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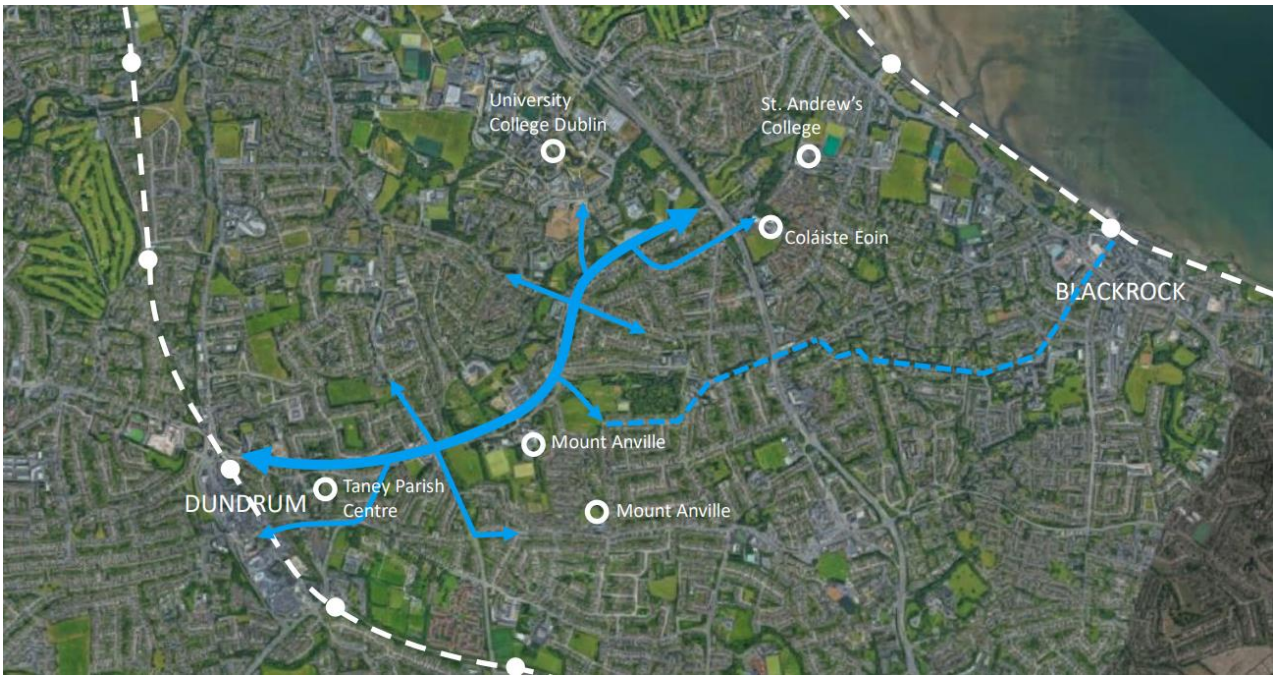
ALTERNATIVE OPTIONS REPORT

TANEY ROAD TO N11 ACTIVE TRAVEL ROUTE



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TANEY ROAD TO N11 ACTIVE TRAVEL ROUTE

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Date	**06/04/2022**
Prepared by	**Jessica Rowe**
Checked by	**Robin van der Griend**
Approved by	**Cathal McKenna**
Description	**The purpose of this report is to consider a number of potential online options to enable an active travel scheme along the R112 between Dundrum and Stillorgan Road. The scheme is focused on improving safety, reducing motorised traffic speeds, and upgrading active mobility infrastructure. The report details how members of the public can engage and provide feedback on the proposed project.**

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1. INTRODUCTION

1.1 Purpose of this Report

The purpose of this report is to consider options for active travel provision along the R112 between Dundrum and the N11. The scheme is focused on improving safety, reducing motorised traffic speeds, and upgrading active mobility infrastructure and includes:

- Reduction of the existing road width along the R112 to facilitate slow traffic speeds;
- The upgrade and introduction of a segregated cycle path along the R112;
- The upgrade of existing crossings for walkers; to provide easy and safe routes to key destinations on either side of the street;
- The provision of additional crossings for walkers at key locations, based on consideration of 'desire lines' (likely routes to be carried out by the public);
- The upgrade of existing junctions to facilitate safer walking and cycling movements; and
- The integration of continuous footways and cycle tracks at side streets to enable safe and easy transition to side streets.

The report considers a number of proposed options and establishes the emerging preferred option to be taken forward to public consultation.

The report forms part of the proposed projects non-statutory consultation process. Dún Laoghaire-Rathdown County Council will hold a non-statutory public consultation. The public are invited to make comments/submissions on the proposed development. An advertisement will be placed in the local newspaper. A leaflet containing information regarding the proposed development will be published. As part of this consultation process, where appropriate, a range of consultation materials will be issued via Dún Laoghaire-Rathdown County Council's social media platforms with online briefing and meetings held.

2.THE PROPOSED PROJECT

The project is focused on improving safety, reducing motorised traffic speeds, and upgrading active mobility infrastructure and includes:

- Reduction of the existing road width along the R112 to facilitate slow traffic speeds;
- The upgrade and introduction of a segregated cycle path along the R112;
- The upgrade of existing crossings for walkers; to provide easy and safe routes to key destinations on either side of the street;
- The provision of additional crossings for walkers at key locations, based on consideration of 'desire lines' (likely routes to be carried out by the public);
- The upgrade of existing junctions to prioritise safer walking and cycling movements; and
- The integration of continuous footways and cycle tracks at side streets to enable safe and easy transition to side streets.

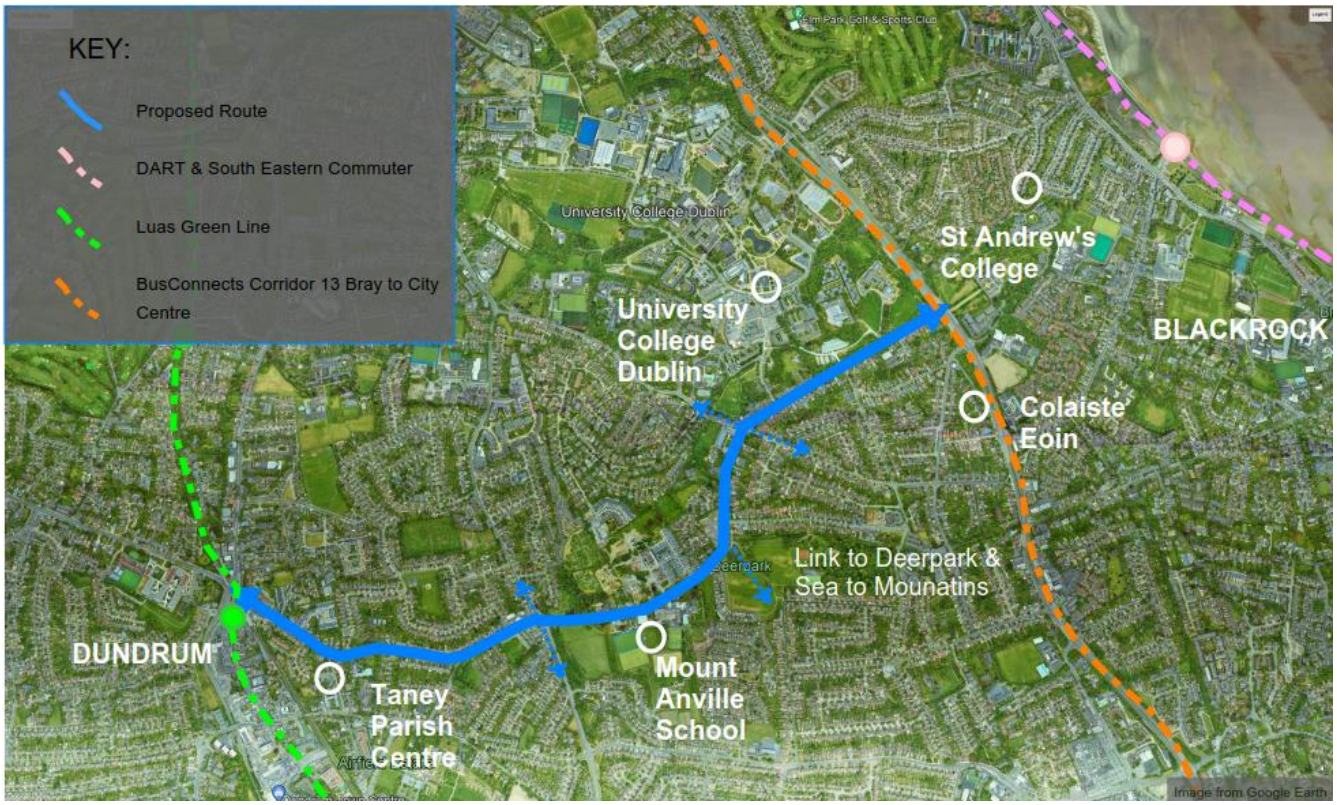


Figure 2-1-1 Proposed route and links to existing amenities

3. POLICY CONTEXT

The following documents set out the transport planning policy framework on a national, regional and local level. The overarching emphasis of these documents is to promote and encourage sustainable modes while reducing unnecessary car trips.

3.1 National Policy

3.1.1 Smarter Travel – A Sustainable Transport Future

This document sets out the transport policy for Ireland and was last updated in July 2020. It identifies a target for reducing work-related commuting by cars from its current modal share of 65% to 45% by 2020. The document acknowledges that the targets were ambitious and may need to be adjusted in light of improving knowledge and changing trends.

3.1.2 National Cycle Policy Framework

The National Cycle Policy Framework outlines the national policy for cycling, in order to create a stronger cycling society, and a friendlier environment for cycling.

The policy document sets a target of 10% of all trips by bicycle and equally recognises the need of promoting and integrating cycle networks.

3.1.3 Building for Everyone: A Universal design approach – planning and policy, 2012

The Building for Everyone: A Universal design approach provides extensive practical guidance in relation to the universal design of buildings, places, and facilities in accordance with the Barcelona Declaration.

3.2 Regional Policy

3.2.1 Transport Strategy for the Greater Dublin Area

The NTA's Transport Strategy for the Greater Dublin Area (GDA) was adopted in April 2016.

The strategic purpose of the document is '*to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.'*

3.2.2 Greater Dublin Area Cycling Network Plan

The NTA published the 'Greater Dublin Area Cycle Network Plan' in December 2013, which describes both the existing cycle network and the planned cycle route provision for future years.

The Plan proposes a number of upgrades to the cycling network in line with the GDA Cycling Network Plan and specifically this route develops the identified Primary and Secondary Cycle Route for Dublin Metropolitan Area (Sheet CN2), extracted below in Figure 3-1.

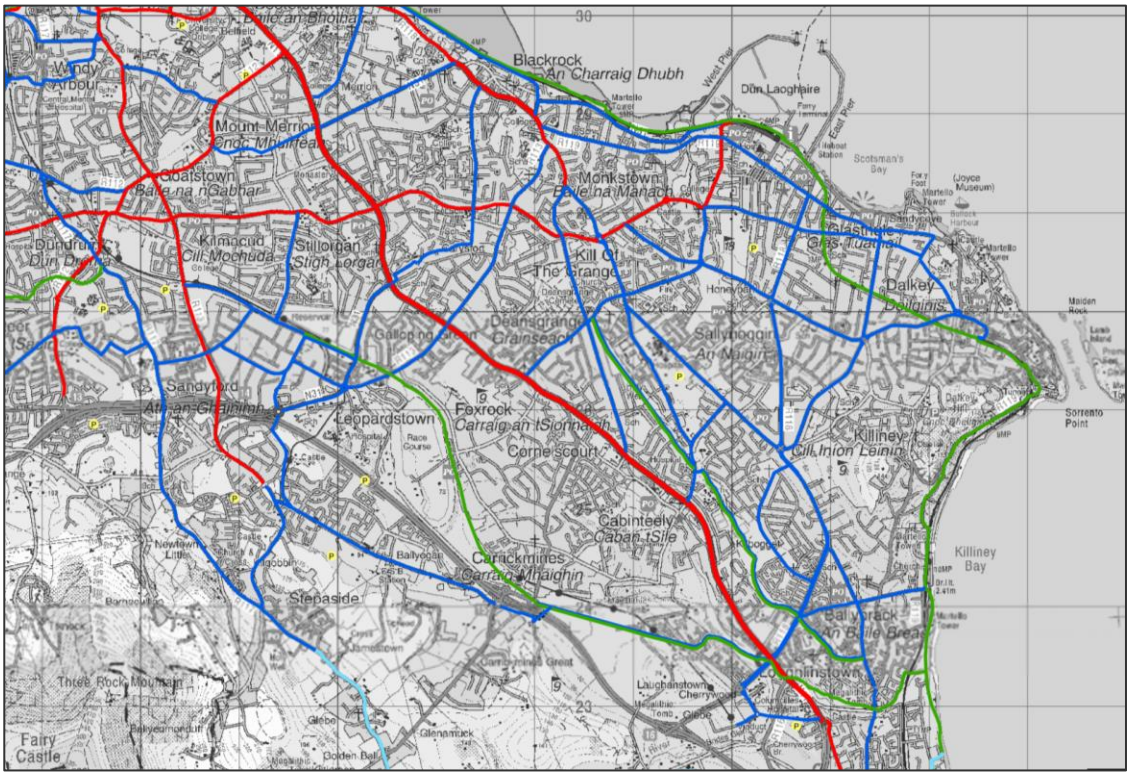


Figure 3-1 – Proposed Cycle Network in the GDA for Taney Road, Mount Anville and Fosters Avenue to Stillorgan Road.

3.3 Local Policy

3.3.1 Dún Laoghaire-Rathdown County Development Plan (2022-2028)

Dún Laoghaire-Rathdown County Council will put into effect its Development Plan on the 21st April, for the period from 2022 to 2028. This plan sets out a shared vision that will shape the future growth in the County over the 6-year period.

The plan outlines various transport related policies and objectives to be implemented during the period of the Plan. The policies and objectives relevant to this proposal are described below:

Policy T10: Walking and Cycling
It is a Policy Objective to secure the development of a high quality, fully connected and inclusive walking and cycling network across the County and the integration of walking, cycling and physical activity with placemaking including public realm improvements.

Policy T11: Footways and Pedestrian Routes
It is a Policy Objective to maintain and expand the footway and pedestrian route network to provide for accessible, safe pedestrian routes within the County in accordance with best accessibility practice.

Policy T12: County Cycle Network
It is a Policy Objective to secure improvements to the County Cycle Network in accordance with the Dún Laoghaire-Rathdown Cycle Network Review whilst supporting the NTA on the development and implementation of the Greater Dublin Area Cycle Network Plan, subject to environmental assessment.

The proposed scheme is also in accordance with the objectives of the **'Dún Laoghaire-Rathdown County Council Climate Change Action Pan 2019-2024'**, including Actions T4, T6, T7, T8, T11 and T13.

4. SCHEME OBJECTIVES

4.1 Overview

The framing of scheme specific objectives was undertaken in accordance with the guidance provided in the TII Project Appraisal Guidelines and DoT CAF. These guidance documents include a recommendation that project objectives are established based on each of the following criteria:

- Economy;
- Safety;
- Environment;
- Accessibility & Social Inclusion;
- Integration; and
- Physical Activity (if applicable).

On the basis of the characteristics of the existing road corridor and responding to the aspirations of national and strategic policy documentation, a series of defined objectives were developed. The objectives which are presented in Table 1 Scheme Specific Objectives are intended to allow a focused definition of options which can be examined against a series of required outcomes.

Table 1 Scheme Specific Objectives

Criteria	Scheme Specific Objective
Economy	• Generate positive local economic benefits to businesses and consumers by: ○ Reducing unnecessary commuting motor vehicle traffic that currently is not engaged economically; and ○ Encouraging spaces were children and adults feel comfortable and confident to economically engage.
Safety	• Improve safety for all road users, including vulnerable user groups; • Meet the safety needs of children and their parents to support a modal shift to active travel.
Environment	• To reduce CO_2 emissions and particulate emissions through a reduction in fuel consumption; • To secure the development of a high-quality walking and cycling network as identified in the GDA cycling Plan and in accordance with relevant Council and National policy and guidelines; • To secure improvements to the County Cycle Network in accordance with the Dún Laoghaire-Rathdown Cycle Network Review whilst supporting the NTA on the development and implementation of the Cycle Network Plan for the Greater Dublin Area; • To enable a reduction of noise impacts in populated areas.
Accessibility and Social Inclusion	• To provide a route that will encourage and support investment in the wider area in alignment with current investment plans on a County, Regional and National level; • To improve multi-modal transport journey time and multi-modal journey time reliability for active transport modes; • To expand the footway and pedestrian route network to provide for accessible pedestrian routes within the County in accordance with best accessibility practice;

Criteria	Scheme Specific Objective
	• To enable social equity by enabling people to choose a variety of travel options and active travel modes in particular; and • To facilitate the objective of national, regional and local planning policy.
Integration	• To improve connectivity to the existing cycle and walking networks; • To improve local amenity, improving amenity along paths and linking adjacent communities and village centres; • To connect to key recreational, education, leisure, and residential areas, such as Deerpark, University College Dublin and Mount Anville Secondary School; and • To provide continuity of network type for active modes through existing motorised vehicular dominated junctions;
Physical Activity	• To encourage active mobility as a mean of improving human health through physical activity;

5. NEED FOR THE SCHEME

5.1 Background

The proposed scheme will seek to improve safety, reduce active journey times, improve active travel directness and contribute to the increasing numbers of trips being made by bicycle and pedestrians in the local catchment for leisure, commuting, shopping and education. The scheme seeks to deliver upon the policy context described in Section 3. It is acknowledged that the scheme will result in a reduction of the existing motorised carriageway width and may impact on the operational efficiency of the existing motorised arms of trafficked junctions to facilitate the new safe active travel provision.

The proposed scheme seeks provides safer, more sustainable travel facilitates that link to residential, commercial, educational and leisure areas across the Greater Dublin Area.

In general, the existing road network along this section of the R112 reflects its role as a regional distributor, designed with wide carriageways in both directions. Consequently, this results in the environment along the R112 corridor and at each of the junctions being heavily car dominated.

As a result of the original road Design Speed being higher than the plated speed limits of 50km/h speed compliance is often difficult with a number of active traffic speed signs placed along the route. The 85th Percentile Speed on the sections of the route exceeding 60kph are near Mount Anville Secondary School. Figure 5-1 illustrated the 85th percentile speeds as an average across the entirety of the route and the highest observed 85th percentile speeds at a defined section of the route, in May 2019.

Time Set	Average 85th Percentile	85th Percentile Highest	Location of the Highest 85th Percentile Speed Along the R112
0:00-6:00	60	61	Mount Anville Road at the School
6:00-10:00	52	59	Mount Anville Road at the School
10:00-14:00	51	56	Mount Anville Road at the School
14:00-20:00	50	57	Mount Anville Road at Deerpark
20:00-24:00	56	62	Mount Anville Road at the School

Figure 5-1 - Average and highest observed 85th Percentile Speeds along the route in May 2019.

The vast majority of this section of network has limited or no segregated cycling provision, with multiple sections of the route having restricted or sub-standard walking provision. Moreover, existing accesses to the R112 are typically wide with unnecessarily long crossing distances for nature and type of typical vehicular movements. Existing elements of the cycling network are fragmented, with sections ending abruptly at junctions. As a result, non-motorised users are being discouraged through route inconsistency; negatively impacting modal shift.

The proposed scheme seeks to facilitate continuity of walking and cycling along the route. The plated speed limit of 50kph is routinely exceed based on the data described in Figure 5-1. Proposed infrastructure will be segregated to improve safety for those walking and cycling in line with existing guidance on active travel.

The proposed route is identified in the GDA Cycling Plan as a Primary route, yet this has limited or no segregated cycle infrastructure. The route also connects a number of existing cycling routes together and these are illustrated in Figure 5-2 Existing Cycling Networks. The route is identified are a key priority for DLRCC in their proposed cycle network.

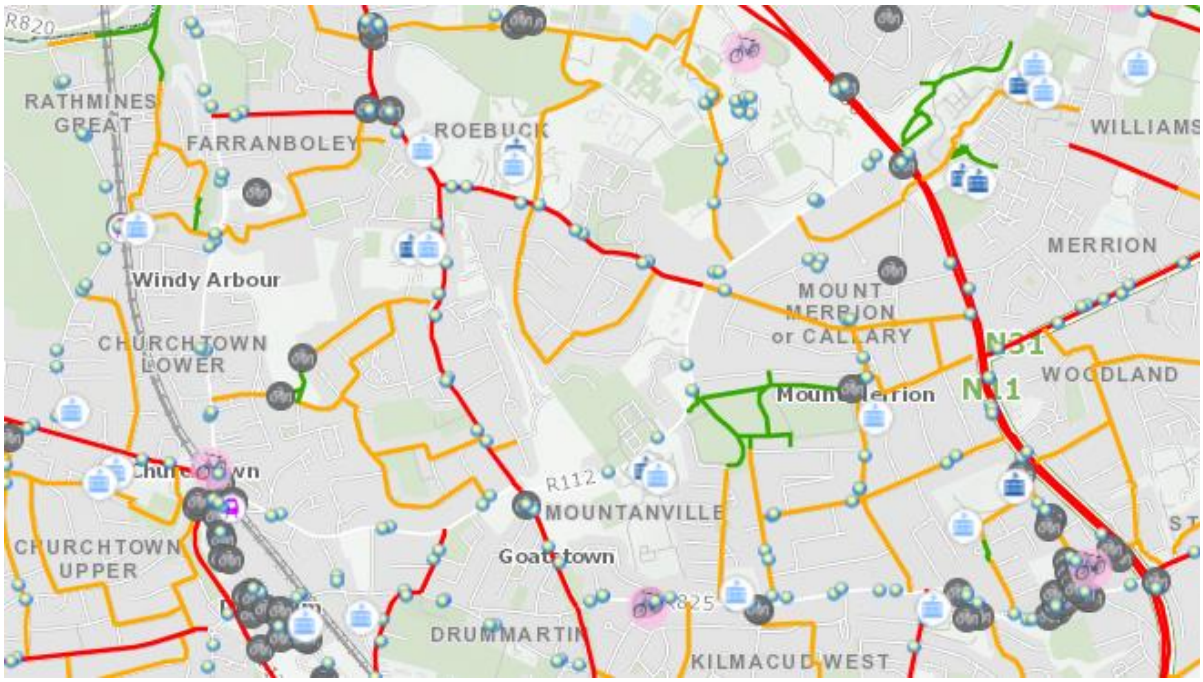


Figure 5-2 Existing Cycling Networks

5.1.1.1 Taney Road

The Taney Road section of the route begins approximately 50m east of the Dundrum Junction and extends to Goatstown Junction. This section of the route links key residential, commercial and public spaces; linking to the Dundrum LUAS stop, community centres, restaurants and to shops.

Figure 5-3 Taney Road - Key Junctions & Links

The existing infrastructure includes kerb-protected footways on both sides of the road for the entire length of the road, and some signal crossing points. There are also some designated cycle lanes, for example at Birches Lane Junction, but these taper off and are typically not segregated.

The cycling provision does not provide for more vulnerable or less confident users with limited protection from motor traffic (Figure 5-5 Taney Road: Sections of unprotected cycle infrastructure)

Figure 5-4 Taney Road: No protected cycling infrastructure between junctions

Figure 5-5 Taney Road: Sections of unprotected cycle infrastructure

5.1.1.2 Mount Anville Road

Mount Anville Road links the Goat Junction on Goatstown road to Roebuck/Callary Road Junction. This section of the route links key residential, commercial and public spaces, while also linking to Mount Anville Secondary school, Roebuck Hill House, and Deerpark.

Figure 5-6 Mount Anville Rd - Key points

Along this section there are kerb-protected footways on both sides of the street for the entire length of the road, with some signal crossing points and a long section with grassed areas and established tree planting. There is no existing cycling infrastructure. It is important to note that this section of the proposed scheme has a direct access to Deerpark and Mount Anville Secondary School and with an evident lack of mobility provision discouraging more vulnerable and less confident users from adopting active modes.

Figure 5-7 Mount Anville Rd: Walking infrastructure exists along the entire route but no cycle infrastructure

5.1.1.3 Foster's Avenue

Foster's Avenue links Roebuck/Callary Rd junction to Stillorgan Road Junction. This section of the route links key residential, commercial and public spaces, while also linking to University College Dublin and the recently upgraded existing cycling infrastructure along Stillorgan Road.

Figure 5-8 Foster's Rd - Key points

There are kerb-protected footways on both sides of the street for the entire length of the road, with some signal crossing points. There is no existing cycling infrastructure provision.

Figure 5-9 Fosters Road: Existing infrastructure

5.1.2 Junctions

There is currently limited cycling infrastructure at any of the junctions along the route. In general, there is provision for walking, although in a number of locations the existing footways are below standard design widths. There is limited protection or segregation for those cycling; with line marking providing designated space, but motorised vehicles regularly incurring within those zones.

The junctions considered as part of the scheme are;

- Birches Lane;
- Goatstown;
- Roebuck/Callary Rd;
- Deerpark; and
- North Avenue.

These junctions are identified in the Greater Dublin Cycling Plan as forming part of the Primary Cycle Route network.

5.1.2.1 Birches Lane Junction

This junction connects the proposed scheme to the Balally Luas stop via existing cycle paths along Birches Lane. It is an important junction for enabling interface between public transport modes as well as active modes.

The existing junction has existing infrastructure for cycling; there are designated cycle lanes, however they are short in length and do not connect to any other cycling infrastructure, nor do they provide adequate protection from motorised traffic. There are some crossing points with traffic lights for walkers with a median to enable crossing in two sections.

Figure 5-10 Birches Lane junction existing infrastructure

Figure 5-11 Birches Lane Junction: current infrastructure

5.1.2.2 The Goat Junction

This junction has limited cycling infrastructure for movements from Taney Road to Mount Anville road. There is existing cycling infrastructure along Drummartin Road leading to the Kilmacud Luas halt, however it provides little protection and places cycling in between moving cars.

The infrastructure limits the potential for less confident and more vulnerable cyclists. Figure 5-12 Existing cycle routes around Goatstown junction shows how this part of the route would connect 3 existing cycle paths (in red and orange).

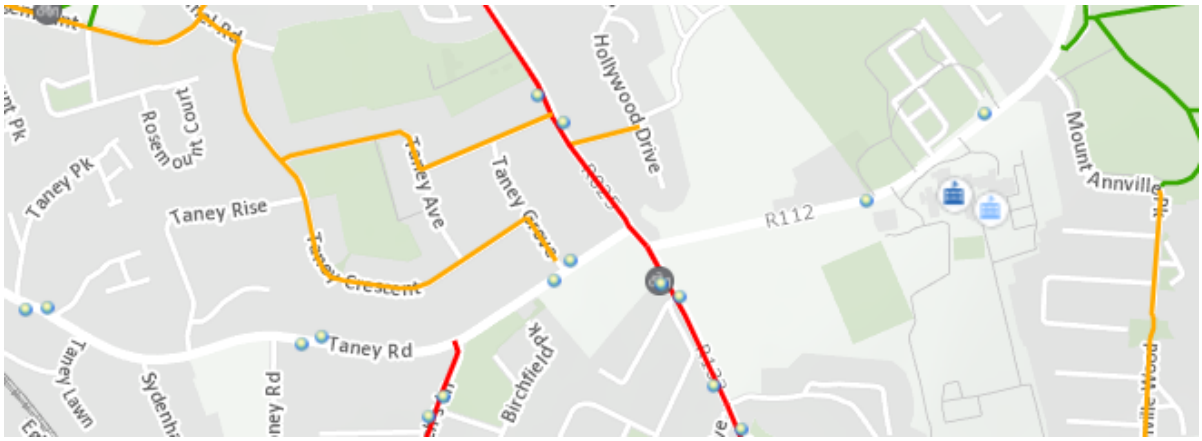


Figure 5-12 Existing cycle routes around Goatstown junction

Figure 5-13 Goatstown Junction: Current infrastructure

Figure 5-14 Goatstown Junction: Some existing cycle lanes along Goatstown road

5.1.2.3 Mount Anville School Access

It is noted that there is a dedicated right turn provision to Mount Anville Secondary School just east of the Goatstwon Junction. The facility is illustrated in Figure 5-15 - Dedicated Right Turning Facility at Mount Anville Secondary School.

Figure 5-15 - Dedicated Right Turning Facility at Mount Anville Secondary School

5.1.2.4 Link to Deerpark

Deerpark is an established and well utilised recreational and amenity space. It is currently accessible from Mount Anville Road via a recessed access lane, from Deerpark Road, South Avenue, Mount Anville Wood, Redesdale Road and Glennabby Road. As a result Deerpark also operates as a highly effective permeability link to distribute and connect active mobility movements.

Figure 5-16 Existing cycling infrastructure around Deerpark demonstrates the opportunity the proposed scheme has to enable improved connectivity to existing mobility infrastructure in and around Deerpark, connecting schools, parks and local amenities.

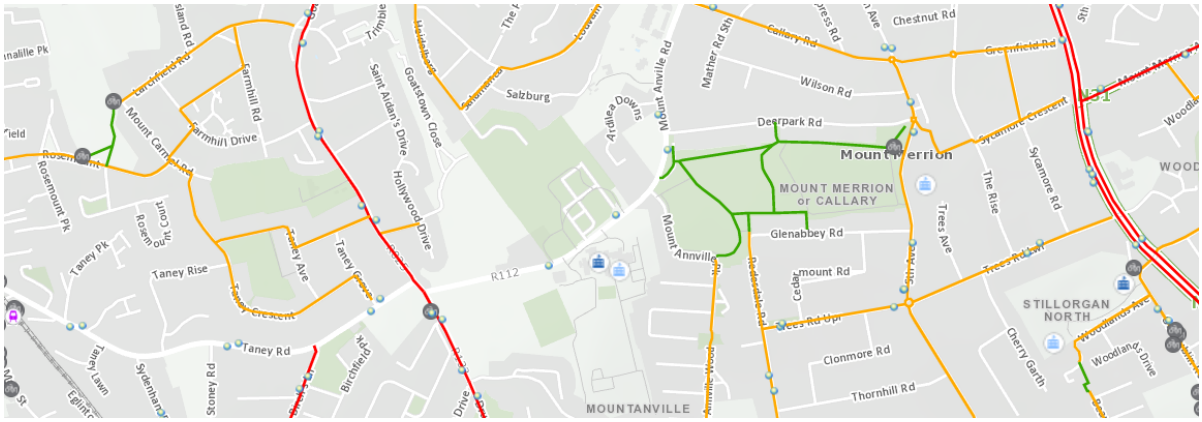


Figure 5-16 Existing cycling infrastructure around Deerpark

Figure 5-17 Link to Deerpark: Current infrastructure

5.1.2.5 Roebuck/ Callary Road junction

This junction has some non-segregated cycling infrastructure; however, this does not extend to movement from Mount Anville Rd to Foster's avenue.

Figure 5-18 Existing junction layout

Figure 5-19 Roebuck Rd/ Callary Junction: Current infrastructure

5.1.2.6 North Avenue junction

This junction links Foster's avenue to the existing cycling infrastructure. It currently has no cycling infrastructure, and the existing infrastructure encourages fast speed vehicular movement around this junction. The 85th percentile speeds for this section of the proposed scheme are typically some of the highest recorded along the route, 85th percentile speeds exceed the 50kph plated speed limit.

Figure 5-20 Existing cycling infrastructure around North Avenue junction

Figure 5-21 North Avenue Junction: Current infrastructure

5.1.2.7 Stillorgan Road junction

Stillorgan Road is a key section of the established cycling infrastructure network in the county. The network runs the length of the county connecting to areas such as Oatland's college, Saint John of God Hospital, Foxrock Golf course and Loughlinstown Commons. The Stillorgan Road junction provides a connection interface between two elements of the Primary cycle network identified in the GDA Cycle Network Plan.

It is vital that this scheme extends the cycling and walking infrastructure to integrate with this junction, however the junction has been recently upgraded and the design of this junction is therefore not included in the scope of this scheme.

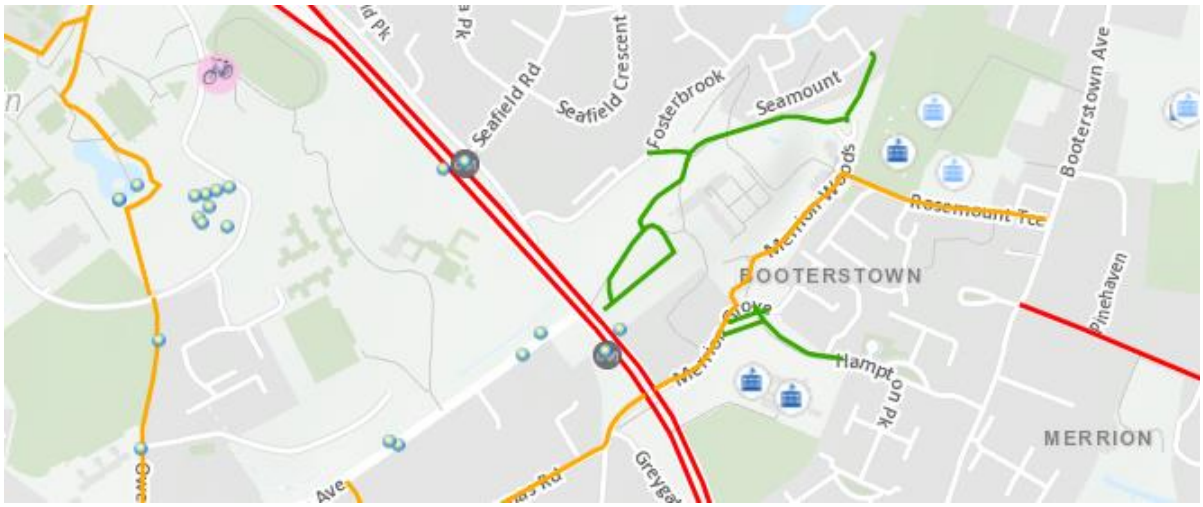


Figure 5-22 Existing cycling infrastructure around Stillorgan junction

6. CONSIDERATION OF OPTIONS

6.1 Option Analysis for one-way and two-way cycle tracks

Several options have been considered and analysed during this preliminary options stage, all of which provide improved priority infrastructure for walking and cycling. The three principal design approaches, highlighted in Figure 6-1 Typical one-way and two-way cross section between junctions (images: Streetmix), that have been considered are:

1. Option 1 - Kerb protected one-way cycle tracks, with the addition of two-way sections at specific crossing point;
2. Option 2 - Kerb protected two-way cycle tracks primarily on the south side of the road; and
3. Option 3 - Kerb protected two-way cycle tracks primarily on the north side of the road.

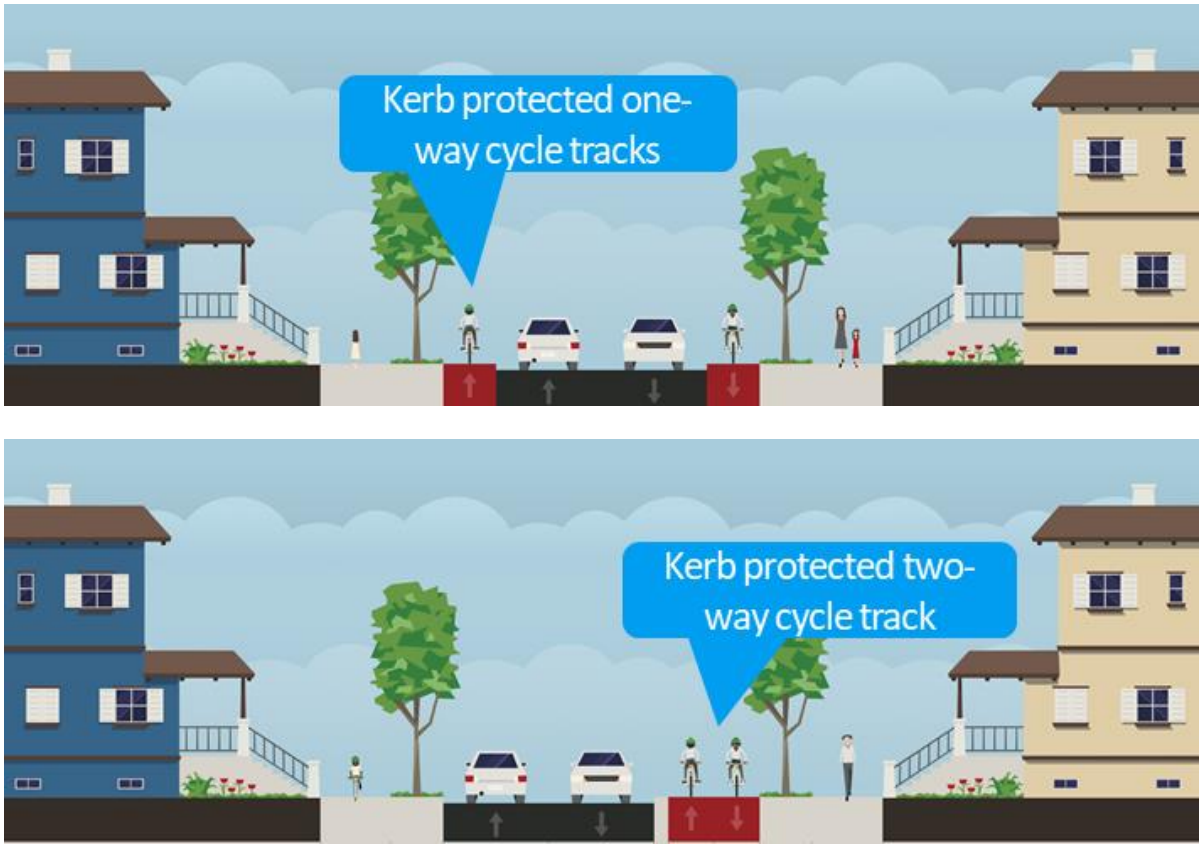


Figure 6-1 Typical one-way and two-way cross section between junctions (images: Streetmix)

While one-way cycle tracks are generally preferred, two-way cycle tracks can be beneficial where they reduce the overall exposure of those cycling to motor vehicle traffic (i.e. fewer crossings) or result in a shorter, more direct route. Generally, both options provide sufficient separation between cycling & walking and motorised vehicles, one of the principal objectives and requirements of this scheme.

Each of the proposed options have been considered under the Common Appraisal framework for Transport Projects (issued by the Department for Transport) to determine the relevant performance of each against the six criteria namely, Economy; Safety; Environment; Accessibility and Social Inclusion; Physical Activity and Integration.

The Multi-Criteria assessment described in the following section considers how the project performs in seeking to achieve the National, Regional and Local Policy objectives as set out in Section 3 Policy Context.

The Multi-Criteria analysis considers three proposed options to identify an emerging preferred option for consideration within the Design Assessment Report.

7. MULTI-CRITERIA ANALYSIS

An appraisal of the three proposed options and their impacts on each of the existing junctions is described in the following section.

7.1.1 One-way cycle track

The existing kerb to kerb widths for this scheme largely allow for a 1.5 meter width in each direction for a one-way cycle path. A width of at least 2-metres is however generally recommended to:

- allow two people to cycle two abreast, for example allow parents to cycle comfortably together with their children; and
- allow enough space for overtaking.

Figure 7-1 Example one-way kerb protected cycle track

The existing road width is typically 9m, to accommodate a one-way cycling network 2m in width on both sides of the carriageway, an operational trafficked carriageway in both directions and maintain complaint existing footway widths is extremely difficult.

Implementation of a 2m wide one-way cycle track on both sides of the road would require

1. The removal of a significant number of established street trees (45no.);
2. Carriageway structural retaining interventions along some significant sections of the route; retaining wall structures will be required on the approaches from Taney Road and Mount Anville road to the Goatstown junction. These have potential to impact existing access arrangement to business and retailers on the North Western and North Eastern arm of the junction and may require Compulsory Purchase of private lands; and
3. At a number of pinch points, cycleway widths and carriageway widths would need to be reduced, which have the potential to affect public transport services along the route.

7.1.2 Two-way cycle track

The main advantage of a two-way cycle track is the more flexible use of the available space. The existing road widths along the R112 is such that a 3-meter two-way cycle track can be

accommodated, through small changes to the existing kerbs and minimising the impact on existing landscaping.

A 3-metre cycle track is sufficient for 3 cyclists to move simultaneously; there is space for cycling two abreast plus for one cyclist to pass. This delivers a more efficient use of space with a two-way 3m wide cycle track requiring 1m less width than the equivalent 2no. 2m wide one-way cycle tracks. However it is noted that in some circumstances additional width can be required to facilitate cycling up hill. The Swedish cycling design manual recommends a cyclist going uphill requires 0.3m additional space on either side.

A two-way cycle track has the opportunity to develop fewer conflict points at entrances if a particular side of the street has fewer accesses, this develops a reduction in the number of interactions between motorised and non-motorised movements which can significantly improve safety.

A two-way cycle track can provide easy access to one side of the street which can be beneficial when the majority of key destinations are located on that side. However, there is sometimes reduced safety at side streets because drivers may not expect cyclists to appear from certain directions, which can lead to reduced safety. This can be mitigated by ensuring low speeds for turning cars or through conflict-free signal phasing.

The following sections assess the option of a two-way cycle track on the north side of the street and on the south side of the street.

Figure 7-2 Example two-way kerb protected cycle track

7.1.2.1 North side

A proposed 3m wide two-way cycle track on the north side would facilitate some established trip attractors on the north of the street such as University College Dublin and some residential areas. However, there are significantly more points of interest on the south side of the street: Deerpark, Mount Anville Secondary school, Taney Parish Centre, the Goat, Dundrum Village and the Dundrum Bus/Luas interchange.

A kerb protected two-way cycle track on the north side of the street makes crossing to these areas on the south-side more challenging, requiring those travelling by foot or by bike to cross

motorised-traffic. There are approximately 93 entrances and 7 side road junctions on the North side of the proposed scheme. Some of these entrances access high volume traffic movements such as a service station and a car garage which would mean a large volume of motorised vehicles would be crossing the cycle track at these entrance points.

Analysis of likely desire lines has been carried out to ensure those wishing to access the cycle path or key destinations on the south side of the road, from the north side of the street can do so safely.

Figure 7-3 Walled area to the north side of the street

Having the two-way cycle track on the north side of the street does not result in fewer crossings for anyone cycling, or a shorter route between destinations and would not result in a benefit for people cycling to destinations along the route.

The proposed two-way cycle track would also require the removal of approximately 13no. existing trees to facilitate the installation of the cycle track on the north side which is a significant reduction compared to the 45no. required for installing a one-way cycle track on both sides of the carriageway.

As with the one-way on both sides of the road a two-way cycle track on the north side will require construction of a retaining wall on the northeast and northwest arms of the Goatstown junction. The impacts are less than a one way cycle track in both directions, but subject to a detailed design may still require Compulsory Purchase of private lands.

7.1.2.2 South Side

With the kerb-protected two-way cycle track on the south side of the road, user can access key destinations that are identified along the south side of the route. This would make it more challenging for anyone cycling to access areas to the north side of the street. Access to University College Dublin can be facilitated via the existing signalised junction. Analysis of likely desire lines has been carried out to ensure those wishing to access the cycle path or key destinations on the north side of the road, from the south side of the street can do so safely.

Having the two-way cycle track on the south results in a more direct route with fewer crossings near Dundrum Main St and Dundrum Bypass. Those cycling can use the Dundrum Bypass-Main St junction to bypass the larger Dundrum Rd-Taney Rd junction. This option would also result in a more direct route with fewer crossings near Deerpark and at the Stillorgan Rd overpass.

The two-way cycle track on the south side provides benefit to people cycling, facilitating better connections to the residential areas between Mount Anville and Lower Kilmacud Road. There are approximately 91 entrances and 7 side road junctions on the South side of the proposed scheme which means there is a reduced amount of interaction between cyclists and motorised traffic crossing the cycle track compared to the proposed north option. Some of these entrances access high volume traffic movements such as the access to Mount Anville Secondary School which could mean a larger volume of motorised vehicles would be crossing the cycle track at these entrance points. Although it should be noted that the project brief seeks to prioritise active travel particularly for school trips which should reduce this potential crossing conflict and moreover that all three options will require the removal of the existing right turning pocket into Mount Anville Secondary School.

The proposed two-way cycle track on the south would also require the removal of approximately 9no. existing trees to facilitate the installation of the cycle track on the south side which is a significant reduction compared to the 45no. required for installing a one-way cycle track on both sides of the carriageway and a further reduction on the 13no. required to be removed on the two-way cycle track on the north.

7.2 Motorised Traffic Impact Assessment

It is acknowledged that each of the proposed options will result in a reduction of the existing motorised carriageway width and may impact on the operational efficiency of the existing motorised arms of trafficked junctions to facilitate the new safe active travel provision.

A traffic impact assessment report has been completed as part of this options appraisal process to evaluate the impact of any changes and where appropriate propose measures or mitigations to reduce those impacts so far as reasonably practicable.

It is acknowledged that the objectives of the project brief is to prioritise safe movement of non-motorised users which may result in increased journey times or queuing for some motorised users.

A detailed Operational Traffic Impact Assessment has been completed utilising LinSig v3 software for the 2021 AM and PM peak scenarios. LinSig V3 which is the industry-standard computer program for assessing traffic signal installations. LinSig V3 is a Traffic Signal Design software that represents the features and constraints of a traffic signal controller. The software models the movement of traffic in fixed time through a junction or a network of junctions and calculates the likely queues generated for each approach of a junction within each peak period.

When analysing LinSig outputs, the primary focus is on link capacity and queues. LinSig outputs refer to the degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of a junction. DoS is presented as a percentage and queue lengths in PCU's (Passenger Car Units).

In Section 7.3 of this report the Operational Traffic Impact Assessment, it's considerations and conclusions are discussed at each junction for each proposed option. The detailed Operational Traffic Impact Assessment Report is included as Appendix A to this report.

7.3 Junctions

All three cycle track alignment options (Kerb protected one-way cycle track; Kerb protected two-way cycle track, north side; Kerb protected two-way cycle, south side) were considered for each of the junctions.

This section of the report outlines the option development, traffic impact and selection process for each of the key junctions along the proposed route.

7.3.1 Birches Lane Junction

The upgrade of Birches Lane junction to enable safer, segregated walking and cycling ways is a key part of the scope of this scheme.

7.3.1.1 Option 1 – One-way cycle track on both sides

Option 1 involves crossing points to connect to the one-way cycle tracks along Birches lane. This involves removing the left-hand slip lane from R112 Taney Road east, the left-hand slip lane from Birches Lane south and realigning the junction slightly on both sides of the carriageway to provide increased segregated areas between motorised traffic and other modes of non-motorised travel.

The proposed changes will allow the junction to operate within capacity for both peak periods in 2021 with slightly longer queues on the R112 Taney Road East in AM and PM Peak compared to the existing configuration. The queues will increase from approximately 40m in the existing configuration AM peak scenario to 65m for the new proposed realignment.

Even though there is a slight increase in the queues the junction still operates within capacity and has increased the safety of other modes of non-motorised travel such as cyclists and pedestrian trying to navigate through the junction safely.

Figure 7-4 Birches Lane junction: Option 1 (one-way)

7.3.1.2 Option 2 – Two way cycle track on the North side

Option 2 would require those cycling along Birches lane towards this scheme to cross with caution at the junction to pass to the north-side of the street and enter the two-way cycle track.

This involves removing the left-hand slip lane from R112 Taney Road east, the left-hand slip lane from Birches Lane south, the removal of the right turn lane on the R112 Taney Road West and realigning the junction on both sides of the carriageway to provide increased segregated areas between motorised traffic and other modes of non-motorised travel.

These proposed changes will allow the junction to operate within capacity for both peak periods in 2021 with longer queues on the R112 Taney Road East in AM and PM Peak compared to the existing configuration. The queues will increase from approximately 103m in the existing configuration AM peak scenario to 155m for the new proposed realignment.

Even though there is an increase in the queues the junction still operates within capacity and has increased the safety of other modes of non-motorised travel such as cyclists and pedestrian trying to navigate through the junction safely.

Figure 7-5 Birches Lane: Option 2 (two-way, North side)

7.3.1.3 Option 3 – Two way cycle track on the South side

Option 3 will facilitate access to the two-way cycle track from Birches Lane on the same side as the junction.

This option would improve directness for cyclists and pedestrians while also implementing an extension of the kerb width to the north of the junction along Taney Road.

It is proposed to utilise the existing service lane to the west of Taney road to facilitate cyclists in a protected space, and also avoiding sharp turns in the cycle track. This option and use of the shared lane facilitates good cycle lane provision within a tight cross section of the proposed route.

Like option 1 this involves removing the left-hand slip lane from R112 Taney Road east, the left-hand slip lane from Birches Lane south, but would not require the removal of the existing right turn provision from Taney Road West. Realigning the junction slightly on both sides of the carriageway will also provide increased segregated areas between motorised traffic and other modes of non-motorised travel.

These proposed changes will allow the junction to operate within capacity for both peak periods in 2021 with slightly longer queues on the R112 Taney Road East in AM and PM Peak compared to the existing configuration. The queues will increase from approximately 40m in the existing configuration AM peak scenario to 65m for the new proposed realignment.

Even though there is a slight increase in the queues the junction still operates within capacity and has increased the safety of other modes of non-motorised travel such as cyclists and pedestrian trying to navigate through the junction safely.

Figure 7-6 Birches Lane: Option 3 (two-way, south side)

7.3.2 The Goat Junction

The upgrade of Goat Junction will enable safer, segregated walking and cycling movements which is a key part of the scope of this scheme. The existing provision for cycling and walking is limited within this junction.

7.3.2.1 Option 1 – One-way cycle track on both sides

Option 1 involves crossing points to connect to the one-way cycle tracks across the junction. Buildouts at each side of the junction would be required to facilitate the additional space necessary to accommodate greater priority for non-motorised users.

The existing lane capacity may be reduced to accommodate the changes. The existing motorised dedicated left turn slips on Taney Road and Mount Anville would be removed to accommodate the cycleway. Motorised left turn movements would still be facilitated within signalised left turn lanes.

Due to the variance between the footway and road elevation, Option 1 may require some retaining structures to accommodate the amendments to the northern sides of the Taney and Mount Anville Road, acquisition of privately owned lands may be required to facilitate those structures.

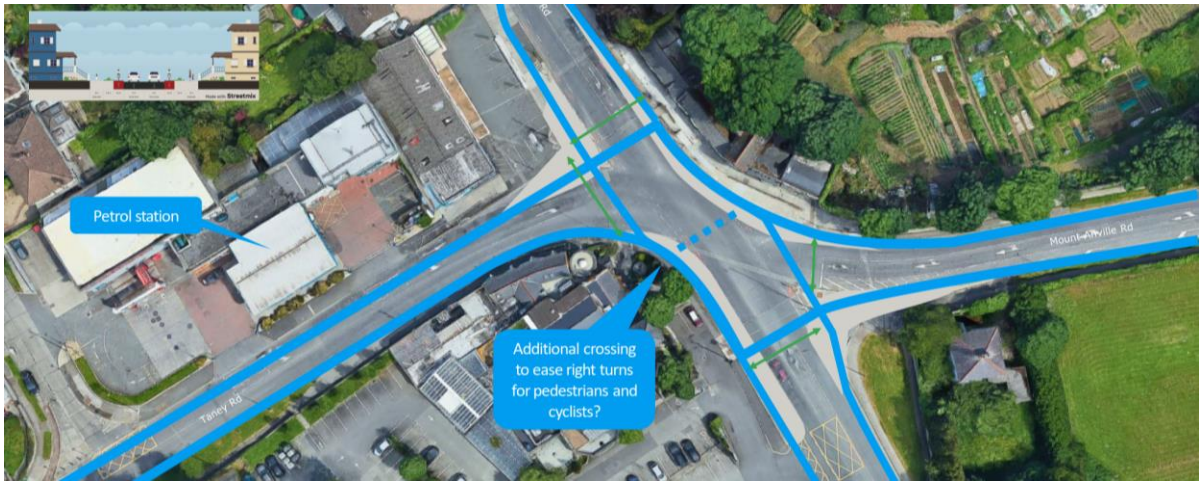


Figure 7-7 The Goat Junction: Option 1 (one-way)

7.3.2.2 Option 2 – Two way cycle track on the North side

Option 2 would include similar infrastructure changes to option 1, although the proposed route option would likely require more significant alteration, due to the variation in grade between the road and footways, to the existing northern sides of Mount Anville and Taney Road.

Again due to the variance between the footway and road elevation, Option 2 will require some retaining structures to accommodate the amendments to the northern sides of the Taney and Mount Anville Road, acquisition of privately owned lands may be required to facilitate those structures.

The existing motorised left turn lane on Taney Road would be removed to accommodate the cycleway although left turn movements would still be facilitated within signalised left turn lanes.

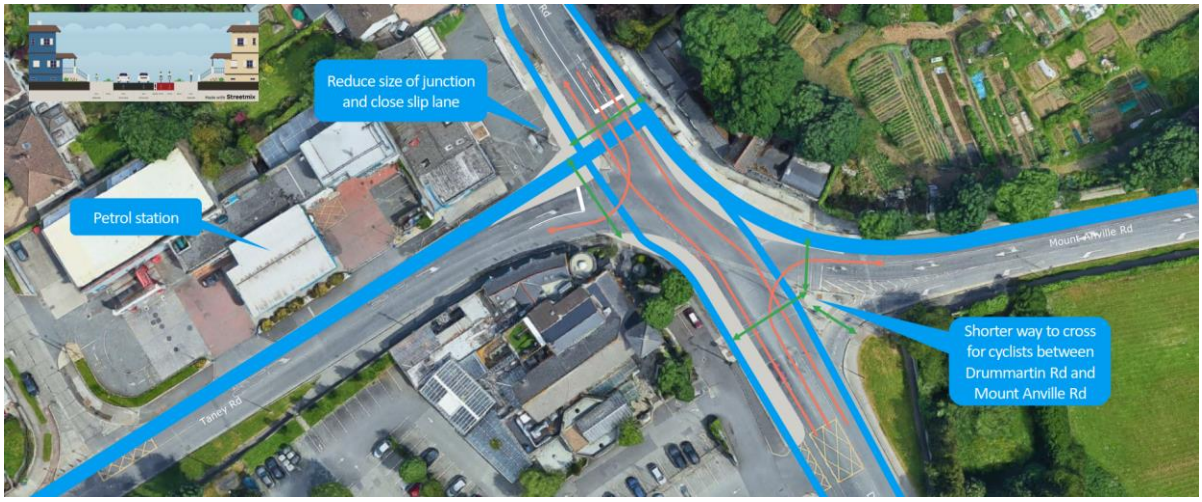


Figure 7-8 The Goat Junction: Option 2 (two-way, north side)

7.3.2.3 Option 3 – Two way cycle track on the South side

Option 3 involves crossing points to connect to the one-way cycle tracks across the junction. Buildouts at each side of the junction would be required to facilitate the additional space necessary to accommodate greater priority for non-motorised users.

The location of the proposed cycleway on the south side removes the potential for retaining structures and acquisition of privately owned lands that may be required to facilitate those structures. The existing left turn lanes on Taney Road and Mount Anville would be removed to accommodate the cycleway with left turn movements facilitated within signalised left turn lanes.

The proposed two-cycle lane on the southern side would facilitate more direct and safe access to Mount Anville School, benefiting vehicular traffic and non-motorised traffic by not requiring additional crossings.

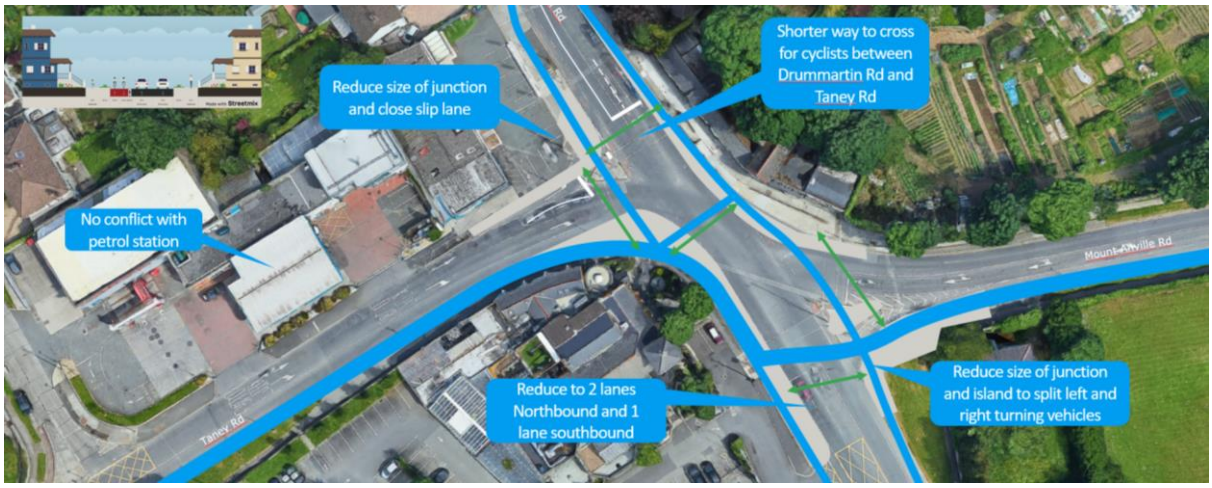


Figure 7-9 The Goat Junction: Option 2 (two-way, south side)

The current configuration of Goat junction is running above capacity in both the AM and PM peaks. The junction has been optimised but remains above operational capacity with the Degree of Saturation (DoS) over 90% meaning it is operating above its Practical Reserve Capacity (PRC). In view of that a more spatially efficient mode of transport needs to be considered to reduce the impact personal car use is having on the junction efficiency.

Option 1, 2 and 3 all have the same effect on the junction with the signal locations, lane capacity and timings similar for each. All three options reduce the motorised traffic operational efficiency of the junction. As a result two phasing scenarios for the junction were developed to minimise these motorised traffic impacts. These scenarios are detailed in the Operational Traffic Impact Assessment report included as Appendix A to this report and summarised below:

1. Scenario 1 (side roads and the internals they run into, run separately), the operation of the junction deteriorates compared to the existing scenario in both AM and PM peaks with longer queues and delays. The introduction of internal stop lines with the side roads and the internals they run into running separately, creates capacity issues on all the approaches to the junction with a Degree of Saturation (DoS) over 90% meaning it is operating above its Practical Reserve Capacity (PRC) on all approaches which is a significant increase on delay compared to the current configuration.

2. Scenario 2 (side roads and internal left turn lanes running together), the overall performance of the junction improves compared to the current junction configuration in the AM peak (PRC=-22.2% in existing junction configuration and -14.2% in implementing scenario 2) and deteriorates in PM peak (PRC= -16.5% in existing junction configuration and PRC= -30.9% in implementing scenario 2). The introduction of internal stop lines with the side roads and internal left turn lanes running together, create capacity issues on the R825 Goatstown Road, R825 Drummartin Road and R112 Taney Road in AM peak, whilst capacity issues are identified on the R112 Drummartin Road and R112 Mount Annville Road in PM peak.

   With scenario 2 the junction performs more efficiently than the existing junction configuration in the AM peak and marginally less efficient in the PM peak but with the proposed implementation of scenario 2 this would mean full segregation of motorised and non-motorised traffic through the junction providing safe movement for both motorised and non-motorised forms of travel. It is noted that no allowance has been made in the operational traffic impact assessment for modal shift of traffic from motorised modes to non-motorised modes.

7.3.3 Roebuck/Callary Road Junction

7.3.3.1 Option 1 – One-way cycle track on both sides

Option 1 would implement safer non-motorised movements within the existing Roebuck/Callary Road junction.

The proposed amendment would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

Existing dedicated left slip lanes would be removed to reduce pedestrian crossing distances and improve cycling segregation.

This option would also require the realignment of the carriageway on both sides to increase the width of the carriageway from 9m to 10.5m.

The existing walking infrastructure would have to be reduced / realigned, existing utilities and trees would also be required to be relocated / removed on both sides of the carriageway to provide one way cycle track on both sides of the carriageway.

Figure 7-10 Roebuck/Callary Junction: Option 1 (one-way)

7.3.3.2 Option 2 – Two way cycle track on the North side

Option 2 would implement safer non-motorised movements within the existing Roebuck/Callary Road junction.

The proposed amendment would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

Existing dedicated left slip lanes would be removed to reduce pedestrian crossing distances and improve cycling segregation.

The carriageway width would only need to be increased from 9m to 9.5m.

The existing walking infrastructure would have to be reduced / realigned, existing utilities and trees would also still be required to be relocated / removed but only on the north side of the carriageway.

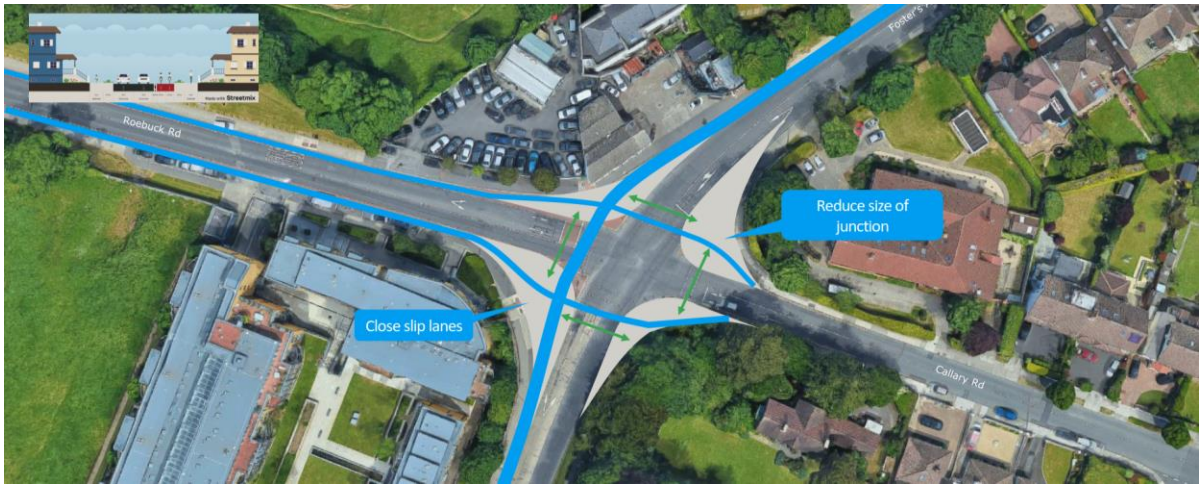


Figure 7-11 Roebuck/Callary Junction: Option 2 (two-way north side)

7.3.3.3 Option 3 – Two way cycle track on the South side

Option 1 would implement safer non-motorised movements within the existing Roebuck/Callary Road junction.

The proposed amendment would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

Existing dedicated left slip lanes would be removed to reduce pedestrian crossing distances and improve cycling segregation.

The carriageway width would only need to be increased from 9m to 9.5m.

The existing walking infrastructure would have to be reduced / realigned on one arm of the junction while on the other arm there is an existing grass verge which could be reduced to allow for the additional width required. Existing utilities and trees would also still be required to be relocated / removed but only on the south side of the carriageway.

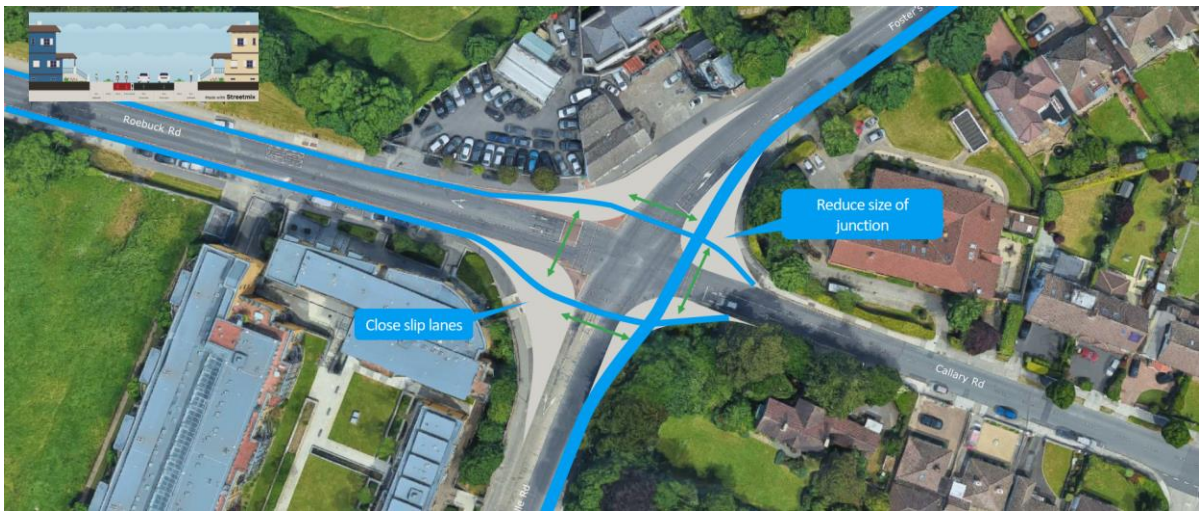


Figure 7-12 Roebuck/Callary Junction: Option 3 (two-way south side)

All 3 proposed alignment options for Roebuck/Callary Road junction indicate that all the arms for the existing and all the options of the proposed junction operate within capacity (DoS<90%) with insignificant changes in queues and delays in both AM and PM peak periods.

It is noted that the existing car garage on the north-western arm of the junction may increase the number of interactions between motorised and non-motorised vehicles under options 1 and 2.

7.3.4 Deerpark

7.3.4.1 Option 1 – One-way cycle track on both sides

Option 1 would facilitate access to Deerpark both directly for those cycling and walking north to south, and via a new crossing for those travelling south to north. The proposed crossing would affect existing vehicular movements along Mount Anville Road. It would be possible to integrate the existing slip way into the proposed design solution for those travelling southbound.

This option would also require the realignment of the carriageway on both sides to increase the width of the carriageway from 9m to 10.5m. The existing walking infrastructure would have to be reduced / realigned and existing utilities would also be required to be relocated on both sides of the carriageway to provide one way cycle track on both sides of the carriageway.

Figure 7-13 Deerpark Access: Option 1 (one-way)

7.3.4.2 Option 2 – Two way cycle track on the North side

Option 2 would shift the proposed cycleway away from the Deerpark access. The alignment would require an additional crossing which would need to facilitate 2-way cycle movements and pedestrians. The existing carriageway width would need to be increased from 9m to 9.5m. The existing walking infrastructure would have to be reduced / realigned on the north side of the carriageway. Existing utilities would also still be required to be relocated but only on the north side of the carriageway.

Figure 7-14 Deerpark Access: Option 2 (two-way north side)

7.3.4.3 Option 3 – Two way cycle track on the South side

Option 3 would move the cycleway close to the Deerpark entrance, this could be integrated into the existing access lane to minimise impacts on the existing Mount Anville Road. A crossing may still be considered necessary to facilitate pedestrian movements.

The existing carriageway width would need to be increased from 9m to 9.5m as per option 2 but the existing walking infrastructure would not need to be adjusted as there is a grass verge which can be reduced in size to widen the carriageway to the required width. Existing utilities would also still be required to be relocated but only on the south side of the carriageway.

Figure 7-15 Deerpark Access: Option 3 (two-way south side)

7.3.5 North Avenue

7.3.5.1 Option 1 – One-way cycle track on both sides

Option 1 would facilitate safer non-motorised movements within the existing North Avenue junction. The proposed amendments would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

The existing dedicated left slip lane would be removed to reduce pedestrian crossing distances and improve cycling segregation. Access would be facilitated both south to the Stillorgan overpass and north to the University College Dublin Campus. It is noted that this is not one of the main DCU Campus access points.
Option 1 requires the realignment of the carriageway on both sides to increase the width of the carriageway from 11.5m to 13.75m.

The existing walking infrastructure would be reduced and significant existing utilities would be required to be relocated on both sides of the carriageway to provide one way cycle track on both sides of the carriageway.

Figure 7-16 North Avenue: Option 1 (one-way)

7.3.5.2 Option 2 – Two way cycle track on the North side

Option 2 would facilitate safer non-motorised movements within the existing North Avenue junction. The proposed amendments would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

The existing dedicated left slip lane would be removed to reduce pedestrian crossing distances and improve cycling segregation. Additional crossings will be required to facilitate cyclist movements from University College Dublin towards North Avenue, although these could be facilitated with the proposed pedestrian movements.

The existing carriageway width would need to be increased from 11.5m to 12.75m. The existing walking infrastructure would be reduced on both the north and south side of the carriageway as there is not enough available space on the north to facilitate the installation of the two-way cycle track. Existing utilities and trees would be required to be removed on both sides of the carriageway.

Figure 7-17 North Avenue: Option 2 (two-way north side)

7.3.5.3 Option 3 – Two way cycle track on the South side

Option 3 would facilitate safer non-motorised movements within the existing North Avenue junction. The proposed amendments would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements.

The existing dedicated left slip lane would be removed to reduce pedestrian crossing distances and improve cycling segregation. Additional crossings will be required to facilitate cyclist movements from North Avenue toward University College Dublin, although these could be facilitated with the proposed pedestrian movements.

The existing carriageway width would need to be increased from 11.5m to 12.75m. The existing walking infrastructure would have to be realigned on the south side of the carriageway facilitate the installation of the two-way cycle track. Existing utilities and trees would also still be required to be removed on the south side of the carriageway.

Figure 7-18 North Avenue: Option 3 (two-way south side)

7.4 Multi-Criteria Analysis Summary for the considered Options

In view of the information presented within this report, Table 2 - Multi-Criteria Analysis Summary against the CAF Key Criteria, below illustrates a Multi-criterion appraisal of each route option.

The appraisal considers compliance with the Economic, Safety, Environmental, Accessibility & Social Inclusion, Physical Activity and Integration objectives of the project described in Section 4 Scheme Objectives.

Common Appraisal Framework Objectives Compliance for each of the proposed options. *Compliance is assessed as High Compliance, Medium Compliance or Low Compliance*						
Alignment Option	Economic	Safety	Environmental	Accessibility & Social Inclusion	Physical Activity	Integration
Option 1 - **One Way**	Medium	High	High	Medium	High	Medium
Option 2 - **Two-Way North Side**	Medium	Medium	High	High	High	Medium
Option 3 - **Two-Way South Side**	High	High	High	High	High	High

Table 2 - Multi-Criteria Analysis Summary against the CAF Key Criteria

7.4.1 Economic

Options 2 and 3 preform similarly in regard to the economic objectives of the project for large sections of the scheme while there is a significant increase in cost for option 1.

7.4.1.1 Construction Costs

Options 1 and 2 require more significant interventions at the Goat junction to enable routing of the proposed cycleway through the junction. The Goats Junction operates in its current layout above its Degree of Saturation (DoS) within the AM and PM peak periods. In view of this it is proposed not to remove any lane capacity beyond the existing left turn lanes to facilitate the additional width required to construct the active travel cycleways.

This requires a number of retaining structures to be implemented for Options 1 and 2 to be constructed and may require the compulsory acquisition of additional lands. Option 3 will not require these structures and can be accommodated without compulsory acquisition of private lands. Option 1 will require the construction within additional verge widths to accommodate a 2m cycleway on both sides of the carriageway compared to the 3m width required for option 2 and 3. A summary of the Feasibility Working Costs for the three options are included the

Outline Cost Estimates	
Alignment Option	**Construction Cost (€m)**
Option 1 - One-way on both sides of the Carriageway	€12.1m
Option 2 – Two-way on the North side of the carriageway	€9.2m
Option 3 - Two-way on the South side of the carriageway	€9.0m

7.4.1.2 Traffic Impacts

Existing vehicular traffic movements are expected to be facilitated in largely the same manner as existing on the mainline network with reduced width.

In all three options the Goat junction which will have improved efficiency in the AM peak but operate less efficiently in the PM peak. This reduction in operational efficiency has be reduced so far as reasonably practicable, for the given junction layout, through the optimisation of the signal phasing.

It is noted that the implementation of Active Travel networks in urban and peri-urban environments has supported economic benefits for local business. A recent report[1] noted that consumers coming on foot or by bike spent more than those coming by car and that any loss in clients coming by car was more than compensated by those who came by foot or on bike. This is further evidenced by research completed by DLRCC following interventions in local villages such as Blackrock, Dun Laoghaire and Dundrum.

7.4.1.3 Economic Summary

In view of the considerations above options 1 & 2 have been defined as medium compliance with option 3 as high compliance.

7.4.2 Safety

All three options preform similarly in regard to the safety objectives of the projects and will yield significant safety improvements for non-motorised users.

Non-motorised improvements at each of the junctions will significantly improve safety of movement, particularly for more vulnerable and less confident users.

Option 2 requires additional crossings to be installed to facilitate access to some of the key attractors along the length of the route, e.g. Deerpark and Mount Anville School.

Option 1 facilitates access to both sides of the existing network along its length with Option 3 providing direct access to a number of the key attractors which is of benefit.

The number of conflict points between motorised and non-motorised users is less in Option 3 compared to Option 1 and 2. Option 3 has the lowest number of conflict points that would have to cross the proposed cycle track.

Location	No. of Direct Entrances	No. of Side Road Junctions
Option 1 - One-way on both sides of the Carriageway	174 (93 North & 81 South)	14 (7 North & 7 South)
Option 2 - Two-way on the North side of the carriageway	93	7
Option 3 - Two-way on the South side of the carriageway	81	7

Figure 7-19 - Conflict Points between Motorised and Non-Motorised users for each Option.

Although all three options perform well, significantly improving the existing situation, option 3 has been defined as high compliance with option 1 and 2 illustrating a medium compliance due to the increased interaction between motorised and non-motorised users.

[1] https://ecf.com/sites/ecf.com/files/TheBenefitsOfCycling2018.pdf

7.4.3 Environmental

All three options preform similarly in regard to the environmental objectives of the project. All three options will seek to improve modal shift, to generate reduced carbon emissions, improve air quality, reduce noise, encourage an active lifestyle and improve human health.

The proposed route options are all delivered within the existing road envelope limiting impacts on the built environment, moreover all three route options will integrate planting and urban design measures to improve the existing streetscape.

The table below describes the impact on established trees for each option.

Location	No. of Trees to be removed to implement the scheme
Option 1 - One-way on both sides of the Carriageway	43
Option 2 - Two-way on the North side of the carriageway	13
Option 3 - Two-way on the South side of the carriageway	9

Figure 7-20 - Established trees to be removed based on each option.

It is noted that the embodied carbon required to construct options 1 and 2 will be greater than Option 3.

Based on the above information option 2 and 3 have been defined as high compliance and option 1 defined as medium compliance.

7.4.4 Accessibility & Social Inclusion

All three options preform similarly in regard to the accessibility and social inclusion objectives of the project. All three options will facilitate mobility access to a wide socio-economic group and enable a number of accessibility improvements along the length of the route.

All three options have been defined as high compliance.

7.4.5 Physical Activity

All three options preform similarly in regard to the physical activity objectives of the project. All three options will facilitate and encourage a more active lifestyle.

All three options have been defined as high compliance.

7.4.6 Integration

All three options perform well in regard to the integration objectives of the project.

All three options will seek to improve integration with the existing mobility and infrastructure network.

Options 1 & 2 require a number of additional crossing to facilitate access to Mount Anville School, Deerpark and Dundrum Luas Halt.

Option 3 better integrates with the existing network by connecting in a more convenient and direct manner to existing mobility networks and attractors and reduces the number of conflicts between motorised and non-motorised users.

Options 1 & 2 have been defined as medium compliance with option 3 illustrating a high compliance.

7.4.7 Emerging Preferred Option

Option 3 is proposed as the emerging preferred option based on the multi-criteria analysis in accordance prescribed project objectives and the 6 key criteria defined in the Common Appraisal Framework.

Common Appraisal Framework Objectives Compliance for each of the proposed options.
Compliance is assessed as High Compliance, Medium Compliance or Low Compliance

Alignment Option	Economic	Safety	Environmental	Accessibility & Social Inclusion	Physical Activity	Integration	Compliance Summary	Option Ranking
Option 1 - **One Way**	Medium	Medium	Medium	High	High	Medium	Medium	3
Option 2 - **Two-Way North Side**	Medium	Medium	High	High	High	Medium	Medium	2
Option 3 - **Two-Way South Side**	High	High	High	High	High	High	High	1

APPENDIX A
OPERATIONAL TRAFFIC IMPACT ASSESSMENT REPORT

OPERATIONAL ASSESSMENT
ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD

Project name	**Active Travel Route Dundrum to Stillorgan Road**
Project no.	**1620012050**
Recipient	**Dún Laoghaire-Rathdown County Council**
Document type	**Operational Assessment**
Version	**1**
Date	**09/03/2022**
Prepared by	**Ioannis Spyropoulos**
Checked by	**Nicola Evans**
Approved by	**Cathal McKenna**

CONTENTS

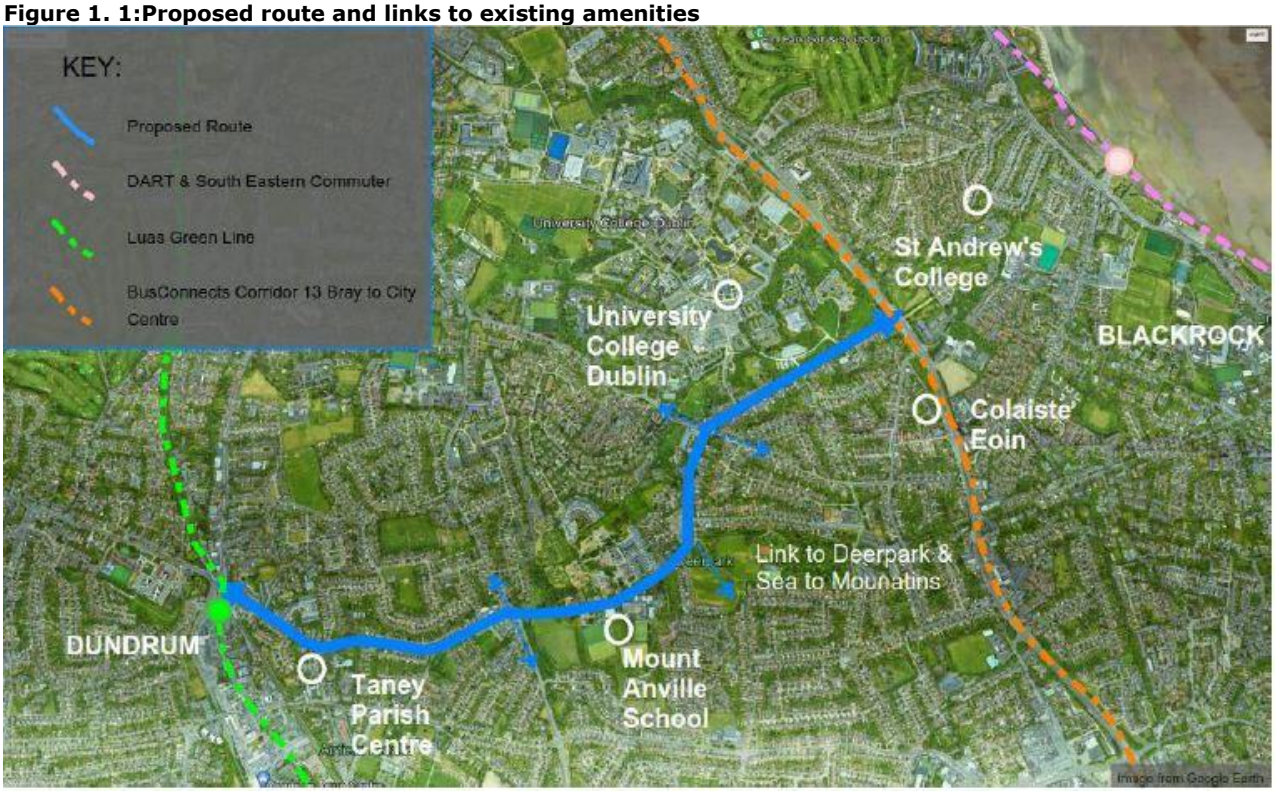
1. Introduction

Ramboll has been commissioned by Dún Laoghaire-Rathdown County Council to prepare an Operational Assessment Report for four junctions located along the proposed active-travel provision along the R112 between Dundrum and Stillorgan Road.

The scheme is focused on improving safety, reducing motorised traffic speeds, and upgrading active mobility infrastructure and includes:

- Reduction of the existing road width along the R112 to facilitate slow traffic speeds;
- The upgrade and introduction of a segregated cycle path along the R112;
- The upgrade of existing crossings for pedestrians; to provide easy and safe routes to key destinations on either side of the street;
- The provision of additional crossings for pedestrians at key locations, based on consideration of 'desire lines' (likely routes to be carried out by the public);
- The upgrade of existing junctions to facilitate safer walking and cycling movements; and
- The integration of continuous footways and cycle tracks at side streets to enable safe and easy transition to side streets.

Figure 1. 1:Proposed route and links to existing amenities



2. Purpose of Report

This report has been produced to compare the operational assessment between the existing (Do Nothing) and proposed (Do Something) layouts in 2021 AM and PM peaks for the following junctions:

- R112 Taney Road/Birches Lane;
- R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road;
- R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road; and
- R112 Fosters Avenue/North Avenue.

The three principal design options that have been considered and assessed for each junction are:

- Option 1 - Kerb protected one-way cycle tracks, with the addition of two-way sections at specific crossing point;
- Option 2 - Kerb protected two-way cycle tracks primarily on the south side of the road; and
- Option 3 - Kerb protected two-way cycle tracks primarily on the north side of the road.

3. Methodology

The four junctions along the R112 have been assessed using LinSig v3 software for the 2021 AM and PM peak scenarios.

LinSig V3 which is the industry-standard computer program for assessing traffic signal installations. LinSig V3 is a Traffic Signal Design software that represents the features and constraints of a traffic signal controller. The software models the movement of traffic in fixed time through a junction or a

network of junctions and calculates the likely queues generated for each approach of a junction within each peak period.

When analysing LinSig outputs, the primary focus is on link capacity and queues. LinSig outputs refer to the degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of a junction. DoS is presented as a percentage and queue lengths in PCU's (Passenger Car Units).

A DoS of 100% indicates that the lane in question is operating at its theoretical capacity (point of full saturation), whilst a DoS of 90% or less indicates that the lane is operating within its Practical Reserve Capacity (PRC). A positive PRC indicates that a junction has spare capacity, whilst a negative PRC that the junction is over capacity and is suffering from traffic congestion. The PRC is related to the DoS of a traffic signal junction because if links are generally operating within capacity (DoS <90%) the junction will tend to have a positive PRC with acceptable delays and queues and good progression of traffic through the junction will be achieved.

At junctions where the DoS exceeds 90%, delays begin to increase exponentially and even small increases in DoS can result in a significant increase in queues and delays. Therefore, a value of DoS <90% is generally accepted as the point at which congestion and flow breakdown starts to occur.

The key assumptions that have been made to build the Do Nothing and Do Something LinSig models for all the four junctions are:

- Geometry for the existing junction layouts has been derived from Google maps;
- In the absence of on-site saturation flow information, geometric saturation flows based on the Research Report 67 (RR67) were used to model the junctions for both peak periods;
- Geometry for the proposed junction layouts has been derived from the Alternative Options Report prepared by Ramboll on 25 October 2021.
- 2016 AM and PM turning movements have been derived from the existing 2016 Regional Saturn model;
- Traffic flows have been growth from 2016 to 2021 based upon the Project Appraisal Guidelines (Unit 5.5 Link-Based Traffic Growth Forecasting). The annual medium growth factor for Dublin County is 1.005;
- Inter-greens have been calculated for both the existing (Do Nothing) and proposed (Do Something) junction layouts;
- The stages for each scenario, which form part of the signal specifications, were extracted from the existing 2016 Regional Saturn model.
- Pedestrian stages run once per two cycles for both the Do Nothing and Do Something scenarios;
- Cyclists will run on green the same time with pedestrians.

Further assumptions specific to each junction are presented in section 4.

4. Operational Assessment

4.1 R112 Taney Road / Birches Lane

The existing R112 Taney Road / Birches Lane junction (Do Nothing) has been assessed for capacity and operation for motorised vehicles using LinSig v3 and is compared to the three options of the proposed junction layout (Do Something) in the 2021 scenario for the AM and PM peaks.

Option 1 involves crossing points to connect to the one-way cycle tracks along Birches Lane.

Figure 4. 1: Birches Lane Junction Option 1 (One-way)

Option 2 would require those cycling along Birches Lane towards this scheme to cross with caution at the junction to pass to the north-side of the street and enter the two-way cycle track.

Figure 4. 2: Birches Lane Junction Option 2 (Two-way, North Side)

Option 3 will facilitate access to the 2-way cycle track from Birches Lane on the same side as the junction. This option would improve directness for cyclists and pedestrians while also implementing an extension of the kerb width to the north of the junction along Taney Road. It would be proposed to utilise the existing service lane to the west of Taney Road to facilitate cyclists in a protected space, and also avoiding sharp turns in the cycle track. This option and use of the shared lane facilitates good cycle lane provision within a tight cross section of the proposed route.

Figure 4. 3: Birches Lane Option 3 (Two-Way, South Side)

Results of the assessments are presented in Table 4.1 showing the modelled queues, delay and DoS at the junction for 2021 AM and PM peaks.

Options 1 and 3 will include similar infrastructure changes with a dedicated right turn short lane from the R112 Taney Road West, with Option 2 providing one lane from the R112 Taney Road West for all movements.

The LinSig assessment results for the existing junction layout and three options of the proposed junction are presented in Table 4.1.

Table 4. 1: R112 Taney Road / Birches Lane Junction – 2021 LinSig Results (AM & PM Peak)

Arm	AM			PM		
	Queues (PCUs)	Delay (pcuHr)	DoS (%)	Queues (PCUs)	Delay (pcuHr)	DoS (%)
2021 Do Nothing (Existing Junction Lyaout)						
R112 Taney Road East (Left, Ahead)	6.5	2.2	46.0	6.8	2.2	52.0
Birches Lane (Right, Left)	9.6	4.6	76.4	2.1	0.9	31.7

R112 Taney Road West (Ahead, Right)	17.3	5.3	76.6	9.0	3.0	61.7
	Cycle Time (s) = 180 Total Delay (pcuHr) = 12.07 Total PRC = 17.5%			Cycle Time (s) = 120 Total Delay (pcuHr) = 6.14 Total PRC = 45.8%		
2021 Do Something (Options 1 and 3)						
R112 Taney Road East (Left, Ahead)	10.9	3.6	62.1	11.4	2.9	64.8
Birches Lane (Right, Left)	10.7	4.8	78.5	2.9	1.7	61.0
R112 Taney Road West (Ahead, Right)	18.6	6.4	80.1	7.9	2.5	53.6
	Cycle Time (s) = 180 Total Delay (pcuHr) = 14.82 Total PRC = 12.4%			Cycle Time (s) = 120 Total Delay (pcuHr) = 7.13 Total PRC = 39%		
2021 Do Something (Option 2)						
R112 Taney Road East (Left, Ahead)	9.4	2.2	47.8	11.0	2.8	63.8
Birches Lane (Right, Left)	12.1	6.0	85.8	3.1	1.7	61.0
R112 Taney Road West (Ahead, Right)	25.8	7.6	85.8	9.6	2.6	57.4
	Cycle Time (s) = 180 Total Delay (pcuHr) = 15.84 Total PRC = 4.8%			Cycle Time (s) = 120 Total Delay (pcuHr) = 7.07 Total PRC = 41.1%		

Table 4.1 indicates that the arms of the existing R112 Taney Road / Birches Lane junction (Do Nothing) operate within capacity (DoS<90%) with acceptable queues and delays to vehicles.

The proposed options 1 and 3 (Do Something) will operate within capacity for both peak periods in 2021 with slightly longer queues on the R112 Taney Road East in AM and PM Peak compared to the Do Nothing scenario. The queues will increase from approximately 40m (6.5PCU *6m= 39m) in the Do Nothing AM peak scenario to 65m (10.9PCUs*6m= 65.4m) for the proposed options 1 and 3.

In the Do Something option 2 AM Peak scenario, longer queues (155m) are observed on the R112 Taney Road West compared to the Do-Nothing scenario (103m). The increase in queue lengths is attributed to the removal of the right turn lane on the R112 Taney Road West, however, the queue lengths are considered acceptable and the proposed option 2 operates within capacity.

Detailed LinSig outputs including origin-destination matrices for the R112 Taney Road / Birches Lane junction in both peak periods are attached as Appendix 1.

4.2 R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road Junction

The existing R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road junction (Do Nothing) has been assessed for capacity and operation using LinSig v3 and is compared to the three proposed junction layout options (Do Something) in the 2021 scenario for the AM and PM peaks.

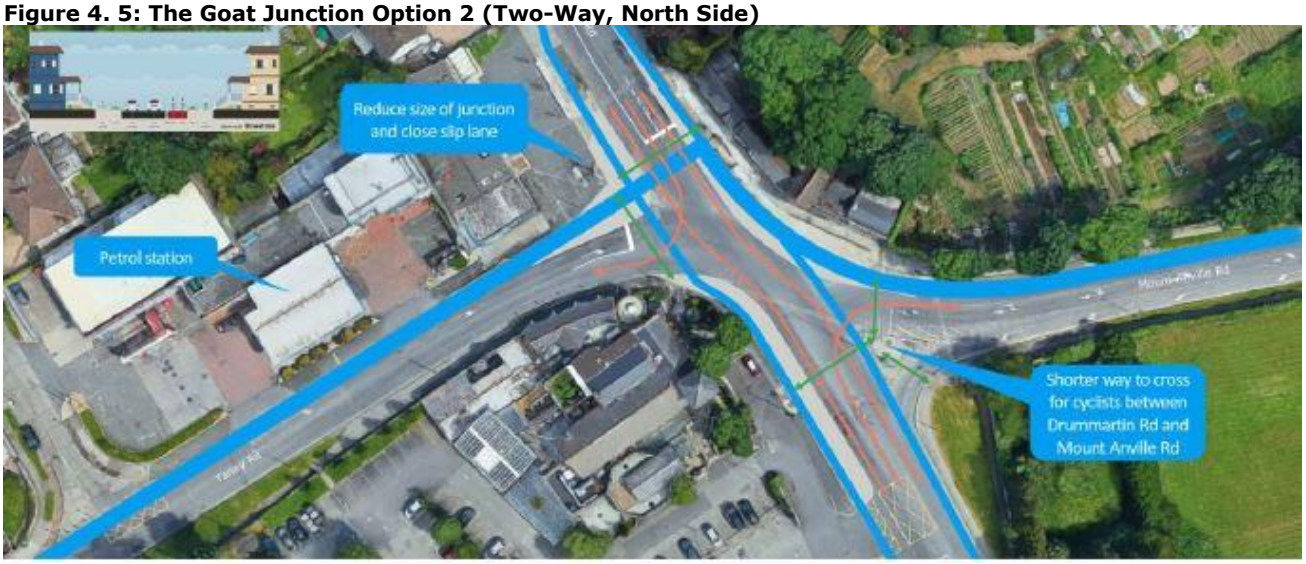
Option 1 involves crossing points to connect to the one-way cycle tracks across the junction.

Buildouts at each side of the junction would be required to facilitate the additional space necessary to accommodate greater priority for pedestrians and cyclists. The existing lane capacity may be reduced to accommodate the changes. The existing motorised dedicated left turn slips on Taney Road and Mount Anville Road would be removed to accommodate the cycleway. Motorised left turn movements would still be facilitated within signalised left turn lanes. Due to the variance between the footway and road elevation, Option 1 may require some retaining structures to accommodate the amendments to the northern sides of the Taney Road and Mount Anville Road.

Figure 4. 4: The Goat Junction Option 1 (One-Way)

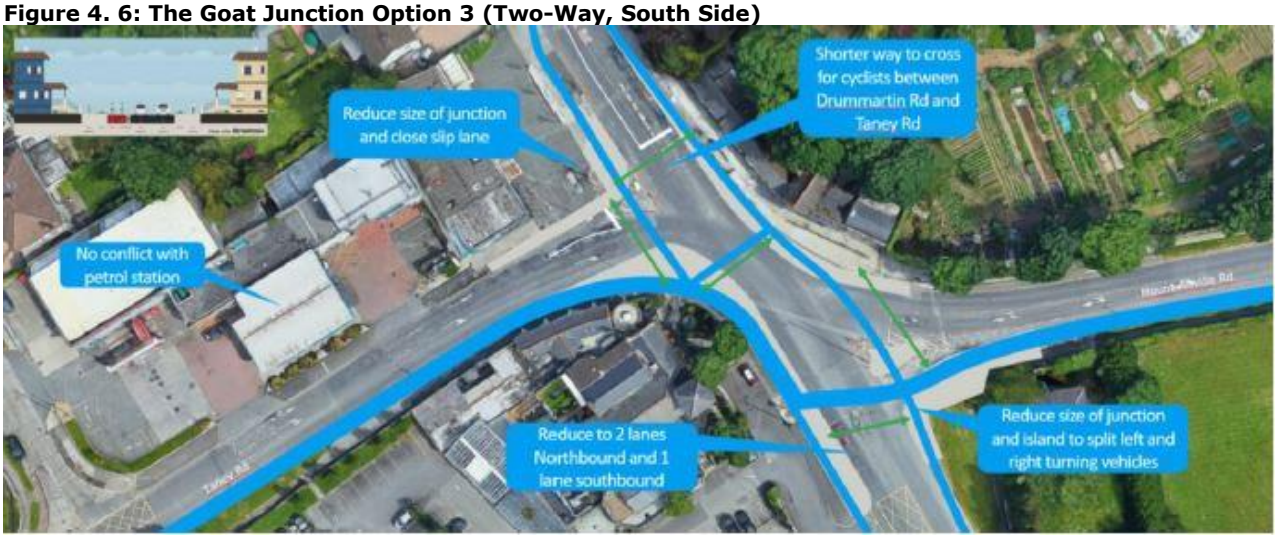
Option 2 would include similar infrastructure changes to option 1, although the proposed route option would likely require more significant alteration, due to the variation in grade between the road and footways, to the existing northern sides of Mount Anville Road and Taney Road. Only the existing motorised left turn lane on Taney Road would be removed to accommodate the cycleway although left turn movements would still be facilitated within signalised left turn lanes.

Figure 4. 5: The Goat Junction Option 2 (Two-Way, North Side)



Option 3 would also include similar infrastructure changes to option 1, although would move the 2-way cycle intervention to the south side of the junction, reducing the potential for significant retaining structures on the northern side of Mount Anville Road and Taney Road. The existing left turn lanes on Taney Road and Mount Anville Road would be removed to accommodate the cycleway with left turn movements facilitated within signalised left turn lanes.

Figure 4. 6: The Goat Junction Option 3 (Two-Way, South Side)



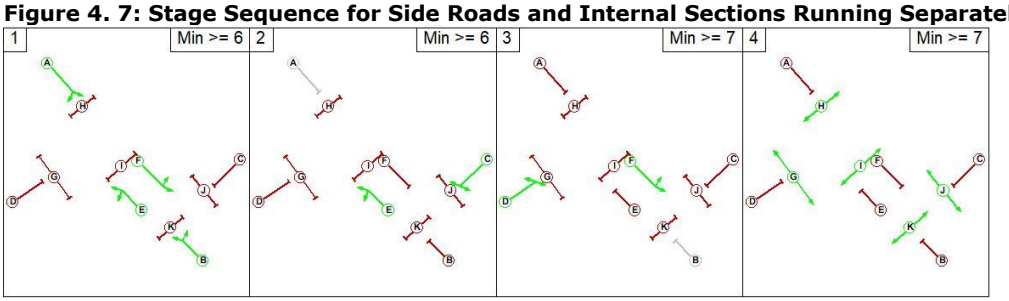
Further assumptions to those identified in section 3 were made and they are as follows:

- RoI signalling for Right Turn (RT) arrows have been used for the Do Nothing scenario;

The proposed junction layout with the internal stop lines has been assessed for the following two scenarios:

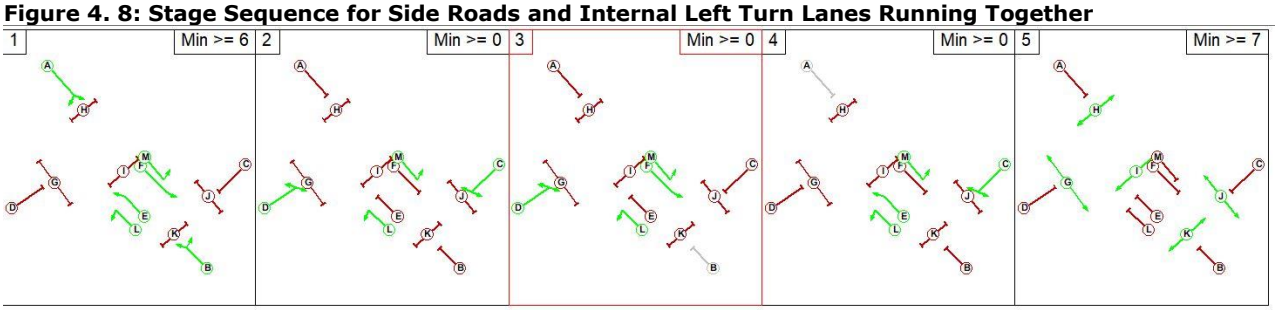
1) the side roads (R112 Taney Road / Mount Annville Road) and the internal signalised sections they run into run separately in the Do Something scenario

Figure 4. 7: Stage Sequence for Side Roads and Internal Sections Running Separately



2) the side roads (R112 Taney Road / Mount Annville Road) run together and allow the reservoir left turn lanes to run on green with a filter with the reservoir aheads kept on red.

Figure 4. 8: Stage Sequence for Side Roads and Internal Left Turn Lanes Running Together



Results of the assessments are presented in Table 4.2 and present the modelled queues, delay and DoS at the junction for 2021 AM and PM peaks.

Table 4. 2: R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road Junction – 2021 LinSig Results (AM & PM Peak)

Arm	AM			PM		
	Queues (PCUs)	Delay (pcuHr)	DoS (%)	Queues (PCUs)	Delay (pcuHr)	DoS (%)
2021 Do Nothing						
R825 Goatstown Road (Left, Ahead, Right)	10.2	5.2	73.7	6.2	3.3	60.3
R112 Mount Anville Road (Right, Left, Ahead)	11.0	6.7	89.3	40.9	32.1	103.4
R825 Drummartin Road (Ahead, Left)	73.1	53.5	110.0	57.5	37.0	104.4
R825 Drummartin Road (Right)	4.2	1.7	37.6	1.3	0.5	12.8

R112 Taney Road (Left, Ahead)	92.7	53.0	109.5	33.1	22.7	104.8
R112 Taney Road (Right)	10.5	3.4	46.2	9.1	3.9	66.5
	Cycle Time (s) = 270 Total Delay (pcuHr) = 123.57 Total PRC = -22.2%			Cycle Time (s) = 240 Total Delay (pcuHr) = 99.58 Total PRC = -16.5%		
2021 Do Something (scenario 1 - side roads and the internals they run into run separately) - Options 1, 2, 3						
R825 Goatstown Road (Ahead, Right)	29.2	27.5	113.8	28.2	26.3	115.1
R825 Drummartin Road (Ahead, Right)	38.3	16.4	95.9	191.1	172.2	138.8
R112 Taney Rd (Left, Right)	121.3	105.4	116.3	127.8	119.8	136.9
Internal WB (Left)	1.0	0.1	42.7	0.3	0.0	36.9
Internal WB (Ahead)	1.2	0.0	40.1	0.8	0.0	24.4
Internal EB (Left)	0.4	0.0	17.3	0.7	0.1	14.7
Internal EB (Ahead)	0.4	0.0	30.5	0.8	0.1	35.7
R112 Mount Anville Road (Right, Left)	36.7	33.8	116.0	217.4	188.8	138.5
	Cycle Time (s) = 270 Total Delay (pcuHr) = 183.37 Total PRC = -29.2%			Cycle Time (s) = 270 Total Delay (pcuHr) = 507.33 Total PRC = -54.33%		
2021 Do Something (scenario 2 - side roads and internal left turn lanes running together) – Options 1, 2, 3						
R825 Goatstown Road (Ahead, Right)	11.8	7.5	92.8	8.7	5.4	85.3
R825 Drummartin Road (Ahead, Right)	59.6	35.7	102.8	120.2	96.2	117.1
R112 Taney Rd (Left, Right)	53.7	36.4	102.4	20.4	10.4	85.1
Internal WB (Left)	0.2	0.0	27.5	0.3	0.0	33.8
Internal WB (Ahead)	0.5	0.2	46.0	0.5	0.2	36.6
Internal EB (Left)	0.0	0.0	16.3	0.0	0.0	10.9
Internal EB (Ahead)	9.0	1.1	42.8	9.6	2.5	46.9
R112 Mount Anville Road (Right, Left)	4.6	2.7	46.2	127.2	108.1	117.8
	Cycle Time (s) = 270			Cycle Time (s) = 270		

	Total Delay (pcuHr) = 83.56 Total PRC = -14.2%	Total Delay (pcuHr) = 222.82 Total PRC = -30.9%

Table 4.2 indicates that the existing R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road junction (Do Nothing) exceeds capacity in both peak periods. In 2021 AM peak the R825 Drummartin Road and R112 Taney Road operate over capacity with 103% DoS. In 2021 PM peak, the R112 Mount Anville Road, R112 Taney Road and R825 Drummartin Road exceed capacity with approximately 105% DoS.

In 2021 Do Something scenario 1 (side roads and the internals they run into, run separately), the operation of the junction deteriorates compared to the Do Nothing scenario in both AM and PM peaks with longer queues and delays. The introduction of internal stop lines with the side roads and the internals they run into running separately, creates capacity issues on all the approaches to the junction with DoS over 90%.

In 2021 Do Something scenario 2 (side roads and internal left turn lanes running together), the overall performance of the junction improves compared to the Do Nothing scenario in AM peak (PRC=-22.2% in Do Nothing and -14.2% in Do Something) and deteriorates in PM peak (PRC= -16.5% in Do Nothing and PRC= -30.9% in Do Something). The introduction of internal stop lines with the side roads and internal left turn lanes running together, create capacity issues on the R825 Goatstown Road, R825 Drummartin Road and R112 Taney Road in AM peak, whilst capacity issues are identified on the R112 Drummartin Road and R112 Mount Annville Road in PM peak.

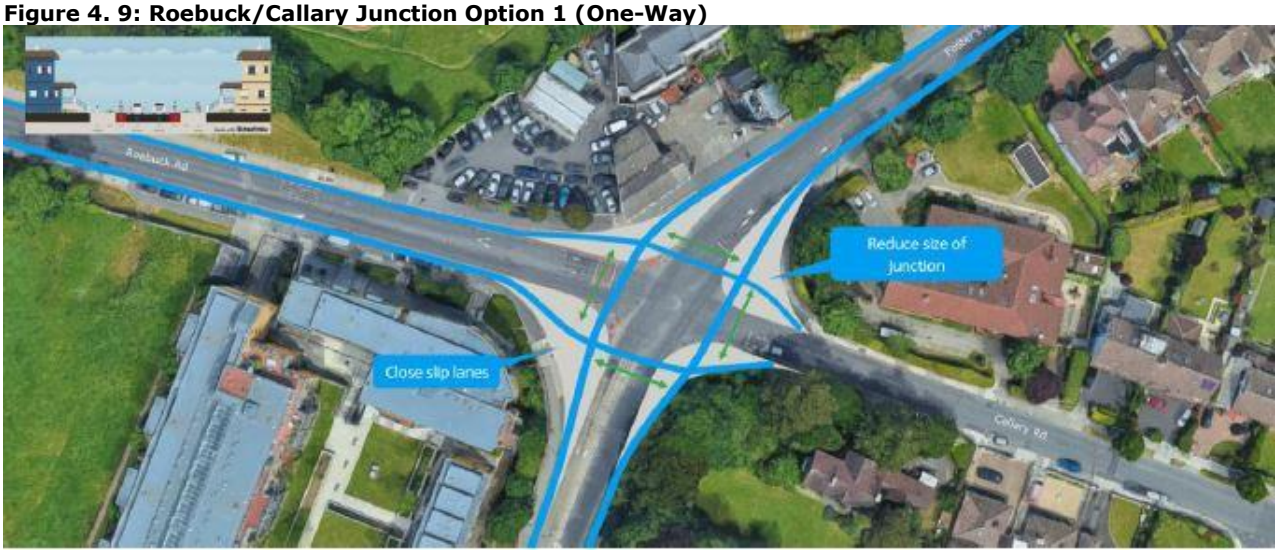
Detailed LinSig outputs including origin-destination matrices for the R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road junction in both peak periods are attached as Appendix 2.

4.3 R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road

The existing R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road junction (Do Nothing) has been assessed for capacity and operation using LinSig v3 and is compared to the three proposed junction options (Do Something) in the 2021 scenario for the AM and PM peaks.

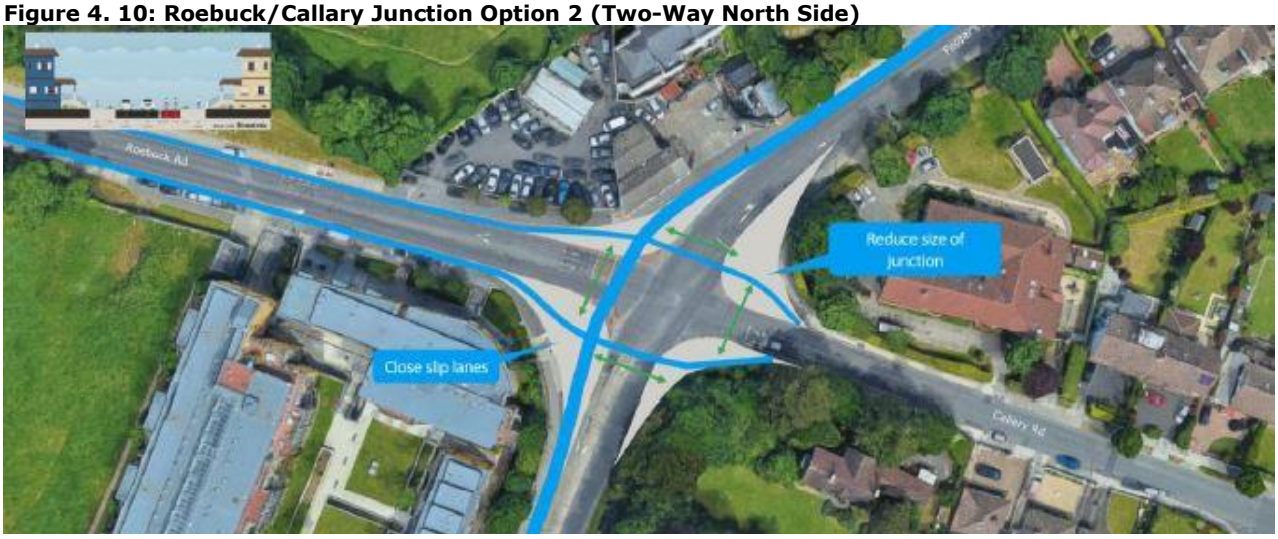
Option 1 would implement safer non-motorised movements within the existing Roebuck/Callary Road junction. The proposed amendment would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements. Existing dedicated left slip lanes would be removed to reduce pedestrian crossing distances and improve cycling segregation.

Figure 4. 9: Roebuck/Callary Junction Option 1 (One-Way)



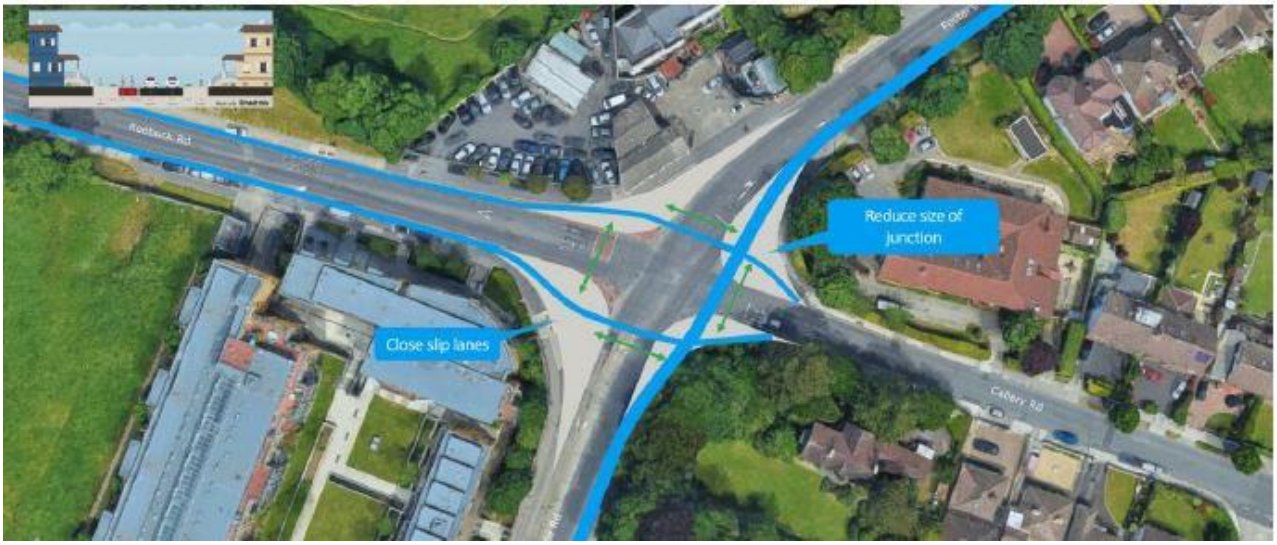
Option 2 would implement similar infrastructure changes to those proposed in option 1.

Figure 4. 10: Roebuck/Callary Junction Option 2 (Two-Way North Side)



Option 3 would implement similar infrastructure changes to those proposed in option 1.

Figure 4. 11: Roebuck/Callary Junction Option 3 (Two-Way South Side)



Results of the assessments are presented in Table 4.3 and present the modelled queues, delay and DoS at the junction for 2021 AM and PM peaks.

Table 4. 3: R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road Junction – 2021 LinSig Results (AM & PM Peak)

Arm	AM			PM		
	Queues (PCUs)	Delay (pcuHr)	DoS (%)	Queues (PCUs)	Delay (pcuHr)	DoS (%)
2021 Do Nothing						
Roebuck Road (Left)	1.3	0.4	25.3	0.5	0.1	8.5
Roebuck Road (Ahead, Right)	0.7	0.5	18.8	5.3	4.4	71.3
R112 Foster Avenue (Left)	0.0	0.0	0.4	0.0	0.0	0.0
R112 Foster Avenue (Right, Ahead)	1.6	0.8	26.7	7.3	3.4	72.6
Callary Road Ahead (Right, Left)	5.1	2.7	70.3	1.7	0.8	23.1
Mount Anville Road (Left)	0.1	0.0	1.6	0.0	0.0	0.7
Mount Anville Road (Ahead, Right)	8.2	3.5	70.6	4.6	1.6	35.6
	Cycle Time (s) = 130 Total Delay (pcuHr) = 7.83 Total PRC = 27.5%			Cycle Time (s) = 160 Total Delay (pcuHr) = 10.31 Total PRC = 23.9%		
2021 Do Something – Options 1, 2, 3						
Roebuck Road (Left, Ahead, Right)	3.9	1.9	54.1	7.3	5.6	81.2

R112 Foster Avenue (Right, Left, Ahead)	3.6	1.4	38.1	18.4	5.5	81.1
Callary Road (Ahead, Right, Left)	4.4	2.1	60.3	1.6	0.7	24.3
Mount Anville Road (Left, Ahead, Right)	6.4	2.3	59.2	3.2	1.0	25.0
	Cycle Time (s) = 100 Total Delay (pcuHr) = 7.58 Total PRC = 49.2%			Cycle Time (s) =140 Total Delay (pcuHr) = 12.81 Total PRC = 10.9%		

Table 4.3 indicates that all the arms for the existing and all the options of the proposed junction operate within capacity (DoS<90%) with insignificant changes in queues and delays in both AM and PM peak periods..

Detailed LinSig outputs including origin-destination matrices for the R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road junction in both peak periods are attached as Appendix 3.

4.4 R112 Foster Avenue / North Avenue

The existing R112 Foster Avenue / North Avenue junction (Do Nothing) has been assessed for capacity and operation using LinSig v3 and is compared to the three proposed junction layout options (Do Something) in the 2021 scenario for the AM and PM peaks.

Option 1 would facilitate safer non-motorised movements within the existing North Avenue junction. The proposed amendments would reduce the existing space within the junction for vehicular movements; giving greater priority to non-motorised movements. The existing dedicated left slip lane would be removed to reduce pedestrian crossing distances and improve cycling segregation. Access would be facilitated both south to the Stillorgan overpass and north to the University College Dublin Campus. It is noted that this is not one of the main DCU Campus access points.

Figure 4. 12: R112 Foster Avenue / North Avenue: Option 1 (One-Way)

Option 2 would implement similar infrastructure changes to those proposed in option 1. Additional crossings will be required to facilitate cyclist movements from University College Dublin towards North Avenue, although these could be facilitated within the proposed pedestrian movements.

Figure 4. 13: R112 Foster Avenue / North Avenue: Option 2 (Two-Way North Side)

Option 3 would implement similar infrastructure changes to those proposed in option 1. Additional crossings will be required to facilitate cyclist movements from North Avenue toward University College Dublin, although these could be facilitated within the proposed pedestrian movements.

Figure 4. 14: R112 Foster Avenue / North Avenue: Option 3 (Two-Way South Side)

Further assumptions to those identified in section 3 were made and are presented below:

- Pedestrian stage runs once per two cycles for both the Do Nothing and Do Something scenarios;
- RoI signalling for RT arrows have been used for the Do Nothing scenario;
- 60 vehicles arrive and depart (20 from each arm) to/from the University in AM and PM peak respectively.

Results of the assessments are presented in Table 4.4 and present the modelled queues, delay and DoS at the junction for 2021 AM and PM peaks.

Table 4. 4: R112 Foster Avenue/North Avenue Junction – 2021 LinSig Results (AM & PM Peak)

Arm	AM			PM		
	Queues (PCUs)	Delay (pcuHr)	DoS (%)	Queues (PCUs)	Delay (pcuHr)	DoS (%)
2021 Do Nothing						
University (Left, Ahead, Right)	0.7	0.3	10.6	0.0	0.0	0.0
R112 Foster Avenue East (Left, Ahead)	3.1	1.2	41.8	8.6	2.7	64.8
R112 Foster Avenue East (Right)	0.0	0.0	0.0	0.2	0.1	2.9
North Avenue (Ahead, Right, Left)	6.3	3.2	74.7	4.7	2.3	66.3
R112 Foster Avenue West (Left, Ahead, Right)	5.6	2.6	68.9	2.1	1.5	36.3

	Cycle Time (s) = 100 Total Delay (pcuHr) = 7.36 Total PRC = 20.4%			Cycle Time (s) = 110 Total Delay (pcuHr) = 6.61 Total PRC = 35.8%		
2021 Do Something – Options 1, 2, 3						
University (Left, Ahead, Right)	0.7	0.3	9.3	0.0	0.0	0.0
R112 Foster Avenue East (Right, Left, Ahead)	3.6	1.7	54.3	10.9	4.0	75.8
North Avenue (Ahead, Right, Left)	6.0	2.9	70.7	5.0	2.7	72.6
R112 Foster Avenue West (Left, Ahead, Right)	5.4	2.8	72.4	2.0	1.2	33.5
	Cycle Time (s) = 100 Total Delay (pcuHr) = 24.3 Total PRC = 7.59%			Cycle Time (s) = 110 Total Delay (pcuHr) = 7.95 Total PRC = 18.7%		

Table 4.4 indicates that all arms of the existing and all the options of the proposed junction operate within capacity with insignificant changes in queues and delays in both AM and PM peak periods.

Detailed LinSig outputs including origin-destination matrices for the R112 Foster Avenue / North Avenue junction in both peak periods are attached as Appendix 4.

4.5 Conclusion

Ramboll has been commissioned by Dún Laoghaire-Rathdown County Council to prepare an Operational Assessment Report for four junctions located along the proposed active-travel provision along the R112 between Dundrum and Stillorgan Road. This report has been produced to compare the operational assessment between the existing (Do Nothing) and proposed (Do Something) junctions in 2021 AM and PM peaks for the following:

- R112 Taney Road/Birches Lane;
- R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road;
- R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road; and
- R112 Fosters Avenue/North Avenue.

The three principal design options that have been considered and assessed for each junction are:

- Option 1 - Kerb protected one-way cycle tracks, with the addition of two-way sections at specific crossing point;
- Option 2 - Kerb protected two-way cycle tracks primarily on the south side of the road; and
- Option 3 - Kerb protected two-way cycle tracks primarily on the north side of the road.

R112 Taney Road/Birches Lane

The existing (Do Nothing) R112 Taney Road/Birches Lane junction operates within capacity for both 2021 AM and PM peak periods. Options 1 and 3 will include similar infrastructure changes with a dedicated right turn short lane from the R112 Taney Road West, with option 2 providing one lane from the R112 Taney Road West for all movements.

All the arms of the proposed options 1 and 3 will operate within capacity (DoS<90%) for both peak periods with slightly longer queues on the R112 Taney Road East in AM and PM Peak compared to the Do-Nothing scenario. The proposed option 2 creates longer queues on the R112 Taney Road West compared to the Do Nothing scenario, however, the queue lengths are considered acceptable and all the arms of the proposed option 2 operate within capacity (DoS < 90%).

R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road

The existing R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road junction exceeds capacity in both 2021 AM and PM peak periods. All the proposed options include similar infrastructure changes.

Two scenarios have been tested for the three options of the proposed R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road junction; scenario 1 with the side roads (R112 Taney Road / Mount Annville Road) and the internal signalised sections they run into running separately and scenario 2 with side roads (R112 Taney Road / Mount Annville Road) running together and allowing the reservoir left turn lanes running on green with a filter with the reservoir ahead keeping on red.

The proposed junction with scenario 2 operates better than scenario 1. With scenario 2 the performance of the junction improves compared to the Do-Nothing scenario in AM peak and deteriorates in PM peak.

R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road

The existing Roebuck/Callary junction operates within capacity in both peak periods. All the proposed options include similar infrastructure changes. All the arms of the proposed Roebuck/Callary junction layout operate within capacity (DoS<90%).

R112 Fosters Avenue/North Avenue

The existing R112 Foster Avenue / North Avenue junction operates within capacity in both peak periods. All the proposed options include similar infrastructure changes. All the arms of the proposed R112 Foster Avenue / North Avenue junction layout operate within capacity (DoS<90%).

The three design options include similar infrastructure changes for each junction. Option 2 on the R112 Taney Road / Birches Lane junction provides one lane from the R112 Taney Road West for all traffic movements which may limit future junction capacity however, the junction operates within capacity.

In all three options the Goat junction which will have improved efficiency in the AM peak but operate less efficiently in the PM peak. This reduction in operational efficiency has be reduced so far as reasonably practicable, for the given junction layout, through the optimisation of the signal phasing.

It is noted that existing vehicular traffic movements are expected to be facilitated in largely the same manner as existing on the mainline network with reduced width.

It therefore can be concluded that the three design options perform identically in terms of capacity across the junctions.

Appendix 1

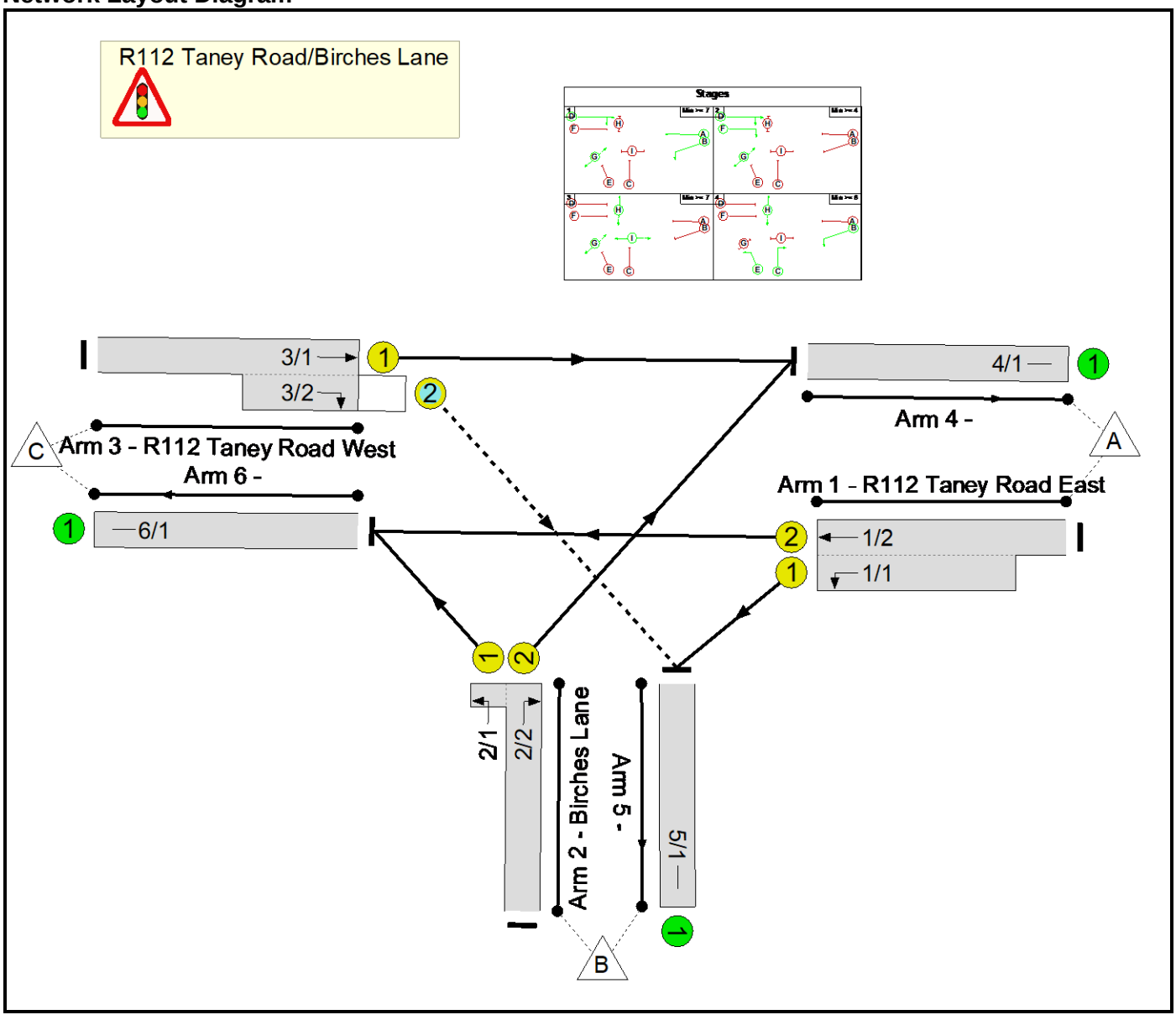
R112 Taney Road/Birches Lane Junction - Detailed LinSig Outputs

Full Input Data And Results

User and Project Details

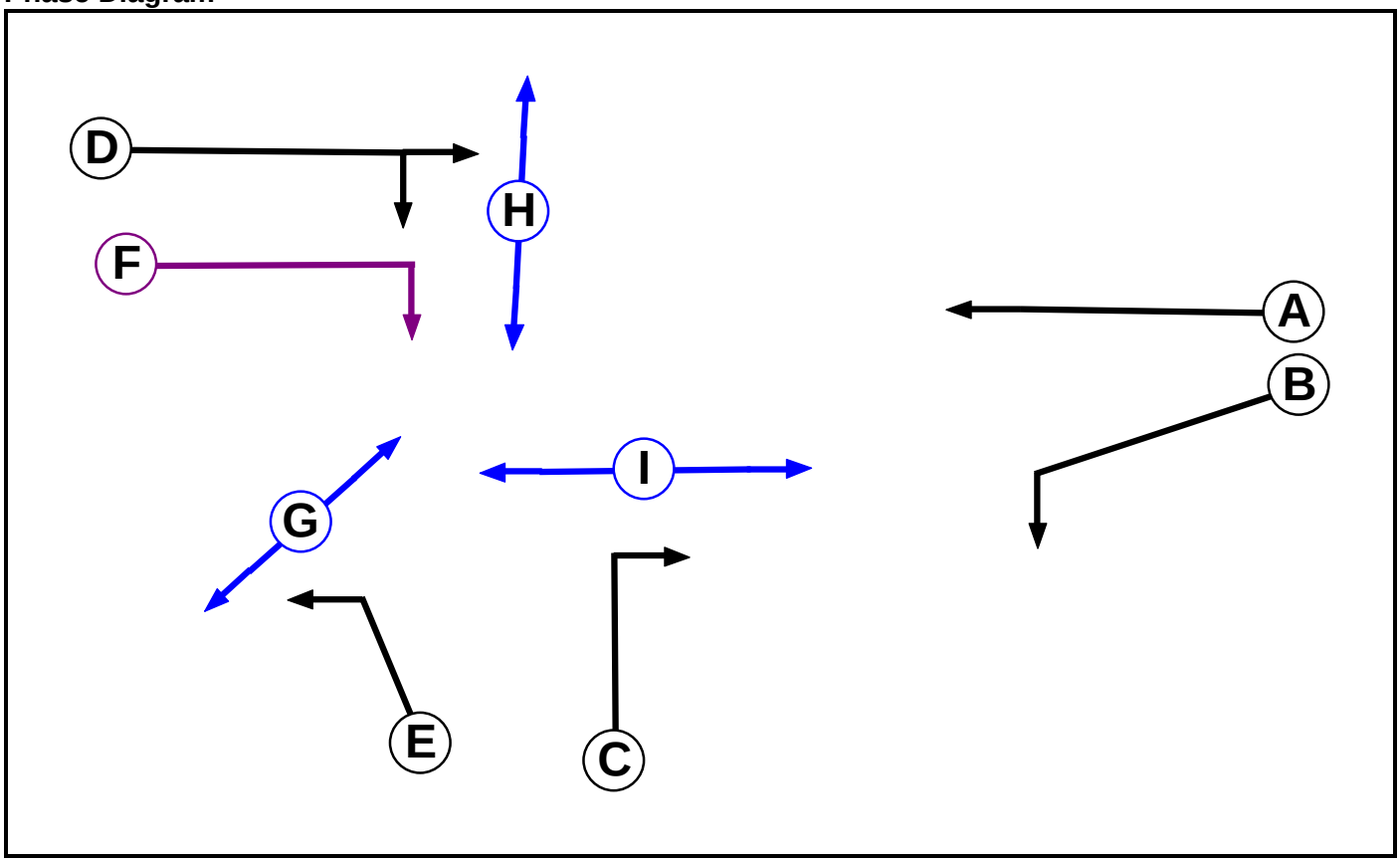
Project:	**Active Travel Route Dundrum to Stillorgan Road**
Title:	**R112 Taney Rd / Birches Lane**
Location:	
Design Layout Ref:	Existing
Additional detail:	
File name:	R112 Taney Rd_Birches Ln Existing v2.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

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

Full Input Data And Results

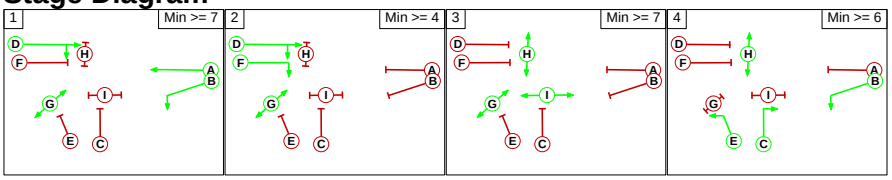
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
4	1	C	Losing	6	6
4	1	E	Losing	7	7

Prohibited Stage Change

From Stage \ To Stage	1	2	3	4
1		5	7	7
2	6		7	6
3	11	X		9
4	12	X	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: R112 Taney Road/Birches Lane											
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)**
3/2 (R112 Taney Road West)	5/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
				1/2	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: R112 Taney Road/Birches Lane												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (R112 Taney Road East)	U	B	2	3	12.2	Geom	-	3.40	0.00	Y	Arm 5 Left	45.00
1/2 (R112 Taney Road East)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
2/1 (Birches Lane)	U	E	2	3	1.0	Geom	-	5.00	0.00	Y	Arm 6 Left	12.40
2/2 (Birches Lane)	U	C	2	3	60.0	Geom	-	4.20	0.00	Y	Arm 4 Right	9.00
3/1 (R112 Taney Road West)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Ahead	Inf
3/2 (R112 Taney Road West)	O	D F	2	3	4.9	Geom	-	3.40	0.00	Y	Arm 5 Right	11.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 AM Peak'	08:00	09:00	01:00	
2: '2021 PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	154	343	497
	B	286	0	67	353
	C	668	201	0	869
	Tot.	954	355	410	1719

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 Do Nothing AM
Junction: R112 Taney Road/Birches Lane	
1/1 (short)	154
1/2 (with short)	497(In) 343(Out)
2/1 (short)	67
2/2 (with short)	353(In) 286(Out)
3/1 (with short)	869(In) 668(Out)
3/2 (short)	201
4/1	954
5/1	355
6/1	410

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.40	0.00	Y	Arm 5 Left	45.00	100.0 %	1892	1892
1/2 (R112 Taney Road East)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
2/1 (Birches Lane)	5.00	0.00	Y	Arm 6 Left	12.40	100.0 %	1887	1887
2/2 (Birches Lane)	4.20	0.00	Y	Arm 4 Right	9.00	100.0 %	1744	1744
3/1 (R112 Taney Road West)	3.50	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1965	1965
3/2 (R112 Taney Road West)	3.40	0.00	Y	Arm 5 Right	11.00	100.0 %	1720	1720
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	230	434	664
	B	114	0	26	140
	C	506	112	0	618
	Tot.	620	342	460	1422

Full Input Data And Results

Traffic Lane Flows

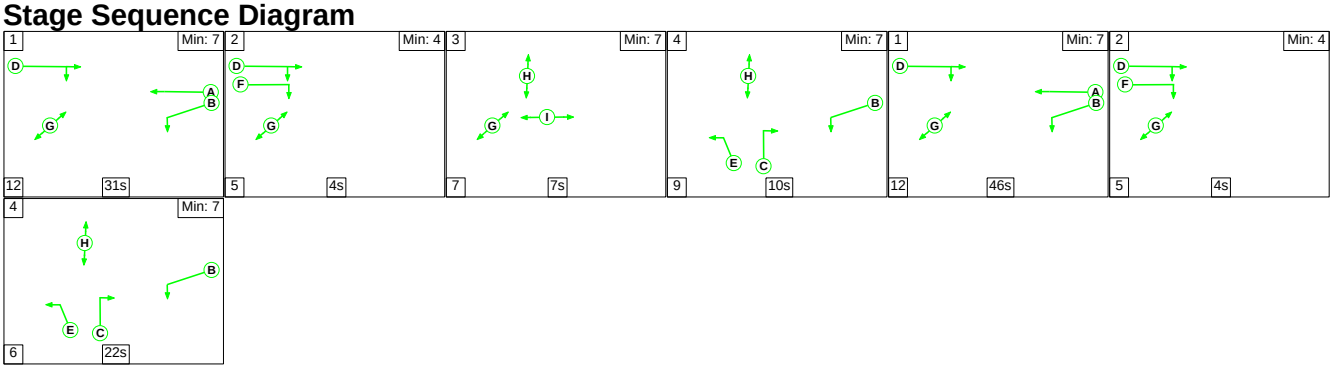
Lane	Scenario 2: 2021 Do Nothing PM
Junction: R112 Taney Road/Birches Lane	
1/1 (short)	230
1/2 (with short)	664(In) 434(Out)
2/1 (short)	26
2/2 (with short)	140(In) 114(Out)
3/1 (with short)	618(In) 506(Out)
3/2 (short)	112
4/1	620
5/1	342
6/1	460

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.40	0.00	Y	Arm 5 Left	45.00	100.0 %	1892	1892
1/2 (R112 Taney Road East)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
2/1 (Birches Lane)	5.00	0.00	Y	Arm 6 Left	12.40	100.0 %	1887	1887
2/2 (Birches Lane)	4.20	0.00	Y	Arm 4 Right	9.00	100.0 %	1744	1744
3/1 (R112 Taney Road West)	3.50	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1965	1965
3/2 (R112 Taney Road West)	3.40	0.00	Y	Arm 5 Right	11.00	100.0 %	1720	1720
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Stage Sequence Diagram

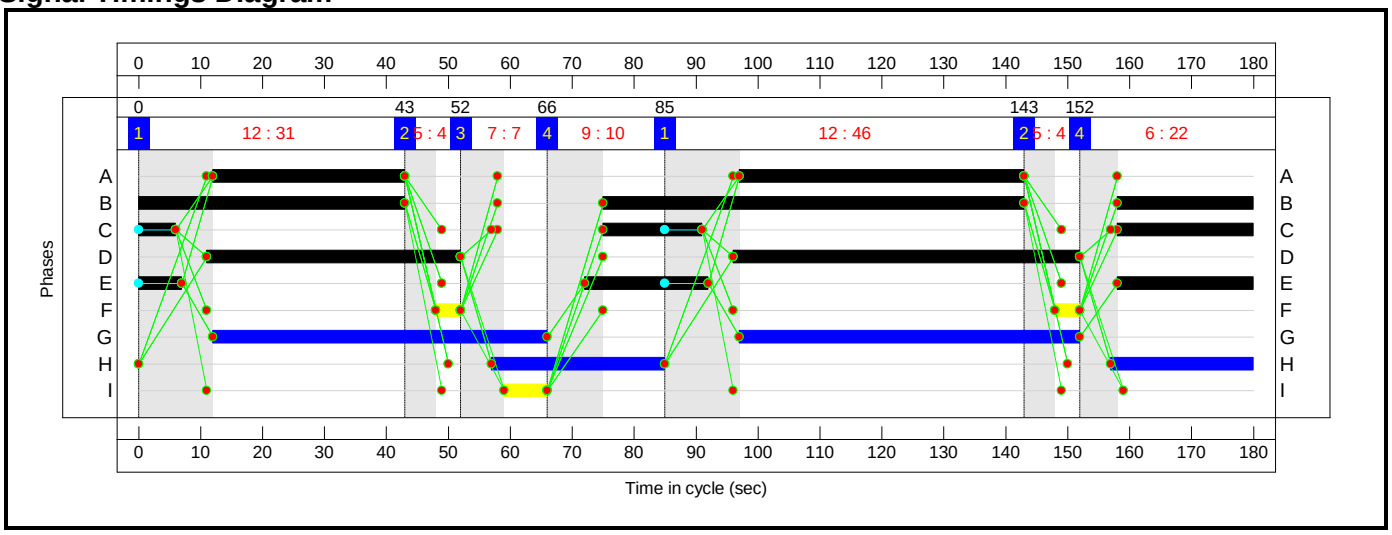


Full Input Data And Results

Stage Timings

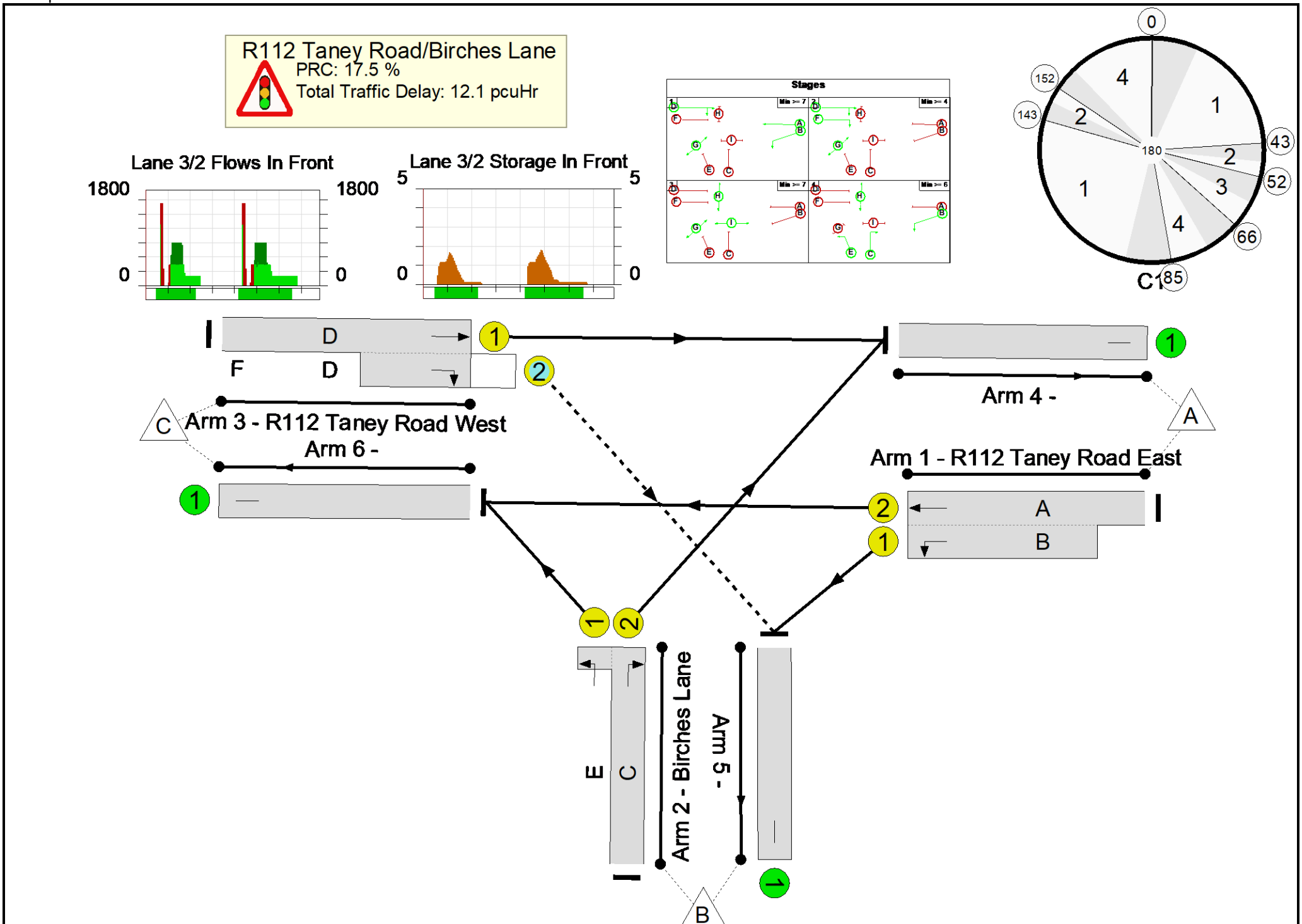
Stage	1	2	3	4	1	2	4
Duration	31	4	7	10	46	4	22
Change Point	0	43	52	66	85	143	152

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 17.5 %
Total Traffic Delay: 12.1 pcuHr
Lane 3/2 Flows In Front
1800
0
1800
0
Lane 3/2 Storage In Front
5
0
5
0
Stages
0
152
143
180
43
52
66
85
C1
4
1
2
2
3
1
4
D
F
D
1
2
C
Arm 3 - R112 Taney Road West
Arm 6 -
1
Arm 4 -
1
A
Arm 1 - R112 Taney Road East
2
1
A
B
1
2
E
C
Arm 2 - Birches Lane
Arm 5 -
1
B

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: R112 Taney Rd / Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.6%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.6%**
1/2+1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A B		2	77:133	-	497	1965:1892	746+335	46.0 : 46.0%
2/2+2/1	Birches Lane Right Left	U	N/A	N/A	C E		2	44:49	-	353	1744:1887	375+88	76.4 : 76.4%
3/1+3/2	R112 Taney Road West Ahead Right	U+O	N/A	N/A	D	F	2	97	8	869	1965:1720	872+263	76.6 : 76.6%
4/1		U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%

Full Input Data And Results

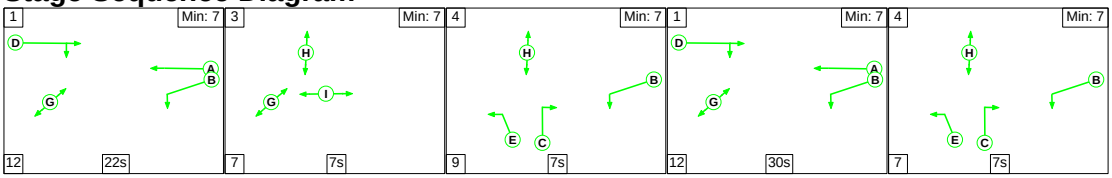
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches Lane	**-**	**-**	**181**	**16**	**4**	**8.2**	**3.6**	**0.2**	**12.1**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**181**	**16**	**4**	**8.2**	**3.6**	**0.2**	**12.1**	**-**	**-**	**-**	**-**
1/2+1/1	497	497	-	-	-	1.8	0.4	-	2.2	16.0	6.1	0.4	6.5
2/2+2/1	353	353	-	-	-	3.0	1.6	-	4.6	46.6	8.0	1.6	9.6
3/1+3/2	869	869	181	16	4	3.4	1.6	0.2	5.3	21.9	15.7	1.6	17.3
4/1	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 17.5 Total Delay for Signalled Lanes (pcuHr): 12.07 Cycle Time (s): 180
PRC Over All Lanes (%): 17.5 Total Delay Over All Lanes(pcuHr): 12.07

Full Input Data And Results

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

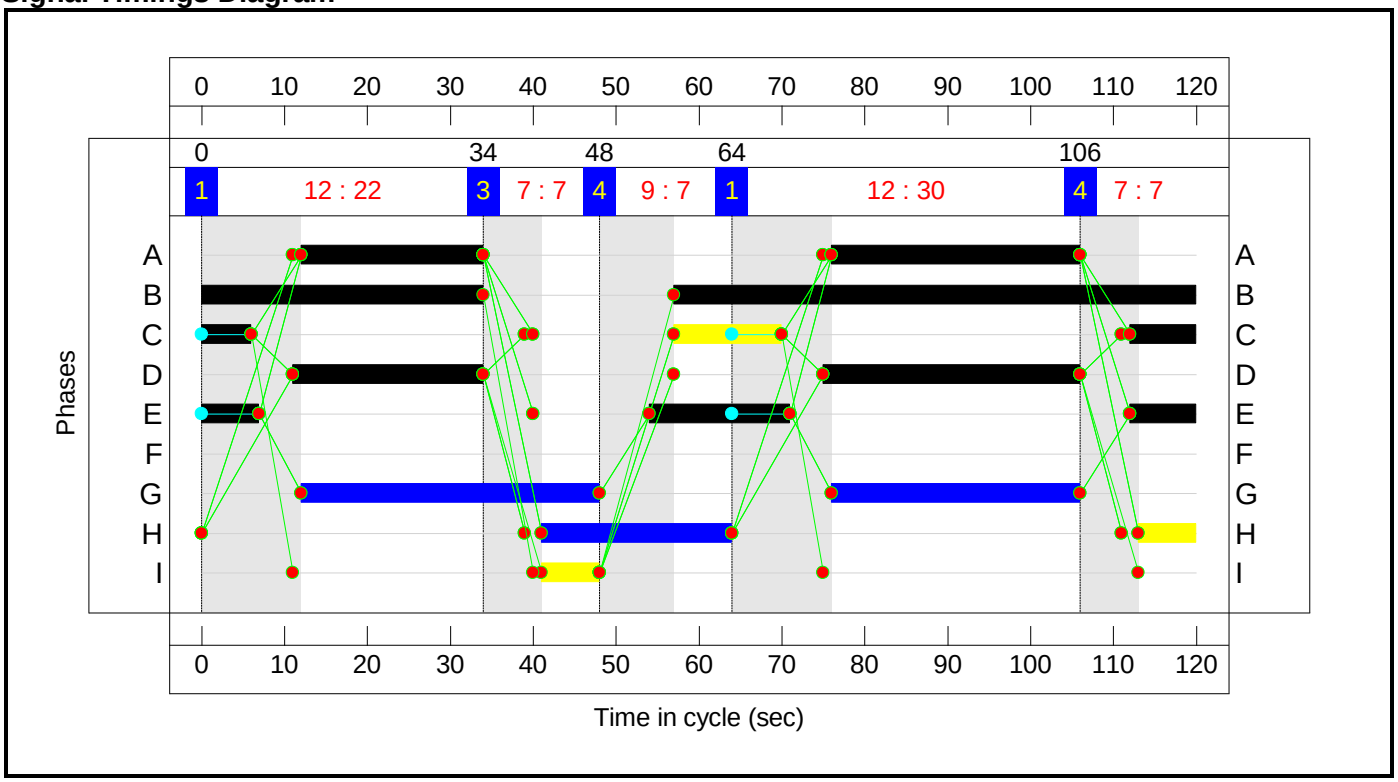
Stage Sequence Diagram



Stage Timings

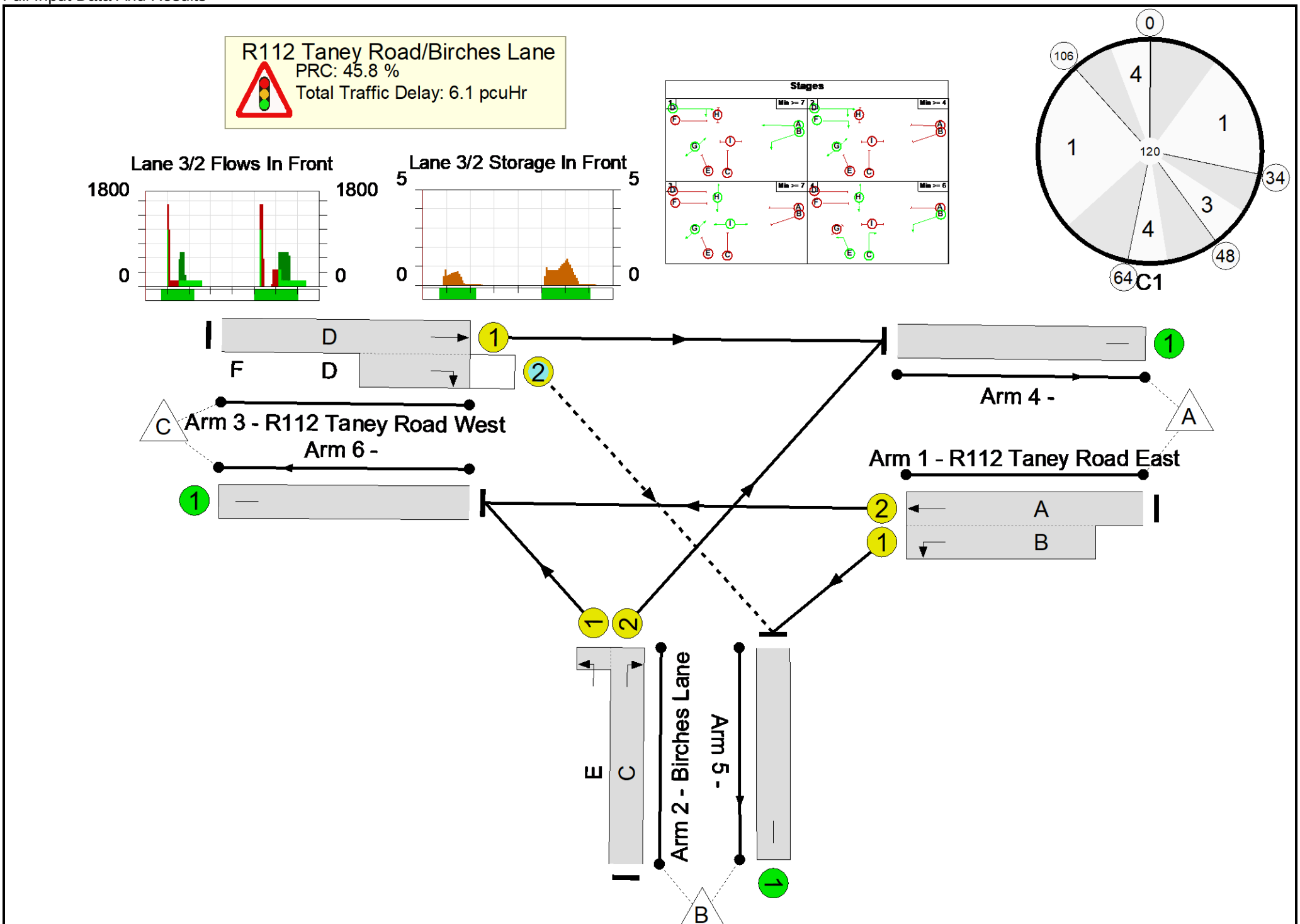
Stage	1	3	4	1	4
Duration	22	7	7	30	7
Change Point	0	34	48	64	106

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 45.8 %
Total Traffic Delay: 6.1 pcuHr
Lane 3/2 Flows In Front
1800
0
1800
0
Lane 3/2 Storage In Front
5
0
5
0
Stages
0
106
4
1
1
120
34
3
4
48
64
C1
D
F
D
1
2
C
Arm 3 - R112 Taney Road West
Arm 6 -
1
Arm 4 -
A
Arm 1 - R112 Taney Road East
2
1
A
B
1
2
E
C
Arm 2 - Birches Lane
Arm 5 -
1
B

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: R112 Taney Rd / Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.7%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.7%**
1/2+1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A B		2:1	52:97	-	664	1965:1892	835+442	52.0 : 52.0%
2/2+2/1	Birches Lane Right Left	U	N/A	N/A	C E		2	27:32	-	140	1744:1887	360+82	31.7 : 31.7%
3/1+3/2	R112 Taney Road West Ahead Right	U+O	N/A	N/A	D	F	2	54	0	618	1965:1720	820+182	61.7 : 61.7%
4/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches Lane	**-**	**-**	**112**	**0**	**0**	**4.4**	**1.6**	**0.2**	**6.1**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**112**	**0**	**0**	**4.4**	**1.6**	**0.2**	**6.1**	**-**	**-**	**-**	**-**
1/2+1/1	664	664	-	-	-	1.6	0.5	-	2.2	11.8	6.3	0.5	6.8
2/2+2/1	140	140	-	-	-	0.7	0.2	-	0.9	24.3	1.8	0.2	2.1
3/1+3/2	618	618	112	0	0	2.0	0.8	0.2	3.0	17.6	8.2	0.8	9.0
4/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

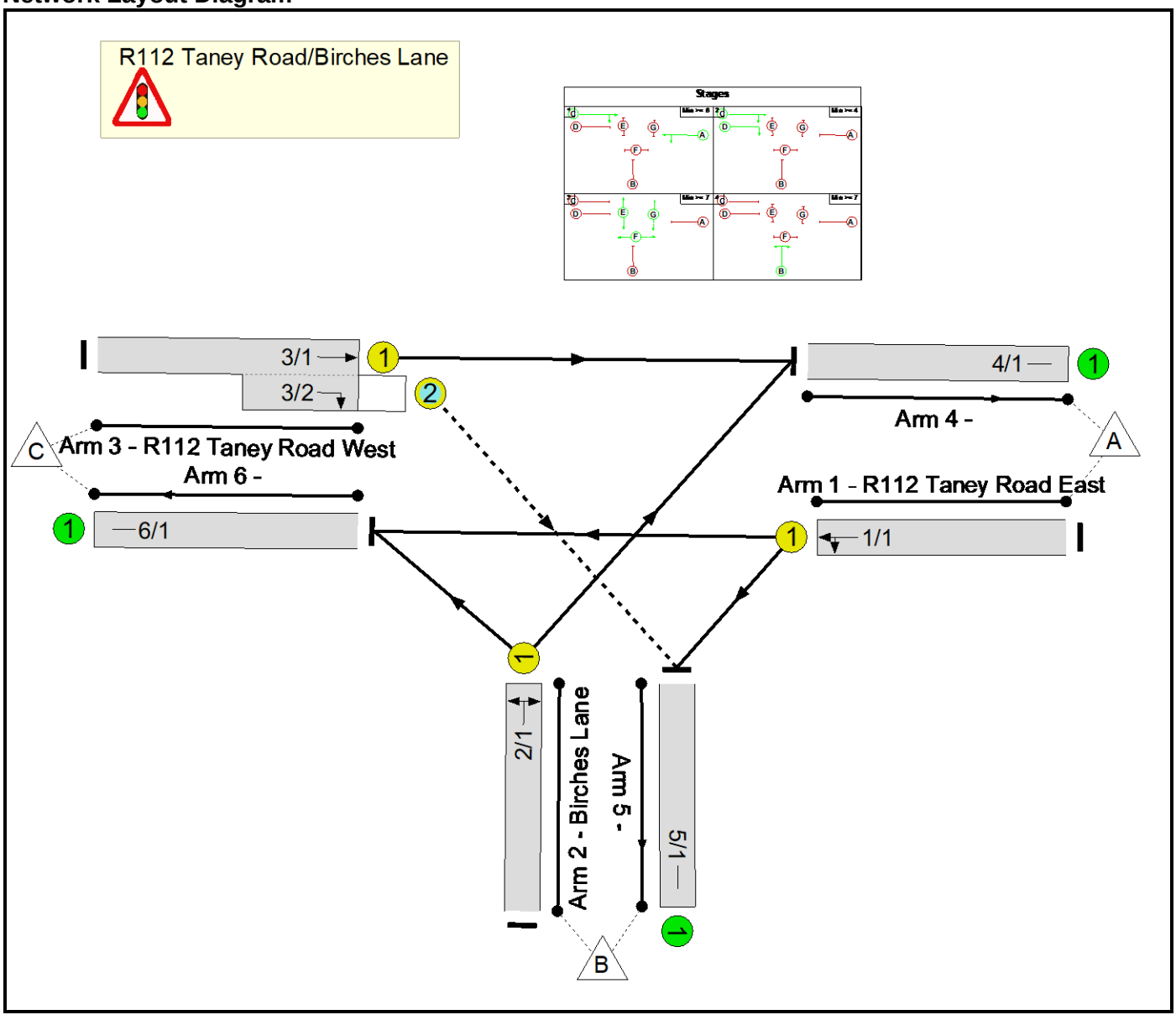
C1 PRC for Signalled Lanes (%): 45.8 Total Delay for Signalled Lanes (pcuHr): 6.14 Cycle Time (s): 120
PRC Over All Lanes (%): 45.8 Total Delay Over All Lanes(pcuHr): 6.14

Full Input Data And Results

User and Project Details

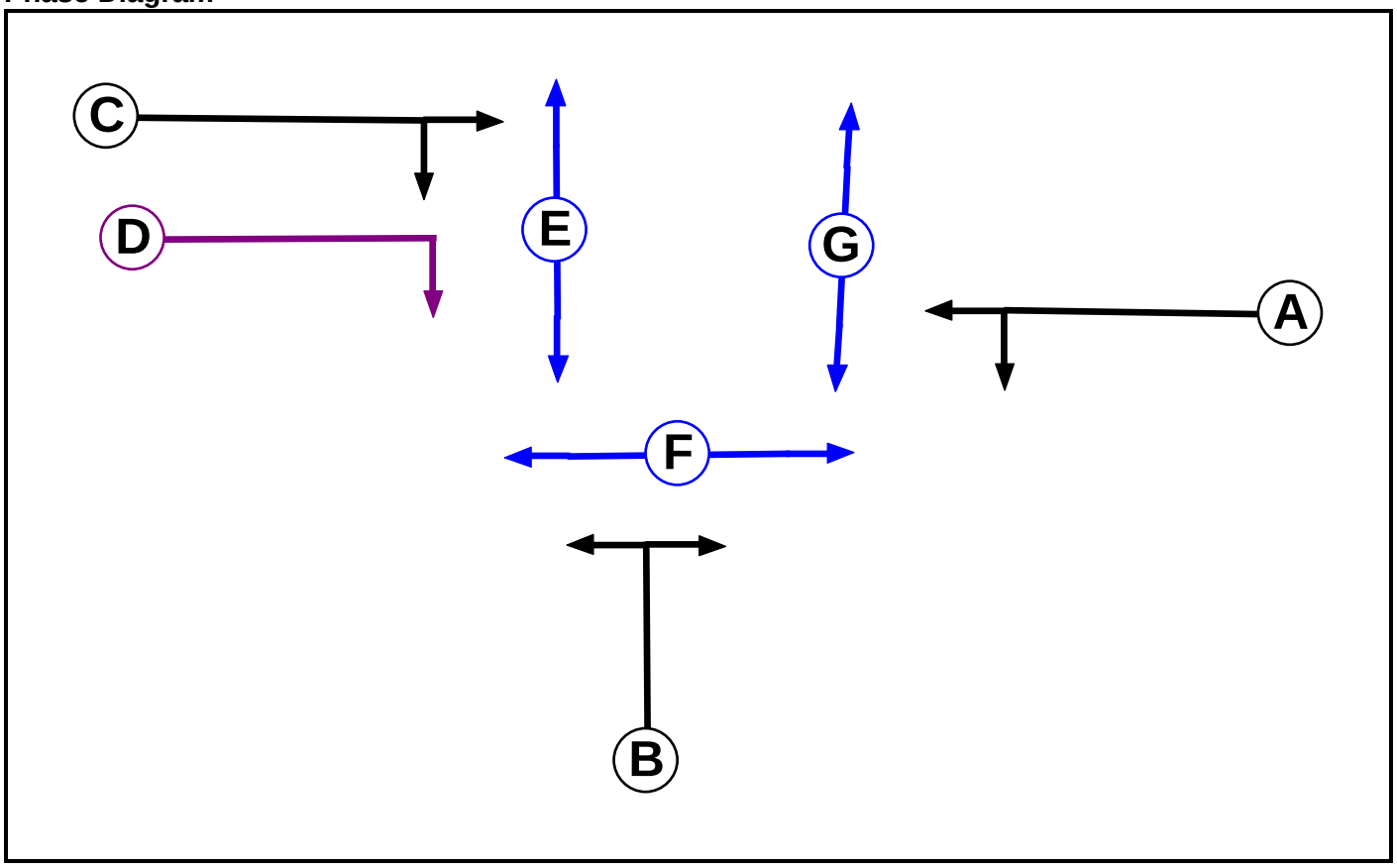
Project:	**Active Travel Route Dundrum to Stillorgan Road**
Title:	**R112 Taney Rd / Birches Lane**
Location:	
Design Layout Ref:	Proposed (Options 1 and 3)
Additional detail:	
File name:	R112 Taney Rd_Birches Ln Proposed Option 1 & 3.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

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		7	7
F	Pedestrian		7	7
G	Pedestrian		7	7

Full Input Data And Results

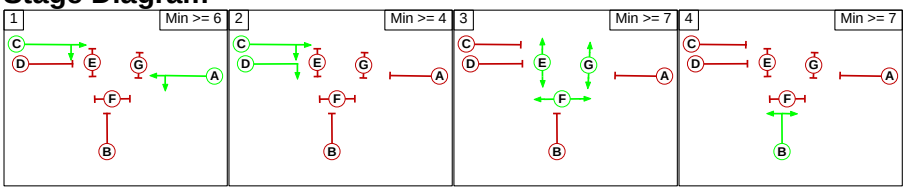
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage \ To Stage	1	2	3	4
1		5	7	5
2	7		7	5
3	11	11		11
4	6	6	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: R112 Taney Road/Birches Lane											
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)**
3/2 (R112 Taney Road West)	5/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: R112 Taney Road/Birches Lane												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (R112 Taney Road East)	U	A	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 5 Left	12.00
											Arm 6 Ahead	Inf
2/1 (Birches Lane)	U	B	2	3	60.0	Geom	-	3.80	0.00	Y	Arm 4 Right	9.00
											Arm 6 Left	12.00
3/1 (R112 Taney Road West)	U	C	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 4 Ahead	Inf
3/2 (R112 Taney Road West)	O	C D	2	3	4.9	Geom	-	3.30	0.00	Y	Arm 5 Right	11.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 AM Peak'	08:00	09:00	01:00	
2: '2021 PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	154	343	497
	B	286	0	67	353
	C	668	201	0	869
	Tot.	954	355	410	1719

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 Do Nothing AM
Junction: R112 Taney Road/Birches Lane	
1/1	497
2/1	353
3/1 (with short)	869(In) 668(Out)
3/2 (short)	201
4/1	954
5/1	355
6/1	410

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.30	0.00	Y	Arm 5 Left	12.00	31.0 %	1872	1872
				Arm 6 Ahead	Inf	69.0 %		
2/1 (Birches Lane)	3.80	0.00	Y	Arm 4 Right	9.00	81.0 %	1722	1722
				Arm 6 Left	12.00	19.0 %		
3/1 (R112 Taney Road West)	3.30	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1945	1945
3/2 (R112 Taney Road West)	3.30	0.00	Y	Arm 5 Right	11.00	100.0 %	1712	1712
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	230	434	664
	B	114	0	26	140
	C	506	112	0	618
	Tot.	620	342	460	1422

Full Input Data And Results

Traffic Lane Flows

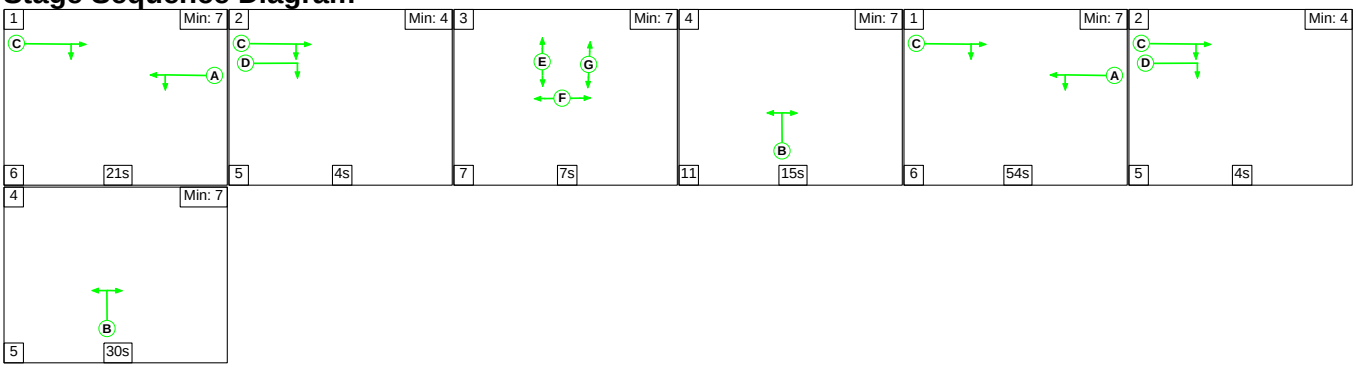
Lane	Scenario 2: 2021 Do Nothing PM
Junction: R112 Taney Road/Birches Lane	
1/1	664
2/1	140
3/1 (with short)	618(In) 506(Out)
3/2 (short)	112
4/1	620
5/1	342
6/1	460

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.30	0.00	Y	Arm 5 Left	12.00	34.6 %	1864	1864
				Arm 6 Ahead	Inf	65.4 %		
2/1 (Birches Lane)	3.80	0.00	Y	Arm 4 Right	9.00	81.4 %	1721	1721
				Arm 6 Left	12.00	18.6 %		
3/1 (R112 Taney Road West)	3.30	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1945	1945
3/2 (R112 Taney Road West)	3.30	0.00	Y	Arm 5 Right	11.00	100.0 %	1712	1712
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Stage Sequence Diagram

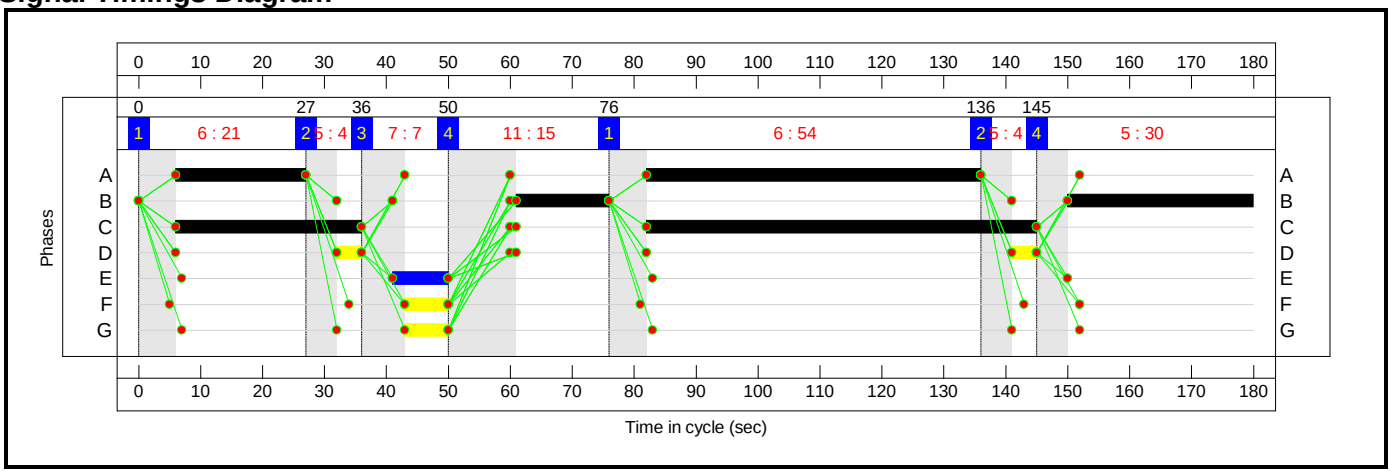


Stage Timings

Stage	1	2	3	4	1	2	4
Duration	21	4	7	15	54	4	30
Change Point	0	27	36	50	76	136	145

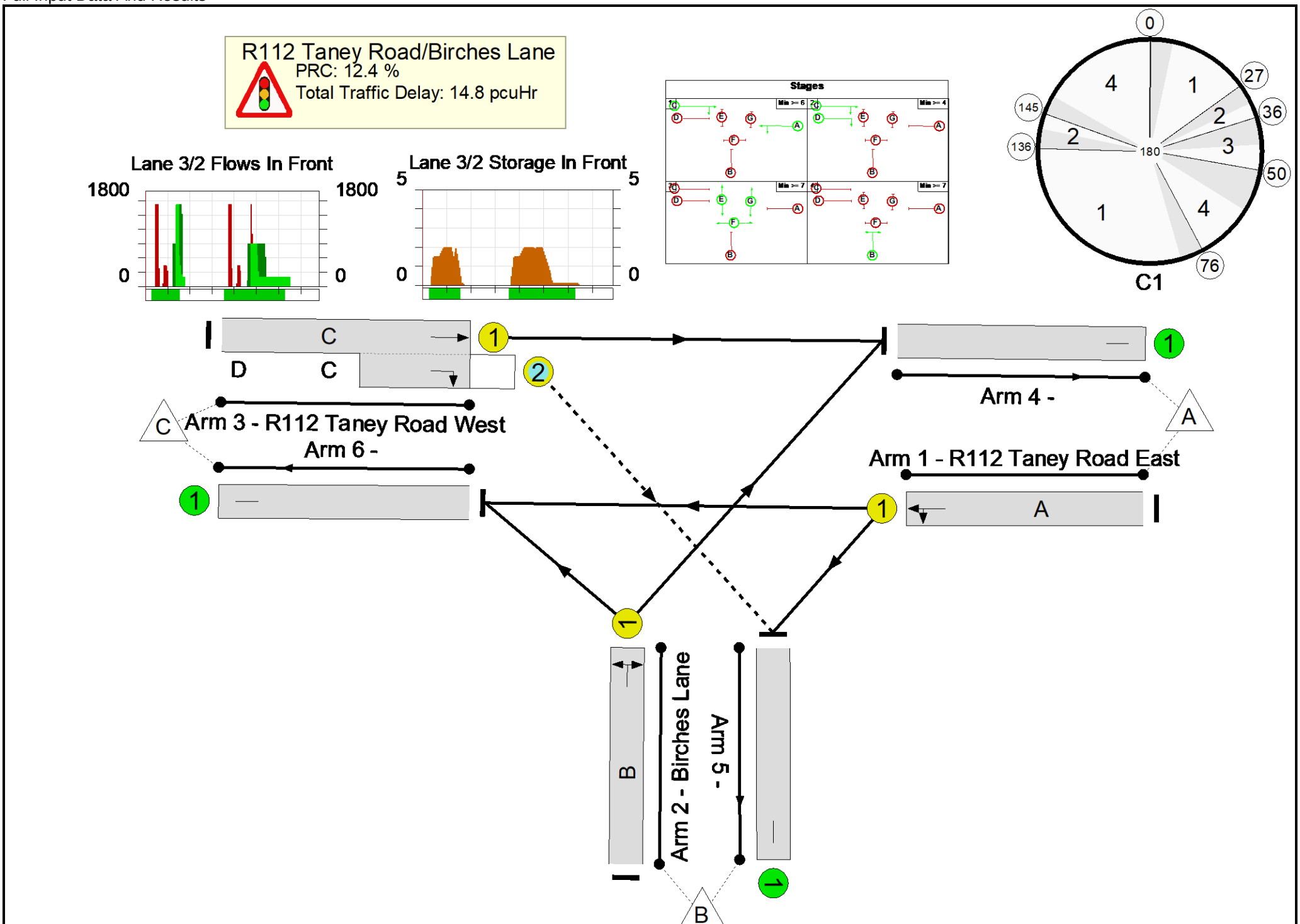
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 12.4 %
Total Traffic Delay: 14.8 pcuHr
Lane 3/2 Flows In Front
1800
0
1800
0
Lane 3/2 Storage In Front
5
0
5
0
Stages
0
27
36
50
76
145
136
180
4
1
2
3
2
1
4
C1
C
D
C
1
2
Arm 3 - R112 Taney Road West
Arm 6 -
Arm 4 -
Arm 1 - R112 Taney Road East
A
B
Arm 2 - Birches Lane
Arm 5 -

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: R112 Taney Rd / Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.1%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.1%**
1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A		2	75	-	497	1872	801	62.1%
2/1	Birches Lane Right Left	U	N/A	N/A	B		2	45	-	353	1722	450	78.5%
3/1+3/2	R112 Taney Road West Ahead Right	U+O	N/A	N/A	C	D	2	93	8	869	1945:1712	834+251	80.1 : 80.1%
4/1		U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches Lane	**-**	**-**	**132**	**65**	**4**	**9.7**	**4.5**	**0.5**	**14.8**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**132**	**65**	**4**	**9.7**	**4.5**	**0.5**	**14.8**	**-**	**-**	**-**	**-**
1/1	497	497	-	-	-	2.8	0.8	-	3.6	26.0	10.1	0.8	10.9
2/1	353	353	-	-	-	3.1	1.8	-	4.8	49.2	8.9	1.8	10.7
3/1+3/2	869	869	132	65	4	3.9	2.0	0.5	6.4	26.5	16.6	2.0	18.6
4/1	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): 12.4
PRC Over All Lanes (%): 12.4

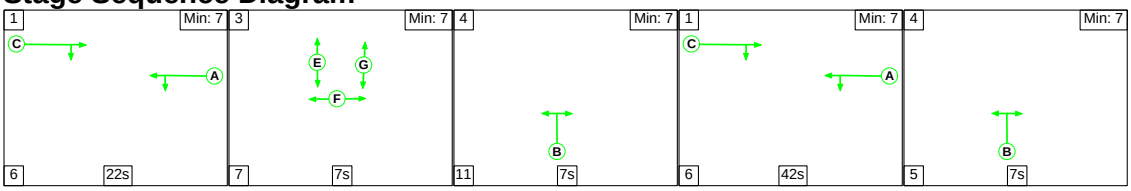
Total Delay for Signalled Lanes (pcuHr): 14.82
Total Delay Over All Lanes(pcuHr): 14.82

Cycle Time (s): 180

Full Input Data And Results

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

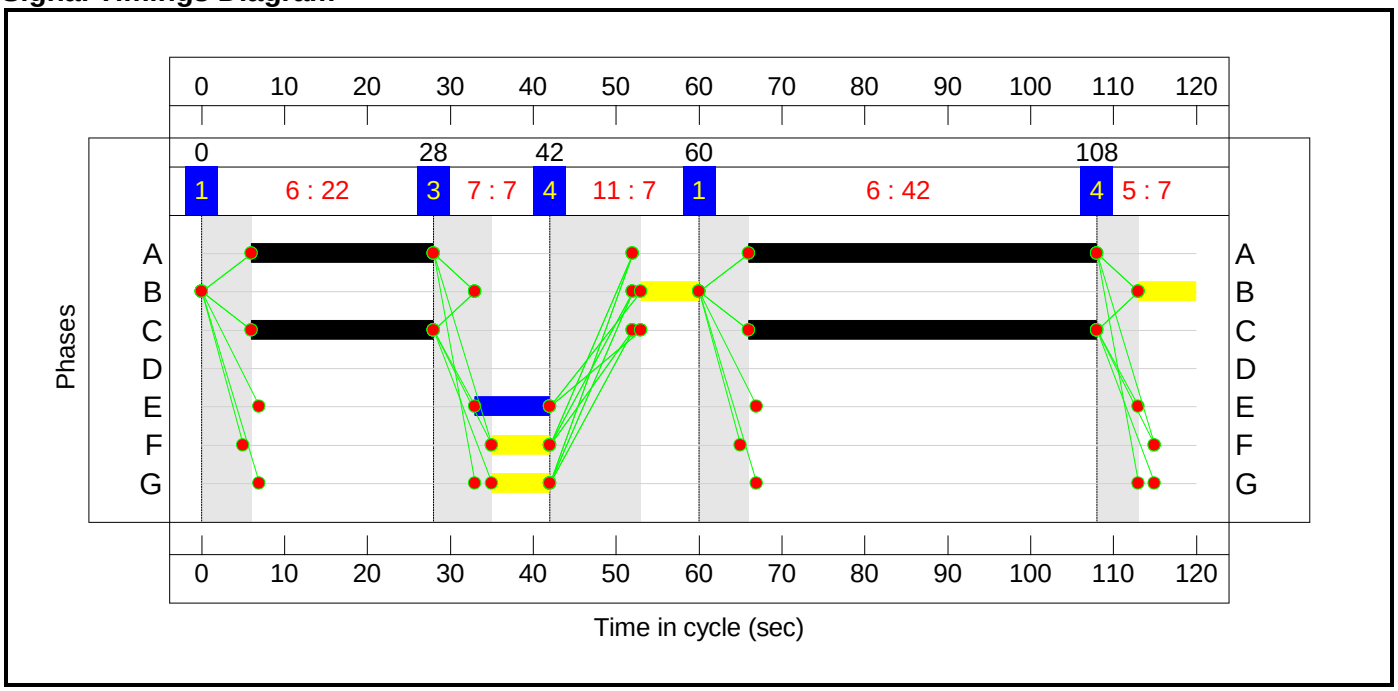
Stage Sequence Diagram



Stage Timings

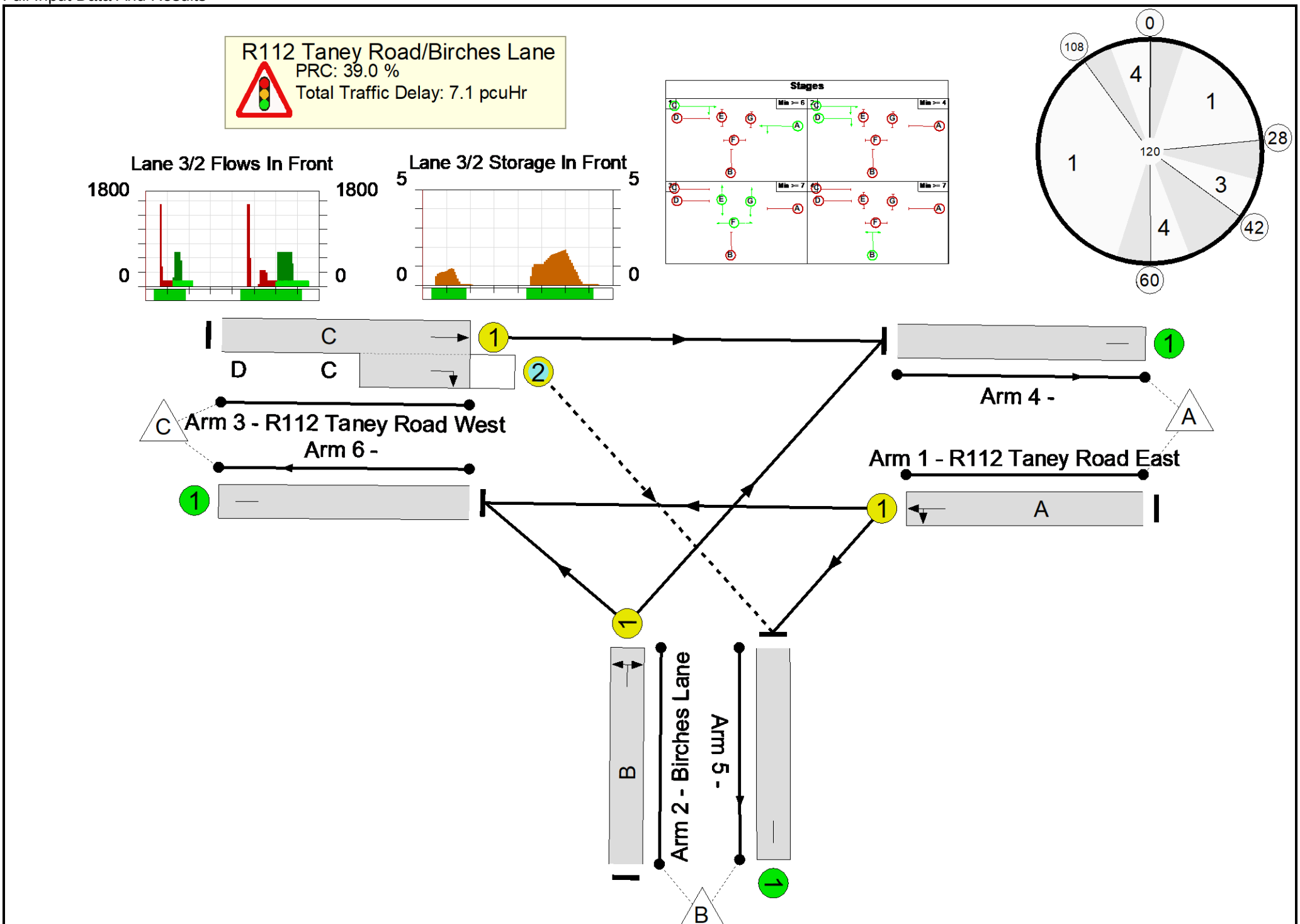
Stage	1	3	4	1	4
Duration	22	7	7	42	7
Change Point	0	28	42	60	108

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 39.0 %
Total Traffic Delay: 7.1 pcuHr
Lane 3/2 Flows In Front
1800
0
1800
0
Lane 3/2 Storage In Front
5
0
5
0
Stages
0
108
4
1
28
120
1
3
42
4
60
C
D
C
1
2
Arm 3 - R112 Taney Road West
Arm 6 -
Arm 4 -
A
Arm 1 - R112 Taney Road East
A
B
Arm 2 - Birches Lane
Arm 5 -
B

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: R112 Taney Rd / Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.8%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.8%**
1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A		2	64	-	664	1864	1025	64.8%
2/1	Birches Lane Right Left	U	N/A	N/A	B		2	14	-	140	1721	229	61.0%
3/1+3/2	R112 Taney Road West Ahead Right	U+O	N/A	N/A	C	D	2	64	0	618	1945:1712	945+209	53.6 : 53.6%
4/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches Lane	**-**	**-**	**112**	**0**	**0**	**4.5**	**2.3**	**0.4**	**7.1**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**112**	**0**	**0**	**4.5**	**2.3**	**0.4**	**7.1**	**-**	**-**	**-**	**-**
1/1	664	664	-	-	-	2.0	0.9	-	2.9	15.7	10.5	0.9	11.4
2/1	140	140	-	-	-	1.0	0.8	-	1.7	44.3	2.2	0.8	2.9
3/1+3/2	618	618	112	0	0	1.6	0.6	0.4	2.5	14.6	7.3	0.6	7.9
4/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

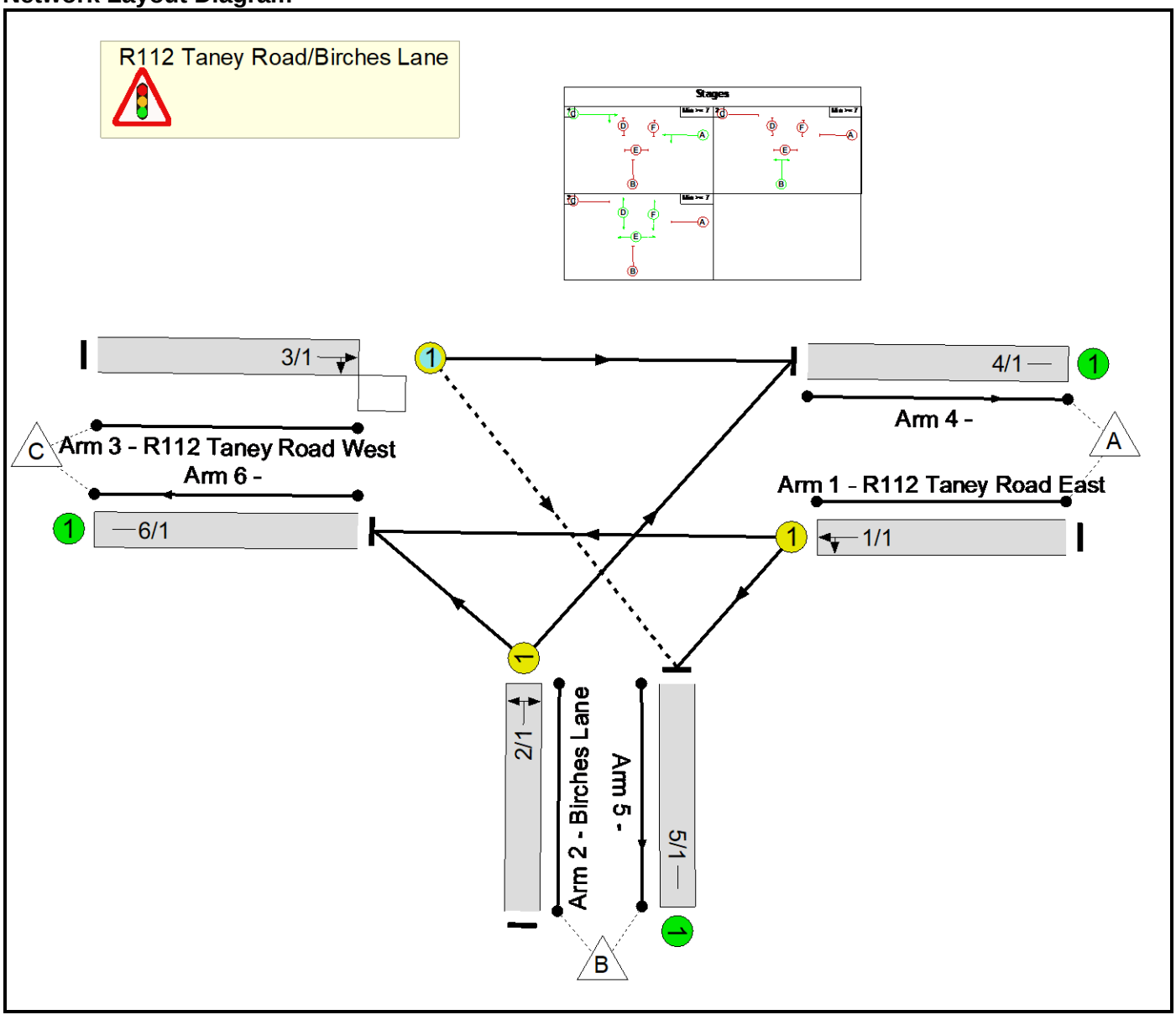
C1 PRC for Signalled Lanes (%): 39.0 Total Delay for Signalled Lanes (pcuHr): 7.13 Cycle Time (s): 120
PRC Over All Lanes (%): 39.0 Total Delay Over All Lanes(pcuHr): 7.13

Full Input Data And Results

User and Project Details

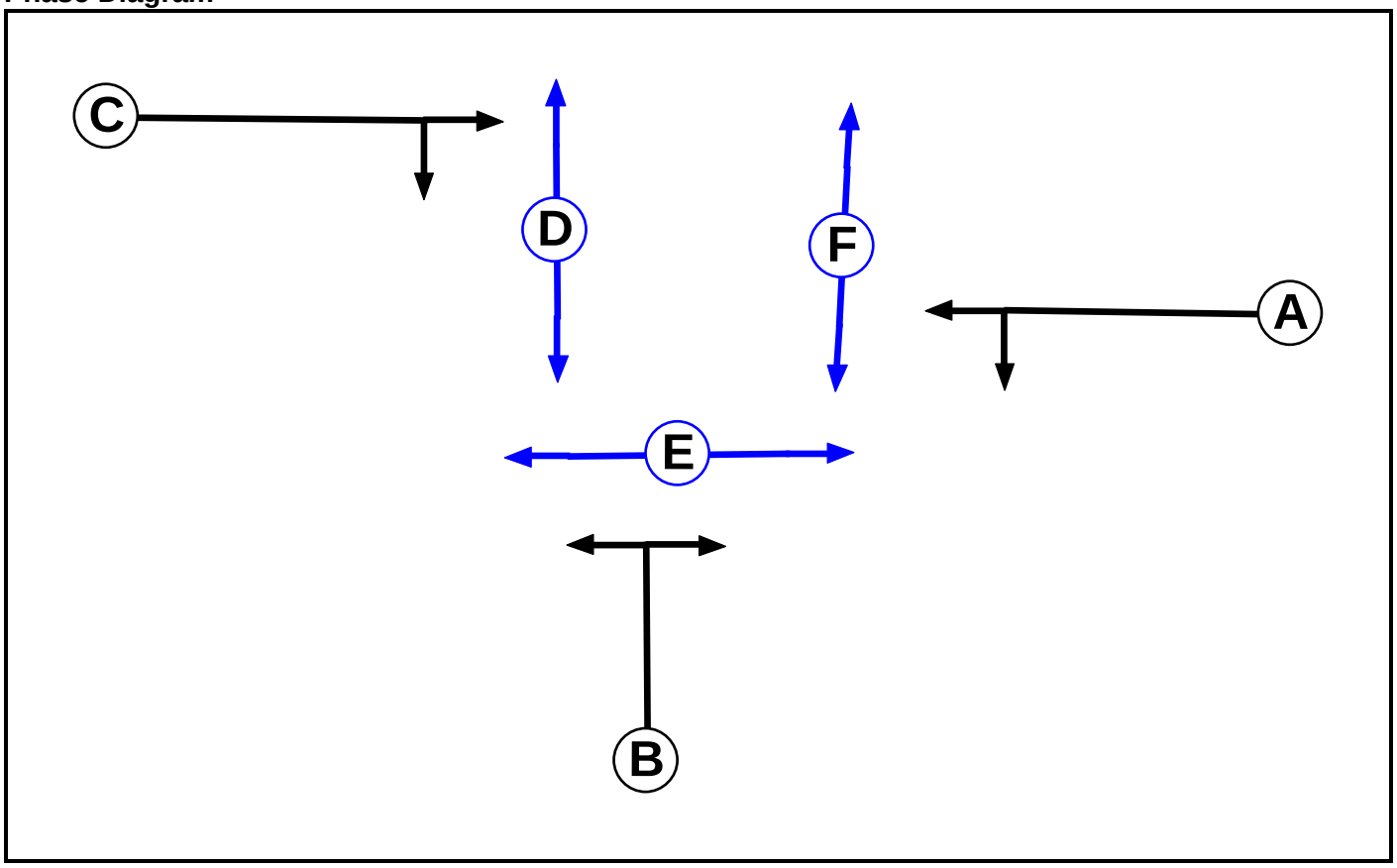
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	**R112 Taney Rd / Birches :ane**
Location:	
Design Layout Ref:	Proposed Option 2
Additional detail:	
File name:	R112 Taney Rd_Birches Ln Proposed v2 - Option 2.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

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		7	7
E	Pedestrian		7	7
F	Pedestrian		7	6

Full Input Data And Results

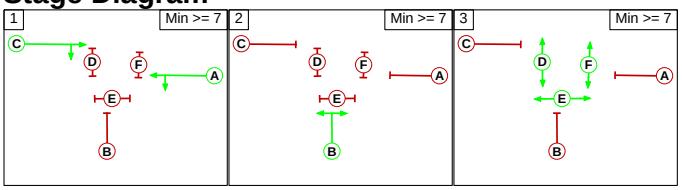
Phase Intergreens Matrix

Terminating Phase	Starting Phase						
		A	B	C	D	E	F
	A		5	-	-	7	5
	B	6		6	7	5	7
	C	-	5		5	7	7
	D	-	11	11		-	-
	E	10	10	10	-		-
	F	10	10	10	-	-	

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	1	F	Losing	1	1
3	2	F	Losing	1	1

Prohibited Stage Change

From Stage	To Stage		
	1	2	3
1		5	7
2	6		7
3	11	11	

Full Input Data And Results

Give-Way Lane Input Data

Junction: R112 Taney Road/Birches Lane											
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)**
3/1 (R112 Taney Road West)	5/1 (Right)	1439	0	1/1	1.09	All	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: R112 Taney Road/Birches Lane												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (R112 Taney Road East)	U	A	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 5 Left	12.00
											Arm 6 Ahead	Inf
2/1 (Birches Lane)	U	B	2	3	60.0	Geom	-	3.80	0.00	Y	Arm 4 Right	9.00
											Arm 6 Left	12.00
3/1 (R112 Taney Road West)	O	C	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 4 Ahead	Inf
											Arm 5 Right	Inf
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 AM Peak'	08:00	09:00	01:00	
2: '2021 PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	154	343	497
	B	286	0	67	353
	C	668	201	0	869
	Tot.	954	355	410	1719

Traffic Lane Flows

Lane	Scenario 1: 2021 Do Nothing AM
Junction: R112 Taney Road/Birches Lane	
1/1	497
2/1	353
3/1	869
4/1	954
5/1	355
6/1	410

Full Input Data And Results

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.30	0.00	Y	Arm 5 Left	12.00	31.0 %	1872	1872
				Arm 6 Ahead	Inf	69.0 %		
2/1 (Birches Lane)	3.80	0.00	Y	Arm 4 Right	9.00	81.0 %	1722	1722
				Arm 6 Left	12.00	19.0 %		
3/1 (R112 Taney Road West)	3.30	0.00	Y	Arm 4 Ahead	Inf	76.9 %	1945	1945
				Arm 5 Right	Inf	23.1 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	230	434	664
	B	114	0	26	140
	C	506	112	0	618
	Tot.	620	342	460	1422

Traffic Lane Flows

Lane	Scenario 2: 2021 Do Nothing PM
Junction: R112 Taney Road/Birches Lane	
1/1	664
2/1	140
3/1	618
4/1	620
5/1	342
6/1	460

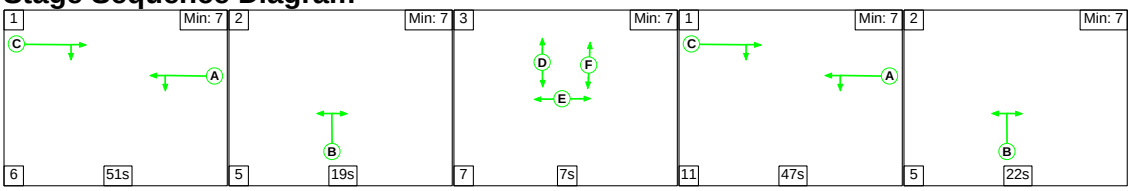
Full Input Data And Results

Lane Saturation Flows

Junction: R112 Taney Road/Birches Lane								
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 (R112 Taney Road East)	3.30	0.00	Y	Arm 5 Left	12.00	34.6 %	1864	1864
				Arm 6 Ahead	Inf	65.4 %		
2/1 (Birches Lane)	3.80	0.00	Y	Arm 4 Right	9.00	81.4 %	1721	1721
				Arm 6 Left	12.00	18.6 %		
3/1 (R112 Taney Road West)	3.30	0.00	Y	Arm 4 Ahead	Inf	81.9 %	1945	1945
				Arm 5 Right	Inf	18.1 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

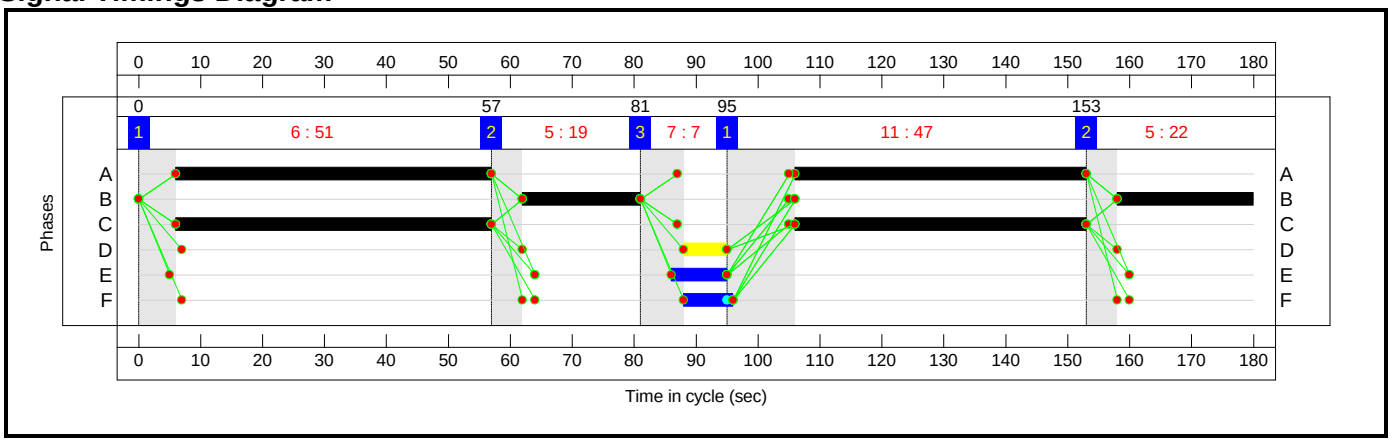
Stage Sequence Diagram



Stage Timings

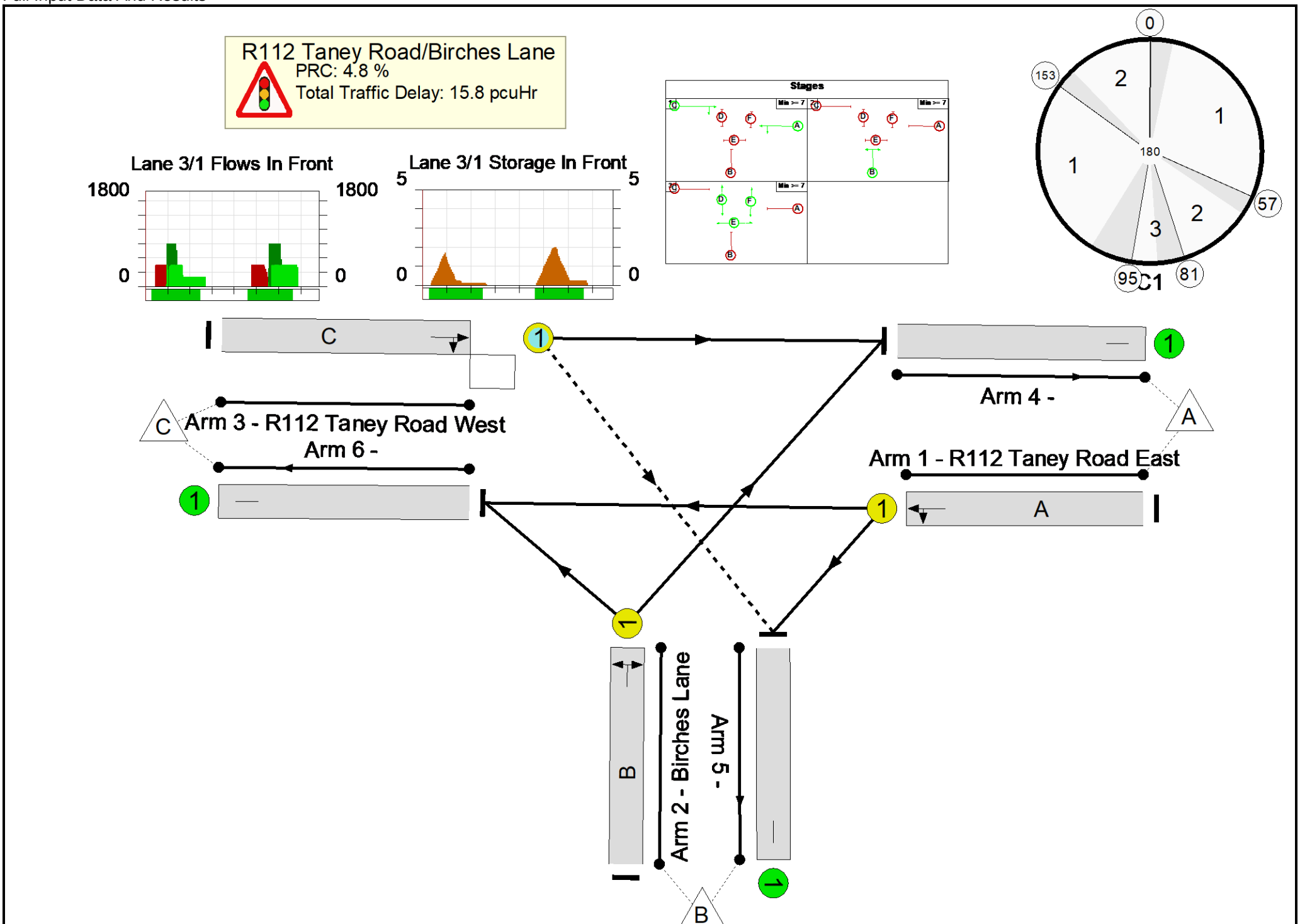
Stage	1	2	3	1	2
Duration	51	19	7	47	22
Change Point	0	57	81	95	153

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 4.8 %
Total Traffic Delay: 15.8 pcuHr
Lane 3/1 Flows In Front
1800
0
1800
0
Lane 3/1 Storage In Front
5
0
5
0
Stages
0
153
2
1
180
1
57
2
3
95
C1
81
C
Arm 3 - R112 Taney Road West
Arm 6 -
Arm 4 -
A
Arm 1 - R112 Taney Road East
A
B
Arm 2 - Birches Lane
Arm 5 -
B

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: R112 Taney Rd / Birches :ane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.8%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.8%**
1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A		2	98	-	497	1872	1040	47.8%
2/1	Birches Lane Right Left	U	N/A	N/A	B		2	41	-	353	1722	411	85.8%
3/1	R112 Taney Road West Ahead Right	O	N/A	N/A	C		2	98	-	869	1945	1012	85.8%
4/1		U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches :ane	**-**	**-**	**201**	**0**	**0**	**9.5**	**6.1**	**0.3**	**15.8**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**201**	**0**	**0**	**9.5**	**6.1**	**0.3**	**15.8**	**-**	**-**	**-**	**-**
1/1	497	497	-	-	-	1.7	0.5	-	2.2	15.9	9.0	0.5	9.4
2/1	353	353	-	-	-	3.3	2.8	-	6.0	61.4	9.3	2.8	12.1
3/1	869	869	201	0	0	4.5	2.9	0.3	7.6	31.6	22.9	2.9	25.8
4/1	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

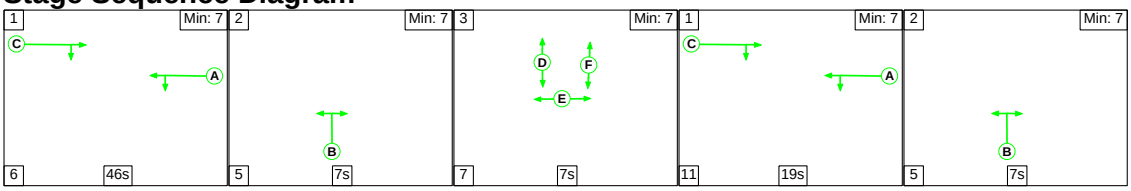
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	4.8	Total Delay for Signalled Lanes (pcuHr):	15.84	Cycle Time (s):	180
	PRC Over All Lanes (%):	4.8	Total Delay Over All Lanes(pcuHr):	15.84		

Full Input Data And Results

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

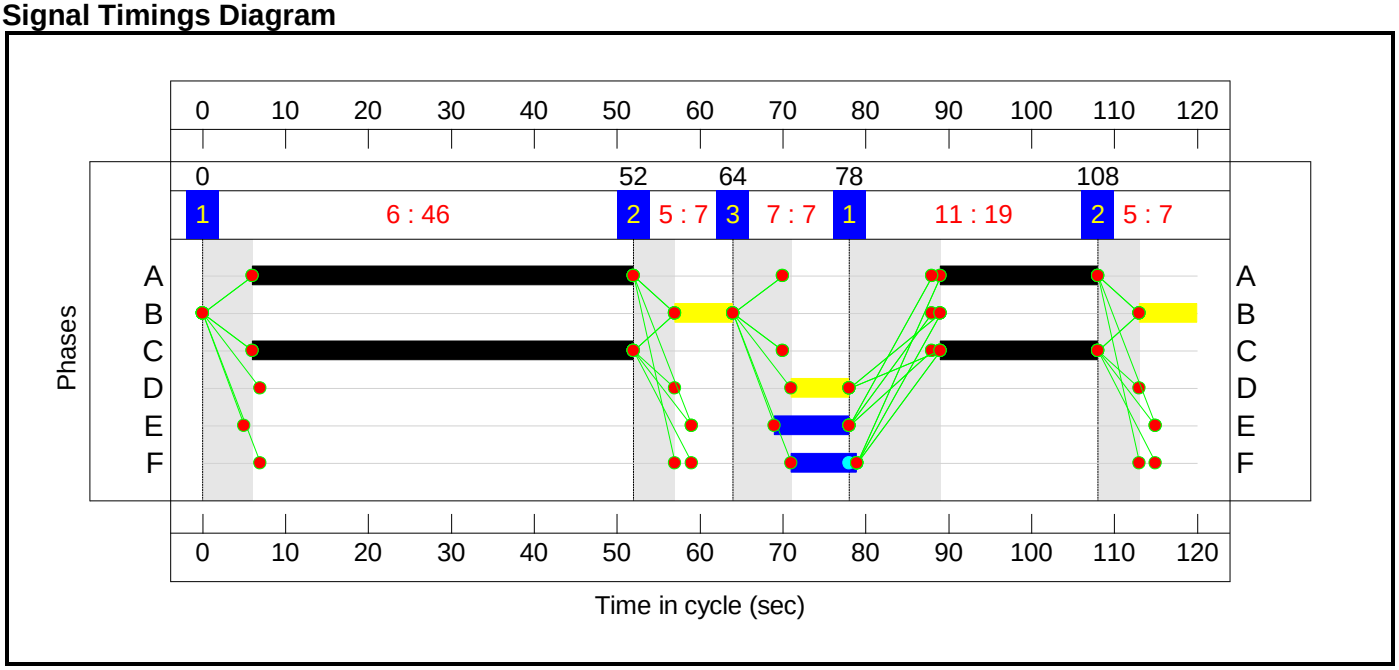
Stage Sequence Diagram



Stage Timings

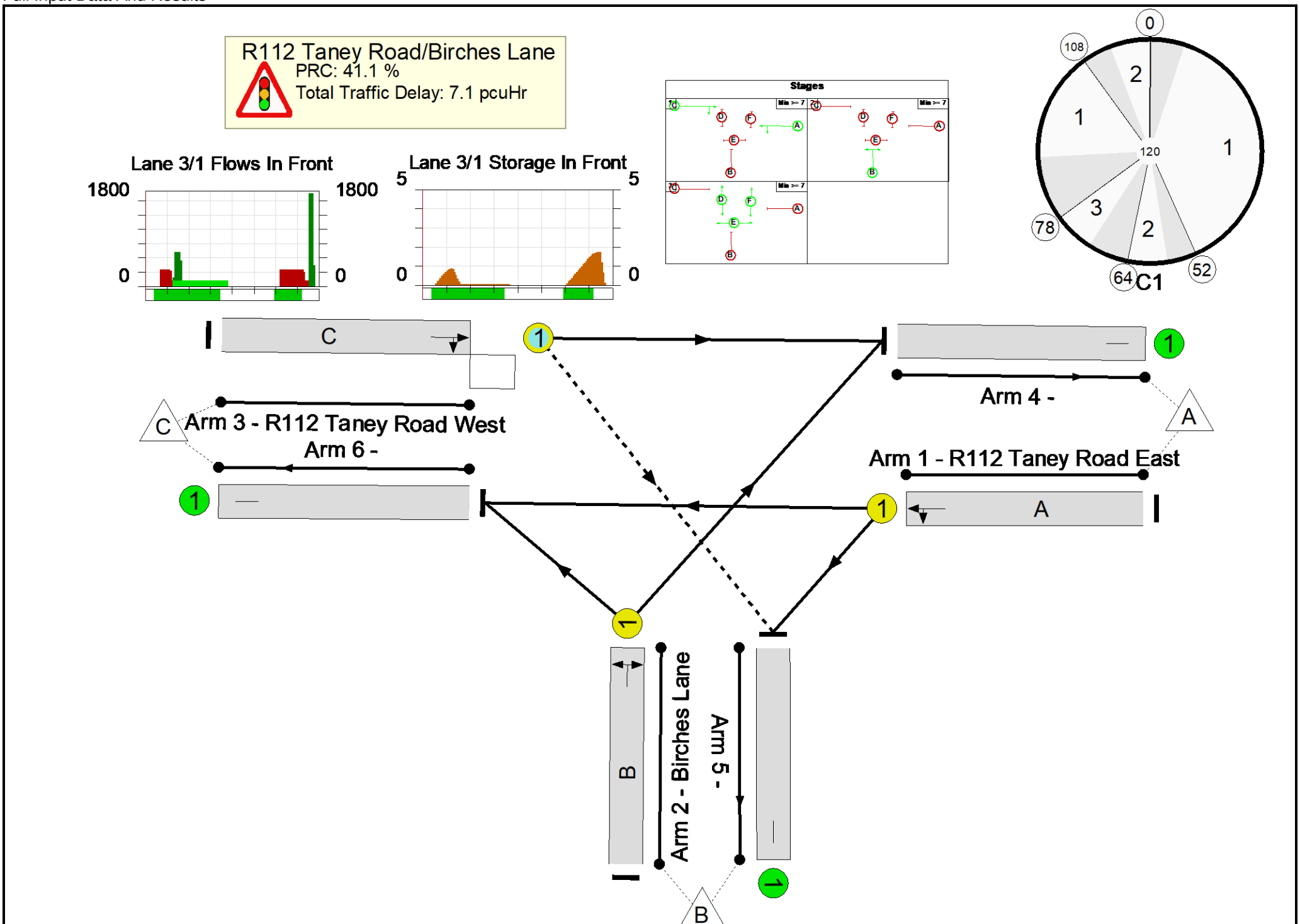
Stage	1	2	3	1	2
Duration	46	7	7	19	7
Change Point	0	52	64	78	108

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


R112 Taney Road/Birches Lane
PRC: 41.1 %
Total Traffic Delay: 7.1 pcuHr
Lane 3/1 Flows In Front
1800
0
1800
0
Lane 3/1 Storage In Front
5
0
5
0
Stages
0
108
2
1
120
1
3
78
2
64
52
C1
C
Arm 3 - R112 Taney Road West
Arm 6 -
Arm 4 -
A
Arm 1 - R112 Taney Road East
A
B
Arm 2 - Birches Lane
Arm 5 -
B

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: R112 Taney Rd / Birches :ane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.8%**
R112 Taney Road/Birches Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.8%**
1/1	R112 Taney Road East Left Ahead	U	N/A	N/A	A		2	65	-	664	1864	1041	63.8%
2/1	Birches Lane Right Left	U	N/A	N/A	B		2	14	-	140	1721	229	61.0%
3/1	R112 Taney Road West Ahead Right	O	N/A	N/A	C		2	65	-	618	1945	1076	57.4%
4/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Taney Rd / Birches :ane	**-**	**-**	**60**	**0**	**52**	**4.5**	**2.3**	**0.2**	**7.1**	**-**	**-**	**-**	**-**
R112 Taney Road/Birches Lane	**-**	**-**	**60**	**0**	**52**	**4.5**	**2.3**	**0.2**	**7.1**	**-**	**-**	**-**	**-**
1/1	664	664	-	-	-	1.9	0.9	-	2.8	15.0	10.1	0.9	11.0
2/1	140	140	-	-	-	1.0	0.8	-	1.7	44.5	2.3	0.8	3.1
3/1	618	618	60	0	52	1.7	0.7	0.2	2.6	15.0	8.9	0.7	9.6
4/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	41.1	Total Delay for Signalled Lanes (pcuHr):	7.07	Cycle Time (s):	120
	PRC Over All Lanes (%):	41.1	Total Delay Over All Lanes(pcuHr):	7.07		

Appendix 2

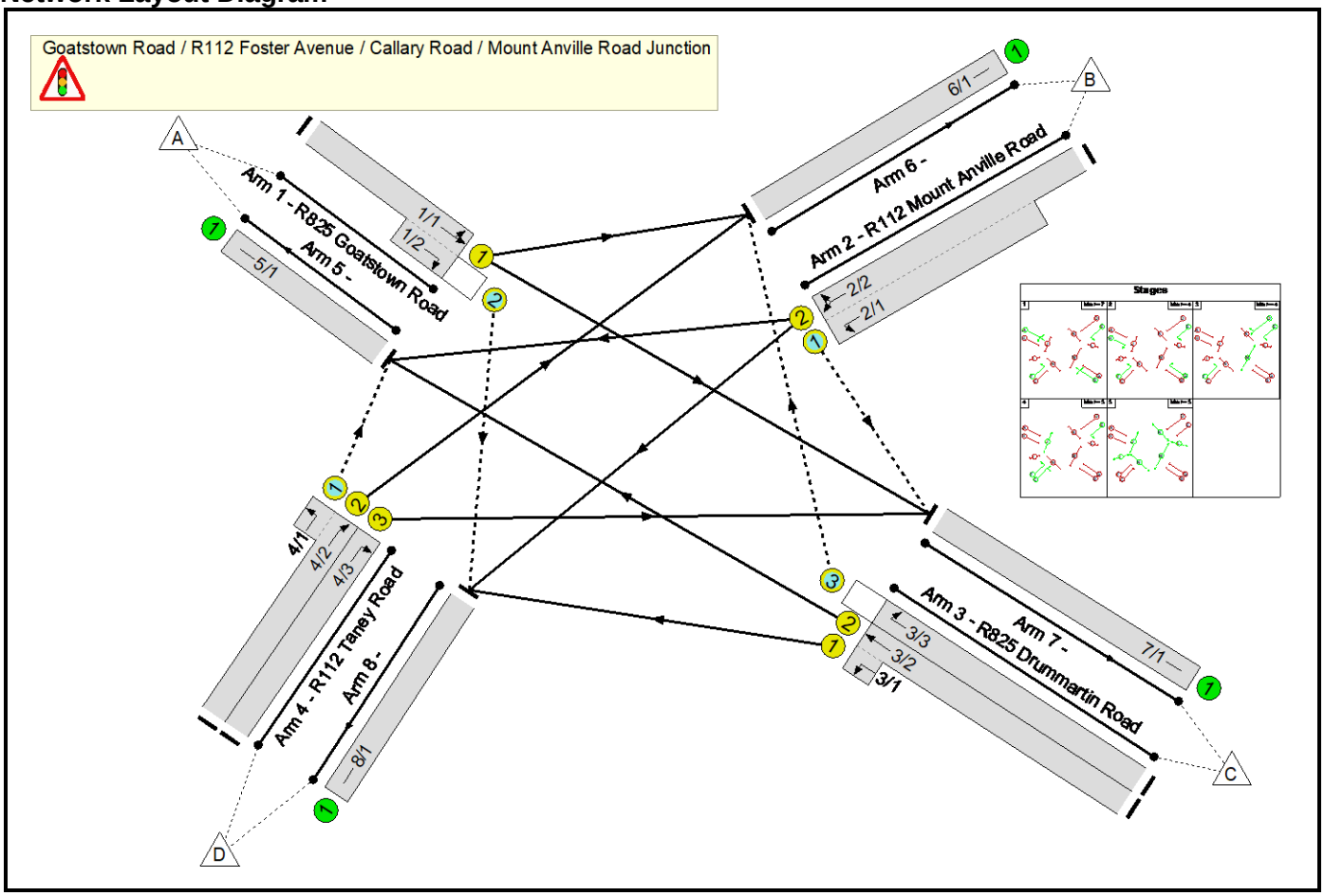
R112 Taney Road/R825 Goatstown Road/R112 Mount Anville Road/R825 Drummartin Road Junction - Detailed LinSig Outputs

Full Input Data And Results

User and Project Details

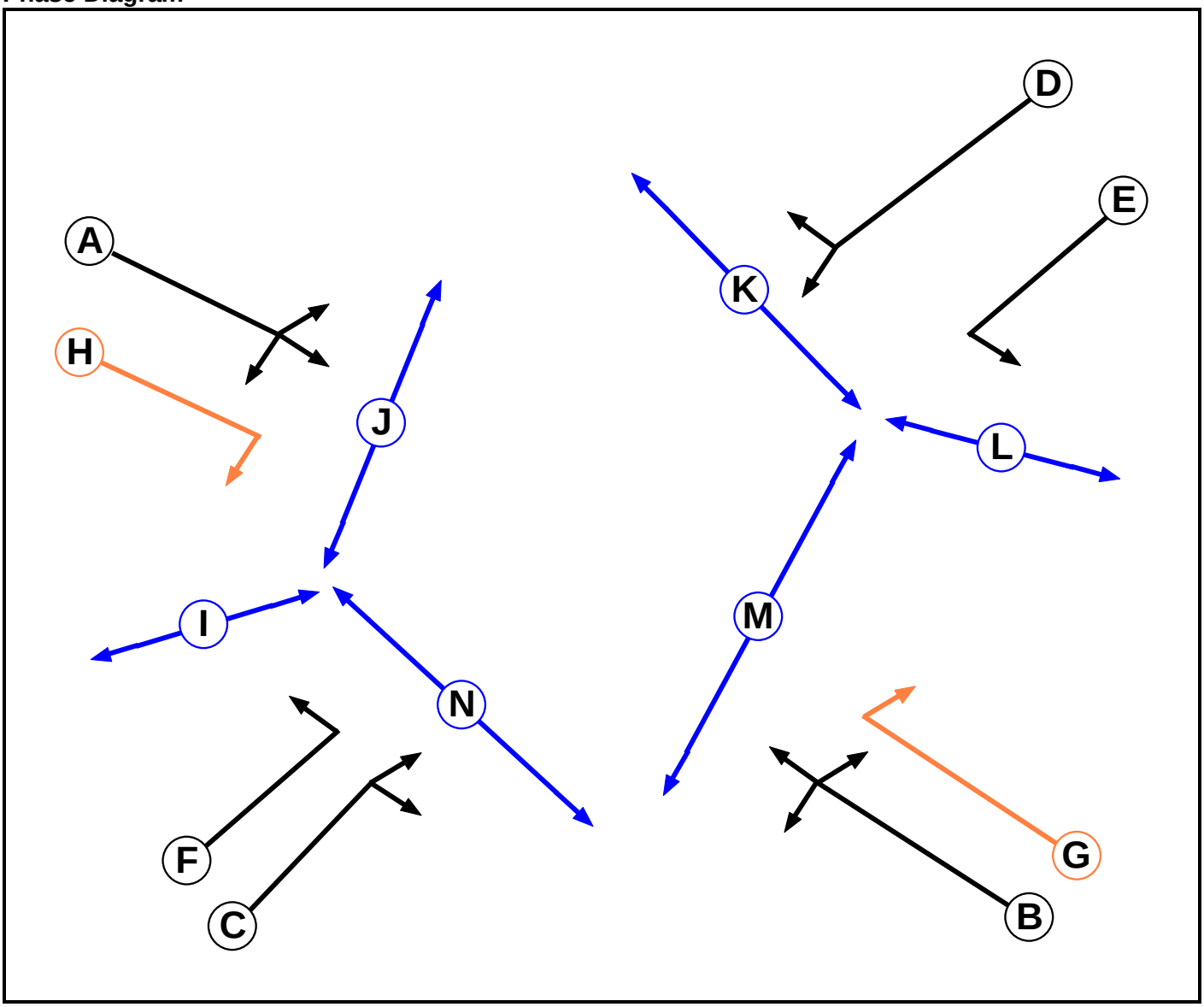
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	
Design Layout Ref:	Existing Layout
Additional detail:	
File name:	R112_R825 Existing v3.lsg3x
Author:	
Company:	RAMBOLL
Address:	The Exchange, St John St, Chester CH1 1DA

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Filter with Closing Amber (Not UK)		4	4
H	Filter with Closing Amber (Not UK)		4	4
I	Pedestrian		6	6
J	Pedestrian		6	6
K	Pedestrian		5	5
L	Pedestrian		7	7
M	Pedestrian		7	7
N	Pedestrian		7	7

Phase Intergreens Matrix

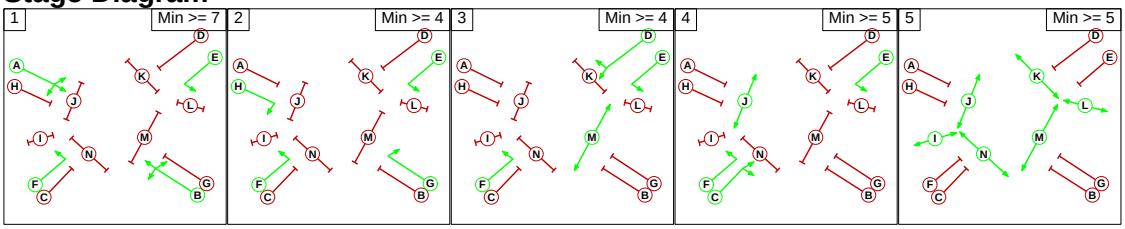
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		-	6	6	-	-	6	-	-	5	9	-	9	-
B	-		6	5	-	-	-	6	-	-	-	-	5	9
C	5	5		7	-	-	6	5	-	-	9	-	9	5
D	5	5	7		-	-	5	6	-	9	5	-	-	8
E	-	-	-	-		-	-	-	-	-	-	5	-	-
F	-	-	-	-	-		-	-	5	-	-	-	-	-
G	5	-	5	6	-	-		-	-	-	7	-	5	-
H	-	5	6	5	-	-	-		-	5	-	-	-	7
I	-	-	-	-	-	6	-	-		-	-	-	-	-
J	10	-	-	10	-	-	-	10	-		-	-	-	-
K	9	-	9	9	-	-	9	-	-	-		-	-	-
L	-	-	-	-	6	-	-	-	-	-	-		-	-
M	13	13	13	-	-	-	13	-	-	-	-	-		-
N	-	12	12	12	-	-	-	12	-	-	-	-	-	

Phases in Stage

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

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	1	D	Losing	9	9
3	4	D	Losing	6	6
4	1	C	Losing	6	6

Prohibited Stage Change

		To Stage				
		1	2	3	4	5
From Stage	1		6	9	6	9
	2	5		6	6	7
	3	14	13		15	9
	4	11	10	10		9
	5	13	13	12	13	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction											
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)**
1/2 (R825 Goatstown Road)	8/1 (Right)	1439	0	3/2	1.09	All	2.00	-	0.50	2	2.00
				3/1	1.09	All					
2/1 (R112 Mount Anville Road)	7/1 (Left)	1439	0	1/1	1.09	To 7/1 (Ahead)	-	-	-	-	-
				4/3	1.09	All					
				4/2	1.09	None					
3/3 (R825 Drummartin Road)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
4/1 (R112 Taney Road)	5/1 (Left)	1439	0	2/2	1.09	To 5/1 (Right)	-	-	-	-	-
				3/2	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction												
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 (R825 Goatstown Road)	U	A	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 6 Left	40.00
											Arm 7 Ahead	Inf
1/2 (R825 Goatstown Road)	O	A H	2	3	3.5	Geom	-	2.70	0.00	N	Arm 8 Right	9.40
2/1 (R112 Mount Anville Road)	O	E	2	3	14.8	Geom	-	3.50	0.00	Y	Arm 7 Left	12.00
2/2 (R112 Mount Anville Road)	U	D	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 5 Right	Inf
											Arm 8 Ahead	Inf
3/1 (R825 Drummartin Road)	U	B	2	3	1.7	Geom	-	2.70	0.00	Y	Arm 8 Left	20.00
3/2 (R825 Drummartin Road)	U	B	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 5 Ahead	Inf
3/3 (R825 Drummartin Road)	O	B G	2	3	5.2	Geom	-	3.30	0.00	Y	Arm 6 Right	9.00
4/1 (R112 Taney Road)	O	F	2	3	1.9	Geom	-	3.70	0.00	Y	Arm 5 Left	20.00
4/2 (R112 Taney Road)	U	C	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 6 Ahead	27.00
4/3 (R112 Taney Road)	U	C	2	3	13.6	Geom	-	2.90	0.00	N	Arm 7 Right	20.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Do Nothing 2021, AM'	08:00	09:00	01:00	
2: 'Do Nothing 2021, PM'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1	232	87	320
	B	0	0	134	181	315
	C	455	125	0	230	810
	D	422	289	270	0	981
	Tot.	877	415	636	498	2426

Traffic Lane Flows

Lane	Scenario 1: 1
Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1 (with short)	320(In) 233(Out)
1/2 (short)	87
2/1 (short)	134
2/2 (with short)	315(In) 181(Out)
3/1 (short)	230
3/2 (with short)	685(In) 455(Out)
3/3	125
4/1 (short)	422
4/2 (with short)	711(In) 289(Out)
4/3	270
5/1	877
6/1	415
7/1	636
8/1	498

Full Input Data And Results

Lane Saturation Flows

Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Left	40.00	0.4 %	1905	1905
				Arm 7 Ahead	Inf	99.6 %		
1/2 (R825 Goatstown Road)	2.70	0.00	N	Arm 8 Right	9.40	100.0 %	1746	1746
2/1 (R112 Mount Anville Road)	3.50	0.00	Y	Arm 7 Left	12.00	100.0 %	1747	1747
2/2 (R112 Mount Anville Road)	3.40	0.00	Y	Arm 5 Right	Inf	0.0 %	1955	1955
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R825 Drummartin Road)	2.70	0.00	Y	Arm 8 Left	20.00	100.0 %	1753	1753
3/2 (R825 Drummartin Road)	3.30	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1945	1945
3/3 (R825 Drummartin Road)	3.30	0.00	Y	Arm 6 Right	9.00	100.0 %	1667	1667
4/1 (R112 Taney Road)	3.70	0.00	Y	Arm 5 Left	20.00	100.0 %	1847	1847
4/2 (R112 Taney Road)	2.90	0.00	Y	Arm 6 Ahead	27.00	100.0 %	1805	1805
4/3 (R112 Taney Road)	2.90	0.00	N	Arm 7 Right	20.00	100.0 %	1902	1902
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	197	80	277
	B	0	0	695	278	973
	C	486	62	0	306	854
	D	224	189	216	0	629
	Tot.	710	251	1108	664	2733

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2
Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1 (with short)	277(In) 197(Out)
1/2 (short)	80
2/1 (short)	695
2/2 (with short)	973(In) 278(Out)
3/1 (short)	306
3/2 (with short)	792(In) 486(Out)
3/3	62
4/1 (short)	224
4/2 (with short)	413(In) 189(Out)
4/3	216
5/1	710
6/1	251
7/1	1108
8/1	664

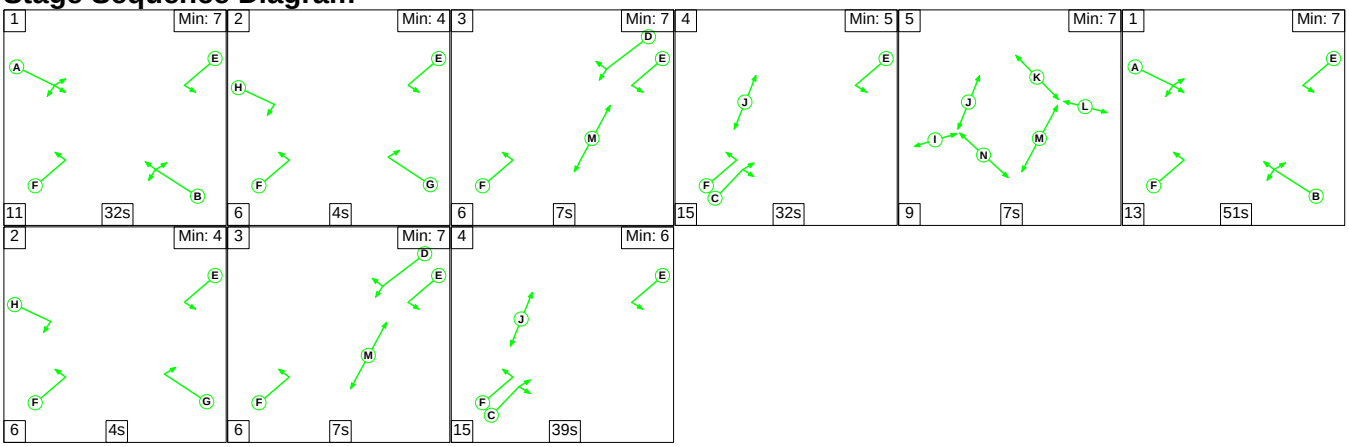
Full Input Data And Results

Lane Saturation Flows

Junction: Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Left	40.00	0.0 %	1905	1905
				Arm 7 Ahead	Inf	100.0 %		
1/2 (R825 Goatstown Road)	2.70	0.00	N	Arm 8 Right	9.40	100.0 %	1746	1746
2/1 (R112 Mount Anville Road)	3.50	0.00	Y	Arm 7 Left	12.00	100.0 %	1747	1747
2/2 (R112 Mount Anville Road)	3.40	0.00	Y	Arm 5 Right	Inf	0.0 %	1955	1955
				Arm 8 Ahead	Inf	100.0 %		
3/1 (R825 Drummartin Road)	2.70	0.00	Y	Arm 8 Left	20.00	100.0 %	1753	1753
3/2 (R825 Drummartin Road)	3.30	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1945	1945
3/3 (R825 Drummartin Road)	3.30	0.00	Y	Arm 6 Right	9.00	100.0 %	1667	1667
4/1 (R112 Taney Road)	3.70	0.00	Y	Arm 5 Left	20.00	100.0 %	1847	1847
4/2 (R112 Taney Road)	2.90	0.00	Y	Arm 6 Ahead	27.00	100.0 %	1805	1805
4/3 (R112 Taney Road)	2.90	0.00	N	Arm 7 Right	20.00	100.0 %	1902	1902
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

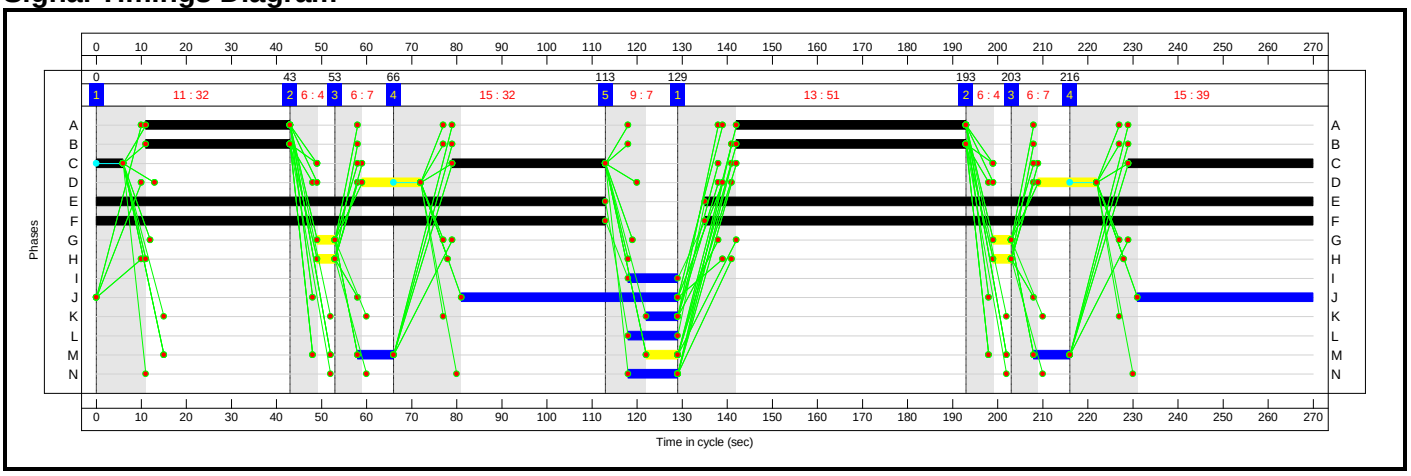


Stage Timings

Stage	1	2	3	4	5	1	2	3	4
Duration	32	4	7	32	7	51	4	7	39
Change Point	0	43	53	66	113	129	193	203	216

Full Input Data And Results

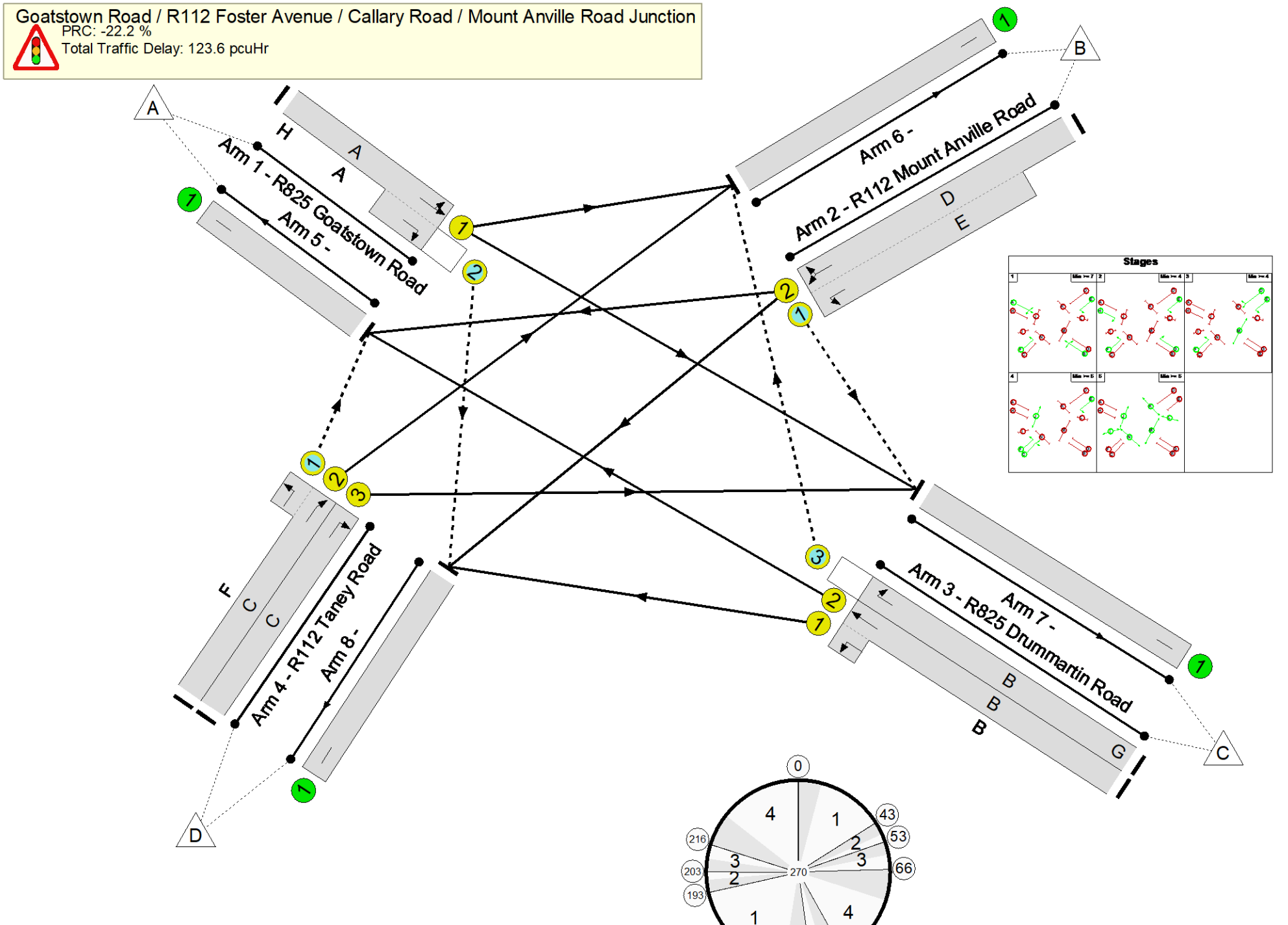
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.0%**
Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.0%**
1/1+1/2	R825 Goatstown Road Left Ahead Right	U+O	N/A	N/A	A	H	2:4	83:91	8	320	1905:1746	316+118	73.7 : 73.7%
2/2+2/1	R112 Mount Anville Road Right Left Ahead	U+O	N/A	N/A	D E		2:1	26:248	-	315	1955:1747	203+150	89.3 : 89.3%
3/2+3/1	R825 Drummartin Road Ahead Left	U	N/A	N/A	B		2	83	-	685	1945:1753	414+209	110.0 : 110.0%
3/3	R825 Drummartin Road Right	O	N/A	N/A	B	G	4	91	8	125	1667	332	37.6%
4/2+4/1	R112 Taney Road Left Ahead	U+O	N/A	N/A	C F		2:1	81:248	-	711	1805:1847	264+385	109.5 : 109.5%
4/3	R112 Taney Road Right	U	N/A	N/A	C		2	81	-	270	1902	585	46.2%
5/1		U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**206**	**467**	**58**	**45.4**	**77.3**	**0.9**	**123.6**	**-**	**-**	**-**	**-**
Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**206**	**467**	**58**	**45.4**	**77.3**	**0.9**	**123.6**	**-**	**-**	**-**	**-**
1/1+1/2	320	320	0	31	56	3.3	1.4	0.6	5.2	59.0	8.8	1.4	10.2
2/2+2/1	315	315	82	52	0	3.2	3.5	-	6.7	76.3	7.5	3.5	11.0
3/2+3/1	685	623	-	-	-	17.6	35.9	-	53.5	281.4	37.2	35.9	73.1
3/3	125	125	116	7	2	1.1	0.3	0.3	1.7	48.9	3.9	0.3	4.2
4/2+4/1	711	649	8	377	0	17.2	35.8	-	53.0	268.4	56.9	35.8	92.7
4/3	270	270	-	-	-	3.0	0.4	-	3.4	45.4	10.0	0.4	10.5
5/1	799	799	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	390	390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	477	477	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

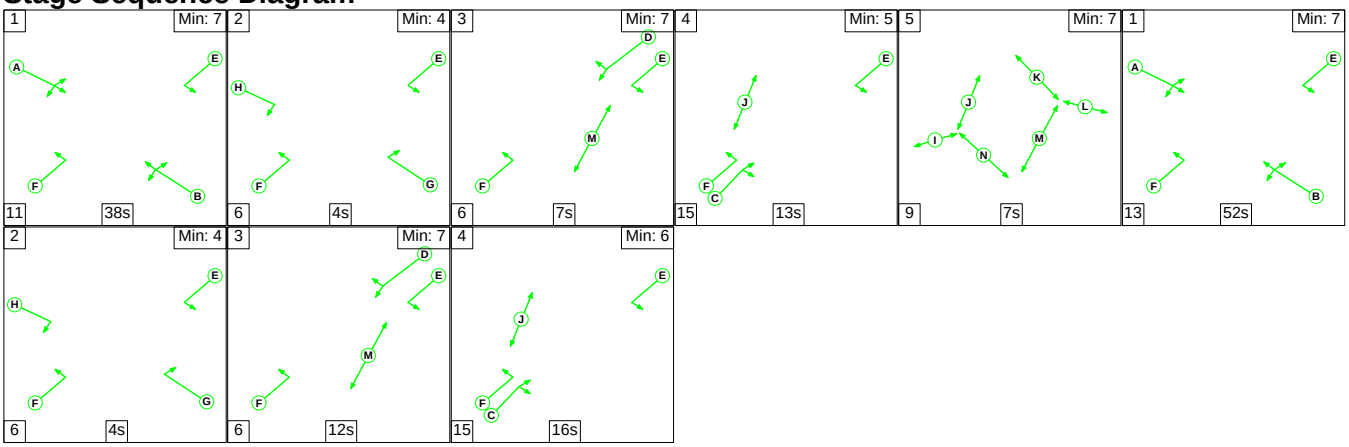
C1 PRC for Signalled Lanes (%): -22.2 Total Delay for Signalled Lanes (pcuHr): 123.57 Cycle Time (s): 270

PRC Over All Lanes (%): -22.2 Total Delay Over All Lanes(pcuHr): 123.57

Full Input Data And Results

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

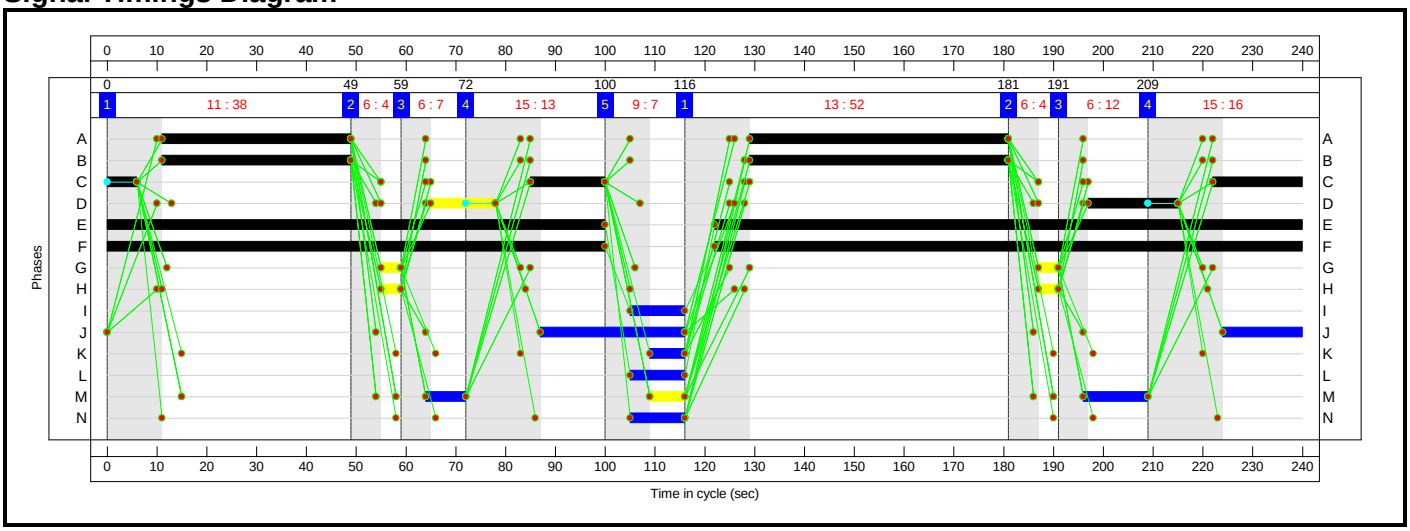
Stage Sequence Diagram



Stage Timings

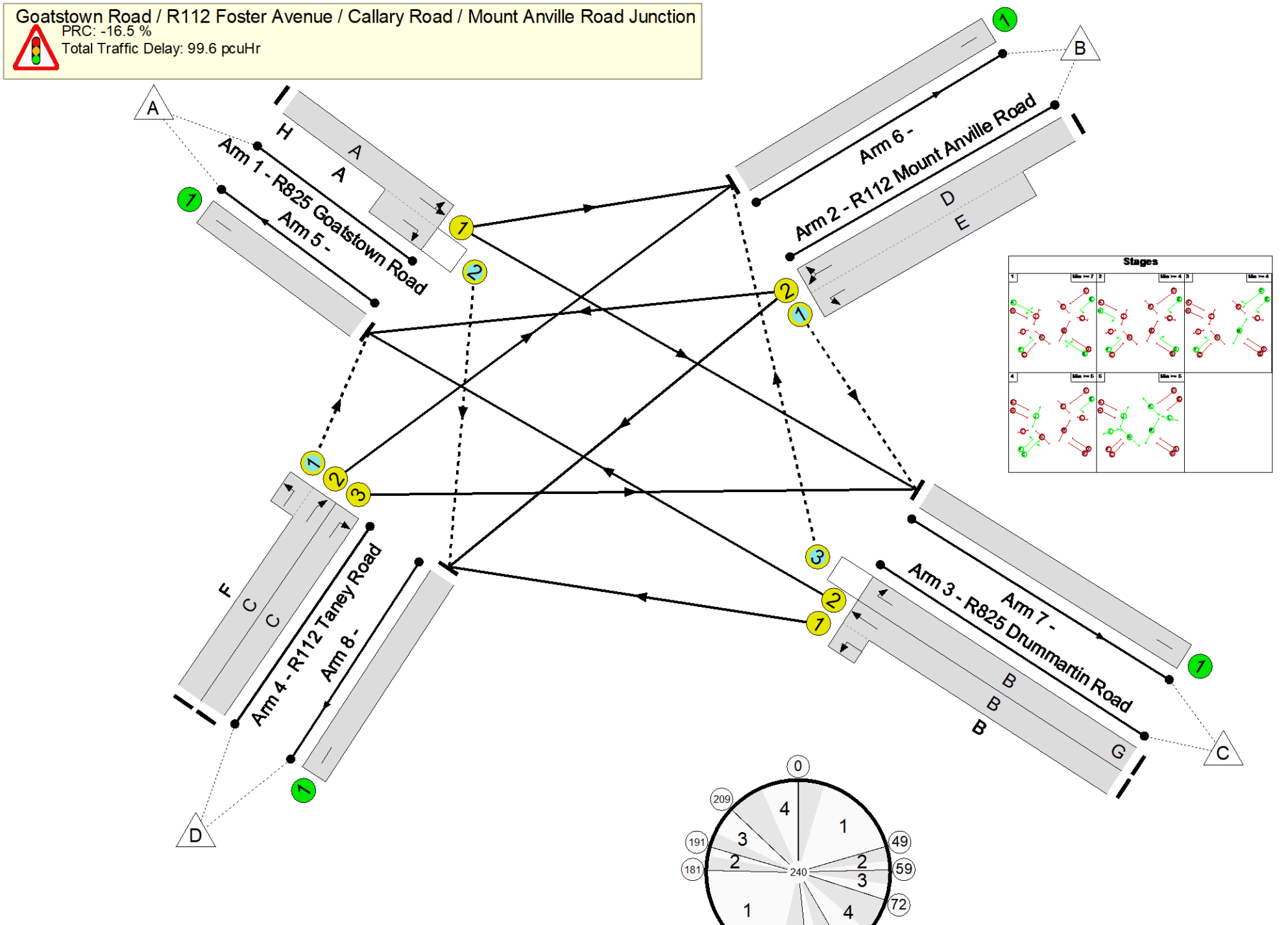
Stage	1	2	3	4	5	1	2	3	4
Duration	38	4	7	13	7	52	4	12	16
Change Point	0	49	59	72	100	116	181	191	209

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction
PRC: -16.5 %
Total Traffic Delay: 99.6 pcuHr
A
B
C
D
Arm 1 - R825 Goatstown Road
Arm 2 - R112 Mount Anville Road
Arm 3 - R825 Drummartin Road
Arm 4 - R112 Taney Road
Arm 5 -
Arm 6 -
Arm 7 -
Arm 8 -
Stages
0
209
191
181
240
49
59
72
4
1
3
2
2
3
1
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.8%**
Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.8%**
1/1+1/2	R825 Goatstown Road Left Ahead Right	U+O	N/A	N/A	A	H	2:4	90:98	8	277	1905:1746	327+133	60.3 : 60.3%
2/2+2/1	R112 Mount Anville Road Right Left Ahead	U+O	N/A	N/A	D E		2:1	31:218	-	973	1955:1747	269+672	103.4 : 103.4%
3/2+3/1	R825 Drummartin Road Ahead Left	U	N/A	N/A	B		2	90	-	792	1945:1753	465+293	104.4 : 104.4%
3/3	R825 Drummartin Road Right	O	N/A	N/A	B	G	4	98	8	62	1667	484	12.8%
4/2+4/1	R112 Taney Road Left Ahead	U+O	N/A	N/A	C F		2:1	39:218	-	413	1805:1847	180+214	104.8 : 104.8%
4/3	R112 Taney Road Right	U	N/A	N/A	C		2	39	-	216	1902	325	66.5%
5/1		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1108	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	664	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**449**	**539**	**62**	**30.6**	**68.2**	**0.8**	**99.6**	**-**	**-**	**-**	**-**
Goatstown Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**449**	**539**	**62**	**30.6**	**68.2**	**0.8**	**99.6**	**-**	**-**	**-**	**-**
1/1+1/2	277	277	0	19	61	1.9	0.8	0.7	3.3	43.5	5.4	0.8	6.2
2/2+2/1	973	964	383	312	0	6.6	25.6	-	32.1	118.9	15.3	25.6	40.9
3/2+3/1	792	758	-	-	-	12.2	24.8	-	37.0	168.2	32.7	24.8	57.5
3/3	62	62	57	4	1	0.3	0.1	0.1	0.5	28.1	1.2	0.1	1.3
4/2+4/1	413	394	9	205	0	6.7	16.0	-	22.7	197.9	17.1	16.0	33.1
4/3	216	216	-	-	-	2.9	1.0	-	3.9	64.9	8.2	1.0	9.1
5/1	679	679	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	242	242	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1108	1108	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

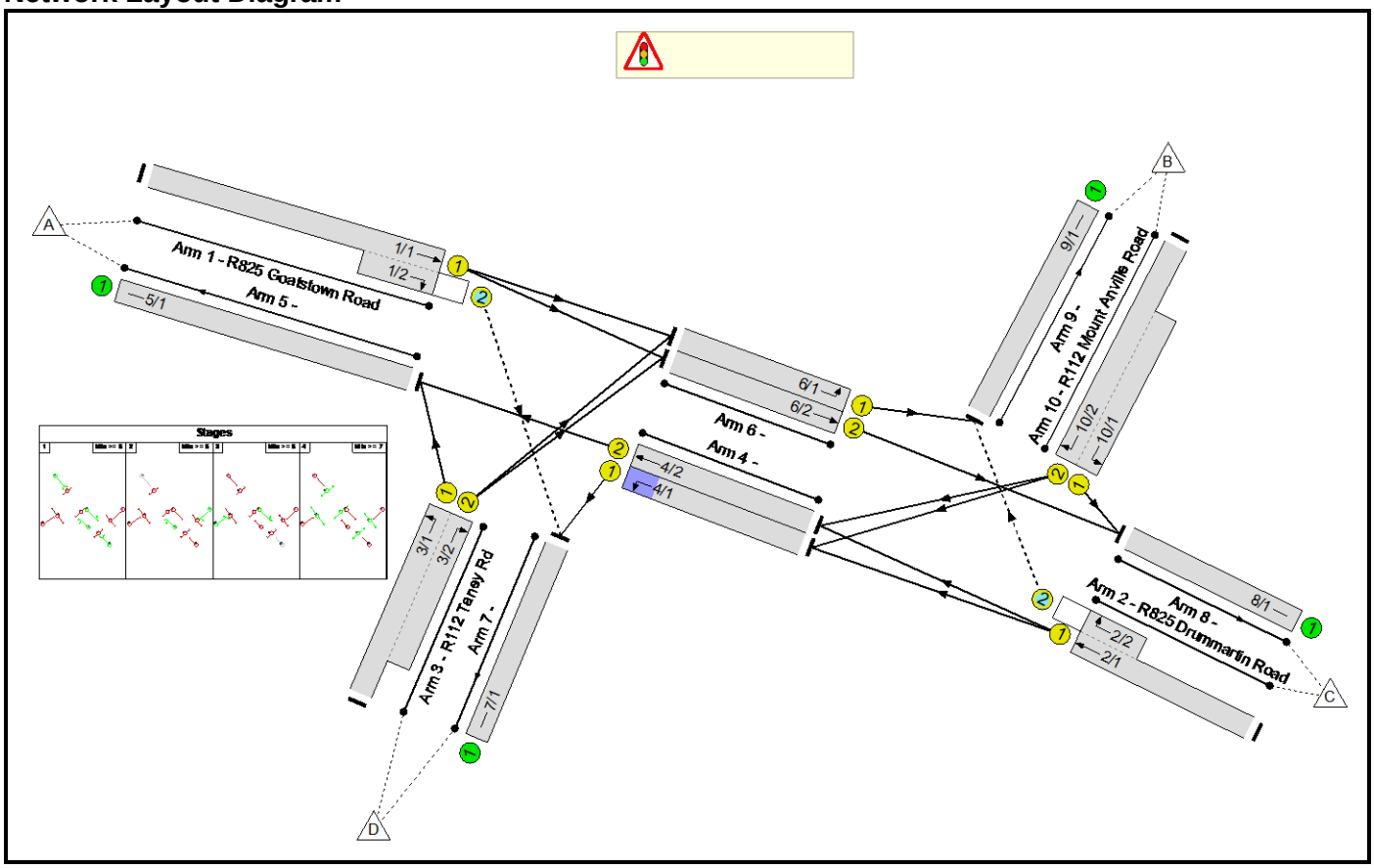
C1 PRC for Signalled Lanes (%): -16.5 Total Delay for Signalled Lanes (pcuHr): 99.58 Cycle Time (s): 240
PRC Over All Lanes (%): -16.5 Total Delay Over All Lanes(pcuHr): 99.58

Full Input Data And Results

User and Project Details

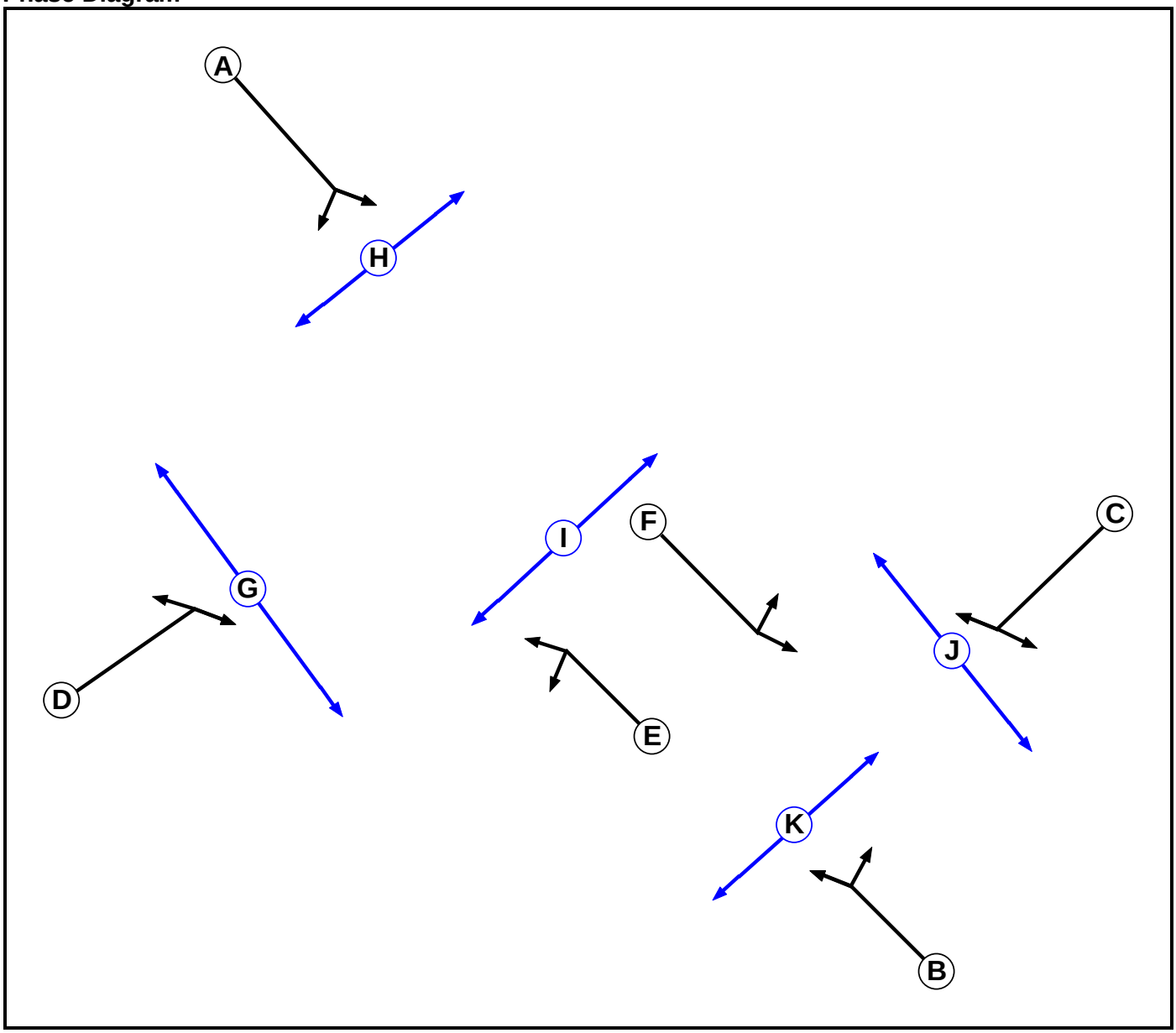
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	
Location:	
Additional detail:	
File name:	R112_R825 Proposed v2 Option 1.lsg3x
Author:	
Company:	RAMBOLL
Address:	The Exchange, St John St, Chester CH1 1DA

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

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

Full Input Data And Results

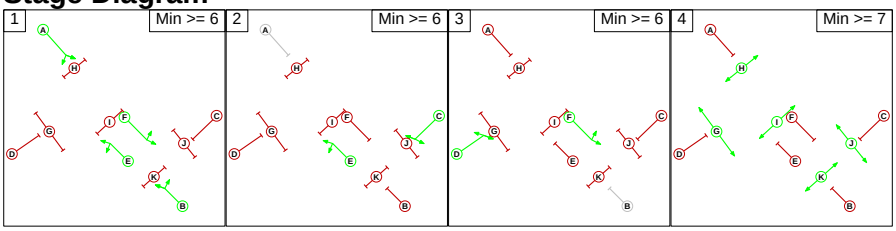
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K
A		-	-	6	-	-	7	5	7	-	-
B	-		6	-	-	-	-	-	-	7	5
C	-	5		-	-	6	-	-	-	5	7
D	5	-	-		6	-	5	6	7	-	-
E	-	-	-	5		-	6	7	5	-	-
F	-	-	5	-	-		-	-	-	6	7
G	10	-	-	10	10	-		-	-	-	-
H	10	-	-	10	10	-	-		-	-	-
I	10	-	-	10	10	-	-	-		-	-
J	-	11	11	-	-	11	-	-	-		-
K	-	10	10	-	-	10	-	-	-	-	

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	F	Losing	1	1
2	3	E	Losing	3	3

Prohibited Stage Change

From Stage \ To Stage	1	2	3	4
1		6	6	7
2	6		8	7
3	6	6		7
4	11	11	11	

Full Input Data And Results

Give-Way Lane Input Data

Junction:											
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)**
1/2 (R825 Goatstown Road)	7/1 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	2	2.00
				4/2	1.09	All					
2/2 (R825 Drummartin Road)	9/1 (Right)	1439	0	6/1	1.09	All	2.00	-	0.50	2	2.00
				6/2	1.09	All					

Full Input Data And Results

Lane Input Data

Junction:												
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 (R825 Goatstown Road)	U	A	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 6 Ahead	Inf
1/2 (R825 Goatstown Road)	O	A	2	3	5.0	Geom	-	2.90	0.00	N	Arm 7 Right	12.33
2/1 (R825 Drummartin Road)	U	B	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Ahead	Inf
2/2 (R825 Drummartin Road)	O	B	2	3	4.0	Geom	-	3.20	0.00	N	Arm 9 Right	12.50
3/1 (R112 Taney Rd)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Left	5.40
3/2 (R112 Taney Rd)	U	D	2	3	13.9	Geom	-	3.25	0.00	N	Arm 6 Right	16.00
4/1	U	E	2	3	7.0	Geom	-	2.60	0.00	Y	Arm 7 Left	9.00
4/2	U	E	2	3	7.0	Geom	-	2.60	0.00	N	Arm 5 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U	F	2	3	7.0	Geom	-	4.60	0.00	Y	Arm 9 Left	16.60
6/2	U	F	2	3	7.0	Geom	-	2.60	0.00	N	Arm 8 Ahead	Inf
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (R112 Mount Anville Road)	U	C	2	3	11.1	Geom	-	3.70	0.00	Y	Arm 8 Left	6.80
10/2 (R112 Mount Anville Road)	U	C	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 4 Right	11.50

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Do Nothing 2021, AM'	08:00	09:00	01:00	
2: 'Do Nothing 2021, PM'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1	232	87	320
	B	0	0	134	181	315
	C	455	125	0	230	810
	D	422	289	270	0	981
	Tot.	877	415	636	498	2426

Traffic Lane Flows

Lane	Scenario 1: 1
Junction:	
1/1 (with short)	320(In) 233(Out)
1/2 (short)	87
2/1 (with short)	810(In) 685(Out)
2/2 (short)	125
3/1 (with short)	981(In) 422(Out)
3/2 (short)	559
4/1	411
4/2	455
5/1	877
6/1	290
6/2	502
7/1	498
8/1	636
9/1	415
10/1 (short)	134
10/2 (with short)	315(In) 181(Out)

Full Input Data And Results

Lane Saturation Flows

Junction:								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
1/2 (R825 Goatstown Road)	2.90	0.00	N	Arm 7 Right	12.33	100.0 %	1823	1823
2/1 (R825 Drummartin Road)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (R825 Drummartin Road)	3.20	0.00	N	Arm 9 Right	12.50	100.0 %	1853	1853
3/1 (R112 Taney Rd)	3.25	0.00	Y	Arm 5 Left	5.40	100.0 %	1518	1518
3/2 (R112 Taney Rd)	3.25	0.00	N	Arm 6 Right	16.00	100.0 %	1902	1902
4/1	2.60	0.00	Y	Arm 7 Left	9.00	100.0 %	1607	1607
4/2	2.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2015	2015
5/1	Infinite Saturation Flow						Inf	Inf
6/1	4.60	0.00	Y	Arm 9 Left	16.60	100.0 %	1903	1903
6/2	2.60	0.00	N	Arm 8 Ahead	Inf	100.0 %	2015	2015
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 8 Left	6.80	100.0 %	1626	1626
10/2 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 4 Right	11.50	100.0 %	1756	1756

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	197	80	277
	B	0	0	695	278	973
	C	486	62	0	306	854
	D	224	189	216	0	629
	Tot.	710	251	1108	664	2733

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2
Junction:	
1/1 (with short)	277(In) 197(Out)
1/2 (short)	80
2/1 (with short)	854(In) 792(Out)
2/2 (short)	62
3/1 (with short)	629(In) 224(Out)
3/2 (short)	405
4/1	584
4/2	486
5/1	710
6/1	189
6/2	413
7/1	664
8/1	1108
9/1	251
10/1 (short)	695
10/2 (with short)	973(In) 278(Out)

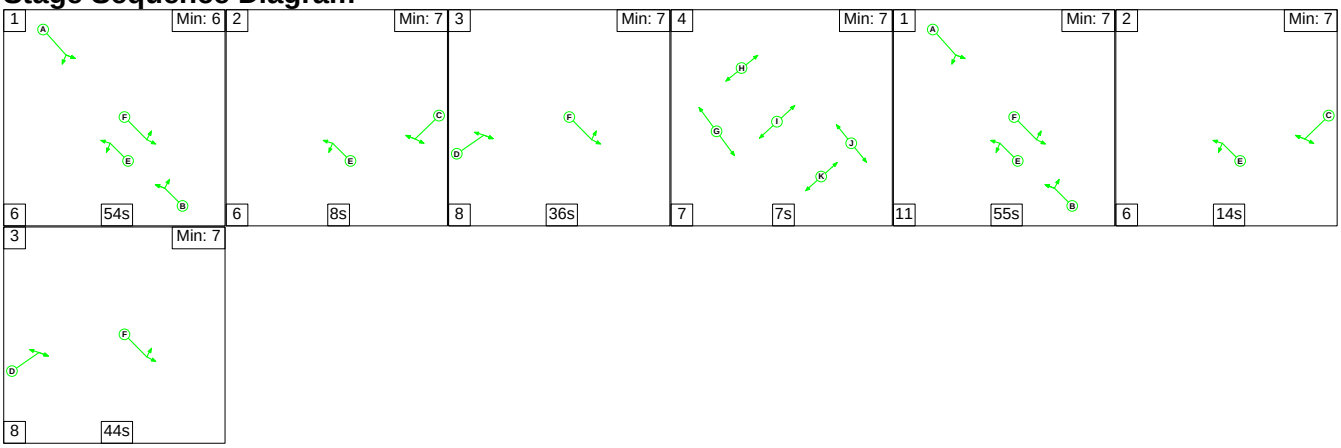
Full Input Data And Results

Lane Saturation Flows

Junction:								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
1/2 (R825 Goatstown Road)	2.90	0.00	N	Arm 7 Right	12.33	100.0 %	1823	1823
2/1 (R825 Drummartin Road)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (R825 Drummartin Road)	3.20	0.00	N	Arm 9 Right	12.50	100.0 %	1853	1853
3/1 (R112 Taney Rd)	3.25	0.00	Y	Arm 5 Left	5.40	100.0 %	1518	1518
3/2 (R112 Taney Rd)	3.25	0.00	N	Arm 6 Right	16.00	100.0 %	1902	1902
4/1	2.60	0.00	Y	Arm 7 Left	9.00	100.0 %	1607	1607
4/2	2.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2015	2015
5/1	Infinite Saturation Flow						Inf	Inf
6/1	4.60	0.00	Y	Arm 9 Left	16.60	100.0 %	1903	1903
6/2	2.60	0.00	N	Arm 8 Ahead	Inf	100.0 %	2015	2015
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 8 Left	6.80	100.0 %	1626	1626
10/2 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 4 Right	11.50	100.0 %	1756	1756

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

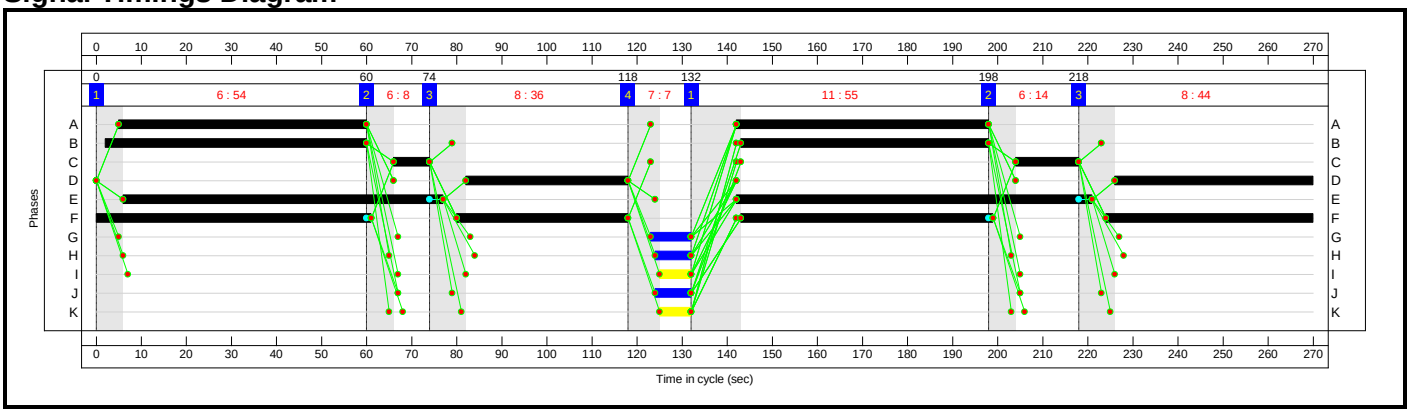


Stage Timings

Stage	1	2	3	4	1	2	3
Duration	54	8	36	7	55	14	44
Change Point	0	60	74	118	132	198	218

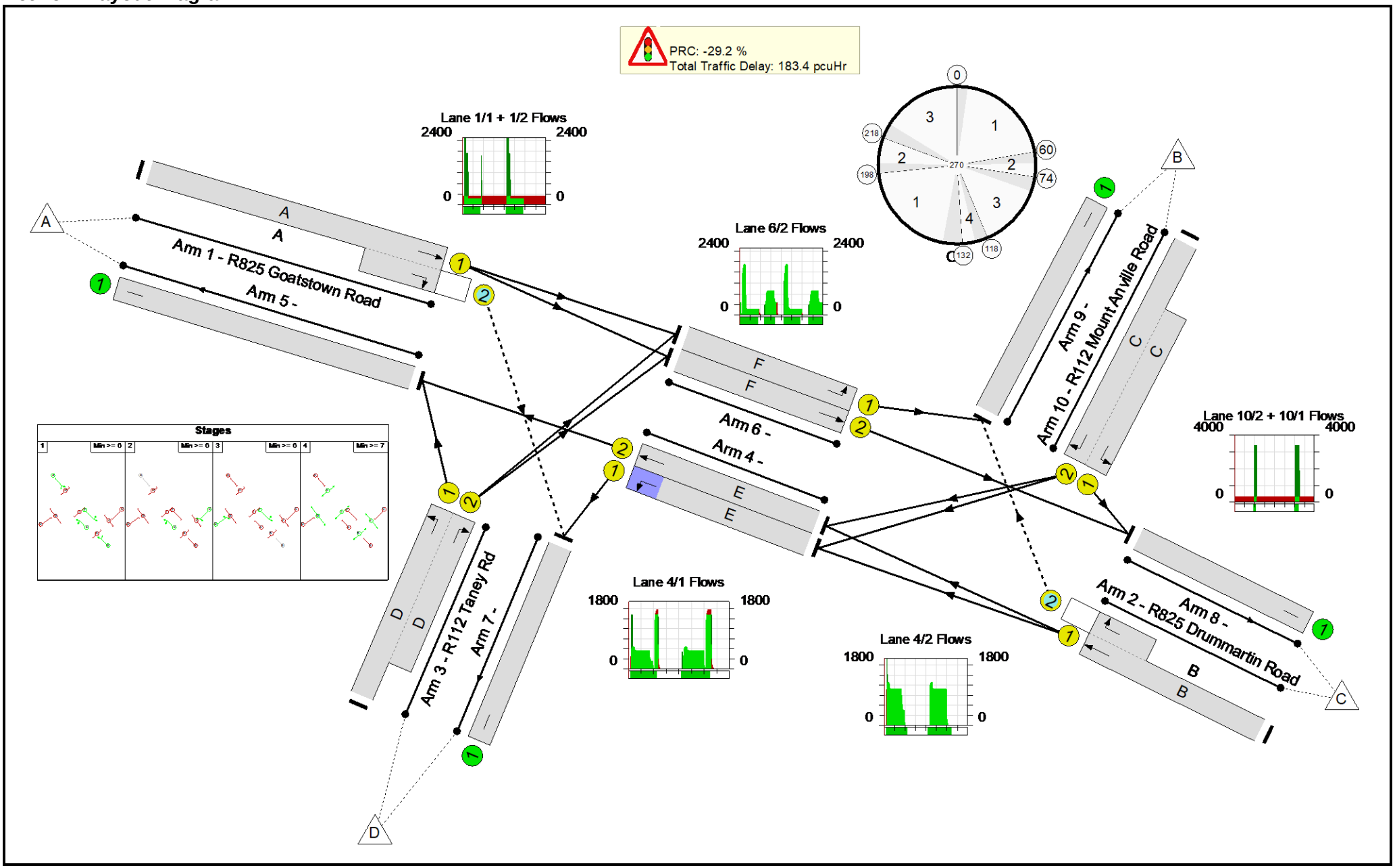
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.3%**
	-	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.3%**
1/1+1/2	R825 Goatstown Road Ahead Right	U+O	N/A	N/A	A		2	111	-	320	1905:1823	205+76	113.8 : 113.8%
2/1+2/2	R825 Drummartin Road Ahead Right	U+O	N/A	N/A	B		2	113	-	810	1935:1853	715+130	95.9 : 95.9%
3/1+3/2	R112 Taney Rd Left Right	U	N/A	N/A	D		2	80	-	981	1518:1902	363+481	116.3 : 116.3%
4/1	Left	U	N/A	N/A	E		2	150	-	411	1607	905	42.7%
4/2	Ahead	U	N/A	N/A	E		2	150	-	455	2015	1134	40.1%
5/1		U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
6/1	Left	U	N/A	N/A	F		3	201	-	290	1903	1438	17.3%
6/2	Ahead	U	N/A	N/A	F		3	201	-	502	2015	1522	30.5%
7/1		U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
10/2+10/1	R112 Mount Anville Road Right Left	U	N/A	N/A	C		2	22	-	315	1756:1626	156+116	116.0 : 116.0%

Full Input Data And Results

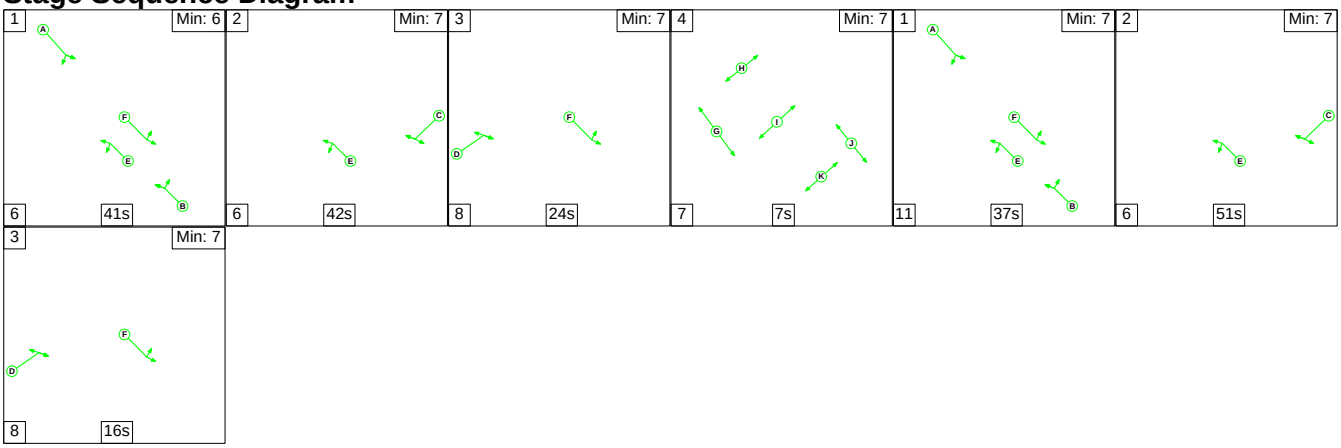
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**198**	**0**	**3**	**54.6**	**127.9**	**0.9**	**183.4**	**-**	**-**	**-**	**-**
	-	**-**	**198**	**0**	**3**	**54.6**	**127.9**	**0.9**	**183.4**	**-**	**-**	**-**	**-**
1/1+1/2	320	309	73	0	3	3.8	22.9	0.9	27.5	309.8	6.3	22.9	29.2
2/1+2/2	810	810	125	0	0	8.4	7.9	0.1	16.4	72.9	30.3	7.9	38.3
3/1+3/2	981	843	-	-	-	33.2	72.2	-	105.4	386.7	49.1	72.2	121.3
4/1	386	386	-	-	-	0.1	0.0	-	0.1	1.2	1.0	0.0	1.0
4/2	455	455	-	-	-	0.0	0.0	-	0.0	0.0	1.2	0.0	1.2
5/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	249	249	-	-	-	0.0	0.0	-	0.0	0.5	0.4	0.0	0.4
6/2	464	464	-	-	-	0.0	0.0	-	0.0	0.4	0.4	0.0	0.4
7/1	463	463	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	598	598	-	-	-	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
10/2+10/1	315	290	-	-	-	9.0	24.8	-	33.8	386.6	11.9	24.8	36.7

C1 PRC for Signalled Lanes (%): -29.2 Total Delay for Signalled Lanes (pcuHr): 183.37 Cycle Time (s): 270
PRC Over All Lanes (%): -29.2 Total Delay Over All Lanes(pcuHr): 183.37

Full Input Data And Results

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

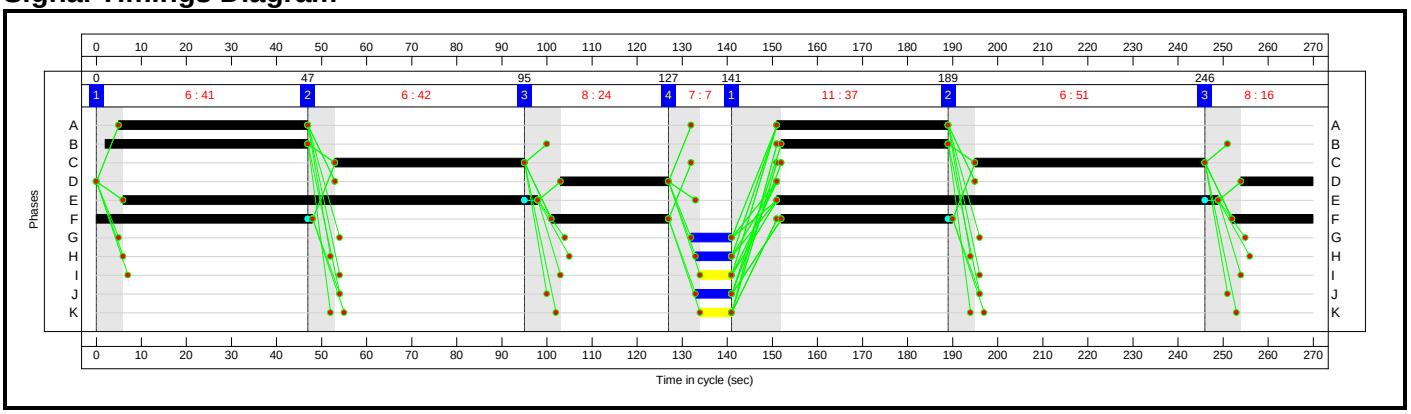
Stage Sequence Diagram



Stage Timings

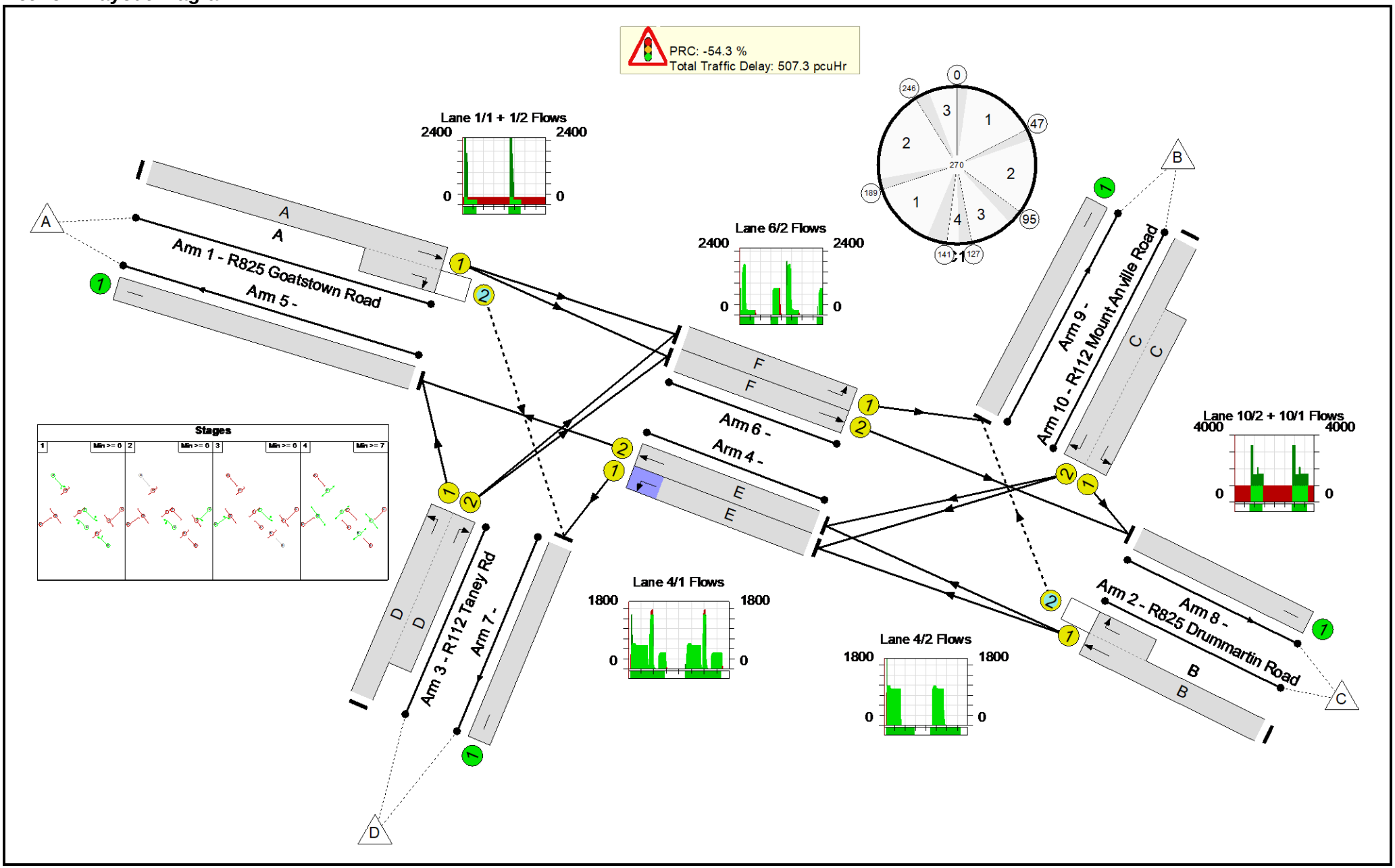
Stage	1	2	3	4	1	2	3
Duration	41	42	24	7	37	51	16
Change Point	0	47	95	127	141	189	246

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**138.8%**
	-	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**138.8%**
1/1+1/2	R825 Goatstown Road Ahead Right	U+O	N/A	N/A	A		2	80	-	277	1905:1823	171+70	115.1 : 115.1%
2/1+2/2	R825 Drummartin Road Ahead Right	U+O	N/A	N/A	B		2	82	-	854	1935:1853	570+45	138.8 : 138.8%
3/1+3/2	R112 Taney Rd Left Right	U	N/A	N/A	D		2	40	-	629	1518:1902	164+296	136.9 : 136.9%
4/1	Left	U	N/A	N/A	E		2	190	-	584	1607	1143	36.9%
4/2	Ahead	U	N/A	N/A	E		2	190	-	486	2015	1433	24.4%
5/1		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
6/1	Left	U	N/A	N/A	F		3	130	-	189	1903	937	14.7%
6/2	Ahead	U	N/A	N/A	F		3	130	-	413	2015	993	35.7%
7/1		U	N/A	N/A	-		-	-	-	664	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1108	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%
10/2+10/1	R112 Mount Anville Road Right Left	U	N/A	N/A	C		2	93	-	973	1756:1626	201+502	138.5 : 138.5%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**114**	**0**	**0**	**140.5**	**366.2**	**0.7**	**507.3**	**-**	**-**	**-**	**-**
	-	**-**	**114**	**0**	**0**	**140.5**	**366.2**	**0.7**	**507.3**	**-**	**-**	**-**	**-**
1/1+1/2	277	267	70	0	0	4.3	21.4	0.7	26.3	342.1	6.8	21.4	28.2
2/1+2/2	854	615	45	0	0	51.0	121.2	0.0	172.2	726.1	69.9	121.2	191.1
3/1+3/2	629	460	-	-	-	33.2	86.6	-	119.8	685.4	41.3	86.6	127.8
4/1	421	421	-	-	-	0.0	0.0	-	0.0	0.2	0.3	0.0	0.3
4/2	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.8	0.0	0.8
5/1	514	514	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	138	138	-	-	-	0.1	0.0	-	0.1	1.5	0.7	0.0	0.7
6/2	355	355	-	-	-	0.1	0.0	-	0.1	1.1	0.8	0.0	0.8
7/1	491	491	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	183	183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	973	703	-	-	-	51.9	137.0	-	188.8	698.6	80.4	137.0	217.4

C1

PRC for Signalled Lanes (%): -54.3
PRC Over All Lanes (%): -54.3

Total Delay for Signalled Lanes (pcuHr): 507.33
Total Delay Over All Lanes(pcuHr): 507.33

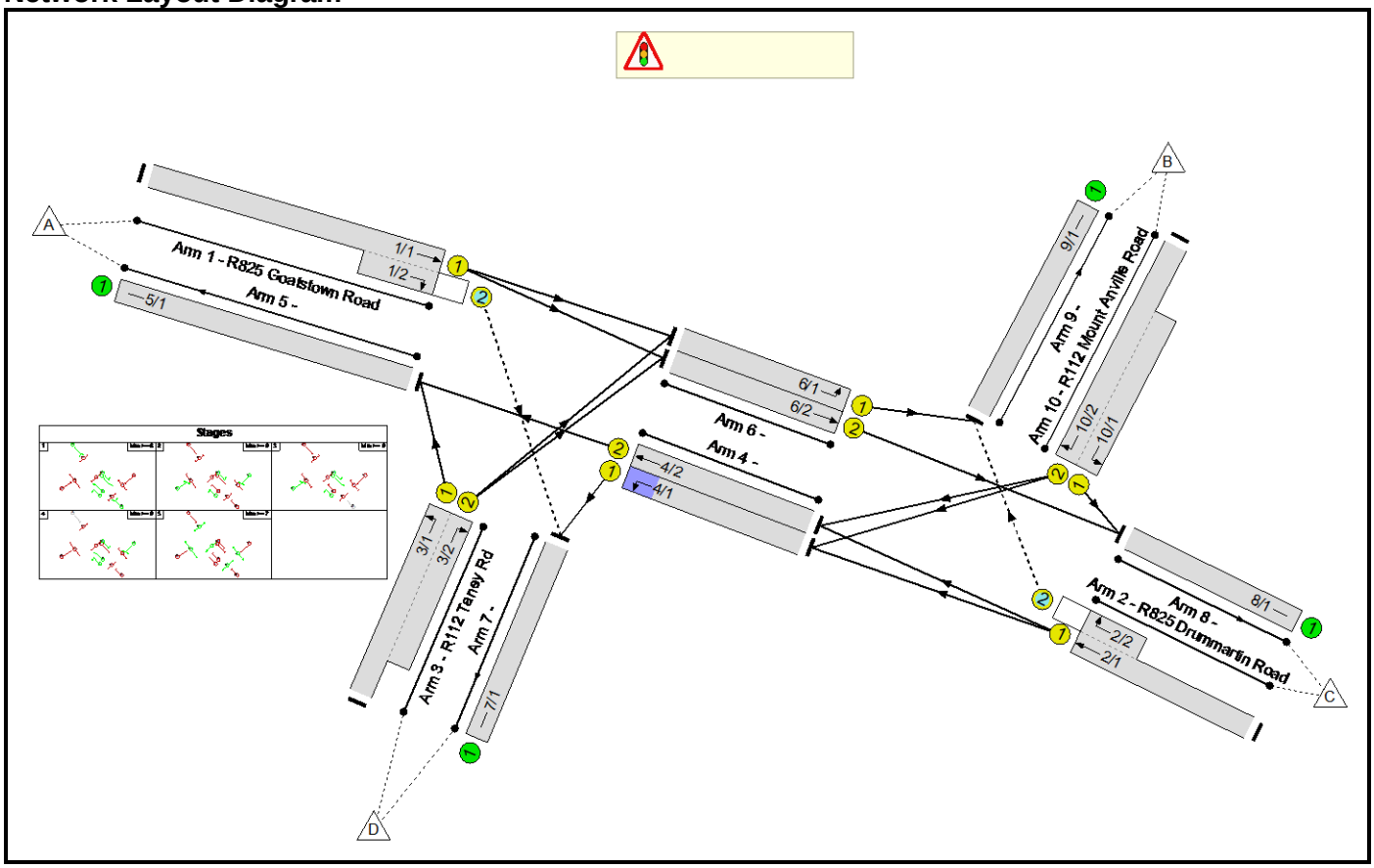
Cycle Time (s): 270

Full Input Data And Results

User and Project Details

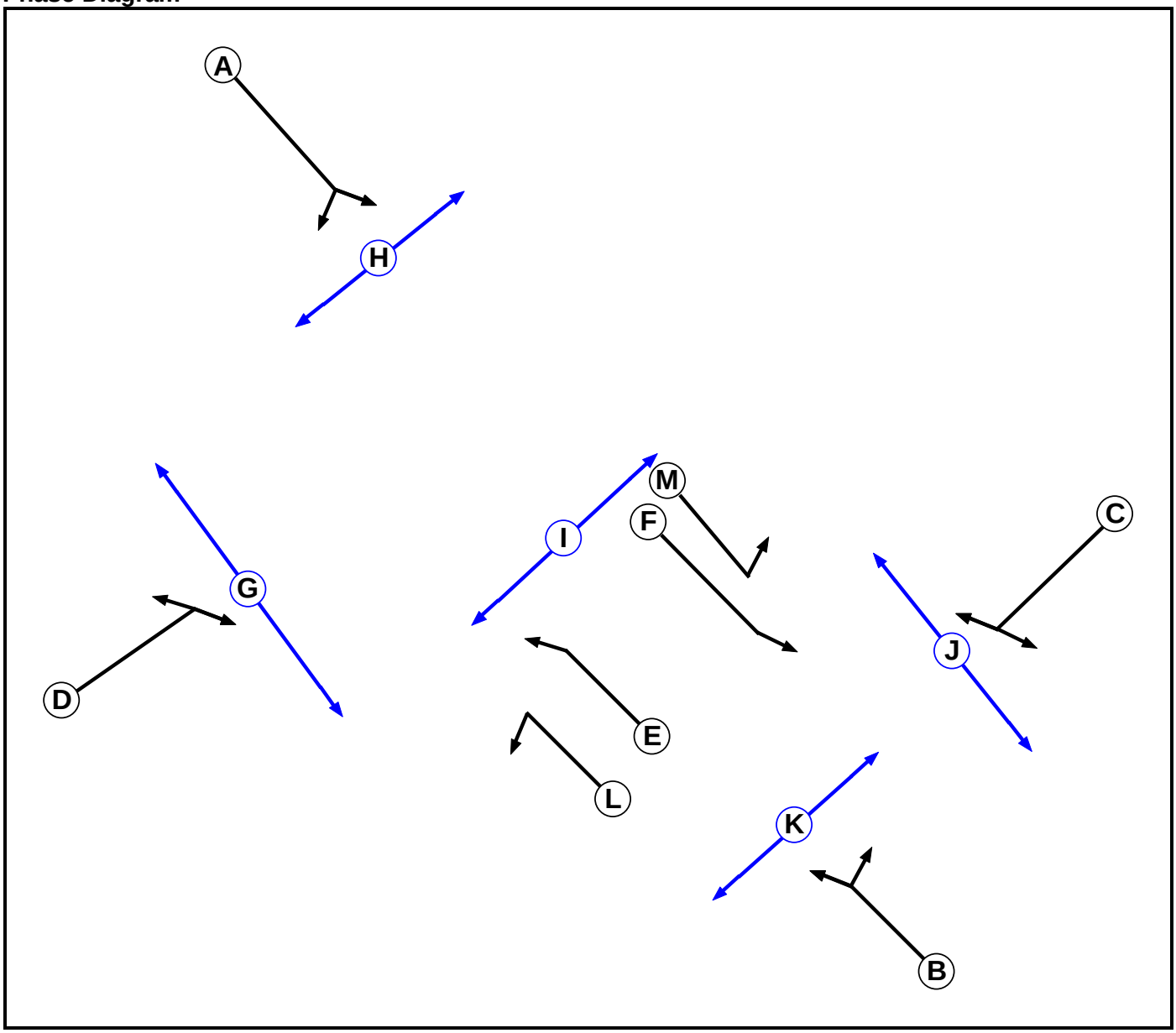
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	
Location:	
Additional detail:	
File name:	R112_R825 Proposed v2 -Left Filter Arrow _Option2.lsg3x
Author:	
Company:	RAMBOLL
Address:	The Exchange, St John St, Chester CH1 1DA

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

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

Phase Intergreens Matrix

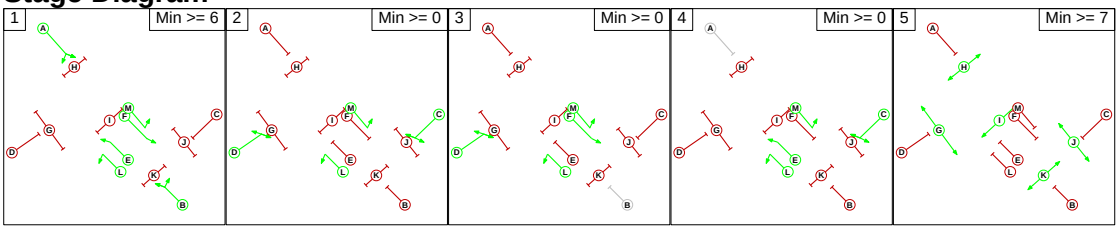
		Starting Phase												
		A	B	C	D	E	F	G	H	I	J	K	L	M
Terminating Phase	A		-	-	6	-	-	7	5	7	-	-	-	-
	B	-		6	-	-	-	-	-	-	7	5	-	-
	C	-	5		-	-	6	-	-	-	5	7	-	-
	D	5	-	-		6	-	5	6	7	-	-	-	-
	E	-	-	-	5		-	-	7	5	-	-	-	-
	F	-	-	5	-	-		-	-	-	-	7	-	-
	G	10	-	-	10	-	-		-	-	-	-	10	-
	H	10	-	-	10	10	-	-		-	-	-	-	-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

Phases in Stage

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

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	1	1
1	2	F	Losing	1	1
1	3	E	Losing	1	1
1	4	F	Losing	1	1
1	5	B	Losing	2	2

Prohibited Stage Change

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

Full Input Data And Results

Give-Way Lane Input Data

Junction:											
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)**
1/2 (R825 Goatstown Road)	7/1 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	2	2.00
				4/2	1.09	All					
2/2 (R825 Drummartin Road)	9/1 (Right)	1439	0	6/1	1.09	All	2.00	-	0.50	2	2.00
				6/2	1.09	All					

Full Input Data And Results

Lane Input Data

Junction:												
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 (R825 Goatstown Road)	U	A	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 6 Ahead	Inf
1/2 (R825 Goatstown Road)	O	A	2	3	5.0	Geom	-	2.90	0.00	N	Arm 7 Right	12.33
2/1 (R825 Drummartin Road)	U	B	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Ahead	Inf
2/2 (R825 Drummartin Road)	O	B	2	3	4.0	Geom	-	3.20	0.00	N	Arm 9 Right	12.50
3/1 (R112 Taney Rd)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Left	5.40
3/2 (R112 Taney Rd)	U	D	2	3	13.9	Geom	-	3.25	0.00	N	Arm 6 Right	16.00
4/1	U	L	2	3	7.0	Geom	-	2.60	0.00	Y	Arm 7 Left	9.00
4/2	U	E	2	3	7.0	Geom	-	2.60	0.00	N	Arm 5 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U	M	2	3	7.0	Geom	-	4.60	0.00	Y	Arm 9 Left	16.60
6/2	U	F	2	3	7.0	Geom	-	2.60	0.00	N	Arm 8 Ahead	Inf
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (R112 Mount Anville Road)	U	C	2	3	11.1	Geom	-	3.70	0.00	Y	Arm 8 Left	6.80
10/2 (R112 Mount Anville Road)	U	C	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 4 Right	11.50

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Do Nothing 2021, AM'	08:00	09:00	01:00	
2: 'Do Nothing 2021, PM'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1	232	87	320
	B	0	0	134	181	315
	C	455	125	0	230	810
	D	422	289	270	0	981
	Tot.	877	415	636	498	2426

Traffic Lane Flows

Lane	Scenario 1: 1
Junction:	
1/1 (with short)	320(In) 233(Out)
1/2 (short)	87
2/1 (with short)	810(In) 685(Out)
2/2 (short)	125
3/1 (with short)	981(In) 422(Out)
3/2 (short)	559
4/1	411
4/2	455
5/1	877
6/1	290
6/2	502
7/1	498
8/1	636
9/1	415
10/1 (short)	134
10/2 (with short)	315(In) 181(Out)

Full Input Data And Results

Lane Saturation Flows

Junction:								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
1/2 (R825 Goatstown Road)	2.90	0.00	N	Arm 7 Right	12.33	100.0 %	1823	1823
2/1 (R825 Drummartin Road)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (R825 Drummartin Road)	3.20	0.00	N	Arm 9 Right	12.50	100.0 %	1853	1853
3/1 (R112 Taney Rd)	3.25	0.00	Y	Arm 5 Left	5.40	100.0 %	1518	1518
3/2 (R112 Taney Rd)	3.25	0.00	N	Arm 6 Right	16.00	100.0 %	1902	1902
4/1	2.60	0.00	Y	Arm 7 Left	9.00	100.0 %	1607	1607
4/2	2.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2015	2015
5/1	Infinite Saturation Flow						Inf	Inf
6/1	4.60	0.00	Y	Arm 9 Left	16.60	100.0 %	1903	1903
6/2	2.60	0.00	N	Arm 8 Ahead	Inf	100.0 %	2015	2015
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 8 Left	6.80	100.0 %	1626	1626
10/2 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 4 Right	11.50	100.0 %	1756	1756

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	197	80	277
	B	0	0	695	278	973
	C	486	62	0	306	854
	D	224	189	216	0	629
	Tot.	710	251	1108	664	2733

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2
Junction:	
1/1 (with short)	277(In) 197(Out)
1/2 (short)	80
2/1 (with short)	854(In) 792(Out)
2/2 (short)	62
3/1 (with short)	629(In) 224(Out)
3/2 (short)	405
4/1	584
4/2	486
5/1	710
6/1	189
6/2	413
7/1	664
8/1	1108
9/1	251
10/1 (short)	695
10/2 (with short)	973(In) 278(Out)

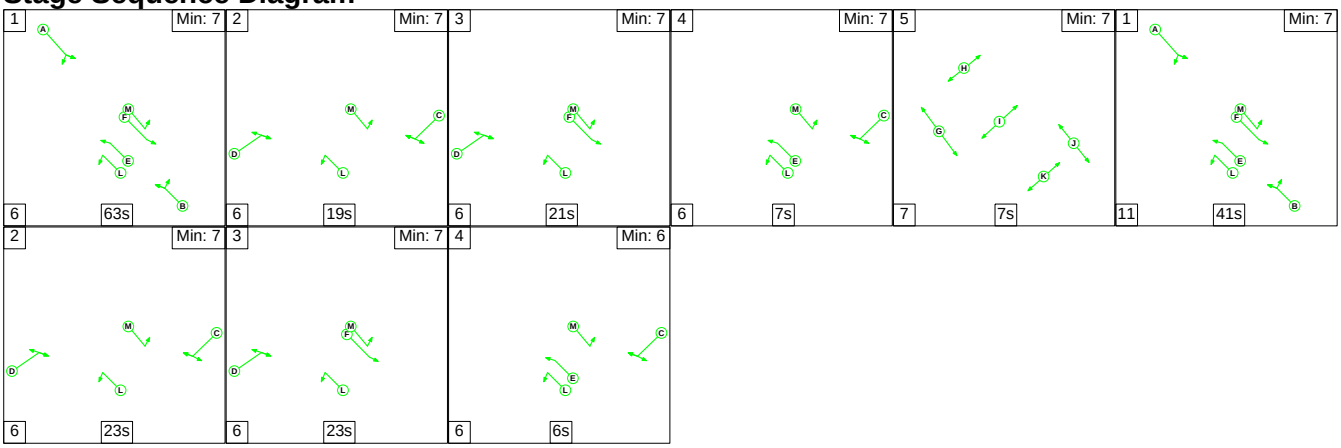
Full Input Data And Results

Lane Saturation Flows

Junction:								
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 (R825 Goatstown Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
1/2 (R825 Goatstown Road)	2.90	0.00	N	Arm 7 Right	12.33	100.0 %	1823	1823
2/1 (R825 Drummartin Road)	3.20	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1935	1935
2/2 (R825 Drummartin Road)	3.20	0.00	N	Arm 9 Right	12.50	100.0 %	1853	1853
3/1 (R112 Taney Rd)	3.25	0.00	Y	Arm 5 Left	5.40	100.0 %	1518	1518
3/2 (R112 Taney Rd)	3.25	0.00	N	Arm 6 Right	16.00	100.0 %	1902	1902
4/1	2.60	0.00	Y	Arm 7 Left	9.00	100.0 %	1607	1607
4/2	2.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2015	2015
5/1	Infinite Saturation Flow						Inf	Inf
6/1	4.60	0.00	Y	Arm 9 Left	16.60	100.0 %	1903	1903
6/2	2.60	0.00	N	Arm 8 Ahead	Inf	100.0 %	2015	2015
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 8 Left	6.80	100.0 %	1626	1626
10/2 (R112 Mount Anville Road)	3.70	0.00	Y	Arm 4 Right	11.50	100.0 %	1756	1756

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

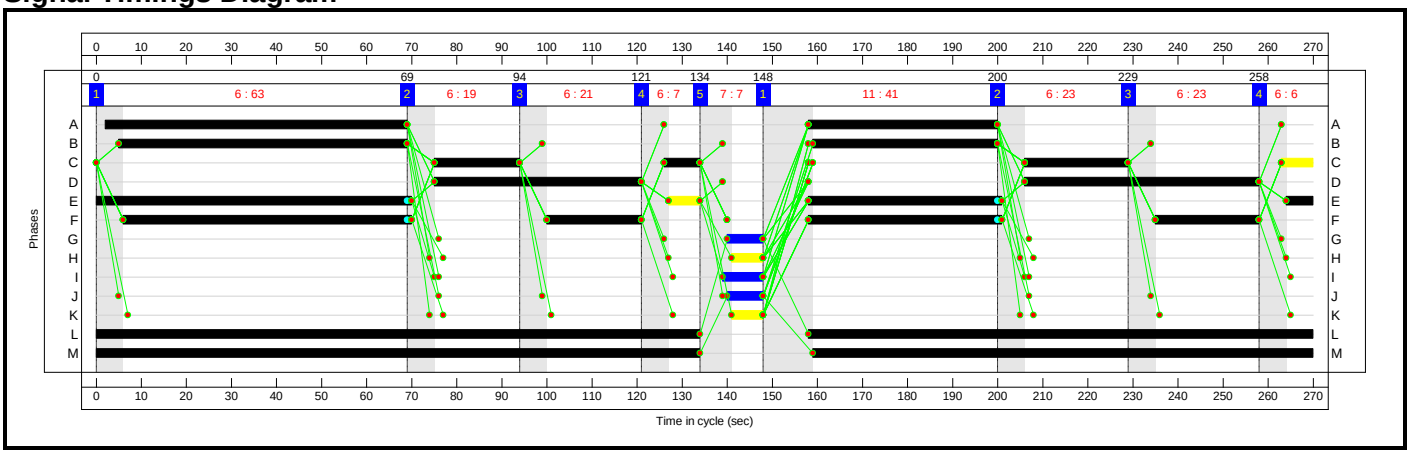


Stage Timings

Stage	1	2	3	4	5	1	2	3	4
Duration	63	19	21	7	7	41	23	23	6
Change Point	0	69	94	121	134	148	200	229	258

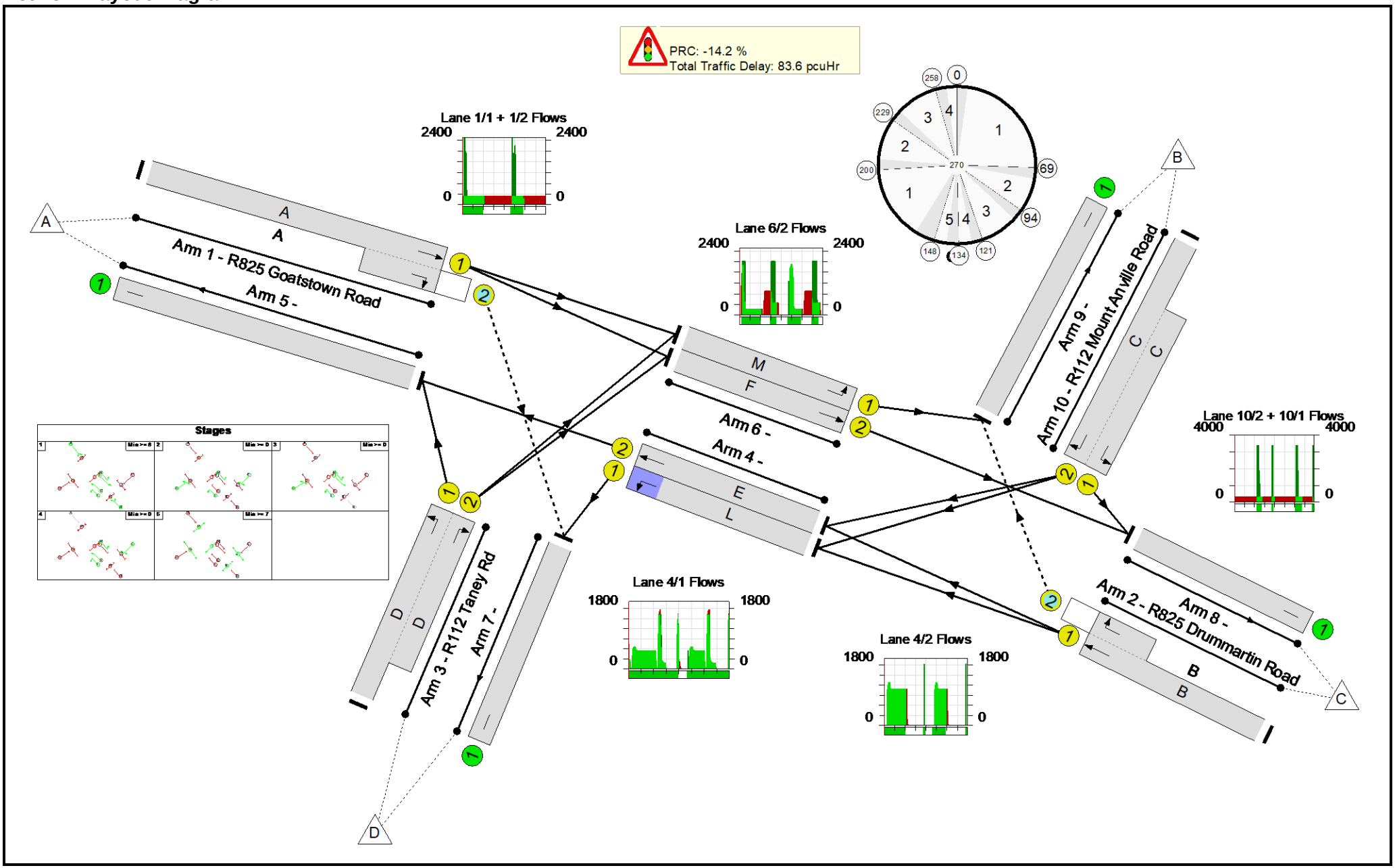
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.8%**
	-	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.8%**
1/1+1/2	R825 Goatstown Road Ahead Right	U+O	N/A	N/A	A		2	109	-	320	1905:1823	251+94	92.8 : 92.8%
2/1+2/2	R825 Drummartin Road Ahead Right	U+O	N/A	N/A	B		2	105	-	810	1935:1853	666+122	102.8 : 102.8%
3/1+3/2	R112 Taney Rd Left Right	U	N/A	N/A	D		2	98	-	981	1518:1902	412+546	102.4 : 102.4%
4/1	Left	U	N/A	N/A	L		1	246	-	411	1607	1470	27.5%
4/2	Ahead	U	N/A	N/A	E		3	126	-	455	2015	963	46.0%
5/1		U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
6/1	Left	U	N/A	N/A	M		1	245	-	290	1903	1734	16.3%
6/2	Ahead	U	N/A	N/A	F		4	151	-	502	2015	1157	42.8%
7/1		U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
10/2+10/1	R112 Mount Anville Road Right Left	U	N/A	N/A	C		4	57	-	315	1756:1626	392+290	46.2 : 46.2%

Full Input Data And Results

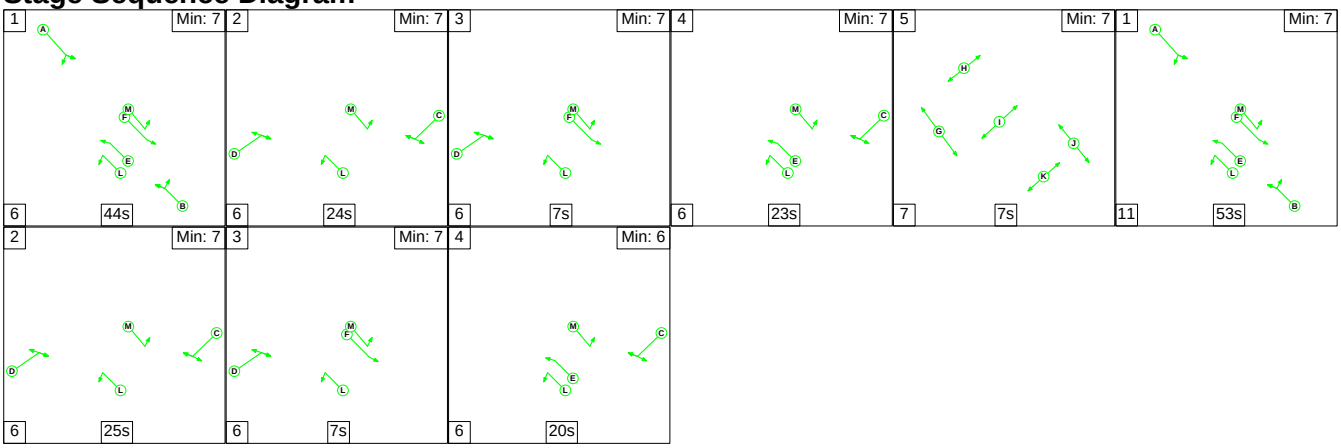
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**209**	**0**	**0**	**34.7**	**48.4**	**0.5**	**83.6**	**-**	**-**	**-**	**-**
	-	**-**	**209**	**0**	**0**	**34.7**	**48.4**	**0.5**	**83.6**	**-**	**-**	**-**	**-**
1/1+1/2	320	320	87	0	0	2.4	4.7	0.5	7.5	84.5	7.1	4.7	11.8
2/1+2/2	810	788	122	0	0	14.9	20.7	0.1	35.7	158.6	38.9	20.7	59.6
3/1+3/2	981	958	-	-	-	13.8	22.5	-	36.4	133.5	31.2	22.5	53.7
4/1	405	405	-	-	-	0.0	0.0	-	0.0	0.2	0.2	0.0	0.2
4/2	443	443	-	-	-	0.2	0.0	-	0.2	1.8	0.5	0.0	0.5
5/1	855	855	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	283	283	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	496	496	-	-	-	1.1	0.0	-	1.1	7.7	9.0	0.0	9.0
7/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	630	630	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	315	315	-	-	-	2.2	0.4	-	2.7	30.6	4.1	0.4	4.6

C1 PRC for Signalled Lanes (%): -14.2 Total Delay for Signalled Lanes (pcuHr): 83.56 Cycle Time (s): 270
PRC Over All Lanes (%): -14.2 Total Delay Over All Lanes(pcuHr): 83.56

Full Input Data And Results

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

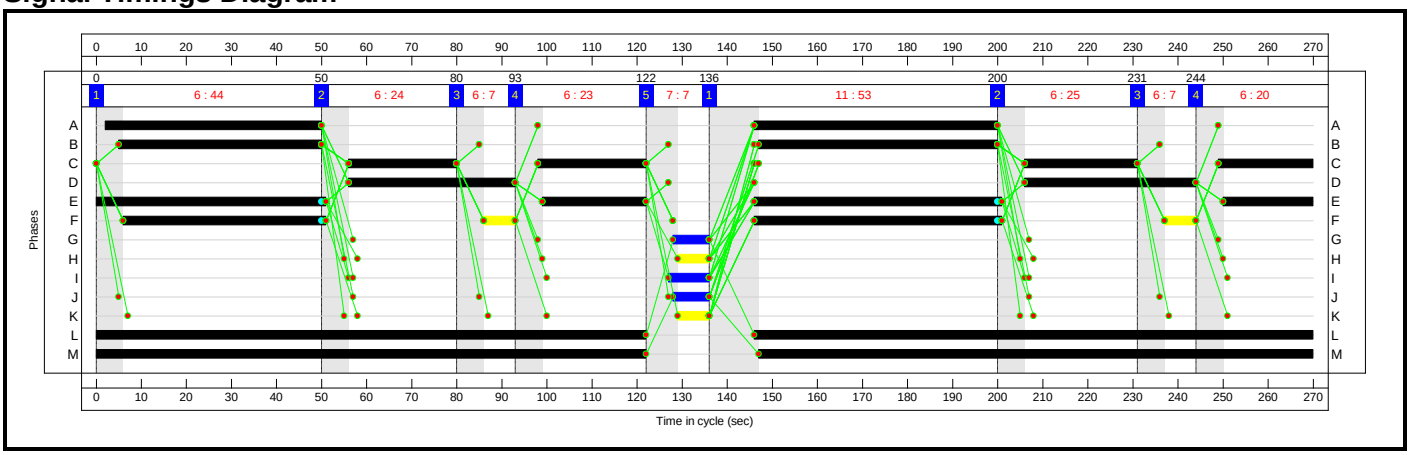
Stage Sequence Diagram



Stage Timings

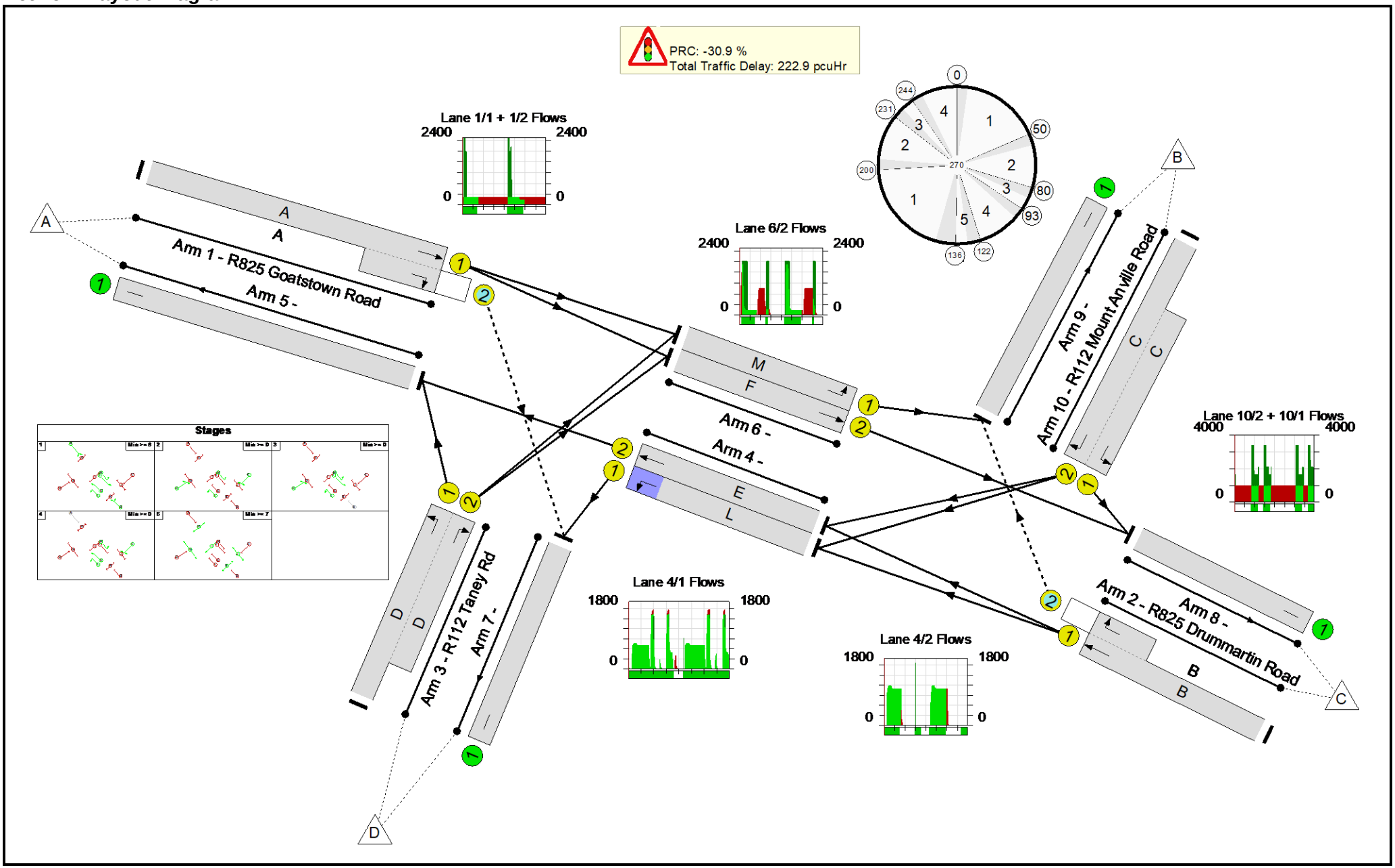
Stage	1	2	3	4	5	1	2	3	4
Duration	44	24	7	23	7	53	25	7	20
Change Point	0	50	80	93	122	136	200	231	244

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**117.8%**
	-	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**117.8%**
1/1+1/2	R825 Goatstown Road Ahead Right	U+O	N/A	N/A	A		2	102	-	277	1905:1823	231+94	85.3 : 85.3%
2/1+2/2	R825 Drummartin Road Ahead Right	U+O	N/A	N/A	B		2	98	-	854	1935:1853	676+53	117.1 : 117.1%
3/1+3/2	R112 Taney Rd Left Right	U	N/A	N/A	D		2	75	-	629	1518:1902	263+476	85.1 : 85.1%
4/1	Left	U	N/A	N/A	L		1	246	-	584	1607	1470	33.8%
4/2	Ahead	U	N/A	N/A	E		3	149	-	486	2015	1134	36.6%
5/1		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
6/1	Left	U	N/A	N/A	M		1	245	-	189	1903	1734	10.9%
6/2	Ahead	U	N/A	N/A	F		4	114	-	413	2015	881	46.9%
7/1		U	N/A	N/A	-		-	-	-	664	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1108	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	251	Inf	Inf	0.0%
10/2+10/1	R112 Mount Anville Road Right Left	U	N/A	N/A	C		4	94	-	973	1756:1626	236+590	117.8 : 117.8%

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	**-**	**-**	**133**	**0**	**0**	**74.8**	**147.5**	**0.5**	**222.9**	**-**	**-**	**-**	**-**
	-	**-**	**133**	**0**	**0**	**74.8**	**147.5**	**0.5**	**222.9**	**-**	**-**	**-**	**-**
1/1+1/2	277	277	80	0	0	2.3	2.6	0.5	5.4	70.0	6.1	2.6	8.7
2/1+2/2	854	729	53	0	0	30.6	65.6	0.0	96.2	405.7	54.7	65.6	120.2
3/1+3/2	629	629	-	-	-	7.7	2.7	-	10.4	59.7	17.7	2.7	20.4
4/1	497	497	-	-	-	0.0	0.0	-	0.0	0.2	0.3	0.0	0.3
4/2	415	415	-	-	-	0.2	0.0	-	0.2	1.6	0.5	0.0	0.5
5/1	639	639	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	413	413	-	-	-	2.5	0.0	-	2.5	21.8	9.6	0.0	9.6
7/1	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1003	1003	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	242	242	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	973	826	-	-	-	31.5	76.6	-	108.1	400.0	50.6	76.6	127.2

C1

PRC for Signalled Lanes (%): -30.9
PRC Over All Lanes (%): -30.9

Total Delay for Signalled Lanes (pcuHr): 222.87
Total Delay Over All Lanes(pcuHr): 222.87

Cycle Time (s): 270

Appendix 3

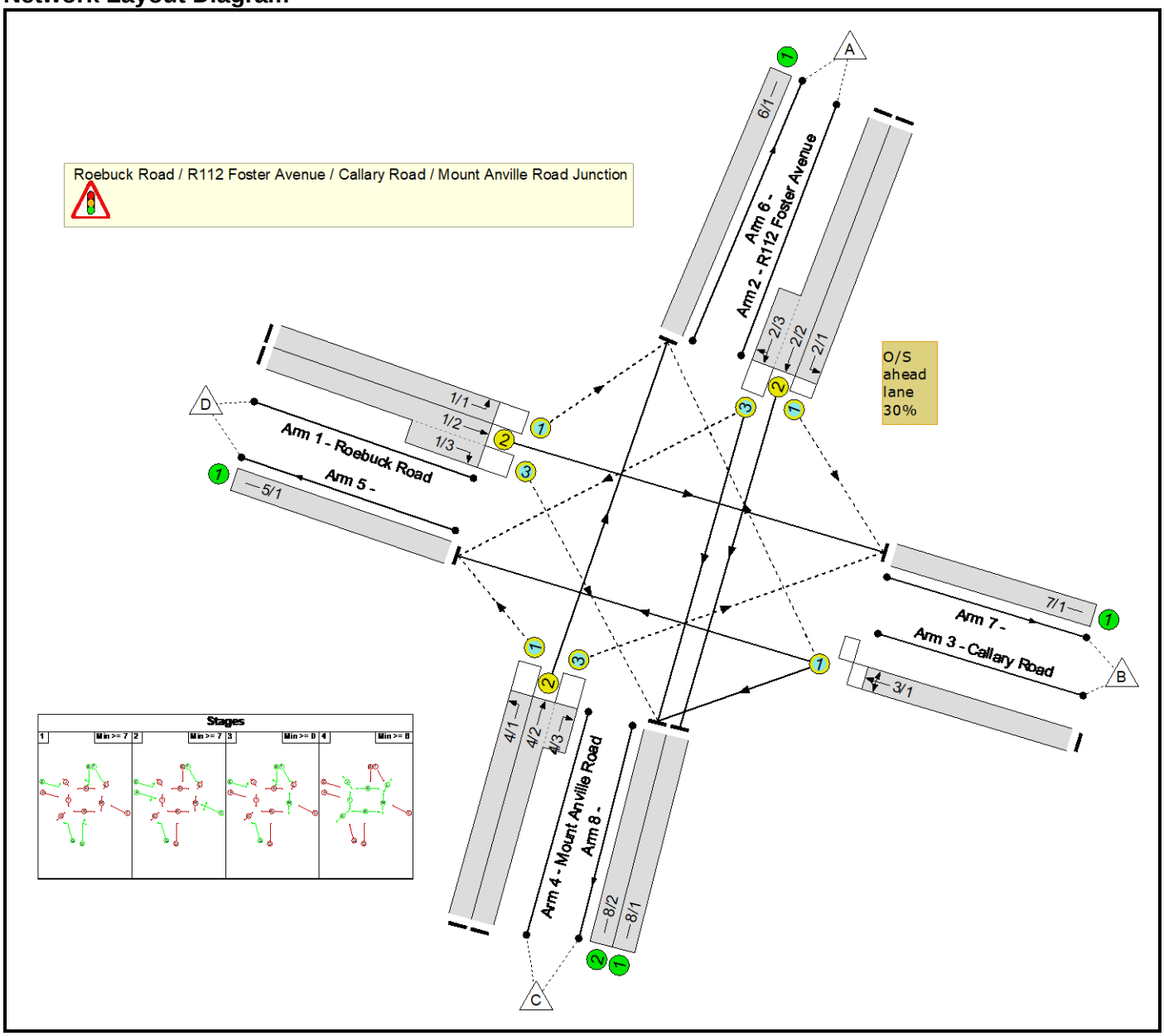
R112 Mount Anville Road/R112 Fosters Avenue/Roebuck Road/Callary Road Junction - Detailed LinSig Outputs

Full Input Data And Results

User and Project Details

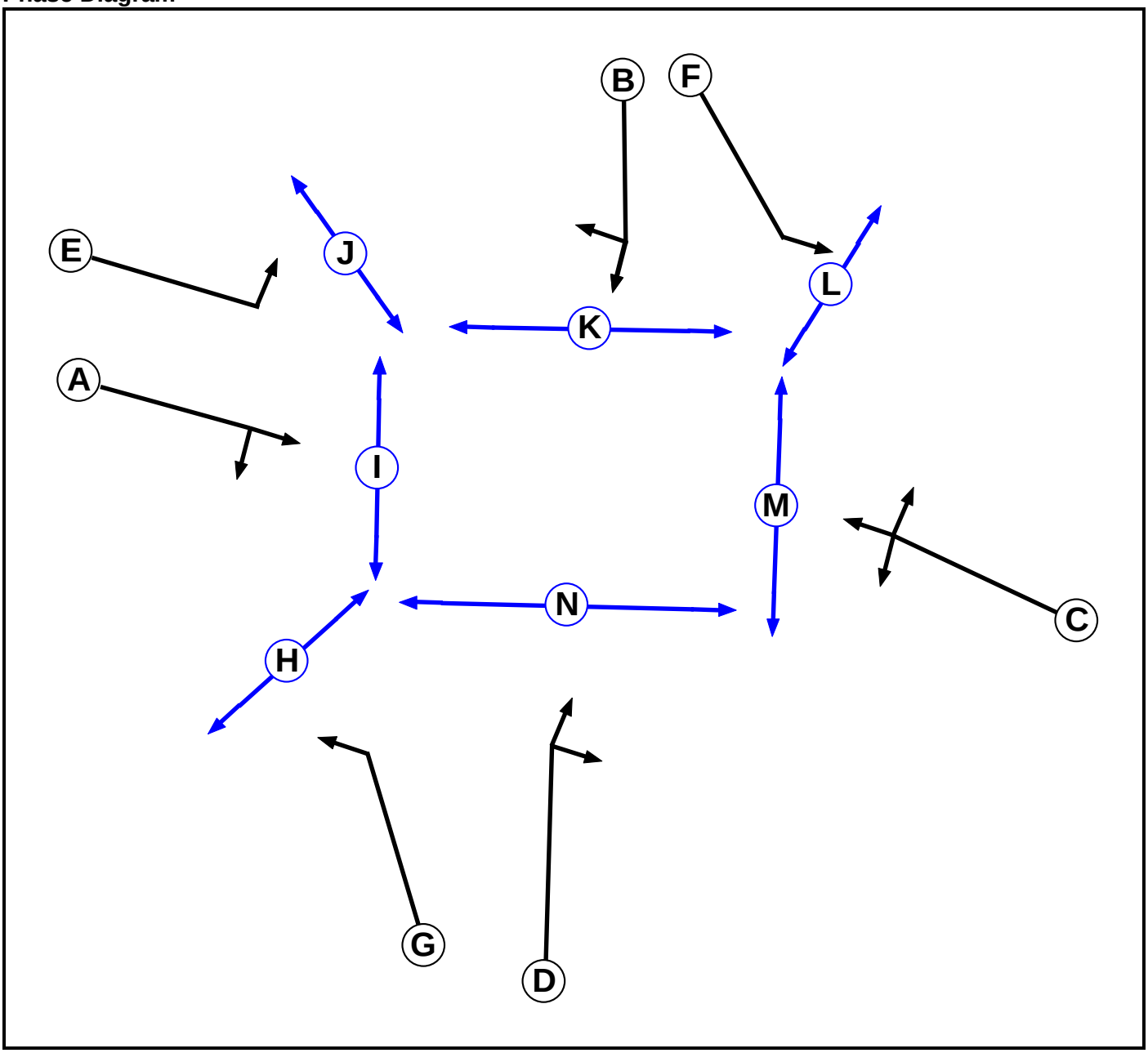
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	**R112 / Roebuck Rd / Callary Ave**
Location:	
Design Layout Ref:	Existing Layout
Additional detail:	
File name:	R112 Mount Anville Rd_Roebuck Rd Existing v2.lsg3x
Author:	
Company:	RAMBOLL
Address:	The Exchange, St John St, Chester CH1 1DA

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7
H	Pedestrian		5	5
I	Pedestrian		6	4
J	Pedestrian		5	5
K	Pedestrian		7	7
L	Pedestrian		5	5
M	Pedestrian		6	6
N	Pedestrian		7	7

Phase Intergreens Matrix

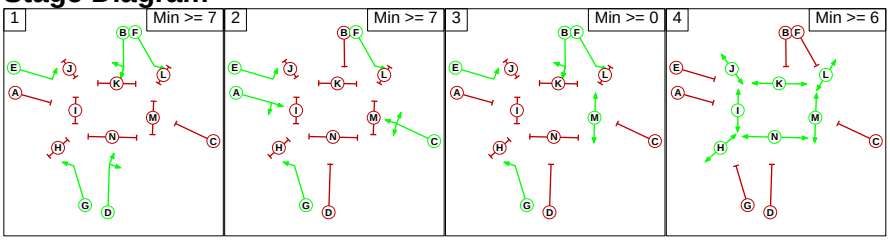
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		6	-	6	-	-	-	-	5	-	-	-	8	7
B	6		6	-	-	-	-	-	8	-	5	-	-	8
C	-	6		6	-	-	-	-	8	-	7	-	5	7
D	6	-	6		-	-	-	-	-	-	7	-	7	5
E	-	-	-	-		-	-	-	-	5	-	-	-	-
F	-	-	-	-	-		-	-	-	-	-	5	-	-
G	-	-	-	-	-	-		5	-	-	-	-	-	-
H	-	-	-	-	-	-	6		-	-	-	-	-	-
I	9	9	9	-	-	-	-	-		-	-	-	-	-
J	-	-	-	-	6	-	-	-	-		-	-	-	-
K	-	11	11	11	-	-	-	-	-	-		-	-	-
L	-	-	-	-	-	6	-	-	-	-	-		-	-
M	8	-	8	8	-	-	-	-	-	-	-	-		-
N	11	11	11	11	-	-	-	-	-	-	-	-	-	

Phases in Stage

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

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	2	B	Losing	2	2
4	1	I	Losing	2	2
4	1	M	Losing	3	3
4	2	I	Losing	2	2
4	2	M	Losing	3	3
4	3	I	Losing	2	2

Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1		6	7	8
	2	6		8	8
	3	8	8		8
	4	11	11	11	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction											
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 (Roebuck Road)	6/1 (Left)	1439	0	4/2	1.09	All	2.00	-	0.50	2	2.00
				3/1	1.09	To 6/1 (Right)					
1/3 (Roebuck Road)	8/2 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/2 (Left)	2.00	-	0.50	2	2.00
2/1 (R112 Foster Avenue)	7/1 (Left)	1439	0	1/2	1.09	All	1.00	-	0.50	1	1.00
				4/3	1.09	All					
2/3 (R112 Foster Avenue)	5/1 (Right)	1439	0	4/2	1.09	All	2.00	-	0.50	2	2.00
3/1 (Callary Road)	6/1 (Right)	1439	0	1/2	1.09	To 7/1 (Ahead)	2.00	1.00	0.50	2	3.00
4/1 (Mount Anville Road)	5/1 (Left)	1439	0	2/3	1.09	To 5/1 (Right)	2.00	-	0.50	2	2.00
				3/1	1.09	To 5/1 (Ahead)					
4/3 (Mount Anville Road)	7/1 (Right)	1439	0	2/2	1.09	All	2.00	-	0.50	2	2.00
				2/3	1.09	To 8/2 (Ahead)					

Full Input Data And Results

Lane Input Data

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction												
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 (Roebuck Road)	O	E	2	3	1.2	Geom	-	2.90	0.00	Y	Arm 6 Left	26.00
1/2 (Roebuck Road)	U	A	2	3	60.0	Geom	-	2.50	0.00	Y	Arm 7 Ahead	Inf
1/3 (Roebuck Road)	O	A	2	3	5.0	Geom	-	2.50	0.00	N	Arm 8 Right	11.00
2/1 (R112 Foster Avenue)	O	F	2	3	1.0	Geom	-	4.10	0.00	Y	Arm 7 Left	20.20
2/2 (R112 Foster Avenue)	U	B	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 8 Ahead	Inf
2/3 (R112 Foster Avenue)	O	B	2	3	5.0	Geom	-	2.90	0.00	Y	Arm 5 Right	21.80
											Arm 8 Ahead	Inf
3/1 (Callary Road)	O	C	2	3	60.0	Geom	-	3.30	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	12.60
											Arm 8 Left	8.80
4/1 (Mount Anville Road)	O	G	2	3	3.0	Geom	-	3.25	0.00	Y	Arm 5 Left	48.00
4/2 (Mount Anville Road)	U	D	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 6 Ahead	Inf
4/3 (Mount Anville Road)	O	D	2	3	3.0	Geom	-	2.90	0.00	N	Arm 7 Right	16.80
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Do Nothing 2021, AM'	08:00	09:00	01:00	
2: 'Do Nothing 2021, PM'	17:00	18:00	01:00	

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	5	272	40	317
	B	88	0	0	133	221
	C	396	1	0	15	412
	D	190	19	35	0	244
	Tot.	674	25	307	188	1194

Traffic Lane Flows

Lane	Scenario 1: 1
Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1	190
1/2 (with short)	54(In) 19(Out)
1/3 (short)	35
2/1	5
2/2 (with short)	312(In) 195(Out)
2/3 (short)	117
3/1	221
4/1	15
4/2 (with short)	397(In) 396(Out)
4/3 (short)	1
5/1	188
6/1	674
7/1	25
8/1	195
8/2	112

Full Input Data And Results

Lane Saturation Flows

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (Roebuck Road)	2.90	0.00	Y	Arm 6 Left	26.00	100.0 %	1801	1801
1/2 (Roebuck Road)	2.50	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1865	1865
1/3 (Roebuck Road)	2.50	0.00	N	Arm 8 Right	11.00	100.0 %	1764	1764
2/1 (R112 Foster Avenue)	4.10	0.00	Y	Arm 7 Left	20.20	100.0 %	1885	1885
2/2 (R112 Foster Avenue)	2.90	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1905	1905
2/3 (R112 Foster Avenue)	2.90	0.00	Y	Arm 5 Right	21.80	34.2 %	1861	1861
				Arm 8 Ahead	Inf	65.8 %		
3/1 (Callary Road)	3.30	0.00	Y	Arm 5 Ahead	Inf	60.2 %	1857	1857
				Arm 6 Right	12.60	39.8 %		
				Arm 8 Left	8.80	0.0 %		
4/1 (Mount Anville Road)	3.25	0.00	Y	Arm 5 Left	48.00	100.0 %	1881	1881
4/2 (Mount Anville Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
4/3 (Mount Anville Road)	2.90	0.00	N	Arm 7 Right	16.80	100.0 %	1877	1877
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	778	104	882
	B	10	0	0	74	84
	C	217	28	0	7	252
	D	86	174	192	0	452
	Tot.	313	202	970	185	1670

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2
Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1	86
1/2 (with short)	366(In) 174(Out)
1/3 (short)	192
2/1	0
2/2 (with short)	882(In) 550(Out)
2/3 (short)	332
3/1	84
4/1	7
4/2 (with short)	245(In) 217(Out)
4/3 (short)	28
5/1	185
6/1	313
7/1	202
8/1	550
8/2	420

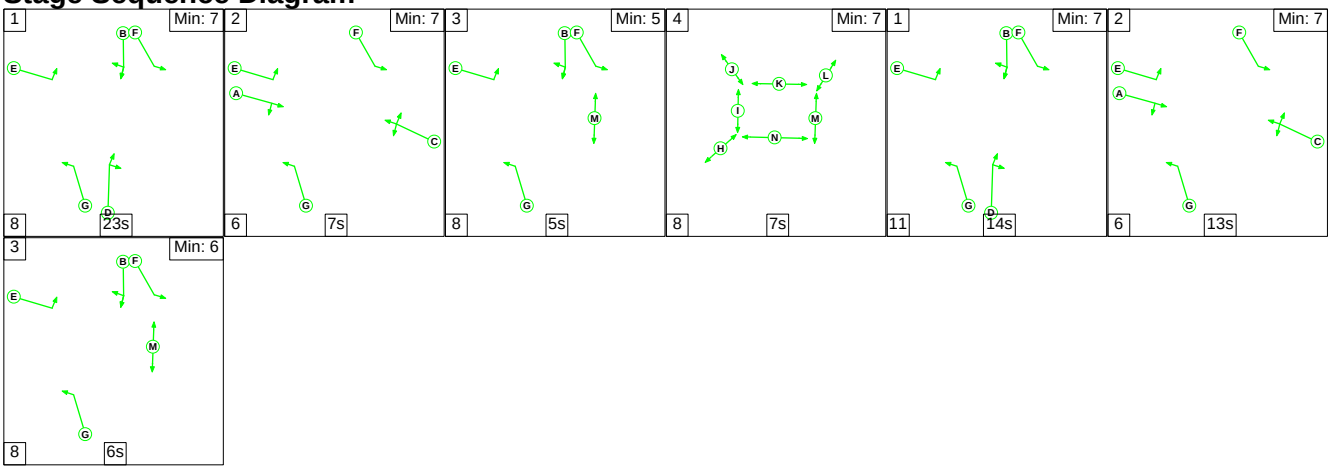
Full Input Data And Results

Lane Saturation Flows

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (Roebuck Road)	2.90	0.00	Y	Arm 6 Left	26.00	100.0 %	1801	1801
1/2 (Roebuck Road)	2.50	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1865	1865
1/3 (Roebuck Road)	2.50	0.00	N	Arm 8 Right	11.00	100.0 %	1764	1764
2/1 (R112 Foster Avenue)	4.10	0.00	Y	Arm 7 Left	20.20	0.0 %	2025	2025
2/2 (R112 Foster Avenue)	2.90	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1905	1905
2/3 (R112 Foster Avenue)	2.90	0.00	Y	Arm 5 Right	21.80	31.3 %	1865	1865
				Arm 8 Ahead	Inf	68.7 %		
3/1 (Callary Road)	3.30	0.00	Y	Arm 5 Ahead	Inf	88.1 %	1918	1918
				Arm 6 Right	12.60	11.9 %		
				Arm 8 Left	8.80	0.0 %		
4/1 (Mount Anville Road)	3.25	0.00	Y	Arm 5 Left	48.00	100.0 %	1881	1881
4/2 (Mount Anville Road)	2.90	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1905	1905
4/3 (Mount Anville Road)	2.90	0.00	N	Arm 7 Right	16.80	100.0 %	1877	1877
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

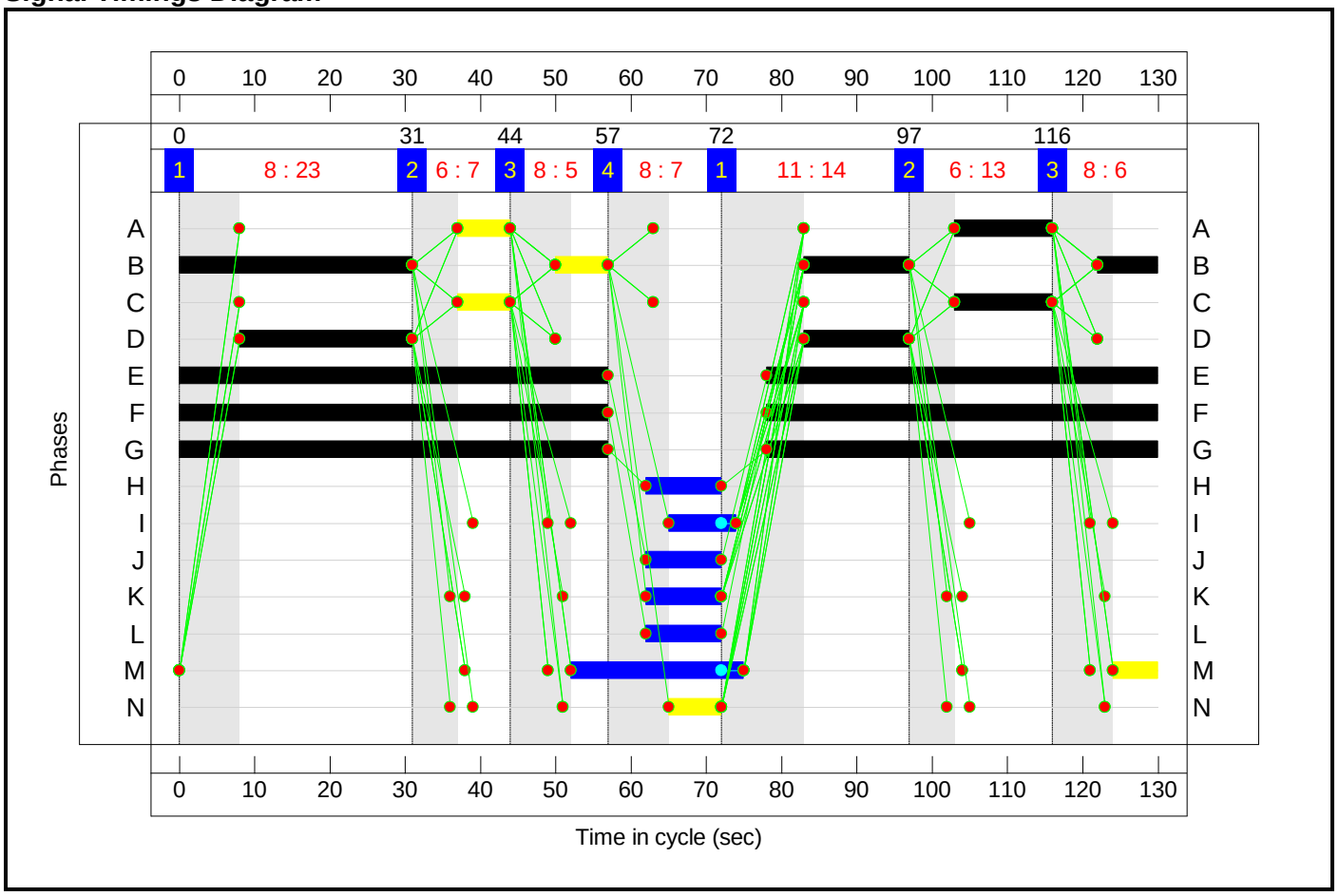


Full Input Data And Results

Stage Timings

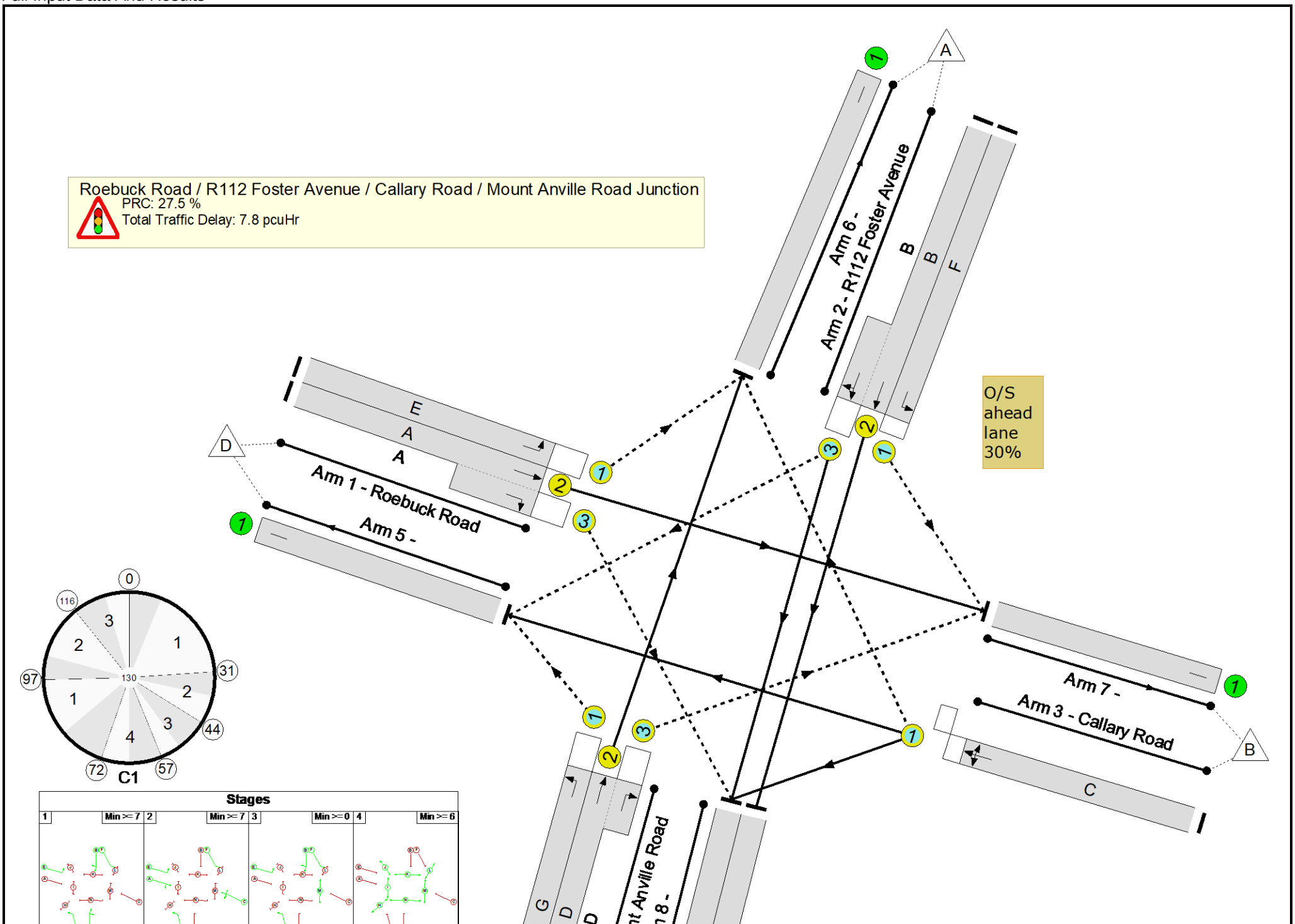
Stage	1	2	3	4	1	2	3
Duration	23	7	5	7	14	13	6
Change Point	0	31	44	57	72	97	116

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction
PRC: 27.5 %
Total Traffic Delay: 7.8 pcuHr
A
B
C
D
E
F
G
Arm 1 - Roebuck Road
Arm 2 - R112 Foster Avenue
Arm 3 - Callary Road
Arm 5 -
Arm 6 -
Arm 7 -
O/S ahead lane 30%
C1
Stages
Min >= 7
Min >= 7
Min >= 0
Min >= 6

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: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.6%**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.6%**
1/1	Roebuck Road Left	O	N/A	N/A	E		1	109	-	190	1801	752	25.3%
1/2+1/3	Roebuck Road Ahead Right	U+O	N/A	N/A	A		2	20	-	54	1865:1764	101+186	18.8 : 18.8%
2/1	R112 Foster Avenue Left	O	N/A	N/A	F		1	109	-	5	1885	1124	0.4%
2/2+2/3	R112 Foster Avenue Right Ahead	U+O	N/A	N/A	B		3	60	-	312	1905:1861	730+438	26.7 : 26.7%
3/1	Callary Road Ahead Right Left	O	N/A	N/A	C		2	20	-	221	1857	314	70.3%
4/1	Mount Anville Road Left	O	N/A	N/A	G		1	109	-	15	1881	964	1.6%
4/2+4/3	Mount Anville Road Ahead Right	U+O	N/A	N/A	D		2	37	-	397	1905:1877	561+1	70.6 : 70.6%
5/1		U	N/A	N/A	-		-	-	-	188	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	674	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	25	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	195	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	112	Inf	Inf	0.0%

Full Input Data And Results

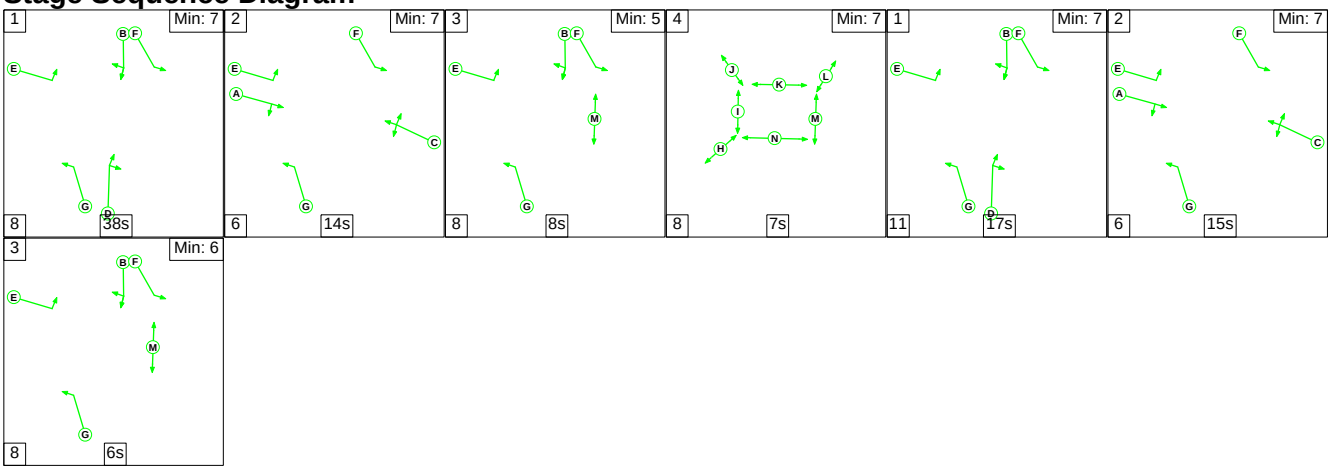
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**228**	**128**	**17**	**4.8**	**2.8**	**0.2**	**7.8**	**-**	**-**	**-**	**-**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**228**	**128**	**17**	**4.8**	**2.8**	**0.2**	**7.8**	**-**	**-**	**-**	**-**
1/1	190	190	84	103	3	0.1	0.2	0.1	0.4	7.0	1.2	0.2	1.3
1/2+1/3	54	54	35	0	0	0.3	0.1	0.0	0.5	30.9	0.6	0.1	0.7
2/1	5	5	3	2	0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
2/2+2/3	312	312	8	19	13	0.6	0.2	0.1	0.8	9.1	1.5	0.2	1.6
3/1	221	221	87	0	1	1.6	1.2	0.0	2.7	44.5	4.0	1.2	5.1
4/1	15	15	11	4	0	0.0	0.0	0.0	0.0	3.6	0.1	0.0	0.1
4/2+4/3	397	397	1	0	0	2.3	1.2	0.0	3.5	31.3	7.1	1.2	8.2
5/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	674	674	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	25	25	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	195	195	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	112	112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 27.5 Total Delay for Signalled Lanes (pcuHr): 7.83 Cycle Time (s): 130
PRC Over All Lanes (%): 27.5 Total Delay Over All Lanes(pcuHr): 7.83

Full Input Data And Results

Scenario 2: '2' (FG2: 'Do Nothing 2021, PM', Plan 1: 'Network Control Plan 1')

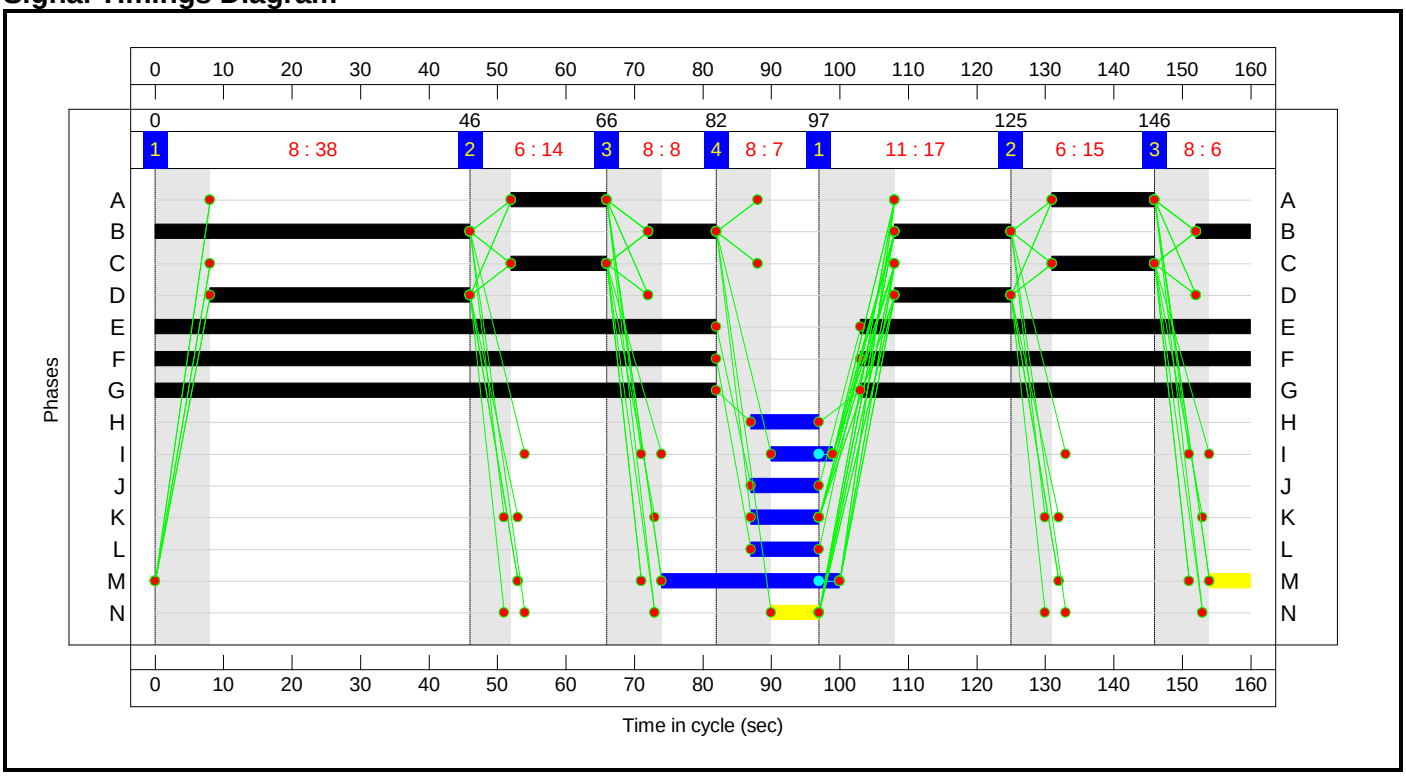
Stage Sequence Diagram



Stage Timings

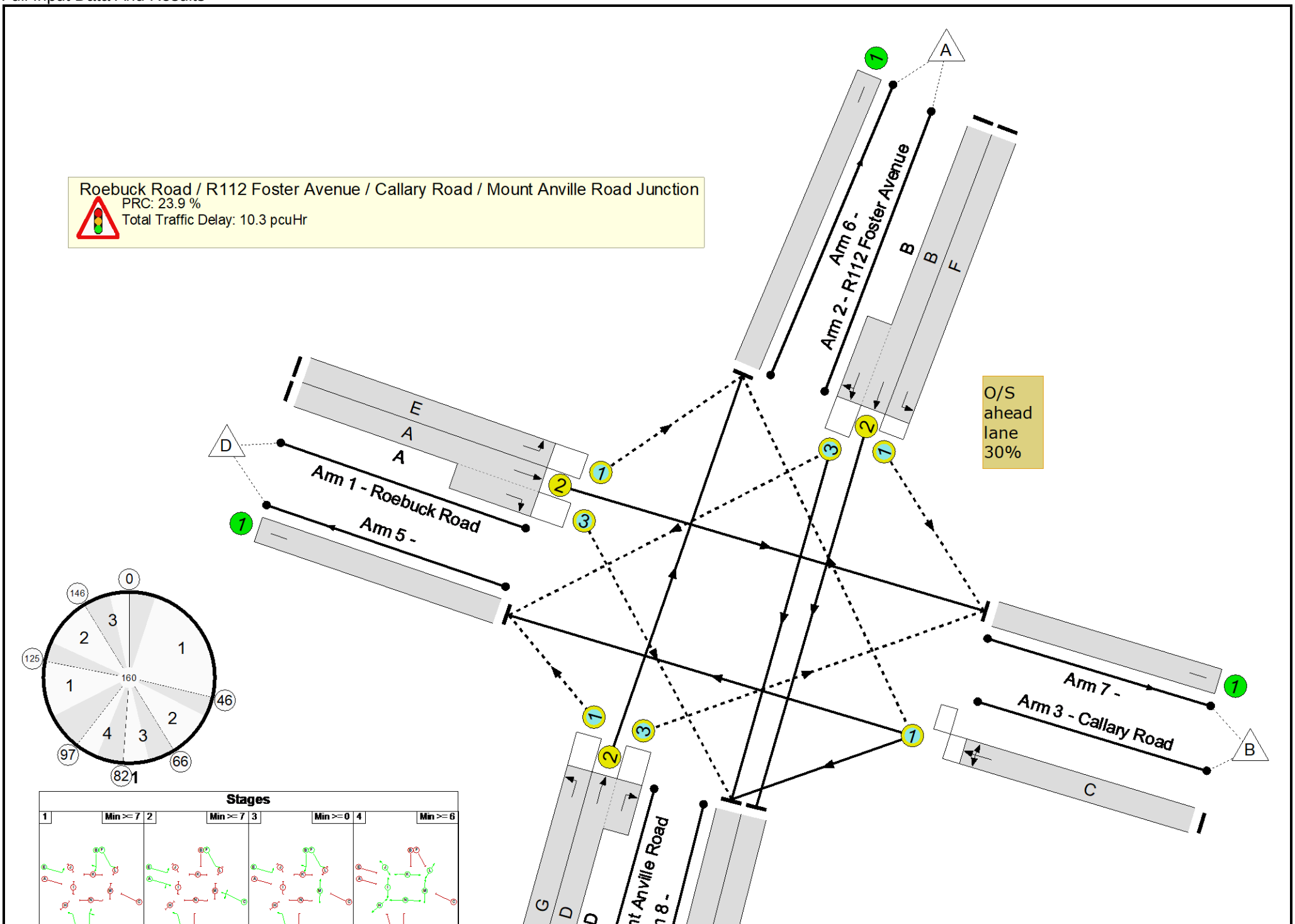
Stage	1	2	3	4	1	2	3
Duration	38	14	8	7	17	15	6
Change Point	0	46	66	82	97	125	146

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction
PRC: 23.9 %
Total Traffic Delay: 10.3 pcuHr
Arm 1 - Roebuck Road
Arm 2 - R112 Foster Avenue
Arm 3 - Callary Road
Arm 5 -
Arm 6 -
Arm 7 -
O/S ahead lane 30%
Stages
Min >= 7
Min >= 7
Min >= 0
Min >= 6

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: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.6%**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.6%**
1/1	Roebuck Road Left	O	N/A	N/A	E		1	139	-	86	1801	1012	8.5%
1/2+1/3	Roebuck Road Ahead Right	U+O	N/A	N/A	A		2	29	-	366	1865:1764	244+269	71.3 : 71.3%
2/1	R112 Foster Avenue Left	O	N/A	N/A	F		1	139	-	0	2025	1228	0.0%
2/2+2/3	R112 Foster Avenue Right Ahead	U+O	N/A	N/A	B		3	81	-	882	1905:1865	757+457	72.6 : 72.6%
3/1	Callary Road Ahead Right Left	O	N/A	N/A	C		2	29	-	84	1918	363	23.1%
4/1	Mount Anville Road Left	O	N/A	N/A	G		1	139	-	7	1881	1027	0.7%
4/2+4/3	Mount Anville Road Ahead Right	U+O	N/A	N/A	D		2	55	-	245	1905:1877	609+79	35.6 : 35.6%
5/1		U	N/A	N/A	-		-	-	-	185	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	550	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	420	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**322**	**83**	**22**	**7.0**	**3.0**	**0.3**	**10.3**	**-**	**-**	**-**	**-**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**322**	**83**	**22**	**7.0**	**3.0**	**0.3**	**10.3**	**-**	**-**	**-**	**-**
1/1	86	86	52	33	1	0.0	0.0	0.0	0.1	3.9	0.5	0.0	0.5
1/2+1/3	366	366	192	0	0	3.0	1.2	0.1	4.4	42.9	4.1	1.2	5.3
2/1	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2/2+2/3	882	882	49	48	7	2.0	1.3	0.0	3.4	13.9	6.0	1.3	7.3
3/1	84	84	10	0	0	0.6	0.2	0.0	0.8	34.2	1.6	0.2	1.7
4/1	7	7	5	2	0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
4/2+4/3	245	245	15	0	13	1.3	0.3	0.1	1.6	24.2	4.3	0.3	4.6
5/1	185	185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	550	550	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	420	420	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

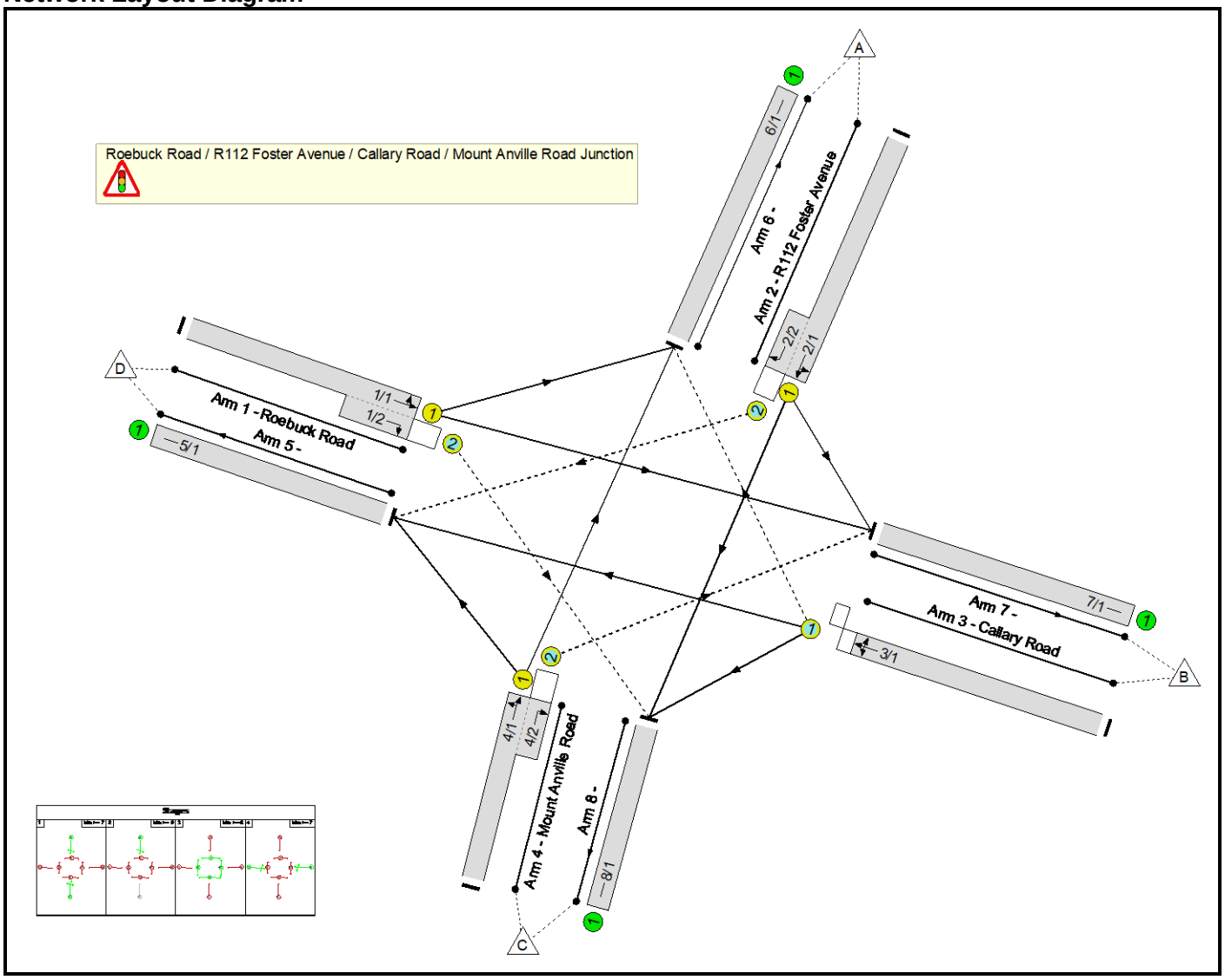
C1 PRC for Signalled Lanes (%): 23.9 Total Delay for Signalled Lanes (pcuHr): 10.31 Cycle Time (s): 160
PRC Over All Lanes (%): 23.9 Total Delay Over All Lanes(pcuHr): 10.31

Full Input Data And Results

User and Project Details

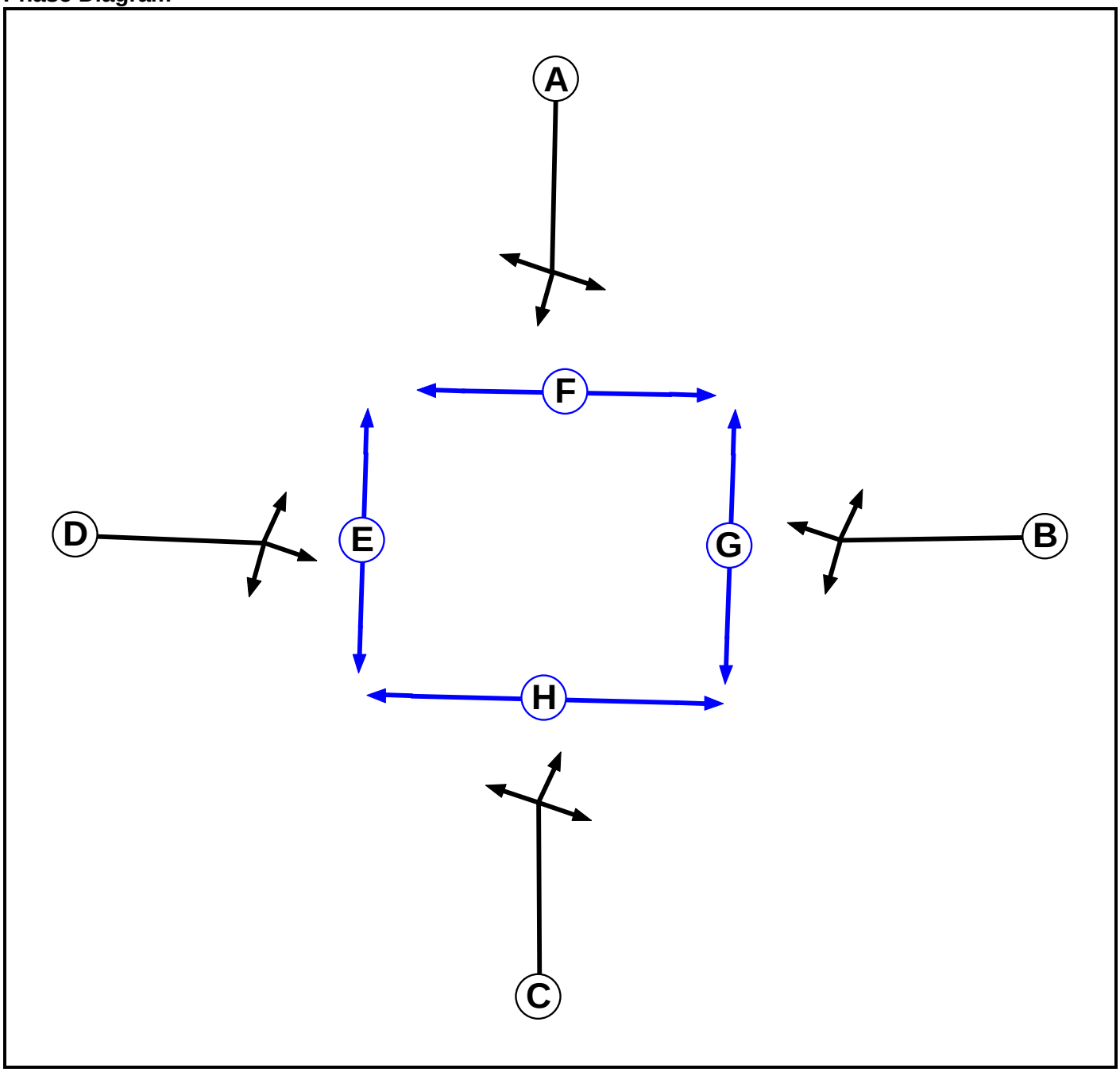
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	**R112 / Roebuck Rd / Callary Ave**
Design Layout Ref:	Proposed Layout
Additional detail:	
File name:	R112 Mount Anville Rd_Roebuck Rd Proposed V2.lsg3x
Author:	
Company:	RAMBOLL
Address:	The Exchange, St John St, Chester CH1 1DA

Network Layout Diagram



Full Input Data And Results

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		6	6
F	Pedestrian		5	5
G	Pedestrian		7	3
H	Pedestrian		7	6

Full Input Data And Results

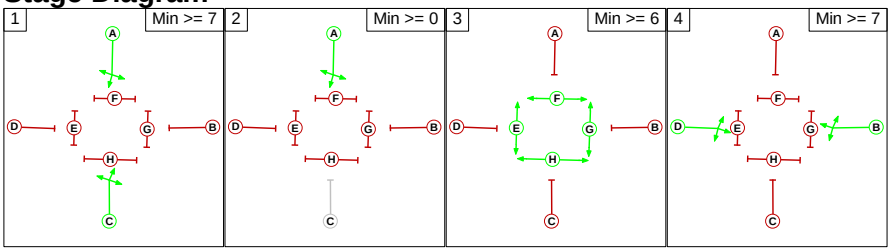
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

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

Full Input Data And Results

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		0	8	6
	2	2		8	6
	3	11	11		11
	4	6	6	8	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction											
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)**
1/2 (Roebuck Road)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	2.00	-	0.50	2	2.00
2/2 (R112 Foster Avenue)	5/1 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	2	2.00
3/1 (Callary Road)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	1.00	0.50	2	3.00
4/2 (Mount Anville Road)	7/1 (Right)	1439	0	2/1	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction												
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 (Roebuck Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 6 Left	13.00
											Arm 7 Ahead	Inf
1/2 (Roebuck Road)	O	D	2	3	4.9	Geom	-	2.90	0.00	Y	Arm 8 Right	11.00
2/1 (R112 Foster Avenue)	U	A	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 7 Left	8.30
											Arm 8 Ahead	Inf
2/2 (R112 Foster Avenue)	O	A	2	3	4.2	Geom	-	3.50	0.00	Y	Arm 5 Right	38.00
											Arm 5 Ahead	Inf
3/1 (Callary Road)	O	B	2	3	60.0	Geom	-	2.80	0.00	Y	Arm 6 Right	12.40
											Arm 8 Left	9.00
4/1 (Mount Anville Road)	U	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Left	8.00
											Arm 6 Ahead	Inf
4/2 (Mount Anville Road)	O	C	2	3	4.0	Geom	-	3.25	0.00	Y	Arm 7 Right	16.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Do Nothing 2021, AM'	08:00	09:00	01:00	
2: 'Do Nothing 2021'	17:00	18:00	01:00	

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	5	272	40	317
	B	88	0	0	133	221
	C	396	1	0	15	412
	D	190	19	35	0	244
	Tot.	674	25	307	188	1194

Traffic Lane Flows

Lane	Scenario 1: 1
Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1 (with short)	244(In) 209(Out)
1/2 (short)	35
2/1 (with short)	317(In) 277(Out)
2/2 (short)	40
3/1	221
4/1 (with short)	412(In) 411(Out)
4/2 (short)	1
5/1	188
6/1	674
7/1	25
8/1	307

Full Input Data And Results

Lane Saturation Flows

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (Roebuck Road)	3.25	0.00	Y	Arm 6 Left	13.00	90.9 %	1756	1756
				Arm 7 Ahead	Inf	9.1 %		
1/2 (Roebuck Road)	2.90	0.00	Y	Arm 8 Right	11.00	100.0 %	1676	1676
2/1 (R112 Foster Avenue)	3.75	0.00	Y	Arm 7 Left	8.30	1.8 %	1984	1984
				Arm 8 Ahead	Inf	98.2 %		
2/2 (R112 Foster Avenue)	3.50	0.00	Y	Arm 5 Right	38.00	100.0 %	1890	1890
3/1 (Callary Road)	2.80	0.00	Y	Arm 5 Ahead	Inf	60.2 %	1808	1808
				Arm 6 Right	12.40	39.8 %		
				Arm 8 Left	9.00	0.0 %		
4/1 (Mount Anville Road)	3.25	0.00	Y	Arm 5 Left	8.00	3.6 %	1927	1927
				Arm 6 Ahead	Inf	96.4 %		
4/2 (Mount Anville Road)	3.25	0.00	Y	Arm 7 Right	16.00	100.0 %	1774	1774
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2' (FG2: 'Do Nothing 2021', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	778	104	882
	B	10	0	0	74	84
	C	217	28	0	7	252
	D	86	174	192	0	452
	Tot.	313	202	970	185	1670

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2
Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	
1/1 (with short)	452(In) 260(Out)
1/2 (short)	192
2/1 (with short)	882(In) 778(Out)
2/2 (short)	104
3/1	84
4/1 (with short)	252(In) 224(Out)
4/2 (short)	28
5/1	185
6/1	313
7/1	202
8/1	970

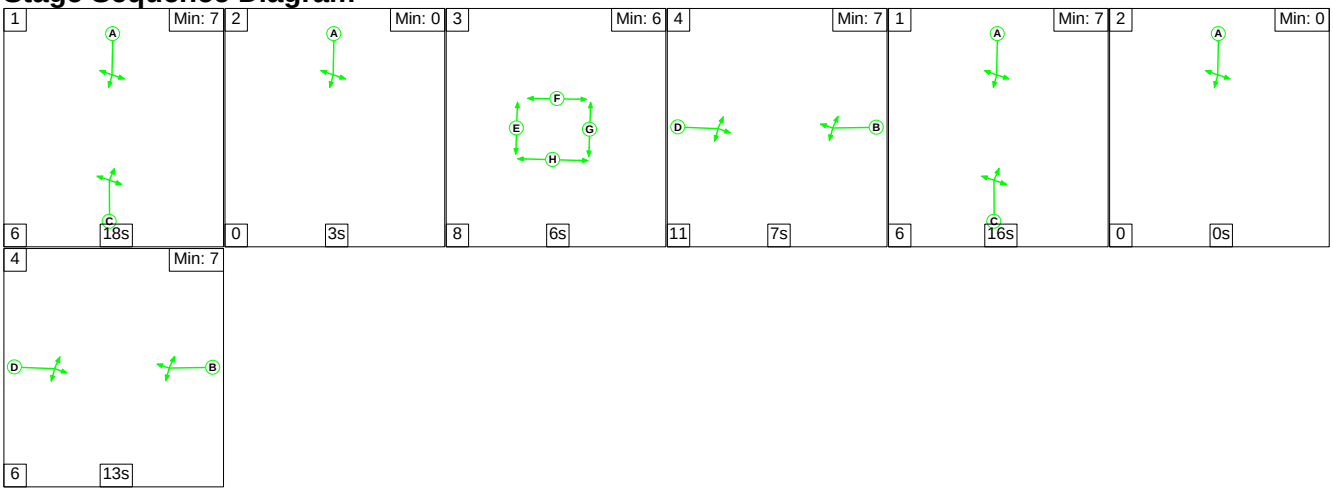
Lane Saturation Flows

Junction: Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction								
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 (Roebuck Road)	3.25	0.00	Y	Arm 6 Left	13.00	33.1 %	1869	1869
				Arm 7 Ahead	Inf	66.9 %		
1/2 (Roebuck Road)	2.90	0.00	Y	Arm 8 Right	11.00	100.0 %	1676	1676
2/1 (R112 Foster Avenue)	3.75	0.00	Y	Arm 7 Left	8.30	0.0 %	1990	1990
				Arm 8 Ahead	Inf	100.0 %		
2/2 (R112 Foster Avenue)	3.50	0.00	Y	Arm 5 Right	38.00	100.0 %	1890	1890
3/1 (Callary Road)	2.80	0.00	Y	Arm 5 Ahead	Inf	88.1 %	1868	1868
				Arm 6 Right	12.40	11.9 %		
				Arm 8 Left	9.00	0.0 %		
4/1 (Mount Anville Road)	3.25	0.00	Y	Arm 5 Left	8.00	3.1 %	1929	1929
				Arm 6 Ahead	Inf	96.9 %		
4/2 (Mount Anville Road)	3.25	0.00	Y	Arm 7 Right	16.00	100.0 %	1774	1774
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: '1' (FG1: 'Do Nothing 2021, AM', Plan 1: 'Network Control Plan 1')

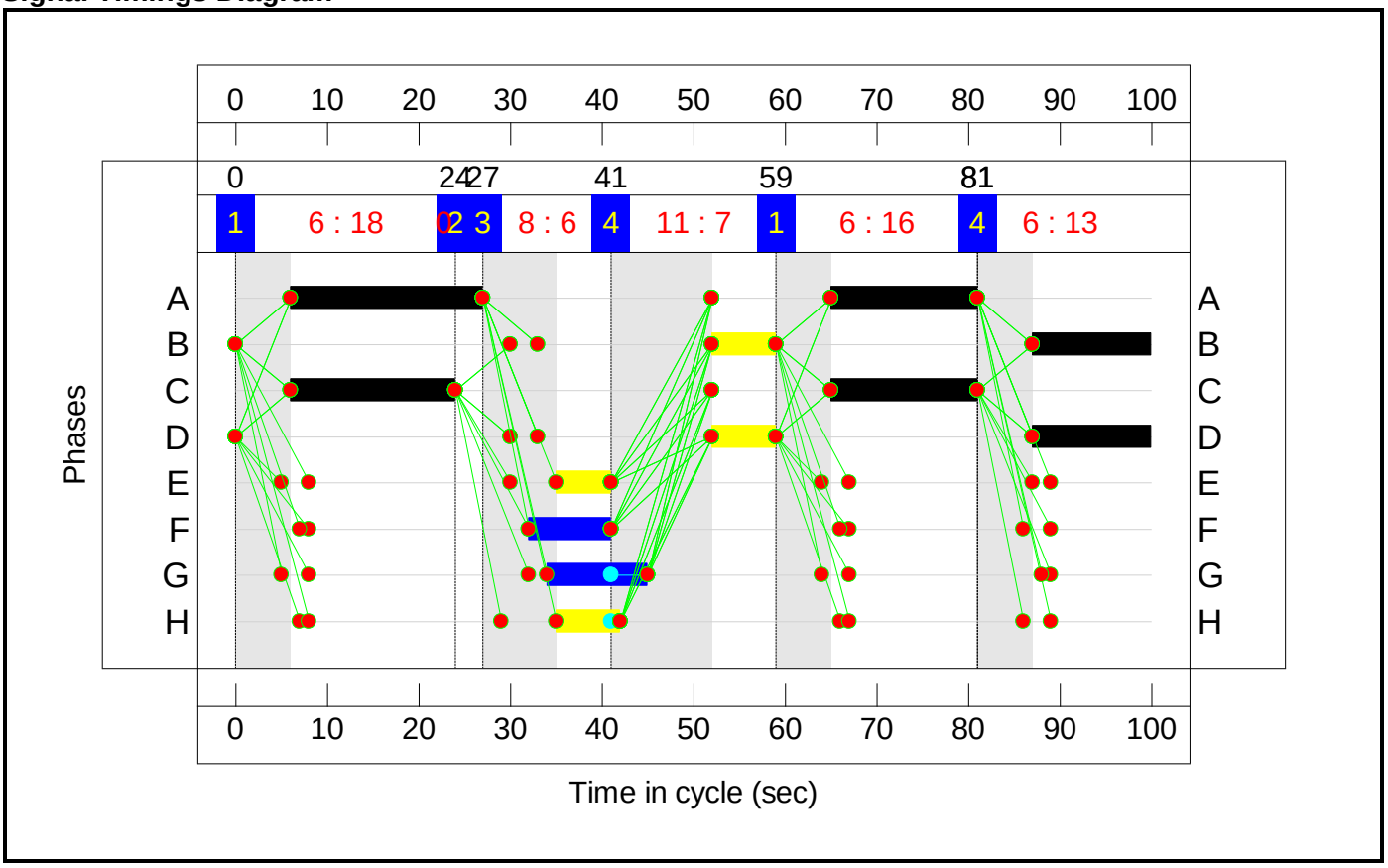
Stage Sequence Diagram



Stage Timings

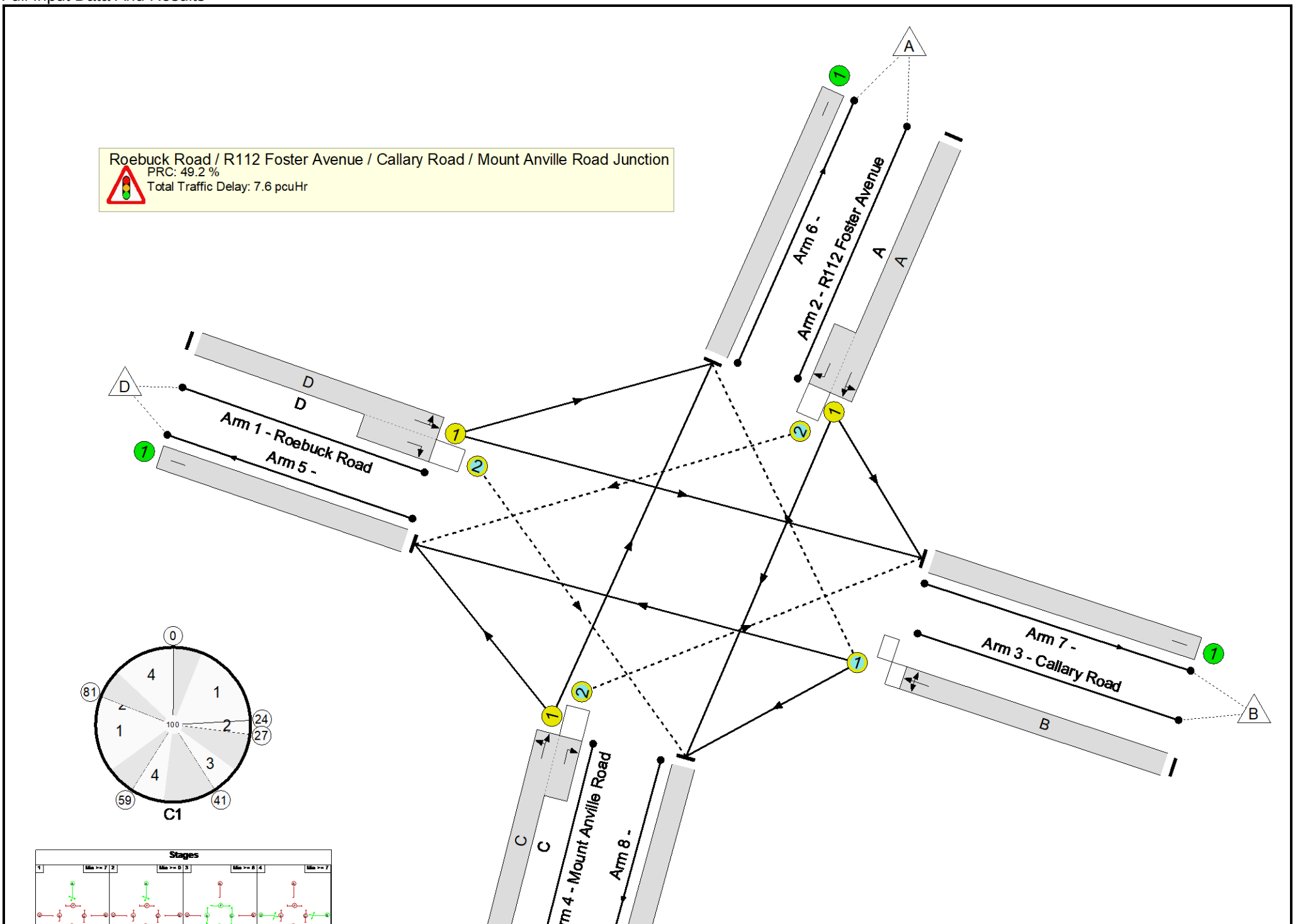
Stage	1	2	3	4	1	2	4
Duration	18	3	6	7	16	0	13
Change Point	0	24	27	41	59	81	81

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction
PRC: 49.2 %
Total Traffic Delay: 7.6 pcuHr
A
D
Arm 1 - Roebuck Road
Arm 5 -
Arm 2 - R112 Foster Avenue
Arm 6 -
Arm 7 -
Arm 3 - Callary Road
B
C
Arm 4 - Mount Anville Road
Arm 8 -
C1
Stages

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: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.3%**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.3%**
1/1+1/2	Roebuck Road Left Ahead Right	U+O	N/A	N/A	D		2	20	-	244	1756:1676	386+65	54.1 : 54.1%
2/1+2/2	R112 Foster Avenue Right Left Ahead	U+O	N/A	N/A	A		2	37	-	317	1984:1890	727+105	38.1 : 38.1%
3/1	Callary Road Ahead Right Left	O	N/A	N/A	B		2	20	-	221	1808	366	60.3%
4/1+4/2	Mount Anville Road Left Ahead Right	U+O	N/A	N/A	C		2	34	-	412	1927:1774	694+2	59.2 : 59.2%
5/1		U	N/A	N/A	-		-	-	-	188	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	674	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	25	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	307	Inf	Inf	0.0%

Full Input Data And Results

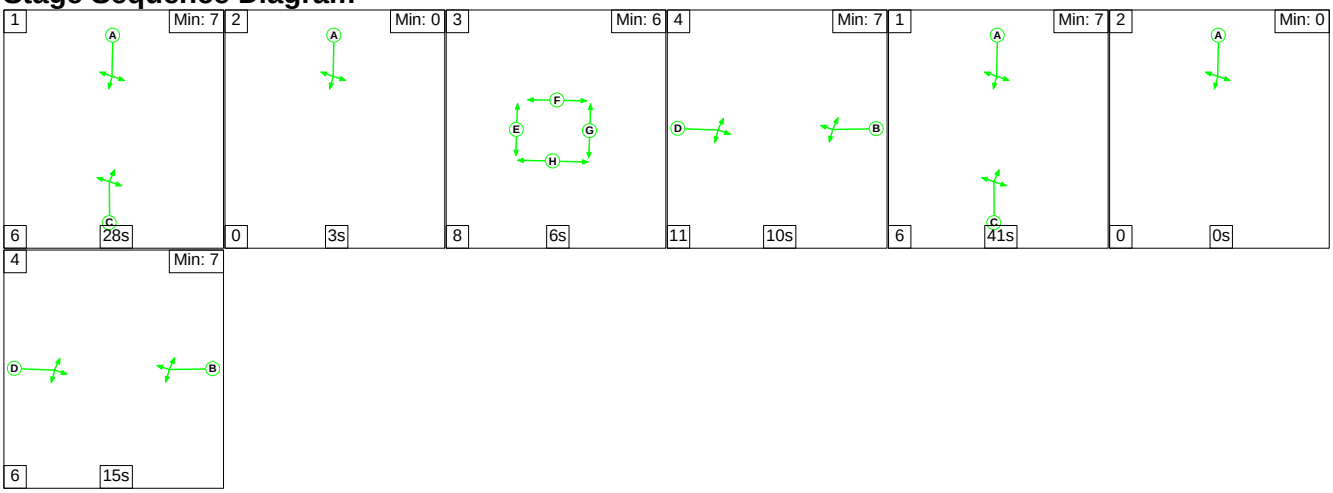
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**124**	**0**	**40**	**5.0**	**2.4**	**0.2**	**7.6**	**-**	**-**	**-**	**-**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**124**	**0**	**40**	**5.0**	**2.4**	**0.2**	**7.6**	**-**	**-**	**-**	**-**
1/1+1/2	244	244	35	0	0	1.3	0.6	0.0	1.9	27.3	3.3	0.6	3.9
2/1+2/2	317	317	39	0	1	1.0	0.3	0.1	1.4	15.5	3.3	0.3	3.6
3/1	221	221	49	0	39	1.2	0.8	0.1	2.1	33.5	3.6	0.8	4.4
4/1+4/2	412	412	1	0	0	1.6	0.7	0.0	2.3	20.2	5.7	0.7	6.4
5/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	674	674	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	25	25	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 49.2 Total Delay for Signalled Lanes (pcuHr): 7.58 Cycle Time (s): 100
PRC Over All Lanes (%): 49.2 Total Delay Over All Lanes(pcuHr): 7.58

Full Input Data And Results

Scenario 2: '2' (FG2: 'Do Nothing 2021', Plan 1: 'Network Control Plan 1')

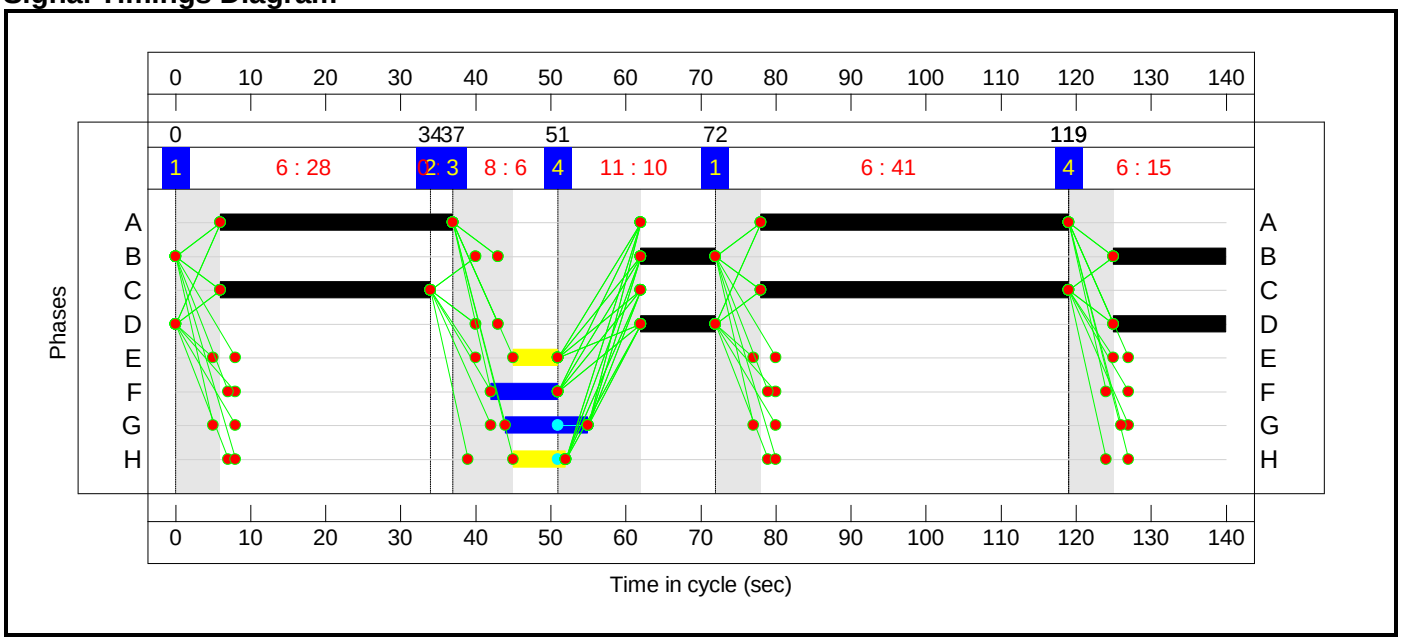
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	1	2	4
Duration	28	3	6	10	41	0	15
Change Point	0	34	37	51	72	119	119

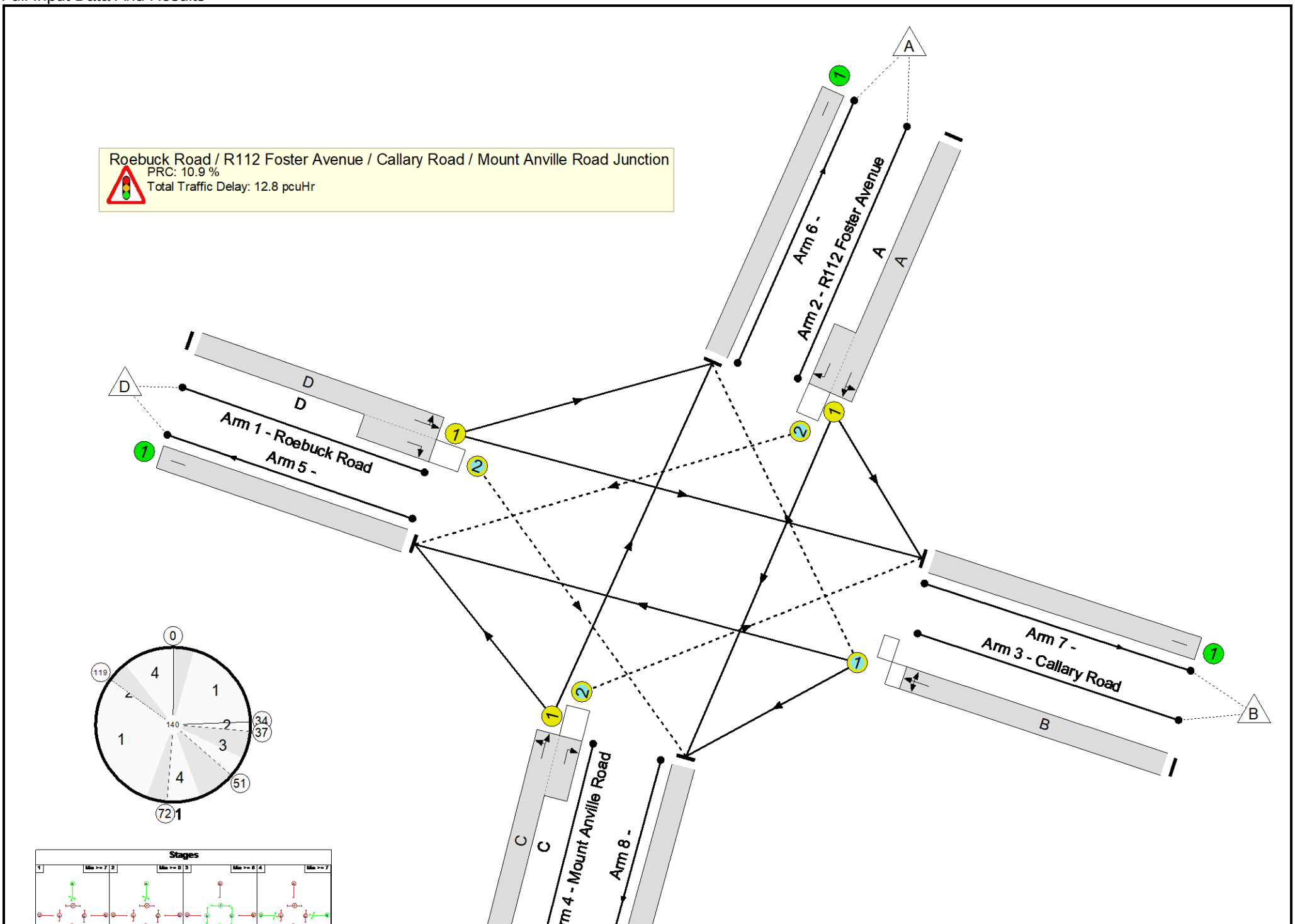
Signal Timings Diagram



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: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.2%**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.2%**
1/1+1/2	Roebuck Road Left Ahead Right	U+O	N/A	N/A	D		2	25	-	452	1869:1676	320+237	81.2 : 81.2%
2/1+2/2	R112 Foster Avenue Right Left Ahead	U+O	N/A	N/A	A		2	72	-	882	1990:1890	959+128	81.1 : 81.1%
3/1	Callary Road Ahead Right Left	O	N/A	N/A	B		2	25	-	84	1868	346	24.3%
4/1+4/2	Mount Anville Road Left Ahead Right	U+O	N/A	N/A	C		2	69	-	252	1929:1774	897+112	25.0 : 25.0%
5/1		U	N/A	N/A	-		-	-	-	185	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 / Roebuck Rd / Callary Ave	**-**	**-**	**312**	**1**	**21**	**8.0**	**4.5**	**0.3**	**12.8**	**-**	**-**	**-**	**-**
Roebuck Road / R112 Foster Avenue / Callary Road / Mount Anville Road Junction	**-**	**-**	**312**	**1**	**21**	**8.0**	**4.5**	**0.3**	**12.8**	**-**	**-**	**-**	**-**
1/1+1/2	452	452	173	0	19	3.4	2.1	0.1	5.6	44.3	5.3	2.1	7.3
2/1+2/2	882	882	102	1	1	3.3	2.1	0.0	5.5	22.4	16.3	2.1	18.4
3/1	84	84	10	0	0	0.6	0.2	0.0	0.7	31.8	1.5	0.2	1.6
4/1+4/2	252	252	28	0	0	0.7	0.2	0.1	1.0	14.5	3.0	0.2	3.2
5/1	185	185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	970	970	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 10.9 Total Delay for Signalled Lanes (pcuHr): 12.81 Cycle Time (s): 140
PRC Over All Lanes (%): 10.9 Total Delay Over All Lanes(pcuHr): 12.81

Appendix 4

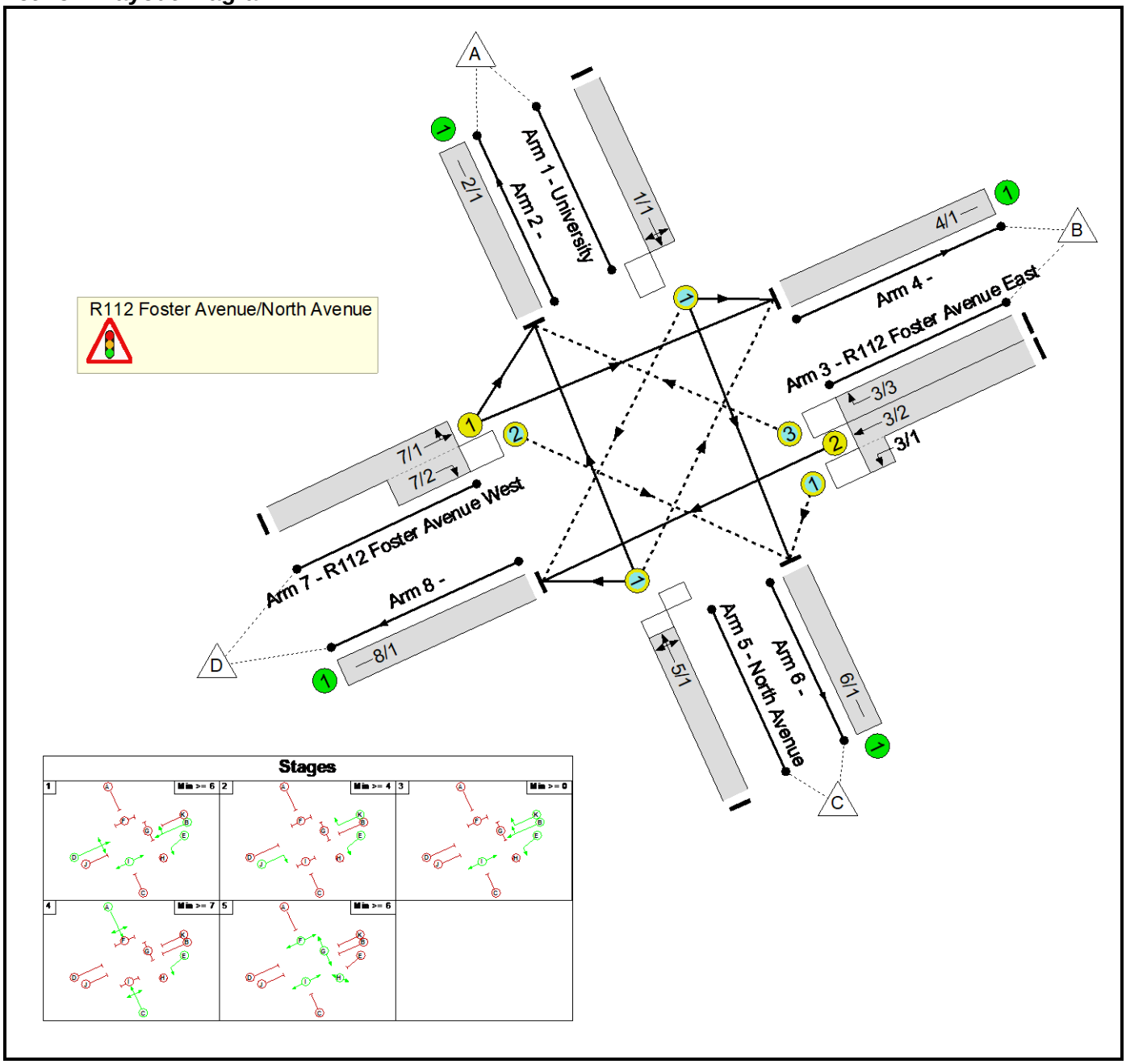
R112 Fosters Avenue/North Avenue Junction - Detailed LinSig Outputs

Full Input Data And Results

User and Project Details

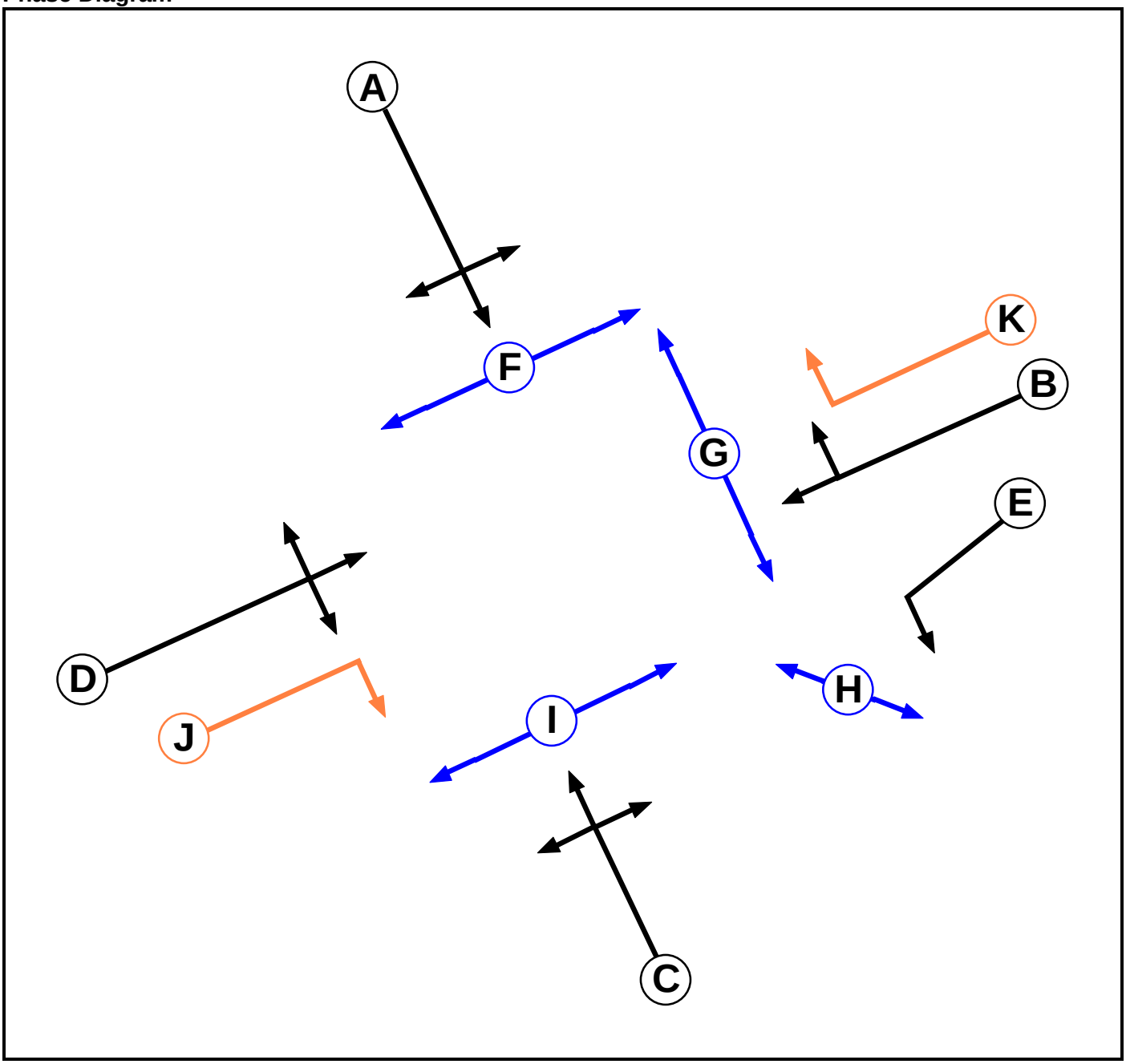
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	**R112 Foster Ave / North Avenue**
Location:	
Design Layout Ref:	Existing Layout
Additional detail:	
File name:	R112 Foster Ave_North Ave Existing v2 Updated.lsg3x
Author:	
Company:	RAMBOLL
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	6
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Pedestrian		7	5
G	Pedestrian		7	7
H	Pedestrian		7	7
I	Pedestrian		7	7
J	Filter with Closing Amber (Not UK)		4	4
K	Filter with Closing Amber (Not UK)		4	4

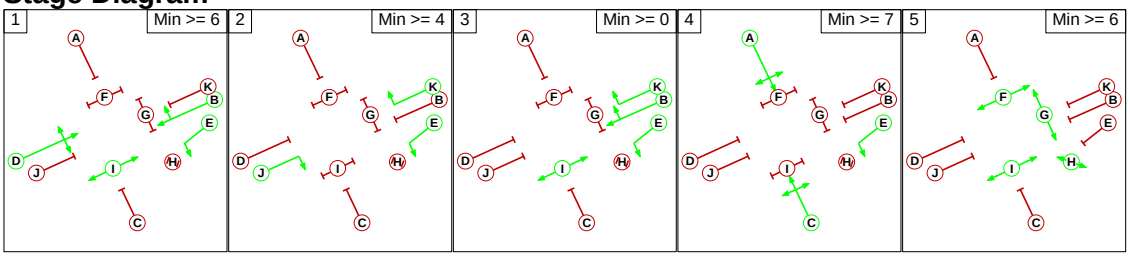
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	B	Losing	4	4
1	4	B	Losing	4	4
1	4	D	Losing	4	4
1	5	B	Losing	2	2
3	2	B	Losing	4	4
3	4	B	Losing	4	4
3	4	K	Losing	4	4
3	5	B	Losing	1	1
4	5	C	Losing	2	2
5	1	F	Losing	2	2
5	2	F	Losing	2	2
5	3	F	Losing	2	2
5	4	F	Losing	2	2

Prohibited Stage Change

From Stage \ To Stage	1	2	3	4	5
1		10	6	10	7
2	6		6	6	6
3	6	10		10	6
4	7	6	7		7
5	10	10	10	10	

Full Input Data And Results

Give-Way Lane Input Data

Junction: R112 Foster Avenue/North Avenue											
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 (University)	8/1 (Right)	1439	0	5/1	1.09	To 2/1 (Ahead) To 8/1 (Left)	2.00	2.00	0.50	2	2.00
3/1 (R112 Foster Avenue East)	6/1 (Left)	1439	0	1/1 7/2	1.09 1.09	To 6/1 (Ahead) All	2.00	-	0.50	2	2.00
3/3 (R112 Foster Avenue East)	2/1 (Right)	1439	0	7/1	1.09	All	2.00	-	0.50	2	2.00
5/1 (North Avenue)	4/1 (Right)	1439	0	1/1	1.09	To 4/1 (Left) To 6/1 (Ahead)	2.00	1.00	0.50	2	2.00
7/2 (R112 Foster Avenue West)	6/1 (Right)	1439	0	3/2	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: R112 Foster Avenue/North Avenue												
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 (University)	O	A	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Left Arm 6 Ahead Arm 8 Right	Inf Inf Inf
2/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (R112 Foster Avenue East)	O	E	2	3	1.5	Geom	-	3.35	0.00	Y	Arm 6 Left	36.00
3/2 (R112 Foster Avenue East)	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 8 Ahead	Inf
3/3 (R112 Foster Avenue East)	O	B K	2	3	4.5	Geom	-	3.25	0.00	Y	Arm 2 Right	12.50
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (North Avenue)	O	C	2	3	60.0	Geom	-	3.80	0.00	Y	Arm 2 Ahead Arm 4 Right Arm 8 Left	Inf 15.70 7.00
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (R112 Foster Avenue West)	U	D	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 2 Left Arm 4 Ahead	5.70 Inf
7/2 (R112 Foster Avenue West)	O	D J	2	3	4.3	Geom	-	3.40	0.00	Y	Arm 6 Right	7.70
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 AM Peak'	08:00	09:00	01:00	
2: '20121 PM Peak'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	20	20	20	60
	B	0	0	21	191	212
	C	0	352	0	19	371
	D	0	283	0	0	283
	Tot.	0	655	41	230	926

Traffic Lane Flows

Lane	Scenario 1: 2021 Do Nothing AM
Junction: R112 Foster Avenue/North Avenue	
1/1	60
2/1	0
3/1 (short)	21
3/2 (with short)	212(In) 191(Out)
3/3	0
4/1	655
5/1	371
6/1	41
7/1 (with short)	283(In) 283(Out)
7/2 (short)	0
8/1	230

Full Input Data And Results

Lane Saturation Flows

Junction: R112 Foster Avenue/North Avenue								
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 (University)	4.00	0.00	Y	Arm 4 Left	Inf	33.3 %	2015	2015
				Arm 6 Ahead	Inf	33.3 %		
				Arm 8 Right	Inf	33.3 %		
2/1	Infinite Saturation Flow						Inf	Inf
3/1 (R112 Foster Avenue East)	3.35	0.00	Y	Arm 6 Left	36.00	100.0 %	1872	1872
3/2 (R112 Foster Avenue East)	3.25	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1940	1940
3/3 (R112 Foster Avenue East)	3.25	0.00	Y	Arm 2 Right	12.50	0.0 %	1940	1940
4/1	Infinite Saturation Flow						Inf	Inf
5/1 (North Avenue)	3.80	0.00	Y	Arm 2 Ahead	Inf	0.0 %	1811	1811
				Arm 4 Right	15.70	94.9 %		
				Arm 8 Left	7.00	5.1 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 2 Left	5.70	0.0 %	1955	1955
				Arm 4 Ahead	Inf	100.0 %		
7/2 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 6 Right	7.70	0.0 %	1955	1955
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 Do Nothing PM' (FG2: '20121 PM Peak', Plan 2: 'pm')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	0	0	0
	B	20	0	160	353	533
	C	20	151	0	75	246
	D	20	106	99	0	225
	Tot.	60	257	259	428	1004

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 Do Nothing PM
Junction: R112 Foster Avenue/North Avenue	
1/1	0
2/1	60
3/1 (short)	160
3/2 (with short)	513(In) 353(Out)
3/3	20
4/1	257
5/1	246
6/1	259
7/1 (with short)	225(In) 126(Out)
7/2 (short)	99
8/1	428

Lane Saturation Flows

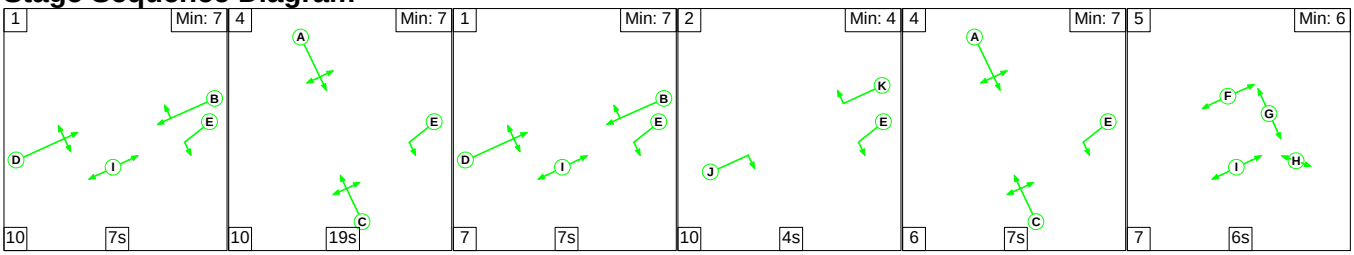
Junction: R112 Foster Avenue/North Avenue

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 (University)	4.00	0.00	Y	Arm 4 Left	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	0.0 %		
				Arm 8 Right	Inf	0.0 %		
2/1	Infinite Saturation Flow						Inf	Inf
3/1 (R112 Foster Avenue East)	3.35	0.00	Y	Arm 6 Left	36.00	100.0 %	1872	1872
3/2 (R112 Foster Avenue East)	3.25	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1940	1940
3/3 (R112 Foster Avenue East)	3.25	0.00	Y	Arm 2 Right	12.50	100.0 %	1732	1732
4/1	Infinite Saturation Flow						Inf	Inf
5/1 (North Avenue)	3.80	0.00	Y	Arm 2 Ahead	Inf	8.1 %	1775	1775
				Arm 4 Right	15.70	61.4 %		
				Arm 8 Left	7.00	30.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 2 Left	5.70	15.9 %	1877	1877
				Arm 4 Ahead	Inf	84.1 %		
7/2 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 6 Right	7.70	100.0 %	1636	1636
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: '2021 Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

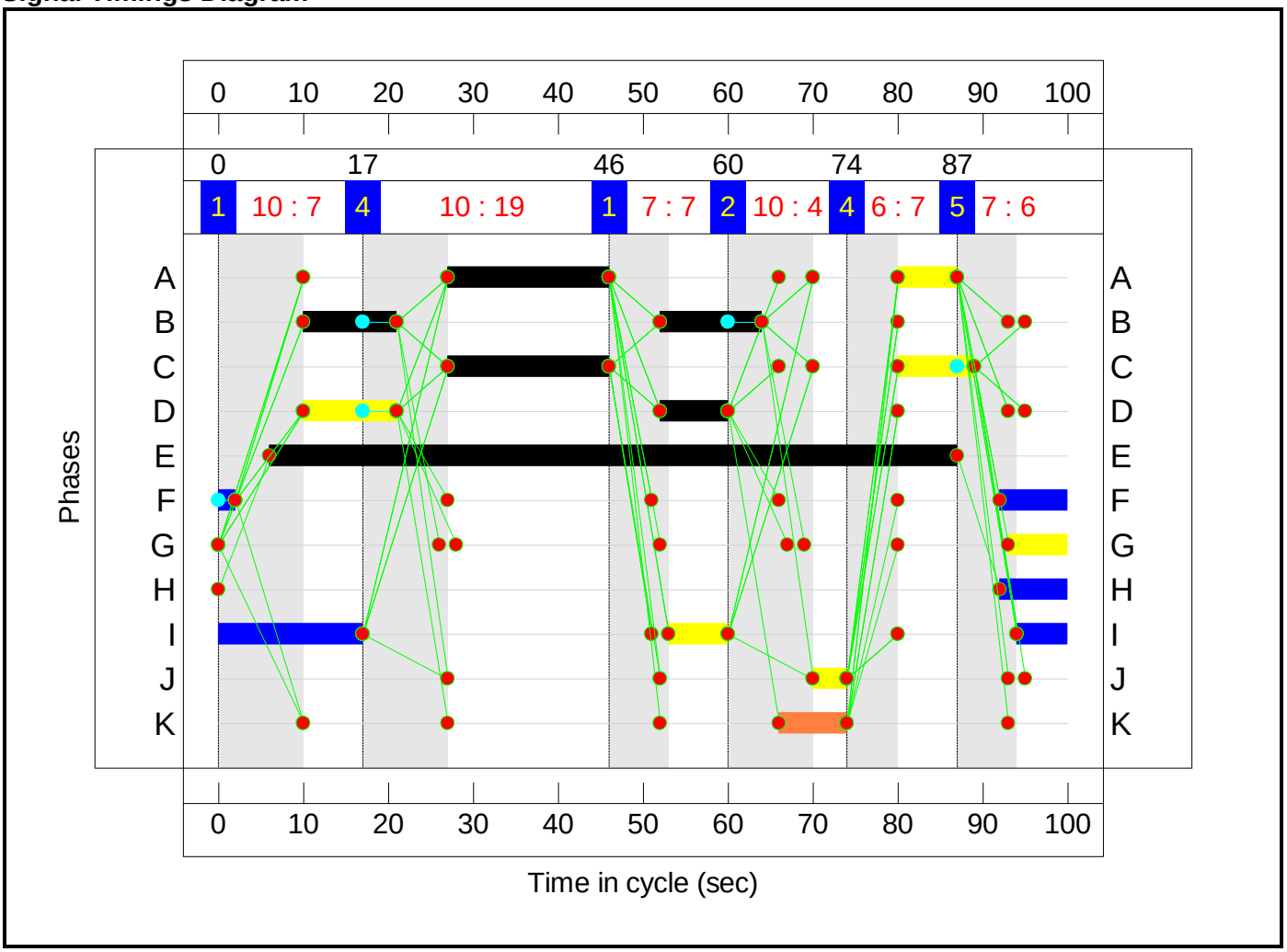
Stage Sequence Diagram



Stage Timings

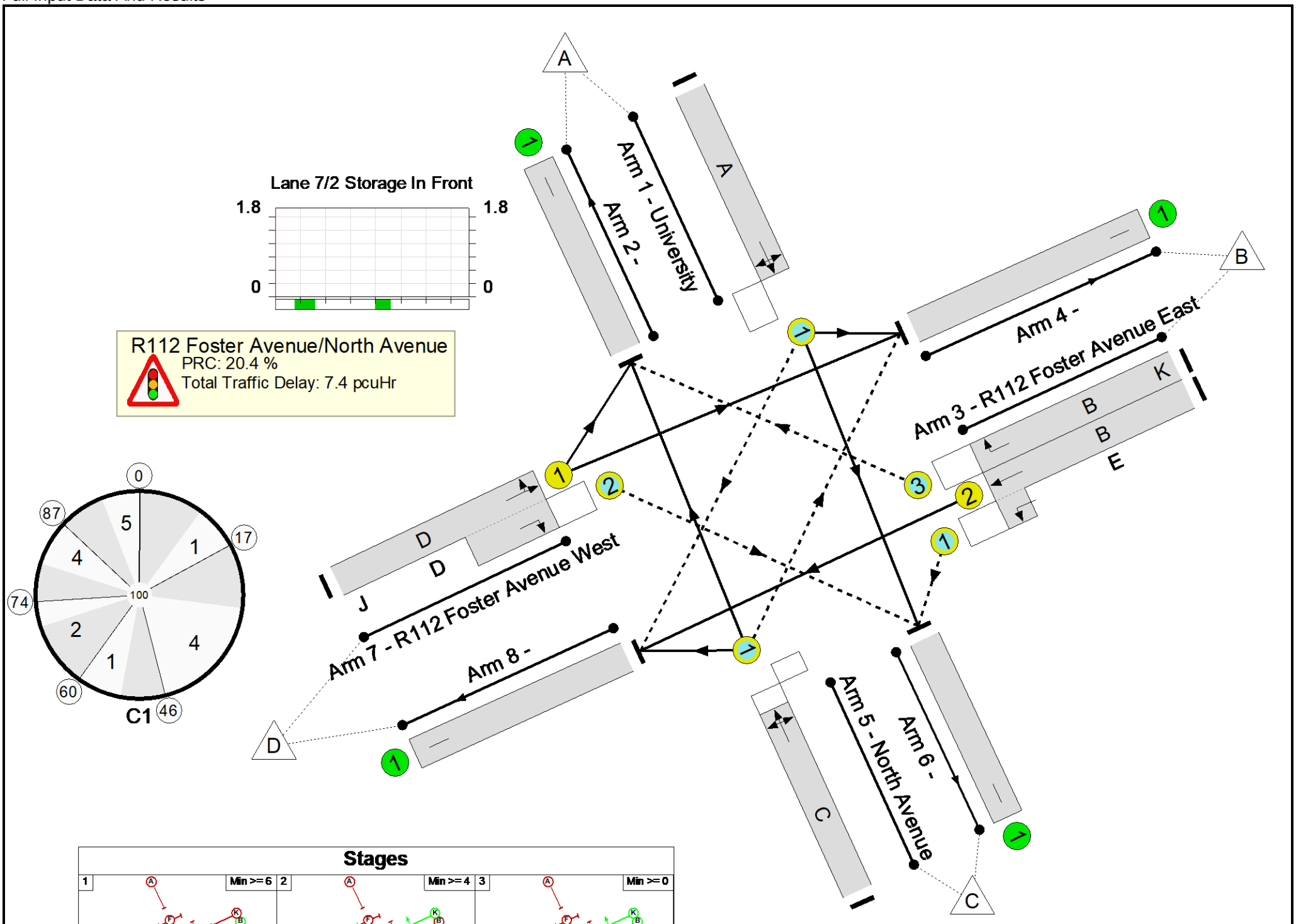
Stage	1	4	1	2	4	5
Duration	7	19	7	4	7	6
Change Point	0	17	46	60	74	87

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Lane 7/2 Storage In Front
1.8
0
1.8
0
R112 Foster Avenue/North Avenue
PRC: 20.4 %
Total Traffic Delay: 7.4 pcuHr
A
B
C
D
Arm 1 - University
Arm 2 -
Arm 3 - R112 Foster Avenue East
Arm 4 -
Arm 5 - North Avenue
Arm 6 -
Arm 7 - R112 Foster Avenue West
Arm 8 -
A
D
D
J
B
B
E
K
C
0
17
46
60
74
87
100
5
1
4
2
1
4
C1
Stages
1
Min >= 6
2
Min >= 4
3
Min >= 0

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: R112 Foster Ave / North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**
R112 Foster Avenue/North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**
1/1	University Left Ahead Right	O	N/A	N/A	A		2	26	-	60	2015	564	10.6%
2/1		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
3/2+3/1	R112 Foster Avenue East Left Ahead	U+O	N/A	N/A	B E		2:1	23:81	-	212	1940:1872	457+50	41.8 : 41.8%
3/3	R112 Foster Avenue East Right	O	N/A	N/A	B	K	3	31	8	0	1940	396	0.0%
4/1		U	N/A	N/A	-		-	-	-	655	Inf	Inf	0.0%
5/1	North Avenue Ahead Right Left	O	N/A	N/A	C		2	28	-	371	1811	496	74.7%
6/1		U	N/A	N/A	-		-	-	-	41	Inf	Inf	0.0%
7/1+7/2	R112 Foster Avenue West Left Ahead Right	U+O	N/A	N/A	D	J	2:3	19:23	4	283	1955:1955	411+0	68.9 : 0.0%
8/1		U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%

Full Input Data And Results

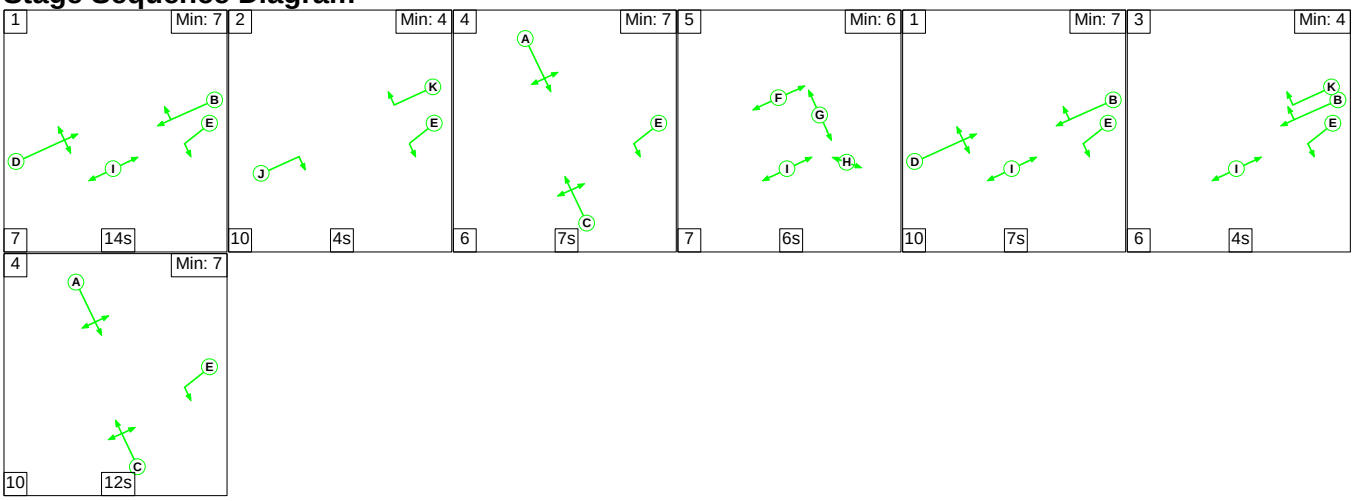
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Foster Ave / North Avenue	**-**	**-**	**321**	**14**	**57**	**4.2**	**3.0**	**0.2**	**7.4**	**-**	**-**	**-**	**-**
R112 Foster Avenue/North Avenue	**-**	**-**	**321**	**14**	**57**	**4.2**	**3.0**	**0.2**	**7.4**	**-**	**-**	**-**	**-**
1/1	60	60	20	0	0	0.2	0.1	0.0	0.3	17.0	0.7	0.1	0.7
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	212	212	7	14	0	0.9	0.4	0.0	1.2	21.0	2.7	0.4	3.1
3/3	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4/1	655	655	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	371	371	295	0	57	1.6	1.4	0.2	3.2	31.4	4.8	1.4	6.3
6/1	41	41	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	283	283	0	0	0	1.5	1.1	0.0	2.6	33.2	4.5	1.1	5.6
8/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 20.4 Total Delay for Signalled Lanes (pcuHr): 7.36 Cycle Time (s): 100
PRC Over All Lanes (%): 20.4 Total Delay Over All Lanes(pcuHr): 7.36

Full Input Data And Results

Scenario 2: '2021 Do Nothing PM' (FG2: '20121 PM Peak', Plan 2: 'pm')

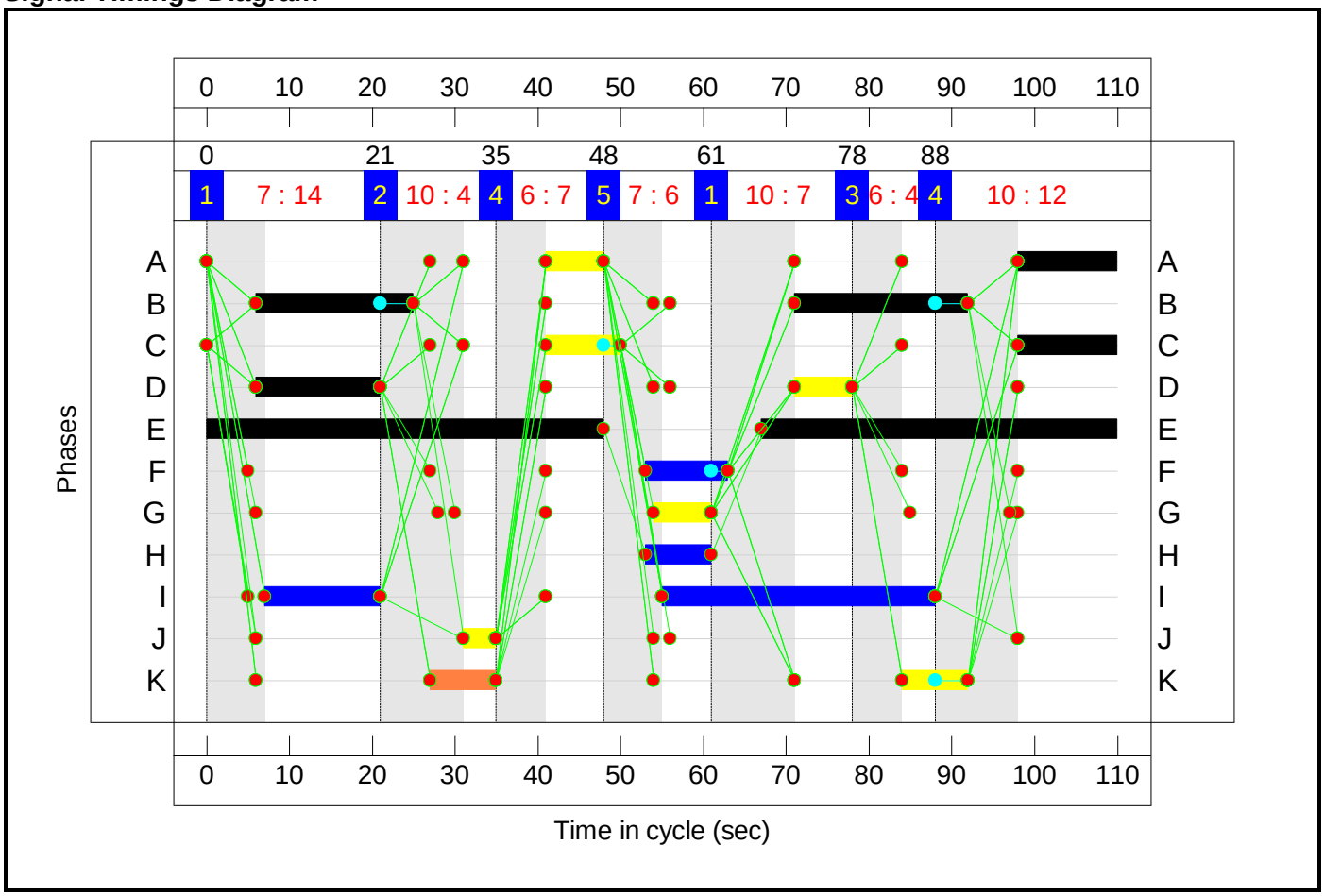
Stage Sequence Diagram



Stage Timings

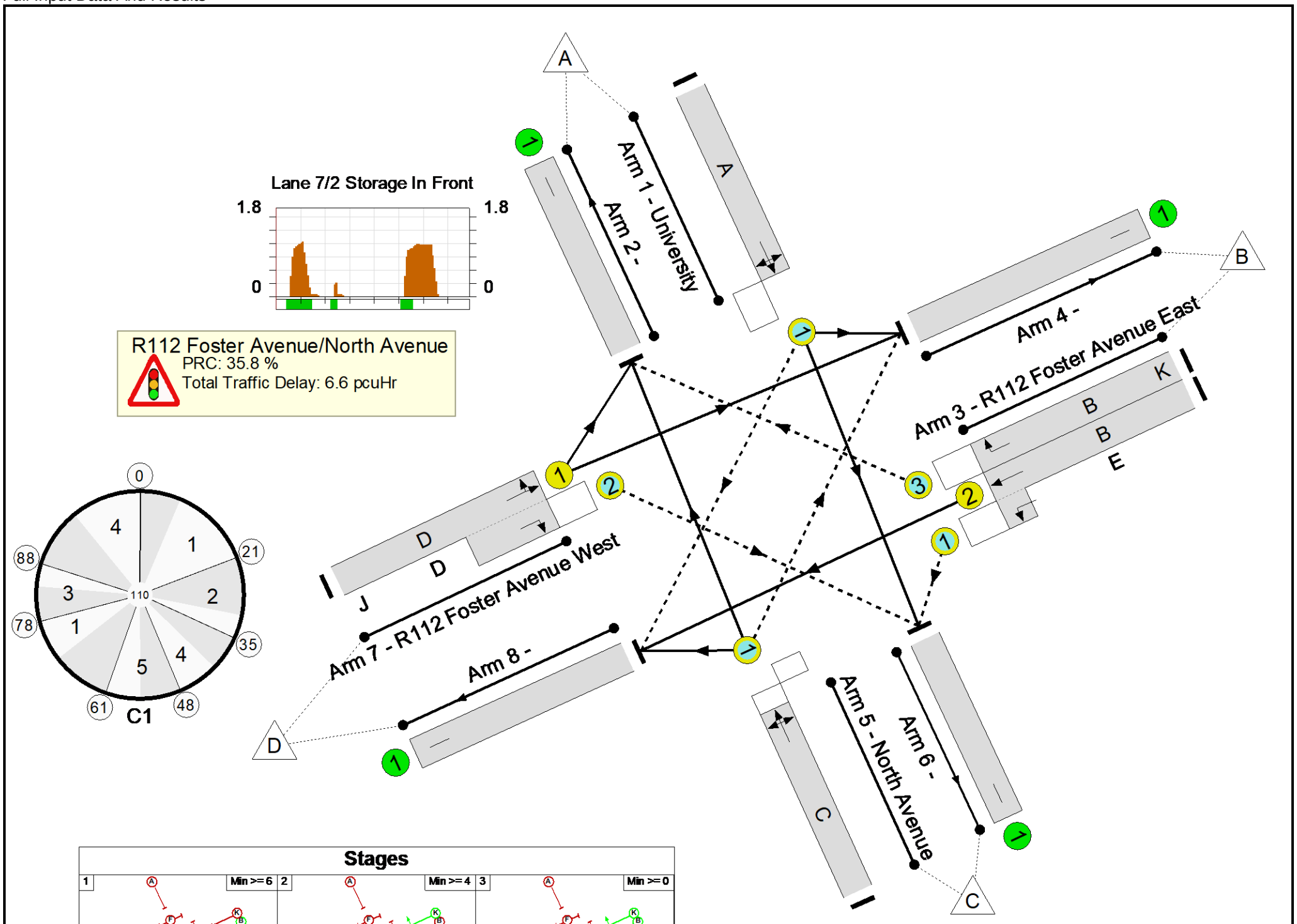
Stage	1	2	4	5	1	3	4
Duration	14	4	7	6	7	4	12
Change Point	0	21	35	48	61	78	88

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Lane 7/2 Storage In Front
1.8
0
1.8
0
R112 Foster Avenue/North Avenue
PRC: 35.8 %
Total Traffic Delay: 6.6 pcuHr
A
B
C
D
Arm 1 - University
Arm 2 -
Arm 3 - R112 Foster Avenue East
Arm 4 -
Arm 5 - North Avenue
Arm 6 -
Arm 7 - R112 Foster Avenue West
Arm 8 -
A
A
B
K
B
B
E
D
D
J
C
0
4
1
21
88
3
110
2
78
1
35
5
4
61
48
C1
Stages
1
Min >= 6
2
Min >= 4
3
Min >= 0

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: R112 Foster Ave / North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.3%**
R112 Foster Avenue/North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.3%**
1/1	University Left Ahead Right	O	N/A	N/A	A		2	19	-	0	2015	385	0.0%
2/1		U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
3/2+3/1	R112 Foster Avenue East Left Ahead	U+O	N/A	N/A	B E		2:1	40:91	-	513	1940:1872	544+247	64.8 : 64.8%
3/3	R112 Foster Avenue East Right	O	N/A	N/A	B	K	3	48	16	20	1732	694	2.9%
4/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
5/1	North Avenue Ahead Right Left	O	N/A	N/A	C		2	21	-	246	1775	371	66.3%
6/1		U	N/A	N/A	-		-	-	-	259	Inf	Inf	0.0%
7/1+7/2	R112 Foster Avenue West Left Ahead Right	U+O	N/A	N/A	D	J	2:3	22:26	4	225	1877:1636	347+273	36.3 : 36.3%
8/1		U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Foster Ave / North Avenue	**-**	**-**	**345**	**78**	**7**	**4.2**	**2.2**	**0.2**	**6.6**	**-**	**-**	**-**	**-**
R112 Foster Avenue/North Avenue	**-**	**-**	**345**	**78**	**7**	**4.2**	**2.2**	**0.2**	**6.6**	**-**	**-**	**-**	**-**
1/1	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	513	513	96	64	0	1.8	0.9	0.0	2.7	18.8	7.7	0.9	8.6
3/3	20	20	15	4	1	0.0	0.0	0.0	0.1	12.8	0.2	0.0	0.2
4/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	246	246	147	0	4	1.4	1.0	0.0	2.3	34.3	3.7	1.0	4.7
6/1	259	259	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	225	225	86	11	2	1.0	0.3	0.2	1.5	24.2	1.8	0.3	2.1
8/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

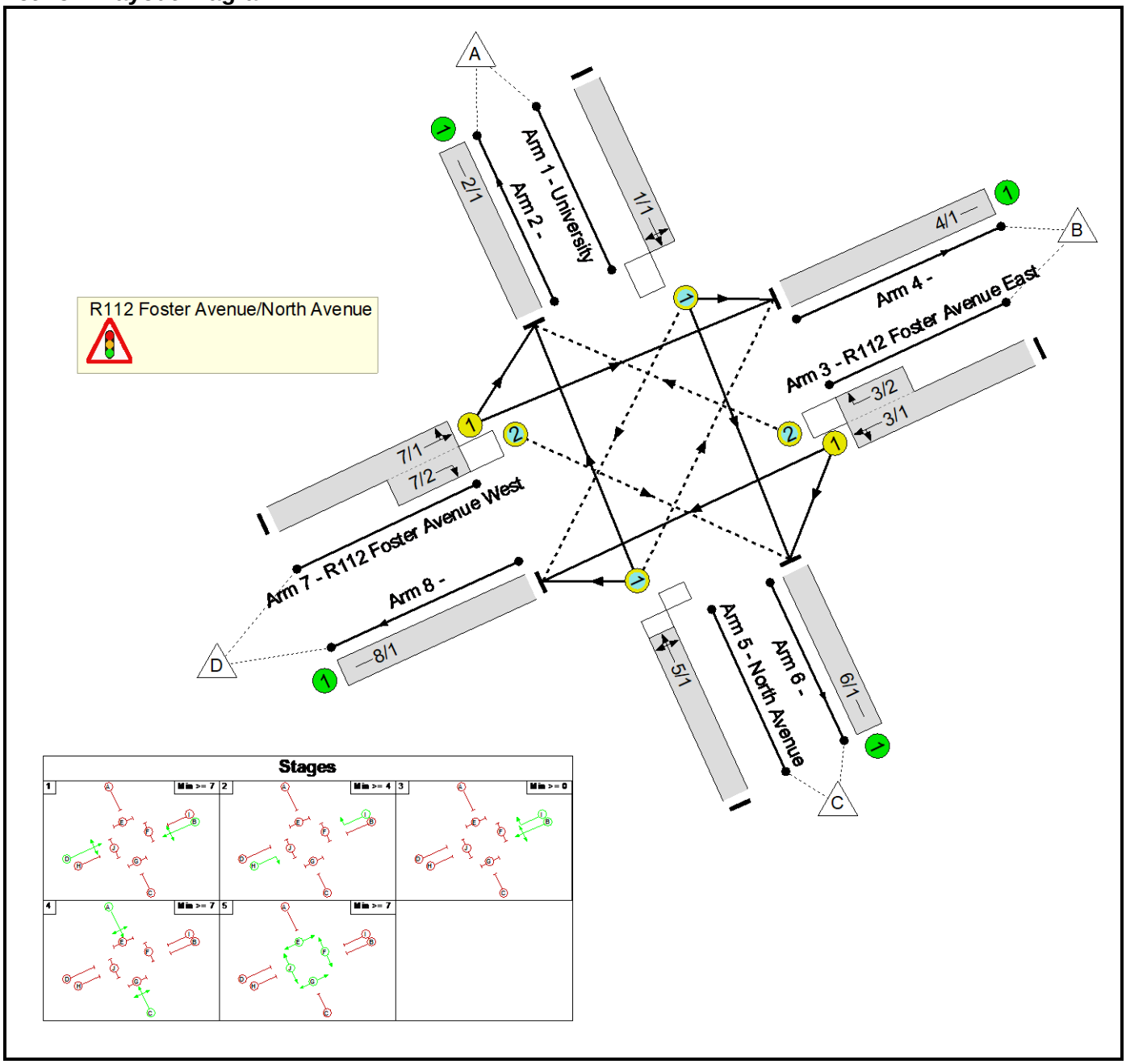
C1 PRC for Signalled Lanes (%): 35.8 Total Delay for Signalled Lanes (pcuHr): 6.61 Cycle Time (s): 110
PRC Over All Lanes (%): 35.8 Total Delay Over All Lanes(pcuHr): 6.61

Full Input Data And Results

User and Project Details

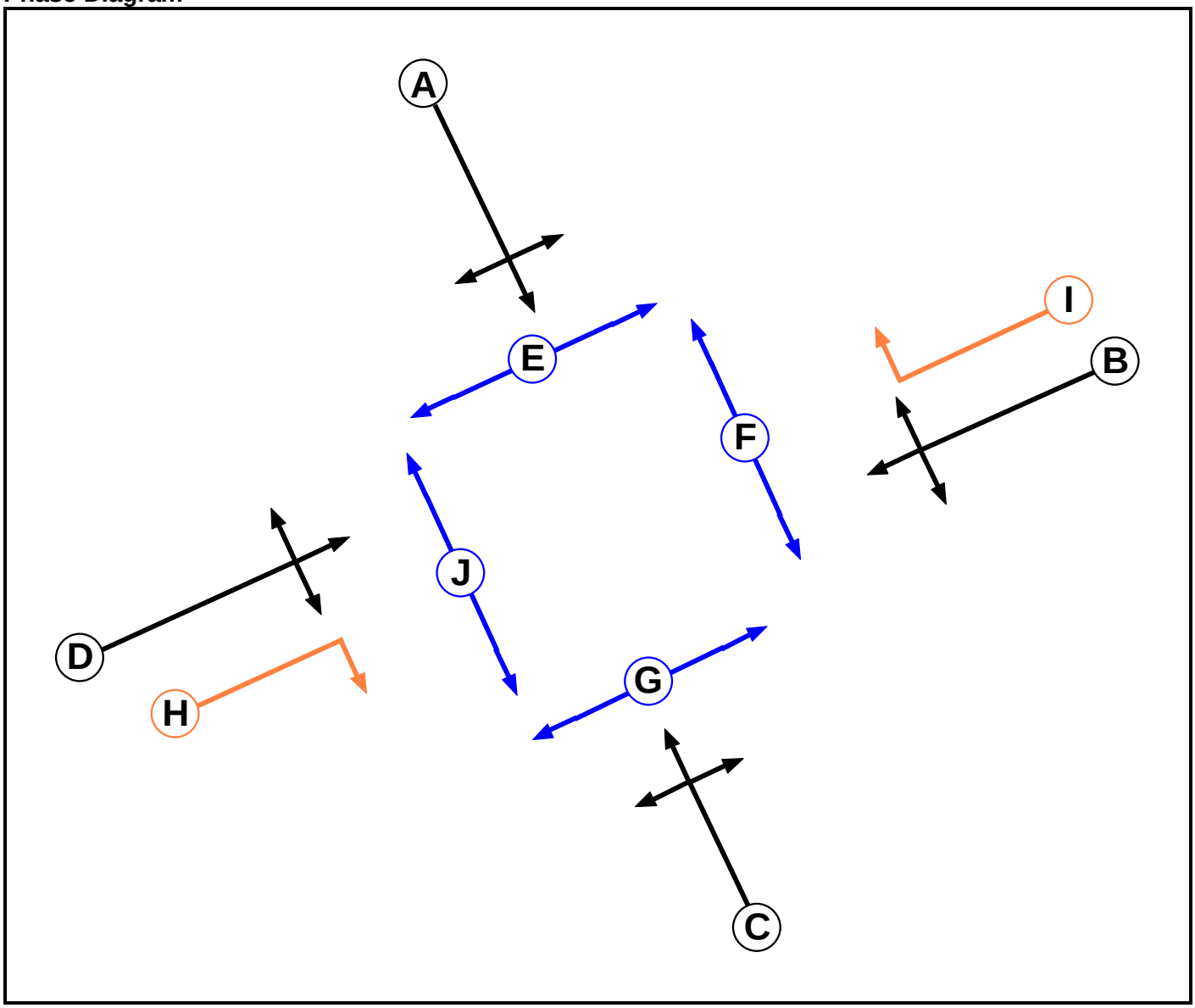
Project:	**ACTIVE TRAVEL ROUTE DUNDRUM TO STILLORGAN ROAD**
Title:	**R112 Foster Ave / North Avenue**
Location:	
Design Layout Ref:	Proposed Layout
Additional detail:	
File name:	R112 Foster Ave_North Ave Proposed v2 Updated.lsg3x
Author:	
Company:	RAMBOLL
Address:	

Network Layout Diagram



Full Input Data And Results

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		7	7
F	Pedestrian		7	7
G	Pedestrian		7	5
H	Filter with Closing Amber (Not UK)		4	4
I	Filter with Closing Amber (Not UK)		4	4
J	Pedestrian		7	7

Full Input Data And Results

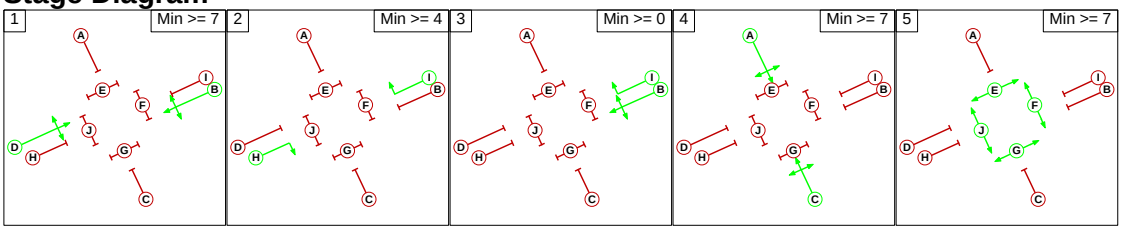
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
5	1	E	Losing	1	1
5	1	F	Losing	1	1
5	1	G	Losing	2	2
5	2	G	Losing	2	2
5	3	G	Losing	2	2
5	4	E	Losing	1	1
5	4	F	Losing	1	1
5	4	G	Losing	2	2

Full Input Data And Results

Prohibited Stage Change

From Stage	To Stage					
		1	2	3	4	5
	1		6	6	6	7
	2	6		6	6	6
	3	6	6		6	7
	4	6	6	6		7
	5	10	10	10	10	

Full Input Data And Results

Give-Way Lane Input Data

Junction: R112 Foster Avenue/North Avenue											
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 (University)	8/1 (Right)	1439	0	5/1	1.09	To 2/1 (Ahead) To 8/1 (Left)	2.00	2.00	0.50	2	2.00
3/2 (R112 Foster Avenue East)	2/1 (Right)	1439	0	7/1	1.09	All	2.00	-	0.50	2	2.00
5/1 (North Avenue)	4/1 (Right)	1439	0	1/1	1.09	To 4/1 (Left) To 6/1 (Ahead)	2.00	1.00	0.50	2	2.00
7/2 (R112 Foster Avenue West)	6/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: R112 Foster Avenue/North Avenue												
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 (University)	O	A	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Left	Inf
											Arm 6 Ahead	Inf
											Arm 8 Right	Inf
2/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (R112 Foster Avenue East)	U	B	2	3	60.0	Geom	-	3.60	0.00	Y	Arm 6 Left	12.00
											Arm 8 Ahead	Inf
3/2 (R112 Foster Avenue East)	O	B I	2	3	4.0	Geom	-	3.60	0.00	Y	Arm 2 Right	12.50
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (North Avenue)	O	C	2	3	60.0	Geom	-	3.80	0.00	Y	Arm 2 Ahead	Inf
											Arm 4 Right	15.70
											Arm 8 Left	7.00
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (R112 Foster Avenue West)	U	D	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 2 Left	5.70
											Arm 4 Ahead	Inf
7/2 (R112 Foster Avenue West)	O	D H	2	3	4.3	Geom	-	3.40	0.00	Y	Arm 6 Right	7.70
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 AM Peak'	08:00	09:00	01:00	
2: '2021 PM Peak'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: '2021Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	20	20	20	60
	B	0	0	21	191	212
	C	0	352	0	19	371
	D	0	283	0	0	283
	Tot.	0	655	41	230	926

Traffic Lane Flows

Lane	Scenario 1: 2021Do Nothing AM
Junction: R112 Foster Avenue/North Avenue	
1/1	60
2/1	0
3/1 (with short)	212(In) 212(Out)
3/2 (short)	0
4/1	655
5/1	371
6/1	41
7/1 (with short)	283(In) 283(Out)
7/2 (short)	0
8/1	230

Full Input Data And Results

Lane Saturation Flows

Junction: R112 Foster Avenue/North Avenue								
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 (University)	4.00	0.00	Y	Arm 4 Left	Inf	33.3 %	2015	2015
				Arm 6 Ahead	Inf	33.3 %		
				Arm 8 Right	Inf	33.3 %		
2/1	Infinite Saturation Flow						Inf	Inf
3/1 (R112 Foster Avenue East)	3.60	0.00	Y	Arm 6 Left	12.00	9.9 %	1951	1951
				Arm 8 Ahead	Inf	90.1 %		
3/2 (R112 Foster Avenue East)	3.60	0.00	Y	Arm 2 Right	12.50	0.0 %	1975	1975
4/1	Infinite Saturation Flow						Inf	Inf
5/1 (North Avenue)	3.80	0.00	Y	Arm 2 Ahead	Inf	0.0 %	1811	1811
				Arm 4 Right	15.70	94.9 %		
				Arm 8 Left	7.00	5.1 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 2 Left	5.70	0.0 %	1955	1955
				Arm 4 Ahead	Inf	100.0 %		
7/2 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 6 Right	7.70	0.0 %	1955	1955
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	0	0	0
	B	20	0	160	353	533
	C	20	151	0	75	246
	D	20	106	99	0	225
	Tot.	60	257	259	428	1004

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 Do Nothing PM
Junction: R112 Foster Avenue/North Avenue	
1/1	0
2/1	60
3/1 (with short)	533(In) 513(Out)
3/2 (short)	20
4/1	257
5/1	246
6/1	259
7/1 (with short)	225(In) 126(Out)
7/2 (short)	99
8/1	428

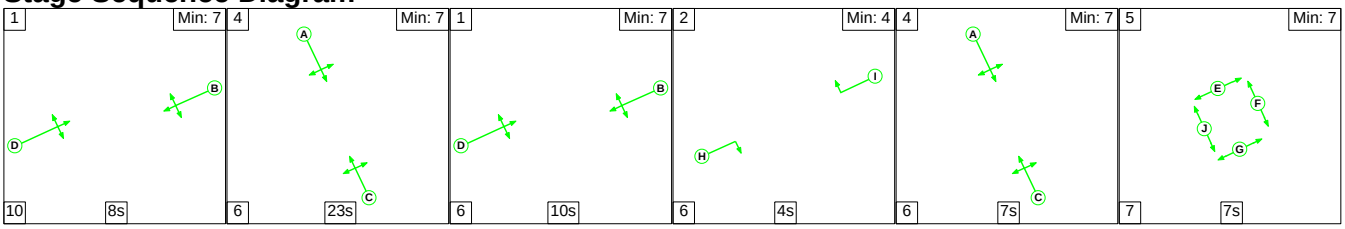
Lane Saturation Flows

Junction: R112 Foster Avenue/North Avenue								
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 (University)	4.00	0.00	Y	Arm 4 Left	Inf	0.0 %	2015	2015
				Arm 6 Ahead	Inf	0.0 %		
				Arm 8 Right	Inf	0.0 %		
2/1	Infinite Saturation Flow						Inf	Inf
3/1 (R112 Foster Avenue East)	3.60	0.00	Y	Arm 6 Left	12.00	31.2 %	1901	1901
				Arm 8 Ahead	Inf	68.8 %		
3/2 (R112 Foster Avenue East)	3.60	0.00	Y	Arm 2 Right	12.50	100.0 %	1763	1763
4/1	Infinite Saturation Flow						Inf	Inf
5/1 (North Avenue)	3.80	0.00	Y	Arm 2 Ahead	Inf	8.1 %	1775	1775
				Arm 4 Right	15.70	61.4 %		
				Arm 8 Left	7.00	30.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 2 Left	5.70	15.9 %	1877	1877
				Arm 4 Ahead	Inf	84.1 %		
7/2 (R112 Foster Avenue West)	3.40	0.00	Y	Arm 6 Right	7.70	100.0 %	1636	1636
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: '2021Do Nothing AM ' (FG1: '2021 AM Peak', Plan 1: 'am')

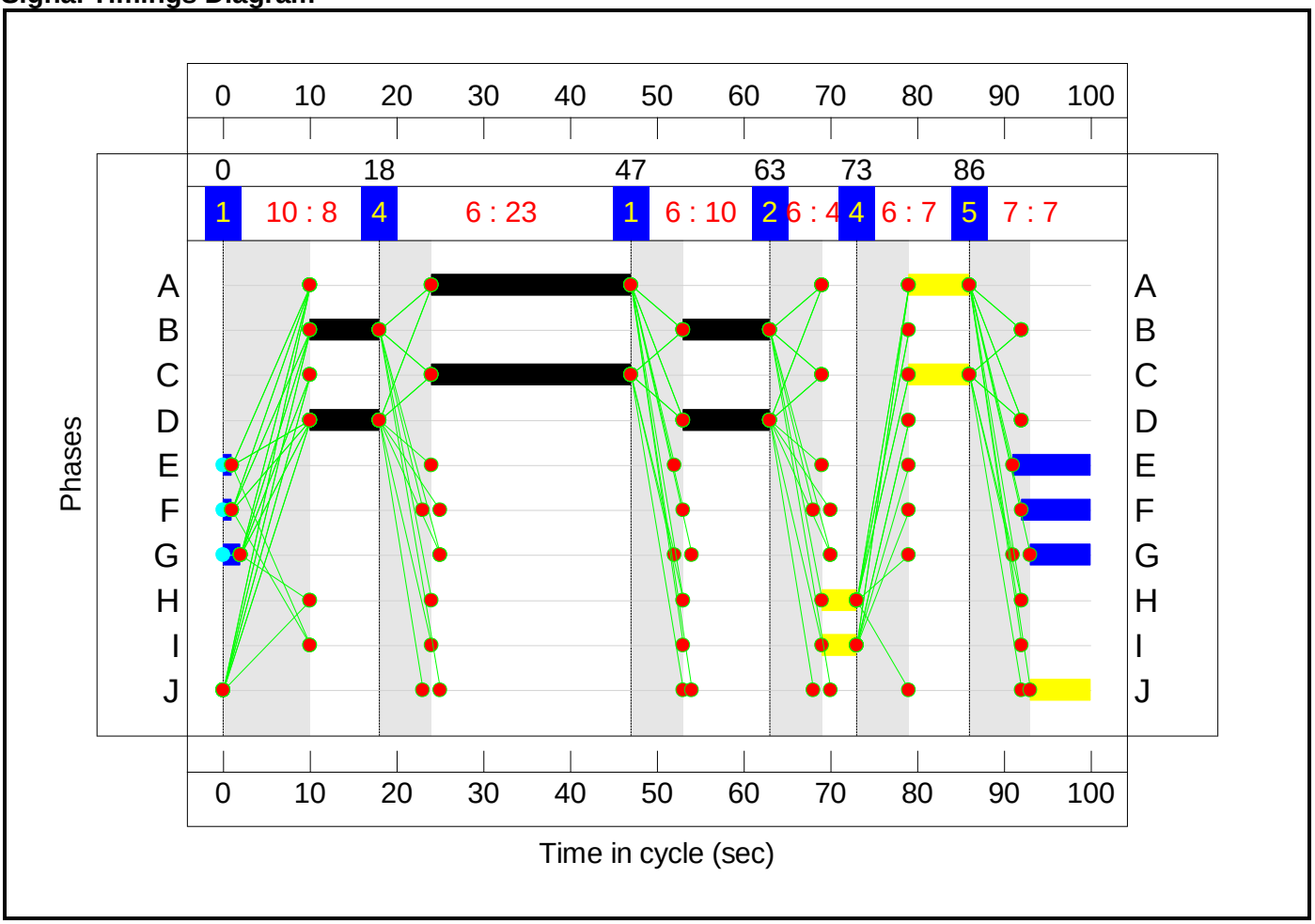
Stage Sequence Diagram



Stage Timings

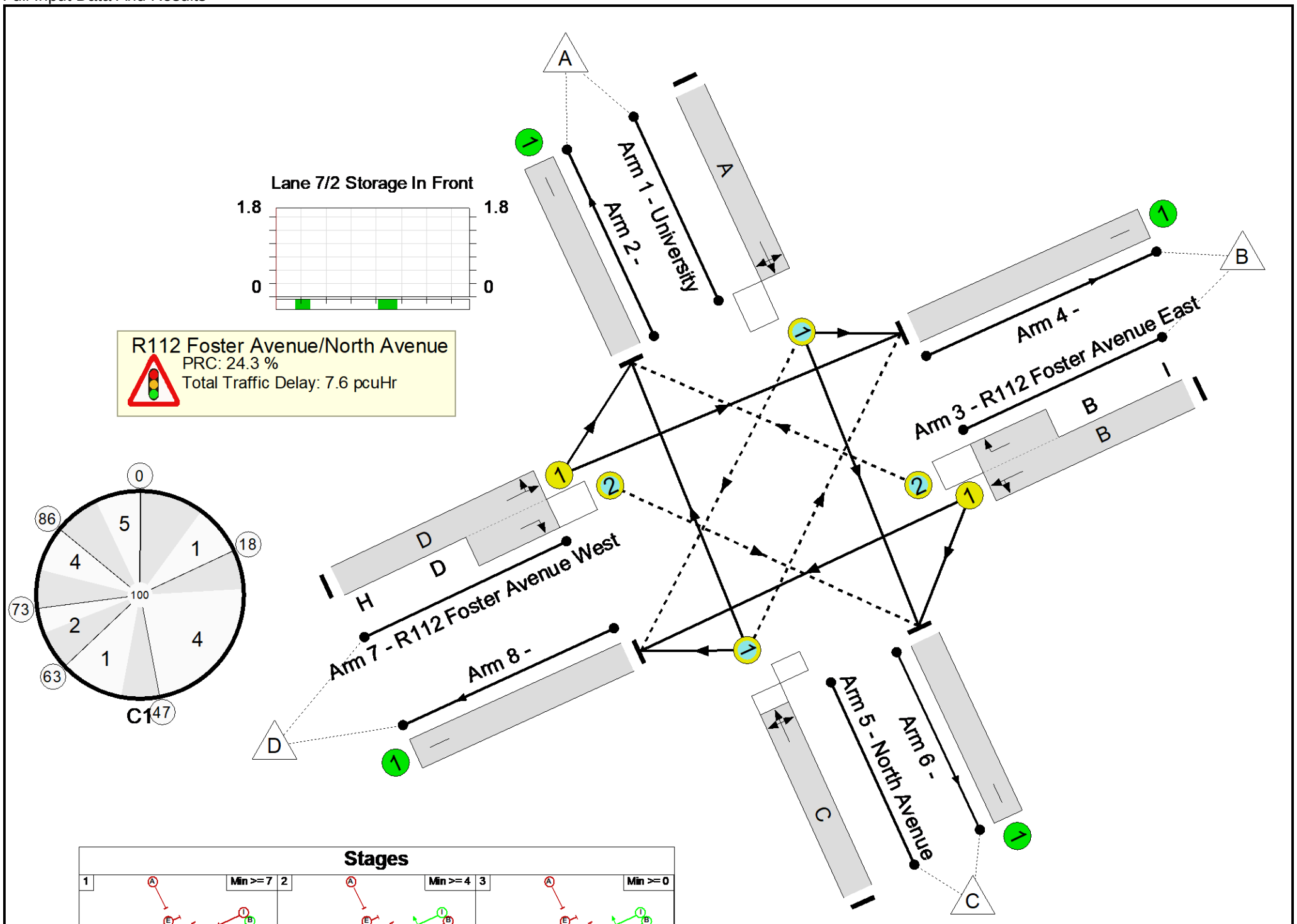
Stage	1	4	1	2	4	5
Duration	8	23	10	4	7	7
Change Point	0	18	47	63	73	86

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Lane 7/2 Storage In Front
1.8
0
1.8
0
R112 Foster Avenue/North Avenue
PRC: 24.3 %
Total Traffic Delay: 7.6 pcuHr
A
Arm 1 - University
Arm 2 -
B
Arm 4 -
Arm 3 - R112 Foster Avenue East
D
Arm 7 - R112 Foster Avenue West
Arm 8 -
C
Arm 5 - North Avenue
Arm 6 -
0
86
18
73
100
63
47
C1
5
1
4
2
1
4
Stages
1
Min >= 7
2
Min >= 4
3
Min >= 0

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: R112 Foster Ave / North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.4%**
R112 Foster Avenue/North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.4%**
1/1	University Left Ahead Right	O	N/A	N/A	A		2	30	-	60	2015	645	9.3%
2/1		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
3/1+3/2	R112 Foster Avenue East Right Left Ahead	U+O	N/A	N/A	B	I	2:3	18:22	4	212	1951:1975	390+0	54.3 : 0.0%
4/1		U	N/A	N/A	-		-	-	-	655	Inf	Inf	0.0%
5/1	North Avenue Ahead Right Left	O	N/A	N/A	C		2	30	-	371	1811	525	70.7%
6/1		U	N/A	N/A	-		-	-	-	41	Inf	Inf	0.0%
7/1+7/2	R112 Foster Avenue West Left Ahead Right	U+O	N/A	N/A	D	H	2:3	18:22	4	283	1955:1955	391+0	72.4 : 0.0%
8/1		U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Foster Ave / North Avenue	**-**	**-**	**329**	**0**	**43**	**4.3**	**3.1**	**0.2**	**7.6**	**-**	**-**	**-**	**-**
R112 Foster Avenue/North Avenue	**-**	**-**	**329**	**0**	**43**	**4.3**	**3.1**	**0.2**	**7.6**	**-**	**-**	**-**	**-**
1/1	60	60	20	0	0	0.2	0.1	0.0	0.3	15.1	0.6	0.1	0.7
2/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1+3/2	212	212	0	0	0	1.1	0.6	0.0	1.7	28.4	3.0	0.6	3.6
4/1	655	655	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	371	371	309	0	43	1.5	1.2	0.2	2.9	28.0	4.8	1.2	6.0
6/1	41	41	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	283	283	0	0	0	1.5	1.3	0.0	2.8	35.4	4.2	1.3	5.4
8/1	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): 24.3
PRC Over All Lanes (%): 24.3

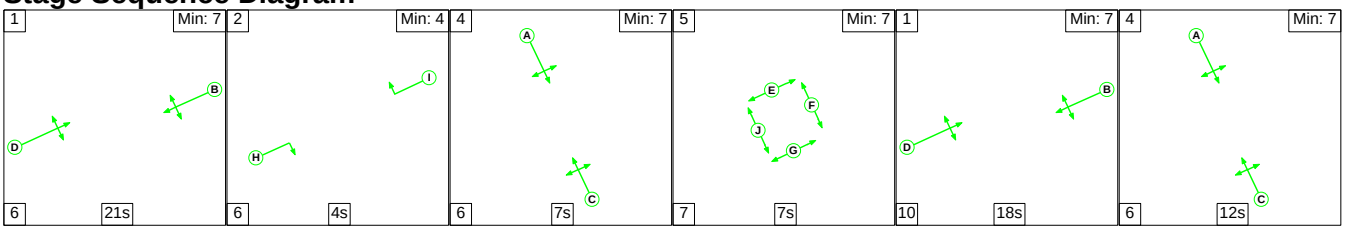
Total Delay for Signalled Lanes (pcuHr): 7.59
Total Delay Over All Lanes(pcuHr): 7.59

Cycle Time (s): 100

Full Input Data And Results

Scenario 2: '2021 Do Nothing PM' (FG2: '2021 PM Peak', Plan 2: 'pm')

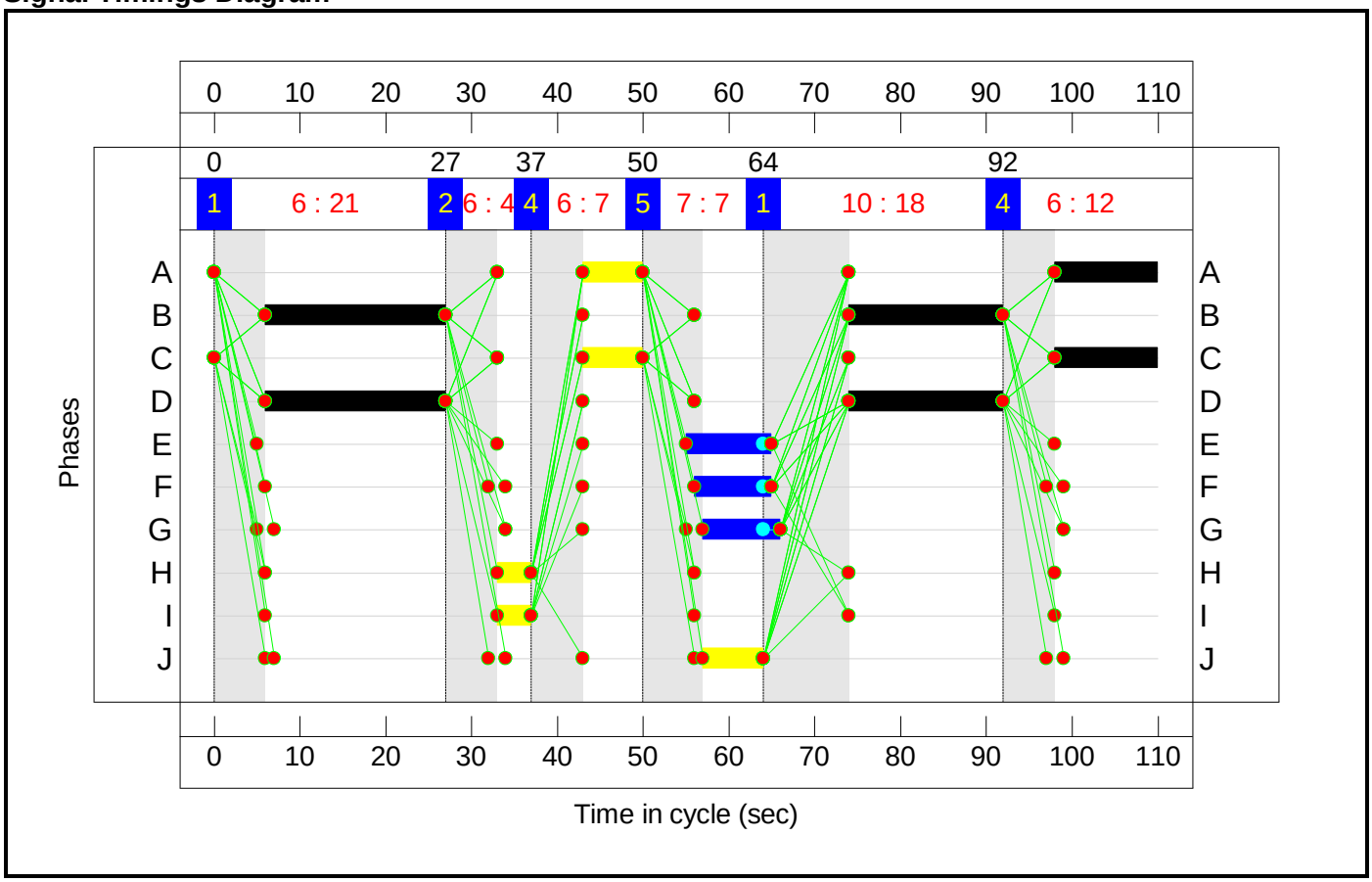
Stage Sequence Diagram



Stage Timings

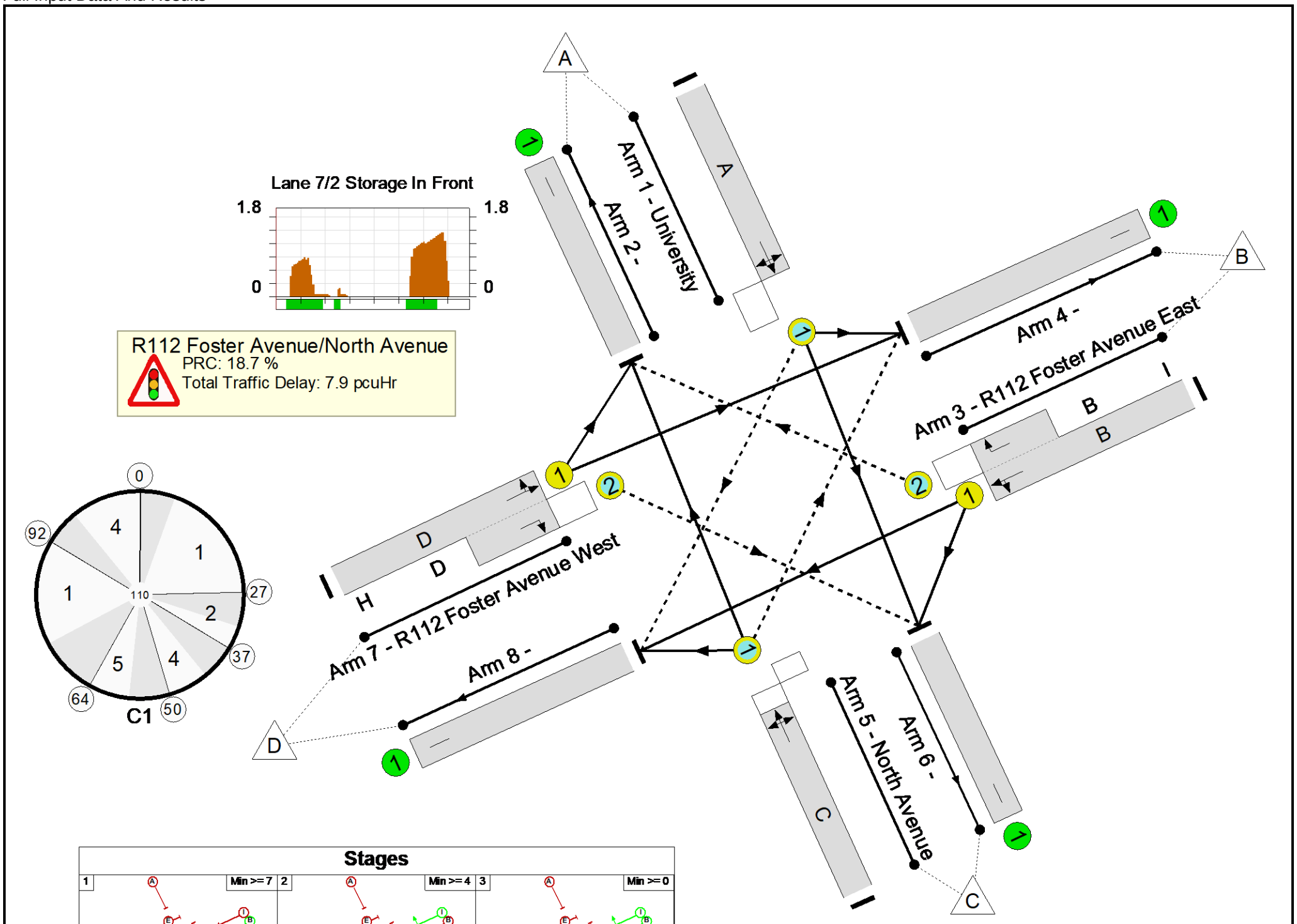
Stage	1	2	4	5	1	4
Duration	21	4	7	7	18	12
Change Point	0	27	37	50	64	92

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Lane 7/2 Storage In Front
1.8
0
1.8
0
R112 Foster Avenue/North Avenue
PRC: 18.7 %
Total Traffic Delay: 7.9 pcuHr
A
B
C
D
Arm 1 - University
Arm 2 -
Arm 3 - R112 Foster Avenue East
Arm 4 -
Arm 5 - North Avenue
Arm 6 -
Arm 7 - R112 Foster Avenue West
Arm 8 -
0
4
1
92
1
110
27
2
5
4
37
64
50
C1
Stages
1
Min >= 7
2
Min >= 4
3
Min >= 0

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: R112 Foster Ave / North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.8%**
R112 Foster Avenue/North Avenue	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.8%**
1/1	University Left Ahead Right	O	N/A	N/A	A		2	19	-	0	2015	385	0.0%
2/1		U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
3/1+3/2	R112 Foster Avenue East Right Left Ahead	U+O	N/A	N/A	B	I	2:3	39:43	4	533	1901:1763	676+26	75.8 : 75.8%
4/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
5/1	North Avenue Ahead Right Left	O	N/A	N/A	C		2	19	-	246	1775	339	72.6%
6/1		U	N/A	N/A	-		-	-	-	259	Inf	Inf	0.0%
7/1+7/2	R112 Foster Avenue West Left Ahead Right	U+O	N/A	N/A	D	H	2:3	39:43	4	225	1877:1636	377+296	33.5 : 33.5%
8/1		U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: R112 Foster Ave / North Avenue	**-**	**-**	**215**	**9**	**46**	**4.6**	**3.1**	**0.3**	**7.9**	**-**	**-**	**-**	**-**
R112 Foster Avenue/North Avenue	**-**	**-**	**215**	**9**	**46**	**4.6**	**3.1**	**0.3**	**7.9**	**-**	**-**	**-**	**-**
1/1	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1+3/2	533	533	18	1	0	2.4	1.5	0.0	4.0	26.9	9.3	1.5	10.9
4/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	246	246	148	0	3	1.4	1.3	0.0	2.7	39.9	3.7	1.3	5.0
6/1	259	259	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	225	225	49	7	43	0.7	0.3	0.3	1.2	19.8	1.7	0.3	2.0
8/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 18.7 Total Delay for Signalled Lanes (pcuHr): 7.95 Cycle Time (s): 110
PRC Over All Lanes (%): 18.7 Total Delay Over All Lanes(pcuHr): 7.95