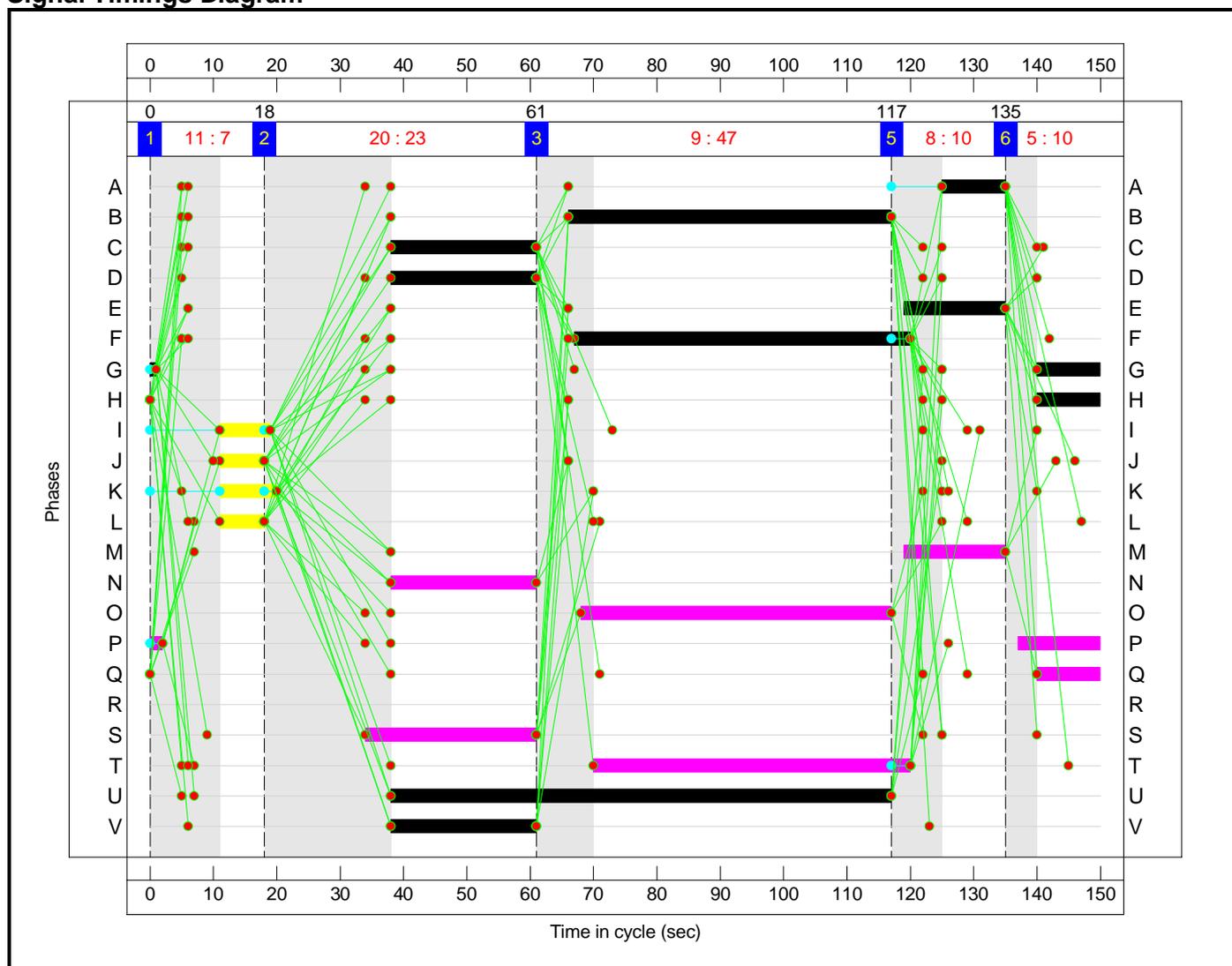
Stage Sequence Diagram



Stage Timings

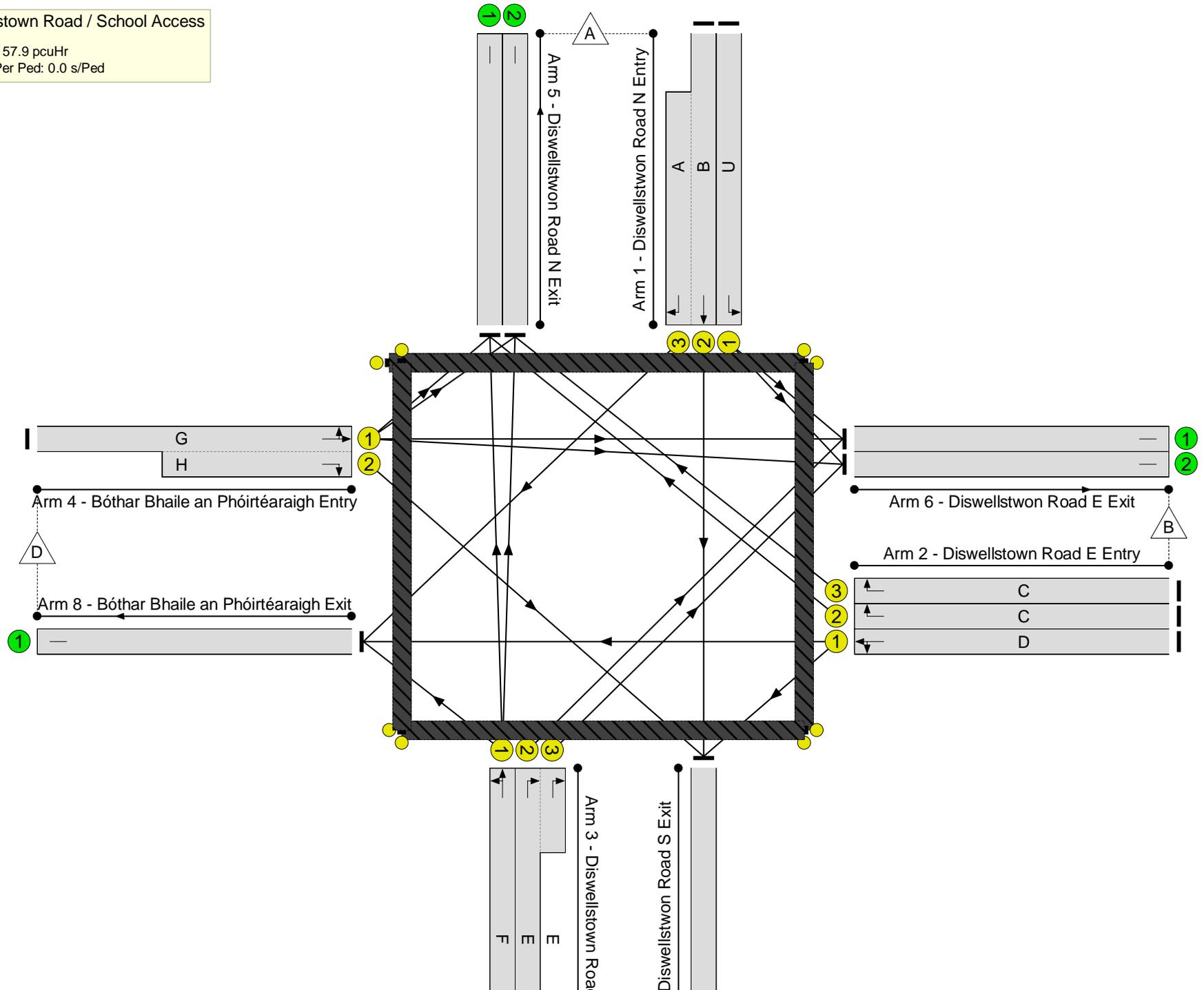
Stage	1	2	3	5	6
Duration	7	23	47	10	10
Change Point	0	18	61	117	135

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: -3.5 %  
 Total Traffic Delay: 57.9 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	N/A	-	-		-	-	-	-	-	-	93.2%
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	N/A	-	-		-	-	-	-	-	-	93.2%
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	79	-	589	1735	925	63.7%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	51:10	-	693	1935:1786	622+131	93.2 : 86.3%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	23	-	246	1935	310	79.5%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	23	-	261	1759	281	92.7%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	23	-	281	1886	302	93.1%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	53	-	494	1922	692	71.4%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	16	-	108	1617:1617	152+152	35.4 : 35.4%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	11:10	-	139	1784:1759	143+20	85.5 : 85.5%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	548	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	569	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	778	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-	-	-	-	207	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I	1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J	1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K	1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L	1	7	-	0	-	0	0.0%

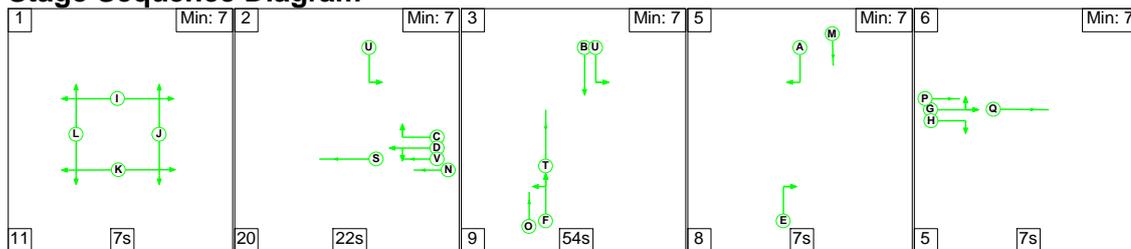
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	37.2	20.7	0.0	57.9	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	37.2	20.7	0.0	57.9	-	-	-	-
1/1	589	589	-	-	-	4.0	0.9	-	4.9	30.1	17.2	0.9	18.1
1/2+1/3	693	693	-	-	-	9.6	4.9	-	14.5	75.4	24.8	4.9	29.7
2/1	246	246	-	-	-	4.1	1.8	-	6.0	87.4	9.8	1.8	11.7
2/2	261	261	-	-	-	4.5	4.4	-	9.0	123.5	10.7	4.4	15.1
2/3	281	281	-	-	-	4.9	4.7	-	9.5	122.0	11.6	4.7	16.2
3/1	494	494	-	-	-	5.7	1.2	-	6.9	50.3	17.7	1.2	18.9
3/2+3/3	108	108	-	-	-	1.8	0.3	-	2.1	70.2	2.1	0.3	2.3
4/1+4/2	139	139	-	-	-	2.6	2.4	-	5.1	131.0	5.0	2.4	7.5
5/1	548	548	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	354	354	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	778	778	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	207	207	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / School Access			PRC for Signalled Lanes (%): -3.5		PRC Over All Lanes (%): -3.5		Total Delay for Signalled Lanes (pcuHr): 57.94		Total Delay Over All Lanes(pcuHr): 57.94		Cycle Time (s): 150		

Full Input Data And Results

Scenario 8: 'DS 2043 PM Peak (150s)' (FG4: 'DS 2043 PM Peak', Plan 1: 'Network Control Plan 1')

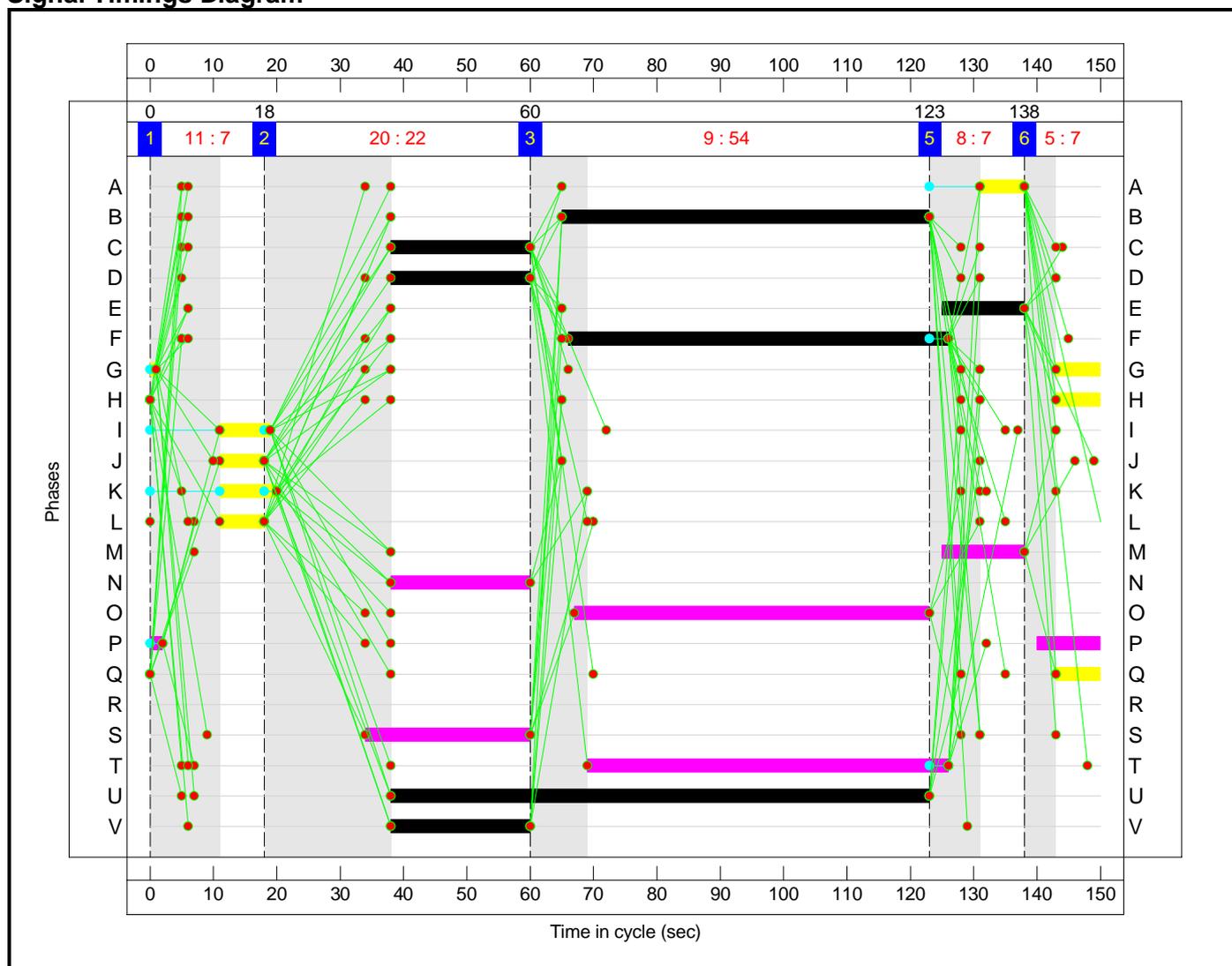
Stage Sequence Diagram



Stage Timings

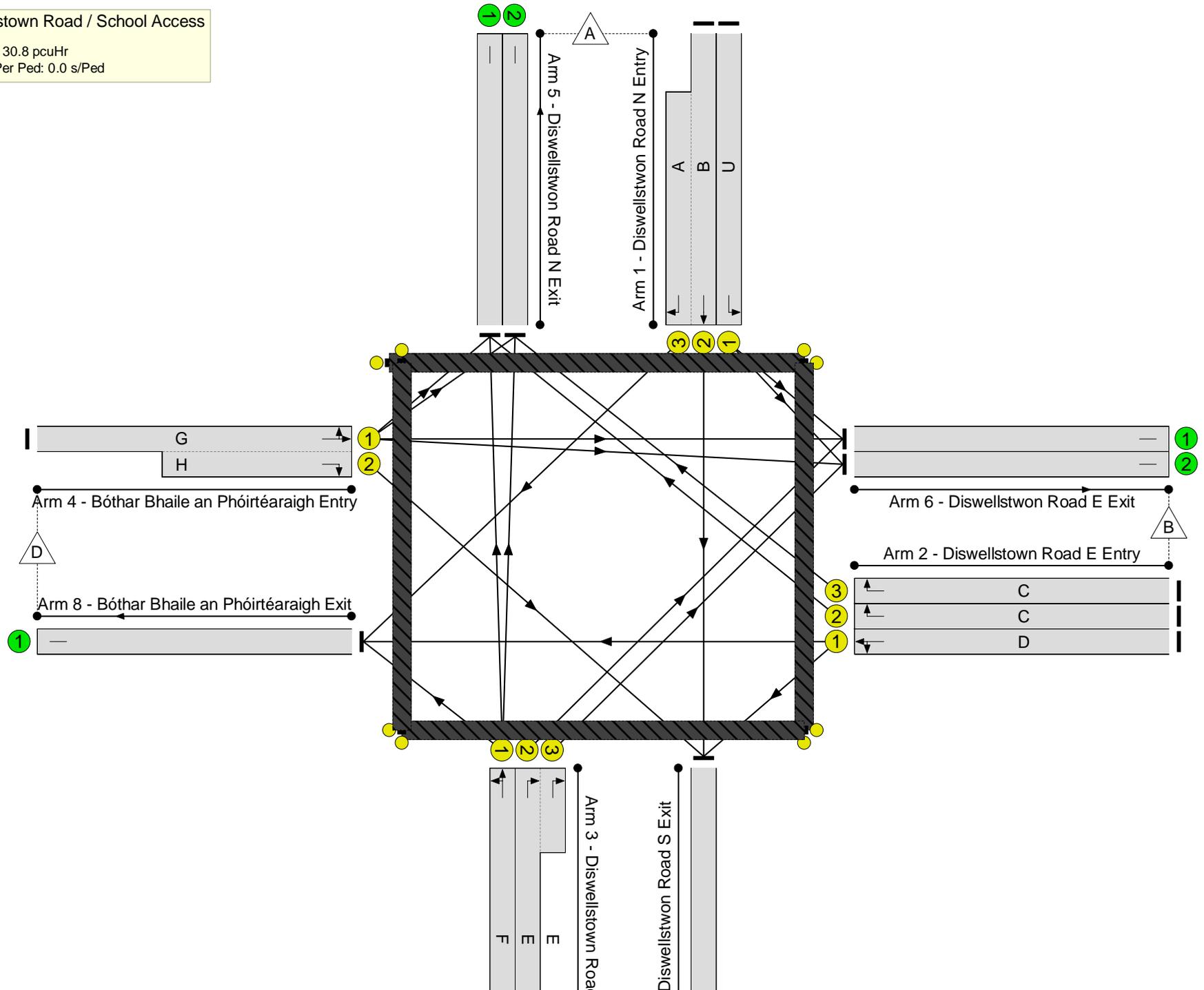
Stage	1	2	3	5	6
Duration	7	22	54	7	7
Change Point	0	18	60	123	138

Signal Timings Diagram



# Full Input Data And Results

**Junction 11 - Diswellstown Road / School Access**  
 PRC: 23.2 %  
 Total Traffic Delay: 30.8 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 (%)
<b>Network: DART West Junction Modelling</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>73.0%</b>
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>73.0%</b>
1/1	Diswellstwon Road N Entry Left	U	N/A	N/A	U		1	85	-	562	1735	995	56.5%
1/2+1/3	Diswellstwon Road N Entry Ahead Right	U	N/A	N/A	B A		1	58:7	-	579	1935:1786	745+48	73.0 : 73.0%
2/1	Diswellstown Road E Entry Left Ahead	U	N/A	N/A	D		1	22	-	75	1935	297	25.3%
2/2	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	22	-	189	1759	270	70.1%
2/3	Diswellstown Road E Entry Right	U	N/A	N/A	C		1	22	-	211	1886	289	73.0%
3/1	Diswellstown Road S Entry Ahead Left	U	N/A	N/A	F		1	60	-	400	1931	785	50.9%
3/2+3/3	Diswellstown Road S Entry Right	U	N/A	N/A	E		1	13	-	158	1617:1617	136+136	58.0 : 58.0%
4/1+4/2	Bóthar Bhaile an Phóirtéaraigh Entry Left Ahead Right	U	N/A	N/A	G H		1	8:7	-	41	1832:1759	110+40	27.3 : 27.3%
5/1	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
5/2	Diswellstwon Road N Exit	U	N/A	N/A	-		-	-	-	417	Inf	Inf	0.0%
6/1	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%
6/2	Diswellstwon Road E Exit	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%
7/1	Diswellstwon Road S Exit	U	N/A	N/A	-		-	-	-	627	Inf	Inf	0.0%

### Full Input Data And Results

8/1	Bóthar Bhaile an Phóirtéaraigh Exit	U	N/A	N/A	-		-	-	-	45	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	I		1	8	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	J		1	7	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	K		1	9	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	L		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: DART West Junction Modelling</b>	-	-	0	0	0	24.8	6.0	0.0	30.8	-	-	-	-
<b>Junction 11 - Diswellstown Road / School Access</b>	-	-	0	0	0	24.8	6.0	0.0	30.8	-	-	-	-
1/1	562	562	-	-	-	3.2	0.6	-	3.8	24.3	14.7	0.6	15.3
1/2+1/3	579	579	-	-	-	6.5	1.3	-	7.8	48.5	19.4	1.3	20.7
2/1	75	75	-	-	-	1.2	0.2	-	1.3	64.0	2.7	0.2	2.9
2/2	189	189	-	-	-	3.2	1.1	-	4.3	81.9	7.5	1.1	8.6
2/3	211	211	-	-	-	3.5	1.3	-	4.9	82.8	8.3	1.3	9.6
3/1	400	400	-	-	-	3.7	0.5	-	4.2	38.0	12.4	0.5	13.0
3/2+3/3	158	158	-	-	-	2.8	0.7	-	3.5	80.4	3.1	0.7	3.8
4/1+4/2	41	41	-	-	-	0.8	0.2	-	1.0	83.9	1.2	0.2	1.4
5/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	417	417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	627	627	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	45	45	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
C1 - Diswellstown Road / School Access			PRC for Signalled Lanes (%): 23.2		Total Delay for Signalled Lanes (pcuHr): 30.80		Cycle Time (s): 150						
			PRC Over All Lanes (%): 23.2		Total Delay Over All Lanes(pcuHr): 30.80								

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: DART\_Junction10\_Base\_DM\_V3.j9

Path: B:\60652384\_DARTWest\400\_Technical\433\_Analysis\Junction Analysis - Linsigs etc\02\_ARCADY\V3 Models

Report generation date: 28/01/2022 12:41:27

- »Junction 10 - Base 2019, AM
- »Junction 10 - Base 2019, PM
- »Junction 10 - DM 2028, AM
- »Junction 10 - DM 2028, PM
- »Junction 10 - DM 2043, AM
- »Junction 10 - DM 2043, PM

**Summary of junction performance**

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
<b>Junction 10 - Base 2019</b>												
Arm A	D1	1.1	4.99	0.51	A	0 % [Arm D]	D2	1.0	4.41	0.48	A	17 % [Arm B]
Arm B		0.6	6.77	0.35	A			2.1	13.40	0.68	B	
Arm C		1.4	6.04	0.58	A			1.7	7.20	0.62	A	
Arm D		7.3	33.92	0.89	D			0.4	5.78	0.27	A	
<b>Junction 10 - DM 2028</b>												
Arm A	D3	1.3	5.38	0.55	A	-1 % [Arm D]	D4	0.8	3.99	0.43	A	8 % [Arm B]
Arm B		0.6	7.72	0.39	A			3.8	19.69	0.79	C	
Arm C		1.8	6.89	0.64	A			0.9	5.48	0.47	A	
Arm D		8.8	38.22	0.90	E			0.4	5.58	0.27	A	
<b>Junction 10 - DM 2043</b>												
Arm A	D5	2.1	7.34	0.67	A	-11 % [Arm D]	D6	0.9	4.24	0.46	A	0 % [Arm B]
Arm B		0.7	8.71	0.39	A			7.6	34.47	0.89	D	
Arm C		1.6	6.58	0.62	A			1.5	7.22	0.59	A	
Arm D		69.3	180.07	1.07	F			0.4	6.38	0.31	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

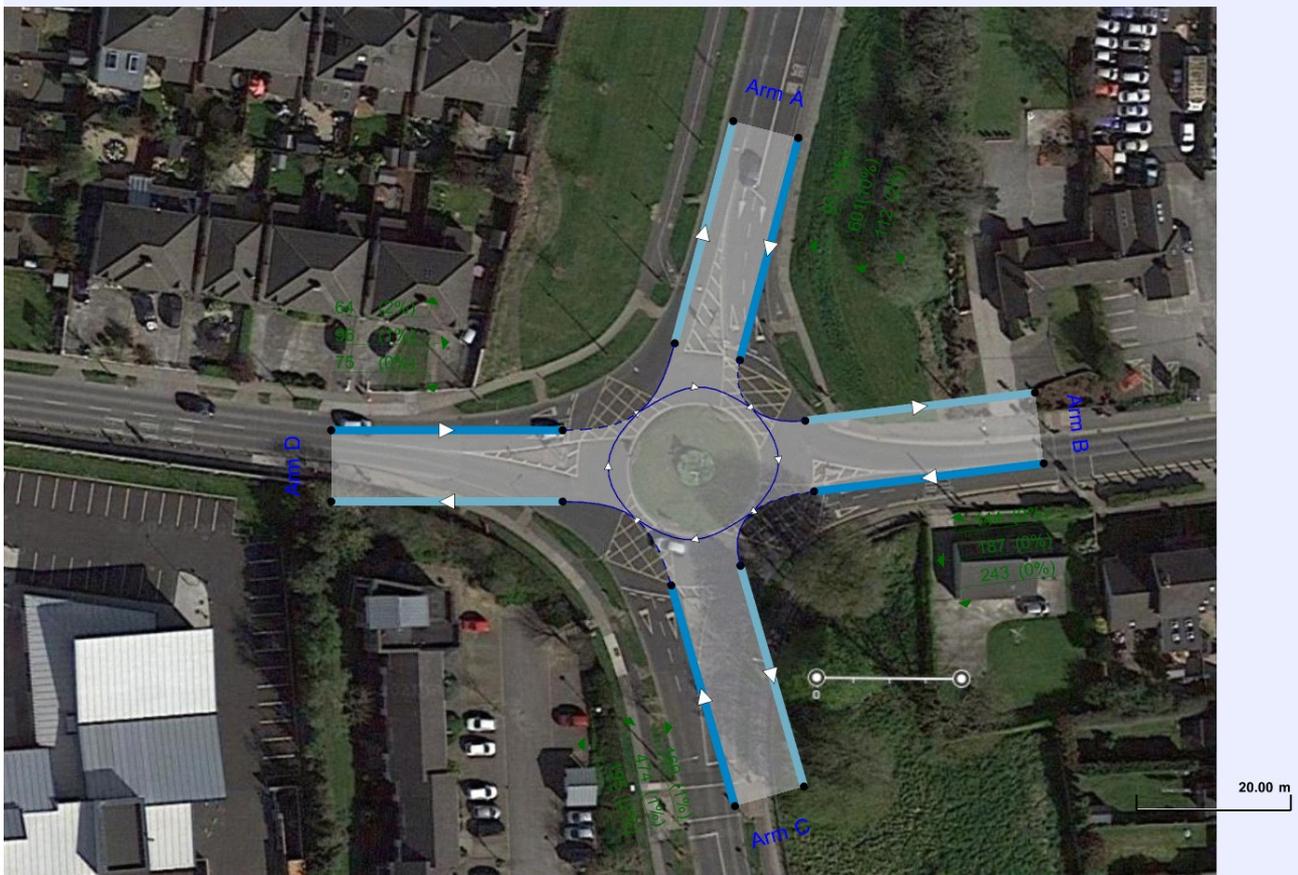
## File summary

### File Description

Title	Junction 10 - Blanchardstown Road / Clonsilla Road / Diswellstown Road
Location	
Site number	
Date	08/11/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	
Description	

## Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



Flows show original traffic demand (PCU/hr).

The junction diagram reflects the last run of Junctions.

### Analysis Options

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

### Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	Base 2019	AM	FLAT	07:00	08:00	60	60
D2	Base 2019	PM	FLAT	17:00	18:00	60	60
D3	DM 2028	AM	FLAT	07:00	08:00	60	60
D4	DM 2028	PM	FLAT	17:00	18:00	60	60
D5	DM 2043	AM	FLAT	07:00	08:00	60	60
D6	DM 2043	PM	FLAT	17:00	18:00	60	60

### Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Junction 10	100.000

# Junction 10 - Base 2019, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	13.55	B

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	0	Arm D

## Arms

### Arms

Arm	Name	Description
A	untitled	
B	untitled	
C	untitled	
D	untitled	

### Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	5.73	7.05	2.5	12.6	30.8	16.2	
B	2.78	4.85	11.4	16.2	30.8	16.1	
C	3.73	6.32	9.0	21.6	30.8	16.1	
D	2.35	5.69	12.4	39.6	30.8	18.5	

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.708	1922
B	0.584	1286
C	0.656	1617
D	0.603	1336

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

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	Base 2019	AM	FLAT	07:00	08:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	772	100.000
B		✓	295	100.000
C		✓	851	100.000
D		✓	736	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To				
	A	B	C	D	
A	0	161	521	90	
B	53	0	144	98	
C	612	175	0	64	
D	349	241	146	0	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To				
	A	B	C	D	
A	0	1	7	1	
B	6	0	4	2	
C	3	2	0	0	
D	1	3	3	0	

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.51	4.99	1.1	A
B	0.35	6.77	0.6	A
C	0.58	6.04	1.4	A
D	0.89	33.92	7.3	D

### Main Results for each time segment

#### 07:00 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	772	558	1527	0.506	771	1.1	4.993	A
B	295	755	845	0.349	294	0.6	6.771	A
C	851	241	1459	0.583	850	1.4	6.044	A
D	736	839	831	0.886	729	7.3	33.918	D

# Junction 10 - Base 2019, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	7.60	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	17	Arm B

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	Base 2019	PM	FLAT	17:00	18:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	804	100.000
B		✓	574	100.000
C		✓	838	100.000
D		✓	235	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	112	601	91
	B	144	0	243	187
	C	474	169	0	195
	D	64	96	75	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	2	10	1
	B	0	0	0	0
	C	1	1	0	2
	D	2	1	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.48	4.41	1.0	A
B	0.68	13.40	2.1	B
C	0.62	7.20	1.7	A
D	0.27	5.78	0.4	A

### Main Results for each time segment

#### 17:00 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	804	339	1681	0.478	803	1.0	4.411	A
B	574	766	838	0.685	572	2.1	13.400	B
C	838	421	1341	0.625	836	1.7	7.198	A
D	235	785	863	0.272	235	0.4	5.780	A

# Junction 10 - DM 2028, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	15.04	C

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-1	Arm D

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	DM 2028	AM	FLAT	07:00	08:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	849	100.000
B		✓	303	100.000
C		✓	918	100.000
D		✓	772	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	119	618	112
	B	43	0	151	109
	C	592	168	0	158
	D	387	255	130	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	3	4
	B	23	0	1	1
	C	2	0	0	0
	D	2	2	9	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.55	5.38	1.3	A
B	0.39	7.72	0.6	A
C	0.64	6.89	1.8	A
D	0.90	38.22	8.8	E

### Main Results for each time segment

#### 07:00 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	849	548	1533	0.554	848	1.3	5.382	A
B	303	857	785	0.386	302	0.6	7.718	A
C	918	264	1444	0.636	916	1.8	6.885	A
D	772	801	853	0.905	763	8.8	38.223	E

# Junction 10 - DM 2028, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	9.27	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	8	Arm B

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	DM 2028	PM	FLAT	17:00	18:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	746	100.000
B		✓	681	100.000
C		✓	600	100.000
D		✓	239	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	85	584	77
	B	205	0	254	222
	C	436	109	0	55
	D	72	93	74	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	11	3
	B	1	0	0	0
	C	7	0	0	0
	D	1	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.43	3.99	0.8	A
B	0.79	19.69	3.8	C
C	0.47	5.48	0.9	A
D	0.27	5.58	0.4	A

### Main Results for each time segment

#### 17:00 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	746	276	1727	0.432	745	0.8	3.986	A
B	681	734	857	0.795	677	3.8	19.686	C
C	600	502	1288	0.466	599	0.9	5.480	A
D	239	748	885	0.270	239	0.4	5.582	A

# Junction 10 - DM 2043, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	56.13	F

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-11	Arm D

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	DM 2043	AM	FLAT	07:00	08:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	1008	100.000
B		✓	273	100.000
C		✓	895	100.000
D		✓	859	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	143	754	111
	B	60	0	118	95
	C	656	173	0	66
	D	411	296	152	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	3	3	1
	B	17	0	0	1
	C	1	0	0	0
	D	4	1	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.67	7.34	2.1	A
B	0.39	8.71	0.7	A
C	0.62	6.58	1.6	A
D	1.07	180.07	69.3	F

### Main Results for each time segment

#### 07:00 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1008	585	1508	0.669	1006	2.1	7.344	A
B	273	1003	700	0.390	272	0.7	8.711	A
C	895	265	1443	0.620	893	1.6	6.578	A
D	859	887	801	1.072	790	69.3	180.074	F

# Junction 10 - DM 2043, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
10	Blanchardstown Road / Clonsilla Road / Diswellstown Road	Standard Roundabout		A, B, C, D	14.39	B

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	0	Arm B

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	DM 2043	PM	FLAT	17:00	18:00	60	60

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

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	779	100.000
B		✓	753	100.000
C		✓	727	100.000
D		✓	251	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	96	592	91
	B	211	0	265	277
	C	530	125	0	72
	D	78	98	75	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	13	3
	B	0	0	0	1
	C	5	0	0	0
	D	1	0	0	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	0.46	4.24	0.9	A
B	0.89	34.47	7.6	D
C	0.59	7.22	1.5	A
D	0.31	6.38	0.4	A

### Main Results for each time segment

#### 17:00 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	779	297	1711	0.455	778	0.9	4.239	A
B	753	757	844	0.893	745	7.6	34.469	D
C	727	574	1240	0.586	726	1.5	7.222	A
D	251	863	816	0.308	251	0.4	6.377	A