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Options Report – Dodder Greenway Section Firhouse Road

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Átha Cliath Theas
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1. INTRODUCTION

1.1 Background

This Options Report has been prepared by Clifton Scannell Emerson Associates (CSEA) on behalf of the South Dublin County Council (SDCC), documenting the options development and selection process of possible layouts for infrastructural changes proposed along R114 Firhouse Road. The changes to which this report relates to are proposed on the road sections between Firhouse Road/ Old Bridge Road, Butterfield Avenue/ Ballyroan Road junction, hereafter called the ôBlue Haven Junctionô and the Spawell Link Road/ Firhouse Road junction.

The proposal includes the upgrade of the above-mentioned junctions. This forms part of approximately 1.54km of road upgrade along Firhouse Road and Spawell Link Road, which aims to deliver segregated cycle tracks, shared paths, and footpaths. The designs taken into consideration have been drawn as part of the Dodder Greenway project.

This Options Report undertakes a review of the current arrangements for all road users, with particular focus on pedestrians and cyclists. Furthermore, it identifies appropriate measures that could be implemented to improve safety for all users and encourage modal change from the use of private car to the use of walking, cycling and public transport.

This report puts forward several layout options, compares them using a Multi Criteria Analysis (MCA), and proposes a preferred option.

1.2 The Study Area

The study area to which this Options Report relates to is identified in Figure 1.1, which follows.

Figure 1.1 *Study Area*

As shown on Figure 1.1, the study area encompase the Firhouse Road section between Spawell Link Road and the Blue Haven junction, the full extend of the Spawell Link Road and the Firhouse Road/ Knocklyon Road junction.

1.3 Scheme Objectives

The main objective of the project is to link and complement, two sections of the overall Dodder Greenway Scheme, and to improve cyclist and pedestrian safety across this section of road, while minimising the impacts to the traffic performance. The upgrade is needed to be able to deliver the complete extend of the Dodder Greenway, eliminating any potential gaps that might risk the completion of the project.

This proposal will deliver segregated cycle tracks and footpaths along the section of Firhouse Road under study and the different arms of the Blue Haven Junction and Spawell Link Road junction. Additional crossing points for pedestrians are also proposed as part of the project. These links will be safe and attractive premium cycle routes that cater for commuting, leisure, tourist, and family cycling, as well as improved accessibility for pedestrians. The proposed scheme must not only increase accessibility and permeability within the immediate study area, but also provide enhanced and safer connectivity with other areas and routes. Ultimately the infrastructure should be delivered to integrate with other parts of the Dodder Greenway, reduce journey times and contribute towards increased numbers of trips being made by bicycle and by foot in the local catchments.

The delivery of the Dodder Greenway has been included in the *South Dublin County Council Development Plan 2017-2023* as one of the objectives the Council. Within the policies in the development plan, it is stated that South Dublin County Council aims to support and facilitate the development of an integrated network of Greenways and Trails, along suitable corridors, including the River Dodder.

A multi-disciplinary approach reflecting the vision of the *Design Manual for Urban Roads and Streets (DMURS)* and the *National Cycle Manual* has been taken into consideration in the creation of the different designs for an integrated design process and provision of opportunities for improvement of the public realm.

1.4 Report Structure

The remainder of this Report is structured as follows:

- **Chapter 2** provides an overview of the relevant local, regional, and national traffic and transport related policy deemed relevant to the proposed scheme;
- **Chapter 3** describes the existing conditions of the study area, presenting the road infrastructure currently in place and existing traffic volumes on the network. The contents within this section also provide a description of the data collection approach undertaken to develop the options and the constraints found in the design process;
- **Chapter 4** provides a detail description of the different layout options proposed for the study area;

- **Chapter 5** presents the traffic modelling results obtained from the assessment of the different layouts; and
- **Chapter 6** sets out the results of the Multi Criteria Analysis (MCA) undertaken to evaluate the different design options.

2. POLICY CONTEXT AND DESIGN GUIDANCE

2.1 Introduction

This section of the Report provides an overview of national and local policy and guidance deemed directly relevant to the creation of the different layout proposals. The existing infrastructure within the study area is substandard, therefore it is relevant to review current Policy for design guidance and implement the necessary changes to comply with the requirements presented within such documents.

2.2 National and Regional Policy

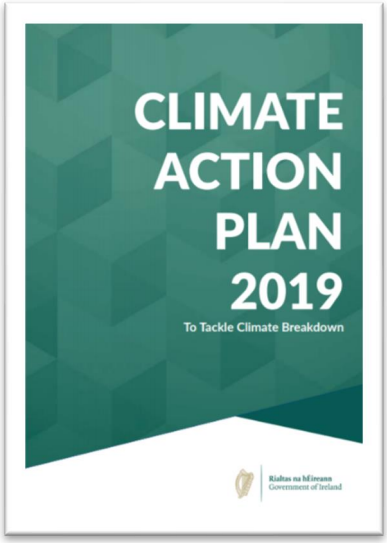
Project Ireland 2040

This document was published by the Irish *Department of Public Expenditure and Reform* in July 2018 with the purpose to provide a high-level strategic plan to improve transport, tourism, and sport infrastructure by 2040.

Project Ireland 2040 seeks to achieve several strategic outcomes, building around the overarching themes of wellbeing, equality and opportunity. *Sustainable Mobility* and *Enhanced Amenity and Heritage* are included within ten shared priorities of this Plan. The *Sustainable Mobility* priority focuses on the provision of safe alternative active travel options to alleviate congestion and help to meet climate action objectives, and the *Enhanced Amenity and Heritage* priority aims to promote the investment in high-quality infrastructure to create living space with defined character and attractiveness.

Climate Action Plan 2019

The *Climate Action Plan 2019* contains the Irish Governmentôs plan for tackling climate breakdown and reduce Irelandôs greenhouse gas emissions. It outlines the current state of play across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture, and charts a course of action towards ambitious decarbonisation targets.



Climate Action Plan aspiration are to achieve a net zero carbon energy system and create a resilient, vibrant, and sustainable country, with modal shift to public transport presented as one of the transport related objectives.

Strategy for the Future Development of National and Regional Greenways, July 2018

The *Strategy for the Future Development of National and Regional Greenways* was prepared by the Department of Tourism, Transport and Sport in July 2018. This document sets out the objectives of the Irish Government for the strategic development of nationally and regionally significant greenways in appropriate locations constructed to appropriate standards.

Page No. 6 of this document states that the Irish Government aims to ñ*increase the number and geographical spread of Greenways of scale and quality around the country over the next 10 years".* For the purposes of this strategy, the development of óGreenwaysô relates ñ*to the development of Greenways of scale i.e., for new developments or extensions of existing Greenways that are more than 20k or shorter distances where it is proposed to join a number of existing Greenways to form a longer, more strategic route".*

It is the objective to deliver the following:

1) *A Strategic Greenway network of national and regional routes, with a number of high-capacity flagship routes that can be extended and/or link with local Greenways and other cycling and walking infrastructure.*

2) *Greenways of scale and appropriate standard that have significant potential to deliver an increase in activity tourism to Ireland and are regularly used by overseas visitors, domestic visitors and locals thereby contributing to a healthier society through increased physical activity.*

3) *Greenways that provide a substantially segregated off-road experience linking places of interest, recreation, and leisure in areas with beautiful scenery of different types with plenty to see and do.*

4) *Greenways that provide opportunities for the development of local businesses and economies.*

5) *Greenways that are developed with all relevant stakeholders in line with an agreed code of practice.*

National Cycle Manual

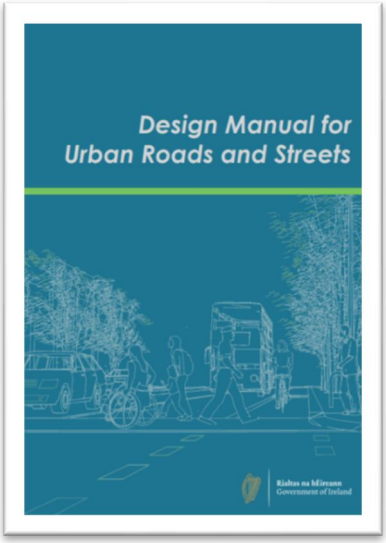
The National Cycle Manual (NCM), published by the National Transport Authority in 2011, sets out detailed guidance on implementation of cyclist facilities for all road types and environments. This document provides guidance to planners and engineers to improve cycling provision in urban areas.

In traffic terms, cycling is considered a vulnerable mode of transport. As a result of this, the contents within the National Cycle Manual (NCM) advise that the design of cycling infrastructure should be supported by principles of sustainable safety. This document details five principles which should be followed in every design of cycling infrastructure:

- *Functionality – cycle facility design is fit for purpose and follows movement related functions and place related functions.*
- *Homogeneity – reduction in the relative speed, mass and directional differences of different road users sharing the same space.*
- *Legibility – self-evident, self-explanatory, and self-enforcing road environment.*
- *Forgivingness – designing environments that contribute to safer outcomes when an accident occurs.*
- *Self-awareness – awareness of the expected cycling abilities of the potential users of the infrastructure.*

Section 1.5.2 of the Manual specifies the width requirements for cycle lanes, which is based on the no. cyclist attempting to be accommodated side to side, the characteristics adjacent infrastructure, and the speed limit on the road. Based on the information provided within this section, the minimum width allowed for a cycle lane can be 0.75 metres, which can accommodate a single file of cyclists. The maximum width permitted shall be 2.50 metres to accommodate two files of cyclists plus overtaking. Cycle facilities measuring 1.75 metres wide are listed as the ideal for basic two-ways, and 2.0 metres wide are ideal for accommodating a single file plus overtaking, partially using next lane. The manual recommends that cycle facilities shall not exceed 3.0 metres wide as they could be confused with traffic lanes.

Design Manual for Urban Roads and Streets



The *Design Manual for Urban Roads and Streets (DMURS)* was jointly published by the Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government in 2013, and updated in 2019. The principles, approaches and standards set out in DMURS apply to the design of all urban roads and streets (with a speed limit of 60 km/h or less).

DMURS outlines the principles approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets. This Manual sets out an integrated design approach influenced by the type of place in which the street is located and balance the needs of all users. It also aims to put well designed streets at the heart of sustainable communities creating physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling and public transport. The manual key design principles are as follows:

- *To support the creation of integrated street networks, which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.*
- *The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.*
- *The quality of the street is measured by the quality of the pedestrian environment*
- *Greater communication and co-operation between design professional through the promotion of a plan-led, multidisciplinary approach design.*

Section 4.3.1 of DMURS provide guidance in relation to footpath design. It states that a ñ*minimum footway widths are based on the space needed for two wheelchairs to pass each other (1.8m). In densely populated areas and along busier streets, additional width must be provided to allow people to pass each other in larger groups. The footway should be maintained at a consistent width between junctions and should not be narrowed to accommodate turning vehicles.”*

Section 4.3.3 of DMURS states ñ*reducing corner radii will significantly improve pedestrian and cyclist safety at junctions by lowering the speed at which vehicles can turn corners and by increasing inter-visibility between users. In general, on junctions between Arterial and/or Link streets a maximum corner radius of 6m should be applied. 6m will generally allow larger vehicles, such as buses and rigid body trucks, to turn corners without crossing the centre line of the intersecting road.”*

In relation to carriageway width, section 4.4.1 of DMURS indicates that ñ*in new designs the standard lane width on Arterial and Link Streets should lie in the range of 2.75m to 3.5m.*ò

BusConnects: Bus Network Redesign and Core Bus Corridors Project

<u>Overview</u>

The ôBusConnectsô programme was launched by the National Transport Authority (NTA) in May 2017 and is described as *“a programme to greatly improve bus and sustainable transport services. It is a key part of the Government’s polices to improve public transport and address climate change in Dublin and other cities. The aim of BusConnects is to deliver an enhanced bus system that is better for the city, its people and the environment*ò

The BusConnects programme contains three key elements:

- Dublin Area Bus Network Redesign Project;
- fare and ticketing enhancements; and
- better quality bus infrastructure, including the Core Bus Corridors Project (CBC).

BusConnects Core Bus Corridors

The aim of *BusConnects Core Bus Corridors* is to ñprovide enhanced walking, cycling and bus infrastructure on key access corridors in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along these corridors.ò Figure 2.2, below, illustrates the location of all 16 core bus corridors proposed under the BusConnects project within the Greater Dublin Area.

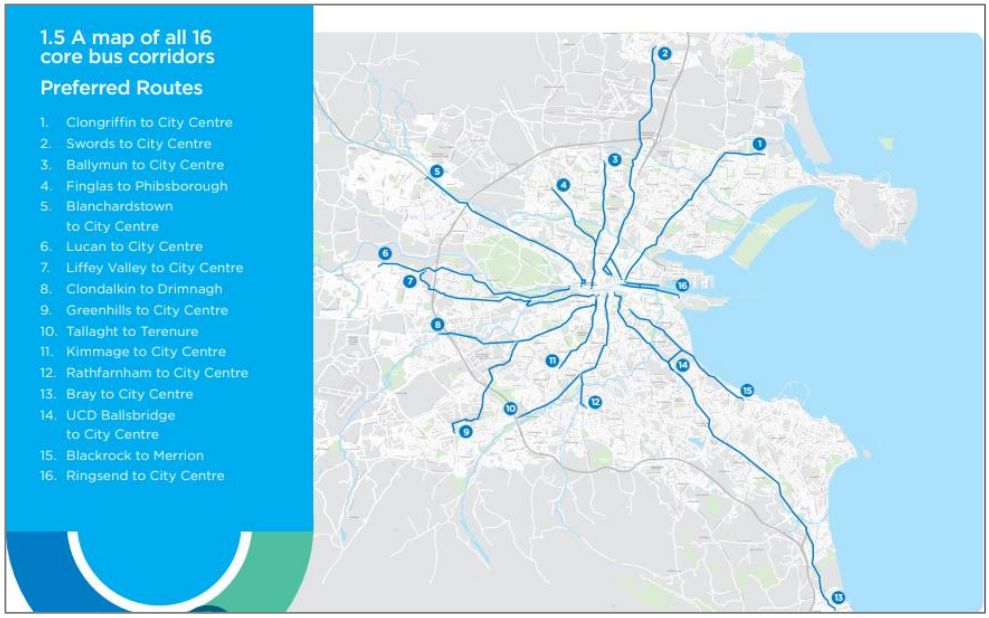


Figure 2.1 *BusConnects Core Bus Corridors (Source: busconnects.ie)*

Core Bus Corridors no. 10 (The Tallaght to Terenure CBC, as listed above) extends along the R137, from the M50 interchange to Terenure Cross, routed via the R137 Tallaght Road and Templeogue Road. This will be located directly to the north of Firhouse Road. Figure 2.1, below, illustrates the extend of CBC 10 in relation to the study area.

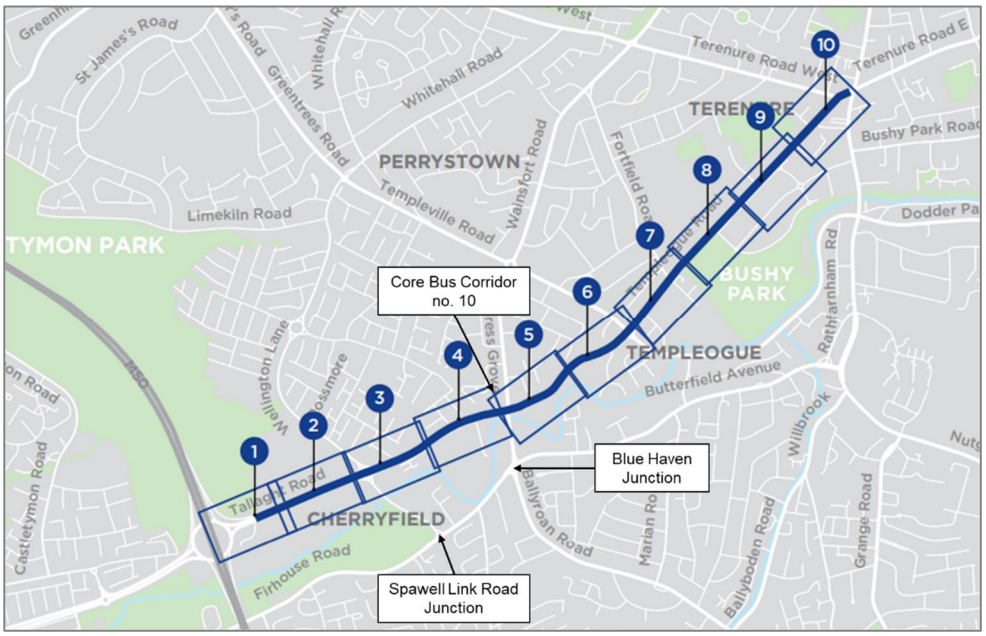


Figure 2.2 *Core Bus Corridor no. 10 (Source: busconnects.ie)*

A traffic assessment was undertaken by Jacobs, Arub, and Systra, on behalf of the NTA, ñ*to support the design development and assessment of the Tallaght to Terenure Core Bus Corridor".* The assessment analysed the changes in traffic distribution throughout the road network in the vicinity of the proposed CBC.

Due to the proximity of CBC no. 10 to the study area, it has been deemed relevant to review the forecasted traffic changes expected as part of the ôBusConnectsô project.

The latest version of the Transport Modelling Report created for CBC no. 10 dates from October 2020, and it is available within the ôBusConnectsô website. The traffic data utilised for the assessment was collected in November 2019. Figure 2.3, below, sets out the changes in vehicular traffic estimated for the AM peak period.

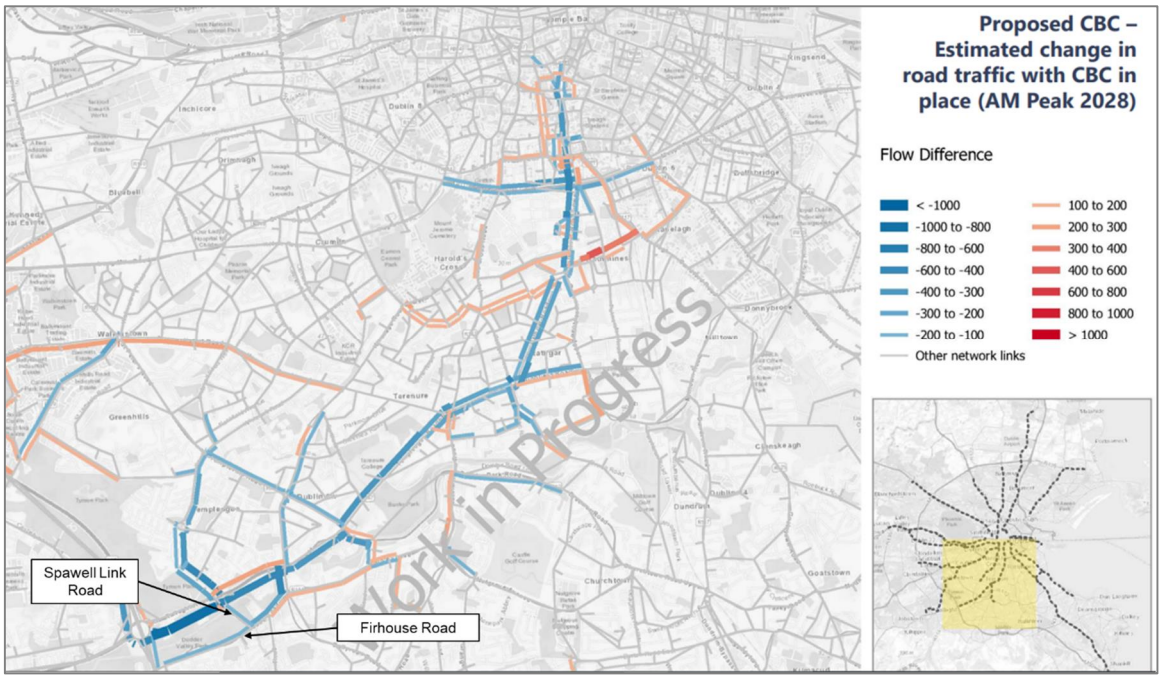


Figure 2.3 *AM Peak Traffic Modelling Results (Source: busconnects.ie)*

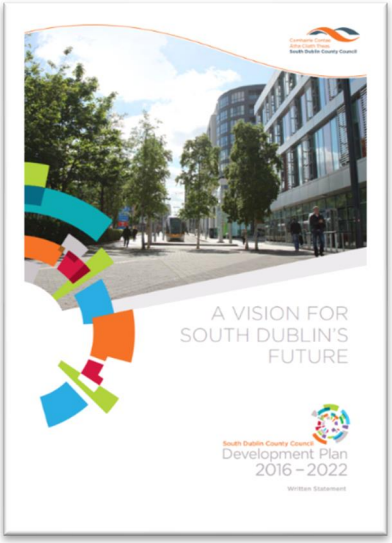
As shown on Figure 2.3, above, the results obtained from the modelling exercise estimates a reduction of up to 300 no. cars in Firhouse Road (northbound) during the AM peak. Around the same level of change should be expected for Spawell Link Road. This reduction comes as a result of travel mode shift from private car to public transport.

The traffic survey utilised in the traffic impact assessment undertaken as part of this MCA (see Section 3.7) showed that the northbound approach along Firhouse Road and transiting through the Blue Haven junction, carries the biggest percentage of traffic during the AM peak. The reduction estimated by the CBC modelling will benefit the traffic performance of the study area as less vehicular traffic will utilise the network. For the southbound approach, the model estimated an increase of up to 200 cars in Butterfield Avenue and a section of Firhouse Road (ending at Knocklyon Road).

The latest version of the Modelling report does not include the changes in traffic volumes estimated for the PM peak. These results can be expected to be available at a later date within an updated version of the Report.

2.3 Local Policy

South Dublin County Council Development Plan 2016-2022



The *South Dublin County Council Development Plan 2016-2022* sets out the Councilõs policies and objectives for development in the County over the period from 2016 through 2022.

ET6 Objective 1 of the Plan states that is the policy of the Council to *"support and facilitate the development of an integrated network of Greenways and Trails, including blueways/water trails, along suitable corridors, including the River Liffey, Dublin Mountains Way, Grand Canal, River Dodder and Slade Valley".*

Furthermore, the Council aims to *"Improved facilities for pedestrians and cyclists, such as increased footpath/cyclepath widths and safer crossings".*

Table 6.4 of the Plan sets out the Six Year Cycle Network Programme for the South Dublin Area. The Dodder Greenway Project has been included as item 1 on the list, as a proposed Green Route to extend from Bohernabreena to Rathfarnham via Firhouse and Old Bawn.

3. EXISTING CONDITIONS

3.1 Introduction

This section of the report sets out the exiting condition of the study area in terms of design and traffic volumes. The contents within this section describe the existing provision for the different transport modes. The data collection approach undertaken to support the design development and the constraints found in the design process are also included within this chapter.

3.2 Existing Layout- Blue Haven Junction

R114 Firhouse Road intersects with R817 Old Bridge Road, R114 Butterfield Avenue and R817 Ballyroan Road via a 4-arm signal-controlled junction. The existing layout of the Blue Haven Junction is illustrated in Figure 3.1, which follows.

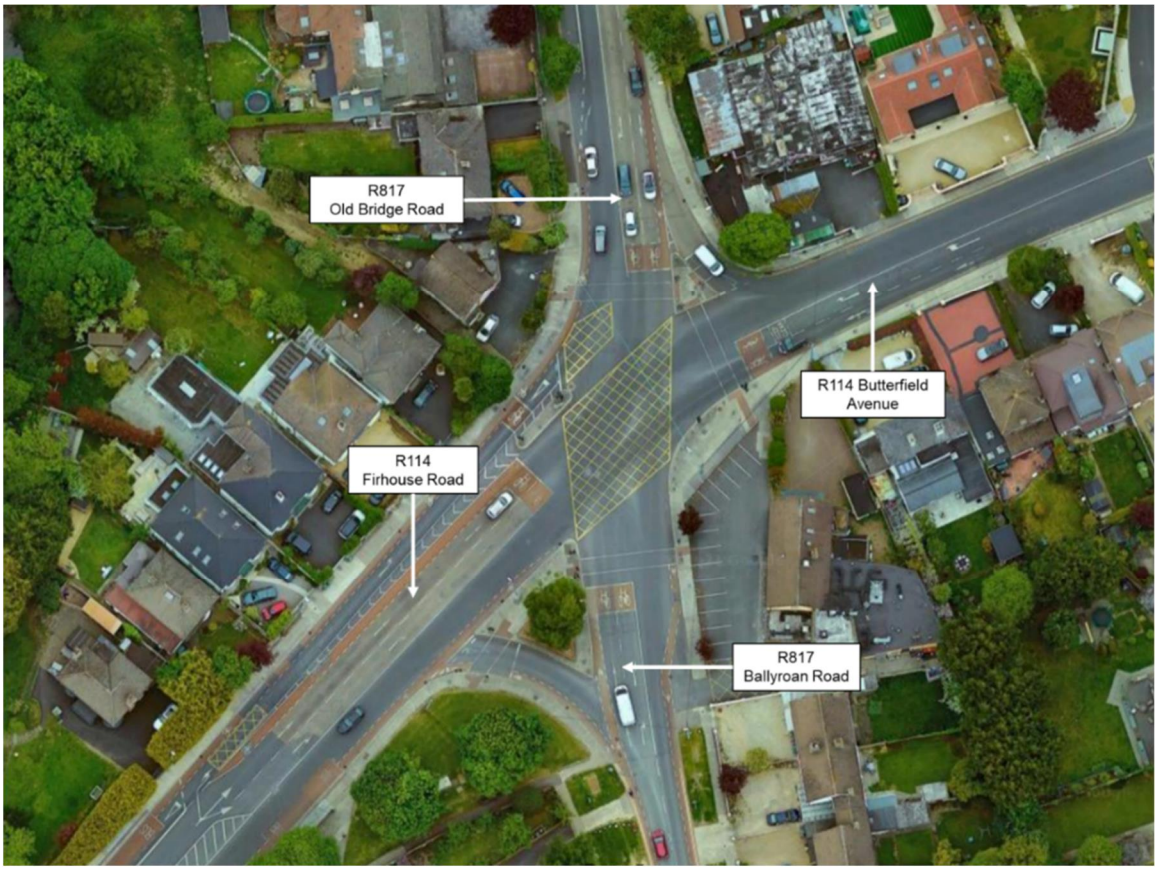


Figure 3.1 *Existing Blue Haven Junction Layout*

<u>Old Bridge Road</u>

Old Bridge Road comprises the northern arm of the junction and it accommodates the following:

- 2 no. entry lanes measuring 2.5-2.7 metres wide, accommodating straight and right turning movements, and 13.0 metres-long left turning slip.
- 1 no. exit lane for general traffic.

- 3.0 metres wide bus lane on northbound approach (exit lane).
- 2 no. signalised pedestrian crossing points, the first measuring 15.0 metres long and the second 4.5 metres.
- 1.25 metres wide cycle lane on the southbound approach, in addition to Advance Stop Line for cyclists.

Butterfield Avenue

Butterfield Avenue comprises the eastern arm of the junction and it accommodates the following:

- 2 no. entry lanes, one to allow straight-through and left turn movements and one to allow right turning manoeuvres only, measuring 2.0-2.5 metres wide.
- 1 no. exit lane for general traffic.
- 1 no. signalised pedestrian crossing provided across the arm, measuring 13.5 metres long
- 1.8-2.3 metres wide footpaths on both sides of the road.
- Advance Stop Line storage for cyclist.

Ballyroan Road

Ballyroan Road comprises the southern arm of the junction and it accommodates the following:

- 3 no. entry lanes, one to allow straight-through movements, one to allow right turning movements and one slip-lane to allow left turns only. These lanes are 2.5 metres wide and 22.0 metres long. The slip lane measures 25.0 metres in length.
- 1 no. exit lane for general traffic.
- 1.25-1.5 metres wide cycle lanes available on each approach.
- Advance Stop Line storage for cyclist.
- 2 no. signalised pedestrian points, measuring 14.0 and 6.0 metres in length.

Firhouse Road

Firhouse Road comprises the southwestern arm of the junction and it accommodates the following:

- 3 no. entry lanes, one to allow straight-through movements, one to allow right turning movements and one slip-lane to allow left turns only. The straight and right turning lanes measure 3.0 metres wide, while the slip lane measures 2.5 metres wide. All lanes are 66.0 metres long.
- 1 no. exit lane, which includes one bus stop.

- 1.25-1.4 metres wide cycle lanes available on each approach.
- Advance Stop Line storage for cyclist.
- 1.8-3.0 metres wide footpaths on both sides of the road.

3.3 Existing Layout- Knocklyon Road Junction

R114 Firhouse Road intersects with Knocklyon Road via a 3-arm signal-controlled junction. Figure 3.2, below, sets out the junction layout is currently in place.

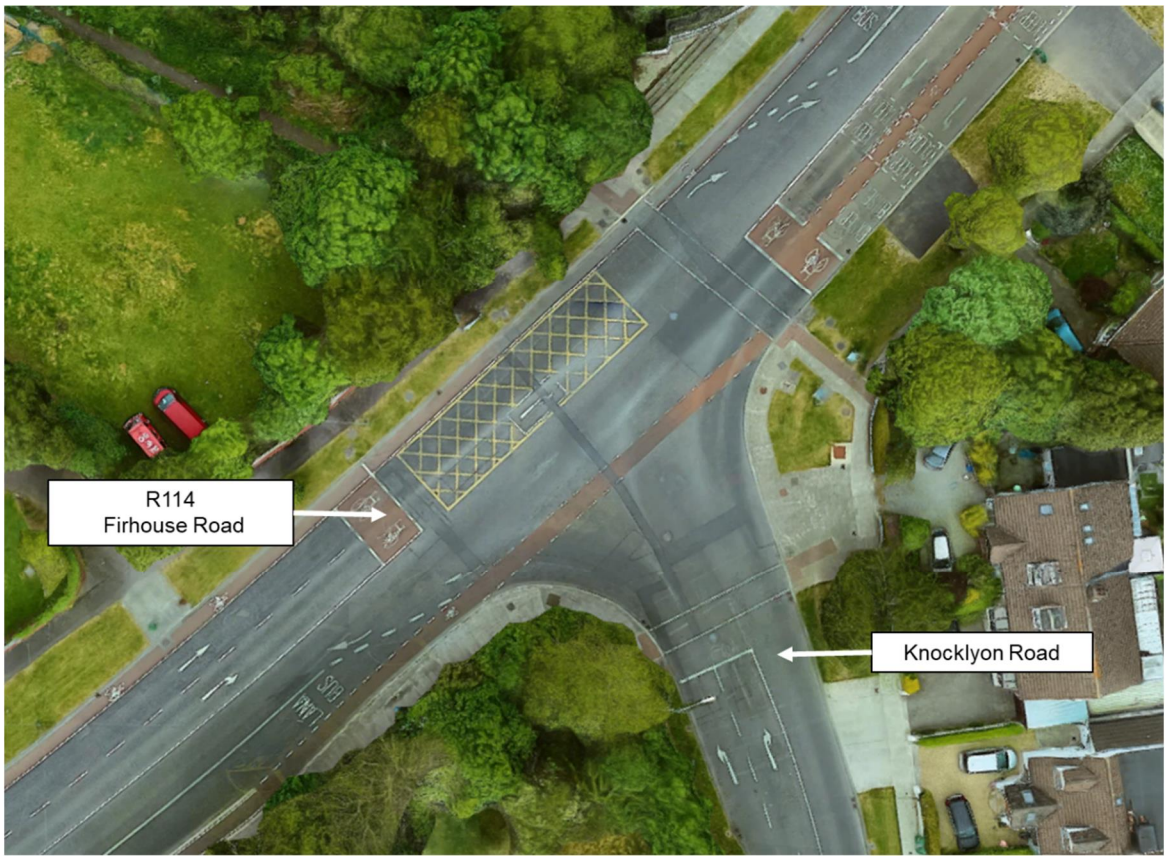


Figure 3.2 *Existing Knocklyon Road Junction Layout*

<u>Firhouse Road</u>

R114 Firhouse Road comprises the northeaster and southwestern arms of this junction. It accommodates the following:

- 2 no. entry lane, one to allow straight through movements and one to allow right turns only into Knocklyon Road, measuring 2.8-3.0 metres wide.
- 1 no. exit lanes on each arm are available in both ends.
- 1.25 metres wide On-street cycle lanes and Advance Stop Line storage for cyclist is also provided. A signalised pedestrian crossing is available across the northeaster arm.
- 2.0 metres wide footpaths on both sides of the road.

Knocklyon Road

Knocklyon Road comprises the southern arm of this junction. It accommodates the following:

- 2 no. entry lanes for left turns and right turns, measuring 3.3 metres wide.
- 1 no. exit lane.
- A signalised pedestrian crossing is available across this arm.
- Footpaths are available on both sides of the road.

3.4 Existing Layout- Spawell Link Road Junction

R114 Firhouse Road intersects with Spawell Link Road and Charleville Manor via a 4-arm signal-controlled junction. Figure 3.3, below, presents the existing junction layout.

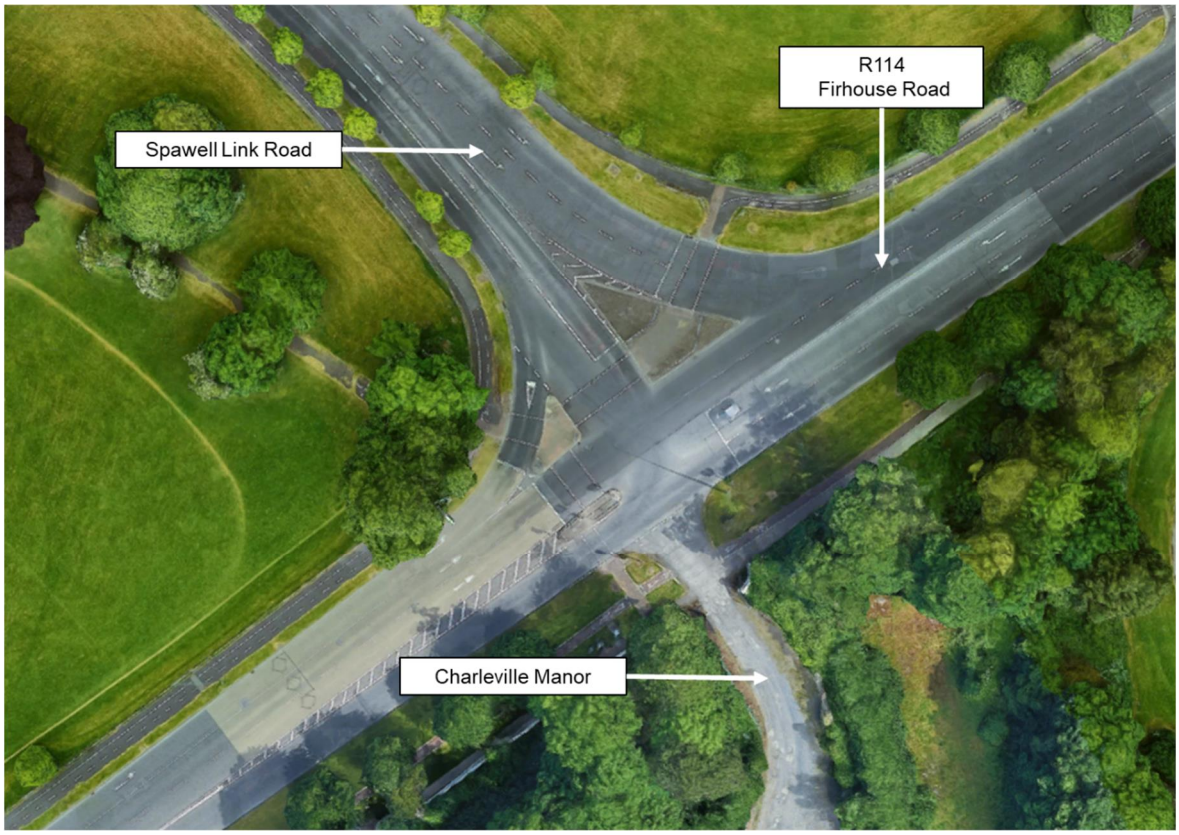


Figure 3.3 *Existing Spawell Link Road Junction Layout*

Firhouse Road

R114 Firhouse Road comprises the northeaster and southwestern arms of this junction. It accommodates the following:

- The northeaster arm accommodates 2 no. entry lane, one to allow straight through movements and one to allow right turns only. These measure 3.4-4.7 metres wide.
- The southwestern arm accommodates 3 no. entry lanes, two allowing straight-through movements and left turning slip-lane into Spawell link Road. These measure 3.0-3.3 metres wide.

- 1 no. exit lane is provided on the southwestern arm and 2 no. exit lanes on the northeaster arm.
- A staggered signalised pedestrian crossing is available across the southwestern arm with a refuge island dividing both approaches.
- A 3.0 metres wide shared path for pedestrians and cyclists is available along the northern side of this road.

Spawell Link Road

Spawell Link Road comprises the north-western arm of the junction. It accommodates the following:

- 3 no. entry lanes, one allowing straight through/right turns, and two allowing left turns into R114 Firhouse Road. These measure 4.0 metres wide.
- 1 no. exit lane is provided on this arm.
- A signalised crossing is provided across this arm with a refuge island available for pedestrians.
- A shared path for pedestrians and cyclists is available on both sides of this arm.

Charleville Manor

Charleville Manor comprises the southeaster arm of the junction. This arm only provides access to 2 residential properties located on this side of the junction accommodating all movement in a single access lane. Due to the low activity associated with this arm, it has not been taken into consideration in the Traffic Impact Assessment.

3.5 Data Collection Approach

The following data sources have been utilised to establish the main goals of the scheme, traffic performance on the local areas, existing traffic volumes, relevant utility service units present on local area, and safety performance of the section of road under study:

- Consultation with South Dublin County Council.
- Consultation with National Transport Authority.
- Classified Junction Counts (Traffic Surveys).
- Topographical Survey of the area.
- On Site Measurements.
- Road Safety Authority Collision statistics database - CollStats, website (2005 ï 2016).
- Utility Service Providers database

3.6 Significant Constraints

A number of significant constraints were considered when developing the proposed layouts for the Blue Haven junction. These constraints include:

- Existing site boundaries and building outlines.

- Existing utilities e.g., Telecom Chambers, Cabinets, Gas infrastructure, Existing Traffic Light Infrastructure, etc.
- Multiple number of private and commercial access points.
- Mature Trees in the surrounding area.

3.7 Existing Traffic Volumes

Data Collection

In order to establish the existing traffic conditions within the study area, 12-hours classified junction turning counts were undertaken at the following junctions:

- J1: 4-arm signal controlled R817 Old Bridge Road/ R114 Butterfield Avenue/ R817 Ballyroan Road/R114 Firhouse Road junction;
- J2: 3-arm signal-controlled R114 Firhouse Road/Knocklyon Road; and
- J3: 4-arm signal controlled R114 Firhouse Road/ Spawell Link Road/ Charlesville Manor junction.

The location of these junctions within the study area are shown in Figure 3.4 (overleaf).

Figure 3.4 *Junctions Under Study*

The surveys for junctions no. 1 and no. 3 were carried out on Thursday 13th February 2020 over a period of 12-hours (07:00-19:00hrs). The surveys were undertaken by Irish Traffic Surveys (ITS), on behalf of CSEA. At the time of this assessment, a 2020 traffic survey was not available for the R114 Firhouse Road / Knocklyon Road Junction (junction no. 2). In light of this, historical data, dated from 30th May 2017, has been used for the assessment of this junction.

Traffic Survey Results

Following the analysis of the traffic surveys, network peak hours were determined to occur between 08:00-09:00hrs for the AM peak, and 16:30-17:30hrs for the PM peak. Table 3.1 below, summaries the total approach flows recorded to transit through each arm. Traffic figures presented in the following table are in Passenger Car Units (PCUs) with the following factors assumed: *medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).* Full Traffic Survey Results are included within Appendix D of this Report

Junction No.	Approach Flows	
	AM Peak (08:00-09:00hrs)	PM Peak (16:30-17:30hrs)
J1	2,377	2,294
J2	1,771	1,956
J3	2,053	2,232

Table 3.1 *Existing Approach Flows at the Blue Haven Junction*

As shown on Table 3.1 above, junction no.1 (Blue Haven junction) carries the highest number of approach vehicles to the Figure 3.5 below, illustrates the turning proportions from each arm of the junctions.

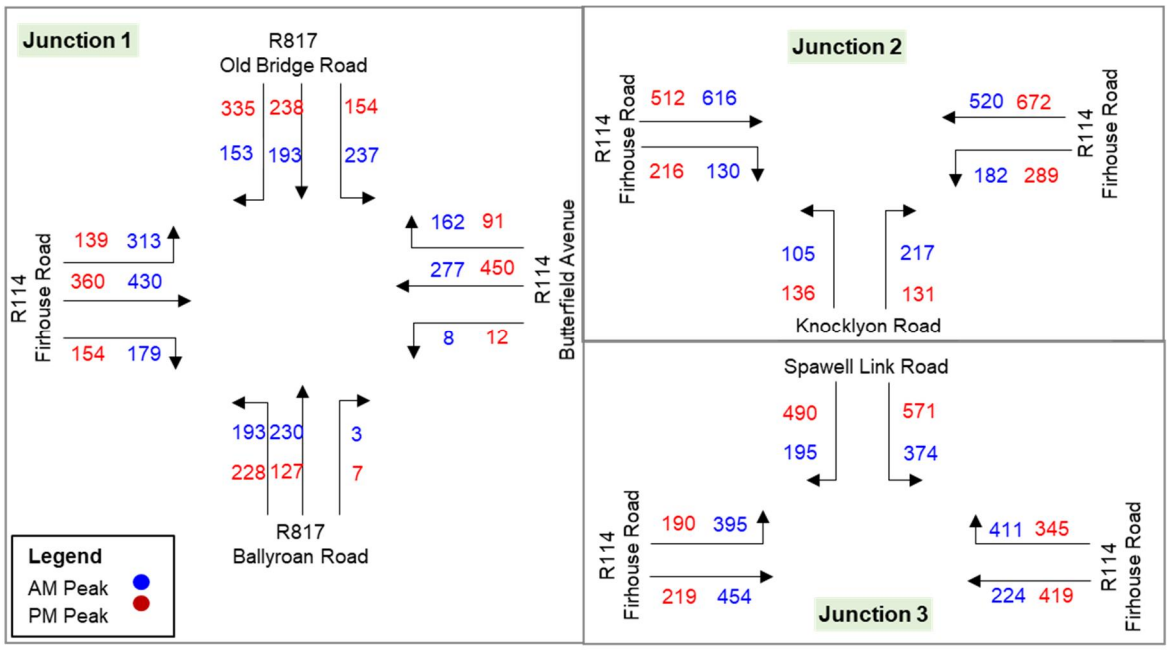


Figure 3.5 *Existing Turning Proportions at the Blue Haven Junction*

3.8 Road Safety

Data from the Road Safety Authority (RSA) collision database was used to assess the safety performance characteristics of the junction. The database contains information on all reported collisions by severity of injury incurred (i.e., fatal, serious, or minor) and by year the collision occurred. Figure 3.6 (overleaf) illustrates all collisions recorded on the road network surrounding the site during the 12-year period from 2005 to 2016, inclusive.

As shown on Figure 3.6, several minor collisions have been recorded on the junction during the 12-year assessment period, some of these involving bicycles and pedestrians. No serious or fatal collisions have been recorded.

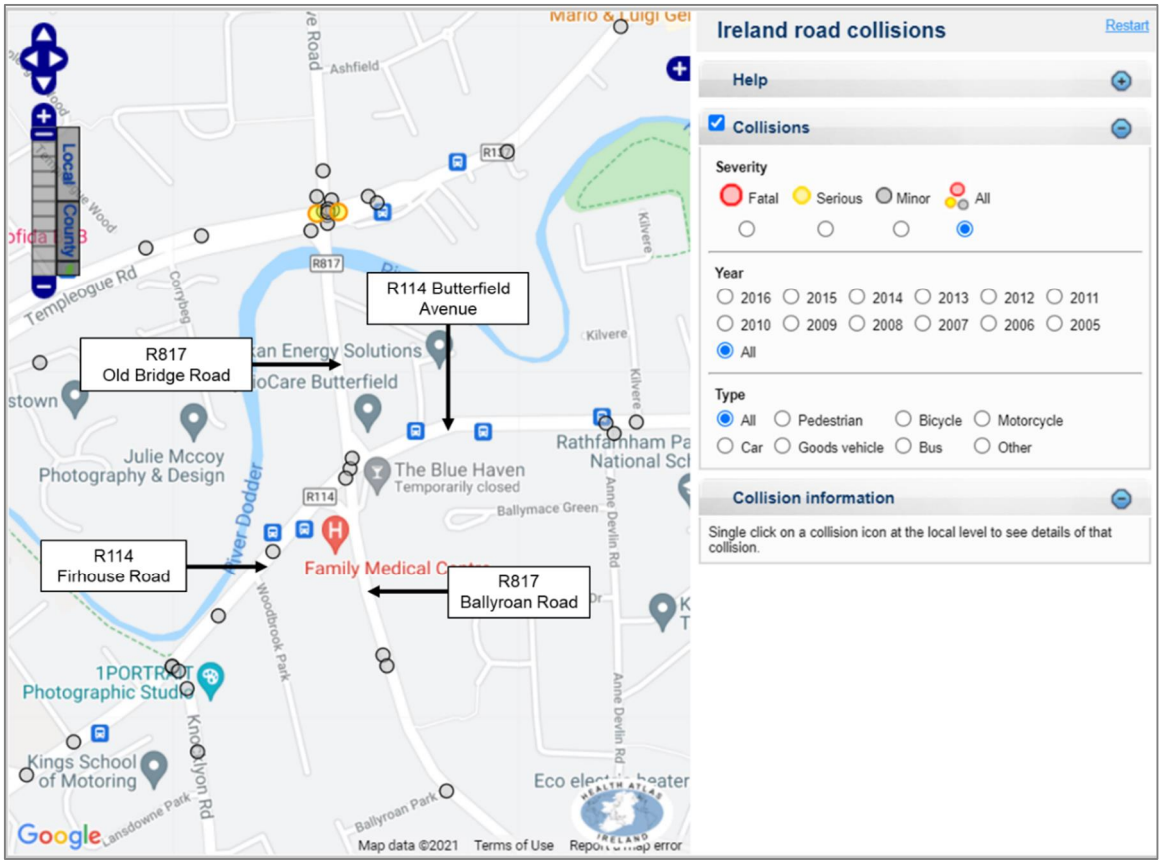


Figure 3.6 *RSA Collision Statistics*

4. PROPOSED LAYOUT OPTIONS

4.1 Introduction

This section of the report provides a description of the three layout options developed for the proposal and the changes proposed, compared to existing arrangements. The contents within this section describe the proposed vehicular, pedestrian and cyclist arrangements to be delivered with the options. Illustrations of each layout are provided within this section. Detailed Drawings for each layout are presented within Appendix B of this Report.

4.2 Option 1

4.2.1 Blue Haven Junction

The layout proposed with option no. 1 for the Blue Haven junction is shown in Figure 4.1 and Figure 4.2, below. The delivery of this option can be implemented as a quick build system and as a trial scheme. Following the trial, if the results are favourable, the scheme can be made permanent.

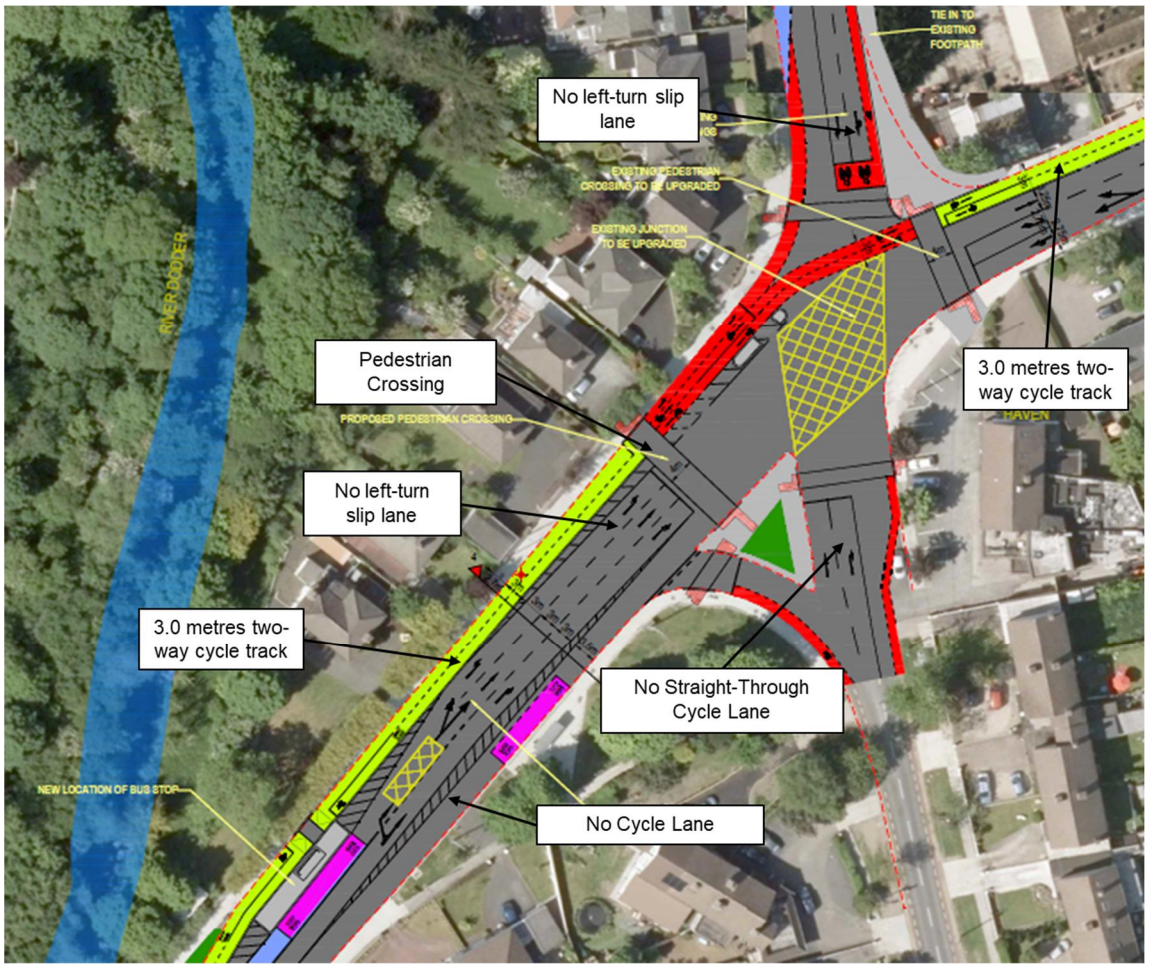


Figure 4.1 *Proposed Layout no. 1 for Blue Haven Junction*

Figure 4.2 *Proposed Layout no. 1 for Butterfield Avenue*

As shown in Figure 4.1-4.2, compared to existing arrangements, the main changes proposed with this layout are the following:

- Provision of a two-way east-west cycle track along Firhouse Road and Butterfield Avenue.
- Provision of a pedestrian crossing across Firhouse Road.
- Elimination of the left turning slips at Firhouse Road and Old Bridge Road.
- Elimination of the straight through cycle lane at Ballyroan Road as well as the Advance Stop Line storage currently in place.
- Elimination of the on-street cycle lane along Firhouse Road exit lane.
- Length reduction of left turning slip on Ballyroan Road from 25 to 20 metres.

The existing width of the traffic lanes and length of the pedestrian crossings on the different arms have also been modified to accommodate the proposed facilities.

4.2.2 Knocklyon Road Junction

The layout proposed for the Knocklyon Road junction with option no. 1 is shown in Figure 4.3 (overleaf).

Compared to existing arrangements, the main changes proposed with this layout are the following:

- Elimination of the on-street cycle lane along Firhouse Road.
- Provision of a two-way cycle track along Firhouse Road northeaster arm.
- Elimination of the on-street cycle lane on Firhouse Road southwestern arm and provision of a one-way cycle track.
- Provision of a Park Entrance Plaza on the northern side of the junction.
- Provision of a northbound Bus Lane along Firhouse Road southwestern arm.

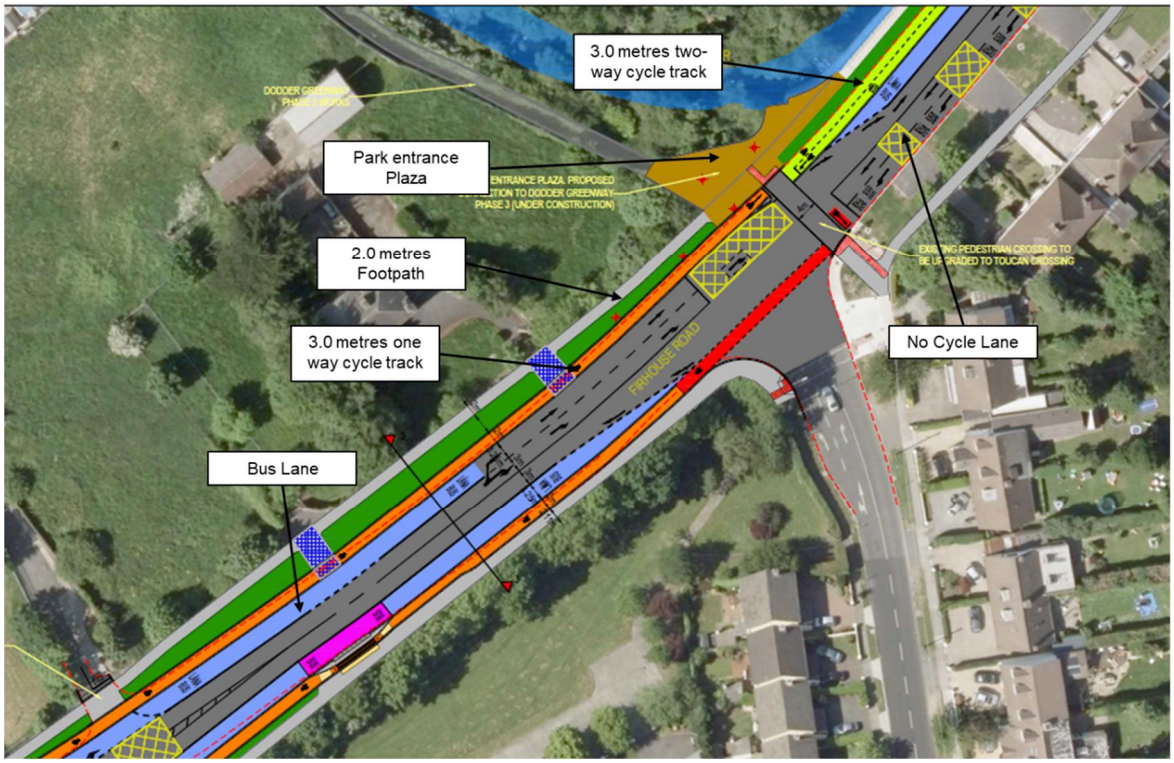


Figure 4.3 *Proposed Layout no. 1 for Knocklyon Road Junction*

4.2.3 Spawell Link Road Junction

The layout proposed for the Spawell Link Road junction with option no. 1 is shown in Figure 4.4 and Fiogure 4.5 (overleaf).

The main changes proposed for the Spawell Link Road junction with this layout are the following:

- Provision of bus lanes on both approach lanes and exit lanes of Firhouse Road. These will extend to the stop line of the junction.
- Elimination of one of the existing exit lanes on Firhouse road northeaster arm to accommodate a Bus Lane.
- Elimination of the left turn slip lane from Firhouse Road southwestern arm to accommodate a Bus Lane.
- Elimination of one of the approach lanes on Spawell Link Road to accommodate all entry movements in 2 no. lanes only.
- Provision of pedestrian crossing across Firhouse Road northeaster arm.
- Provision of 2.0 metres cycle tracks in all arms of the junction.
- Provision of 2.7 metres wide footpath along Spawell Link Road

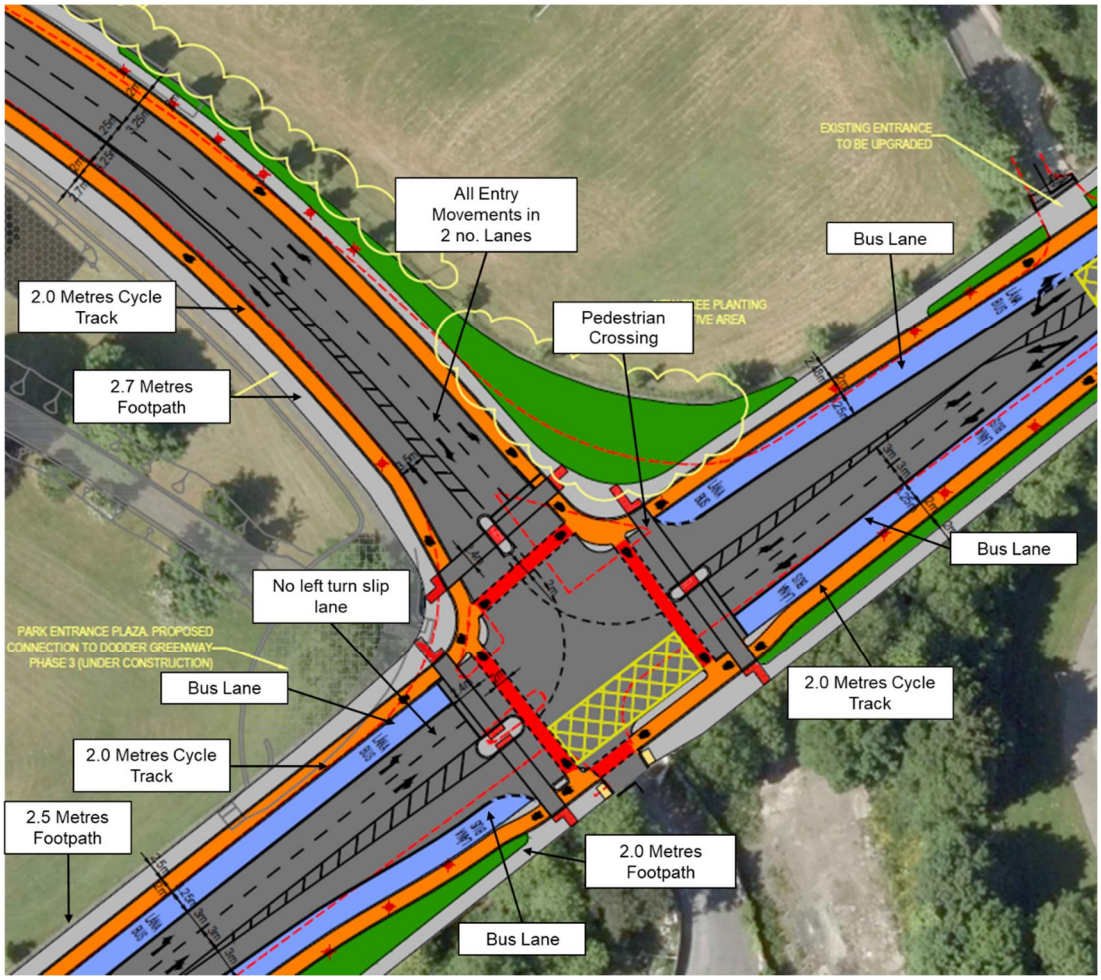


Figure 4.4 *Proposed Layout no. 1 for Spawell Link Road Junction*

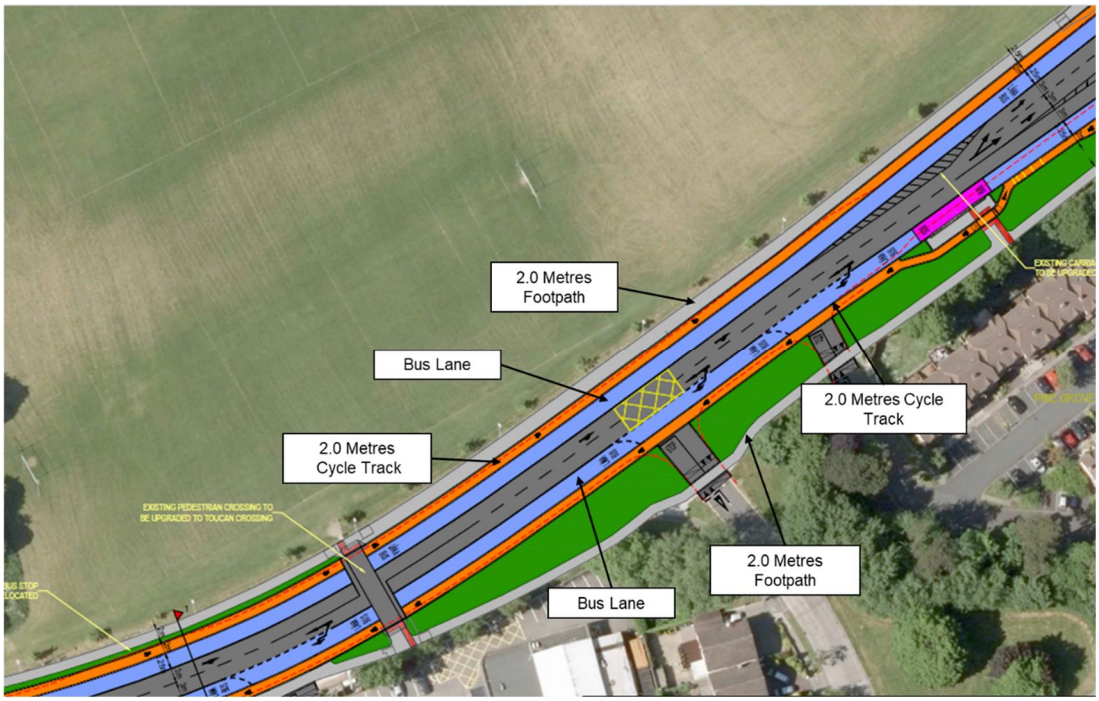


Figure 4.5 *Proposed Layout no. 1 for Firhouse Road (southwest arm)*

4.2.4 Spawell Link Road

The layout proposed for the Spawell Link Road with option no. 1 is shown in Figure 4.6, below.

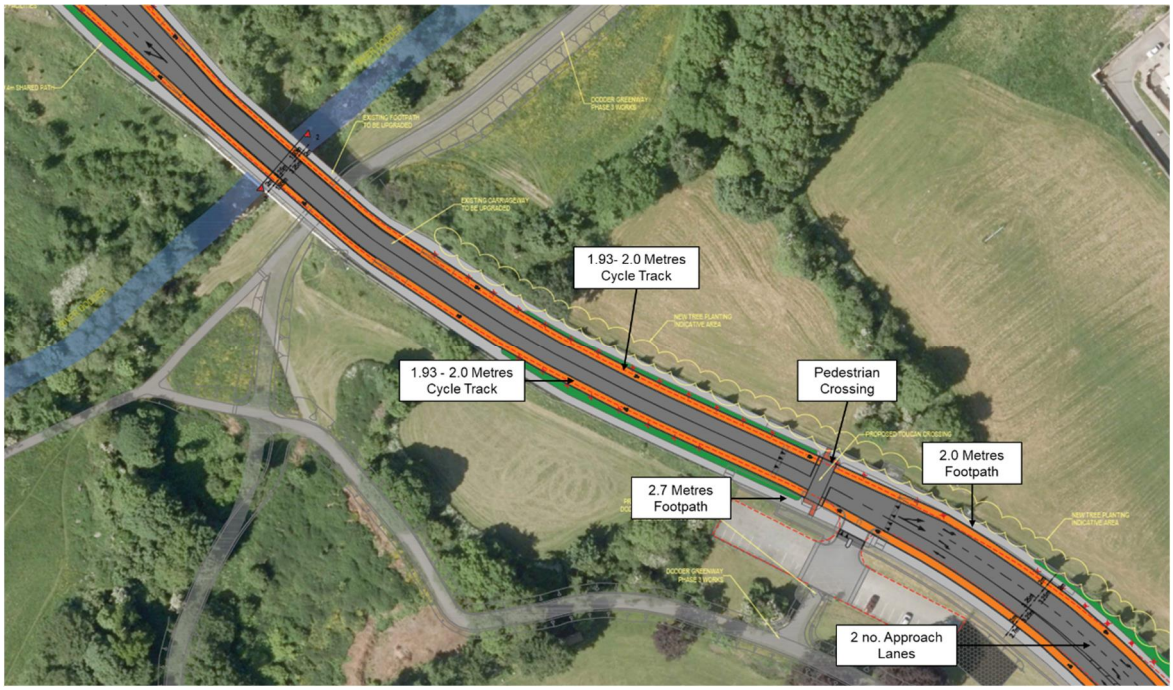


Figure 4.6 *Proposed Layout no. 1 for Spawell Link Road*

The main changes proposed for the Spawell Link Road with this layout are the following:

- Provision of 1.93-2.0 metres cycle tracks on both sides of the road.
- Provision of 2.0-2.7 metres wide footpath on both sides of the road.
- Provision of pedestrian crossing in front of Dodder Valley Car Park.
- Elimination of one approach lane to Firhouse Road to accommodate all entry movements in 2 no. lanes.

4.3 Option 2

4.3.1 Blue Haven Junction

The layout proposed with option no. 2 for the Blue Haven junction is shown in Figure 4.7 and Figure 4.8 (overleaf).

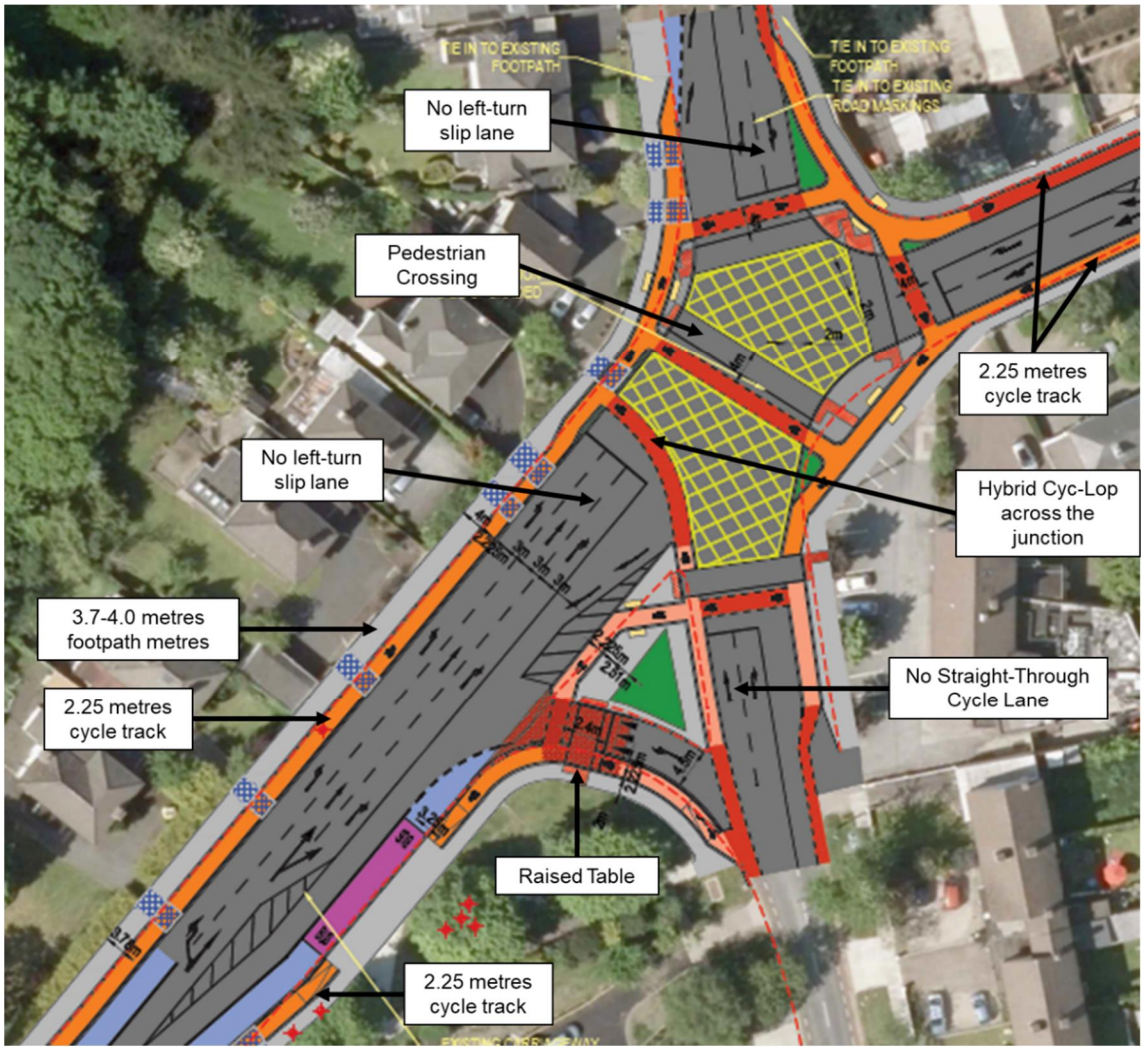


Figure 4.7 *Proposed Layout no. 2 for Blue Haven Junction*

Figure 4.8 *Proposed Layout no. 2 for Butterfield Avenue*

Compared to existing arrangements, the main changes proposed with this layout are the following:

- Provision of 2.25 metres wide cycle tracks along both sides of Firhouse Road and Butterfield Avenue.
- Provision of a hybrid Cyc-Lop around the junction allowing clockwise cyclistsô movements on the junction.
- Provision of cycle tracks on Ballyroan Road and Old Bri9dge Road on the approach to the junction.
- Provision of 3.7-4.0 metres wide footpath on the northern side of Firhouse road and 2.0 metres wide on the southern side.
- Provision of a diagonal pedestrian crossing across the junction linking both sides of Firhouse Road.
- Elimination of the left turning slips at Firhouse Road and Old Bridge Road.
- Elimination of the straight through cycle lane at Ballyroan Road as well as the Advance Stop Line storage currently in place.
- Length reduction of left turning slip on Ballyroan Road from 25 to 20 metres.
- Provision of a raised table on the Ballyroan Road left turning slip.

4.3.2 Knocklyon Road Junction

The layout proposed for the Knocklyon Road junction with option no. 2 is shown in Figure 4.9, below.

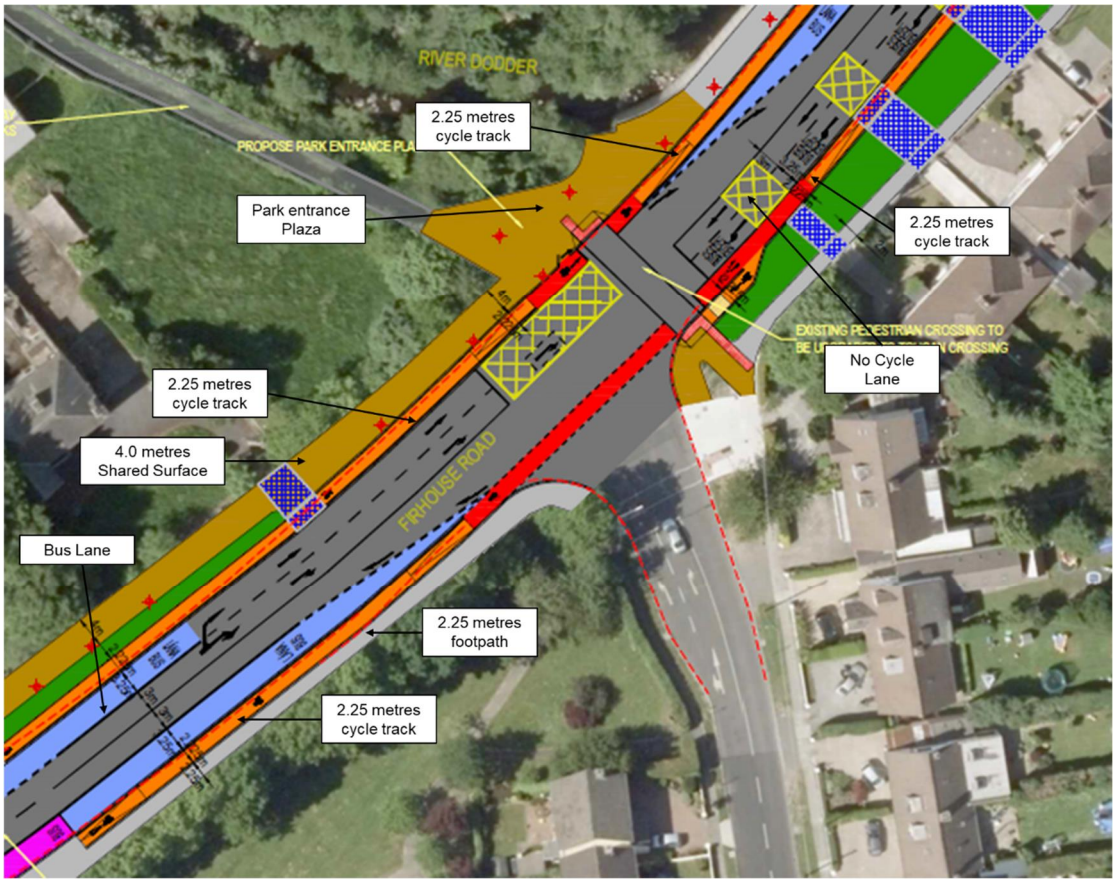


Figure 4.9 *Proposed Layout no. 2 for Knocklyon Road Junction*

Compared to existing arrangements, the main changes proposed with this layout are the following:

- Elimination of the on-street cycle lanes on Firhouse Road.
- Provision of cycle tracks along both sides of Firhouse Road.
- Provision of a 4.0 metres wide shared spaces for pedestrians and cyclists on the northern side of Firhouse Road.
- Provision of a Park Entrance Plaza on the northern side of the junction.
- Provision of a northbound Bus Lane along Firhouse Road southwestern arm.

4.3.3 Spawell Link Road Junction

The layout proposed for the Spawell Link Road junction with option no. 2 is shown in Figure 4.10 and Figure 4.11, below

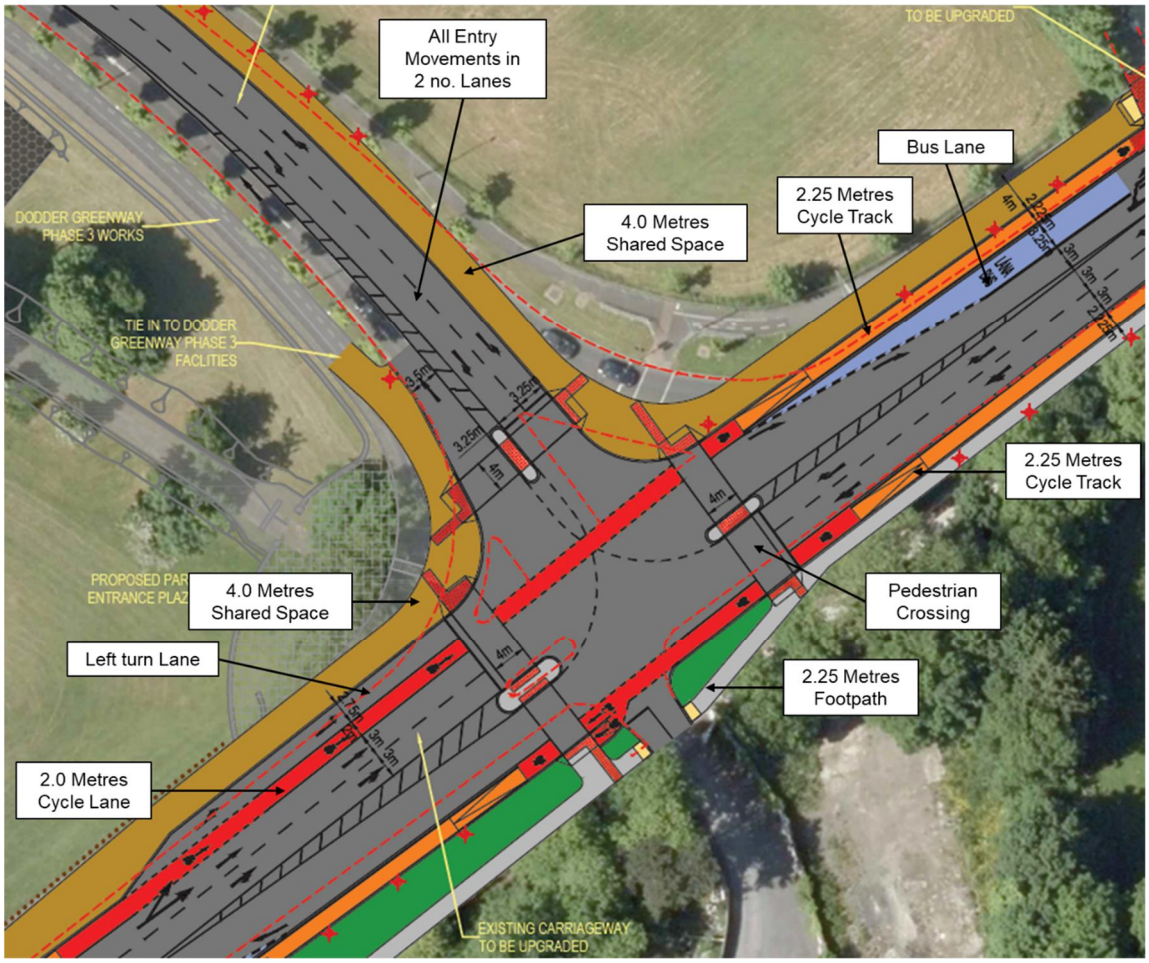


Figure 4.10 *Proposed Layout no. 2 for Spawell Link Road Junction*

The main changes proposed for the Spawell Link Road junction with this layout are the following:

- Elimination of one of the existing exit lanes on Firhouse road northeaster arm to accommodate a Bus Lane.
- Elimination of the left turn slip lane from Firhouse Road southwestern arm to be layout as a left tuning lane.

- Elimination of one of the approach lanes on Spawell Link Road to accommodate all entry movements in 2 no. lanes only.
- Provision of pedestrian crossing across Firhouse Road northeaster arm.
- Provision of 2.0 metres straight through cycle lane on Firhouse Road southwestern arm.
- Provision of 4.0 metres wide shared space for pedestrians and cyclists along the northern side of Firhouse road and Spawell Link Road.
- Provision of a 2.25 metres wide cycle track and a 2.25 metres wide footpath along Firhouse Road southern side.

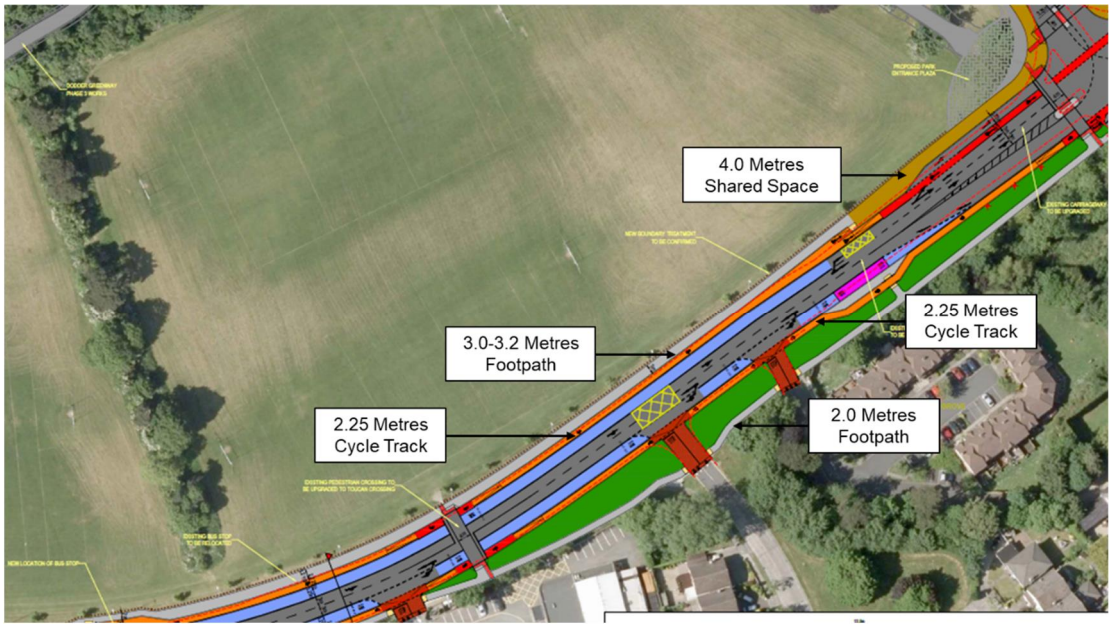


Figure 4.11 *Proposed Layout no. 2 for Firhouse Road (southwest arm)*

4.3.4 Spawell Link Road

The layout proposed for the Spawell Link Road with option no. 2 is shown in Figure 4.12, below.

The main changes proposed for the Spawell Link Road with this layout are the following:

- Provision of 4.0 metres wide shared space for pedestrians and cyclists on both sides of the road.
- Provision of pedestrian crossing in front of Dodder Valley Car Park.
- Elimination of one approach lane to Firhouse Road to accommodate all entry movements in 2 no. lanes.

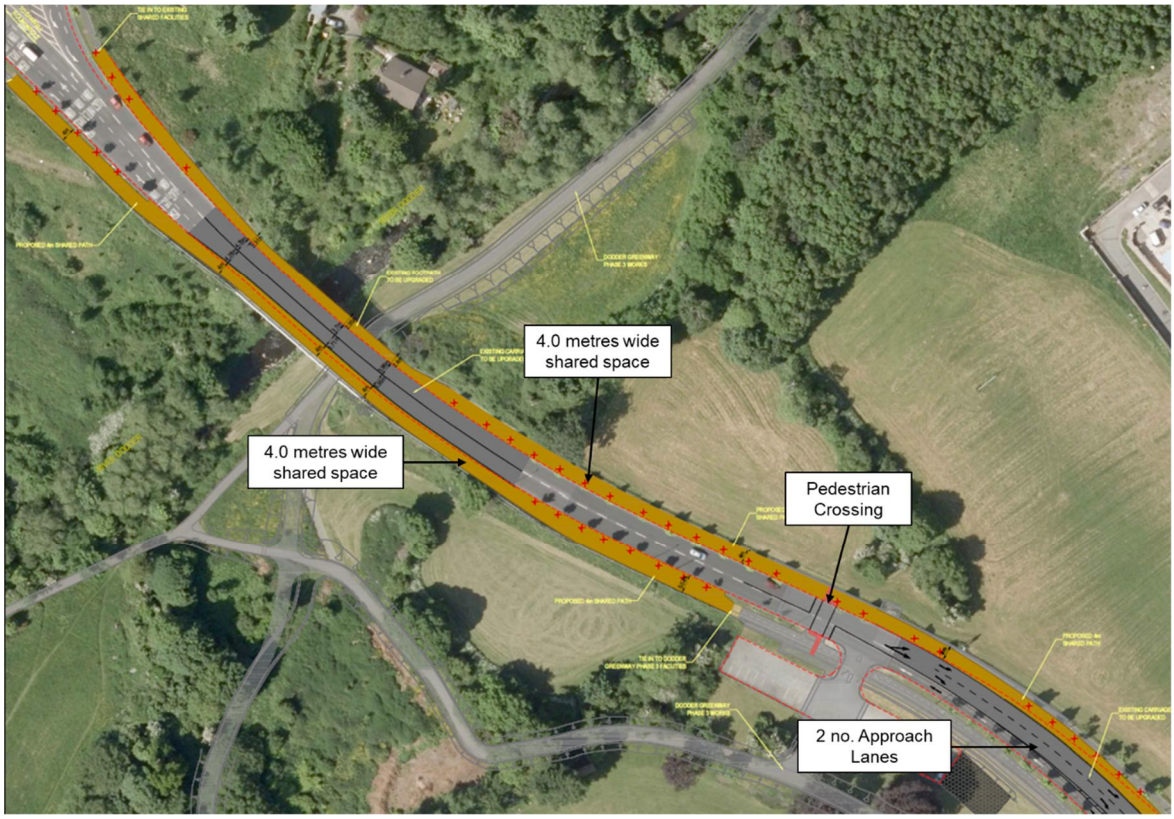


Figure 4.12 *Proposed Layout no. 2 for Spawell Link Road*

4.4 Option 3

4.4.1 Blue Haven Junction

The layout proposed with option no. 3 for the Blue Haven junction is shown in Figure 4.13 and Figure 4.14 (overleaf).

Compared to existing arrangements, the main changes proposed with this layout are the following:

- Provision of 2.25 metres wide cycle tracks and 2.0 metres footpaths along both sides of Firhouse Road.
- Provision of a southbound bus lane along Firhouse Road.
- Elimination of the left turning slips at Firhouse Road and Old Bridge Road
- Provision of 2.0 metres cycle lanes along Butterfield Avenue. These should be provided on the approach to the junction only, with the northern cycle lane extending for ca. 75 metres and the southern for ca. 20 metres. 2.0 metres cycle tracks will be provided after.
- Provision of 2.25 metres wide cycle track and raised table on Ballyroan Road left turning slip.
- Provision of a diagonal pedestrian crossing across the junction linking both sides of Firhouse Road.
- Length reduction of left turning slip on Ballyroan Road from 25 to 20 metres.

- Provision of 2.0 metres wide straight-through cycle lanes across the junction to allow cyclists to move with vehicular traffic. These will be available from/to all arms of the junction.

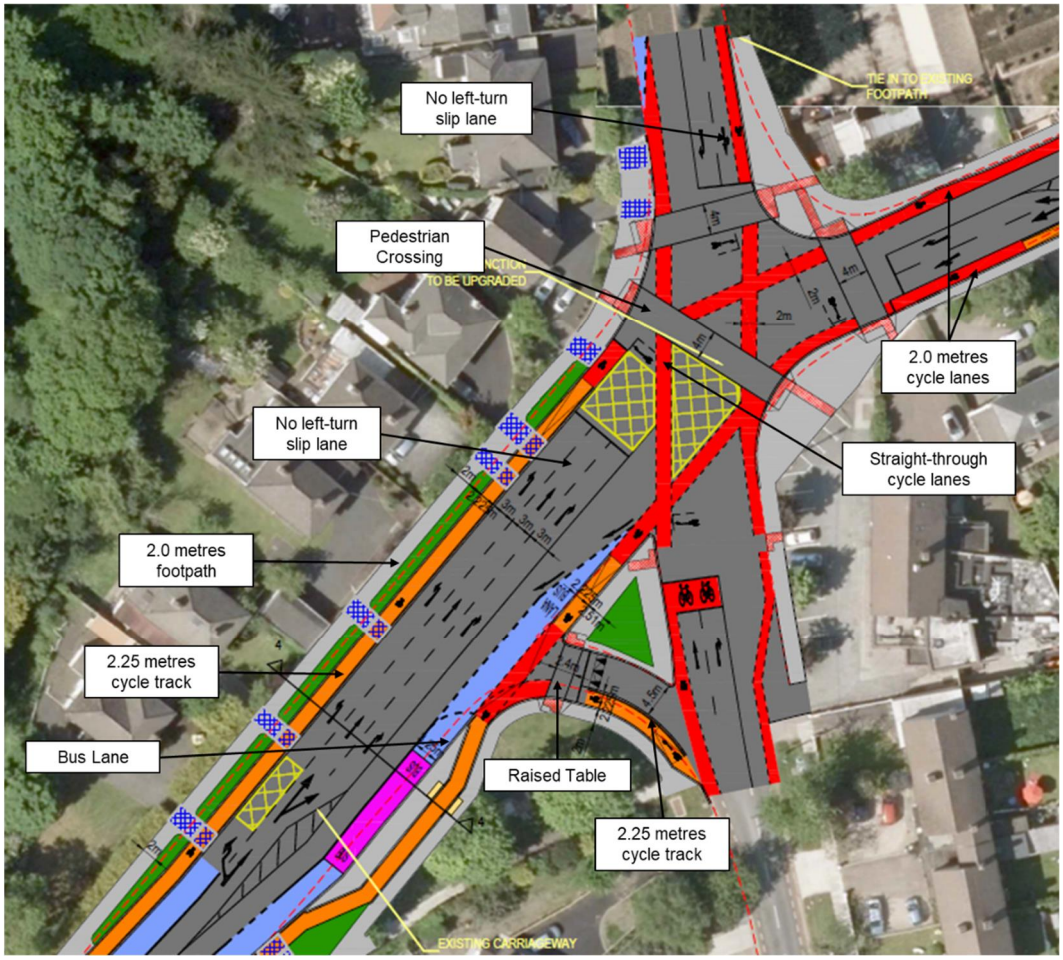


Figure 4.13 *Proposed Layout no. 3 for Blue Haven Junction*

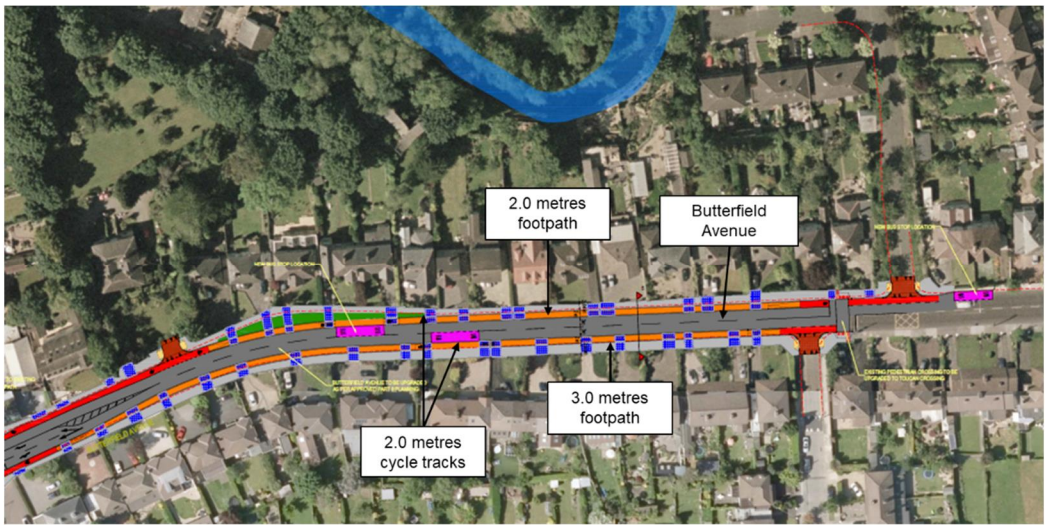


Figure 4.14 *Proposed Layout no. 3 for Butterfield Avenue*

4.4.2 Knocklyon Road Junction

The layout proposed for the Knocklyon Road junction with option no. 3 is shown in Figure 4.15, below.

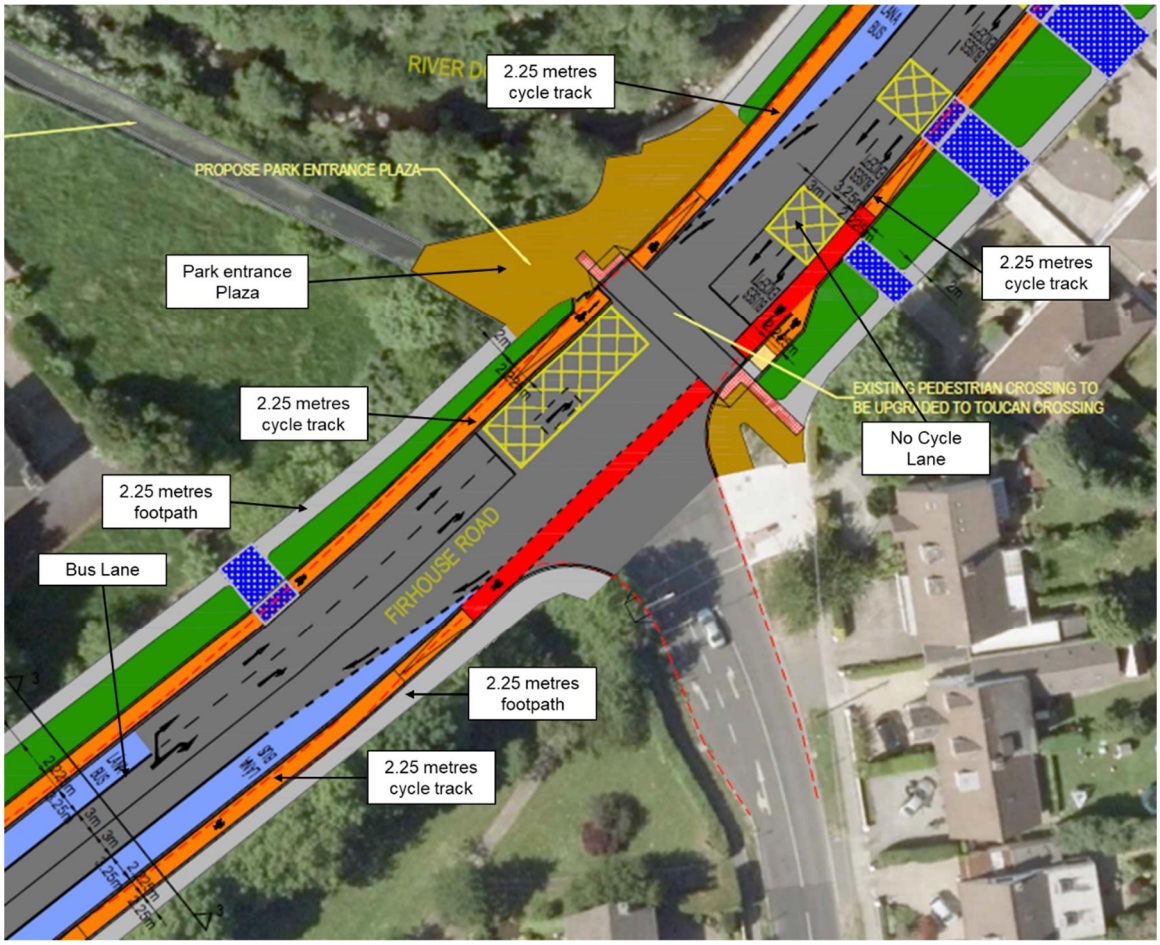


Figure 4.15 *Proposed Layout no. 3 for Knocklyon Road Junction*

Compared to existing arrangements, the main changes proposed with this layout are the following:

- Elimination of the on-street cycle lanes on Firhouse Road.
- Provision of cycle tracks along both sides of Firhouse Road.
- Provision of 2.25 metres wide footpaths on both sides of Firhouse Road.
- Provision of a Park Entrance Plaza on the northern side of the junction.
- Provision of a northbound Bus Lane along Firhouse Road southwestern arm.

4.4.3 Spawell Link Road Junction

The layout proposed for the Spawell Link Road junction with option no. 3 is shown in Figure 4.16 and Figure 4.17 (overleaf).

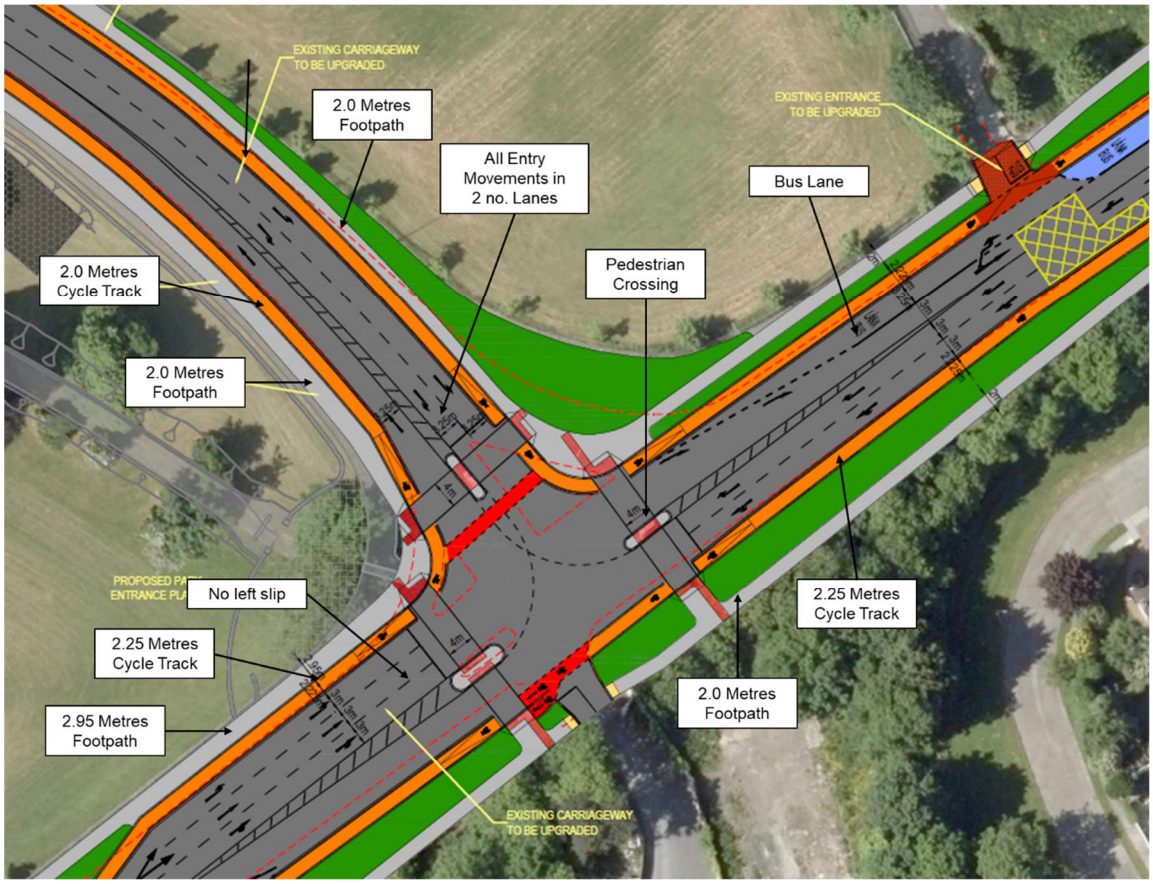


Figure 4.16 *Proposed Layout no. 3 for Spawell Link Road Junction*

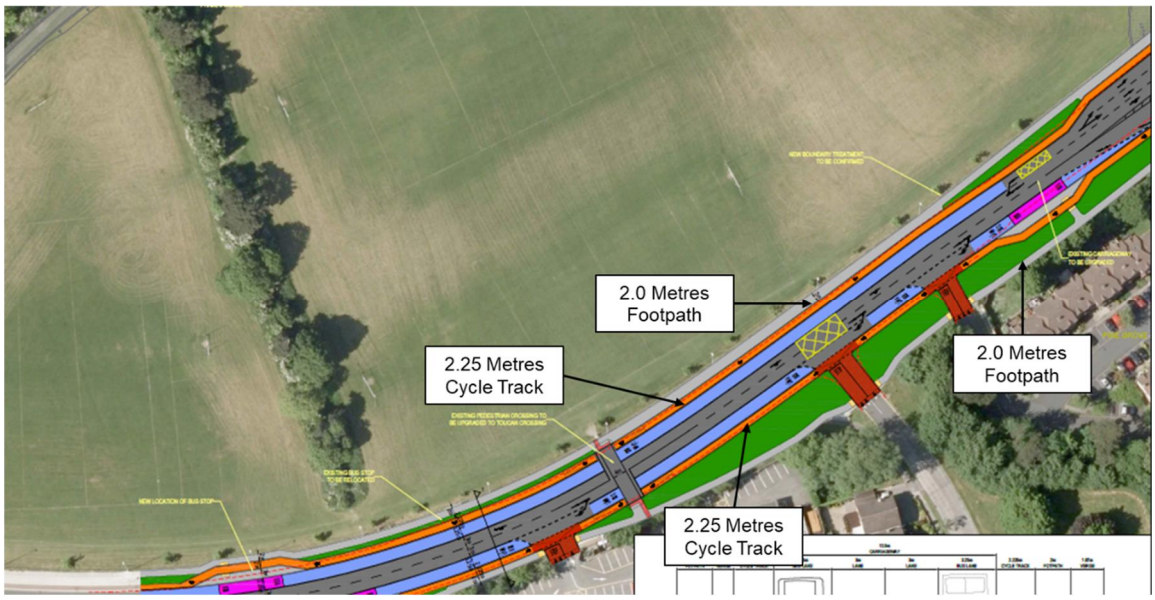


Figure 4.17 *Proposed Layout no. 3 for Firhouse Road (southwest arm)*

The main changes proposed for the Spawell Link Road junction with this layout are the following:

- Elimination of one of the existing exit lanes on Firhouse road northeaster arm to accommodate a Bus Lane.

- Elimination of the left turn slip lane from Firhouse Road southwestern arm to be layout as a left tuning lane.
- Elimination of one of the approach lanes on Spawell Link Road to accommodate all entry movements in 2 no. lanes only.
- Provision of pedestrian crossing across Firhouse Road northeaster arm.
- Provision of 2.0-2.25 metres wide cycle tracks and 2.0-2.95 metres wide footpaths in all arms of the junction.

4.4.4 Spawell Link Road

The layout proposed for the Spawell Link Road with option no. 3 is shown in Figure 4.18, below.

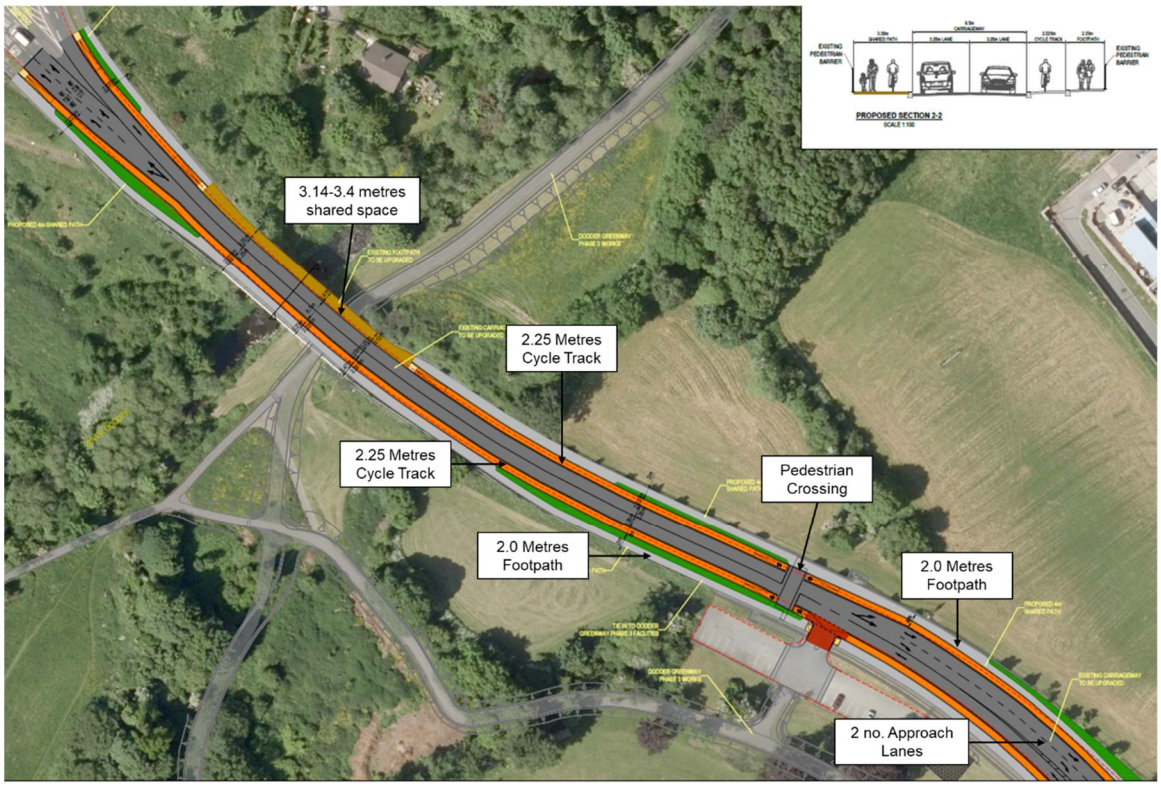


Figure 4.18 *Proposed Layout no. 3 for Spawell Link Road*

The main changes proposed for the Spawell Link Road with this layout are the following:

- Provision of 2.0-2.25 metres cycle tracks on both sides of the road.
- Provision of 2.0 metres wide footpath on both sides of the road.
- Provision of pedestrian crossing in front of Dodder Valley Car Park.
- Elimination of one approach lane to Firhouse Road to accommodate all entry movements in 2 no. lanes.

4.5 Layout Options Cost and Construction Time

A construction cost estimation, for the three options presented above, has been done based on construction costs for projects of similar proportion. The estimation captures all major elements on a road construction environment and combine them into a rate per

metre of road construction/upgrade. The major elements considered on a road construction environment are the following:

- Preliminary costs
- Site Clearance
- Drainage and Service Ducts
- Pavements and Kerbs
- Traffic Signs and Road Markings
- Road Lighting System
- Landscape
- Traffic Management

In addition to the above, the construction time for the delivery of the scheme with each option have also been estimated based on the scale of the works required for the project. These figures are presented in Table 4.1, which follows.

Layout Option No.	Estimated Cost (Ex Vat)	Estimated Construction Time
1	€6,741,885.50	12 months
2	€6,311,849.25	12 months
3	€6,815,606.00	12 months

Table 4.1 *Estimated Cost and Construction Time for the Layout Options*

A detailed cost estimation is presented within Appendix C of this Report.

4.6 Street Trees Impacts

A site visit was undertaken by Arborist Eunan OÕDonnell from Austen Associates on Monday 31st May 2021 to evaluate the current state of such trees. A summary of the commentary provided by the Arborist is listed below.

- Trees are juvenile Sycamore Acer pseudoplatanus classed as category C trees.
- They are of poor quality and are impeding sightlines on entry and exit of the compound
- Die back present to the top centre of the crown of most trees.
- scale insects present in some trees.
- Bark damage identified on the trunk at ground level.
- Some roots are lifting in the cycle track tarmac.

In order to, it is proposed mitigation measure will be introduced to off-set the impacts of the tree removal, which would include the planting of 2 no. trees for every one that is removed. The full report created for such site visit is included within Appendix F of this Report.

4.7 Other Assessed Routes and Layouts Not Selected for the Scheme

In addition to the designs and route presented in above sections, one alternative route was considered for this section of the dodder greenway and several other layouts were drawn and assessed for the upgrade of the Blue Haven junction. These route/designs were not considered for the MCA as the preliminary results of their assessment showed significant environmental impacts, as well as impacts to the traffic and/or safety performance of the junction. The following sub-sections present a description and illustration of these layouts.

4.7.1 Alternative Greenway Route

Figure 4.19, below, presents an alternative off-road route that was considered for this section of the Dodder Greenway. A detailed drawing showing the extend of this alternative have been included within Appendix B of this Report.

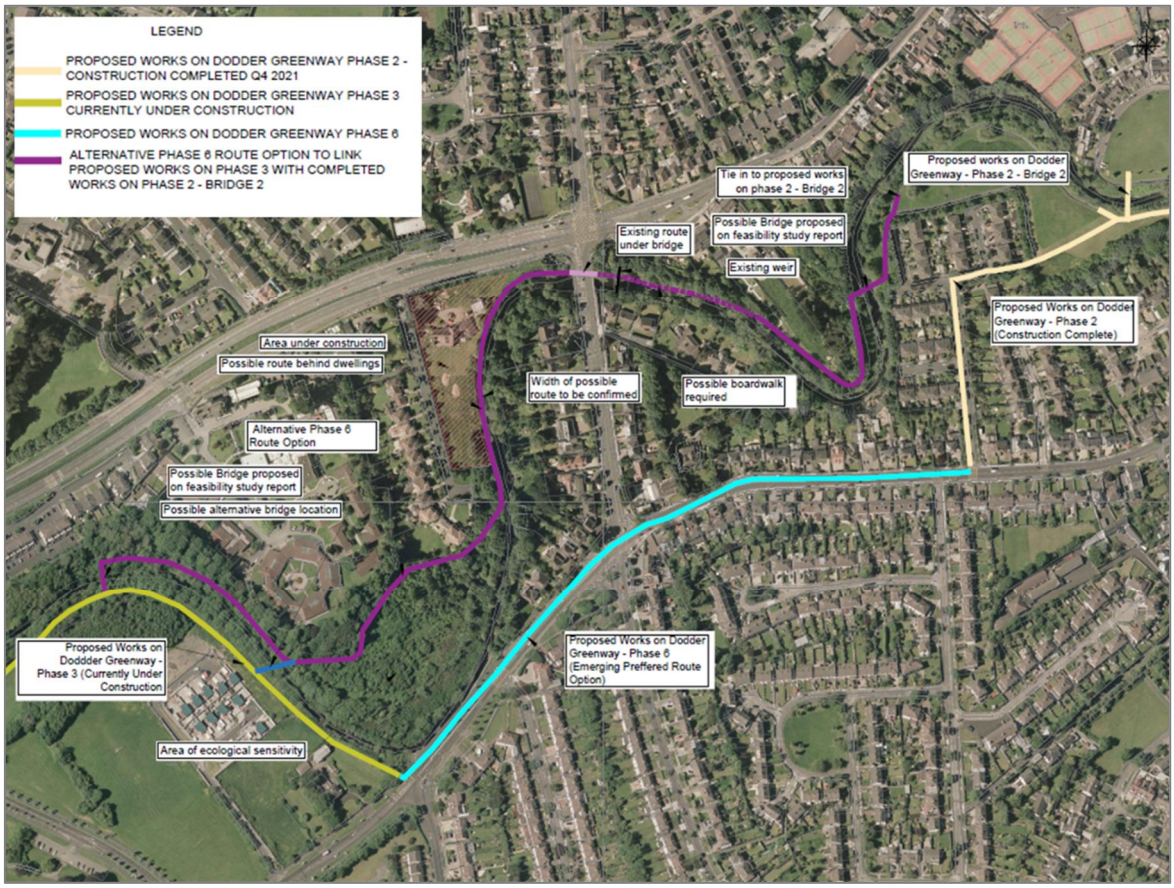


Figure 4.19 *Alternative Route Dodder Greenway Phase 6*

As shown above, the alternative route for the proposed works mainly followed the River Dodder path. This route was not chosen for the following reasons:

- Additional 2 bridges required on this option.
- Possible restraint on the width of the path along the route due to extents of private property land and the riverbank.
- A boardwalk was required.

- Proposed shared route to run throughout existing woodland of ecological sensitivity.
- Itôs possible that sheet piles were required at some locations to support the shared route.
- Possible piles required for both bridges
- Ecological and environmental constrains.
- Possible land acquisition.

4.7.2 Blue Haven Junction Option 4

Similar to layout option no. 2, this design proposed the integration of cyclops around the junction, however, it also included the removal of the existing left turn slip-lane on Ballyroan Road. This design is illustrated in Figure 4.20, which follows.

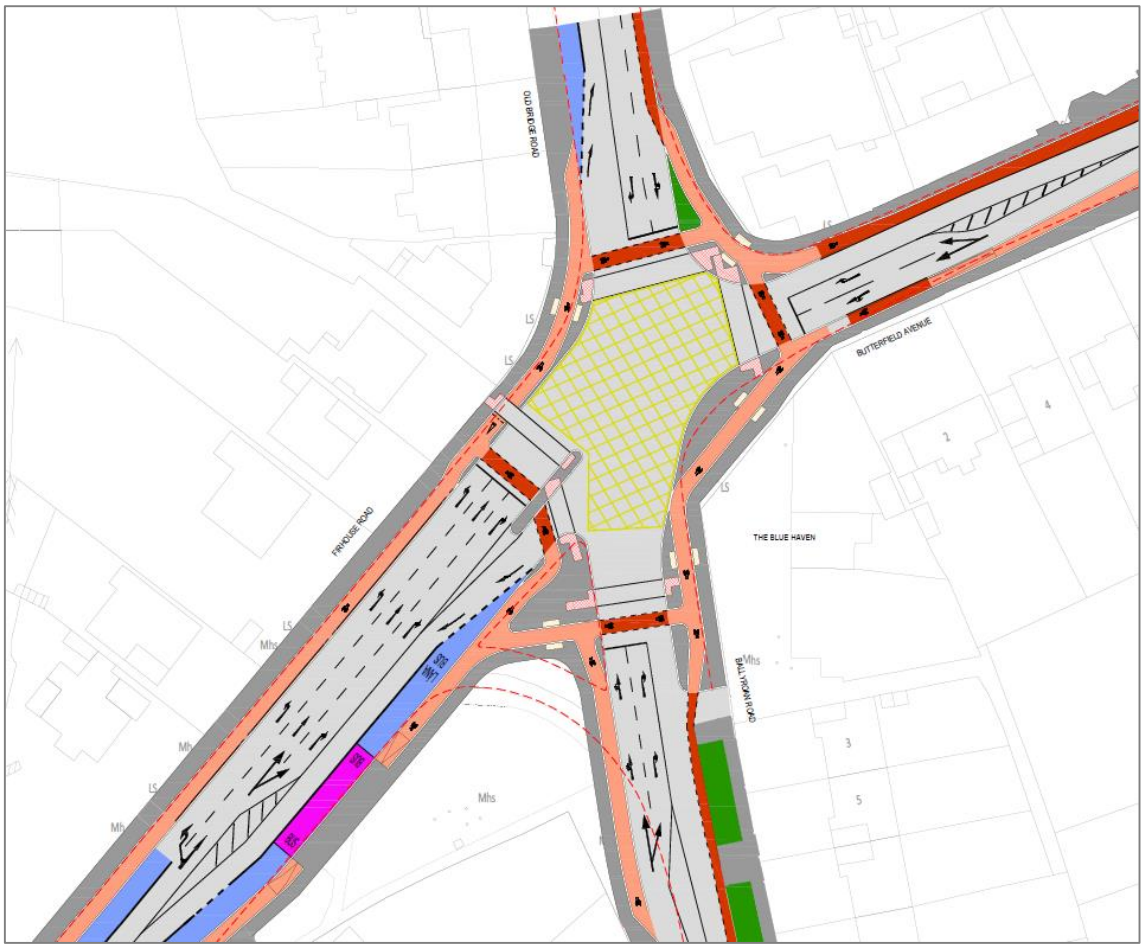


Figure 4.20 *Blue Haven Junction Layout no. 4*

This layout was not included on the MCA as the traffic modelling results obtained from its assessment showed significant impact to the traffic performance of the junction.

The main factor affecting the traffic performance was the tight turning radii for the left turns from Ballyroan Road into Firhouse Road. The traffic model showed that the geometry of this arm reduced the estimated speed at which cars performing this manoeuvre clear the junction. This influenced the green time allocation for all the other arms, reducing the total number of cars able to pass through the junction and increasing the degree of saturation

of all lanes. A practical reserve capacity of -11.4% for the AM peak and -27.5% for the PM Peak was obtained for this model (See section 5.3 for traffic modelling outputs description).

4.7.3 Blue Haven Junction Option 5

This design proposed the integration of protected cycle lanes around the junction and removal of the left turning slip lane on Ballyroan Road. Figure 4.21, bellow, illustrates this layout.

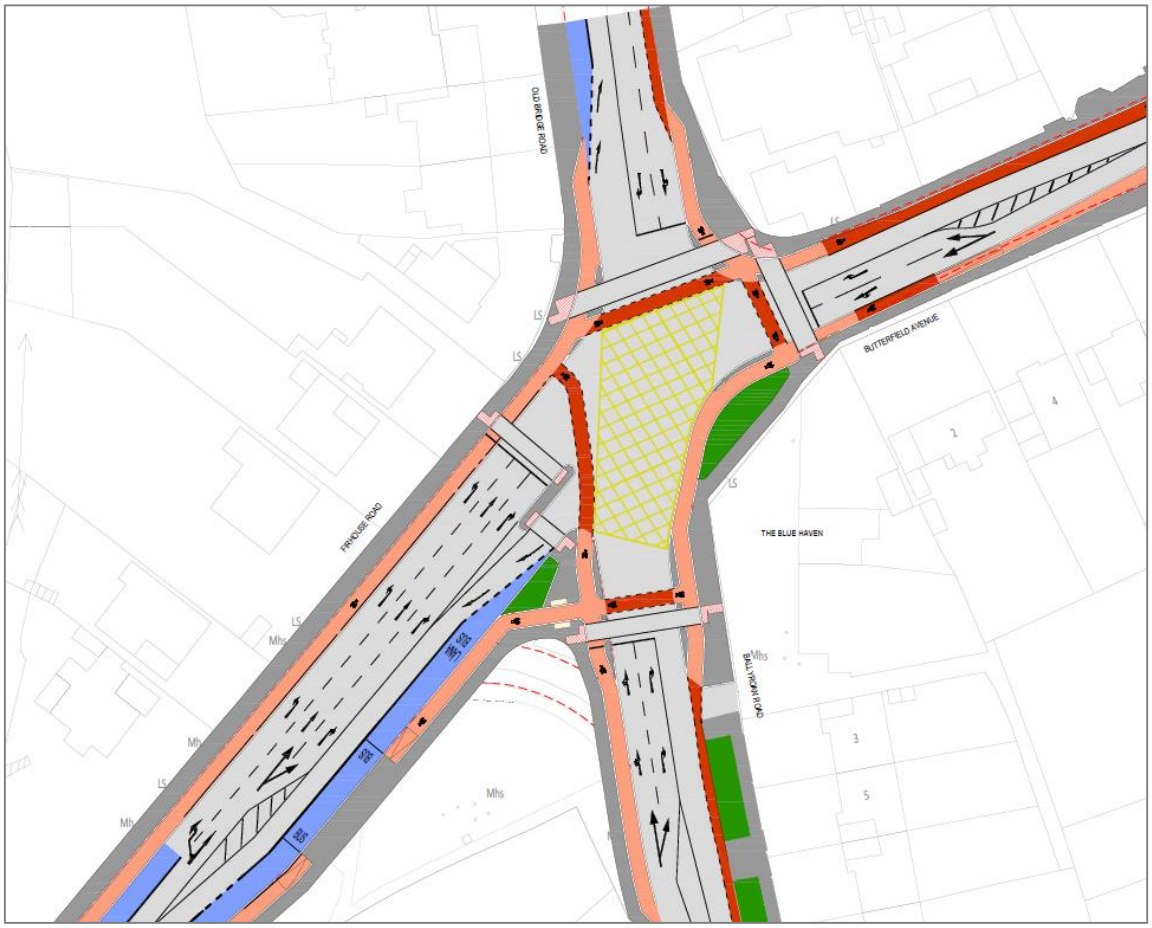


Figure 4.21 *Blue Haven Junction Layout no. 5*

This design was not included on the MCA due to safety concerns on pedestrians and cyclists movements around the junction and significant impacts to the traffic performance.

Following the creation of a traffic model, it was concluded that a separate signal stage could not be provided for cyclists, which forced to have pedestrians and cyclistsô movements to be accommodated on a single signal stage. This arrangement presented significant safety concerns for all users as too many conflict points were identified on the junction.

In addition to the above, and similar to option no. 4, the traffic performance of the junction deteriorated significantly with the removal of the left turning slip on Ballyroan Road. A practical reserve capacity of -13.80% for the AM peak and -28.30% for the PM peak was obtained from the traffic model.

4.7.4 Blue Haven Junction Option 6

This design proposed the integration of protected cycle lanes around the junction and the retention of the left turning slip lane on Ballyroan Road. Figure 4.22, below, illustrates this layout.

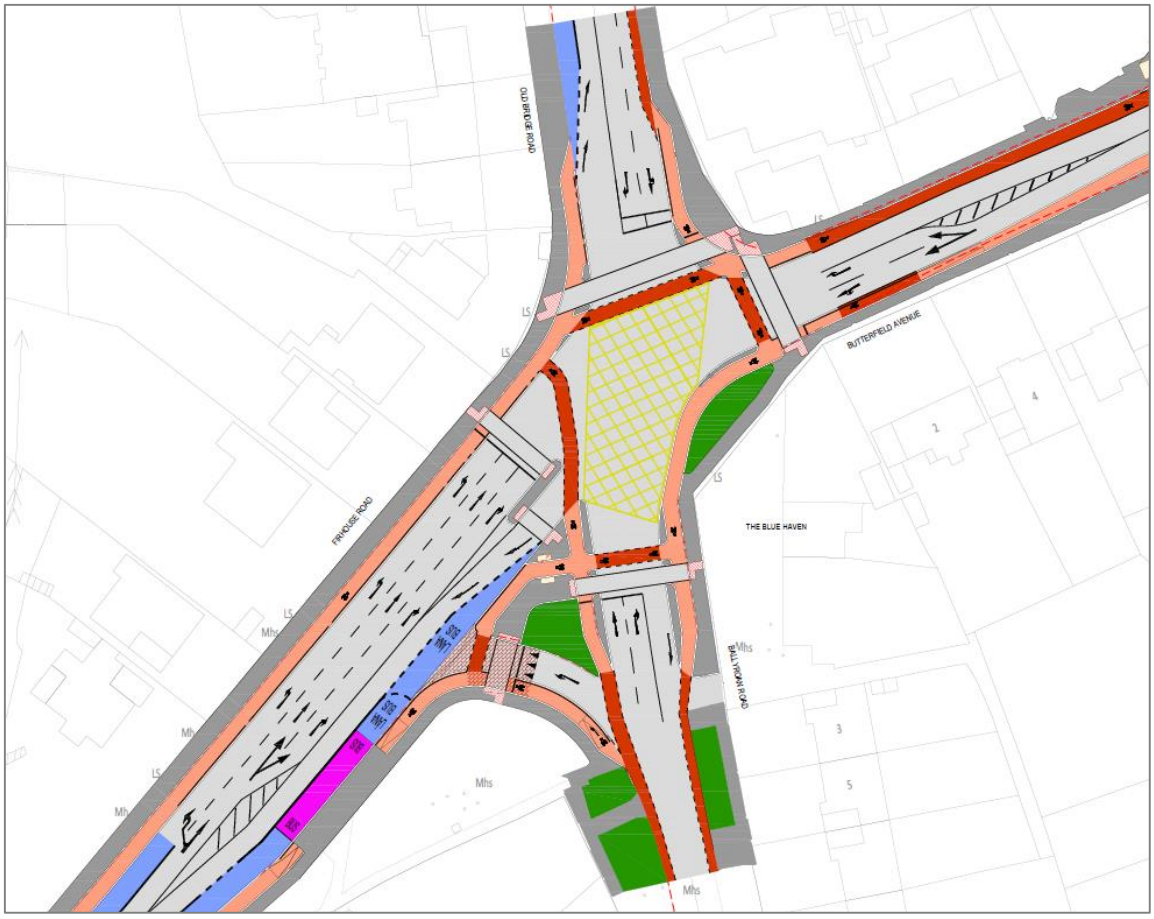


Figure 4.22 *Blue Haven Junction Layout no. 6*

Similar to option 4, this design was not included on the MCA due to safety concerns on pedestrians and cyclistsômovements around the junction. Due to the impacts on traffic performance, a separate signal stage could not be provided for cyclists, which forced to have pedestrians and cyclistsômovements to be accommodated on a single signal stage. This arrangement presented significant safety concerns for all users as too many conflict points were identified on the junction.

5. TRAFFIC IMPACT ASSESSMENT

5.1 Introduction

This section of the Report sets out the traffic impacts of each layout to the overall performance of the junction. The industry standard LinSig traffic modelling software has been used for predicting capacities, queues, and delays. Detailed traffic modelling results are included in Appendix E of this Report.

5.2 Traffic Modelling Approach and Inputs

Assessment Scenarios and Time Period

The assessment focuses on estimating the traffic impact of the proposed road changes to the junctions presented within section 4 of this Report. As recommended by TIIôs TTA Guidelines, critical time periods are considered as established by the traffic survey, i.e., the AM peak hour (08:00-09:00hrs) and the PM peak hour (16:30-17:30hrs). The 2020 traffic survey results, discussed in section 3.6 of this report, have been used as input for the capacity analysis.

The following scenarios have been developed in assessing the traffic impacts:

- **Do-Nothing Scenario**: To assess the traffic impact of each layout to the performance of the junction, first, the existing junction performance was established. This scenario is referred as the ódo-nothingôscenario and it is based on the existing traffic conditions.
- **Do-Something Scenario:** This scenario assesses the junction performance with each layout.

Traffic Modelling Software

The industry standard LinSig traffic modelling software has been used for predicting capacities, queues, and delays at the relevant junction. LinSig is a modelling software dedicated for analysing isolated signal-controlled junctions and small junction networks. Key functions of this software include capacity-based traffic assignment across the roads and lanes forming the modelled network, traffic signal timing optimisation, and forecasting of performance parameters for the entire network, individual junctions, and individual lanes. The models analyse the junctions in relation to their geometry and traffic flows and calculate the Practical Reserve Capacity (PRC).

Traffic Signal Inputs

The traffic signal inputs utilised for the assessment of the existing conditions have been provided by the Client (South Dublin County Council). The inputs provided information about the Traffic Signal Phases, Stages, and Inter-greens. Detailed description of these inputs has been included within Appendix E of this Report.

5.3 Traffic Modelling Outputs Description

The following outputs were obtained from the LinSig model:

- Degree of Saturation: this output presents the ratio of demand flow to the maximum flow which can be passed through a junction from a particular approach, i.e., number of vehicles that could cross the stop line in an hour on a particular lane. A lane with a degree of Saturation greater than 90% is considered to be approaching its theoretical capacity.
- Maximum Queue Length: queue lengths at junctions are measured in Passenger Car Units (PCU), which represents a standard vehicle length including a buffer length to the front and back. For the purposes of this assessment, a PCU length of 5.75 metres has been assumed.
- Delay: the delay is based on the estimated average delay per vehicle among all traffic passing through the junction. The delay per vehicle provides an insight into operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. Average delays greater than 80 seconds per vehicle is considered generally considered to be excessive for signalised intersections.
- Practical Reserve Capacity (PRC): is the amount by which traffic demand can grow before Practical Capacity is reached. A PRC close to 0% suggest that the junction is operating at capacity. A negative PRC indicates the junction is operating over its practical capacity.

5.4 Do-Nothing Traffic Modelling

5.4.1 AM Peak

The modelling results obtained for the existing conditions or ódo-nothingôscenario for the AM peak are presented within Table 5.1, which follows. The degree of saturation and maximum queues are presented per approach arm, while the delays and Practical Reserve Capacity are provided for the junction.

Junction No.	Do-Nothing AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	85.1%	9.6	40.20	-0.8%
	R114 Butterfield Avenue	85.0%	10.4		
	R817 Ballyroan Road	89.0%	13.4		
	R114 Firhouse Road	90.8%	17.4		
2	R114 Fihouse Road (northeast)	75.9%	16.4	17.9	14.40%
	Knocklyon Road	78.7%	10.2		
	R114 Fihouse Road (southwest)	67.0%	16.3		

Junction No.	Do-Nothing AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
3	R114 Fihouse Road (northeast)	70.3%	11.8	18.6	21.50%
	Spawell Link Road	74.1%	7.5		
	R114 Fihouse Road (southwest)	64.9%	8.6		

Table 5.1 *'Do-nothing' AM Peak Traffic Modelling Results*

As shown above, during the AM peak the Blue Haven junction is the worst [performing junction in the network obtaining a PRC of -0.8%, and an average delay of 40.2 seconds. During this assessment period, both the Knocklyon Road junction and Spawell Link Road junction have spare capacity obtaining PRcôs of 14.40% and 21.50%, respectively.

The performance indicators presented above suggest that the Blue Haven junction is operating at capacity or slightly over capacity during the AM peak period.

5.4.2 PM Peak

The modelling results obtained for the existing conditions or ódo-nothingôscenario for the PM peak are presented within Table 5.2, which follows.

Junction No.	Do-Nothing PM Peak (16:30-17:30hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	96.9%	17.9	49.3	-7.7%
	R114 Butterfield Avenue	94.6%	21.0		
	R817 Ballyroan Road	86.7%	7.0		
	R114 Firhouse Road	92.1%	11.4		
2	R114 Fihouse Road (northeast)	98.9%	40.8	40.2	-9.9%
	Knocklyon Road	97.0%	14.1		
	R114 Fihouse Road (southwest)	97.7%	14.1		
3	R114 Fihouse Road (northeast)	81.5%	13.6	30.6	-3.4%
	Spawell Link Road	93.1%	20.9		
	R114 Fihouse Road (southwest)	74.7%	5.7		

Table 5.2 *'Do-nothing' PM Peak Traffic Modelling Results*

The performance indicators obtained for the PM peak suggest that all junctions are operating over capacity. The worst performance has been obtained for Knocklyon Road junction with a PRC of -9.9% and an average delay of 40.2 seconds. This is followed

by the Blue Haven junction with a PRC of -7.7% and delays of 49.3 seconds. Spawell Link Road obtained a PRC of -3.4% and delays of 30.6 seconds.

Compared to the AM peak, the traffic modelling results indicate that the performance of the PM peak is worst for the network under study.

5.5 'Do Something'- Layout no. 1 Traffic Modelling Results

5.5.1 AM Peak

The modelling results obtained for the AM peak with layout no. 1 are presented within Table 5.3, which follows.

Junction No.	Layout 1 AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	96.6%	21.5	56.6	-8.9%
	R114 Butterfield Avenue	98.0%	10.9		
	R817 Ballyroan Road	89.4%	14.6		
	R114 Firhouse Road	93.7%	19.4		
2	R114 Fihouse Road (northeast)	72.7%	15.8	26.1	-9.2%
	Knocklyon Road	98.3%	18.4		
	R114 Fihouse Road (southwest)	63.6%	9.1		
3	R114 Fihouse Road (northeast)	81.6%	11.3	25.2	9.5%
	Spawell Link Road	78.2%	7.7		
	R114 Fihouse Road (southwest)	82.2%	16.1		

Table 5.3 *Layout no. 1 AM Peak Traffic Modelling Results*

The performance obtained with the implementation of Layout no. 1 indicates that both the Blue Haven junction and Knocklyon Road junction be operate over capacity obtaining PRCs of -8.9% -9.2%, respectively, during this assessment period. Average delays of 56.6 seconds for junction 1 and 26.1 seconds for junction 2 should be expected.

The performance indicators obtained for the Spawell Link Road junction indicated a PRC of 9.5% and delays of 25.2 seconds, remaining within acceptable levels for this assessment period.

5.5.2 PM Peak

The modelling results obtained for the PM peak with layout option no. 1 are presented within Table 5.4(overleaf).

Junction No.	Layout 1 PM Peak (16:30-17:30hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	95.0%	17.3	58.9	-8.1%
	R114 Butterfield Avenue	97.3%	23		
	R817 Ballyroan Road	94.8%	11.4		
	R114 Firhouse Road	96.7%	14.2		
2	R114 Fihouse Road (northeast)	98.0%	43.3	45.3	-8.8%
	Knocklyon Road	96.9%	15.7		
	R114 Fihouse Road (southwest)	94.1%	12.2		
3	R114 Fihouse Road (northeast)	89.4%	16.3	33.5	0.2%
	Spawell Link Road	89.8%	19.3		
	R114 Fihouse Road (southwest)	83.4%	9.2		

Table 5.4 *Layout no. 1 PM Peak Traffic Modelling Results*

As shown above, with layout no. 1 during the PM peak the Blue Haven junctionõs PRC is estimated to deteriorate from -7.7% under existing conditions to -8.1% with the implementation of the new design. An average delay of 58.9 seconds shall be expected, which compares to 49.3 seconds in the do-nothing scenario.

PRCs of -8.8% and 0.2% have been obtained for the Knocklyon Road junction and Spawell Link Road junction, respectively. This compares to -9.9% and -3.4% under existing conditions.

5.6 Do Something- Layout no. 2 Traffic Modelling Results

5.6.1 AM Peak

AM Peak

The modelling results obtained for the AM peak with layout no. 2 are presented within Table 5.5, which follows.

Junction No.	Layout 2 AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	93.7%	19.4	50.9	-4.1%
	R114 Butterfield Avenue	90.5%	10.5		
	R817 Ballyroan Road	89.7%	14.5		
	R114 Firhouse Road	93.7%	19.3		
2	R114 Fihouse Road (northeast)	73.8%	16	27.2	-9.2%

Junction No.	Layout 2 AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
	Knocklyon Road	98.3%	18.4		
	R114 Fihouse Road (southwest)	64.3%	11.3		
3	**R114 Fihouse Road (northeast)**	70.3%	8.5	17.5	28.1%
	Spawell Link Road	62.4%	7.1		
	R114 Fihouse Road (southwest)	44.3%	8.4		

Table 5.5 *Layout no. 2 AM Peak Traffic Modelling Results*

The results obtained for this scenario indicate that Blue Haven junction will operate over capacity with a PRC of -4.1%. An average delay of 50.9 seconds has been estimated with the implementation of this layout. This compares to -0.8% PRC and 40.2 seconds delay in the do-nothing scenario.

Knoclyon Road junction and Spawell Link Road junction obtained PRCs of -9.2% and 28.1%, respectively. This compares to 14.4% and 21.5% in the do-nothing scenario.

5.6.2 PM Peak

The modelling results obtained for the PM peak with layout no. 2 are presented within Table 5.6, which follows.

Junction No.	Layout 2 PM Peak (16:30-17:30hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	**R817 Old Bridge Road**	96.9%	17.9	60.9	-10.9%
	R114 Butterfield Avenue	98.5%	24.3		
	R817 Ballyroan Road	97.4%	12.9		
	R114 Firhouse Road	99.8%	11.6		
2	**R114 Fihouse Road (northeast)**	100.4%	45.5	48.3	-11.5%
	Knocklyon Road	96.9%	15.7		
	R114 Fihouse Road (southwest)	99.9%	15.2		
3	**R114 Fihouse Road (northeast)**	84.2%	15.2	23.7	6.9%
	Spawell Link Road	73.8%	15.3		
	R114 Fihouse Road (southwest)	39.8%	3.6		

Table 5.6 *Layout no. 2 PM Peak Traffic Modelling Results*

The modelling results for this scenario estimate a -10.9% PRC and 60.9 secondsôdelay for the Blue Haven junction. This compares to -7.7% PRC and 49.2 seconds delay in the do-nothing scenario.

Knocklyon Road junction and Spawell Link Road junction obtained PRCs of -11.5% and 6.9%, respectively.

5.7 Do Something- Layout no. 3 Traffic Results

5.7.1 AM Peak

The modelling results obtained for the AM peak with layout no. 3 are presented within Table 5.7, which follows.

Junction No.	Layout 3 AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	92.7%	18.8	52.3	-8.8%
	R114 Butterfield Avenue	97.9%	11		
	R817 Ballyroan Road	88.5%	14		
	R114 Firhouse Road	93.7%	19		
2	R114 Fihouse Road (northeast)	75.4%	16.8	28.3	-9.2%
	Knocklyon Road	98.3%	18.4		
	R114 Fihouse Road (southwest)	63.4%	19.2		
3	R114 Fihouse Road (northeast)	87.2%	15.2	29.5	3.2%
	Spawell Link Road	66.3%	7.0		
	R114 Fihouse Road (southwest)	84.0%	14.7		

Table 5.7 *Layout no. 3 AM Peak Traffic Modelling Results*

The traffic modelling results obtained for this scenario indicates that the Blue Haven junction will operate above capacity with a -8.8% PRC and 52.3 secondsôdelay. This compares to -0.8% PRC and 40.2 seconds delay in the do-nothing scenario.

Knocklyon Road junction will also operate over capacity with a PRC of -9.2%. Spawell Link Road junction will be almost reaching capacity with a PRC of 3.2%.

5.7.2 PM Peak

The modelling results obtained for the PM peak with layout no. 3 are presented within Table 5.8 (overleaf).

Junction No.	Layout 3 PM Peak (16:30-17:30hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	R817 Old Bridge Road	102.3%	22.6	72.7	-16.2%
	R114 Butterfield Avenue	101.8%	28.4		
	R817 Ballyroan Road	95.3%	11.2		
	R114 Firhouse Road	104.6%	14.1		
2	R114 Fihouse Road (northeast)	97.7%	41.4	49.3	-13.7%
	Knocklyon Road	102.4%	19.3		
	R114 Fihouse Road (southwest)	94.1%	14.8		
3	R114 Fihouse Road (northeast)	97.2%	20.6	42.5	-8.0%
	Spawell Link Road	83.8%	5.7		
	R114 Fihouse Road (southwest)	94.8%	22.1		

Table 5.8 *Layout no. 3 PM Peak Traffic Modelling Results*

With the implementation of Layout no. 3, the PRC of the Blue Haven Junction will deteriorate to -16.2% from -7.7 under existing conditions. The average delay estimated for this scenario is 72.7 seconds, comparing to 49.3 seconds in the do-nothing scenario.

The performance of the knocklyon road junction and Spawell Link Road junction will also deteriorate to -13.7% and -8.0%, respectively.

6. MULTI CRITERIA ANALYSIS

6.1 Introduction

This chapter of the report presents the Multi Criteria Analysis (MCA) undertaken to evaluate the three design options created for the study area. These layout options have been compared and assessed using the principles of a MCA in line with best practice and compliant with tenets of ó*Common Appraisal Framework for Transport Projects and Programmes'* 2016 (CAF) under the headings *Pedestrian Movement, Cyclist Movement, Public Transport, Road Safety, Vehicle Capacity, Environmental Impact, Diversion Required, Vehicle Travel Time, and Cost / Economic.* The assessment criteria also follow the guidance set by the *TII Project Appraisal Guidelines for National Roads Unit 13.0-Pedestrians and Cyclist Facilities (PE-PAG-02036, October 2016)*

The contents within this section provide a description of the methodology utilised the evaluate each option, as well as the design elements taken into consideration for the assessment.

6.2 Assessment Methodology

The proposed layout options were assessed using ôMulti Criteria Analysisô (MCA) as outlined in the *'Common Appraisal Framework for Transport Projects and Programmes'* published by the Department of Transport, Tourism and Sport (DTTAS) in March 2016 and the *TII Project Appraisal Guidelines for National Roads Unit 13.0-Pedestrians and Cyclist Facilities*. The following aspects of the designs were evaluated on the assessment:

- Economy
- Safety
- Physical Activity
- Environment
- Accessibility and Social Inclusion
- Integration

In addition to the items presented above, the following additional criterion have been taken into consideration in the assessment as they a deemed relevant to the study area:

- Traffic Impact
- Design Suitability to JunctionsôGeometry
- Construction Time
- Part VIII Compliance

A detailed description of the assessment criteria to be taken into consideration on the aspects presented above is provided in the following sub-sections.

6.2.1 Economy

Capital Cost – Indicative Infrastructure Cost Estimate

Capital cost estimates are determined from both the indicative high-level infrastructure cost estimate and land acquisition cost. Indicative cost estimate is established to assess options for their likely capital infrastructure cost. Each option has been assessed relative

to the nature and extent of infrastructure works requirements to deliver the scheme objectives. The indicative cross-section for each option was used to determine the extent of the works required to provide the pedestrian and cycle facilities.

Transport Reliability and Quality of Service

This sub-criterion assesses the extent to which journey time savings for public transport services can be achieved on each route. This is dependent on the provision of some, or all of the following measures being implemented:

- Provision of new bus lanes along the scheme
- Use of traffic signals to provide virtual priority
- Rationalisation of existing bus stops in terms of location and spacing.

6.2.2 Safety

Pedestrian Safety

This criterion considers the safety of pedestrian circulation along the route. The elements taken into consideration for this criterion include safety of access to the pedestrian facilities, location of such facilities, availability of such facilities, and layout of pedestrian crossing infrastructure.

Cyclist Safety

This criterion assesses the safety of cyclists within the study area. The elements taken into consideration on the evaluation of cyclist safety predominately focus on the level of cycle segregation provided within the design.

Road Safety

This criterion assesses the overall safety for motorised vehicles. The elements assessed include carriageway width and speed reduction measures. For the purposes of comparing the proposed options, the proposed cross-section is used to assess road safety.

6.2.3 Physical Activity

This criterion identifies the impact of the potential health benefits associated with each proposed option.

6.2.4 Environment

The scope and methodology for the environmental assessment was established by considering what environmental aspects are likely to be impacted with the implementation of each layout option. The potential impacts of the options are assessed at desktop study level, with details of the constraints considered outline in the following sections.

Landscape and Visual Quality

This criterion assesses the possible effects of each layout on the surrounding streetscapes.

Air Quality

This criterion evaluates the potential effects of each layout in air quality as a result of mode shift to more sustainable transport modes.

Noise and Vibration

This criterion assesses the noise and vibration impact of each option.

Land Use

This criterion evaluates the potential impact on lands use through land-take, severance, or reduction of viability.

6.2.5 Accessibility and Social Inclusion

This criterion assesses how the proposed options will benefit vulnerable group in society such as people on low income, non-car owners, people with disabilities, young age users, and advance age users. The key trip attractors facilities are also taken into consideration on this criterion, with the land-uses considered as such listed below:

- Education (schools, universities, community centre, etc.)
- Retail and leisure (shopping centres, town centre, etc.)
- Health (hospitals, clinics, etc.)
- Employment (business parks, office developments etc.)

6.2.6 Integration

Land Use Integration

This criterion identifies the extent to which an option supports or encourages planned future development or provides economic opportunities. As part of this assessment, cognisance was taken of the ability of each option to offer opportunities to re-generate particular streets or areas or enhance the urban environment in general.

Residential, Employment and Educational Catchment

This criterion compares how the existing populations within 5, 10 and 15-minutesôwalk catchment from the study area are served by a particular option.

Transport Network Integration

This criterion identifies the possible links between each option and existing and proposed sustainable transport modes. Additionally, major effects on general traffic are also considered.

Cycling Integration

This criterion identifies the integration of the proposed options with the existing and proposed adjacent routes, and the quality of infrastructure along the route. Each option was assessed on its ability to provide the required cycling infrastructure in tandem with bus priority measures.

6.2.7 Traffic Impact

This criterion identifies the traffic impacts associated with the layout in terms of junction performance, i.e., practical reserve capacity, degree of saturation, delays, queues, etc.

6.2.8 Design Suitability to Junctions' Geometry

This criterion evaluates the suitability of the design ability to accommodate all users on a safe manner with direct focus on the junctionôs geometry.

6.2.9 Construction Time and Part VII Compliance

Construction Time

This criterion identifies the construction time associated with the delivery of the scheme.

Part VIII Compliance

This criterion identifies the Part VIII compliance associated each layout option scheme.

6.3 Layout Options Ranking Scale

Under each criterion presented above, all identified solutions were assessed to have an impact measured through an indicative green, orange and red. Darker green indicates a positive impact with respect to the relevant topic, orange indicates a neutral or somewhat negative or positive impact, and red indicates a negative impact. Each option will be compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other layout options. Table 6.1 below shows the colour coding of the five-point scale, with advantageous routes graded ñdark greenò and disadvantageous routes graded ñredò

Colour	Description
	Significant advantages over other options.
	Some advantages over other options.
	Neutral compared to other options.
	Some disadvantages to other options.
	Significant disadvantages to other options.

Table 6.1 *Options Colour Coded Ranking Scale*

6.4 MCA Options Assessment Results

The following Table 6.2 presents the results of the Multi Criteria Analysis undertaken to evaluate each layout option. The contents within this table provide a ranking to each sub-criterion discussed in section 6.2. Further details of the assessment are presented within Appendix A of this report.

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
Traffic Impact	N/A			
Safety	Pedestrian Safety			
	Cyclist Safety			
	Road Safety			
Design Suitability to Junctions' Geometry	N/A			
Economy	Capital Cost			
	Transport Reliability and Quality Service			
Physical Activity	Physical Activity			
Environment	Landscape and Visual Quality			
	Air Quality			
	Noise & Vibration			
	Land Use Character			
Accessibility & Social Inclusion	Vulnerable Group			
Integration	Land Use Integration			
	Residential, Employment and Education Catchment			
	Transport Network Integration			

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
	Cycling Integration			
Construction Time	N/A			
Part VIII Planning Compliance	N/A			

Table 6.2 *Options Assessment Summary (Sub-Criteria)*

Table 6.3 below, provides a summary ranking for the options under each assessment criteria.

Assessment Criteria	Option 1	Option 2	Option 3
Traffic Impact			
Safety			
Design Suitability to Junction's Geometry			
Economy			
Physical Activity			
Environment			
Accessibility & Social Inclusion			
Integration			
Construction Time			
Part VIII Planning Compliance			

Table 6.3 *Route Options Assessment Summary (Main Criteria)*

Traffic Impact

A light green ranking has been assigned to Option 1 as this layout obtained better traffic modelling results during the PM peak, when compared to option 2. During the AM peak Option 2 resulted to perform better than Option 1. Due to this, a light green has also been assigned to Layout 2.

A red score has been assigned to option 3 as this layout obtained the poorest performance in the modelling exercise for both AM and PM peak.

Safety

Option 1 has been assigned a light green rank as it provides some advantages compared to Option 3, however, some disadvantages compared to option 2. The Blue Have design proposed with this option provides cycle tracks along Firhouse Road and Butterfield Avenue, in addition to a separate traffic signal stage for the cyclists moving along these two arms. On the other hand, segregated cycle facilities are not available for the cyclists moving north-south along the remaining two arms of the junction. Compared to the two other options, this layout does not provide any traffic calming on the left turning slip in Ballyroan Road.

An orange ranking has been assigned to layout option 2, as this design presents some disadvantages compared to option 1. Compared to Option 1, this layout does not provide the same level of safety for pedestrians, as shared facilities are proposed for pedestrians and cyclists along Spa Well Link Road, and the Cy-Lops arrangements for the Blue Haven junction generate some conflicts with cyclists at crossing points.

Option 3 has been assigned a red ranking as it presents significant disadvantages when compared to the other options in the arrangements for cyclists. With this design, the cyclists would need to transit through the Blue Haven junction with the cars, which highly compromises their safety.

Design Suitability to Junction's Geometry

The designs suitability to the Spawell Link Road junction and Knocklyon junction are similar in all 3 proposals, however, this significantly varies for the Blue Haven junction.

For this criterion, a light green has been assigned to options 1 and 3 as the layouts fit the Blue Haven junction geometry to accommodate all users.

An orange ranking has been assigned to option 2 because the design does not adapt to the junction geometry to accommodate a complete and proper Cyclop layout for cyclists. A hybrid Cyclop approach has been included on this design on the Ballyroan Road arm of the junction as the left turning slip lane cannot be eliminated.

Economy

Under the economic point of view, option 1 and 2 have received a light green ranking. In terms of cost, option 2 is estimated to required less financial investment than option 1. On the other hand, the transport reliability and quality service achieved with option 1 is superior to the one provided by option 2.

An orange ranking has been assigned to option 3 as it presents some disadvantages when compared to the other options.

Physical Activity

A neutral yellows ranking has been given to all option in this category. This is because all layouts provide improve and expanded walking and cycling infrastructure and will promote opportunity for a shift to active travel modes.

Environment

On the environmental perspective, a light green ranking has been assigned to option no. 1 as this option provides some visual improvement to streetscape by integrating high-quality paved surface for cyclists along Firhouse Road, Spawell Link Road and Butterfield Avenue. Compared to option 2, this layout does not propose significant improvements for cyclists in Old Bridge Road and Ballyroan Road, however, a superior design is available with this option when compared to option 3.

Option 2 also received a light green ranking as it provides high quality segregated cyclist infrastructure along all arms of the Blue Haven junction enhancing the landscape and visual quality of the area. This option presents some disadvantages when compared to option 1 as it proposes a shared space instead of cycle tracks along Spawell Link Road. As superior design is proposed for Blue Haven junction when compared to option 3.

An orange ranking has been assigned for option 3, because compared to option 1 and 2, this layout only proposes the provision of high-quality paved surfaces for cyclists along Firhouse Road and Spawell Link Road.

Accessibility & Social Inclusion

A neutral yellow ranking has been assigned to each option as all of them will benefit vulnerable group in society by providing quality pedestrian and cyclist facilities.

Integration

A neutral yellow has been assigned to all options as they all support various policies and enhance public realm by providing quality pedestrian and cycle facilities to link two sections of the Dodder Greenway. This walking/cycling infrastructure will serve land use character of the area, allowing more sustainable travel patterns for commuting from the residential areas and accessing the commercial properties in the surroundings.

Construction Time

A neutral yellow ranking has been assigned to all options in this category as it is estimated that they all of them would take approximately 12 months to be delivered.

Part VIII Planning Compliance

A neutral yellow ranking has been given to all options in this category as they all require Part VIII Planning to be implemented.

6.5 Public Consultation

This section of the Report will be populated once the Public Consultation period concludes. This will summarise the main observations submitted by the public.

6.6 Emerging Preferred Option

Having examined the three options developed using a multi criteria analysis, Option 1 has emerged as the preferred option. A summary of the benefits of option 1includes:

- Links the two sections of the Dodder Greenway with the provision of high-quality cycle and pedestrian facilities along Firhouse Road, Butterfield Avenue, and Spawell Link Road.
- Achievement of a high level of safety and efficiency for cyclists moving along the Greenway, with the provision of segregated facilities and a separate traffic signal phase in the Blue Haven junction that do not conflict with the vehicles or pedestrians.
- High level of safety for pedestrians moving through the junctions with the provision of crossing points in all arms and an All-Green signal stage isolated from vehicles and cyclists.
- High-quality of pedestrian and cycling facilities can potentially promote the sustainable and active modes of travel such as walking and cycling.
- Improvements to public realm can have a positive impact on real estate in the subject area and can add value to the communities in the surroundings.
- Proposed design significantly enhances streetscape creating more vibrant environment.
- Construction cost for the preferred option is very similar to other options evaluated.

When compared to option 2 and 3, the preferred option provides a higher level of safety for the cyclists and pedestrians moving along the Dodder Greenway as segregated facilities for both users are available throughout the study area. Furthermore, the cycle movements will be accommodated across Blue Haven Junction are accommodated in a separate signal phase with no conflicts with the vehicles or pedestrians.

In terms of traffic impact, Options 1 and 2 obtained the same ranking in the evaluation. The difference in the traffic performance of both layouts is not significant, therefore, the impacts to the network studied should be expected to be in the same margins. Choosing one option over the other will not have a significant effect in the network.

Please note that the outcome of the Public Consultation may have a bearing on the Emerging Preferred Route. Once the public consultation is concluded this section will be finalised.

APPENDICES

Appendix A MCA Options Evaluation

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
Traffic Impact	N/A	1-Traffic Modelling Indicates the lowest Practical Reserve Capacity is -9.2% and highest 9.5% for the AM peak; lowest PRC for PM peak is -8.8% and highest 0.2%.	1-Traffic Modelling Indicates the lowest Practical Reserve Capacity is -9.2% and highest 28.1%% for the AM peak; lowest PRC for PM peak is -11.5% and highest 6.9%.	1-Traffic Modelling Indicates the lowest Practical Reserve Capacity is -9.2% and highest 3.2% for the AM peak; lowest PRC for PM peak is -16.2% and highest -8.0%.
	Rank			
Safety	Pedestrian Safety	1- Provision of segregated facilities throughout study area. 2- Crossing Points available across all arms of Spawell Link Road Junction and Blue Haven Junction. 3- Separate traffic signal staging.	1- Shared Space for Cyclists and Pedestrians proposed along Spawell Link Road. 2- Crossing Points available across all arms of Spawell Link Road Junction and Blue Haven Junction. 3-Potential conflicts with cyclists at Blue Haven Junction crossing points.	1- Provision of segregated facilities throughout study area. 2- Crossing Points available across all arms of Spawell Link Road Junction and Blue Haven Junction. 3- Separate traffic signal staging
	Rank			
	Cyclist Safety	1-Provides two-way cycle tracks on the northern side of Firhouse Road and Butterfield Avenue with separate traffic signal staging. 2-Provides on-road cycle lanes along Old Bridge Road and Ballyroan Road which requires cyclist to move with the vehicular traffic.	1-Provides cycle tracks on both sides of Firhouse Road and Butterfield Avenue. 2-Raises cycle lanes to cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road. 3-Cyclops type arrangement is provided across the junction	1-Proposes cycle tracks on both sides of Firhouse Road and Spawell Link Road. 2-Proposes on-road cycle lanes for Remaining roads. 3-Layout pushes cyclists to move through Blue Haven Junction in conjunction with the vehicular traffic.

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
		3-Do not proposed any traffic calming on the left turning slip from Ballyroan road. 4-Provides cycle tracks along Spawell Link Road and Firhouse Road.	reducing the number of conflict points between cyclists. 4-Proposes traffic calming measures at Ballyroan Road left turning slip. 4- Shared Space for Cyclists and Pedestrians proposed along Spawell Link Road.	
	Rank	🟩	🟩	🟥
	Road Safety	1-Proposed elimination of left turning slipfrom Old Bridge Road. 2-Proposes retention of existing layout at Butterfield Avenue and Ballyroan Road. 3-Proposes the redesign of lanes layout on Firhouse Road to eliminate left turning slip arrangement and accommodate all lanes along side.	1-Proposed elimination of left turning slipfrom Old Bridge Road. 2-Proposes retention of existing layout at Butterfield Avenue and Ballyroan Road. 3-Proposes the redesign of lanes layout on Firhouse Road to eliminate left turning slip arrangement and accommodate all lanes along side.	1-Proposed elimination of left turning slipfrom Old Bridge Road. 2-Proposes retention of existing layout at Butterfield Avenue and Ballyroan Road. 3-Proposes the redesign of lanes layout on Firhouse Road to eliminate left turning slip arrangement and accommodate all lanes along side.
	Rank	🟨	🟨	🟨
Design Suitability to Junction's Geometry	N/A	1-Design fits the junctionôs geometry to accommodate all users.	1-Design does not fit the Blue Haven junctionôs geometry as cyclist cannot be accommodated on a complete Cyclop layout.	1-Design fits the junctionôs geometry to accommodate all users.
	Rank	🟩	🟧	🟩

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
Economy	Capital Cost	Estimated cost: ú6,741,885.50 ex. VAT (refer to Appendix C for details)	Estimated cost: ú6,311,849.259 ex. VAT (refer to Appendix C for details)	Estimated cost: ú6,815,606.00 ex. VAT (refer to Appendix C for details)
	Rank			
	Transport Reliability and Quality of Service	1-Northbound Bus Lane Proposed along Firhouse Road. 2-Bus Lane extends to stop line on Spawell Link Road junction. 3-Separate Signal Stage provided for Buses.	1-Northbound Bus Lane Proposed along Firhouse Road	1-Northbound Bus Lane Proposed along Firhouse Road
	Rank			
Physical Activity	Physical Activity	1-Provides improved and expanded walking and cycling infrastructure and will promote opportunity for a shift to active travel modes.	1-Provides improved and expanded walking and cycling infrastructure and will promote opportunity for a shift to active travel modes.	1-Provides improved and expanded walking and cycling infrastructure and will promote opportunity for a shift to active travel modes.
	Rank			
Environment	Landscape and Visual Quality	1. Provides some visual improvement to streetscape by integrating high-quality paved surface for cyclists along Firhouse Road, Spawell Link Road, and Butterfield Avenue. 2-Provides some landscaped areas.	1. Provides significant visual improvement to streetscape by trees planting and high-quality paved surface for cyclists along all arms of the Blue Haven junction and Knocklyon junction, however no segregated cyclistsfacilities are proposed along Spawell Link Road. 2-Provides some landscaped areas.	1. Provides some visual improvement to streetscape by integrating high-quality paved surface for cyclists along Firhouse Road and Spawell Link Road. Cycle lanes are proposed for the remaining roads. 2-Provides some landscaped areas.
	Rank			

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
	Air Quality	1- Propose slight impacts with regard to air quality in comparison to other options by allowing shift from car driving to cycling/walking.	1- Propose slight impacts with regard to air quality in comparison to other options by allowing shift from car driving to cycling/walking.	1- Propose slight impacts with regard to air quality in comparison to other options by allowing shift from car driving to cycling/walking.
	Rank			
	Noise & Vibration	1.No impact on noise or vibration levels.	1.No impact on noise or vibration levels.	1.No impact on noise or vibration levels.
	Rank			
	Land Use Character	1-No land acquisition required.	1-No land acquisition required.	1-No land acquisition required.
	Rank			
Accessibility & Social Inclusion	Vulnerable Group	1.The provision of quality pedestrian and cycle facilities will benefit the vulnerable group.	1.The provision of quality pedestrian and cycle facilities will benefit the vulnerable group.	1.The provision of quality pedestrian and cycle facilities will benefit the vulnerable group.
	Rank			
Integration	Land Use Integration	1-supports various policies and enhance public realm by providing quality pedestrian and cycle facilities to link two sections of the Dodder Greenway. This option promotes the sustainable modes of travel such as walking and cycling.	1-supports various policies and enhance public realm by providing quality pedestrian and cycle facilities to link two sections of the Dodder Greenway. This option promotes the sustainable modes of travel such as walking and cycling.	1-supports various policies and enhance public realm by providing quality pedestrian and cycle facilities to link two sections of the Dodder Greenway. This option promotes the sustainable modes of travel such as walking and cycling.
	Rank			
	Residential, Employment and Education Catchment	1-Walking infrastructure provided in the junction layout, enhancing the quality of the	1-Walking infrastructure provided in the junction layout, enhancing the quality of the	1-Walking infrastructure provided in the junction layout, enhancing the quality of the

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
		available infrastructure for people within the 5-15 minutes walking catchment.	available infrastructure for people within the 5-15 minutes walking catchment.	available infrastructure for people within the 5-15 minutes walking catchment.
	Rank			
	Transport Network Integration	1-Northbound Bus Lane Proposed along Firhouse Road. 2-Bus Lane extends to stop line on Spawell Link Road junction. 3-Separate Signal Stage provided for Buses.	1-Northbound Bus Lane Proposed along Firhouse Road	1-Northbound Bus Lane Proposed along Firhouse Road
	Rank			
	Cycling Integration	1-Proposes cycle facilities in all arms of the junction.	1-Proposes cycle facilities in all arms of the junction.	1-Proposes cycle facilities in all arms of the junction.
	Rank			
Construction Time		1-Estimated construction time is 12 months	1-Estimated construction time is 12 months	1-Estimated construction time is 12 months
	Rank			
Part VIII Planning Compliance		1-Requires Part VIII planning	1-Requires Part VIII planning	1-Requires Part VIII planning
	Rank			

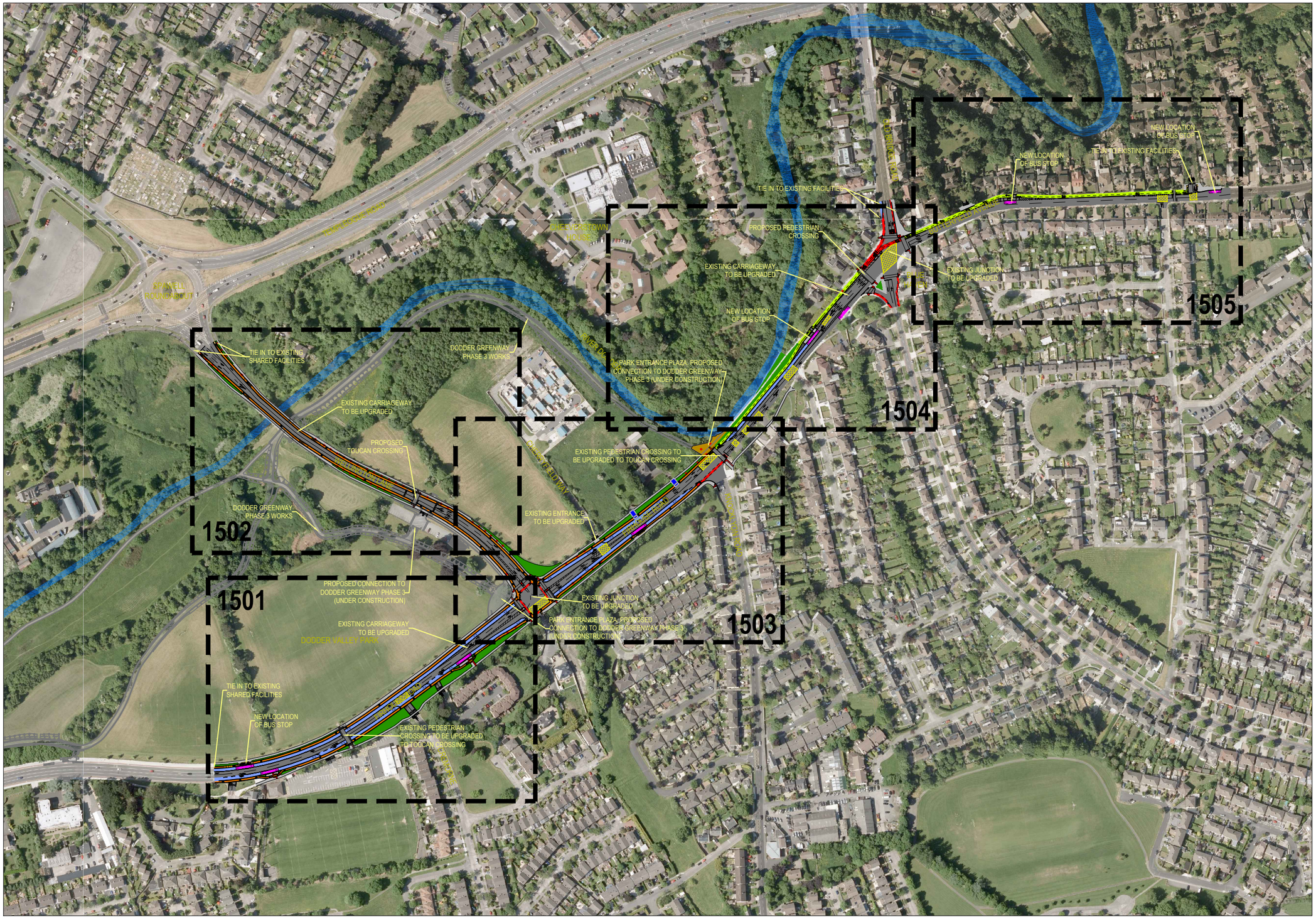
Appendix B Layout Options Drawings

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Clifton Scannell Emerson Associates



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

N

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED FLEXIBLE BOLLARD
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - OVERALL

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:2000 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1500

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

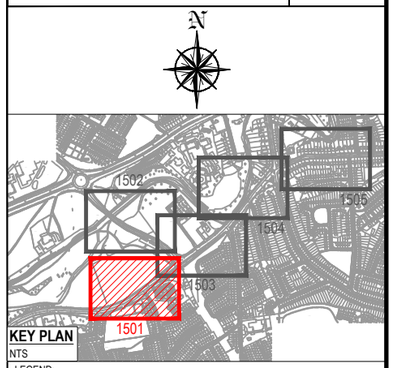
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
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- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - SHEET 1 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1501

Status Code: S2 | Suitability Description: FOR INFORMATION

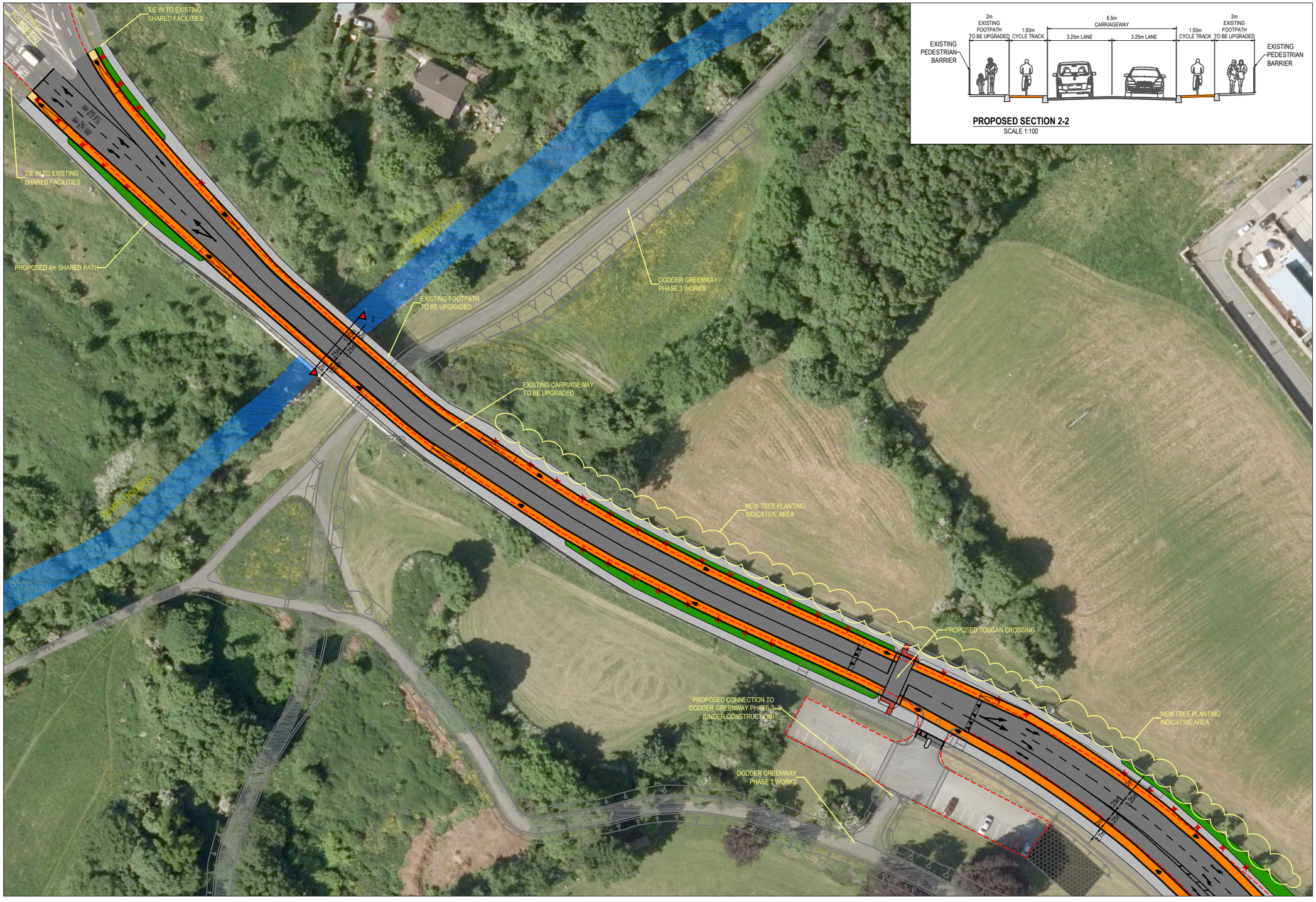
Revision: FINAL | Project Status: PRELIMINARY

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

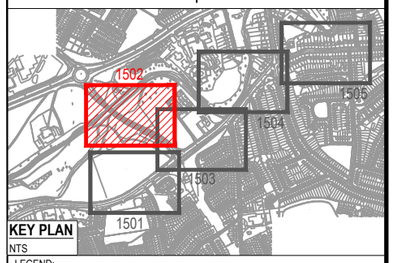
Clifton Scannell Emerson Associates



PROPOSED SECTION 2-2
SCALE 1:100

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



KEY PLAN
NTS

LEGEND:

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Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - SHEET 2 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1502

Status Code: S2 | Suitability Description: FOR INFORMATION

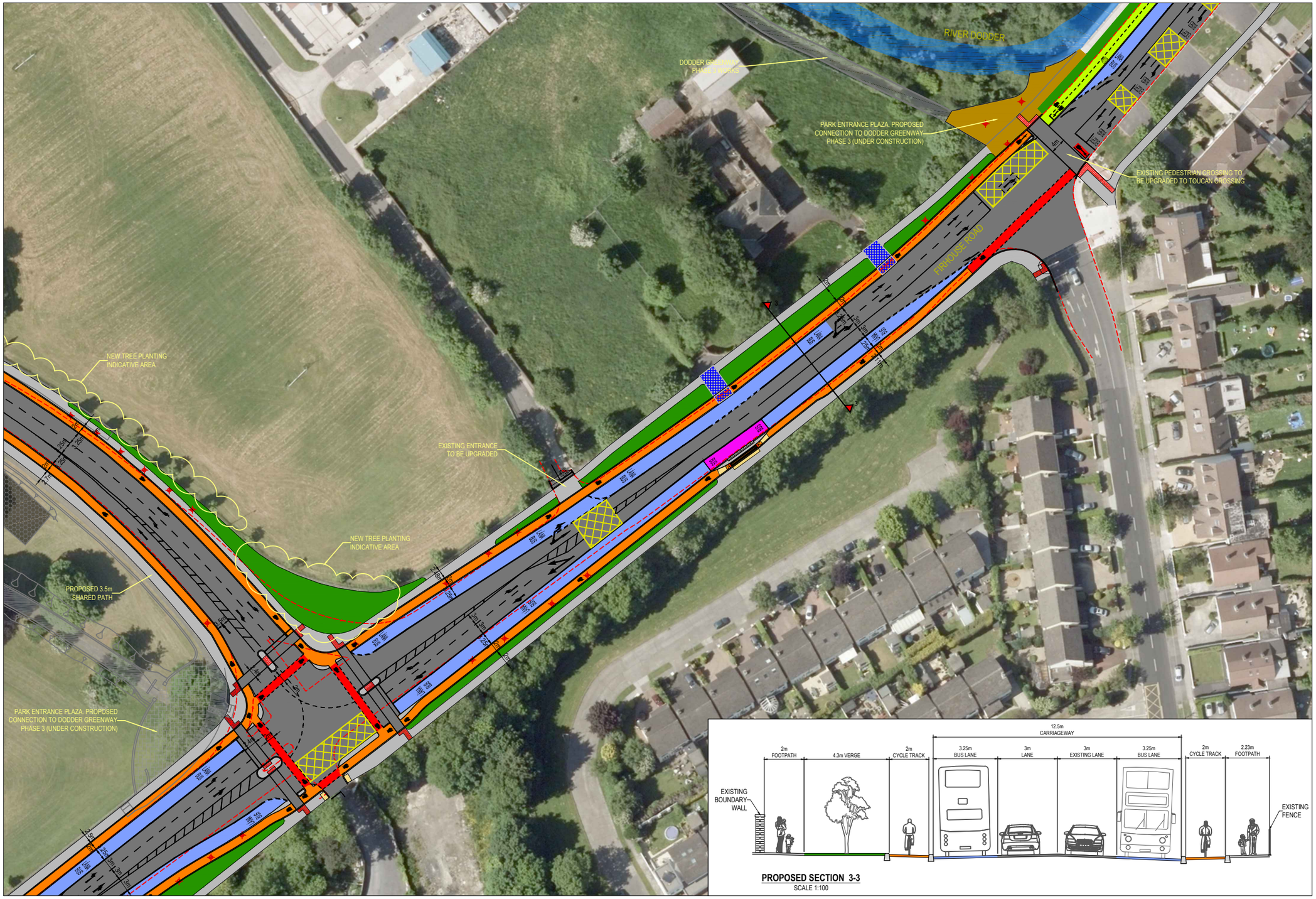
Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Clifton Scannell Emerson Associates



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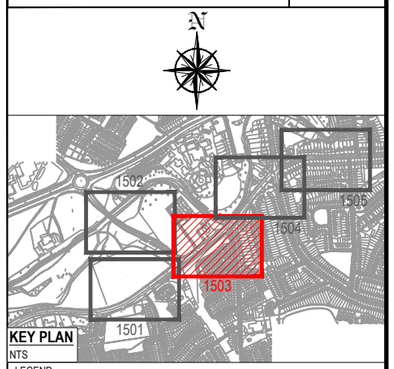

KEY PLAN
NTS

LEGEND:

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - SHEET 3 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1503

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

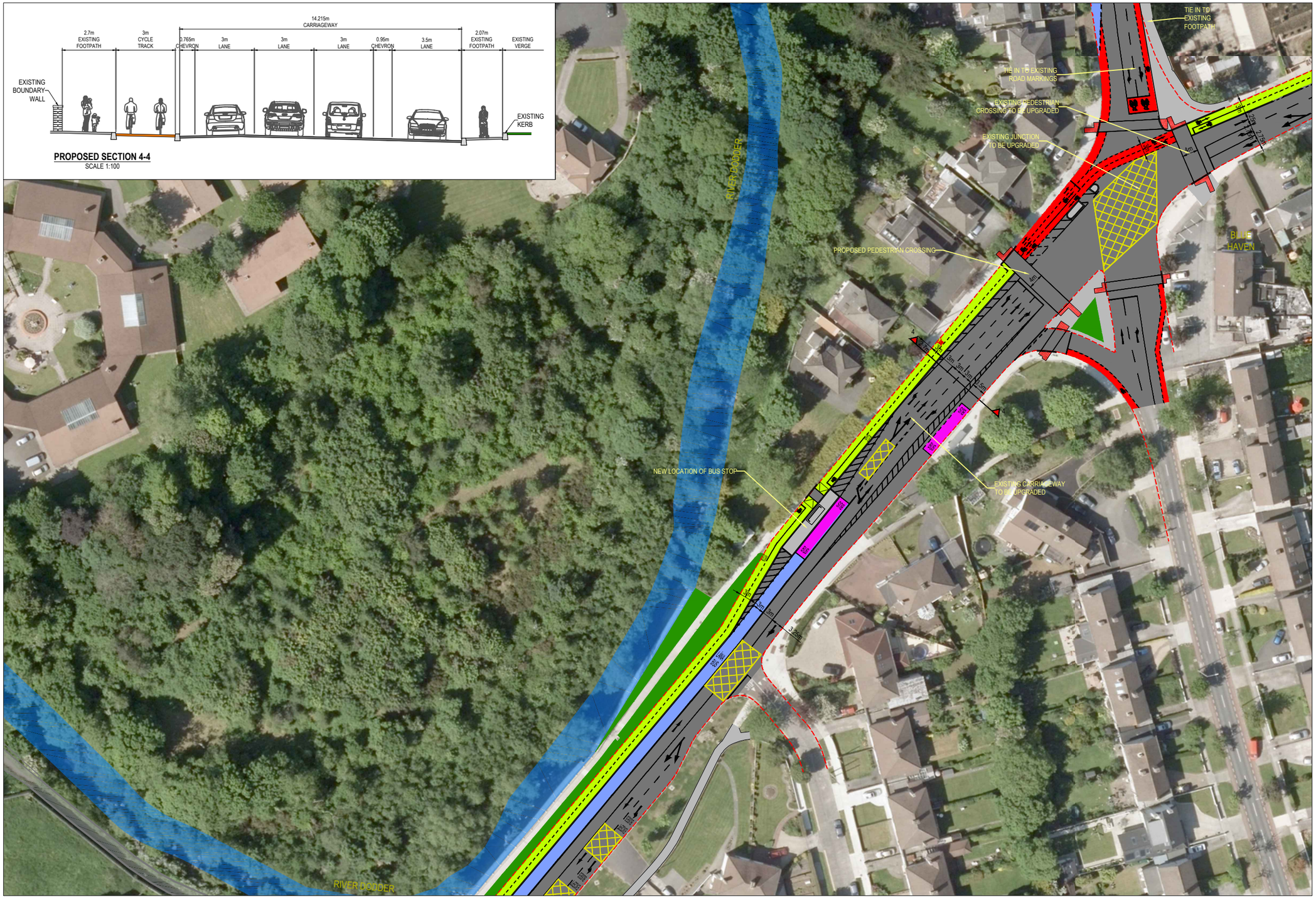
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

PROPOSED SECTION 4-4
SCALE 1:100



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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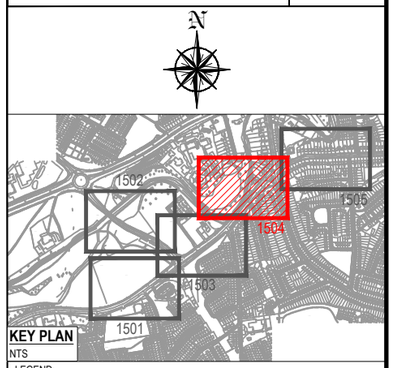

KEY PLAN
NTS

LEGEND:

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- EXISTING KERB

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - SHEET 4 OF 5

Drawn By: KT
Date: OCT. 2021
Checked By: DRL
Scale: 1:500 @ A1
CSEA Job No.: 18_123D

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1504

Status Code: S2
Suitability Description: FOR INFORMATION

Revision: FINAL
Project Status: PRELIMINARY

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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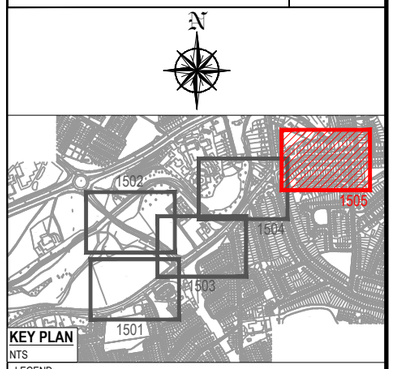

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
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Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 1 - SHEET 5 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1505

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

N

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
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- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - OVERALL

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:2000 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1510

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

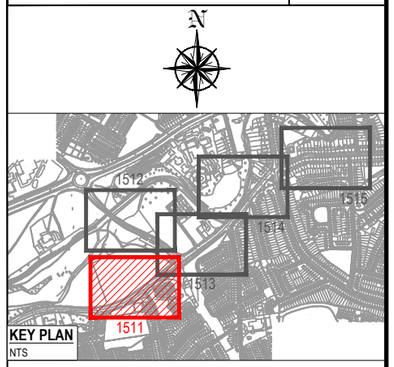
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



KEY PLAN
NTS

LEGEND:

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- PROPOSED CARRIAGEWAY UPGRADE
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- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

Clifton Scannell Emerson Associates

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W: www.csea.ie

Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - SHEET 1 OF 5

Drawn By: KT | Date: OCT. 2021

Checked By: DRL | Scale: 1:500 @ A1

CSEA Job No.: 18_123D

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1511

Status Code: S2 | Suitability Description: FOR INFORMATION

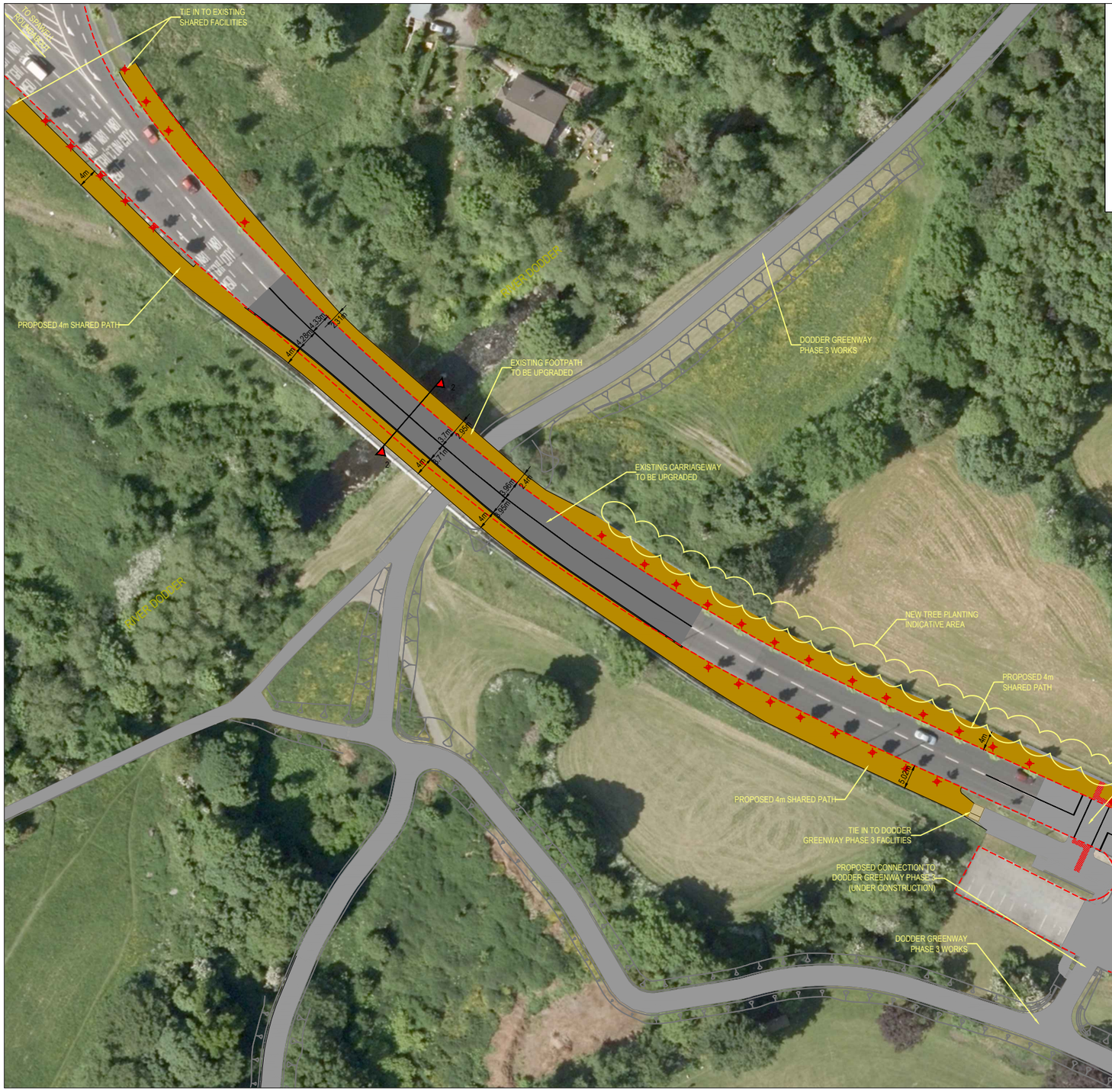
Revision: FINAL | Project Status: PRELIMINARY

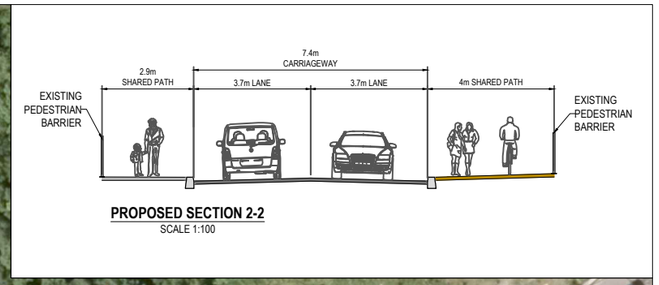
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates





PROPOSED SECTION 2-2
SCALE 1:100

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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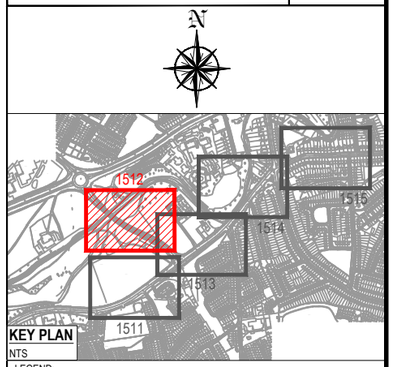

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

Clifton Scannell Emerson Associates

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - SHEET 2 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1512

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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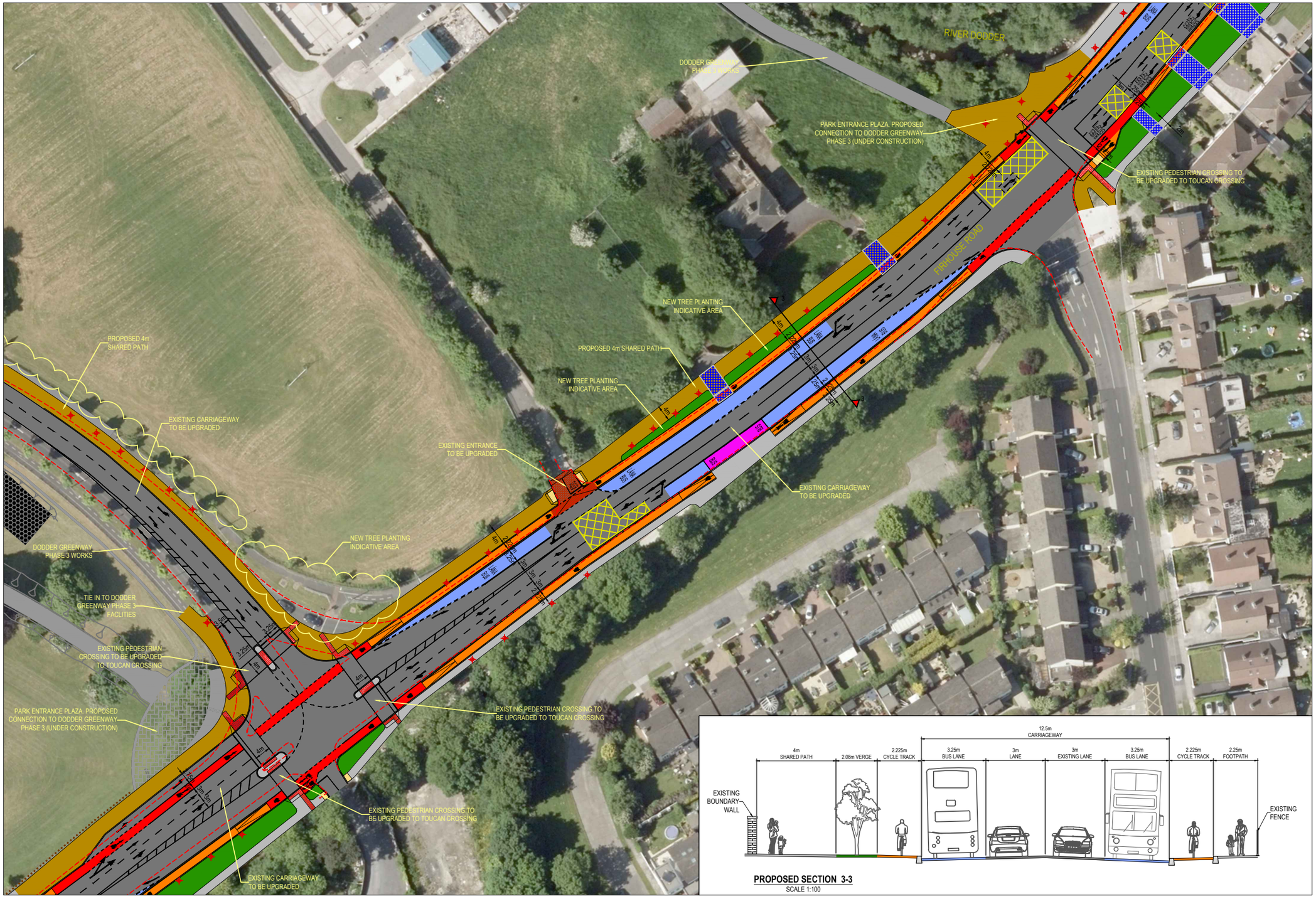

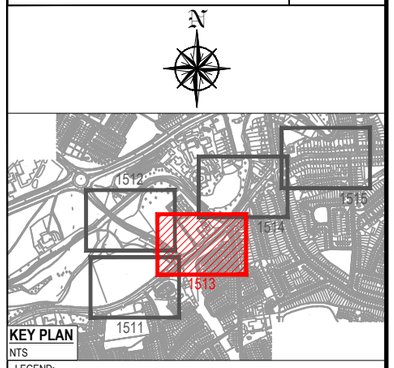

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - SHEET 3 OF 5

Drawn By: KT | Date: OCT. 2021 | 18_123D

Checked By: DRL | Scale: 1:500 @ A1 | CSEA Job No.

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1513

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

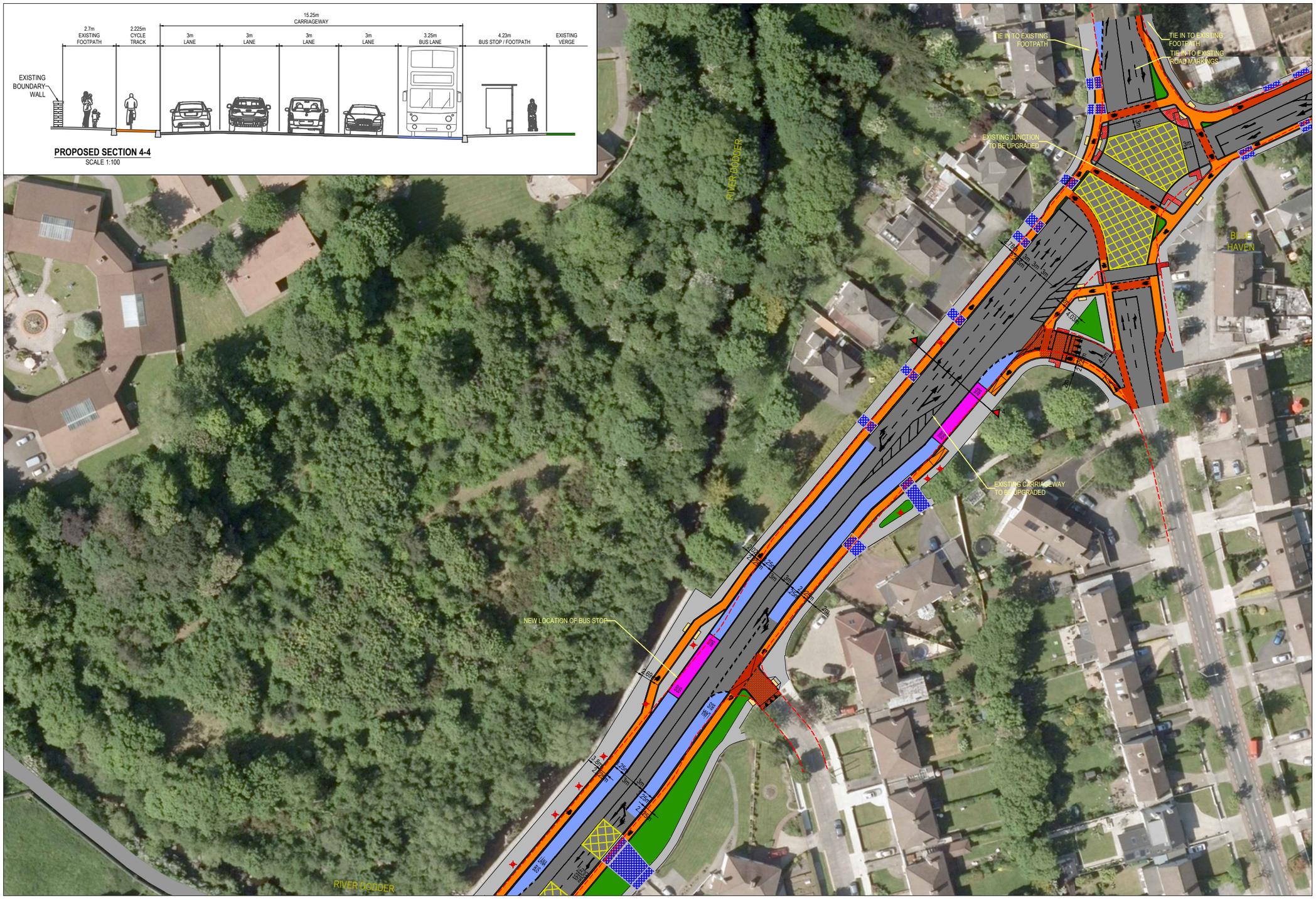
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

PROPOSED SECTION 4-4
SCALE 1:100



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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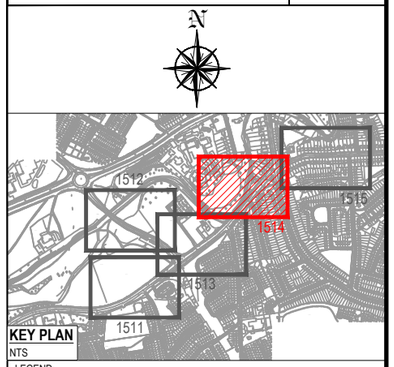

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - SHEET 4 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1514

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Clifton Scannell Emerson Associates

PROPOSED SECTION 5-5
SCALE 1:100

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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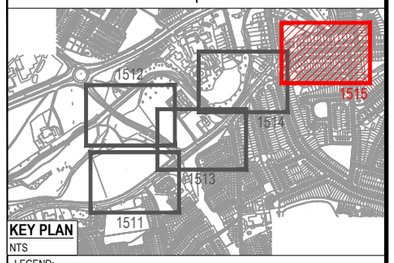

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 2 - SHEET 5 OF 5

Drawn By: KT
Date: OCT. 2021
Checked By: DRL
Scale: 1:500 @ A1
CSEA Job No.: 18_123D

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1515

Status Code: S2
Suitability Description: FOR INFORMATION

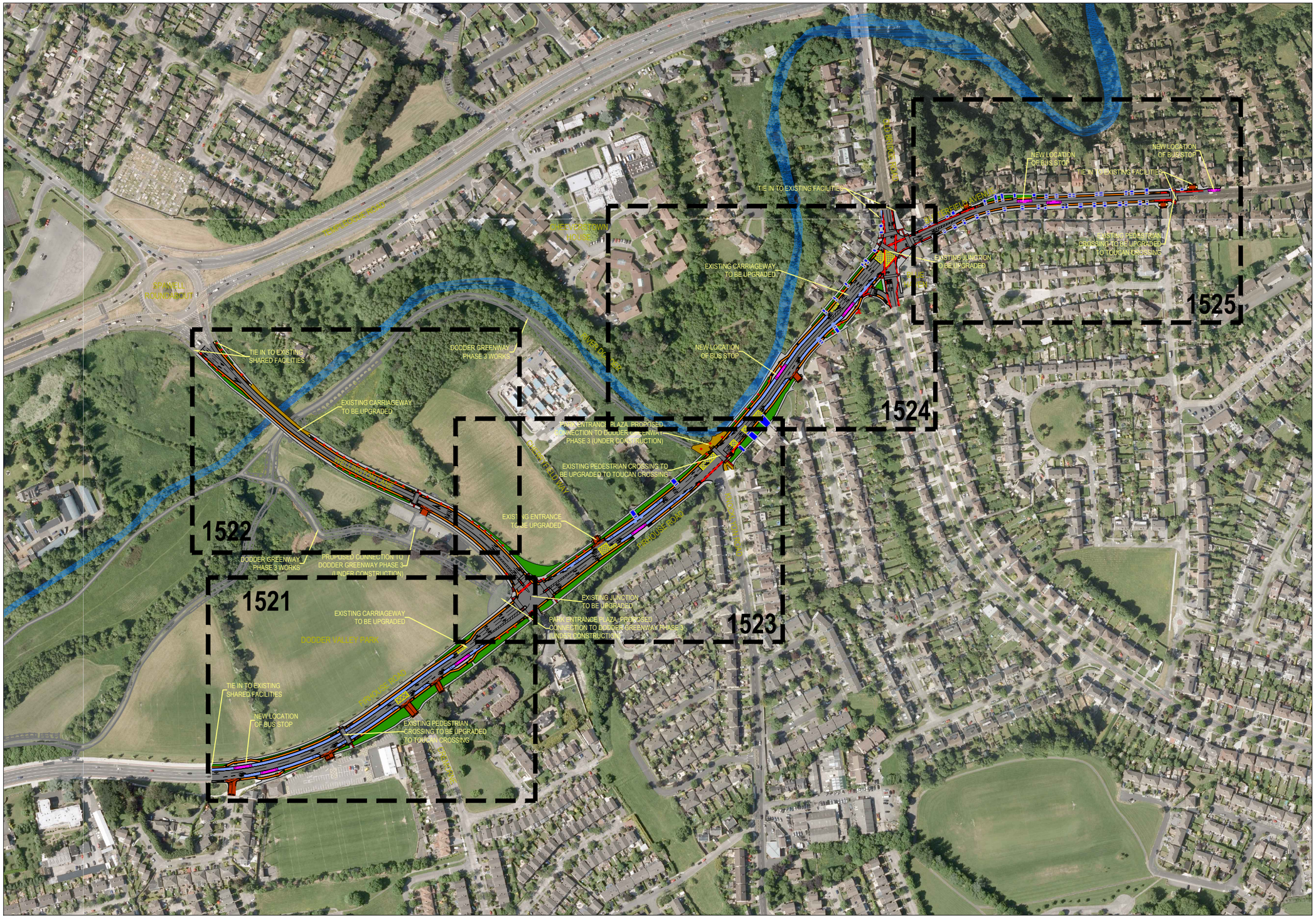
Revision: FINAL
Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

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LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OVERALL - OPTION 3

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:2000 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1520

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

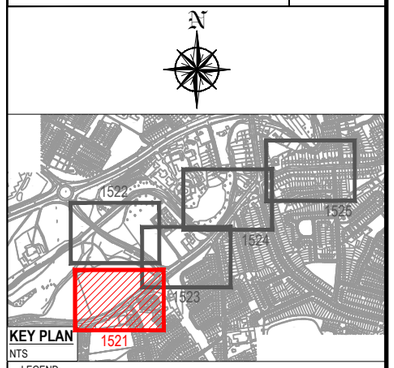
Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 3 - SHEET 1 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1521

Status Code: S2 | Suitability Description: FOR INFORMATION

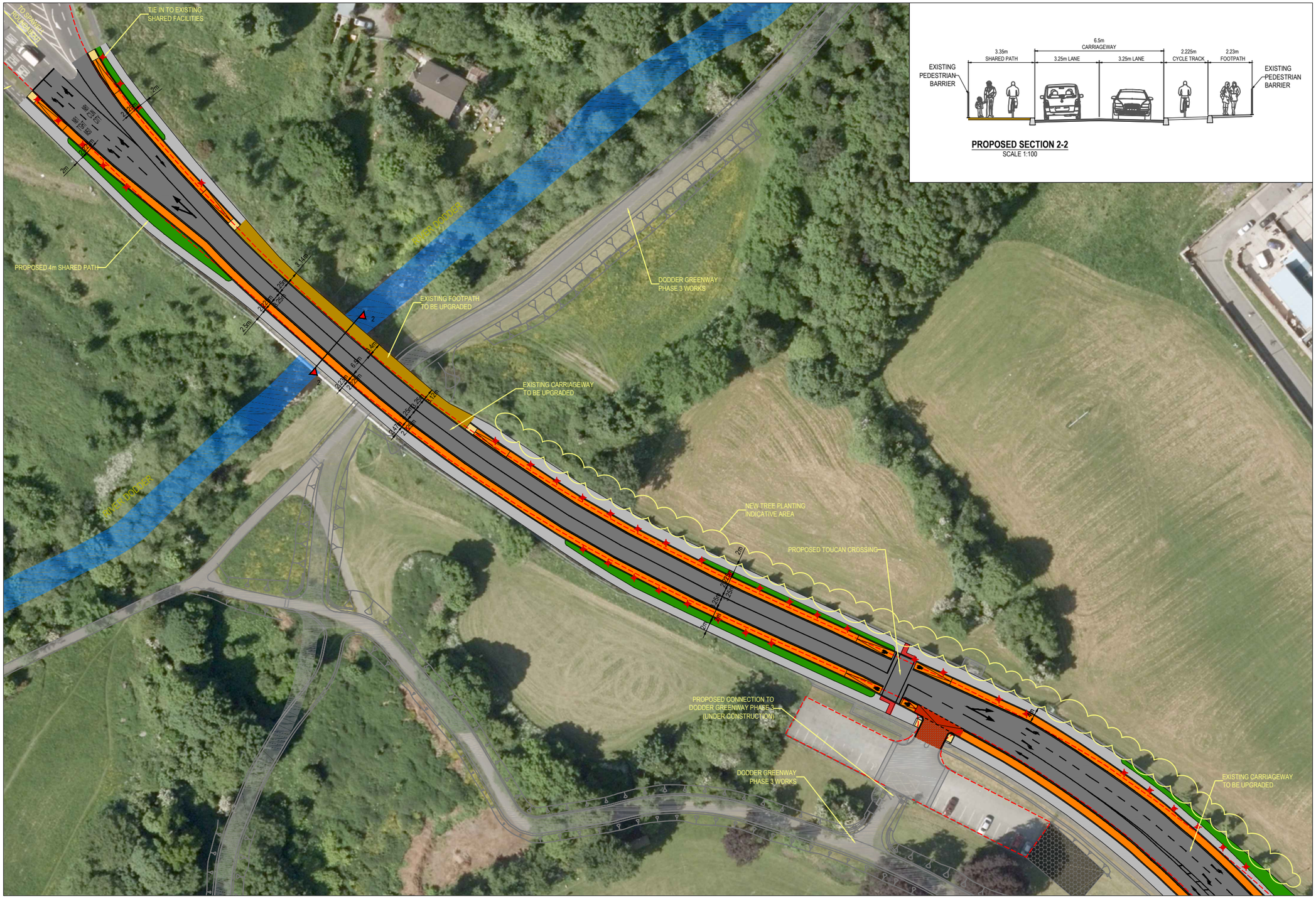
Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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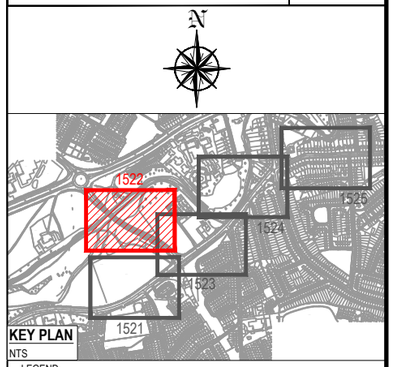

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 3 - SHEET 3 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1522

Status Code: S2 | Suitability Description: FOR INFORMATION

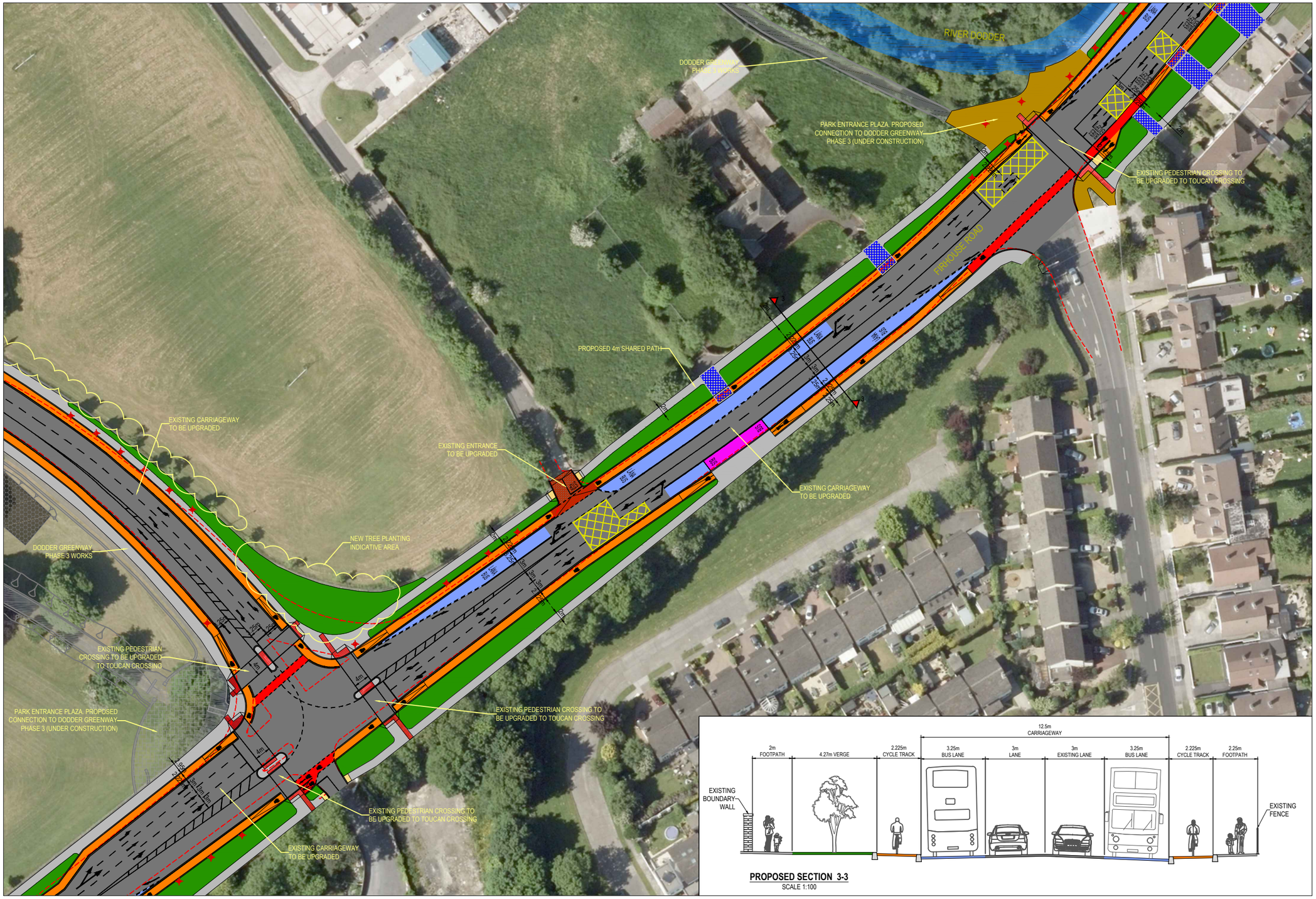
Revision: FINAL | Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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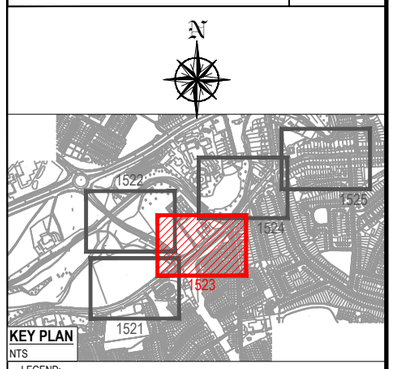

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
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- PROPOSED TACTILE PAVING (BUFF)
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- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 3 - SHEET 3 OF 5

Drawn By: KT | Date: OCT. 2021 | CSEA Job No.: 18_123D

Checked By: DRL | Scale: 1:500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1523

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: FINAL | Project Status: PRELIMINARY

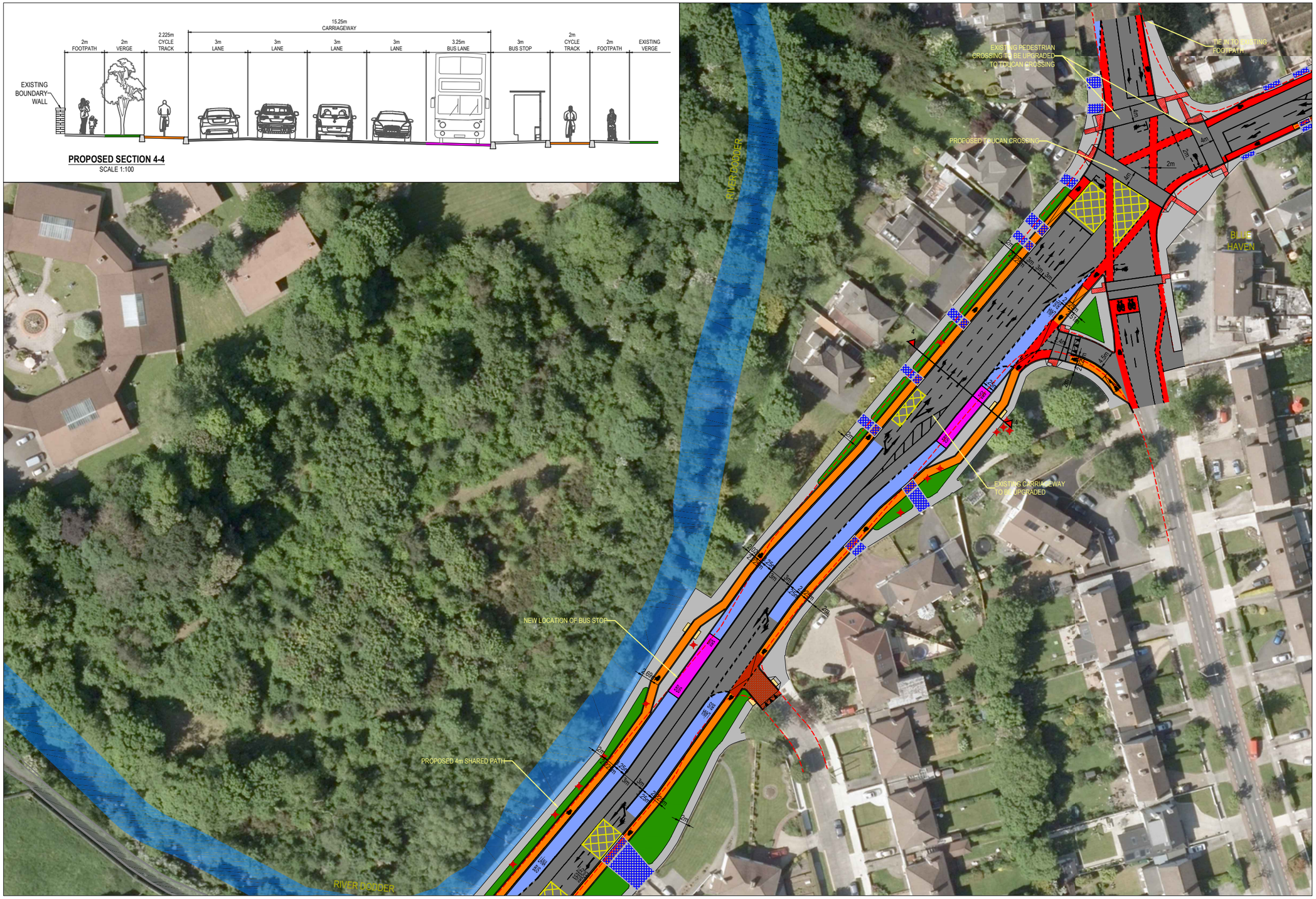
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Clifton Scannell Emerson Associates

PROPOSED SECTION 4-4
SCALE 1:100



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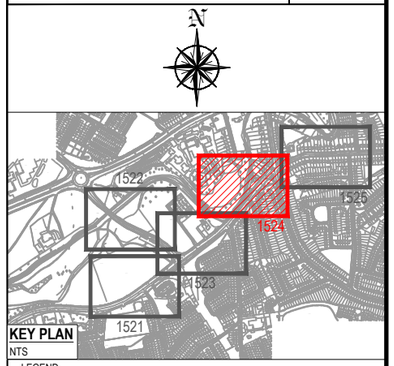

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 3 - SHEET 4 OF 5

Drawn By: KT — Date: OCT. 2021

Checked By: DRL — Scale: 1:500 @ A1

CSEA Job No.: 18_123D

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1524

Status Code: S2 — Suitability Description: FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

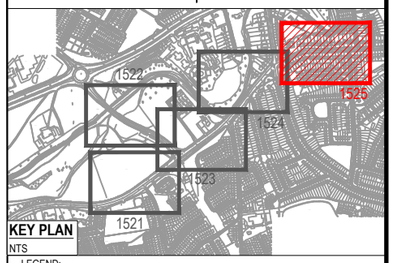
Clifton Scannell Emerson Associates

PROPOSED SECTION 5-5
SCALE 1:100

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

N



KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING TREES TO BE REMOVED
- EXISTING KERB

Rev	Description	Drawn	Checked	Date

Clifton Scannell Emerson Associates

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 6

Dwg. Title: FIRHOUSE ROAD LINKS OPTION 3 - SHEET 5 OF 5

Drawn By: KT
Date: OCT. 2021
Checked By: DRL
Scale: 1:500 @ A1
CSEA Job No.: 18_123D

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123D	CSE	GEN	XX	DR	C	1525

Status Code: S2
Suitability Description: FOR INFORMATION

Revision: FINAL
Project Status: PRELIMINARY

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

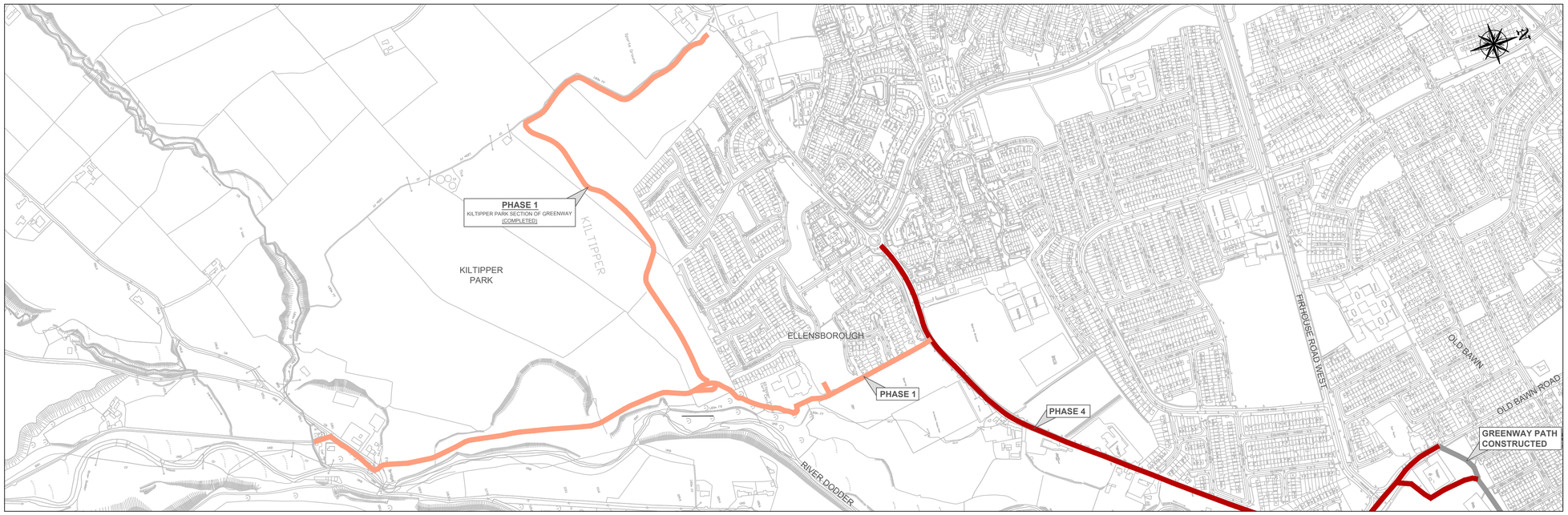
PROPOSED DODDER GREENWAY THROUGH SOUTH DUBLIN COUNTY COUNCIL

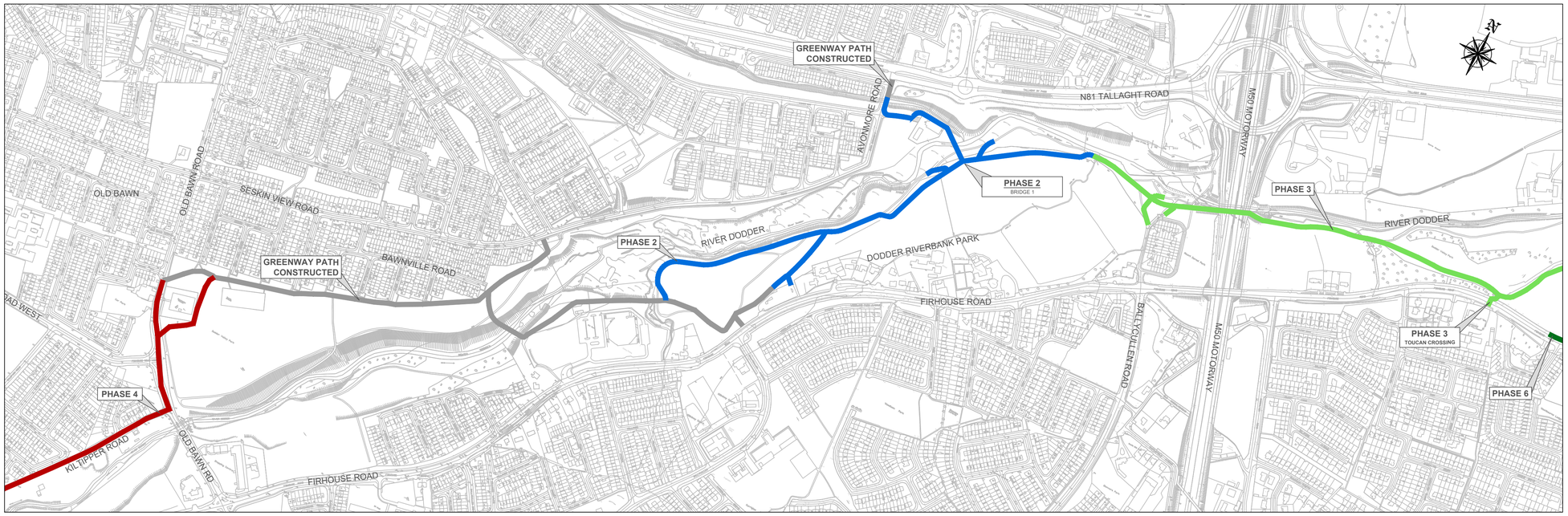
Comhairle Contae Átha Cliath Theas
South Dublin County Council

Údarás Náisiúnta Iompair
National Transport Authority

LEGEND:

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5
- PHASE 6
- GREENWAY ROUTE CURRENTLY ON HOLD
- GREENWAY ROUTE/PATH CONSTRUCTED





Rev	Description	Drawn	Checked	Date
P04	GENERAL AMENDMENTS	KT	RG	22/02/21
P03	GENERAL AMENDMENTS	KT	RG	20/08/20
P02	GENERAL AMENDMENTS	KT	RG	22/04/20
P01	FOR DISCUSSION	SM	JC	07-01-19

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY OVERALL SCHEME

Dwg. Title: DODDER GREENWAY OVERALL SCHEME (SHEET 1 OF 2)

Drawn By: SM | Date: DEC 2019 | CSEA Job No.: 18_123A

Checked By: JC | Scale: AS INDICATED @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123A	CSE	GEN	XX	DR	C	1000

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: P04 | Project Status: PRELIMINARY

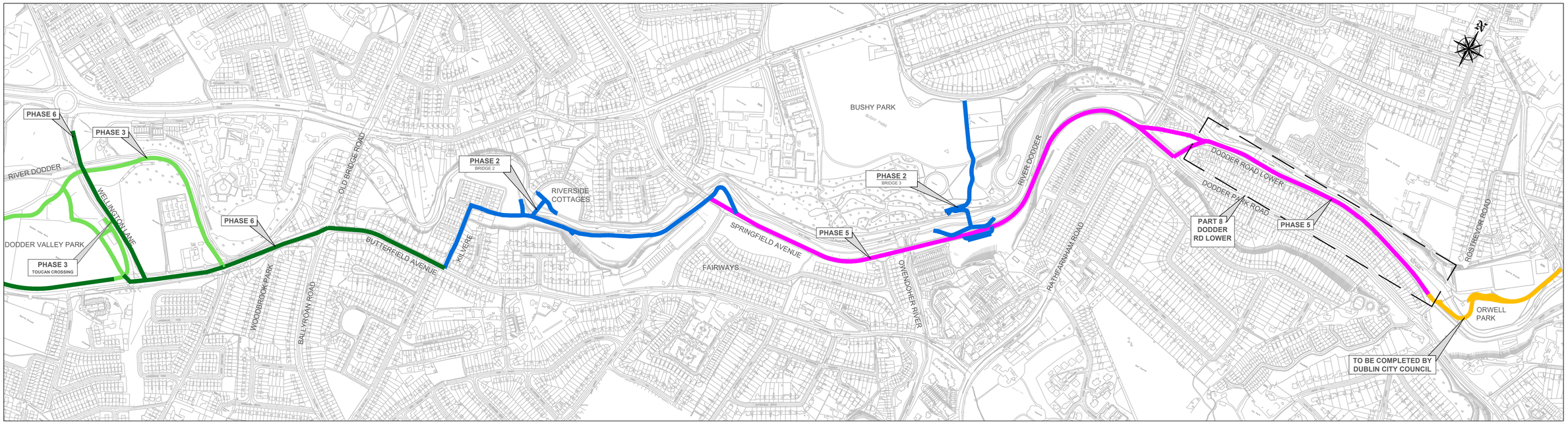
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Údarás Náisiúnta Iompair
National Transport Authority

PROPOSED DODDER GREENWAY THROUGH SOUTH DUBLIN COUNTY COUNCIL



LEGEND:

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5
- PHASE 6
- GREENWAY ROUTE CURRENTLY ON HOLD
- GREENWAY ROUTE/PATH CONSTRUCTED

Rev	Description	Drawn	Checked	Date
P04	GENERAL AMENDMENTS	KT	RG	22/02/21
P03	GENERAL AMENDMENTS	KT	RG	20/08/20
P02	GENERAL AMENDMENTS	KT	RG	22/04/20
P01	FOR DISCUSSION	SM	JC	07-01-2019

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY OVERALL SCHEME

Dwg. Title: DODDER GREENWAY OVERALL SCHEME (SHEET 2 OF 2)

Drawn By: SM | Date: DEC 2019 | CSEA Job No.: 18_123A

Checked By: JC | Scale: AS INDICATED @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123A	CSE	GEN	XX	DR	C	1001

Status Code: S2 — Suitability Description: FOR INFORMATION

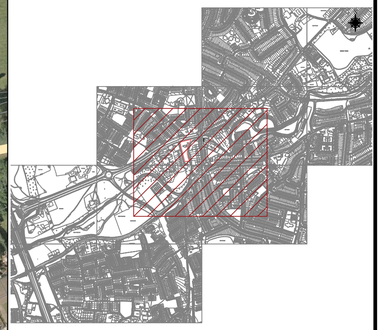
Revision: P04 — Project Status: PRELIMINARY

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Údarás Náisiúnta Iompair
National Transport Authority



LEGEND

- PROPOSED WORKS ON DODDER GREENWAY PHASE 2 - CONSTRUCTION COMPLETED Q4 2021
- PROPOSED WORKS ON DODDER GREENWAY PHASE 3 CURRENTLY UNDER CONSTRUCTION
- PROPOSED WORKS ON DODDER GREENWAY PHASE 6
- ALTERNATIVE PHASE 6 ROUTE OPTION TO LINK PROPOSED WORKS ON PHASE 3 WITH COMPLETED WORKS ON PHASE 2 - BRIDGE 2

Rev	Description	Drawn	Checked	Date
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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 3

Dwg. Title: ALTERNATIVE ROUTE - OVERALL LAYOUT

Drawn By: PS | Date: FEB 2020 | CSEA Job No.: 18_123

Checked By: RG | Scale: 1:1500 @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
18_123	CSE	GEN	XX	DR	C	1050

Status Code: S2 | Suitability Description: FOR INFORMATION

Revision: ---- | Project Status: PRELIMINARY

Appendix C Options Cost Estimation

OPTION 1 LAYOUT							
Item	**Description**	**Quantity**	**Unit**	**Rate €**		**Amount €**	
1	Preliminary Works (at 18% of the construction cost)	1	item	ú	787,950.00	ú	787,950.00
1	Spawell Link Road	400	m	ú	2,000.00	ú	800,000.00
2	Spawell Link Road & Firhouse Road Junction	1	item	ú	700,000.00	ú	700,000.00
3	Firhouse Road (West of Spawell Link Road)	350	m	ú	2,000.00	ú	700,000.00
4	Firhouse Road (Between Spawell Link Road & Blue Haven Junction)	435	m	ú	2,000.00	ú	870,000.00
5	Blue Haven Junction	1	item	ú	730,000.00	ú	730,000.00
6	Butterfield Avenue	330	m	ú	1,750.00	ú	577,500.00
7	Traffic Management	1	item	ú	500,000.00	ú	500,000.00
	Subtotal (ex VAT)					**€**	**5,665,450.00**
	Contingency @19%					**€**	**1,076,435.50**
	TOTAL (ex VAT)					**€**	**6,741,885.50**
	TOTAL (inc VAT)					**€**	**7,652,040.04**

OPTION 2 LAYOUT							
Item	**Description**	**Quantity**	**Unit**	**Rate €**		**Amount €**	
1	Preliminary Works (at 18% of the construction cost)	1	item	ú	732,825.00	ú	732,825.00
1	Spawell Link Road	400	m	ú	1,500.00	ú	600,000.00
2	Spawell Link Road & Firhouse Road Junction	1	item	ú	650,000.00	ú	650,000.00
3	Firhouse Road (West of Spawell Link Road)	350	m	ú	2,000.00	ú	700,000.00
4	Firhouse Road (Between Spawell Link Road & Blue Haven Junction)	435	m	ú	1,750.00	ú	761,250.00
5	Blue Haven Junction	1	item	ú	700,000.00	ú	700,000.00
6	Butterfield Avenue	330	m	ú	2,000.00	ú	660,000.00
7	Traffic Management	1	item	ú	500,000.00	ú	500,000.00
	Subtotal (ex VAT)					**€**	**5,304,075.00**
	Contingency @19%					**€**	**1,007,774.25**
	TOTAL (ex VAT)					**€**	**6,311,849.25**
	TOTAL (inc VAT)					**€**	**7,163,948.90**

OPTION 3 LAYOUT							
Item	**Description**	**Quantity**	**Unit**	**Rate €**		**Amount €**	
1	Preliminary Works (at 18% of the construction cost)	1	item	ú	797,400.00	ú	797,400.00
1	Spawell Link Road	400	m	ú	2,000.00	ú	800,000.00
2	Spawell Link Road & Firhouse Road Junction	1	item	ú	700,000.00	ú	700,000.00
3	Firhouse Road (West of Spawell Link Road)	350	m	ú	2,000.00	ú	700,000.00
4	Firhouse Road (Between Spawell Link Road & Blue Haven Junction)	435	m	ú	2,000.00	ú	870,000.00
5	Blue Haven Junction	1	item	ú	700,000.00	ú	700,000.00
6	Butterfield Avenue	330	m	ú	2,000.00	ú	660,000.00
7	Traffic Management	1	item	ú	500,000.00	ú	500,000.00
	Subtotal (ex VAT)					**€**	**5,727,400.00**
	Contingency @19%					**€**	**1,088,206.00**
	TOTAL (ex VAT)					**€**	**6,815,606.00**
	TOTAL (inc VAT)					**€**	**7,735,712.81**

Appendix D Traffic Survey Results

Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13/02/2020
Time:	07:00-19:00
Location:	53.293808, -6.308894
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys

	A => A						A => B						A => C						A => D					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	0	0	0	0	39	7	0	1	1	48	9	2	1	0	0	12	7	1	0	0	1	9
07:15	0	0	0	0	0	0	31	3	0	0	0	34	24	3	0	0	1	28	9	2	0	1	3	15
07:30	0	0	0	0	0	0	28	9	2	1	0	40	32	4	0	0	0	36	13	5	0	0	2	20
07:45	0	0	0	0	0	0	35	5	0	1	0	41	34	9	0	0	0	43	21	2	2	0	0	25
H/TOT	0	0	0	0	0	0	133	24	2	3	1	163	99	18	1	0	1	119	50	10	2	1	6	69
08:00	0	0	0	0	0	0	46	5	0	1	0	52	42	6	0	0	0	48	35	4	0	0	1	40
08:15	0	0	0	0	0	0	59	4	0	0	0	63	49	11	2	0	1	63	25	1	0	0	3	29
08:30	0	0	0	0	0	0	61	4	1	0	0	66	42	3	0	0	0	45	40	1	1	0	0	42
08:45	0	0	0	0	0	0	49	5	0	0	0	54	28	7	0	0	0	35	28	2	1	0	3	34
H/TOT	0	0	0	0	0	0	215	18	1	1	0	235	161	27	2	0	1	191	128	8	2	0	7	145
09:00	0	0	0	0	0	0	37	4	0	0	0	41	37	4	0	0	0	41	12	1	0	0	3	16
09:15	0	0	0	0	0	0	36	3	2	2	0	43	33	5	2	0	0	40	17	0	0	0	2	19
09:30	0	0	0	0	0	0	47	2	0	0	0	49	16	3	1	0	0	20	15	2	0	0	3	20
09:45	0	0	0	0	0	0	30	0	1	0	0	31	39	5	1	1	0	46	21	2	1	1	5	30
H/TOT	0	0	0	0	0	0	150	9	3	2	0	164	125	17	4	1	0	147	65	5	1	1	13	85
10:00	0	0	0	0	0	0	23	2	1	0	0	26	25	6	0	0	0	31	16	1	0	0	2	19
10:15	0	0	0	0	0	0	32	4	0	0	0	36	27	5	0	0	0	32	23	5	0	0	3	31
10:30	0	0	0	0	0	0	27	1	0	0	0	28	26	3	0	0	0	29	18	3	0	0	4	25
10:45	0	0	0	0	0	0	36	2	0	0	0	38	34	6	0	0	0	40	24	2	1	0	2	29
H/TOT	0	0	0	0	0	0	118	9	1	0	0	128	112	20	0	0	0	132	81	11	1	0	11	104
11:00	0	0	0	0	0	0	34	4	0	0	0	38	33	1	0	0	0	34	28	1	1	0	2	32
11:15	0	0	0	0	0	0	37	2	0	0	0	39	31	5	0	0	0	36	21	7	1	0	2	31
11:30	0	0	0	0	0	0	27	1	0	0	0	27	23	2	1	0	0	26	27	4	0	1	1	33
11:45	0	0	0	0	0	0	30	5	0	0	0	35	30	2	1	0	0	33	22	4	0	0	3	29
H/TOT	0	0	0	0	0	0	128	12	0	0	0	139	117	10	2	0	0	129	98	16	2	1	8	125
12:00	0	0	0	0	0	0	40	5	0	0	3	48	31	3	1	0	0	35	34	2	0	0	3	39
12:15	0	0	0	0	0	0	36	3	0	1	0	40	36	4	0	0	0	40	46	3	0	0	2	51
12:30	0	0	0	0	0	0	44	2	0	0	0	46	33	2	1	0	0	36	25	1	0	0	2	28
12:45	0	0	0	0	0	0	58	6	0	0	0	64	38	4	0	0	1	43	47	0	0	0	2	49
H/TOT	0	0	0	0	0	0	178	16	0	1	3	198	138	13	2	0	1	154	152	6	0	0	9	167
13:00	0	0	0	0	0	0	38	1	0	0	0	39	33	7	0	0	0	40	33	1	0	0	2	36
13:15	0	0	0	0	0	0	34	0	2	0	0	36	41	2	1	0	0	44	35	3	0	1	2	41
13:30	0	0	0	0	0	0	30	3	0	0	0	33	27	6	1	0	0	34	33	4	0	0	3	40
13:45	0	0	0	0	0	0	41	3	2	0	0	46	26	6	0	0	0	32	36	1	0	0	1	38
H/TOT	0	0	0	0	0	0	143	7	4	0	0	154	127	21	2	0	0	150	137	9	0	1	8	155
14:00	0	0	0	0	0	0	36	4	2	1	0	43	29	2	0	1	0	32	25	1	2	0	3	31
14:15	0	0	0	0	0	0	31	5	2	0	0	38	38	2	0	0	0	40	39	1	1	0	2	43
14:30	0	0	0	0	0	0	32	4	0	0	0	36	22	9	1	0	0	32	45	1	1	0	3	50
14:45	0	0	0	0	0	0	40	0	0	0	0	40	43	1	0	0	0	44	46	2	1	0	0	49
H/TOT	0	0	0	0	0	0	139	13	4	1	0	157	132	14	1	1	0	148	155	5	5	0	8	173
15:00	0	0	0	0	0	0	34	1	0	0	0	35	38	2	1	0	0	41	38	2	0	0	2	42
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15:30	0	0	0	0	0	0	40	2	0	0	0	42	33	2	0	0	0	35	36	5	0	0	3	44
15:45	0	0	0	0	0	0	38	2	1	0	0	41	37	3	0	0	0	40	52	1	0	0	0	53
H/TOT	0	0	0	0	0	0	151	10	2	0	0	163	164	12	1	0	0	177	177	15	0	0	8	200
16:00	0	0	0	0	0	0	42	0	0	0	0	42	28	3	0	0	0	31	49	8	0	0	3	60
16:15	0	0	0	0	0	0	40	2	0	0	0	42	54	2	1	0	0	57	65	10	0	0	2	77
16:30	0	0	0	0	0	0	36	5	0	0	0	41	69	6	0	0	0	75	77	9	2	0	1	89
16:45	0	0	0	0	0	0	43	1	0	0	0	44	52	2	0	0	0	54	79	15	1	0	1	96
H/TOT	0	0	0	0	0	0	161	8	0	0	0	169	203	13	1	0	0	217	270	42	3	0	7	322
17:00	0	0	0	0	0	0	38	1	0	0	0	39	59	4	0	0	0	63	88	12	0	0	0	100
17:15	0	0	0	0	0	0	27	3	0	0	0	30	45	1	0	0	0	46	37	5	0	0	2	44
17:30	0	0	0	0	0	0	47	2	0	0	0	49	37	5	0	0	0	42	58	2	0	0	2	62
17:45	0	0	0	0	0	0	26	2	0	0	0	28	44	5	0	0	0	49	36	0	1	0	3	40
H/TOT	0	0	0	0	0	0	138	8	0	0	0	146	185	15	0	0	0	200	219	19	1	0	7	246
18:00	0	0	0	0	0	0	62	1	0	0	0	63	47	2	0	0	0	49	59	4	0	0	5	68
18:15	0	0	0	0	0	0	49	1	1	0	0	51	66	1	0	0	0	67	62	2	0	0	4	68
18:30	0	0	0	0	0	0	42	1	2	0	0	45	48	2	0	0	0	50	69	4	0	0	5	78
18:45	0	0	0	0	0	0	36	2	0	0	0	38	46	3	0	0	0	49	48	1	0	0	1	50
H/TOT	0	0	0	0	0	0	189	5	3	0	0	197	207	8	0	0	0	215	238	11	0	0	15	264
12 TOT	0	0	0	0	0	0	1843	139	20	8	4	2013	1770	188	16	2	3	1979	1770	157	17	4	107	2055

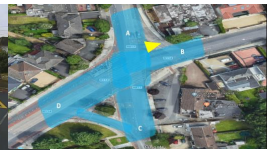
Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13/02/2020
Time:	07:00-19:00
Location:	53.293808, -6.308894
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys

	B => A						B => B						B => C						B => D					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	28	3	0	0	0	31
07:15	15	2	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	43	6	0	1	1	51
07:30	29	3	0	0	0	32	0	0	0	0	0	0	0	0	1	0	0	1	59	5	0	1	1	66
07:45	37	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	73	1	1	1	1	77
H/TOT	89	5	0	0	0	94	0	0	0	0	0	0	0	0	1	0	0	1	203	15	1	3	3	225
08:00	41	1	1	0	0	43	0	0	0	0	0	0	3	0	0	0	0	3	66	8	0	0	1	75
08:15	43	1	1	0	0	45	0	0	0	0	0	0	1	0	0	0	0	1	46	1	0	0	0	47
08:30	45	3	0	2	0	50	0	0	0	0	0	0	2	0	0	0	0	2	75	11	0	1	1	88
08:45	19	1	0	0	0	20	0	0	0	0	0	0	2	0	0	0	0	2	56	4	1	1	0	62
H/TOT	148	6	2	2	0	158	0	0	0	0	0	0	8	0	0	0	0	8	243	24	1	2	2	272
09:00	26	3	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	44	4	0	0	1	49
09:15	15	0	0	0	0	15	0	0	0	0	0	0	3	0	0	0	0	3	68	4	1	0	0	73
09:30	17	1	1	0	0	19	0	0	0	0	0	0	3	0	0	0	0	3	48	5	1	1	1	56
09:45	15	0	0	0	0	15	0	0	0	0	0	0	1	0	0	0	0	1	40	1	1	2	0	44
H/TOT	73	4	1	0	0	78	0	0	0	0	0	0	7	0	0	0	0	7	200	14	3	3	2	222
10:00	13	1	1	0	0	15	0	0	0	0	0	0	1	0	0	0	0	1	43	3	2	2	1	51
10:15	13	1	1	1	0	16	0	0	0	0	0	0	0	0	0	0	0	0	56	4	0	1	3	64
10:30	21	1	0	0	0	22	0	0	0	0	0	0	3	0	0	0	0	3	48	7	1	2	1	59
10:45	21	5	0	1	0	27	0	0	0	0	0	0	2	1	0	0	0	3	51	10	1	2	0	64
H/TOT	68	8	2	2	0	80	0	0	0	0	0	0	6	1	0	0	0	7	198	24	4	7	5	238
11:00	25	4	0	0	0	29	0	0	0	0	0	0	1	0	0	0	0	1	64	2	2	2	1	71
11:15	12	6	0	0	0	18	0	0	0	0	0	0	3	0	0	0	0	3	73	12	1	1	1	88
11:30	19	1	0	0	0	20	0	0	0	0	0	0	1	0	0	0	0	1	81	4	0	0	1	86
11:45	11	3	1	0	0	15	0	0	0	0	0	0	2	0	0	0	0	2	67	9	0	1	0	77
H/TOT	67	14	1	0	0	82	0	0	0	0	0	0	7	0	0	0	0	7	285	27	3	4	3	322
12:00	29	2	0	0	0	31	0	0	0	0	0	0	4	0	0	0	0	4	29	2	0	0	0	31
12:15	17	1	0	0	0	18	0	0	0	0	0	0	1	0	0	0	0	1	72	5	0	0	0	77
12:30	16	2	0	0	0	18	0	0	0	0	0	0	2	0	0	0	0	2	58	10	1	1	1	71
12:45	23	1	0	0	0	24	0	0	0	0	0	0	1	0	0	0	0	1	80	3	1	1	2	87
H/TOT	85	6	0	0	0	91	0	0	0	0	0	0	8	0	0	0	0	8	239	20	2	2	3	266
13:00	27	2	0	0	0	29	0	0	0	0	0	0	4	0	0	0	0	4	62	6	1	0	1	70
13:15	27	3	1	0	0	31	0	0	0	0	0	0	1	0	0	0	0	1	82	7	1	0	0	90
13:30	21	1	2	1	0	25	0	0	0	0	0	0	1	2	0	0	0	3	67	7	1	1	1	77
13:45	16	2	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	49	5	0	0	0	54
H/TOT	91	8	3	1	0	103	0	0	0	0	0	0	6	2	0	0	0	8	260	25	3	1	2	291
14:00	24	2	1	0	0	27	0	0	0	0	0	0	3	1	0	0	0	4	81	6	0	0	1	88
14:15	22	1	1	0	0	24	0	0	0	0	0	0	3	0	0	0	0	3	78	4	1	1	0	84
14:30	30	1	0	0	0	31	0	0	0	0	0	0	1	1	0	0	0	2	69	4	2	1	1	77
14:45	27	5	1	0	0	33	0	0	0	0	0	0	5	0	0	0	0	5	79	9	0	1	0	89
H/TOT	103	9	3	0	0	115	0	0	0	0	0	0	12	2	0	0	0	14	307	23	3	3	2	338
15:00	20	0	0	0	0	20	0	0	0	0	0	0	6	0	0	0	0	6	83	7	0	0	1	91
15:15	31	1	0	0	0	32	0	0	0	0	0	0	3	1	0	0	0	4	70	10	0	1	0	81
15:30	20	1	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	100	14	0	0	1	115
15:45	27	4	0	0	0	31	0	0	0	0	0	0	3	0	0	0	0	3	83	7	6	0	0	96
H/TOT	98	6	0	0	0	104	0	0	0	0	0	0	12	1	0	0	0	13	336	38	6	1	2	383
16:00	16	1	0	0	0	17	0	0	0	0	0	0	3	0	0	0	0	3	103	8	4	0	1	116
16:15	20	2	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	95	16	1	0	0	112
16:30	16	1	0	0	0	17	0	0	0	0	0	0	6	0	0	0	0	6	78	8	1	0	1	88
16:45	23	10	0	0	0	33	0	0	0	0	0	0	1	0	0	0	0	1	112	10	0	0	0	122
H/TOT	75	14	0	0	0	89	0	0	0	0	0	0	10	0	0	0	0	10	388	42	6	0	2	438
17:00	21	3	0	0	0	24	0	0	0	0	0	0	3	1	0	0	0	4	103	7	1	0	0	111
17:15	15	2	0	0	0	17	0	0	0	0	0	0	1	0	0	0	0	1	108	15	0	1	1	125
17:30	25	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	106	6	0	0	0	112
17:45	12	1	1	0	0	14	0	0	0	0	0	0	0	1	0	0	0	1	77	10	2	0	1	90
H/TOT	73	6	1	0	0	80	0	0	0	0	0	0	4	2	0	0	0	6	394	38	3	1	2	438
18:00	22	2	0	0	0	24	0	0	0	0	0	0	2	0	0	0	0	2	121	8	0	0	1	130
18:15	24	3	0	0	0	27	0	0	0	0	0	0	1	0	0	0	0	1	98	5	0	0	0	103
18:30	26	2	0	0	0	28	0	0	0	0	0	0	3	0	0	0	0	3	110	7	0	0	0	117
18:45	28	0	0	0	0	28	0	0	0	0	0	0	2	0	0	0	0	2	104	4	0	2	1	111
H/TOT	100	7	0	0	0	107	0	0	0	0	0	0	8	0	0	0	0	8	433	24	0	2	2	461
12 TOT	1070	93	13	5	0	1181	0	0	0	0	0	0	88	8	1	0	0	97	3486	314	35	29	30	3894

Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13/02/2020
Time:	07:00-19:00
Location:	53.293808, -6.308894
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys



	C => A						C => B						C => C						C => D					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	31	5	0	0	0	36	1	0	0	0	0	1	0	0	0	0	0	0	18	0	1	0	0	19
07:15	25	2	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	1	0	29
07:30	64	3	1	0	0	68	0	0	0	0	0	0	0	0	0	0	0	0	47	1	0	1	0	49
07:45	58	3	1	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	43	2	0	0	0	45
H/TOT	178	13	2	0	0	193	1	0	0	0	0	1	0	0	0	0	0	0	136	3	1	2	0	142
08:00	56	0	0	0	0	56	0	0	0	0	0	0	0	0	0	0	0	0	49	5	0	2	0	56
08:15	39	2	2	0	0	43	1	0	0	0	0	1	0	0	0	0	0	0	25	2	0	0	0	27
08:30	51	3	0	1	0	55	0	0	1	0	0	1	0	0	0	0	0	0	49	4	0	0	0	53
08:45	69	2	0	1	0	72	0	0	0	0	0	0	0	0	0	0	0	0	50	3	1	0	0	54
H/TOT	215	7	2	2	0	226	1	0	1	0	0	2	0	0	0	0	0	0	173	14	1	2	0	190
09:00	34	6	1	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	47	3	0	1	0	51
09:15	42	3	3	0	0	48	2	0	0	0	0	2	0	0	0	0	0	0	45	3	0	1	0	49
09:30	21	2	1	0	1	25	2	0	0	0	0	2	0	0	0	0	0	0	36	2	0	1	0	39
09:45	28	3	0	0	0	31	4	0	0	0	0	4	0	0	0	0	0	0	32	6	0	0	0	38
H/TOT	125	14	5	0	1	145	8	0	0	0	0	8	0	0	0	0	0	0	160	14	0	3	0	177
10:00	19	3	2	1	0	25	1	0	0	0	0	1	0	0	0	0	0	0	24	1	0	0	0	25
10:15	28	5	1	0	0	34	3	0	0	0	0	3	0	0	0	0	0	0	27	2	0	0	0	29
10:30	20	0	0	0	0	20	3	0	0	0	0	3	0	0	0	0	0	0	25	2	0	1	0	28
10:45	32	10	4	0	0	46	1	1	0	0	0	2	0	0	0	0	0	0	23	3	1	0	0	27
H/TOT	99	18	7	1	0	125	8	1	0	0	0	9	0	0	0	0	0	0	99	8	1	1	0	109
11:00	16	2	0	0	0	18	3	2	0	0	0	5	0	0	0	0	0	0	24	4	0	0	0	28
11:15	17	0	0	0	0	17	3	0	0	0	0	3	0	0	0	0	0	0	29	0	0	0	0	29
11:30	40	1	1	0	0	42	2	0	0	0	0	2	0	0	0	0	0	0	27	4	1	0	0	32
11:45	22	0	1	0	0	23	3	0	0	0	0	3	0	0	0	0	0	0	34	2	1	0	0	37
H/TOT	95	3	2	0	0	100	11	2	0	0	0	13	0	0	0	0	0	0	114	10	2	0	0	126
12:00	27	1	1	0	0	29	4	0	0	0	0	4	0	0	0	0	0	0	28	5	3	0	0	36
12:15	31	3	1	1	0	36	3	0	0	0	0	3	0	0	0	0	0	0	32	0	0	0	0	32
12:30	26	5	1	1	0	33	1	0	0	0	0	1	0	0	0	0	0	0	20	5	0	0	0	25
12:45	33	5	0	0	1	39	2	0	0	0	0	2	0	0	0	0	0	0	18	3	1	1	0	23
H/TOT	117	14	3	2	1	137	10	0	0	0	0	10	0	0	0	0	0	0	98	13	4	1	0	116
13:00	26	2	1	0	0	29	2	0	0	0	0	2	0	0	0	0	0	0	32	0	0	0	0	32
13:15	32	5	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	22	3	0	1	0	26
13:30	38	4	0	0	0	42	6	0	0	0	0	6	0	0	0	0	0	0	40	5	1	0	0	46
13:45	31	3	1	1	0	36	2	1	0	0	0	3	0	0	0	0	0	0	30	3	0	1	0	34
H/TOT	127	14	2	1	0	144	10	1	0	0	0	11	0	0	0	0	0	0	124	11	1	2	0	138
14:00	40	3	1	0	0	44	1	0	0	0	0	1	0	0	0	0	0	0	32	3	0	0	0	35
14:15	23	2	1	1	0	27	2	0	0	0	0	2	0	0	0	0	0	0	42	7	0	0	0	49
14:30	38	1	1	0	0	40	2	1	0	0	0	3	0	0	0	0	0	0	63	4	1	0	0	68
14:45	27	1	0	0	0	28	1	0	0	0	0	1	0	0	0	0	0	0	42	4	0	0	0	46
H/TOT	128	7	3	1	0	139	6	1	0	0	0	7	0	0	0	0	0	0	179	18	1	0	0	198
15:00	39	2	0	0	0	41	1	0	0	0	0	1	0	0	0	0	0	0	40	5	0	0	0	45
15:15	36	5	0	0	0	41	1	0	0	0	0	1	0	0	0	0	0	0	36	4	0	0	0	40
15:30	24	9	0	0	0	33	2	0	0	0	0	2	0	0	0	0	0	0	31	5	0	0	0	36
15:45	40	9	1	0	0	50	3	0	0	0	0	3	0	0	0	0	0	0	51	3	0	0	0	54
H/TOT	139	25	1	0	0	165	7	0	0	0	0	7	0	0	0	0	0	0	158	17	0	0	0	175
16:00	25	5	0	0	0	30	0	1	0	0	0	1	0	0	0	0	0	0	53	4	1	0	0	58
16:15	31	2	0	0	0	33	1	0	0	0	0	1	0	0	0	0	0	0	56	5	0	0	0	61
16:30	30	5	0	0	0	35	3	0	0	0	0	3	0	0	0	0	0	0	46	8	1	0	0	55
16:45	34	4	1	0	0	39	1	1	0	0	0	2	0	0	0	0	0	0	59	3	1	0	0	63
H/TOT	120	16	1	0	0	137	5	2	0	0	0	7	0	0	0	0	0	0	214	20	3	0	0	237
17:00	23	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	58	6	0	0	0	64
17:15	22	7	0	0	0	29	1	1	0	0	0	2	0	0	0	0	0	0	41	4	0	0	0	45
17:30	25	4	0	0	0	29	1	0	0	0	0	1	0	0	0	0	0	0	50	4	0	0	0	54
17:45	29	3	0	0	0	32	3	0	0	0	0	3	0	0	0	0	0	0	53	4	0	0	0	57
H/TOT	99	14	0	0	0	113	5	1	0	0	0	6	0	0	0	0	0	0	202	18	0	0	0	220
18:00	22	3	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	32	3	0	0	0	35
18:15	34	2	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	30
18:30	23	2	0	0	0	25	4	0	0	0	0	4	0	0	0	0	0	0	36	0	0	0	0	36
18:45	31	2	0	0	0	33	1	0	0	0	0	1	0	0	0	0	0	0	30	2	0	0	0	32
H/TOT	110	9	0	0	0	119	5	0	0	0	0	5	0	0	0	0	0	0	128	5	0	0	0	133
12 TOT	1552	154	28	7	2	1743	77	8	1	0	0	86	0	0	0	0	0	0	1785	151	14	11	0	1961

Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13/02/2020
Time:	07:00-19:00
Location:	53.293808, -6.308894
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys

	D => A						D => B						D => C						D => D					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	47	3	0	0	4	54	161	17	2	1	1	182	11	4	0	2	0	17	0	0	0	0	0	0
07:15	66	3	0	0	2	71	138	24	1	2	1	166	32	6	0	0	0	38	0	0	0	0	0	0
07:30	65	5	0	0	2	72	35	15	0	0	1	51	30	6	0	0	1	37	0	0	0	0	0	0
07:45	96	4	0	0	6	106	103	15	0	1	0	119	30	5	0	0	1	36	0	0	0	0	0	0
H/TOT	274	15	0	0	14	303	437	71	3	4	3	518	103	21	0	2	2	128	0	0	0	0	0	0
08:00	85	2	0	0	4	91	106	8	0	1	0	115	31	5	0	0	1	37	0	0	0	0	0	0
08:15	62	5	1	1	4	73	95	13	1	1	2	112	56	2	1	1	0	60	0	0	0	0	0	0
08:30	52	7	1	0	2	62	64	6	1	1	0	72	43	4	0	0	0	47	0	0	0	0	0	0
08:45	62	5	0	0	4	71	108	12	1	1	0	122	28	4	0	0	0	32	0	0	0	0	0	0
H/TOT	261	19	2	1	14	297	373	39	3	4	2	421	158	15	1	1	1	176	0	0	0	0	0	0
09:00	59	0	0	0	3	62	100	14	4	2	2	122	17	5	3	0	0	25	0	0	0	0	0	0
09:15	45	3	0	2	2	52	101	10	1	0	0	112	21	3	1	0	0	25	0	0	0	0	0	0
09:30	38	0	0	1	2	41	95	8	2	1	2	108	23	1	0	0	0	24	0	0	0	0	0	0
09:45	32	1	0	0	2	35	90	12	1	0	0	103	19	1	1	0	0	21	0	0	0	0	0	0
H/TOT	174	4	0	3	9	190	386	44	8	3	4	445	80	10	5	0	0	95	0	0	0	0	0	0
10:00	27	1	0	0	4	32	66	12	0	2	1	81	15	0	0	1	0	16	0	0	0	0	0	0
10:15	36	2	1	0	4	43	72	5	1	0	0	78	14	1	0	0	0	15	0	0	0	0	0	0
10:30	30	3	0	0	1	34	75	7	1	4	2	89	18	5	0	0	0	23	0	0	0	0	0	0
10:45	21	3	0	0	3	27	70	9	1	0	0	80	30	2	1	0	0	33	0	0	0	0	0	0
H/TOT	114	9	1	0	12	136	283	33	3	6	3	328	77	8	1	1	0	87	0	0	0	0	0	0
11:00	40	5	0	0	1	46	74	9	2	2	1	88	27	0	0	1	0	28	0	0	0	0	0	0
11:15	27	3	0	0	2	32	67	7	0	1	0	75	34	5	0	0	0	39	0	0	0	0	0	0
11:30	30	4	0	0	2	36	74	5	1	0	1	81	19	0	0	0	0	19	0	0	0	0	0	0
11:45	29	3	0	0	3	35	65	8	0	1	0	74	32	3	0	0	0	35	0	0	0	0	0	0
H/TOT	126	15	0	0	8	149	280	29	3	4	2	318	112	8	0	1	0	121	0	0	0	0	0	0
12:00	36	2	0	0	1	39	66	13	2	1	1	83	25	1	0	0	0	26	0	0	0	0	0	0
12:15	17	0	2	0	3	22	71	7	4	1	0	83	19	3	0	0	0	22	0	0	0	0	0	0
12:30	27	2	0	0	2	31	70	9	1	0	1	81	17	5	0	0	0	22	0	0	0	0	0	0
12:45	31	2	0	0	3	36	84	7	0	0	2	93	23	1	0	0	0	24	0	0	0	0	0	0
H/TOT	111	6	2	0	9	128	291	36	7	2	4	340	84	10	0	0	0	94	0	0	0	0	0	0
13:00	35	1	0	1	1	38	84	10	1	0	0	95	38	4	2	0	0	44	0	0	0	0	0	0
13:15	29	0	0	0	3	32	66	7	0	0	1	74	33	4	1	0	0	38	0	0	0	0	0	0
13:30	11	0	0	0	1	12	81	6	6	0	0	93	29	2	0	0	1	32	0	0	0	0	0	0
13:45	35	2	0	0	2	39	86	4	1	2	1	94	23	0	1	0	0	24	0	0	0	0	0	0
H/TOT	110	3	0	1	7	121	317	27	8	2	2	356	123	10	4	0	1	138	0	0	0	0	0	0
14:00	37	3	0	0	2	42	75	9	2	2	1	89	28	3	0	0	0	31	0	0	0	0	0	0
14:15	46	1	0	0	2	49	69	14	1	0	0	84	47	4	0	0	0	51	0	0	0	0	0	0
14:30	27	1	0	0	2	30	69	10	0	0	0	79	27	2	0	0	0	29	0	0	0	0	0	0
14:45	32	2	0	0	1	35	84	8	0	0	1	93	45	2	2	1	0	50	0	0	0	0	0	0
H/TOT	142	7	0	0	7	156	297	41	3	2	2	345	147	11	2	1	0	161	0	0	0	0	0	0
15:00	31	3	0	0	3	37	81	5	0	1	1	88	33	3	0	1	0	37	0	0	0	0	0	0
15:15	24	1	0	0	3	28	78	11	1	1	1	92	41	1	0	0	0	42	0	0	0	0	0	0
15:30	29	3	0	0	1	33	79	4	1	1	1	86	34	2	0	0	0	36	0	0	0	0	0	0
15:45	40	1	0	0	1	42	72	5	1	0	0	78	35	1	0	0	0	36	0	0	0	0	0	0
H/TOT	124	8	0	0	8	140	310	25	3	3	3	344	143	7	0	1	0	151	0	0	0	0	0	0
16:00	28	3	1	0	4	36	89	10	1	0	1	101	31	3	0	0	0	34	0	0	0	0	0	0
16:15	36	3	0	0	2	41	68	8	0	0	2	78	41	1	0	0	0	42	0	0	0	0	0	0
16:30	35	1	0	0	3	39	72	5	1	0	1	79	36	1	0	0	0	37	0	0	0	0	0	0
16:45	27	0	0	0	1	28	63	3	0	0	1	67	42	6	3	0	0	51	0	0	0	0	0	0
H/TOT	126	7	1	0	10	144	292	26	2	0	5	325	150	11	3	0	0	164	0	0	0	0	0	0
17:00	27	2	0	0	1	30	96	7	0	1	0	104	27	1	0	0	0	28	0	0	0	0	0	0
17:15	35	0	0	0	1	36	102	3	1	0	0	106	35	1	0	0	0	36	0	0	0	0	0	0
17:30	34	2	0	0	1	37	76	6	1	0	1	84	37	0	0	0	0	37	0	0	0	0	0	0
17:45	41	0	0	0	1	42	102	5	0	0	0	107	42	2	0	0	0	44	0	0	0	0	0	0
H/TOT	137	4	0	0	4	145	376	21	2	1	1	401	141	4	0	0	0	145	0	0	0	0	0	0
18:00	44	4	0	0	2	50	94	6	0	0	1	101	31	2	0	0	0	33	0	0	0	0	0	0
18:15	35	4	0	0	2	41	99	3	0	1	0	103	37	2	0	0	0	39	0	0	0	0	0	0
18:30	30	2	0	0	2	34	82	6	0	0	1	89	38	3	0	0	0	41	0	0	0	0	0	0
18:45	48	0	0	0	0	48	101	5	0	0	0	106	51	2	0	0	0	53	0	0	0	0	0	0
H/TOT	157	10	0	0	6	173	376	20	0	1	2	399	157	9	0	0	0	166	0	0	0	0	0	0
12 TOT	1856	107	6	5	108	2082	4018	412	45	32	33	4540	1475	124	16	7	4	1626	0	0	0	0	0	0

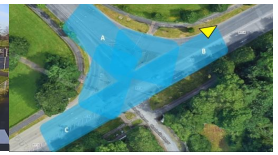
Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13.02.2020
Time:	07:00-19:00
Location:	53.290854, -6.314320
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys

	A => A						A => B						A => C					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	0	0	0	0	48	13	2	0	0	63	9	4	0	0	0	13
07:15	0	0	0	0	0	0	53	18	0	1	3	75	16	4	1	0	2	23
07:30	0	0	0	0	0	0	33	16	2	1	0	52	15	4	0	0	1	20
07:45	0	0	0	0	0	0	61	12	0	0	2	75	20	9	0	0	0	29
H/TOT	0	0	0	0	0	0	195	59	4	2	5	265	60	21	1	0	3	85
08:00	0	0	0	0	0	0	71	10	0	0	2	83	39	2	0	0	0	41
08:15	0	0	0	0	0	0	71	22	0	0	0	93	43	6	2	0	0	51
08:30	0	0	0	0	0	0	75	16	2	0	0	93	40	9	1	0	0	50
08:45	0	0	0	0	0	0	74	21	3	1	0	99	45	5	1	0	0	51
H/TOT	0	0	0	0	0	0	291	69	5	1	2	368	167	22	4	0	0	193
09:00	0	0	0	0	0	0	65	17	1	1	0	84	54	12	0	0	1	67
09:15	0	0	0	0	0	0	53	7	0	0	0	60	44	5	1	0	0	50
09:30	0	0	0	0	0	0	70	13	0	1	0	84	34	9	1	0	0	44
09:45	0	0	0	0	0	0	72	11	1	1	0	85	26	9	1	0	1	37
H/TOT	0	0	0	0	0	0	260	48	2	3	0	313	158	35	3	0	2	198
10:00	0	0	0	0	0	0	46	16	1	2	0	65	25	9	0	0	0	34
10:15	0	0	0	0	0	0	42	11	0	2	1	56	20	4	1	0	0	25
10:30	0	0	0	0	0	0	40	11	2	4	0	57	22	4	0	0	1	27
10:45	0	0	0	0	0	0	53	10	2	1	0	66	41	10	0	1	0	52
H/TOT	0	0	0	0	0	0	181	48	5	9	1	244	108	27	1	1	1	138
11:00	0	0	0	0	0	0	41	8	2	3	0	54	22	2	0	0	0	24
11:15	0	0	0	0	0	0	39	9	2	1	0	51	47	10	2	0	0	59
11:30	0	0	0	0	0	0	41	8	2	2	0	53	30	4	1	0	1	36
11:45	0	0	0	0	0	0	59	8	4	1	0	72	38	5	2	0	0	45
H/TOT	0	0	0	0	0	0	180	33	10	7	0	230	137	21	5	0	1	164
12:00	0	0	0	0	0	0	43	4	1	1	0	49	46	11	0	1	0	58
12:15	0	0	0	0	0	0	54	9	1	1	0	65	48	6	0	0	0	54
12:30	0	0	0	0	0	0	78	6	0	0	0	84	59	9	0	0	1	69
12:45	0	0	0	0	0	0	71	10	1	2	0	84	74	5	0	0	0	79
H/TOT	0	0	0	0	0	0	246	29	3	4	0	282	227	31	0	1	1	260
13:00	0	0	0	0	0	0	76	15	2	2	1	96	58	6	0	0	0	64
13:15	0	0	0	0	0	0	62	12	0	2	0	76	68	9	0	0	1	78
13:30	0	0	0	0	0	0	73	13	2	1	0	89	51	5	2	0	1	59
13:45	0	0	0	0	0	0	75	15	1	1	0	92	82	2	1	1	0	86
H/TOT	0	0	0	0	0	0	286	55	5	6	1	353	259	22	3	1	2	287
14:00	0	0	0	0	0	0	74	16	2	0	0	92	67	7	1	0	0	75
14:15	0	0	0	0	0	0	67	13	1	0	0	81	52	10	1	1	0	64
14:30	0	0	0	0	0	0	80	15	1	0	0	96	39	6	1	0	1	47
14:45	0	0	0	0	0	0	89	10	0	1	0	100	73	9	0	0	0	82
H/TOT	0	0	0	0	0	0	310	54	4	1	0	369	231	32	3	1	1	268
15:00	0	0	0	0	0	0	94	4	2	0	0	100	68	6	0	0	0	74
15:15	0	0	0	0	0	0	80	7	1	0	0	88	70	10	0	0	0	80
15:30	0	0	0	0	0	0	69	2	0	1	0	72	68	10	0	0	1	79
15:45	0	0	0	0	0	0	91	8	1	0	0	100	67	8	1	0	0	76
H/TOT	0	0	0	0	0	0	334	21	4	1	0	360	273	34	1	0	1	309
16:00	0	0	0	0	0	0	86	7	0	0	0	93	80	9	0	0	0	89
16:15	0	0	0	0	0	0	118	16	1	0	0	135	87	13	0	0	0	100
16:30	0	0	0	0	0	0	95	13	1	0	1	110	111	12	2	0	1	126
16:45	0	0	0	0	0	0	116	11	0	0	1	128	81	9	1	0	0	91
H/TOT	0	0	0	0	0	0	415	47	2	0	2	466	359	43	3	0	1	406
17:00	0	0	0	0	0	0	159	11	0	0	0	170	119	17	0	0	0	136
17:15	0	0	0	0	0	0	154	6	0	0	0	160	120	14	0	0	0	134
17:30	0	0	0	0	0	0	134	14	0	0	0	148	112	13	0	0	0	125
17:45	0	0	0	0	0	0	152	5	0	0	0	157	132	11	0	0	0	143
H/TOT	0	0	0	0	0	0	599	36	0	0	0	635	483	55	0	0	0	538
18:00	0	0	0	0	0	0	161	7	0	0	0	168	123	10	0	0	0	133
18:15	0	0	0	0	0	0	158	9	0	0	0	167	117	9	0	0	0	126
18:30	0	0	0	0	0	0	154	10	0	0	0	164	120	11	0	0	0	131
18:45	0	0	0	0	0	0	120	9	0	0	0	129	125	8	0	0	0	133
H/TOT	0	0	0	0	0	0	593	35	0	0	0	628	485	38	0	0	0	523
12 TOT	0	0	0	0	0	0	3890	534	44	34	11	4513	2947	381	24	4	13	3369

Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13.02.2020
Time:	07:00-19:00
Location:	53.290854, -6.314320
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

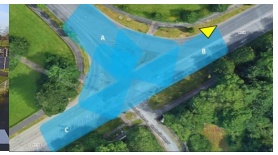
Irish Traffic Surveys



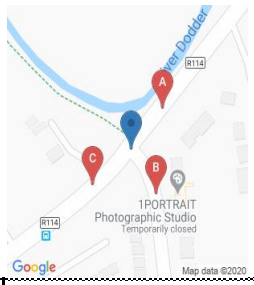
	B => A						B => B						B => C					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	61	9	2	0	0	72	0	0	0	0	0	0	11	0	0	0	1	12
07:15	70	4	1	0	0	75	0	0	0	0	0	0	12	1	0	0	4	17
07:30	98	7	0	0	0	105	0	0	0	0	0	0	22	1	0	0	4	27
07:45	98	11	0	2	0	111	0	0	0	0	0	0	36	3	0	0	2	41
H/TOT	327	31	3	2	0	363	0	0	0	0	0	0	81	5	0	0	11	97
08:00	91	5	1	0	0	97	0	0	0	0	0	0	31	3	0	0	1	35
08:15	90	3	0	1	0	94	0	0	0	0	0	0	39	5	0	0	1	45
08:30	110	8	0	3	0	121	0	0	0	0	0	0	54	5	1	0	0	60
08:45	84	9	0	0	0	93	0	0	0	0	0	0	75	4	0	1	0	80
H/TOT	375	25	1	4	0	405	0	0	0	0	0	0	199	17	1	1	2	220
09:00	100	7	2	0	0	109	0	0	0	0	0	0	70	7	1	1	2	81
09:15	131	9	0	1	0	141	0	0	0	0	0	0	49	2	1	0	0	52
09:30	105	9	5	0	0	119	0	0	0	0	0	0	26	2	0	0	3	31
09:45	71	14	1	1	0	87	1	0	0	0	0	1	36	5	0	0	0	41
H/TOT	407	39	8	2	0	456	1	0	0	0	0	1	181	16	2	1	5	205
10:00	49	6	1	1	0	57	0	0	0	0	0	0	31	2	0	0	1	34
10:15	52	11	4	0	0	67	0	0	0	0	0	0	38	3	0	0	1	42
10:30	43	7	1	1	0	52	0	0	0	0	0	0	43	2	1	0	2	48
10:45	68	9	1	1	1	80	0	0	0	0	0	0	26	3	0	0	1	30
H/TOT	212	33	7	3	1	256	0	0	0	0	0	0	138	10	1	0	5	154
11:00	43	8	1	3	0	55	0	0	0	0	0	0	42	3	3	0	1	49
11:15	57	9	1	0	0	67	0	0	0	0	0	0	46	1	0	0	1	48
11:30	49	12	2	1	0	64	0	0	0	0	0	0	37	2	0	0	1	40
11:45	48	6	2	0	0	56	0	0	0	0	0	0	45	5	1	0	1	52
H/TOT	197	35	6	4	0	242	0	0	0	0	0	0	170	11	4	0	4	189
12:00	59	9	1	1	0	70	0	0	0	0	0	0	46	3	1	0	2	52
12:15	63	7	1	0	0	71	0	0	0	0	0	0	70	9	0	0	0	79
12:30	64	5	2	1	0	72	0	0	0	0	0	0	58	4	1	0	0	63
12:45	62	10	2	0	0	74	0	0	0	0	0	0	55	1	0	0	1	57
H/TOT	248	31	6	2	0	287	0	0	0	0	0	0	229	17	2	0	3	251
13:00	72	10	1	0	0	83	0	0	0	0	0	0	54	4	0	0	1	59
13:15	48	12	1	0	1	62	0	0	0	0	0	0	56	5	0	0	1	62
13:30	69	15	2	0	0	86	0	0	0	0	0	0	50	3	0	0	1	54
13:45	67	14	0	2	0	83	0	0	0	0	0	0	54	6	1	0	0	61
H/TOT	256	51	4	2	1	314	0	0	0	0	0	0	214	18	1	0	3	236
14:00	76	10	2	1	0	89	0	0	0	0	0	0	59	3	0	0	2	64
14:15	76	10	4	0	0	90	0	0	0	0	0	0	56	7	1	0	1	65
14:30	61	10	5	1	0	77	0	0	0	0	0	0	53	3	0	0	1	57
14:45	61	9	2	1	0	73	0	0	0	0	0	0	80	11	0	0	1	92
H/TOT	274	39	13	3	0	329	0	0	0	0	0	0	248	24	1	0	5	278
15:00	75	16	0	1	0	92	0	0	0	0	0	0	64	5	1	0	1	71
15:15	62	9	0	1	0	72	0	0	0	0	0	0	65	6	2	0	1	74
15:30	61	15	4	0	0	80	0	0	0	0	0	0	79	1	1	0	0	81
15:45	62	16	1	0	1	80	0	0	0	0	0	0	68	3	2	0	3	76
H/TOT	260	56	5	2	1	324	0	0	0	0	0	0	276	15	6	0	5	302
16:00	68	19	2	0	1	90	0	0	0	0	0	0	89	14	0	0	1	104
16:15	75	17	0	0	0	92	0	0	0	0	0	0	64	8	0	0	1	73
16:30	62	11	1	0	0	74	0	0	0	0	0	0	96	11	0	0	1	108
16:45	70	16	0	0	0	86	0	0	0	0	0	0	94	9	0	0	1	104
H/TOT	275	63	3	0	1	342	0	0	0	0	0	0	343	42	0	0	4	389
17:00	65	23	1	0	0	89	0	0	0	0	0	0	96	11	0	0	2	109
17:15	74	21	0	0	0	95	0	0	0	0	0	0	88	4	1	0	0	93
17:30	59	5	0	0	0	64	0	0	0	0	0	0	72	8	0	0	1	81
17:45	89	14	0	0	0	103	0	0	0	0	0	0	87	9	2	0	2	100
H/TOT	287	63	1	0	0	351	0	0	0	0	0	0	343	32	3	0	5	383
18:00	61	10	0	0	0	71	0	0	0	0	0	0	67	8	0	0	2	77
18:15	73	9	0	0	0	82	0	0	0	0	0	0	74	6	0	0	1	81
18:30	58	3	0	0	0	61	0	0	0	0	0	0	69	7	0	0	2	78
18:45	71	0	0	0	0	71	0	0	0	0	0	0	50	1	0	0	1	52
H/TOT	263	22	0	0	0	285	0	0	0	0	0	0	260	22	0	0	6	288
12 TOT	3381	488	57	24	4	3954	1	0	0	0	0	1	2682	229	21	2	58	2992

Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13.02.2020
Time:	07:00-19:00
Location:	53.290854, -6.314320
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

Irish Traffic Surveys



	C => A						C => B						C => C					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	72	6	2	0	0	80	113	11	0	0	2	126	0	0	0	0	0	0
07:15	67	11	1	0	0	79	92	14	2	0	2	110	0	0	0	0	0	0
07:30	118	20	0	1	1	140	124	7	2	0	2	135	0	0	0	0	0	0
07:45	95	8	0	0	0	103	134	6	0	0	1	141	0	0	0	0	0	0
H/TOT	352	45	3	1	1	402	463	38	4	0	7	512	0	0	0	0	0	0
08:00	83	8	1	0	2	94	130	6	1	1	2	140	0	0	0	0	0	0
08:15	107	12	0	0	0	119	100	10	3	0	3	116	0	0	0	0	0	0
08:30	69	9	0	0	0	78	85	4	0	0	0	89	0	0	0	0	0	0
08:45	96	5	0	0	0	101	94	5	0	0	1	100	0	0	0	0	0	0
H/TOT	355	34	1	0	2	392	409	25	4	1	6	445	0	0	0	0	0	0
09:00	77	6	0	0	0	83	86	5	1	0	1	93	0	0	0	0	0	0
09:15	91	2	0	0	1	94	79	9	0	0	1	89	0	0	0	0	0	0
09:30	98	7	0	1	0	106	79	4	0	0	1	84	0	0	0	0	0	0
09:45	58	7	2	0	1	68	50	4	1	0	1	56	0	0	0	0	0	0
H/TOT	324	22	2	1	2	351	294	22	2	0	4	322	0	0	0	0	0	0
10:00	53	4	2	0	0	59	57	2	1	0	0	60	0	0	0	0	0	0
10:15	46	8	1	0	0	55	44	2	2	1	2	51	0	0	0	0	0	0
10:30	34	9	0	0	1	44	55	6	1	0	1	63	0	0	0	0	0	0
10:45	48	7	1	0	1	57	40	3	2	0	1	46	0	0	0	0	0	0
H/TOT	181	28	4	0	2	215	196	13	6	1	4	220	0	0	0	0	0	0
11:00	54	4	0	1	0	59	50	5	2	0	1	58	0	0	0	0	0	0
11:15	39	8	1	1	0	49	52	6	3	0	1	62	0	0	0	0	0	0
11:30	41	10	3	1	0	55	55	5	2	0	1	63	0	0	0	0	0	0
11:45	46	5	2	0	2	55	43	3	0	0	1	47	0	0	0	0	0	0
H/TOT	180	27	6	3	2	218	200	19	7	0	4	230	0	0	0	0	0	0
12:00	45	8	0	0	0	53	45	3	0	0	2	50	0	0	0	0	0	0
12:15	47	7	0	1	0	55	47	7	0	0	1	55	0	0	0	0	0	0
12:30	38	6	0	1	0	45	60	4	0	0	0	64	0	0	0	0	0	0
12:45	58	3	1	1	1	64	104	5	0	0	2	111	0	0	0	0	0	0
H/TOT	188	24	1	3	1	217	256	19	0	0	5	280	0	0	0	0	0	0
13:00	55	8	0	0	1	64	48	6	2	1	1	58	0	0	0	0	0	0
13:15	50	9	0	0	0	59	66	3	3	0	1	73	0	0	0	0	0	0
13:30	59	11	1	0	0	71	59	4	1	0	1	65	0	0	0	0	0	0
13:45	51	6	3	0	1	61	54	3	0	0	1	58	0	0	0	0	0	0
H/TOT	215	34	4	0	2	255	227	16	6	1	4	254	0	0	0	0	0	0
14:00	38	5	3	0	1	47	64	5	1	0	0	70	0	0	0	0	0	0
14:15	53	8	1	1	0	63	62	1	2	0	2	67	0	0	0	0	0	0
14:30	54	7	0	1	0	62	55	4	1	0	1	61	0	0	0	0	0	0
14:45	45	13	1	0	1	60	42	2	0	1	0	45	0	0	0	0	0	0
H/TOT	190	33	5	2	2	232	223	12	4	1	3	243	0	0	0	0	0	0
15:00	58	6	1	0	0	65	56	4	1	0	1	62	0	0	0	0	0	0
15:15	54	6	0	0	0	60	63	7	0	0	2	72	0	0	0	0	0	0
15:30	55	4	1	0	0	60	46	6	1	0	1	54	0	0	0	0	0	0
15:45	43	9	0	0	1	53	63	4	2	0	1	70	0	0	0	0	0	0
H/TOT	210	25	2	0	1	238	228	21	4	0	5	258	0	0	0	0	0	0
16:00	48	5	2	0	0	55	50	3	0	0	2	55	0	0	0	0	0	0
16:15	42	4	1	0	0	47	55	2	1	0	2	60	0	0	0	0	0	0
16:30	40	6	1	0	0	47	50	1	0	0	1	52	0	0	0	0	0	0
16:45	56	6	1	0	0	63	51	1	0	0	2	54	0	0	0	0	0	0
H/TOT	186	21	5	0	0	212	206	7	1	0	7	221	0	0	0	0	0	0
17:00	41	2	0	0	1	44	56	5	0	0	0	61	0	0	0	0	0	0
17:15	30	4	0	0	0	34	44	3	1	0	0	48	0	0	0	0	0	0
17:30	43	3	0	0	0	46	48	6	1	0	2	57	0	0	0	0	0	0
17:45	47	7	0	0	0	54	52	1	0	0	0	53	0	0	0	0	0	0
H/TOT	161	16	0	0	1	178	200	15	2	0	2	219	0	0	0	0	0	0
18:00	39	1	0	0	1	41	71	3	0	0	2	76	0	0	0	0	0	0
18:15	48	4	0	0	0	52	51	6	0	0	1	58	0	0	0	0	0	0
18:30	51	1	0	0	0	52	46	3	0	0	2	51	0	0	0	0	0	0
18:45	53	1	0	0	2	56	65	1	0	0	1	67	0	0	0	0	0	0
H/TOT	191	7	0	0	3	201	233	13	0	0	6	252	0	0	0	0	0	0
12 TOT	2733	316	33	10	19	3111	3135	220	40	4	57	3456	0	0	0	0	0	0



IDASO

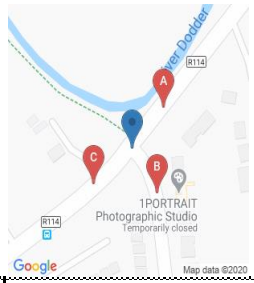
Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	A => A									A => B									A => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
00:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	7	8	3	0	12	0	0	1	0	16
00:15	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	8	2	0	20	0	0	0	0	22
00:30	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	8	0	0	15	0	0	0	0	15
00:45	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7	7	0	0	9	0	0	0	0	9
H/TOT	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	1	30	31	5	0	56	0	0	1	0	62
01:00	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	3	2.2	0	0	6	0	0	0	0	6
01:15	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	3	0	0	0	0	3
01:30	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	4	3.2	0	0	5	0	0	0	0	5
01:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	6	0	0	0	0	6
H/TOT	0	0	0	0	0	0	0	0	0	2	0	10	0	0	0	0	12	10.4	0	0	20	0	0	0	0	20
02:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	5	0	0	0	0	5
02:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	5	0	0	0	0	5
02:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	1	0	2	0	0	0	0	3
02:45	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	4	0	0	0	0	4
H/TOT	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	10	10	1	0	16	0	0	0	0	17
03:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	2	0	0	0	0	2
03:15	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	4	0	0	0	0	4
03:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	0	0	7	0	0	0	0	7
03:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	0	0	3	0	0	0	0	3
H/TOT	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	11	11	0	0	16	0	0	0	0	16
04:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	7	0	0	0	0	7
04:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1
04:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	2	0	1	0	0	3
04:45	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3	0	1	9	1	0	0	0	11
H/TOT	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	9	9	0	1	19	1	1	0	0	22
05:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	6	0	0	0	1	7
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	11
05:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2	0	0	8	0	0	0	0	8
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	8
H/TOT	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	3	2.2	0	0	29	2	0	0	3	34
06:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	1	0	2	1	0	0	1	5
06:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3	0	0	11	0	0	0	2	13
06:30	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4	4	0	0	27	0	0	1	5	33
06:45	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7	7	1	0	37	3	0	0	3	44
H/TOT	0	0	0	0	0	0	0	0	0	0	0	14	2	0	0	1	17	18	2	0	77	4	0	1	11	95
07:00	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	2	6	8.5	2	0	41	5	2	0	1	51
07:15	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	1	12	13	1	0	58	6	1	0	3	69
07:30	0	0	0	0	0	0	0	0	0	0	0	22	0	1	0	1	24	25.5	1	0	87	8	1	0	1	98
07:45	0	0	0	0	0	0	0	0	0	0	0	29	4	1	0	1	35	36.5	3	0	103	9	0	2	1	118
H/TOT	0	0	0	0	0	0	0	0	0	0	0	65	4	3	0	5	77	83.5	7	0	289	28	4	2	6	336
08:00	0	0	0	0	0	0	0	0	0	0	0	27	3	0	0	2	32	34	4	0	137	5	2	0	1	149
08:15	0	0	0	0	0	0	0	0	0	0	0	49	1	0	0	1	51	52	3	1	102	6	0	2	1	115
08:30	0	0	0	0	0	0	0	0	0	1	0	50	2	0	0	0	53	52.2	5	1	147	4	2	2	0	161
08:45	0	0	0	0	0	0	0	0	0	2	0	38	1	0	0	2	43	43.4	2	0	134	5	1	0	1	143
H/TOT	0	0	0	0	0	0	0	0	0	3	0	164	7	0	0	5	179	181.6	14	2	520	20	5	4	3	568
09:00	0	0	0	0	0	0	0	0	0	1	0	27	3	1	0	2	34	35.7	0	0	106	9	0	0	3	118
09:15	0	0	0	0	0	0	0	0	0	0	1	19	2	0	0	1	23	23.4	2	0	83	5	0	0	2	92
09:30	0	0	0	0	0	0	0	0	0	2	0	21	2	0	0	1	26	25.4	2	1	96	9	2	0	2	112
09:45	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	2	16	18	0	0	57	5	2	1	1	66
H/TOT	0	0	0	0	0	0	0	0	0	3	1	81	7	1	0	6	99	102.5	4	1	342	28	4	1	8	388
10:00	0	0	0	0	0	0	0	0	0	0	0	20	1	1	0	2	24	26.5	0	0	69	9	1	0	2	81
10:15	0	0	0	0	0	0	0	0	0	2	0	28	2	0	0	3	35	36.4	4	0	64	8	1	0	1	78
10:30	0	0	0	0	0	0	0	0	0	0	0	33	2	2	0	1	38	40	2	0	68	5	0	1	1	77
10:45	0	0	0	0	0	0	0	0	0	3	0	26	4	0	0	2	35	34.6	1	0	66	6	3	0	0	76
H/TOT	0	0	0	0	0	0	0	0	0	5	0	107	9	3	0	8	132	137.5	7	0	267	28	5	1	4	312
11:00	0	0	0	0	0	0	0	0	0	0	0	37	2	0	0	1	40	41	2	0	66	7	1	0	1	77
11:15	0	0	0	0	0	0	0	0	0	1	0	34	2	0	0	1	38	38.2	1	0	73	12	2	1	3	92
11:30	0	0	0	0	0	0	0	0	0	0	0	51	2	0	0	1	54	55	1	1	76	6	0	0	1	85
11:45	0	0	0	0	0	0	0	0	0	0	0	47	4	1	0	2	54	56.5	2	1	69	9	6	0	1	88
H/TOT	0	0	0	0	0	0	0	0	0	1	0	169	10	1	0	5	186	190.7	6	2	284	34	9	1	6	342



IDASO

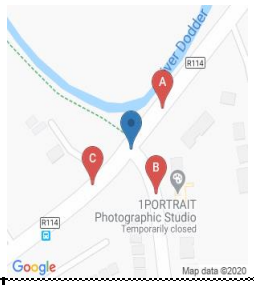
Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	A => A									A => B									A => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
12:00	0	0	0	0	0	0	0	0	0	0	0	45	0	1	0	1	47	48.5	1	0	93	6	1	0	2	103
12:15	0	0	0	0	0	0	0	0	0	2	0	43	4	1	0	2	52	52.9	4	1	88	10	2	0	1	106
12:30	0	0	0	0	0	0	0	0	0	2	0	53	0	1	0	1	57	56.9	3	0	86	9	1	1	1	101
12:45	0	0	0	0	0	0	0	0	0	0	0	68	2	0	0	0	70	70	2	0	93	10	0	1	0	106
H/TOT	0	0	0	0	0	0	0	0	0	4	0	209	6	3	0	4	226	228.3	10	1	360	35	4	2	4	416
13:00	0	0	0	0	0	0	0	0	0	1	0	61	4	0	0	2	68	69.2	3	0	102	11	1	1	1	119
13:15	0	0	0	0	0	0	0	0	0	2	0	47	3	0	0	1	53	52.4	1	0	88	11	1	0	2	103
13:30	0	0	0	0	0	0	0	0	0	2	0	39	4	0	0	2	47	47.4	3	0	101	8	1	0	1	114
13:45	0	0	0	0	0	0	0	0	0	0	0	45	2	0	0	1	48	49	4	1	101	14	1	1	1	123
H/TOT	0	0	0	0	0	0	0	0	0	5	0	192	13	0	0	6	216	218	11	1	392	44	4	2	5	459
14:00	0	0	0	0	0	0	0	0	0	0	0	44	3	0	0	2	49	51	0	0	88	5	1	1	1	96
14:15	0	0	0	0	0	0	0	0	0	2	0	68	5	0	0	1	76	75.4	2	0	111	10	4	0	1	128
14:30	0	0	0	0	0	0	0	0	0	1	3	53	2	0	0	1	60	58.4	3	1	110	6	2	0	2	124
14:45	0	0	0	0	0	0	0	0	0	1	0	58	1	0	0	1	61	61.2	3	3	111	6	3	2	0	128
H/TOT	0	0	0	0	0	0	0	0	0	4	3	223	11	0	0	5	246	246	8	4	420	27	10	3	4	476
15:00	0	0	0	0	0	0	0	0	0	1	0	47	6	0	0	0	54	53.2	2	2	109	14	1	1	1	130
15:15	0	0	0	0	0	0	0	0	0	0	0	46	7	0	0	3	56	59	2	2	128	17	2	0	3	154
15:30	0	0	0	0	0	0	0	0	0	0	0	62	7	1	0	2	72	74.5	3	1	104	7	0	1	0	116
15:45	0	0	0	0	0	0	0	0	0	0	0	38	2	1	0	1	42	43.5	3	0	107	14	1	0	2	127
H/TOT	0	0	0	0	0	0	0	0	0	1	0	193	22	2	0	6	224	230.2	10	5	448	52	4	2	6	527
16:00	0	0	0	0	0	0	0	0	0	2	0	57	6	0	0	1	66	65.4	1	0	129	24	4	0	0	158
16:15	0	0	0	0	0	0	0	0	0	4	0	54	8	0	0	1	67	64.8	3	1	152	20	5	0	1	182
16:30	0	0	0	0	0	0	0	0	0	7	0	63	1	1	0	2	74	70.9	9	3	145	17	0	0	0	174
16:45	0	0	0	0	0	0	0	0	0	7	0	66	6	0	0	1	80	75.4	7	2	134	22	1	0	2	168
H/TOT	0	0	0	0	0	0	0	0	0	20	0	240	21	1	0	5	287	276.5	20	6	560	83	10	0	3	682
17:00	0	0	0	0	0	0	0	0	0	3	1	62	5	0	0	1	72	70	10	1	143	21	2	0	2	179
17:15	0	0	0	0	0	0	0	0	0	9	1	62	4	0	0	2	78	72.2	23	1	150	11	0	0	2	187
17:30	0	0	0	0	0	0	0	0	0	14	2	62	1	1	0	1	81	70.1	14	1	133	12	0	0	0	160
17:45	0	0	0	0	0	0	0	0	0	21	4	75	4	0	0	1	105	86.8	29	2	137	13	2	0	2	185
H/TOT	0	0	0	0	0	0	0	0	0	47	8	261	14	1	0	5	336	299.1	76	5	563	57	4	0	6	711
18:00	0	0	0	0	0	0	0	0	0	17	1	86	3	0	0	1	108	94.8	23	1	133	16	0	0	3	176
18:15	0	0	0	0	0	0	0	0	0	11	2	64	3	0	0	3	83	76	28	0	146	8	0	0	0	182
18:30	0	0	0	0	0	0	0	0	0	16	1	70	3	0	0	1	91	78.6	17	0	113	5	1	0	1	137
18:45	0	0	0	0	0	0	0	0	0	14	1	52	3	0	0	3	73	64.2	11	0	114	2	1	0	2	130
H/TOT	0	0	0	0	0	0	0	0	0	58	5	272	12	0	0	8	355	313.6	79	1	506	31	2	0	6	625
19:00	0	0	0	0	0	0	0	0	0	8	1	51	1	0	0	1	62	56	9	0	103	3	2	1	0	118
19:15	0	0	0	0	0	0	0	0	0	6	1	53	2	1	0	3	66	64.1	9	1	124	3	1	0	2	140
19:30	0	0	0	0	0	0	0	0	0	6	1	49	3	0	0	1	60	55.6	11	1	98	8	0	0	0	118
19:45	0	0	0	0	0	0	0	0	0	7	0	40	3	0	0	2	52	48.4	6	3	97	3	0	0	2	111
H/TOT	0	0	0	0	0	0	0	0	0	27	3	193	9	1	0	7	240	224.1	35	5	422	17	3	1	4	487
20:00	0	0	0	0	0	0	0	0	0	3	0	50	3	0	0	1	57	55.6	3	3	100	8	0	0	1	115
20:15	0	0	0	0	0	0	0	0	0	2	0	50	1	0	0	0	53	51.4	3	1	71	5	0	0	1	81
20:30	0	0	0	0	0	0	0	0	0	3	0	39	1	0	0	1	44	42.6	4	0	74	7	0	0	0	85
20:45	0	0	0	0	0	0	0	0	0	3	0	48	2	0	0	1	54	52.6	5	1	72	2	0	0	2	82
H/TOT	0	0	0	0	0	0	0	0	0	11	0	187	7	0	0	3	208	202.2	15	5	317	22	0	0	4	363
21:00	0	0	0	0	0	0	0	0	0	1	0	41	0	0	0	1	43	43.2	1	1	66	3	0	0	0	71
21:15	0	0	0	0	0	0	0	0	0	4	0	37	0	0	0	0	41	37.8	2	0	54	0	0	0	1	57
21:30	0	0	0	0	0	0	0	0	0	0	0	21	2	0	0	2	25	27	2	0	47	0	1	0	0	50
21:45	0	0	0	0	0	0	0	0	0	0	0	27	2	0	0	0	29	29	2	2	50	3	1	0	1	59
H/TOT	0	0	0	0	0	0	0	0	0	5	0	126	4	0	0	3	138	137	7	3	217	6	2	0	2	237
22:00	0	0	0	0	0	0	0	0	0	1	0	47	2	0	0	1	51	51.2	3	0	56	2	0	0	1	62
22:15	0	0	0	0	0	0	0	0	0	5	0	42	0	0	0	0	47	43	2	0	49	1	0	0	2	54
22:30	0	0	0	0	0	0	0	0	0	1	0	36	0	0	0	2	39	40.2	1	1	35	1	1	0	0	39
22:45	0	0	0	0	0	0	0	0	0	1	0	20	0	0	0	0	21	20.2	1	0	41	0	0	0	2	44
H/TOT	0	0	0	0	0	0	0	0	0	8	0	145	2	0	0	3	158	154.6	7	1	181	4	1	0	5	199
23:00	0	0	0	0	0	0	0	0	0	1	0	28	0	0	0	1	30	30.2	0	0	33	0	0	0	1	34
23:15	0	0	0	0	0	0	0	0	0	2	0	31	0	0	0	0	33	31.4	1	0	24	1	0	0	0	26
23:30	0	0	0	0	0	0	0	0	0	1	0	19	0	0	0	1	21	21.2	1	0	29	1	0	0	1	32
23:45	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	1	10	11	0	1	31	0	0	0	1	33
H/TOT	0	0	0	0	0	0	0	0	0	4	0	87	0	0	0	3	94	93.8	2	1	117	2	0	0	3	125
24 TOT	0	0	0	0	0	0	0	0	0	209	20	2998	161	16	0	89	3493	3410.8	326	44	6438	525	72	21	93	7519



IDASO

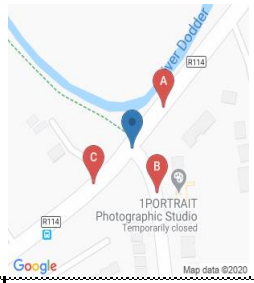
Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	B => A									B => B									B => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
00:00	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
00:15	1	0	5	0	0	0	0	6	5.2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
00:30	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4
00:45	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	1	0	16	0	0	0	0	17	16.2	0	0	0	0	0	0	0	0	0	0	0	10	1	0	0	0	11
01:00	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	1	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
01:45	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	0	0	10	0	0	0	1	11	12	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
02:00	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:45	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	7	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:30	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	0	0	6	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
04:00	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:15	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
04:30	0	0	5	0	0	0	1	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	11	0	0	0	1	12	13	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
05:00	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	4	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
05:30	0	0	5	1	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
05:45	1	0	5	1	0	0	0	7	6.2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	1	0	16	3	0	0	0	20	19.2	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
06:00	2	0	9	1	1	0	1	14	13.9	0	0	0	0	0	0	0	0	0	1	0	3	1	0	0	0	5
06:15	3	0	18	2	0	0	2	25	24.6	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
06:30	4	0	26	1	0	0	1	32	29.8	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
06:45	5	1	27	2	0	0	1	36	32.4	0	0	0	0	0	0	0	0	0	1	0	12	1	0	0	0	14
H/TOT	14	1	80	6	1	0	5	107	100.7	0	0	0	0	0	0	0	0	0	2	0	25	2	0	0	0	29
07:00	7	0	44	1	0	0	2	54	50.4	0	0	0	0	0	0	0	0	0	0	0	16	2	0	0	0	18
07:15	6	2	44	2	0	0	3	57	54	0	0	0	0	0	0	0	0	0	1	0	16	2	0	0	0	19
07:30	15	0	57	2	0	0	1	75	64	0	0	0	0	0	0	0	0	0	2	0	27	2	0	0	1	32
07:45	15	0	66	3	0	0	3	87	78	0	0	0	0	0	0	0	0	0	0	0	25	4	1	0	0	30
H/TOT	43	2	211	8	0	0	9	273	246.4	0	0	0	0	0	0	0	0	0	3	0	84	10	1	0	1	99
08:00	19	2	52	3	1	0	2	79	65.1	0	0	0	0	0	0	0	0	0	3	0	24	5	2	0	0	34
08:15	35	3	55	4	1	0	3	101	74.7	0	0	0	0	0	0	0	0	0	1	1	38	1	0	0	0	41
08:30	17	2	49	3	0	0	1	72	58.2	0	0	0	0	0	0	0	0	0	1	1	15	3	2	0	0	22
08:45	15	0	56	5	0	0	2	78	68	0	0	0	0	0	0	0	0	0	1	0	46	3	0	0	0	50
H/TOT	86	7	212	15	2	0	8	330	266	0	0	0	0	0	0	0	0	0	6	2	123	12	4	0	0	147
09:00	3	0	65	1	0	0	1	70	68.6	0	0	0	0	0	0	0	0	0	0	0	64	2	0	1	0	67
09:15	9	0	46	2	0	0	1	58	51.8	0	0	0	0	0	0	0	0	0	1	1	39	1	0	0	0	42
09:30	3	0	45	0	0	0	2	50	49.6	0	0	0	0	0	0	0	0	0	0	0	39	3	0	0	0	42
09:45	7	1	41	4	0	0	2	55	50.8	0	0	0	0	0	0	0	0	0	0	0	28	1	0	0	0	29
H/TOT	22	1	197	7	0	0	6	233	220.8	0	0	0	0	0	0	0	0	0	1	1	170	7	0	1	0	180
10:00	3	0	36	2	0	0	1	42	40.6	0	0	0	0	0	0	0	0	0	0	0	29	4	0	0	0	33
10:15	2	0	30	4	0	0	1	37	36.4	0	0	0	0	0	0	0	0	0	0	0	23	1	0	0	0	24
10:30	0	0	48	1	1	0	2	52	54.5	0	0	0	0	0	0	0	0	0	0	0	18	2	0	0	0	20
10:45	2	1	39	7	0	0	2	51	50.8	0	0	0	0	0	0	0	0	0	0	0	23	4	1	0	0	28
H/TOT	7	1	153	14	1	0	6	182	182.3	0	0	0	0	0	0	0	0	0	0	0	93	11	1	0	0	105
11:00	2	0	42	4	0	0	1	49	48.4	0	0	0	0	0	0	0	0	0	0	0	30	3	3	0	0	36
11:15	1	0	29	1	0	0	1	32	32.2	0	0	0	0	0	0	0	0	0	0	1	24	4	0	0	0	29
11:30	1	0	33	3	0	0	2	39	40.2	0	0	0	0	0	0	0	0	0	0	0	19	3	0	0	0	22
11:45	4	1	47	3	0	0	2	57	55.2	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	18
H/TOT	8	1	151	11	0	0	6	177	176	0	0	0	0	0	0	0	0	0	0	1	91	10	3	0	0	105



IDASO

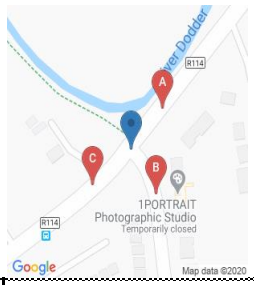
Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	B => A									B => B									B => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
12:00	2	0	30	2	0	0	1	35	34.4	0	0	0	0	0	0	0	0	0	0	0	20	2	1	0	0	23
12:15	1	0	40	5	2	0	2	50	52.2	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	0	17
12:30	2	0	38	4	1	0	1	46	45.9	0	0	0	0	0	0	0	0	0	0	0	20	4	0	0	0	24
12:45	1	0	35	2	1	0	2	41	42.7	0	0	0	0	0	0	0	0	0	0	0	17	2	0	0	0	19
H/TOT	6	0	143	13	4	0	6	172	175.2	0	0	0	0	0	0	0	0	0	0	0	72	10	1	0	0	83
13:00	1	1	50	3	0	0	1	56	55.6	0	0	0	0	0	0	0	0	0	0	0	21	4	0	0	0	25
13:15	1	0	33	3	0	0	1	38	38.2	0	0	0	0	0	0	0	0	0	0	0	20	2	0	0	0	22
13:30	2	0	42	1	1	0	2	48	48.9	0	0	0	0	0	0	0	0	0	0	0	28	1	1	0	0	30
13:45	1	1	36	5	1	0	1	45	45.1	0	0	0	0	0	0	0	0	0	0	0	29	7	0	0	0	36
H/TOT	5	2	161	12	2	0	5	187	187.8	0	0	0	0	0	0	0	0	0	0	0	98	14	1	0	0	113
14:00	3	0	48	6	0	0	2	59	58.6	0	0	0	0	0	0	0	0	0	0	0	19	2	0	0	0	21
14:15	1	2	40	3	0	0	2	48	48	0	0	0	0	0	0	0	0	0	0	0	22	2	0	0	0	24
14:30	0	0	31	4	0	1	1	37	39.3	0	0	0	0	0	0	0	0	0	1	0	37	5	0	0	0	43
14:45	0	0	39	0	0	0	1	40	41	0	0	0	0	0	0	0	0	0	0	1	40	3	0	0	0	44
H/TOT	4	2	158	13	0	1	6	184	186.9	0	0	0	0	0	0	0	0	0	1	1	118	12	0	0	0	132
15:00	0	0	46	2	0	0	2	50	52	0	0	0	0	0	0	0	0	0	0	0	23	7	0	0	0	30
15:15	0	0	44	2	0	0	1	47	48	0	0	0	0	0	0	0	0	0	0	0	22	5	1	0	1	29
15:30	1	0	33	3	0	0	2	39	40.2	0	0	0	0	0	0	0	0	0	0	0	19	2	1	0	0	22
15:45	0	0	43	3	0	0	2	48	50	0	0	0	0	0	0	0	0	0	0	1	31	1	0	0	0	33
H/TOT	1	0	166	10	0	0	7	184	190.2	0	0	0	0	0	0	0	0	0	0	1	95	15	2	0	1	114
16:00	0	0	26	6	2	0	1	35	37	0	0	0	0	0	0	0	0	0	0	0	26	5	0	0	0	31
16:15	2	0	28	2	0	0	2	34	34.4	0	0	0	0	0	0	0	0	0	0	0	25	5	0	0	0	30
16:30	1	0	28	1	0	0	1	31	31.2	0	0	0	0	0	0	0	0	0	0	0	31	6	2	0	0	39
16:45	2	1	31	1	0	0	0	35	32.8	0	0	0	0	0	0	0	0	0	0	0	19	6	0	0	0	25
H/TOT	5	1	113	10	2	0	4	135	135.4	0	0	0	0	0	0	0	0	0	0	0	101	22	2	0	0	125
17:00	0	0	27	2	0	0	2	31	33	0	0	0	0	0	0	0	0	0	0	1	26	3	0	0	0	30
17:15	1	0	30	2	0	0	1	34	34.2	0	0	0	0	0	0	0	0	0	0	0	37	3	1	0	0	41
17:30	1	0	33	0	0	0	1	35	35.2	0	0	0	0	0	0	0	0	0	1	0	23	2	0	0	0	26
17:45	0	1	37	2	0	0	2	42	43.4	0	0	0	0	0	0	0	0	0	0	0	31	2	0	0	0	33
H/TOT	2	1	127	6	0	0	6	142	145.8	0	0	0	0	0	0	0	0	0	1	1	117	10	1	0	0	130
18:00	1	0	33	3	0	0	2	39	40.2	0	0	0	0	0	0	0	0	0	1	0	24	3	0	0	0	28
18:15	1	0	30	3	0	0	0	34	33.2	0	0	0	0	0	0	0	0	0	0	0	24	1	0	0	0	25
18:30	1	0	43	2	0	0	2	48	49.2	0	0	0	0	0	0	0	0	0	1	1	32	5	0	0	0	39
18:45	2	1	51	1	0	0	2	57	56.8	0	0	0	0	0	0	0	0	0	0	0	46	0	0	0	0	46
H/TOT	5	1	157	9	0	0	6	178	179.4	0	0	0	0	0	0	0	0	0	2	1	126	9	0	0	0	138
19:00	0	1	40	2	0	0	2	45	46.4	0	0	0	0	0	0	0	0	0	2	0	34	0	0	0	0	36
19:15	1	0	44	3	0	0	0	48	47.2	0	0	0	0	0	0	0	0	0	0	1	29	2	1	0	0	33
19:30	3	0	37	2	0	0	1	43	41.6	0	0	0	0	0	0	0	0	0	0	0	27	2	0	0	0	29
19:45	1	0	27	1	0	0	1	30	30.2	0	0	0	0	0	0	0	0	0	2	0	41	1	0	0	0	44
H/TOT	5	1	148	8	0	0	4	166	165.4	0	0	0	0	0	0	0	0	0	4	1	131	5	1	0	0	142
20:00	1	0	31	2	0	0	2	36	37.2	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	27
20:15	1	0	30	0	0	0	0	31	30.2	0	0	0	0	0	0	0	0	0	1	0	30	2	0	0	0	33
20:30	1	0	28	0	0	0	1	30	30.2	0	0	0	0	0	0	0	0	0	1	0	20	1	0	0	0	22
20:45	2	0	39	2	0	0	1	44	43.4	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	25
H/TOT	5	0	128	4	0	0	4	141	141	0	0	0	0	0	0	0	0	0	2	0	102	3	0	0	0	107
21:00	1	0	30	3	0	0	1	35	35.2	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	20
21:15	1	0	25	0	0	0	1	27	27.2	0	0	0	0	0	0	0	0	0	1	0	17	0	0	0	0	18
21:30	1	0	9	2	0	0	0	12	11.2	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	14
21:45	1	0	24	0	0	0	1	26	26.2	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	17
H/TOT	4	0	88	5	0	0	3	100	99.8	0	0	0	0	0	0	0	0	0	1	0	68	0	0	0	0	69
22:00	1	1	15	1	0	0	1	19	18.6	0	0	0	0	0	0	0	0	0	0	1	18	0	1	0	0	20
22:15	0	0	24	0	0	0	0	24	24	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	9
22:30	2	0	12	0	0	0	1	15	14.4	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	8
22:45	0	0	14	0	0	0	1	15	16	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
H/TOT	3	1	65	1	0	0	3	73	73	0	0	0	0	0	0	0	0	0	0	1	42	1	1	0	0	45
23:00	0	0	10	0	0	0	1	11	12	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	12
23:15	1	0	9	0	0	0	0	10	9.2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4
23:30	0	1	12	0	0	0	0	13	12.4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
23:45	0	0	6	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
H/TOT	1	1	37	0	0	0	1	40	39.6	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	1	19
24 TOT	228	23	2561	155	12	1	97	3077	2985.1	0	0	0	0	0	0	0	0	0	23	10	1699	154	18	1	3	1908



IDASO

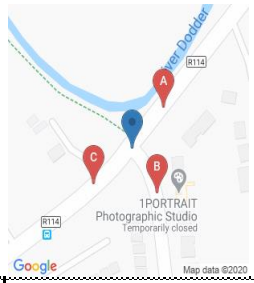
Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	C => A									C => B									C => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
00:00	0	0	9	0	0	0	1	10	11	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0
00:15	0	0	5	0	0	0	1	6	7	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
00:30	0	0	15	0	0	0	0	15	15	0	0	2	1	0	0	0	3	3	0	0	0	0	0	0	0	0
00:45	0	0	9	0	0	0	0	9	9	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0
H/TOT	0	0	38	0	0	0	2	40	42	0	0	11	1	0	0	0	12	12	0	0	0	0	0	0	0	0
01:00	0	0	5	0	0	0	0	5	5	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
01:15	0	0	5	0	0	0	0	5	5	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0
01:30	0	0	4	0	0	0	0	4	4	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
01:45	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	19	0	0	0	0	19	19	0	0	8	0	0	0	0	8	8	0	0	0	0	0	0	0	0
02:00	0	0	7	0	0	0	0	7	7	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
02:15	0	0	2	0	0	0	0	2	2	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
02:30	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	14	0	0	0	0	14	14	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0
03:00	0	0	3	0	0	0	0	3	3	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
03:15	0	0	7	0	0	0	0	7	7	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
03:30	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	4	0	1	0	0	5	5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	17	0	1	0	0	18	18.5	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
04:00	1	0	9	0	0	0	0	10	9.2	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
04:15	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	6	0	0	1	0	7	8.3	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
04:45	0	0	9	0	0	1	0	10	11.3	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	1	0	26	0	0	2	0	29	30.8	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0
05:00	0	0	13	1	1	0	0	15	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	2	0	12	0	0	0	1	15	14.4	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
05:30	1	0	4	0	0	1	0	6	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	1	10	2	1	0	0	14	13.9	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0
H/TOT	3	1	39	3	2	1	1	50	50.3	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0
06:00	0	1	19	3	0	0	0	23	22.4	0	0	2	0	1	0	0	3	3.5	0	0	0	0	0	0	0	0
06:15	9	3	32	6	0	1	1	52	45.3	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0
06:30	4	2	62	13	2	0	1	84	81.6	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
06:45	11	1	105	21	1	0	1	140	132.1	0	0	9	2	0	0	0	11	11	0	0	0	0	0	0	0	0
H/TOT	24	7	218	43	3	1	3	299	281.4	0	0	15	2	1	0	0	18	18.5	0	0	0	0	0	0	0	0
07:00	10	3	153	19	4	1	1	191	185.5	0	0	10	2	0	0	0	12	12	0	0	0	0	0	0	0	0
07:15	20	4	152	17	5	0	2	200	186.1	0	0	9	4	1	0	0	14	14.5	0	0	0	0	0	0	0	0
07:30	15	4	159	27	2	2	1	210	200.2	1	0	24	4	0	0	1	30	30.2	0	0	0	0	0	0	0	0
07:45	22	4	164	22	0	1	2	215	198.3	0	0	31	4	0	1	0	36	37.3	0	0	0	0	0	0	0	0
H/TOT	67	15	628	85	11	4	6	816	770.1	1	0	74	14	1	1	1	92	94	0	0	0	0	0	0	0	0
08:00	33	1	167	19	2	0	2	224	200	0	0	33	2	0	0	0	35	35	0	0	0	0	0	0	0	0
08:15	43	5	159	20	2	0	2	231	196.6	0	0	29	2	1	0	0	32	32.5	0	0	0	0	0	0	0	0
08:30	26	3	138	12	2	0	1	182	161.4	2	0	32	2	0	1	0	37	36.7	0	0	0	0	0	0	0	0
08:45	15	2	136	19	0	0	2	174	162.8	0	0	21	5	0	0	0	26	26	0	0	0	0	0	0	0	0
H/TOT	117	11	600	70	6	0	7	811	720.8	2	0	115	11	1	1	0	130	130.2	0	0	0	0	0	0	0	0
09:00	8	0	113	15	2	0	2	140	136.6	0	0	34	4	0	0	0	38	38	0	0	0	0	0	0	0	0
09:15	15	1	112	11	3	0	2	144	134.9	0	0	20	3	0	0	2	25	27	0	0	0	0	0	0	0	0
09:30	3	1	100	6	3	0	0	113	111.5	0	0	19	1	0	0	0	20	20	0	0	0	0	0	0	0	0
09:45	4	1	79	8	3	1	3	99	101	0	0	15	3	0	0	0	18	18	0	0	0	0	0	0	0	0
H/TOT	30	3	404	40	11	1	7	496	484	0	0	88	11	0	0	2	101	103	0	0	0	0	0	0	0	0
10:00	1	0	83	10	1	1	0	96	97	0	2	25	2	0	0	0	29	27.8	0	0	0	0	0	0	0	0
10:15	9	1	82	8	2	1	2	105	101.5	0	0	18	1	0	0	0	19	19	0	0	0	0	0	0	0	0
10:30	3	0	86	7	0	0	0	96	93.6	0	0	14	1	1	0	0	16	16.5	0	0	0	0	0	0	0	0
10:45	1	0	91	5	3	1	2	103	107	0	0	16	4	1	0	0	21	21.5	0	0	0	0	0	0	0	0
H/TOT	14	1	342	30	6	3	4	400	399.1	0	2	73	8	2	0	0	85	84.8	0	0	0	0	0	0	0	0
11:00	0	0	70	8	1	0	1	80	81.5	0	1	14	3	0	0	0	18	17.4	0	0	0	0	0	0	0	0
11:15	3	1	82	4	4	0	2	96	97	0	0	18	1	0	0	0	19	19	0	0	0	1	0	0	0	1
11:30	3	1	80	10	1	0	2	97	96.5	0	0	16	4	0	0	0	20	20	0	0	0	0	0	0	0	0
11:45	3	0	82	13	0	1	2	101	101.9	0	0	29	2	0	0	0	31	31	0	0	0	0	0	0	0	0
H/TOT	9	2	314	35	6	1	7	374	376.9	0	1	77	10	0	0	0	88	87.4	0	0	0	1	0	0	0	1



IDASO

Survey Name: HDR 20-016 Dodder Greenway Scheme (CSEA)

Site: Site 2

Location: R114 / Knocklyon Road

Date: Tue 30-May-2017

	C => A									C => B									C => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
12:00	3	0	84	4	2	0	0	93	91.6	0	0	16	3	0	0	0	19	19	0	0	0	0	0	0	0	0
12:15	4	0	89	12	1	1	2	109	109.6	1	0	29	4	3	0	0	37	37.7	0	0	0	0	0	0	0	0
12:30	4	0	82	7	6	0	0	99	98.8	0	0	20	1	1	0	0	22	22.5	0	0	0	0	0	0	0	0
12:45	5	0	105	5	1	0	2	118	116.5	0	1	28	5	0	0	0	34	33.4	0	0	0	0	0	0	0	0
H/TOT	16	0	360	28	10	1	4	419	416.5	1	1	93	13	4	0	0	112	112.6	0	0	0	0	0	0	0	0
13:00	2	1	99	6	1	1	0	110	109.6	0	0	30	5	0	0	0	35	35	0	0	0	0	0	0	0	0
13:15	3	0	85	7	1	0	3	99	100.1	0	0	40	4	0	0	0	44	44	0	0	0	0	0	0	0	0
13:30	1	0	84	9	1	1	0	96	97	0	0	25	0	0	0	0	25	25	0	0	0	0	0	0	0	0
13:45	0	1	122	9	1	0	2	135	136.9	0	0	24	3	0	0	0	27	27	0	0	0	0	0	0	0	0
H/TOT	6	2	390	31	4	2	5	440	443.6	0	0	119	12	0	0	0	131	131	0	0	0	0	0	0	0	0
14:00	2	1	115	8	1	0	0	127	125.3	0	0	30	1	0	0	0	31	31	0	0	0	0	0	0	0	0
14:15	3	0	108	7	1	1	2	122	123.4	0	0	36	4	0	0	0	40	40	0	0	0	0	0	0	0	0
14:30	1	0	101	8	0	0	0	110	109.2	0	0	32	3	1	0	0	36	36.5	0	0	0	0	0	0	0	0
14:45	1	1	93	6	1	0	2	104	105.1	0	1	31	3	1	0	0	36	35.9	0	0	0	0	0	0	0	0
H/TOT	7	2	417	29	3	1	4	463	463	0	1	129	11	2	0	0	143	143.4	0	0	0	0	0	0	0	0
15:00	2	2	99	5	0	0	0	108	105.2	0	0	29	2	1	0	0	32	32.5	0	0	0	0	0	0	0	0
15:15	2	0	112	8	0	0	2	124	124.4	0	0	21	0	1	0	0	22	22.5	0	0	0	0	0	0	0	0
15:30	2	3	96	3	3	1	0	108	107.4	0	0	39	1	0	0	1	41	42	0	0	0	0	0	0	0	0
15:45	0	1	87	5	1	0	3	97	99.9	1	0	40	2	0	0	0	43	42.2	0	0	0	0	0	0	0	0
H/TOT	6	6	394	21	4	1	5	437	436.9	1	0	129	5	2	0	1	138	139.2	0	0	0	0	0	0	0	0
16:00	2	0	85	5	3	0	0	95	94.9	3	1	33	2	1	0	0	40	37.5	0	0	0	0	0	0	0	0
16:15	0	0	129	6	2	0	2	139	142	1	0	43	2	1	0	0	47	46.7	0	0	0	0	0	0	0	0
16:30	2	2	105	2	0	0	1	112	110.2	1	0	42	1	0	0	1	45	45.2	0	0	0	0	0	0	0	0
16:45	4	1	117	7	0	0	2	131	129.2	0	0	38	3	0	0	0	41	41	0	0	0	0	0	0	0	0
H/TOT	8	3	436	20	5	0	5	477	476.3	5	1	156	8	2	0	1	173	170.4	0	0	0	0	0	0	0	0
17:00	1	2	117	7	0	0	0	127	125	0	0	50	6	1	0	0	57	57.5	0	0	0	0	0	0	0	0
17:15	5	1	139	3	0	0	2	150	147.4	2	0	70	2	0	0	0	74	72.4	0	0	0	0	0	0	0	0
17:30	2	0	104	6	0	1	0	113	112.7	2	0	63	1	0	0	0	66	64.4	0	0	0	0	0	0	0	0
17:45	2	0	149	2	1	1	2	157	159.2	0	0	60	3	0	0	0	63	63	0	0	0	0	0	0	0	0
H/TOT	10	3	509	18	1	2	4	547	544.3	4	0	243	12	1	0	0	260	257.3	0	0	0	0	0	0	0	0
18:00	1	0	152	4	0	0	0	157	156.2	0	1	61	3	0	0	0	65	64.4	0	0	0	0	0	0	0	0
18:15	0	0	118	8	1	0	2	129	131.5	0	2	46	2	0	0	0	50	48.8	0	0	0	0	0	0	0	0
18:30	2	1	111	5	0	0	0	119	116.8	0	1	59	3	0	0	0	63	62.4	0	0	0	0	0	0	0	0
18:45	2	0	112	6	0	0	2	122	122.4	0	0	43	1	0	0	0	44	44	0	0	0	0	0	0	0	0
H/TOT	5	1	493	23	1	0	4	527	526.9	0	4	209	9	0	0	0	222	219.6	0	0	0	0	0	0	0	0
19:00	3	0	110	1	0	0	0	114	111.6	0	1	45	3	0	0	0	49	48.4	0	0	0	0	0	0	0	0
19:15	4	3	86	3	0	0	2	98	95	3	0	24	6	0	0	0	33	30.6	0	0	0	0	0	0	0	0
19:30	4	0	70	3	0	0	1	78	75.8	0	0	32	0	0	0	0	32	32	0	0	0	0	0	0	0	0
19:45	2	1	79	2	1	0	3	88	89.3	3	0	32	1	0	0	0	36	33.6	0	0	0	0	0	0	0	0
H/TOT	13	4	345	9	1	0	6	378	371.7	6	1	133	10	0	0	0	150	144.6	0	0	0	0	0	0	0	0
20:00	1	0	82	2	1	1	2	89	92	0	0	47	2	0	0	0	49	49	0	0	0	0	0	0	0	0
20:15	5	2	69	4	0	0	2	82	78.8	0	2	37	3	0	0	0	42	40.8	0	0	0	0	0	0	0	0
20:30	1	0	75	2	0	0	1	79	79.2	0	0	22	0	0	0	0	22	22	0	0	0	0	0	0	0	0
20:45	0	1	57	2	0	0	1	61	61.4	1	1	28	0	0	0	0	30	28.6	0	0	0	0	0	0	0	0
H/TOT	7	3	283	10	1	1	6	311	311.4	1	3	134	5	0	0	0	143	140.4	0	0	0	0	0	0	0	0
21:00	3	0	57	6	0	0	1	67	65.6	0	0	32	0	0	0	0	32	32	0	0	0	0	0	0	0	0
21:15	0	0	49	3	0	0	1	53	54	0	0	27	0	0	0	0	27	27	0	0	0	0	0	0	0	0
21:30	0	2	32	1	0	0	1	36	35.8	0	0	21	1	0	0	0	22	22	0	0	0	0	0	0	0	0
21:45	0	0	55	2	0	0	1	58	59	1	0	17	1	0	0	0	19	18.2	0	0	0	0	0	0	0	0
H/TOT	3	2	193	12	0	0	4	214	214.4	1	0	97	2	0	0	0	100	99.2	0	0	0	0	0	0	0	0
22:00	0	0	62	2	0	0	0	64	64	0	0	11	2	0	0	0	13	13	0	0	0	0	0	0	0	0
22:15	0	0	50	0	1	0	1	52	53.5	0	0	21	1	0	0	0	22	22	0	0	0	0	0	0	0	0
22:30	0	0	51	0	0	0	1	52	53	0	0	7	0	0	0	0	7	7	0	0	0	0	0	0	0	0
22:45	0	1	32	1	0	0	1	35	35.4	0	0	15	0	0	0	0	15	15	0	0	0	0	0	0	0	0
H/TOT	0	1	195	3	1	0	3	203	205.9	0	0	54	3	0	0	0	57	57	0	0	0	0	0	0	0	0
23:00	1	0	31	0	0	0	1	33	33.2	0	0	23	0	0	0	0	23	23	0	0	0	0	0	0	0	0
23:15	0	0	29	1	0	0	2	32	34	0	0	11	0	0	0	0	11	11	0	0	0	0	0	0	0	0
23:30	0	0	22	0	0	0	2	24	26	0	0	12	0	0	0	0	12	12	0	0	0	0	0	0	0	0
23:45	0	0	16	0	0	0	1	17	18	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0
H/TOT	1	0	98	1	0	0	6	106	111.2	0	0	50	0	0	0	0	50	50	0	0	0	0	0	0	0	0
24 TOT	347	67	6772	511	77	21	93	7888	7739	22	14	2020	147	16	2	5	2226	2215.6	0	0	0	1	0	0	0	1

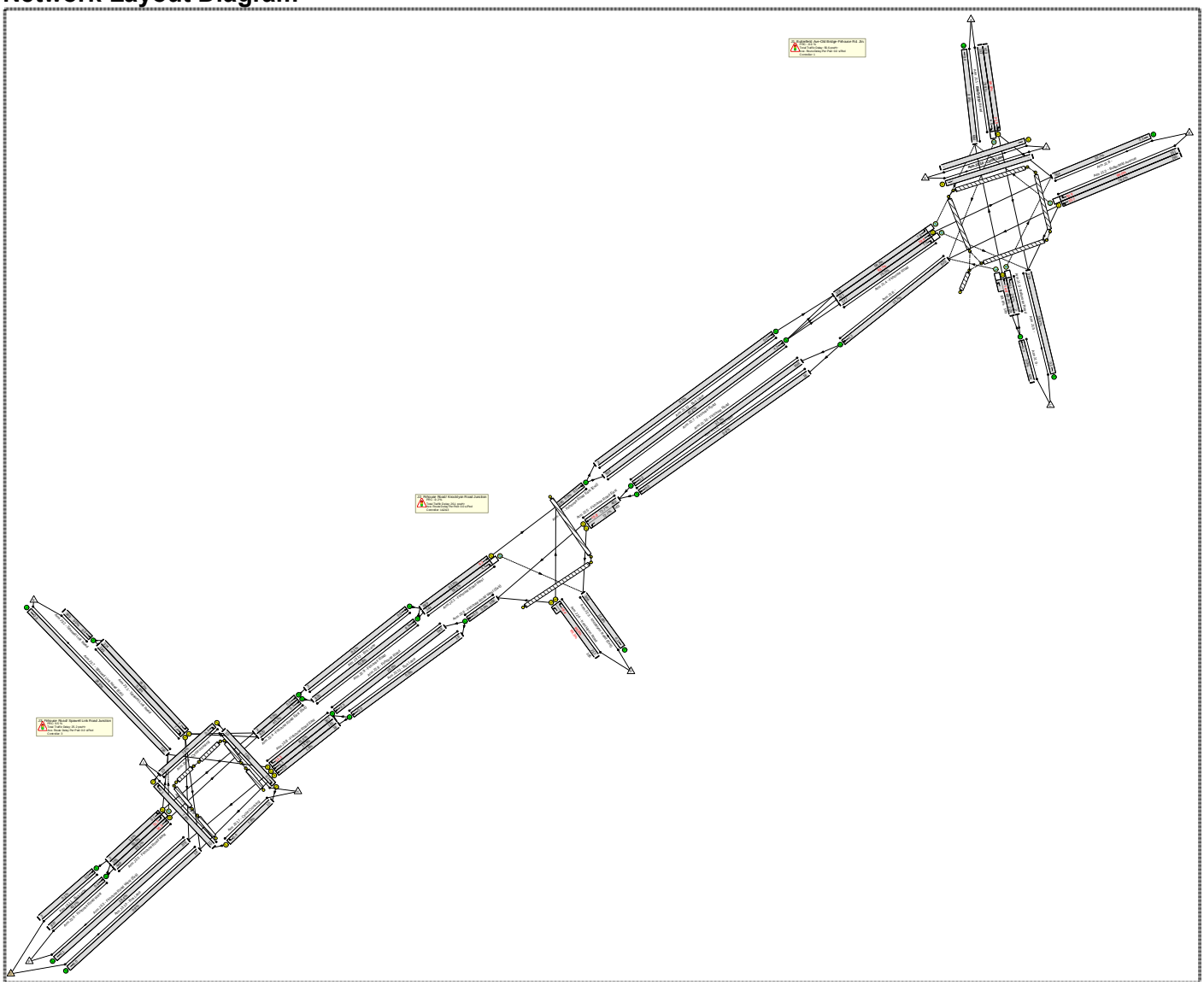
Appendix E Traffic Modelling Results

User and Project Details

Project:	**18_123 - Dodder Greenway**
Title:	**Dodder Greenway Firhouse Rd. Jtn. – Layout 1**
Location:	
Date Started:	September 2020
Checked By:	RG
Additional detail:	
File name:	Firhouse Road - Layout 1.lsg3x
Author:	CDR
Company:	CSEA
Address:	
Linsig Version:	3, 2, 40, 0

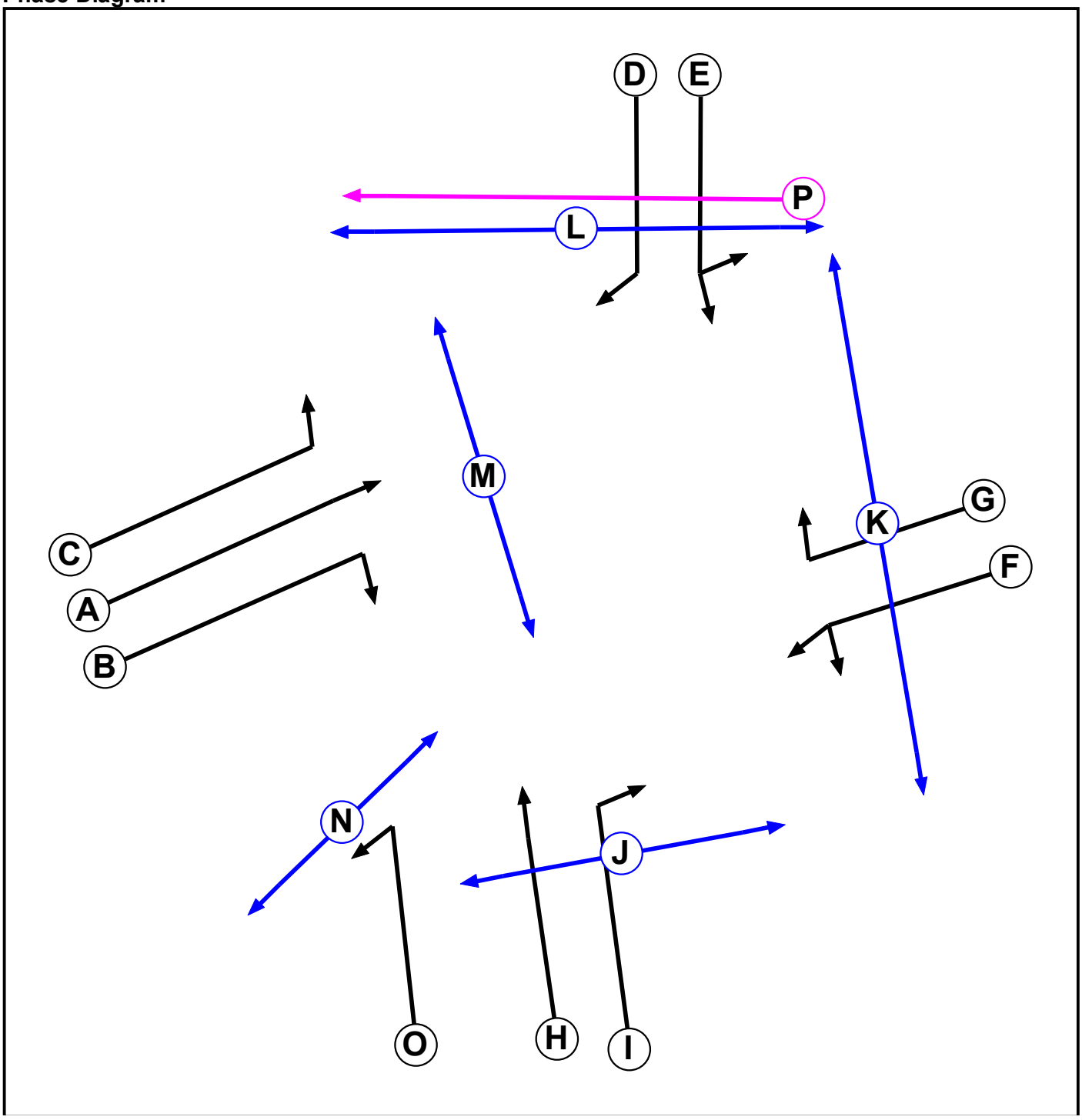
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

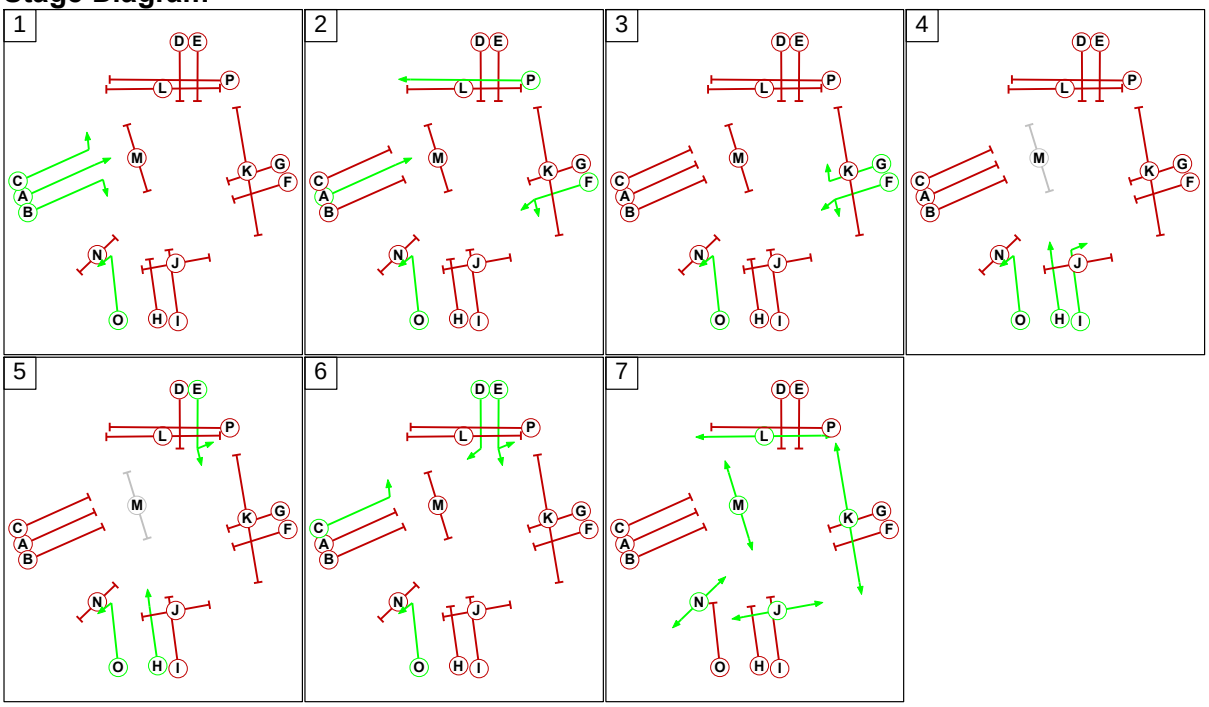
Phase Diagram



Phases in Stage

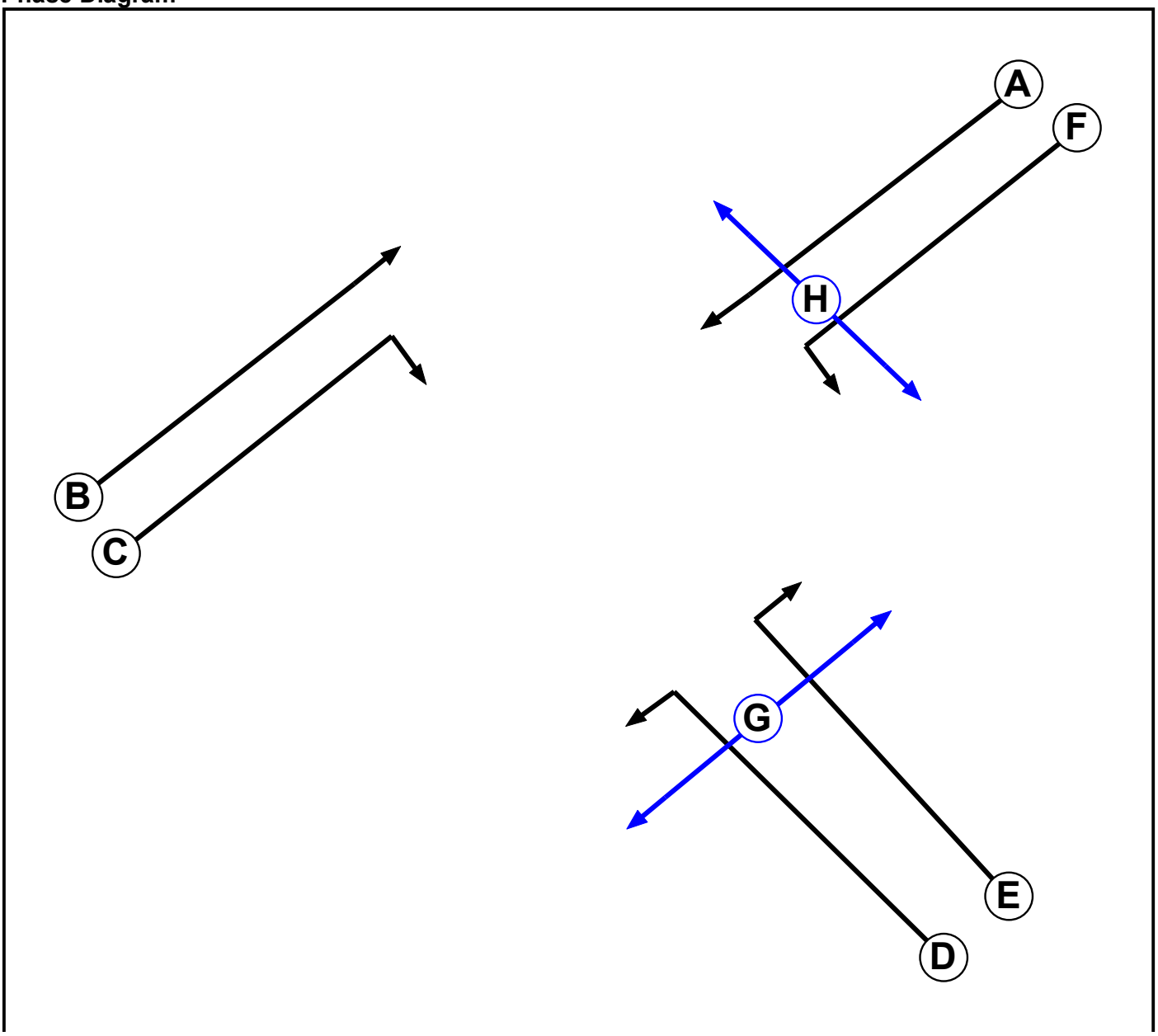
Stage No.	Phases in Stage
1	A B C O
2	A F O P
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N

Stage Diagram



C2

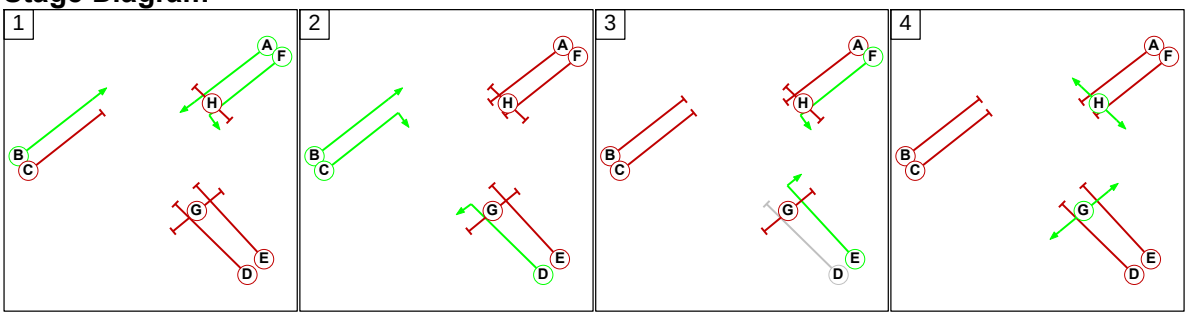
Phase Diagram



Phases in Stage

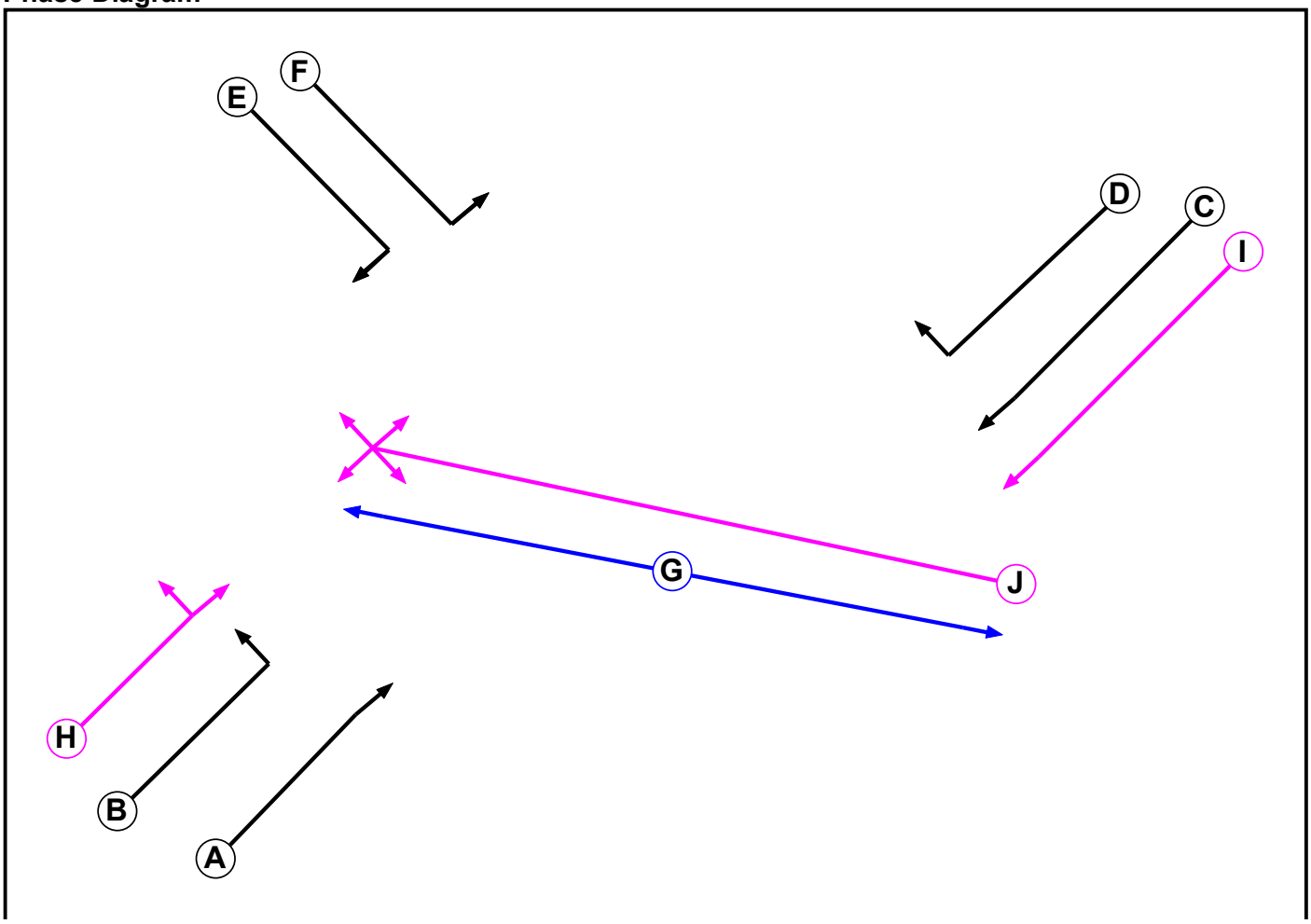
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

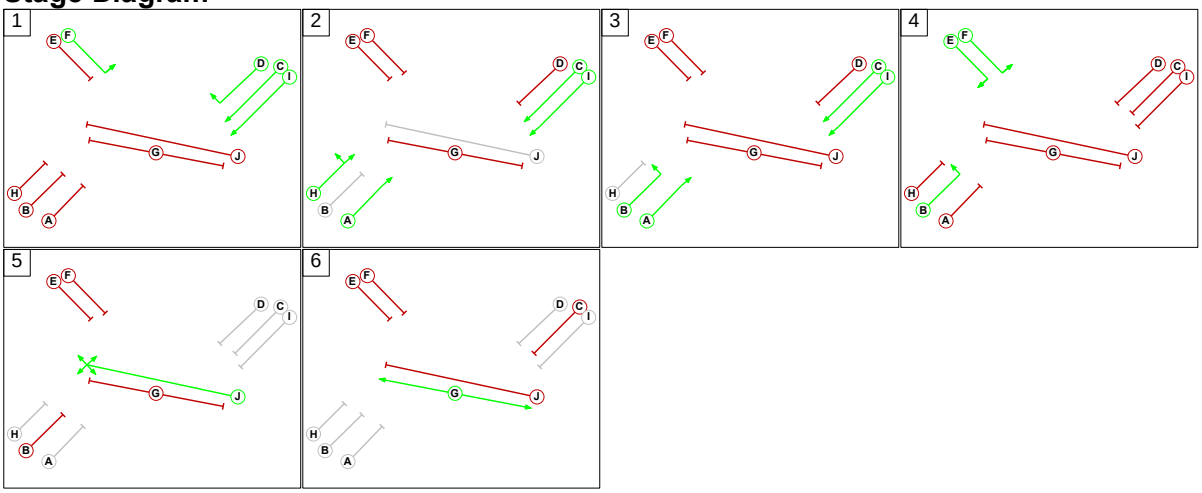
Phase Diagram



Phases in Stage

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

Stage Diagram



Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**98.3%**	**17**	**1422**	**84**	**108.0**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**98.0%**	**17**	**896**	**75**	**56.6**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	429	1714	443	96.9%	-	-	-	12.7	106.7	21.5
1/2	Old Bridge Road Right	O	153	1840	199	76.8%	0	150	3	3.8	88.5	6.5
2/1	Butterfield Avenue Left Ahead	U	285	1823	365	78.2%	-	-	-	5.3	67.2	10.7
2/2	Butterfield Avenue Right	O	161	1643	164	98.0%	0	137	24	8.0	178.5	10.9
3/2+3/1	Ballyroan Road Left Ahead	U+O	422	1980:1918	256+216	89.4 : 89.4%	17	169	7	7.5 (4.9+2.6)	63.7 (76.8:48.0)	14.6
3/3	Ballyroan Road Right	O	2	1881	78	2.6%	0	2	0	0.0	79.1	0.1
4/1	Firhouse Road Left	O	308	1781	445	69.2%	0	267	37	3.4	39.7	7.9
4/2	Firhouse Road Ahead	U	421	1859	449	93.7%	-	-	-	11.1	94.7	19.4
4/3	Firhouse Road Right	O	177	1665	236	75.0%	0	171	4	4.0	82.1	7.0
5/1		U	376	1940	1940	19.4%	-	-	-	0.1	1.2	0.1
6/1	Ahead Ahead2	U	623	1965	1965	31.7%	-	-	-	0.2	1.3	0.2
8/1		U	654	1940	1940	33.7%	-	-	-	0.3	1.4	0.3
10/1	Firhouse Road Ahead	U	608	1915	1915	31.7%	-	-	-	0.2	1.4	0.2
11/1	Bus Lane Ahead	U	18	1940	1940	0.9%	-	-	-	0.0	0.9	0.0
12/1	Bus Lane Ahead	U	2	1940	1940	0.1%	-	-	-	0.0	0.9	0.0
13/1	Cycle Lane	U	0	1940	-	-	-	-	-	-	-	-
14/1	Cycle Lane	U	0	1940	-	-	-	-	-	-	-	-
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.3%**	**0**	**138**	**6**	**26.1**	**-**	**-**
1/1	Firhouse Road West Ahead	U	689	1940	1083	63.6%	-	-	-	3.6	19.1	9.1
1/2	Firhouse Road West Right	O	144	1741	261	55.1%	0	138	6	2.0	50.9	4.4
3/1	Knocklyon Road (Exit)	U	306	1965	1965	15.6%	-	-	-	0.1	1.1	0.1
4/2+4/1	Knocklyon Road Right Left	U	322	1799:1721	221+107	98.3 : 98.3%	-	-	-	13.3 (7.9+5.4)	148.9 (131.4:185.1)	18.4
5/2+5/1	Firhouse Road East Left Ahead	U	626	1940:1702	637+224	72.7 : 72.7%	-	-	-	6.4 (5.8+0.6)	36.7 (45.0:13.2)	15.8
7/1	Firhouse Road Ahead	U	904	1915	1915	47.2%	-	-	-	0.4	1.8	4.2
8/1	Firhouse Road Ahead	U	548	1915	1915	28.6%	-	-	-	0.2	1.3	2.3
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**82.2%**	**0**	**388**	**3**	**25.2**	**-**	**-**
1/1	Spawell Link Road Left	U	374	1687	478	78.2%	-	-	-	3.8	36.6	7.7
1/2	Spawell Link Road Right Right2	U	195	1811	272	71.8%	-	-	-	3.9	71.3	7.4

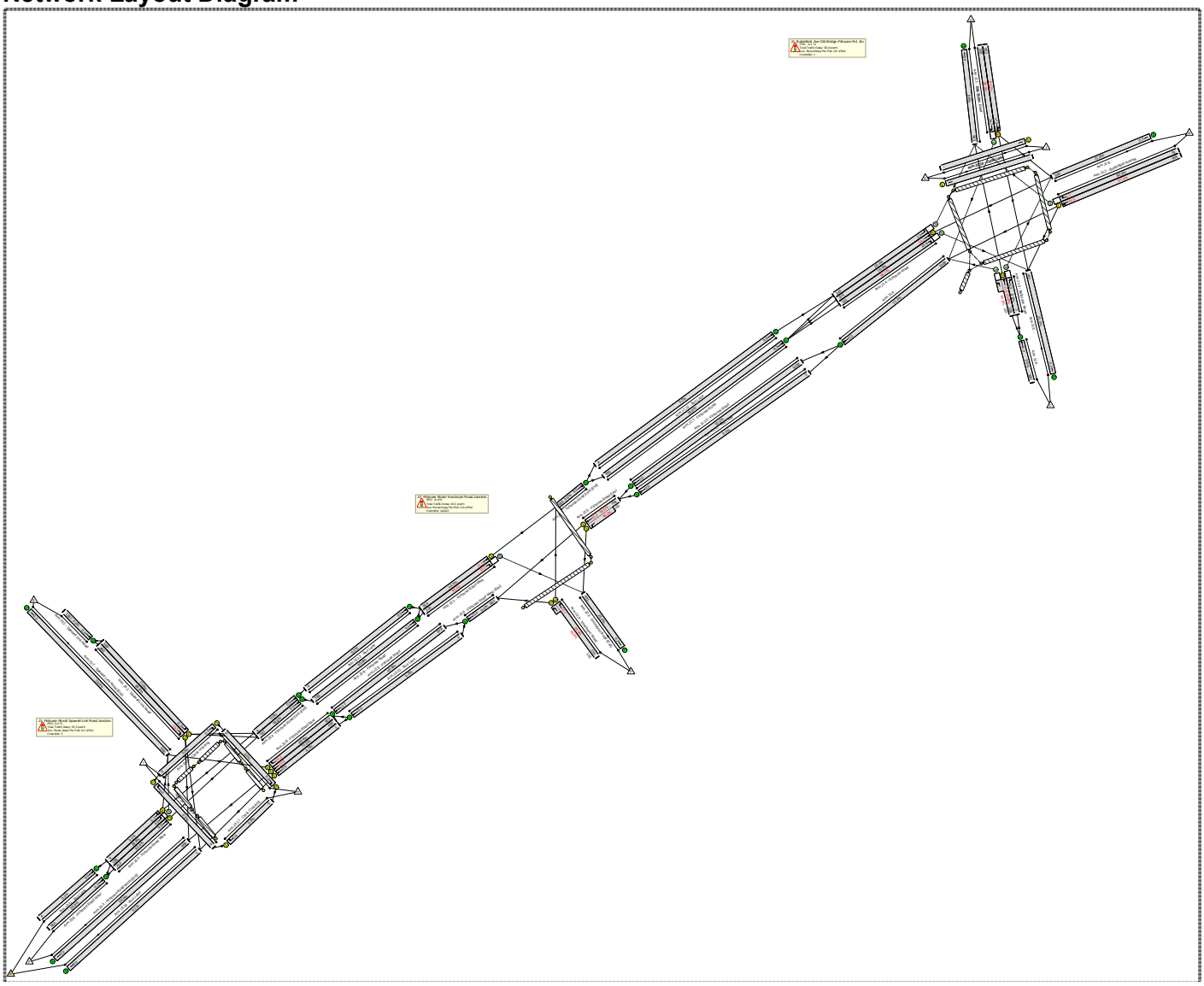
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
3/1	Firhouse Road West (Exit)	U	376	1935	1935	19.4%	-	-	-	0.1	1.2	0.1
4/2	Firhouse Road East (Exit) Ahead	U	820	2015	2015	40.7%	-	-	-	0.3	1.5	0.3
5/1	Firhouse Road West Ahead Left	U	2	1940	129	1.5%	-	-	-	0.0	66.9	0.1
5/2	Firhouse Road West Left	O	391	1665	652	60.0%	0	388	3	3.9	35.9	11.1
5/3	Firhouse Road West Ahead	U	446	1915	543	82.2%	-	-	-	7.2	58.0	16.1
6/1	Firhouse Road West Ahead	U	837	1915	1915	43.7%	-	-	-	0.4	1.7	0.4
7/1	Spawell Link Road (Exit)	U	758	1965	1965	38.6%	-	-	-	0.3	1.5	0.3
8/1	Firhouse Road East Ahead	U	18	1940	1132	1.6%	-	-	-	0.0	1.6	0.0
8/2	Firhouse Road East Ahead	U	181	1915	910	19.9%	-	-	-	0.3	5.7	3.1
8/3	Firhouse Road East Right	U	367	1741	450	81.6%	-	-	-	4.0	39.6	11.3
9/1	Firhouse Road Ahead	U	820	1915	1915	42.8%	-	-	-	0.4	1.6	8.9
10/1	Bus Lane	U	18	1940	1940	0.9%	-	-	-	0.0	0.9	0.0
11/1	Bus Lane Ahead	U	2	1940	1940	0.1%	-	-	-	0.0	0.9	0.0
12/1	Bus Lane Ahead	U	2	1940	1940	0.1%	-	-	-	0.0	0.9	0.0
14/1	Cycle Crossing Right	U	10	1915	128	7.8%	-	-	-	0.1	18.3	0.1
15/1	Cycle crossing Right	U	10	1915	128	7.8%	-	-	-	0.2	68.0	0.4
16/1	Cycle Crossing Right	U	10	1915	128	7.8%	-	-	-	0.1	32.0	0.1
17/1	Cycle Crossing Right	U	10	1915	128	7.8%	-	-	-	0.2	68.0	0.4
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

C1	PRC for Signalled Lanes (%):	-8.9	Total Delay for Signalled Lanes (pcuHr):	55.79	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-9.2	Total Delay for Signalled Lanes (pcuHr):	25.40	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	9.5	Total Delay for Signalled Lanes (pcuHr):	23.64	Cycle Time (s): 120
	PRC Over All Lanes (%):	-9.2	Total Delay Over All Lanes(pcuHr):	107.95	

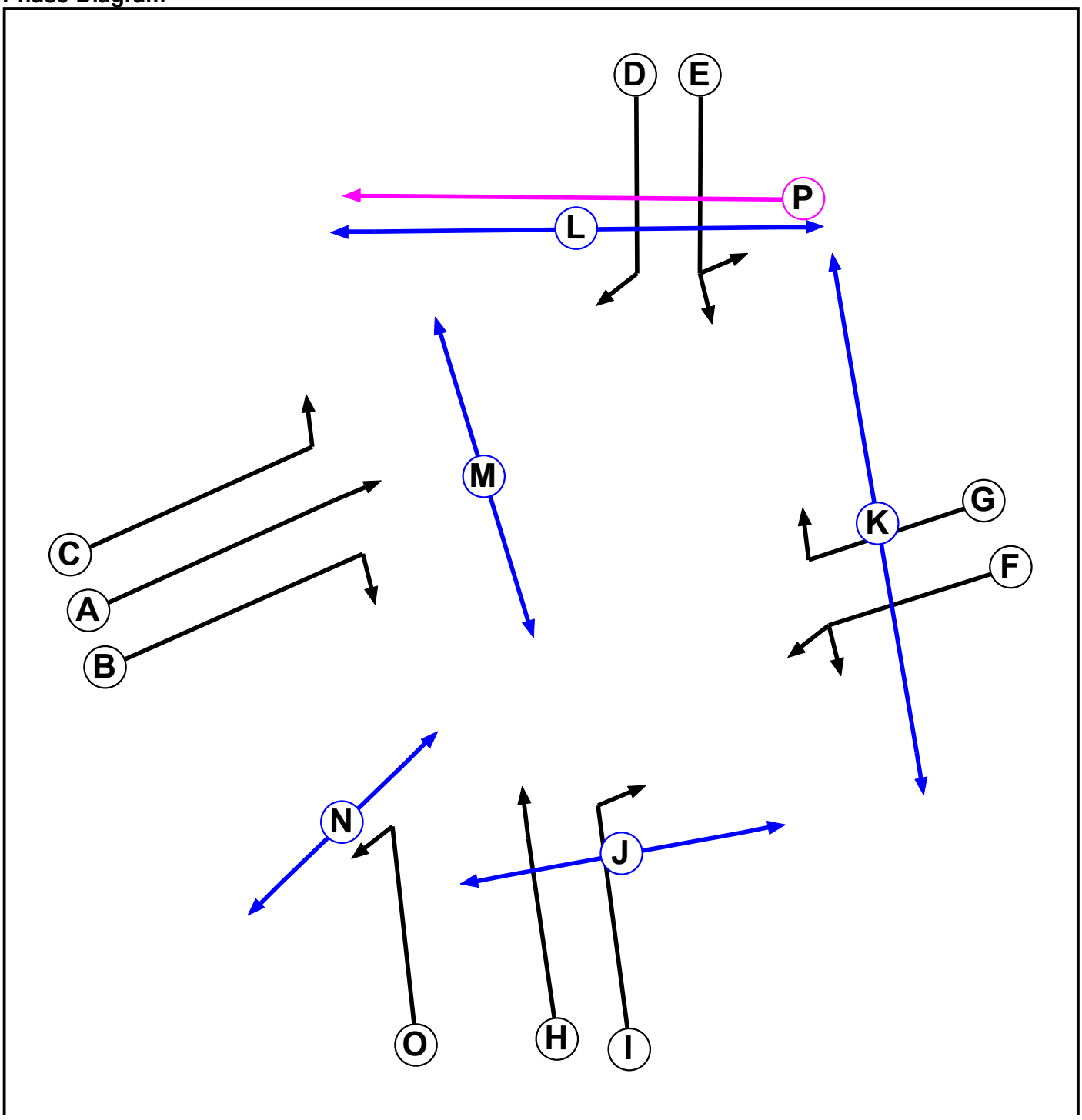
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

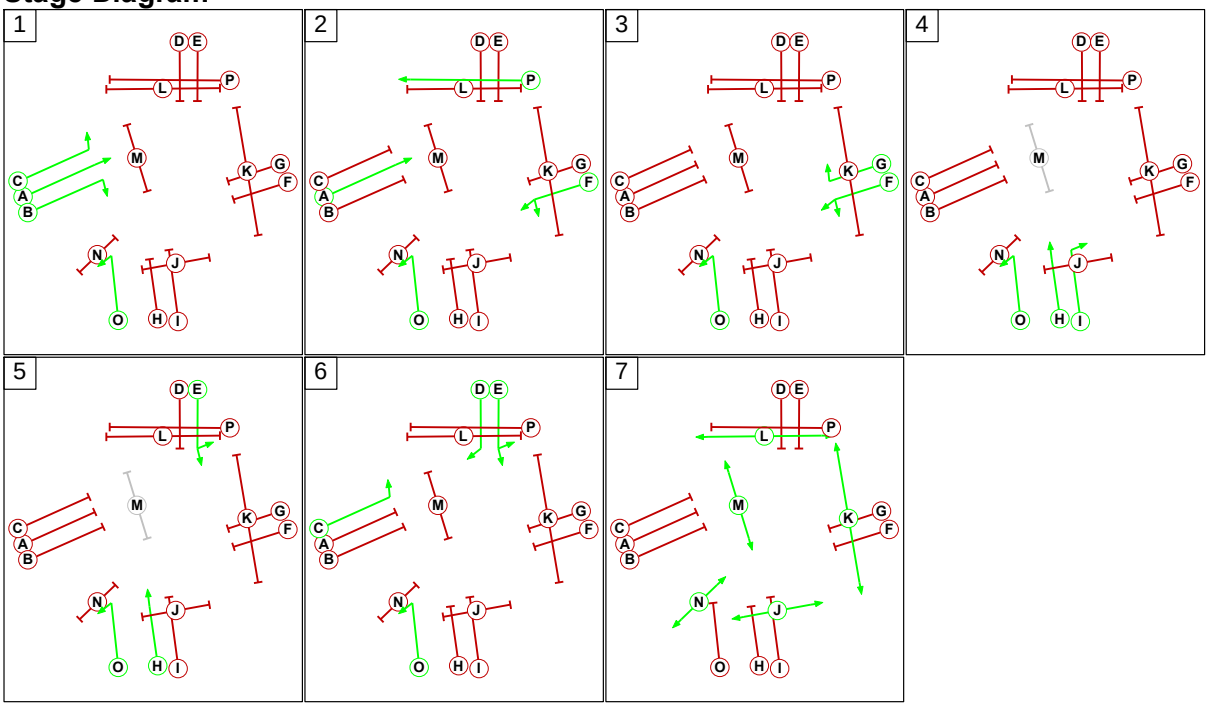
Phase Diagram



Phases in Stage

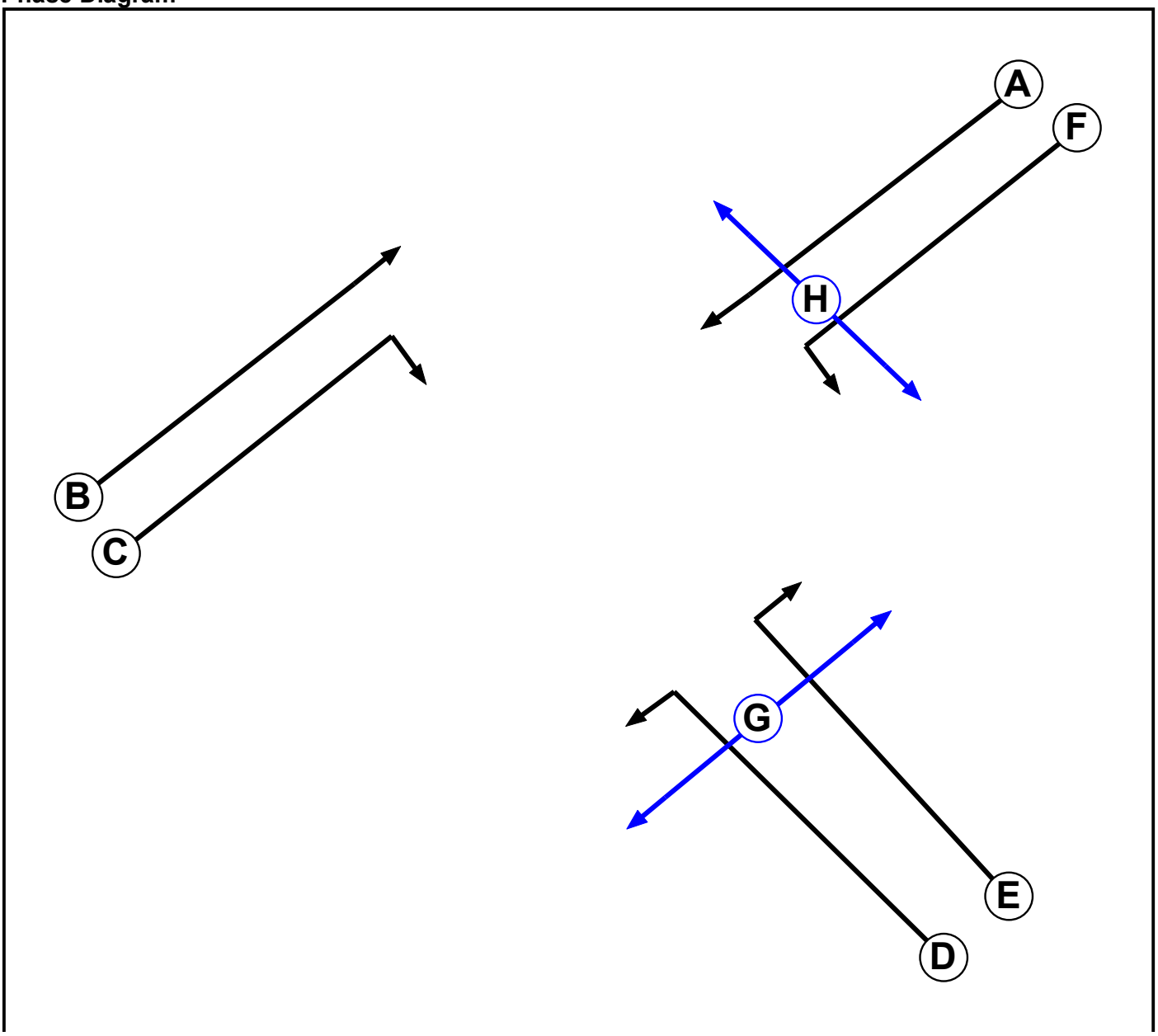
Stage No.	Phases in Stage
1	A B C O
2	A F O P
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N

Stage Diagram



C2

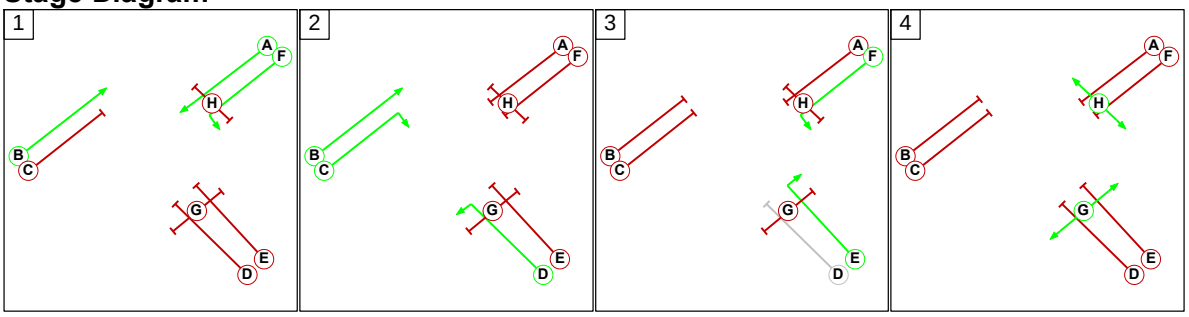
Phase Diagram



Phases in Stage

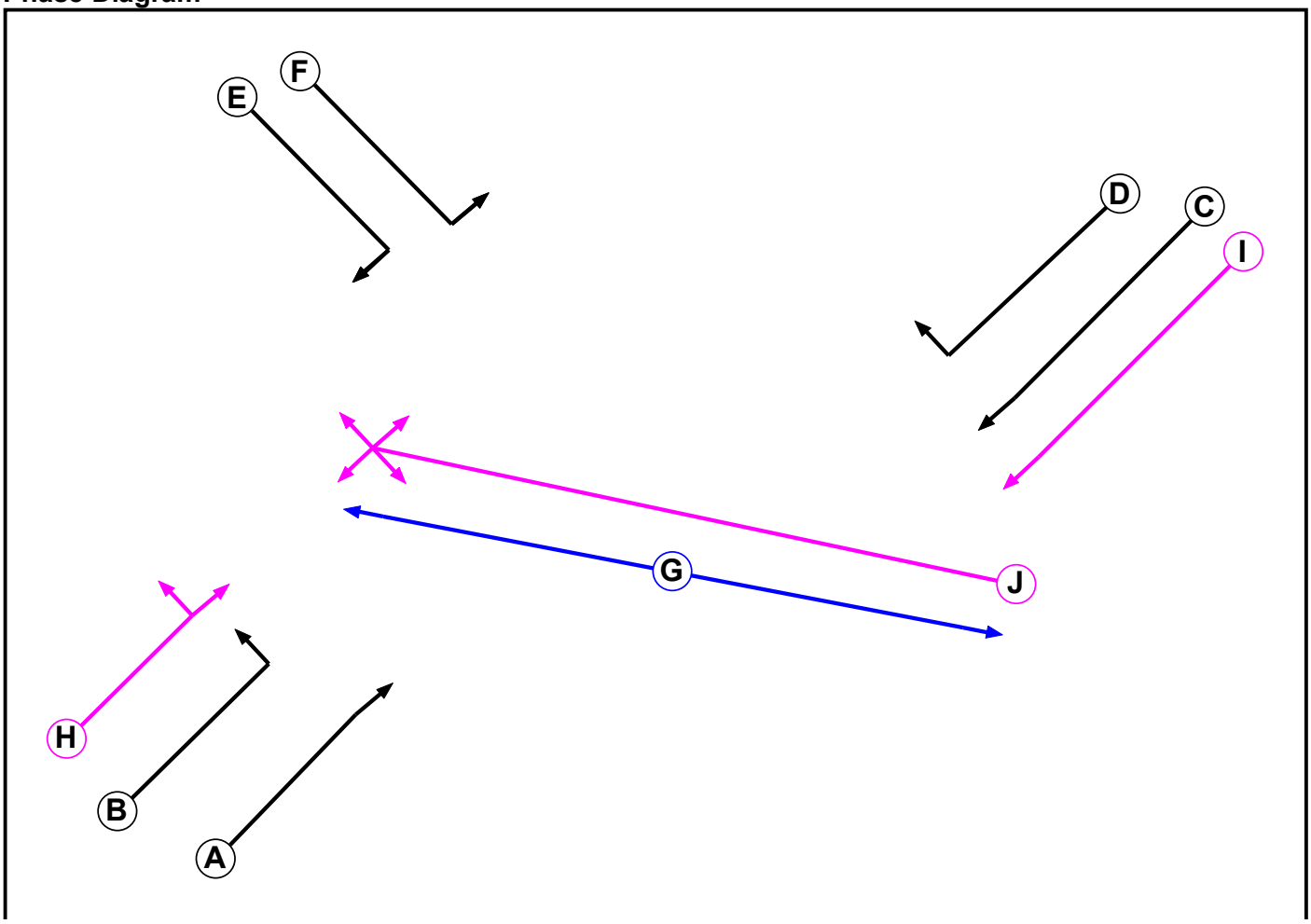
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

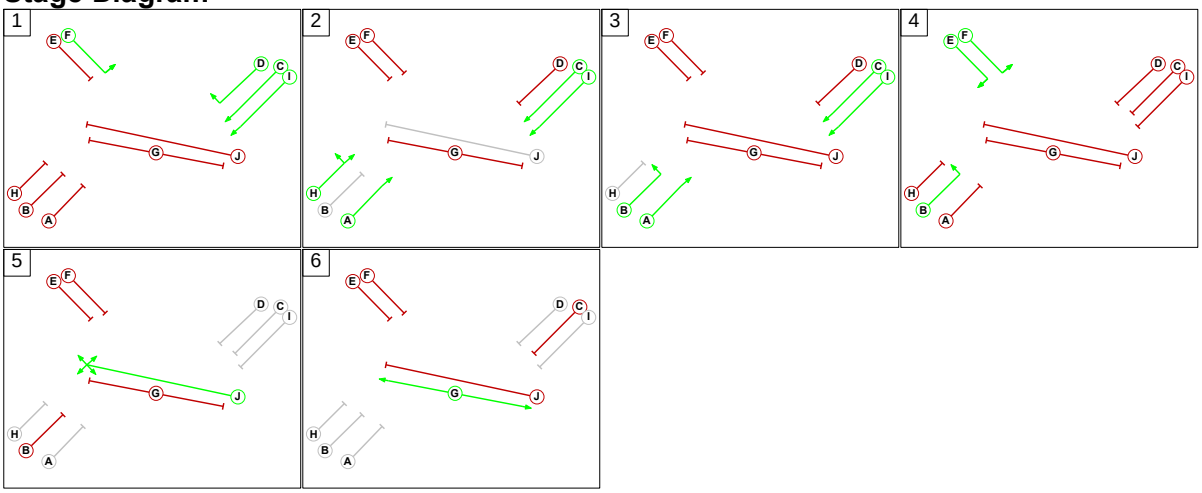
Phase Diagram



Phases in Stage

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

Stage Diagram



Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**98.0%**	**16**	**1279**	**93**	**137.6**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**97.3%**	**16**	**875**	**77**	**58.9**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	392	1761	426	92.1%	-	-	-	9.4	86.5	17.3
1/2	Old Bridge Road Right	O	335	1840	353	95.0%	0	322	13	10.2	109.7	16.7
2/1	Butterfield Avenue Left Ahead	U	458	1823	471	97.3%	-	-	-	13.6	106.5	23.0
2/2	Butterfield Avenue Right	O	91	1643	151	60.4%	0	89	2	2.1	81.9	3.7
3/2+3/1	Ballyroan Road Left Ahead	U+O	353	1980:1918	133+239	94.8 : 94.8%	16	172	40	8.3 (3.9+4.4)	84.7 (111.6:69.8)	11.4
3/3	Ballyroan Road Right	O	7	1881	78	8.9%	0	7	0	0.2	80.8	0.3
4/1	Firhouse Road Left	O	146	1781	519	28.1%	0	146	0	0.6	14.7	2.0
4/2	Firhouse Road Ahead	U	378	1859	496	76.3%	-	-	-	6.3	60.0	14.2
4/3	Firhouse Road Right	O	161	1665	167	96.7%	0	139	22	6.9	153.2	10.5
5/1		U	411	1940	1940	21.2%	-	-	-	0.1	1.2	0.1
6/1	Ahead Ahead2	U	1008	1965	1965	51.3%	-	-	-	0.5	1.9	0.5
8/1		U	539	1940	1940	27.8%	-	-	-	0.2	1.3	0.2
10/1	Firhouse Road Ahead	U	1006	1915	1915	52.5%	-	-	-	0.6	2.0	0.6
11/1	Bus Lane Ahead	U	2	1940	1940	0.1%	-	-	-	0.0	0.9	0.0
12/1	Bus Lane Ahead	U	4	1940	1940	0.2%	-	-	-	0.0	0.9	0.0
13/1	Cycle Lane	U	0	1940	-	-	-	-	-	-	-	-
14/1	Cycle Lane	U	0	1940	-	-	-	-	-	-	-	-
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.0%**	**0**	**218**	**14**	**45.3**	**-**	**-**
1/1	Firhouse Road West Ahead	U	554	1940	1245	44.5%	-	-	-	3.0	19.2	11.1
1/2	Firhouse Road West Right	O	232	1741	247	94.1%	0	218	14	8.2	126.5	12.2
3/1	Knocklyon Road (Exit)	U	492	1965	1965	25.0%	-	-	-	0.2	1.2	0.2
4/2+4/1	Knocklyon Road Right Left	U	266	1799:1721	135+139	96.9 : 96.9%	-	-	-	11.4 (5.0+6.4)	154.3 (137.4:170.7)	15.7
5/2+5/1	Firhouse Road East Left Ahead	U	1011	1940:1702	764+268	98.0 : 98.0%	-	-	-	21.9 (17.3+4.5)	78.0 (83.5:62.2)	43.3
7/1	Firhouse Road Ahead	U	681	1915	1915	35.6%	-	-	-	0.3	1.5	8.3
8/1	Firhouse Road Ahead	U	881	1915	1915	45.9%	-	-	-	0.4	1.8	11.7
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**89.8%**	**0**	**186**	**2**	**33.5**	**-**	**-**
1/1	Spawell Link Road Left	U	569	1687	731	77.8%	-	-	-	4.4	27.9	11.0
1/2	Spawell Link Road Right Right2	U	488	1811	543	89.8%	-	-	-	9.3	68.8	19.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
3/1	Firhouse Road West (Exit)	U	969	1935	1935	50.0%	-	-	-	0.5	1.9	0.5
4/2	Firhouse Road East (Exit) Ahead	U	782	2015	2015	38.8%	-	-	-	0.3	1.5	0.3
5/1	Firhouse Road West Ahead Left	U	4	1940	129	3.1%	-	-	-	0.1	67.1	0.1
5/2	Firhouse Road West Left	O	188	1665	652	28.8%	0	186	2	1.5	28.9	4.5
5/3	Firhouse Road West Ahead	U	213	1915	255	83.4%	-	-	-	5.3	89.1	9.2
6/1	Firhouse Road West Ahead	U	401	1915	1915	20.9%	-	-	-	0.1	1.2	0.1
7/1	Spawell Link Road (Exit)	U	589	1965	1965	29.9%	-	-	-	0.2	1.3	0.2
8/1	Firhouse Road East Ahead	U	1	1940	841	0.1%	-	-	-	0.0	2.2	0.0
8/2	Firhouse Road East Ahead	U	483	1915	622	77.5%	-	-	-	4.8	35.7	15.6
8/3	Firhouse Road East Right	U	403	1741	450	89.4%	-	-	-	6.6	59.0	16.3
9/1	Firhouse Road Ahead	U	782	1915	1915	40.8%	-	-	-	0.3	1.6	4.1
10/1	Bus Lane	U	1	1940	1940	0.1%	-	-	-	0.0	0.9	0.0
11/1	Bus Lane Ahead	U	4	1940	1940	0.2%	-	-	-	0.0	0.9	0.0
12/1	Bus Lane Ahead	U	4	1940	1940	0.2%	-	-	-	0.0	0.9	0.0
14/1	Cycle Crossing Right	U	0	1915	128	0.0%	-	-	-	0.0	0.0	0.0
15/1	Cycle crossing Right	U	0	1915	128	0.0%	-	-	-	0.0	0.0	0.0
16/1	Cycle Crossing Right	U	0	1915	128	0.0%	-	-	-	0.0	0.0	0.0
17/1	Cycle Crossing Right	U	0	1915	128	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

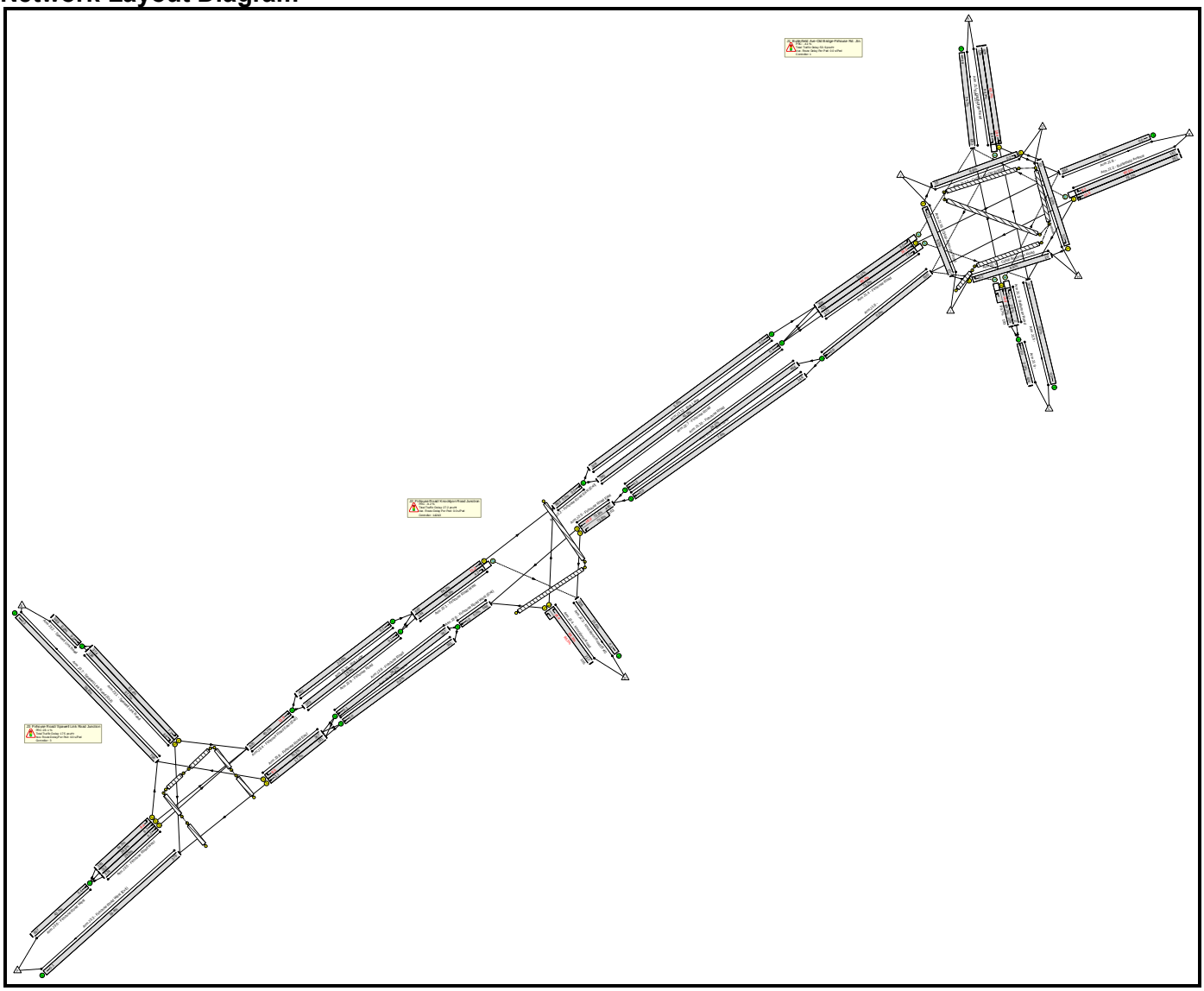
C1	PRC for Signalled Lanes (%):	-8.1	Total Delay for Signalled Lanes (pcuHr):	57.46	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-8.8	Total Delay for Signalled Lanes (pcuHr):	44.41	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	0.2	Total Delay for Signalled Lanes (pcuHr):	31.98	Cycle Time (s): 120
	PRC Over All Lanes (%):	-8.8	Total Delay Over All Lanes(pcuHr):	137.65	

User and Project Details

Project:	**18_123 - Dodder Greenway**
Title:	**Butterfield Ave-Old Bridge-Firhouse Rd. Jtn. – Layout 2**
Location:	
Date Started:	September 2020
Checked By:	RG
Additional detail:	
File name:	Firhouse Road - Layout 2.lsg3x
Author:	CDR
Company:	CSEA
Address:	
Linsig Version:	3, 2, 40, 0

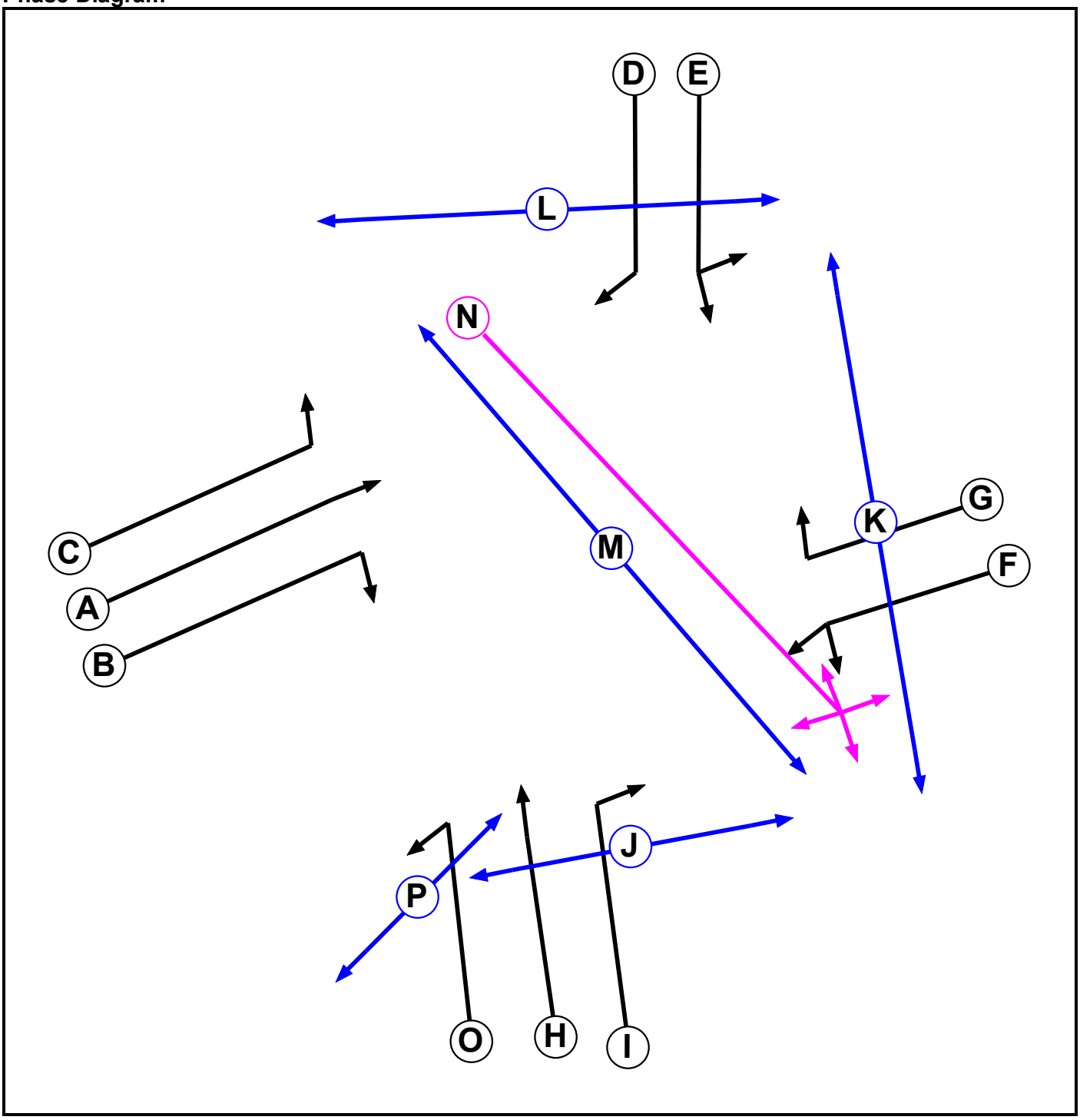
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

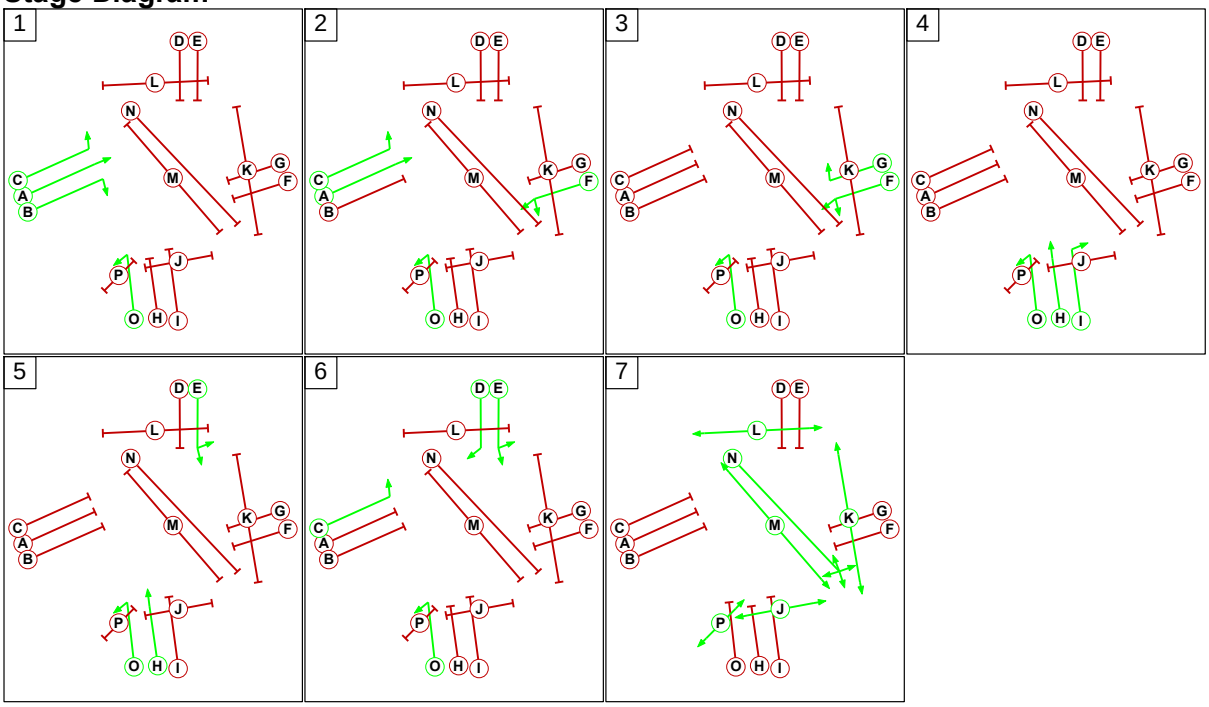
Phase Diagram



Phases in Stage

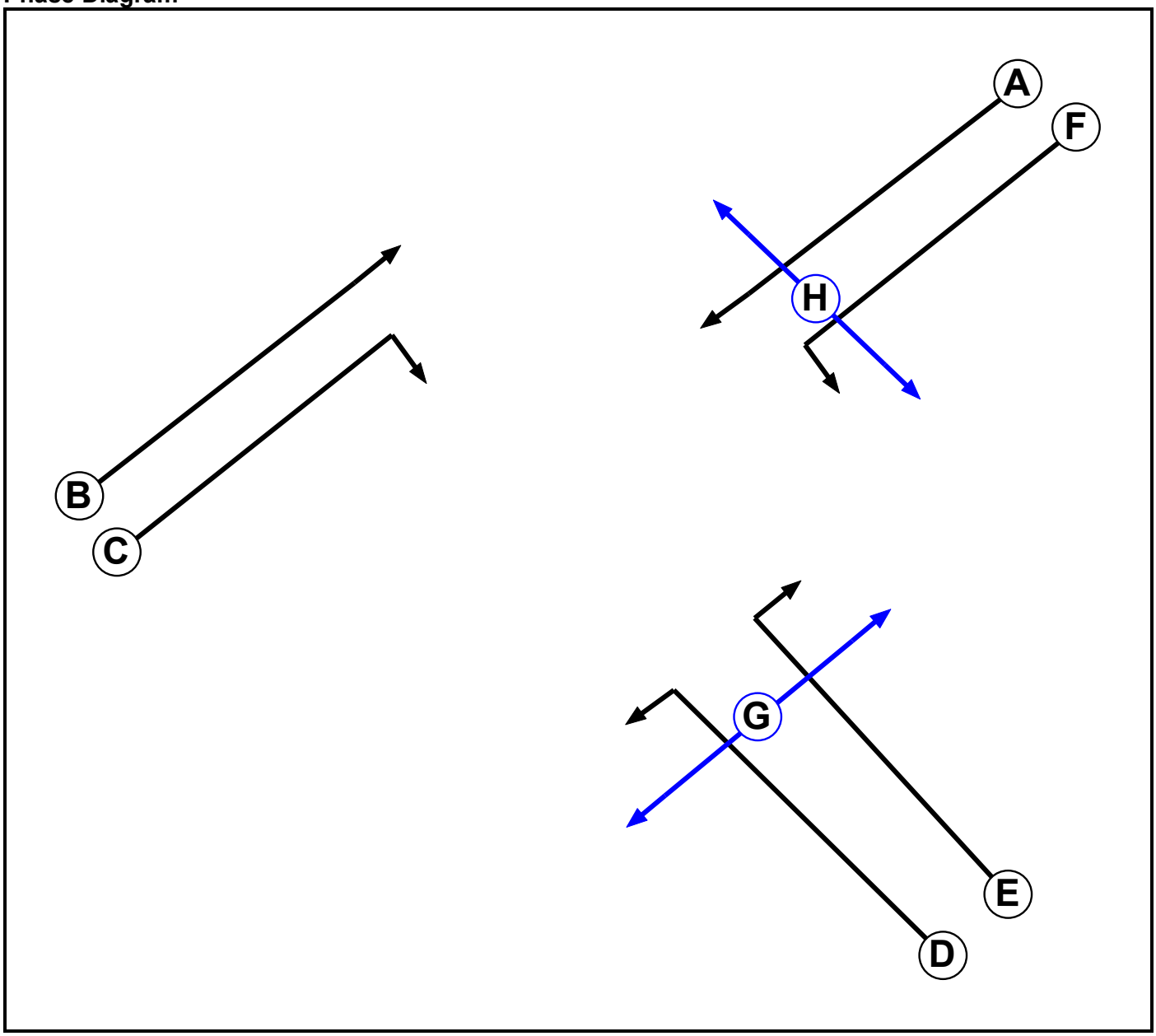
Stage No.	Phases in Stage
1	A B C O
2	A C F O
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N P

Stage Diagram



C2

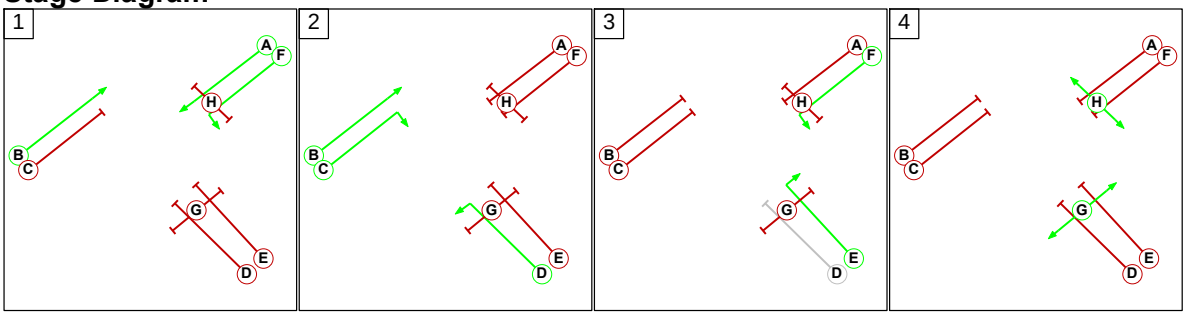
Phase Diagram



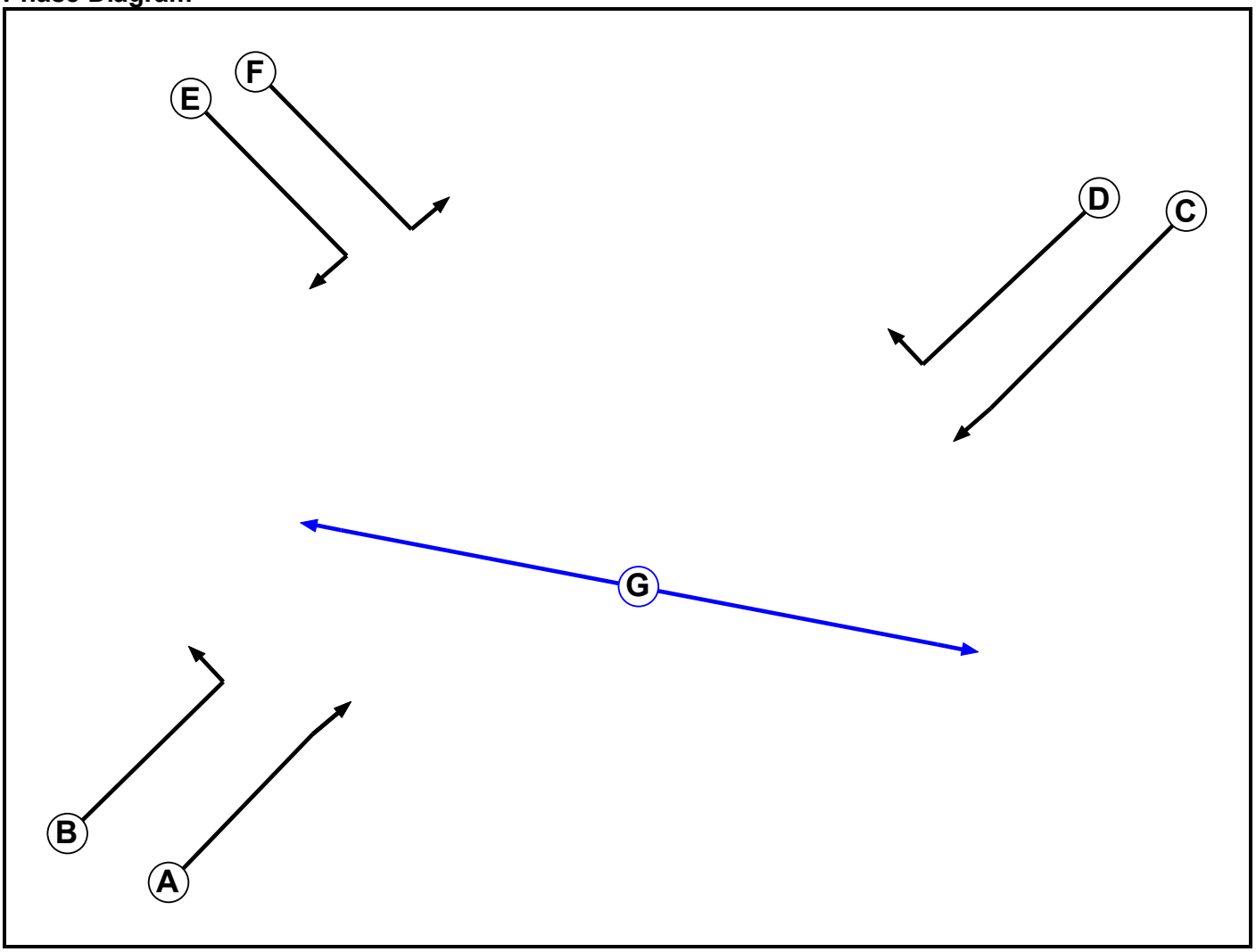
Phases in Stage

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

Stage Diagram



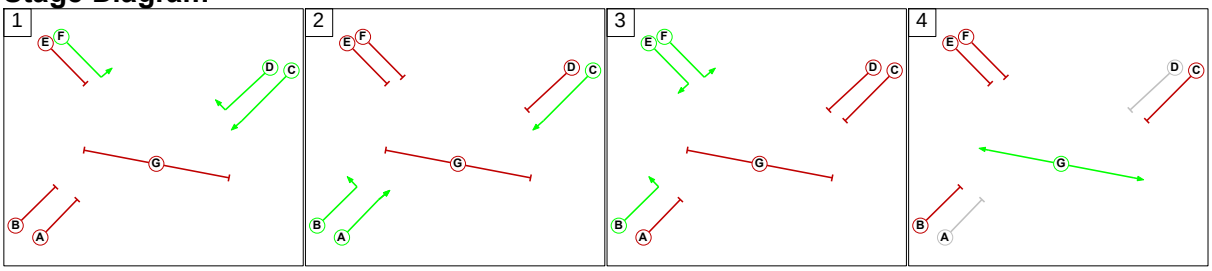
C3
Phase Diagram



Phases in Stage

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

Stage Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**98.3%**	**6**	**1040**	**70**	**95.7**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**93.7%**	**6**	**902**	**64**	**50.9**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	429	1831	458	93.7%	-	-	-	10.7	89.6	19.4
1/2	Old Bridge Road Right	O	139	1799	165	84.3%	0	135	4	4.4	112.7	6.8
2/1	Butterfield Avenue Left Ahead	U	281	1799	360	78.1%	-	-	-	5.3	67.4	10.5
2/2	Butterfield Avenue Right	O	161	1643	178	90.5%	0	151	10	5.8	128.6	8.7
3/2+3/1	Ballyroan Road Left Ahead	U+O	422	1904:1922	255+215	89.7 : 89.7%	6	172	14	7.4 (4.9+2.5)	63.5 (77.1:47.3)	14.5
3/3	Ballyroan Road Right	O	2	1817	76	2.6%	0	2	0	0.0	80.0	0.1
4/1	Firhouse Road Left	O	306	1781	594	51.5%	0	271	31	2.0	23.7	6.0
4/2	Firhouse Road Ahead	U	421	1859	449	93.7%	-	-	-	10.7	91.4	19.3
4/3	Firhouse Road Right	O	177	1613	242	73.2%	0	172	3	3.7	74.9	7.0
7/1		U	692	1940	1940	35.7%	-	-	-	0.3	1.5	4.8
10/1	Firhouse Road Ahead	U	464	1915	1915	24.2%	-	-	-	0.2	1.2	0.2
11/1	Bus Lane Ahead	U	144	1940	1940	7.4%	-	-	-	0.0	1.0	0.0
12/1	Bus Lane Ahead	U	109	1940	1940	5.6%	-	-	-	0.0	1.0	0.0
13/1	Cycle Lop-Old Bridge Right	U	10	1735	116	8.6%	-	-	-	0.1	47.1	0.2
14/1	Cylop-Butterfield Avenue Right	U	10	1735	116	8.6%	-	-	-	0.1	44.9	0.2
15/1	Cylop Ballyroan Road Right	U	10	1735	116	8.6%	-	-	-	0.1	44.9	0.2
16/1	Cylop-Firhouse Road Right	U	10	1759	117	8.5%	-	-	-	0.1	46.8	0.2
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

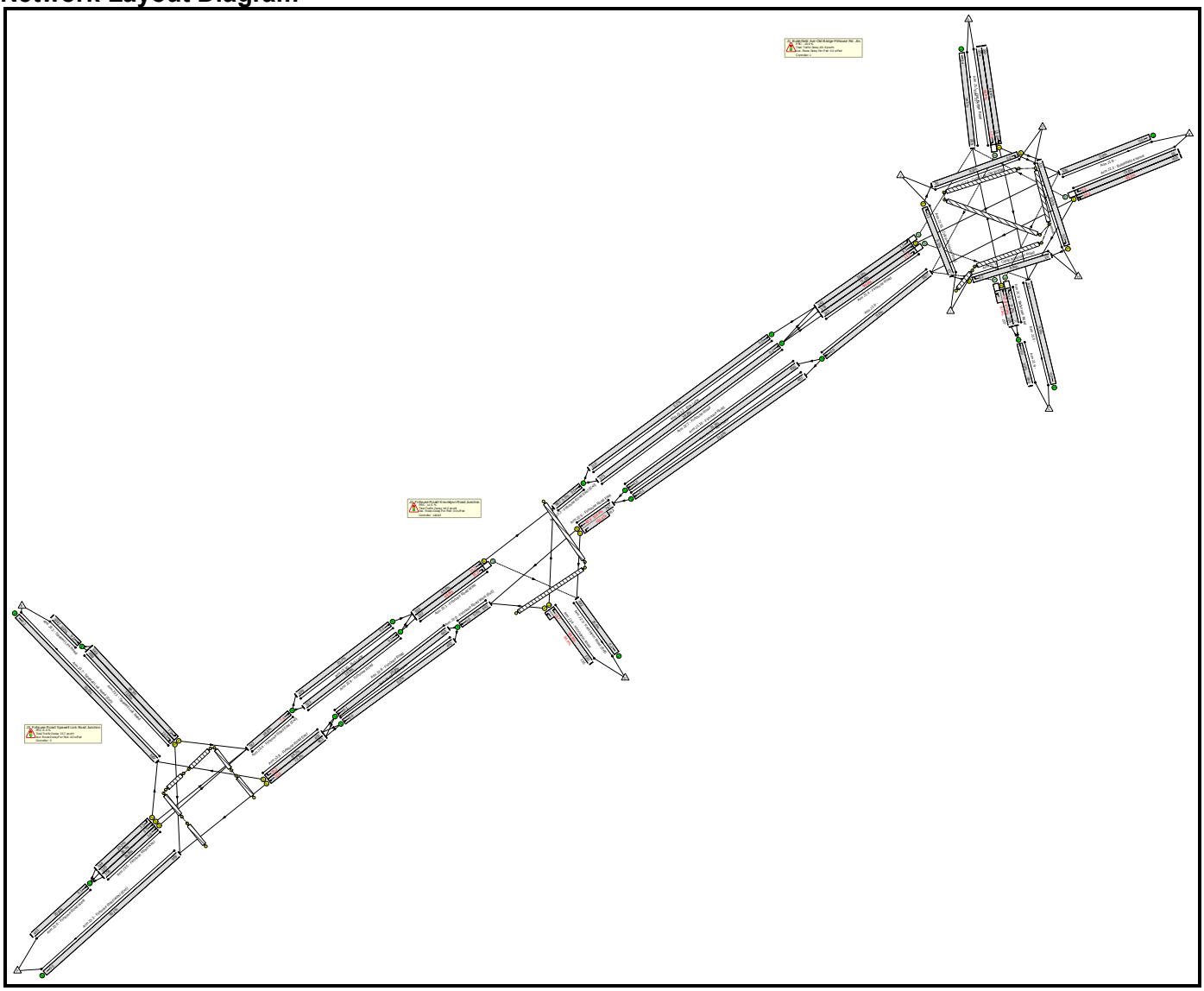
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.3%**	**0**	**138**	**6**	**27.2**	**-**	**-**
1/1	Firhouse Road West Ahead	U	687	1915	1069	64.3%	-	-	-	4.2	21.9	11.3
1/2	Firhouse Road West Right	O	144	1741	261	55.1%	0	138	6	2.2	55.3	4.3
3/1	Knocklyon Road (Exit)	U	306	1965	1965	15.6%	-	-	-	0.1	1.1	0.1
4/2+4/1	Knocklyon Road Right Left	U	322	1795:1721	221+107	98.3 : 98.3%	-	-	-	13.3 (7.9+5.4)	148.9 (131.4:185.1)	18.4
5/2+5/1	Firhouse Road East Left Ahead	U	608	1915:1724	603+221	73.8 : 73.8%	-	-	-	6.9 (6.0+0.9)	40.9 (48.6:19.8)	16.0
7/1	Firhouse Road Ahead	U	795	1915	1915	41.5%	-	-	-	0.4	1.6	0.4
8/1	Firhouse Road Ahead	U	367	1915	1915	19.2%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**70.3%**	**0**	**0**	**0**	**17.5**	**-**	**-**
1/1	Spawell Link Road Left	U	374	1634	599	62.4%	-	-	-	2.5	24.4	7.1
1/2	Spawell Link Road Right	U	195	1764	338	57.7%	-	-	-	3.1	56.5	6.6
3/1	Firhouse Road West (Exit)	U	376	1935	1935	19.4%	-	-	-	0.1	1.2	0.1
4/1	Firhouse Road East (Exit) Ahead Ahead2	U	820	2015	2015	40.7%	-	-	-	0.8	3.7	13.8
5/1	Firhouse Road West Left	U	391	1680	882	44.3%	-	-	-	2.3	21.3	8.4
5/2	Firhouse Road West Ahead	U	222	1915	574	38.6%	-	-	-	2.4	38.4	6.2
5/3	Firhouse Road West Ahead	U	224	1915	574	39.0%	-	-	-	2.4	38.4	6.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
6/1	Firhouse Road West Ahead	U	837	1915	1915	43.7%	-	-	-	0.4	1.7	0.4
7/1	Spawell Link Road (Exit)	U	758	1965	1965	38.6%	-	-	-	0.3	1.5	0.3
8/1	Firhouse Road East Ahead	U	181	1915	1021	17.7%	-	-	-	0.3	5.2	3.1
8/2	Firhouse Road East Right	U	367	1741	522	70.3%	-	-	-	2.7	26.1	8.5
9/1	Firhouse Road Ahead	U	363	1915	1915	19.0%	-	-	-	0.1	1.2	0.1
10/1	Bus Lane Ahead	U	457	1940	1940	23.6%	-	-	-	0.2	1.2	0.2
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

C1	PRC for Signalled Lanes (%):	-4.1	Total Delay for Signalled Lanes (pcuHr):	50.42	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-9.2	Total Delay for Signalled Lanes (pcuHr):	26.62	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	28.1	Total Delay for Signalled Lanes (pcuHr):	15.59	Cycle Time (s): 120
	PRC Over All Lanes (%):	-9.2	Total Delay Over All Lanes(pcuHr):	95.66	

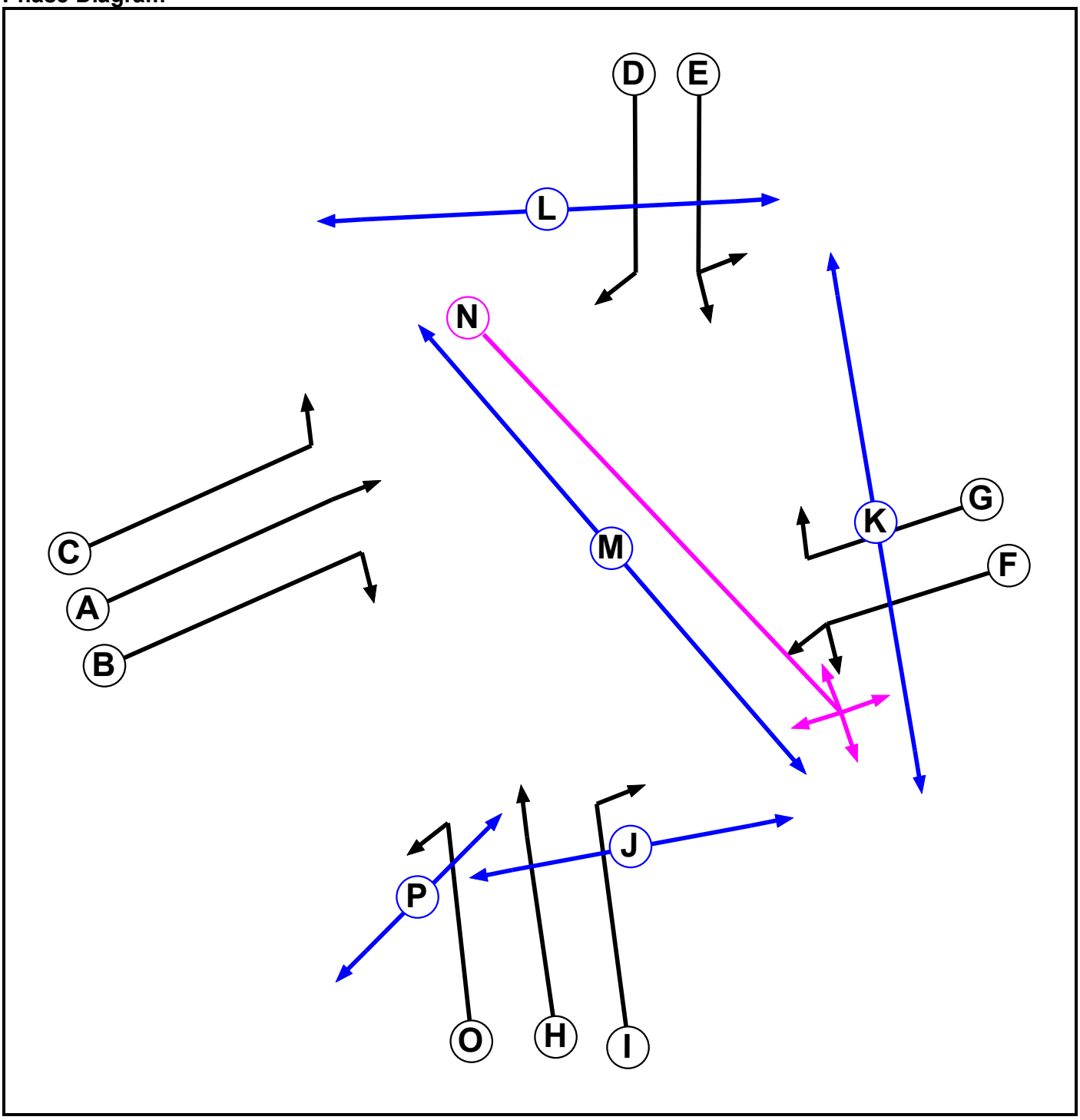
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

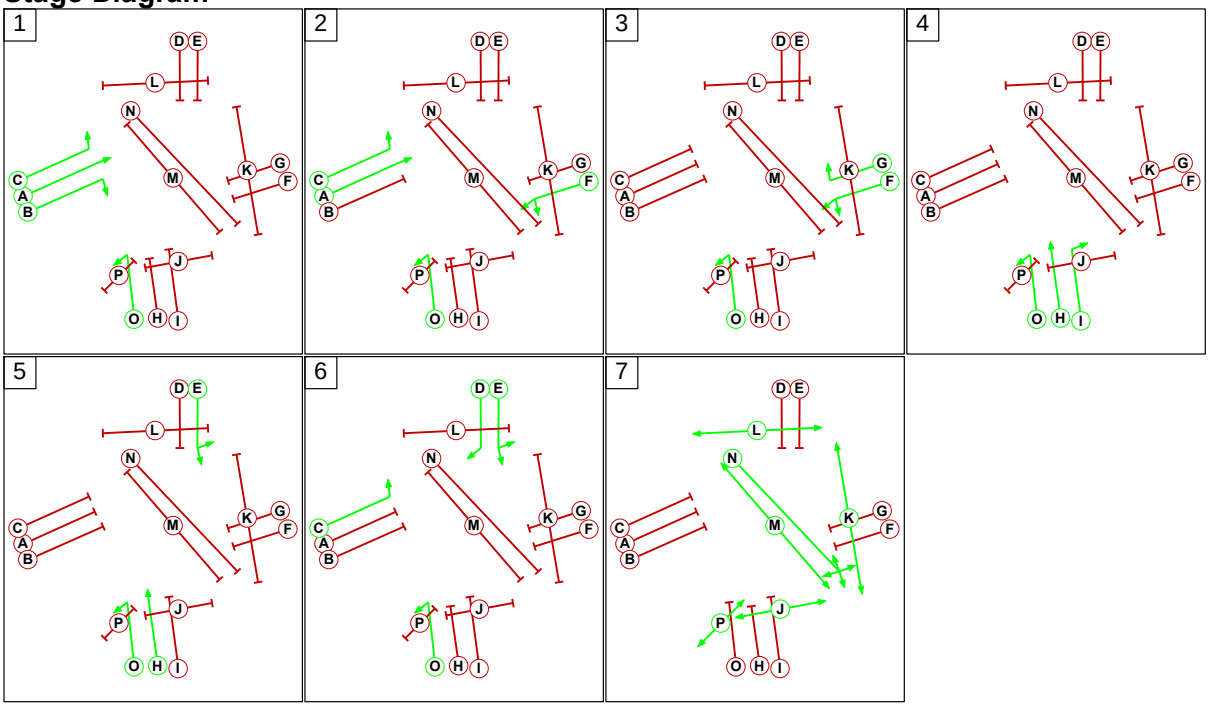
Phase Diagram



Phases in Stage

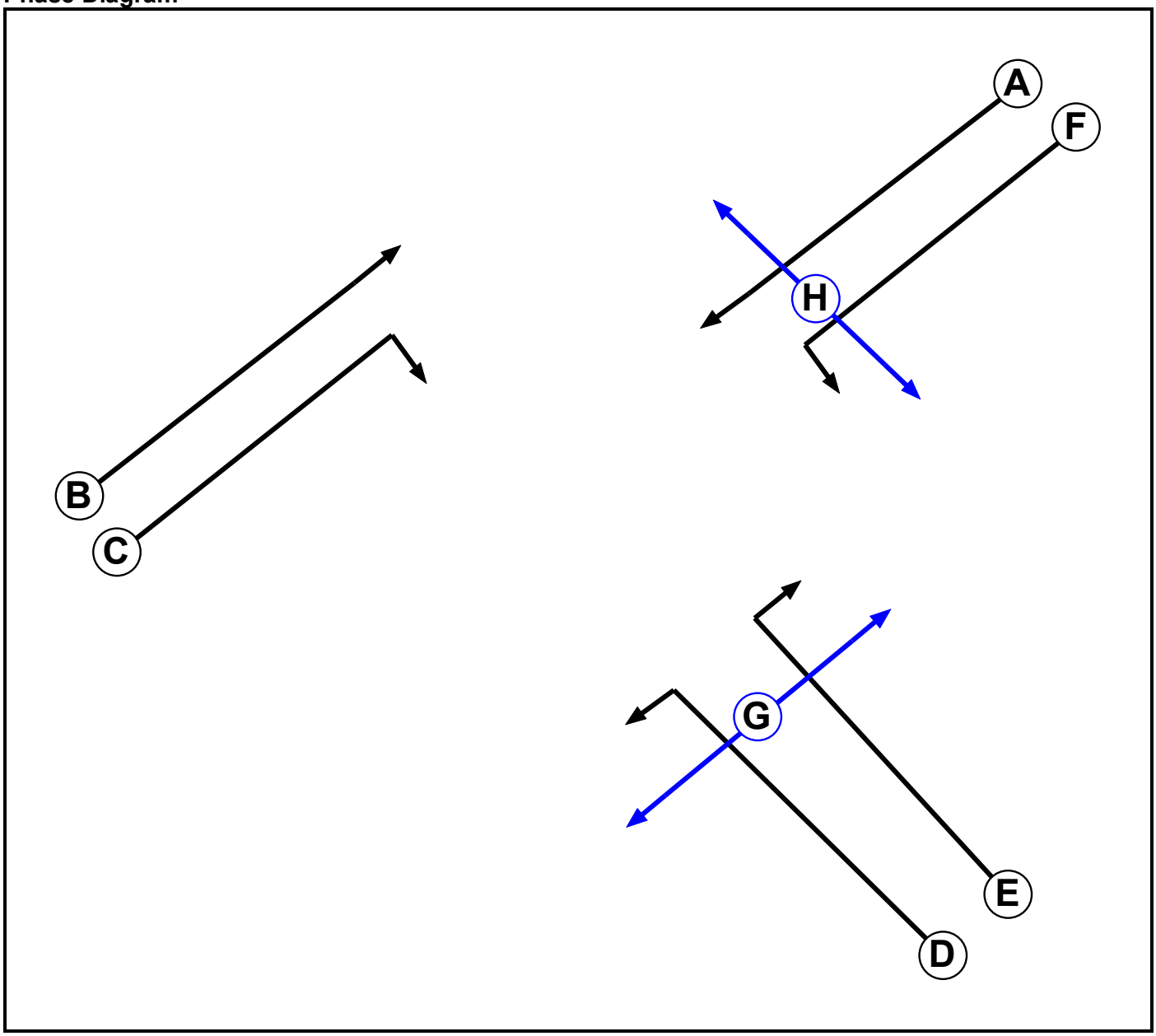
Stage No.	Phases in Stage
1	A B C O
2	A C F O
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N P

Stage Diagram



C2

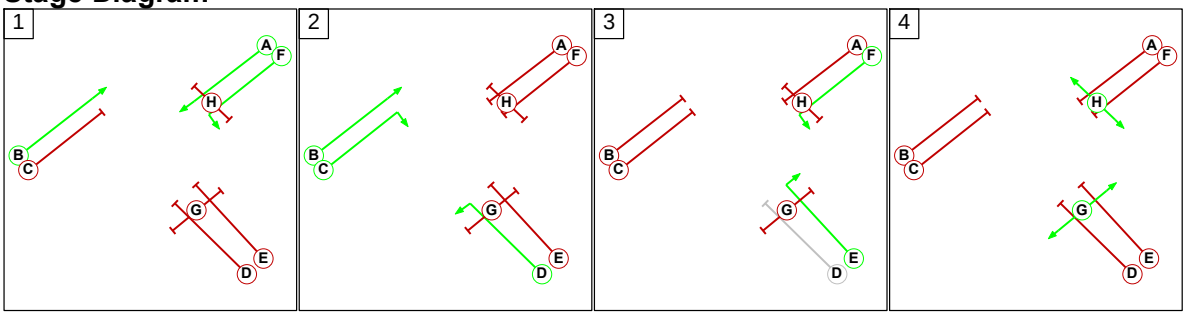
Phase Diagram



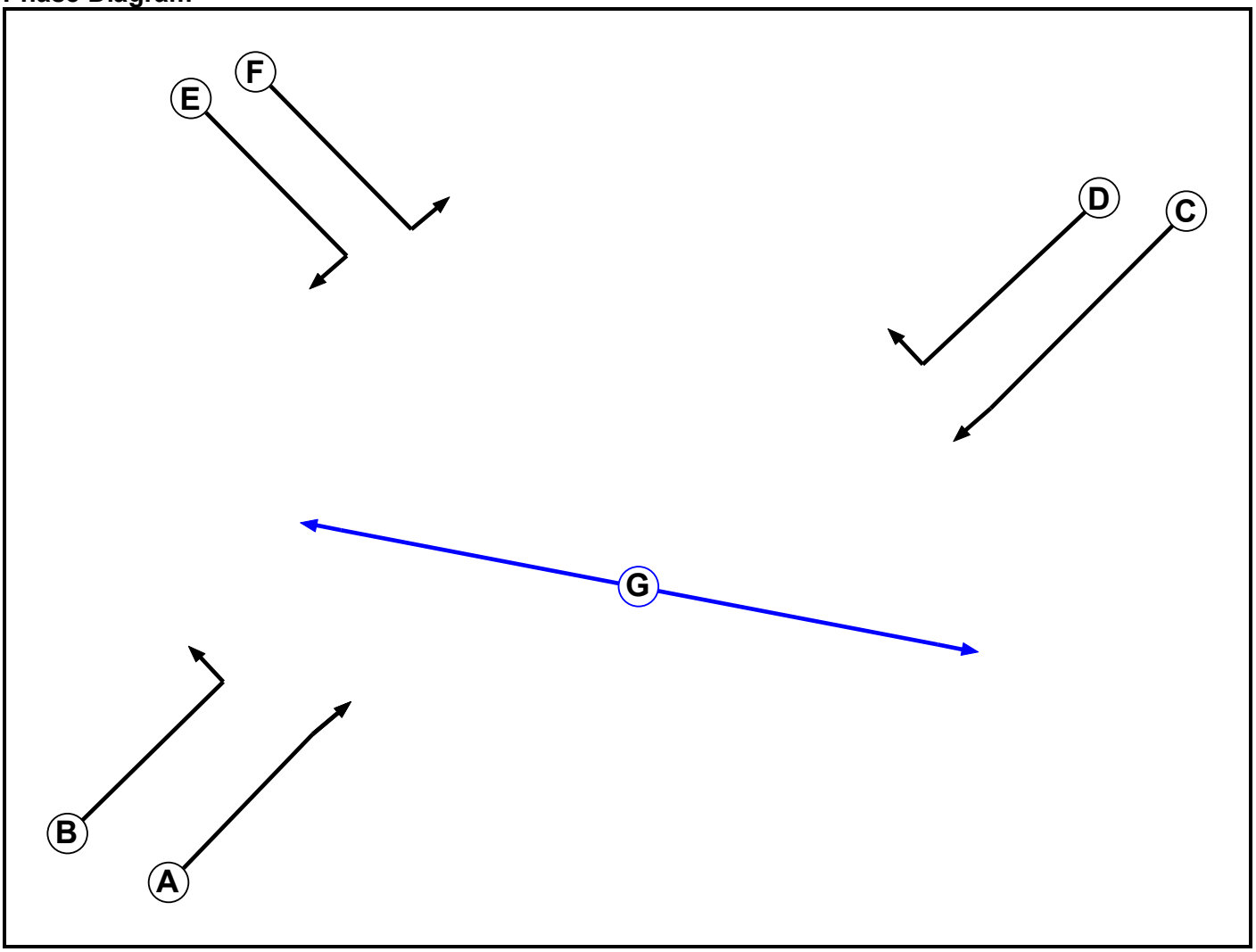
Phases in Stage

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

Stage Diagram



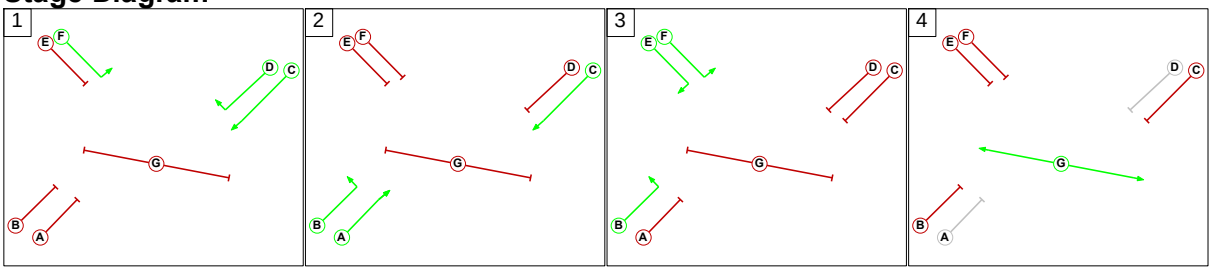
C3
Phase Diagram



Phases in Stage

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

Stage Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**100.4%**	**11**	**1057**	**126**	**132.9**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**99.8%**	**11**	**854**	**97**	**60.9**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	392	1872	452	86.6%	-	-	-	7.7	70.8	15.5
1/2	Old Bridge Road Right	O	334	1799	345	96.9%	0	315	19	11.3	121.7	17.9
2/1	Butterfield Avenue Left Ahead	U	458	1799	465	98.5%	-	-	-	14.8	116.2	24.3
2/2	Butterfield Avenue Right	O	91	1643	123	73.8%	0	89	2	2.7	106.0	4.3
3/2+3/1	Ballyroan Road Left Ahead	U+O	353	1904:1922	129+233	97.4 : 97.4%	11	176	40	9.8 (4.5+5.4)	100.3 (127.8:85.1)	12.9
3/3	Ballyroan Road Right	O	7	1817	76	9.2%	0	7	0	0.2	81.7	0.3
4/1	Firhouse Road Left	O	142	1781	846	16.8%	0	132	10	0.3	8.2	1.1
4/2	Firhouse Road Ahead	U	378	1859	527	71.8%	-	-	-	3.8	36.2	8.3
4/3	Firhouse Road Right	O	161	1613	161	99.8%	0	134	27	9.3	208.3	11.6
7/1		U	359	1940	1940	18.5%	-	-	-	0.1	1.2	3.4
10/1	Firhouse Road Ahead	U	600	1915	1915	31.3%	-	-	-	0.2	1.4	0.2
11/1	Bus Lane Ahead	U	407	1940	1940	21.0%	-	-	-	0.1	1.2	0.1
12/1	Bus Lane Ahead	U	110	1940	1940	5.7%	-	-	-	0.0	1.0	0.0
13/1	Cycle Lop-Old Bridge Right	U	10	1735	116	8.6%	-	-	-	0.1	47.1	0.2
14/1	Cylop-Butterfield Avenue Right	U	10	1735	116	8.6%	-	-	-	0.1	44.9	0.2
15/1	Cylop Ballyroan Road Right	U	10	1735	116	8.6%	-	-	-	0.1	44.9	0.2
16/1	Cylop-Firhouse Road Right	U	10	1759	117	8.5%	-	-	-	0.1	46.8	0.2
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**100.4%**	**0**	**203**	**29**	**48.3**	**-**	**-**
1/1	Firhouse Road West Ahead	U	550	1915	1229	44.8%	-	-	-	2.8	18.5	11.7
1/2	Firhouse Road West Right	O	232	1741	232	99.9%	0	203	29	11.1	171.9	15.2
3/1	Knocklyon Road (Exit)	U	492	1965	1965	25.0%	-	-	-	0.2	1.2	0.2
4/2+4/1	Knocklyon Road Right Left	U	266	1795:1721	135+139	96.9 : 96.9%	-	-	-	11.5 (5.0+6.4)	155.1 (137.7:172.0)	15.7
5/2+5/1	Firhouse Road East Left Ahead	U	1010	1915:1724	744+262	100.4 : 100.4%	-	-	-	22.4 (17.4+5.0)	79.9 (83.7:69.1)	45.5
7/1	Firhouse Road Ahead	U	571	1915	1915	29.8%	-	-	-	0.2	1.3	0.2
8/1	Firhouse Road Ahead	U	400	1915	1915	20.9%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**84.2%**	**0**	**0**	**0**	**23.7**	**-**	**-**
1/1	Spawell Link Road Left	U	569	1634	858	66.3%	-	-	-	2.6	16.6	7.9
1/2	Spawell Link Road Right	U	488	1764	662	73.8%	-	-	-	5.8	42.6	15.3
3/1	Firhouse Road West (Exit)	U	969	1935	1935	50.1%	-	-	-	0.5	1.9	0.5
4/1	Firhouse Road East (Exit) Ahead Ahead2	U	782	2015	2015	38.8%	-	-	-	0.5	2.1	7.4
5/1	Firhouse Road West Left	U	188	1680	924	20.3%	-	-	-	0.8	16.1	3.3
5/2	Firhouse Road West Ahead	U	105	1915	271	38.7%	-	-	-	1.7	57.6	3.5
5/3	Firhouse Road West Ahead	U	108	1915	271	39.8%	-	-	-	1.7	57.8	3.6

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
6/1	Firhouse Road West Ahead	U	401	1915	1915	20.9%	-	-	-	0.1	1.2	0.1
7/1	Spawell Link Road (Exit)	U	589	1965	1965	30.0%	-	-	-	0.2	1.3	0.2
8/1	Firhouse Road East Ahead	U	483	1915	670	72.1%	-	-	-	4.2	31.6	15.0
8/2	Firhouse Road East Right	U	403	1741	479	84.2%	-	-	-	5.3	47.2	15.2
9/1	Firhouse Road Ahead	U	323	1915	1915	16.9%	-	-	-	0.1	1.1	0.1
10/1	Bus Lane Ahead	U	459	1940	1940	23.7%	-	-	-	0.2	1.2	0.2
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

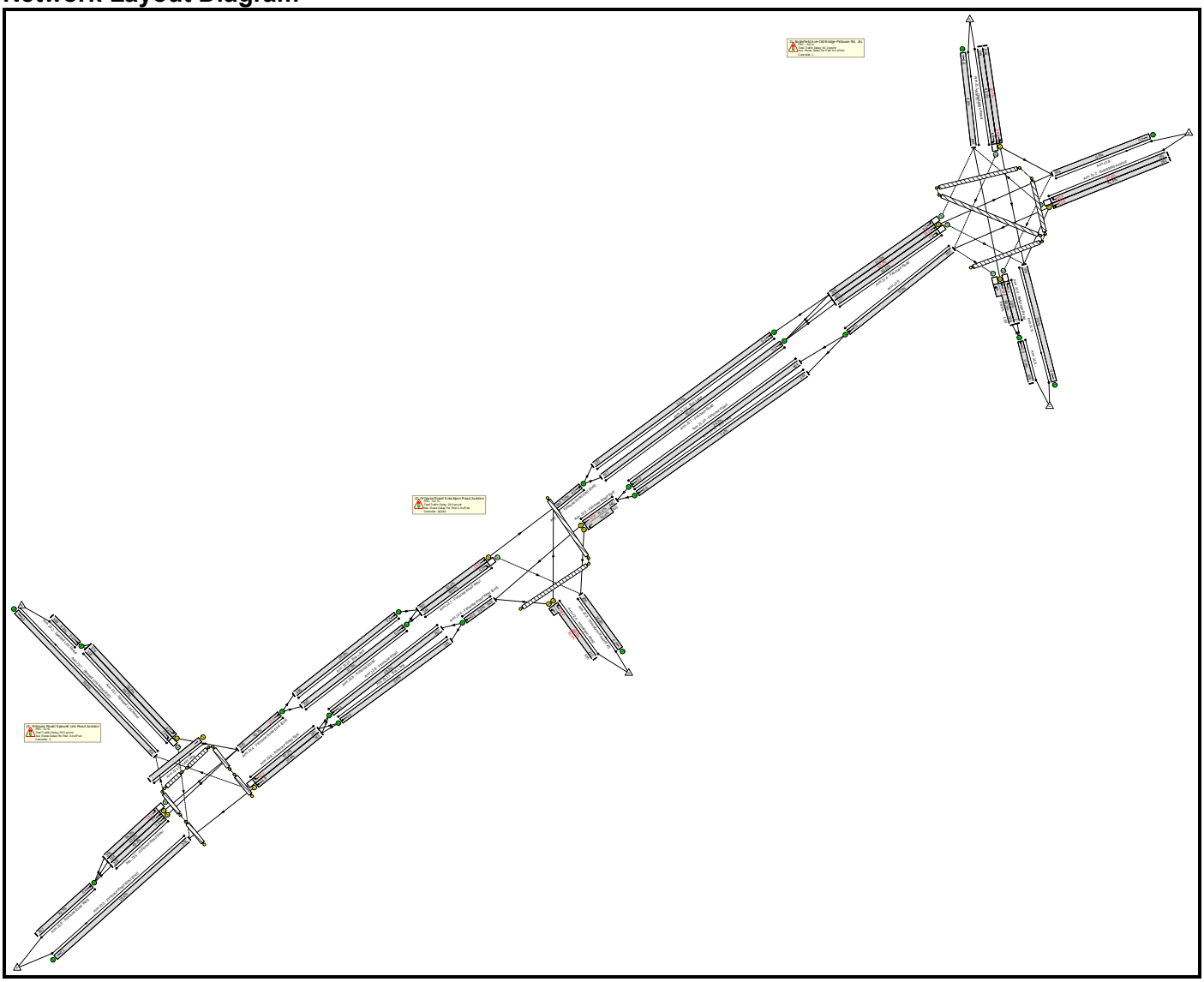
C1	PRC for Signalled Lanes (%):	-10.9	Total Delay for Signalled Lanes (pcuHr):	60.41	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	47.76	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	22.18	Cycle Time (s): 120
	PRC Over All Lanes (%):	-11.5	Total Delay Over All Lanes(pcuHr):	132.93	

User and Project Details

Project:	**18_123 - Dodder Greenway**
Title:	**Butterfield Ave-Old Bridge-Firhouse Rd. Jtn. – Layout 3**
Location:	
Date Started:	September 2020
Checked By:	RG
Additional detail:	
File name:	Firhouse Road - Layout 3.lsg3x
Author:	CDR
Company:	CSEA
Address:	
Linsig Version:	3, 2, 40, 0

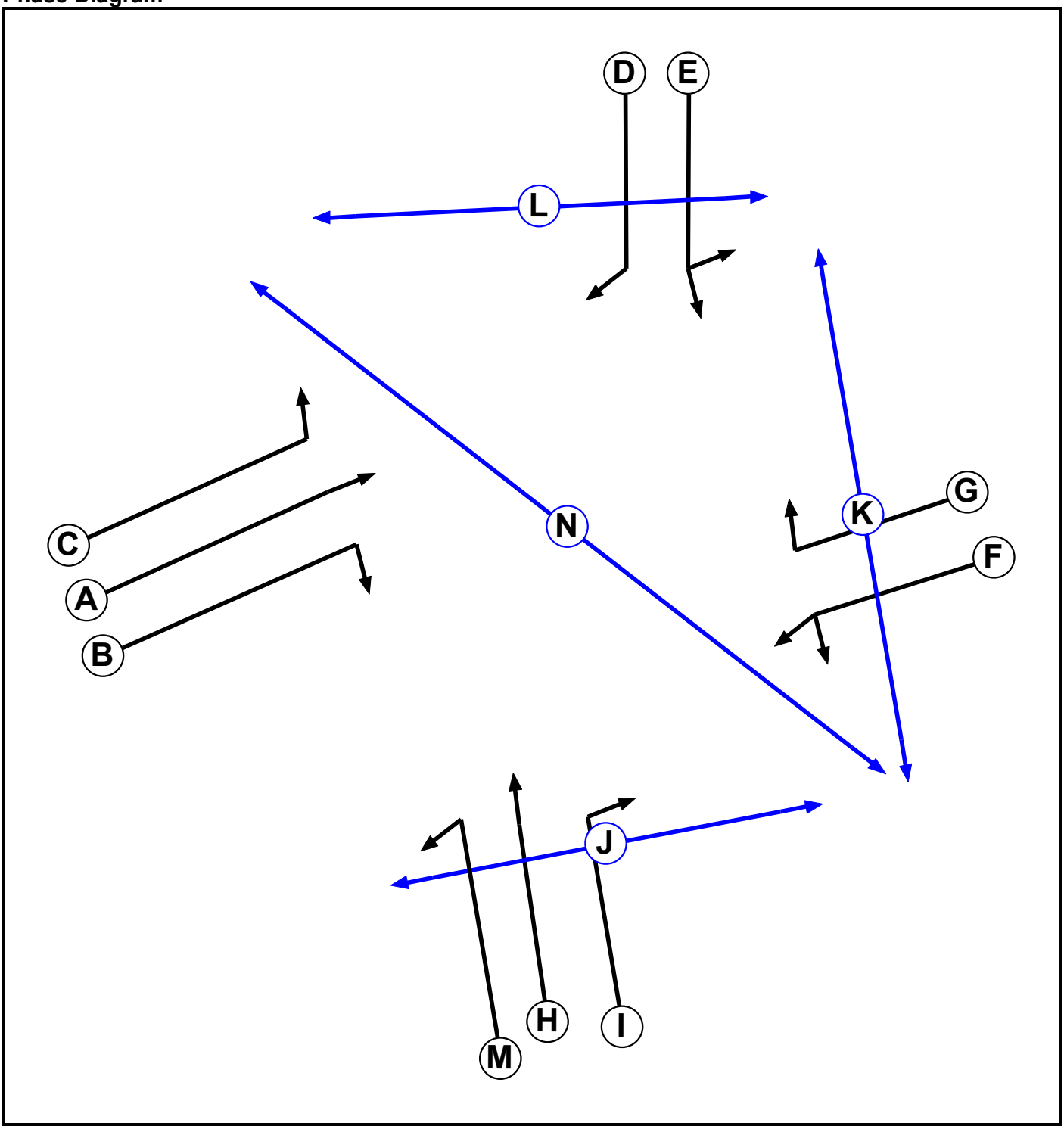
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

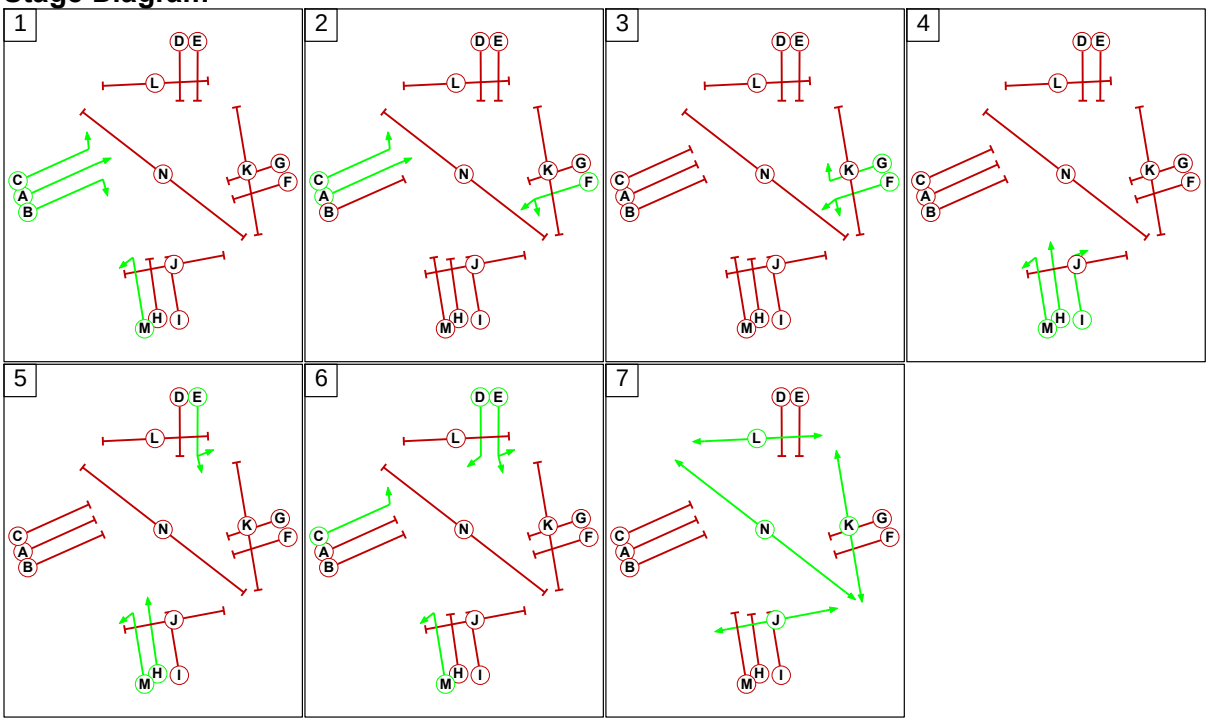
Phase Diagram



Phases in Stage

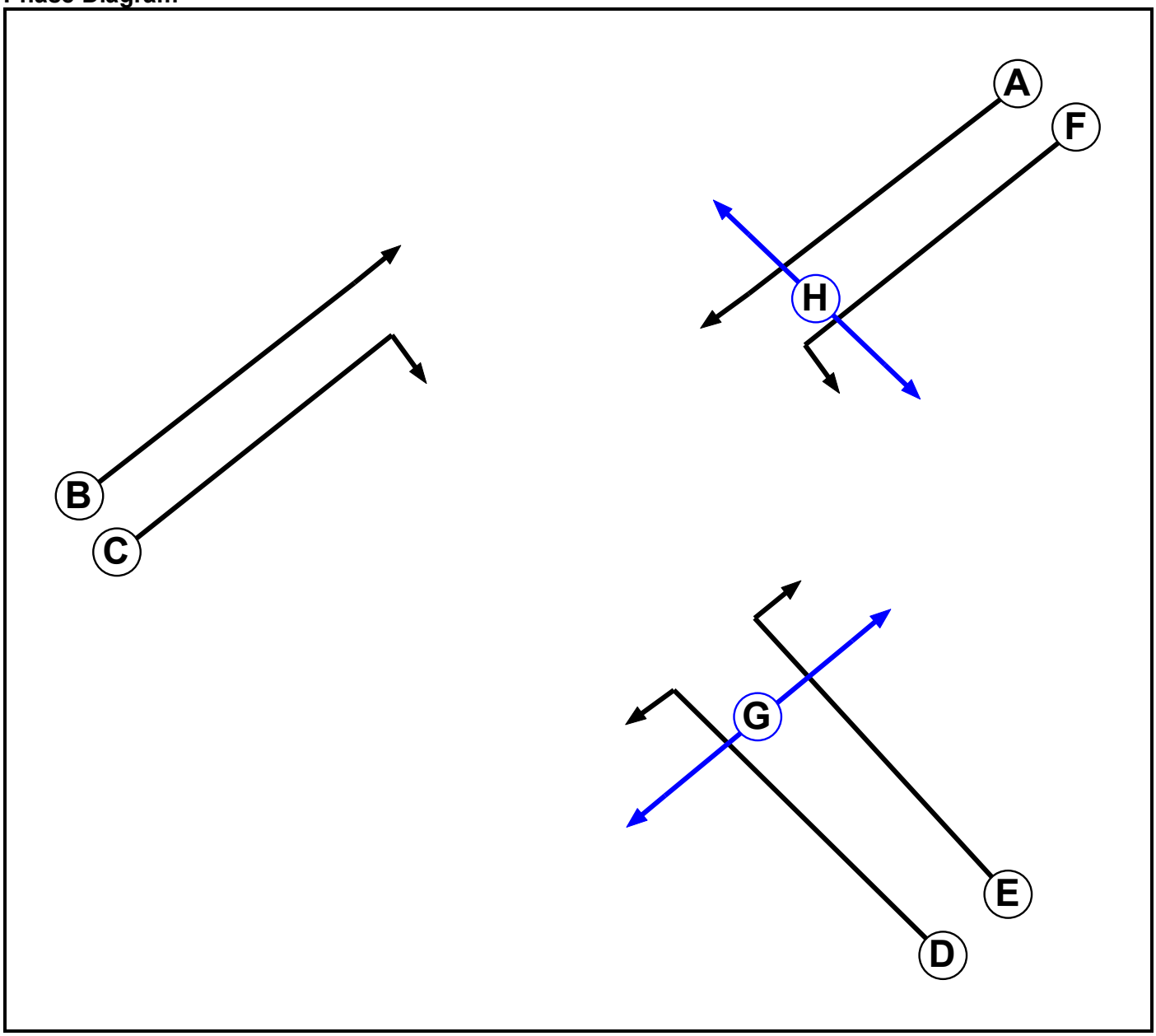
Stage No.	Phases in Stage
1	A B C M
2	A C F
3	F G
4	H I M
5	E H M
6	C D E M
7	J K L N

Stage Diagram



C2

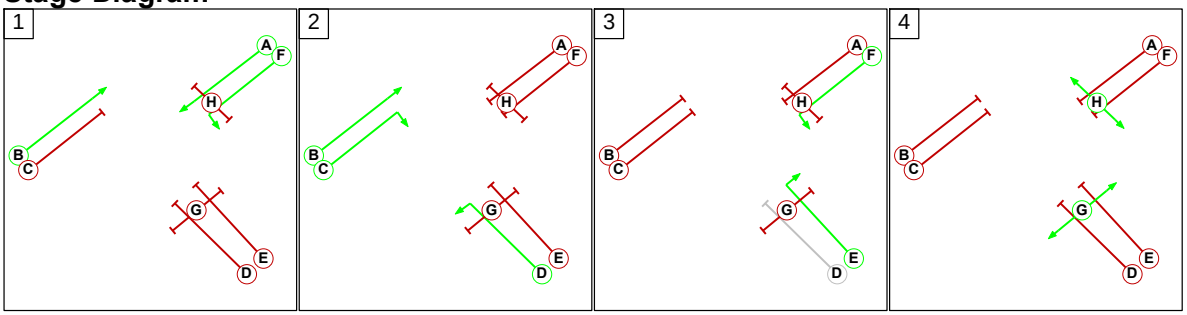
Phase Diagram



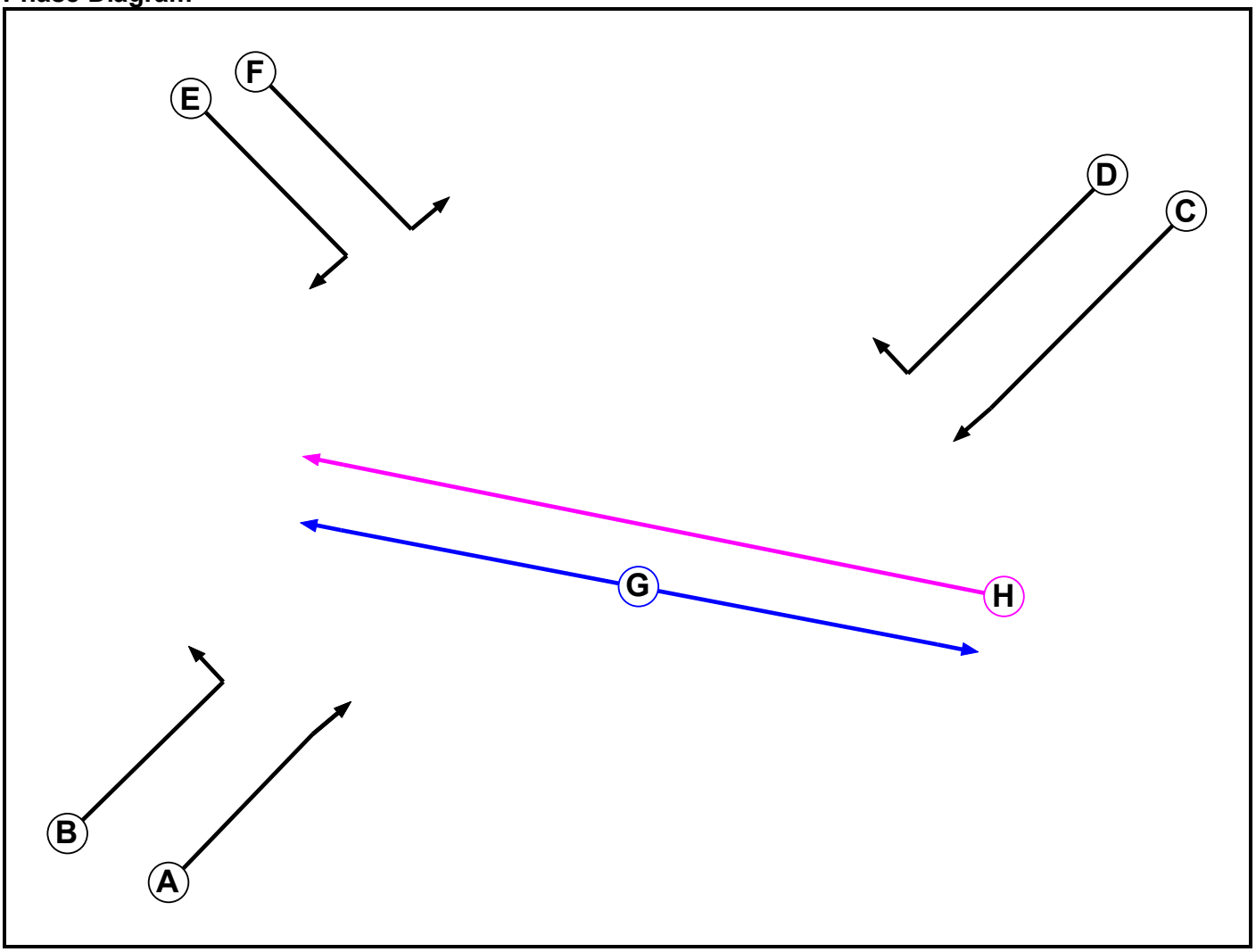
Phases in Stage

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

Stage Diagram



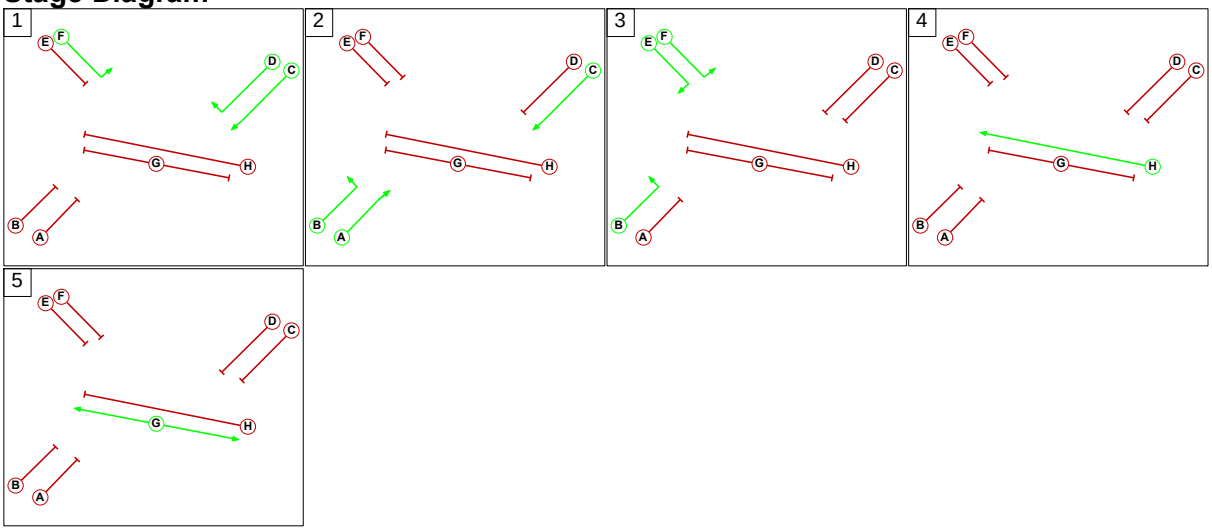
C3
Phase Diagram



Phases in Stage

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

Stage Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**98.3%**	**96**	**1898**	**75**	**110.1**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**97.9%**	**6**	**904**	**62**	**52.3**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	429	1852	463	92.7%	-	-	-	10.1	85.0	18.8
1/2	Old Bridge Road Right	O	139	1781	163	85.1%	0	134	5	4.5	115.7	6.9
2/1	Butterfield Avenue Left Ahead	U	281	1800	345	81.4%	-	-	-	5.7	72.9	11.0
2/2	Butterfield Avenue Right	O	161	1644	164	97.9%	0	137	24	8.0	178.0	10.9
3/2+3/1	Ballyroan Road Left Ahead	U+O	422	1901:1956	259+218	88.5 : 88.5%	6	172	14	7.2 (4.7+2.4)	61.0 (74.1:45.5)	14.0
3/3	Ballyroan Road Right	O	2	1819	76	2.6%	0	2	0	0.0	80.0	0.1
4/1	Firhouse Road Left	O	306	1781	594	51.5%	0	286	16	2.1	24.6	5.3
4/2	Firhouse Road Ahead	U	421	1859	449	93.7%	-	-	-	10.1	86.6	19.0
4/3	Firhouse Road Right	O	177	1532	217	81.6%	0	173	2	4.4	89.5	7.8
10/1	Firhouse Road Ahead	U	464	1915	1915	24.2%	-	-	-	0.2	1.2	0.2
11/1	Bus Lane Ahead	U	144	1940	1940	7.4%	-	-	-	0.0	1.0	0.0
12/1	Bus Lane Ahead	U	227	1940	1940	11.7%	-	-	-	0.1	1.1	0.1
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.3%**	**0**	**142**	**2**	**28.3**	**-**	**-**
1/1	Firhouse Road West Ahead	U	687	1940	1083	63.4%	-	-	-	6.7	34.9	19.2

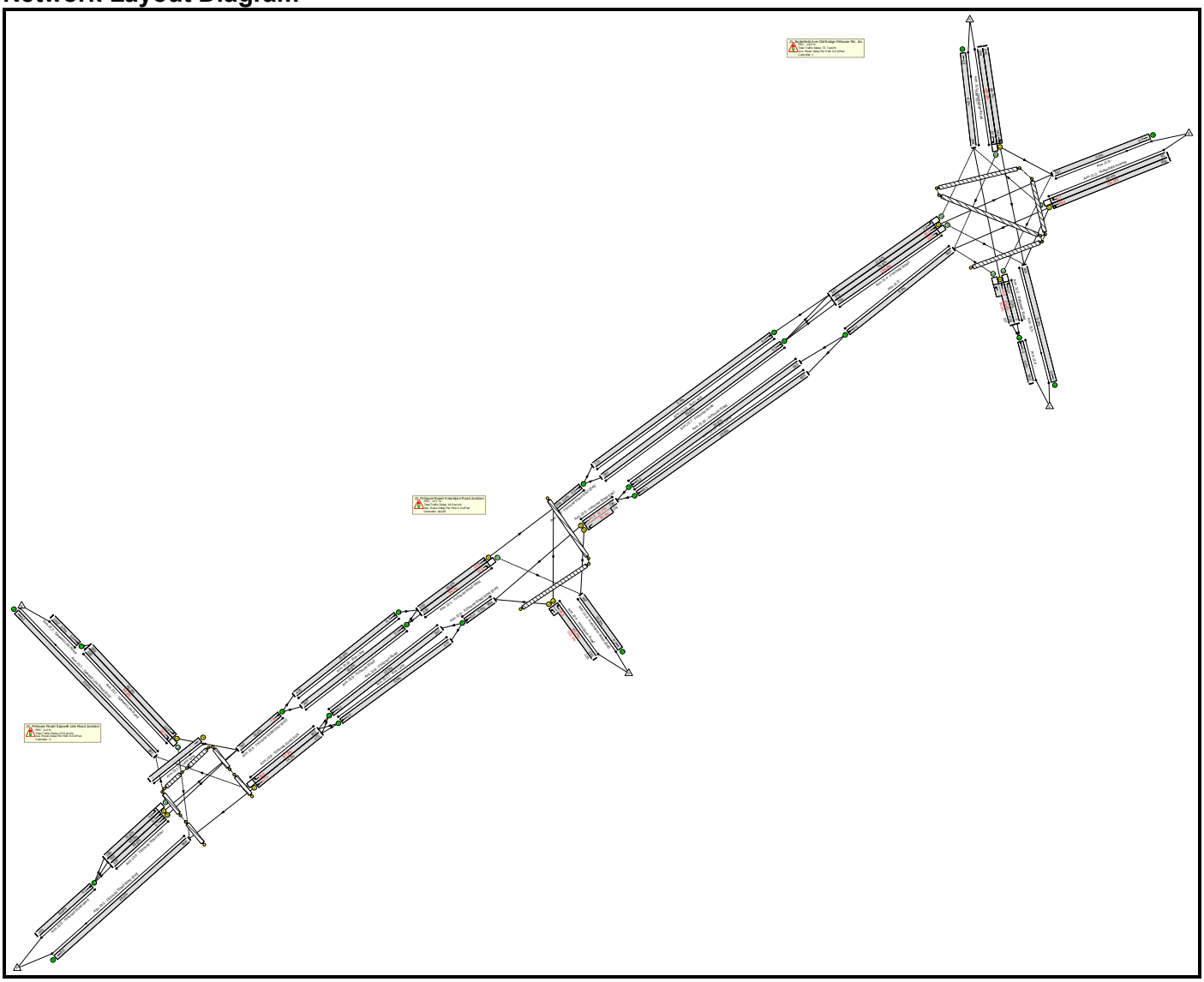
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/2	Firhouse Road West Right	O	144	1741	290	49.6%	0	142	2	2.8	70.3	4.5
3/1	Knocklyon Road (Exit)	U	306	1965	1965	15.6%	-	-	-	0.1	1.1	0.1
4/2+4/1	Knocklyon Road Right Left	U	322	1799:1721	221+107	98.3 : 98.3%	-	-	-	13.3 (7.9+5.3)	148.3 (131.4:183.1)	18.4
5/2+5/1	Firhouse Road East Left Ahead	U	608	1915:1724	590+216	75.4 : 75.4%	-	-	-	5.0 (4.5+0.6)	29.9 (36.0:13.0)	16.8
7/1	Firhouse Road Ahead	U	677	1915	1915	35.4%	-	-	-	0.3	1.5	0.3
8/1	Firhouse Road Ahead	U	367	1915	1915	19.2%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**87.2%**	**90**	**852**	**11**	**29.5**	**-**	**-**
1/1	Spawell Link Road Left	U	374	1634	640	58.4%	-	-	-	2.2	21.4	6.2
1/2	Spawell Link Road Right	O	195	1764	294	66.3%	0	192	3	3.5	64.7	7.0
3/1	Firhouse Road West (Exit)	U	376	1935	1935	19.4%	-	-	-	0.1	1.2	0.1
4/1	Firhouse Road East (Exit) Ahead Ahead2	U	820	2015	2015	40.7%	-	-	-	1.0	4.6	15.4
5/1	Firhouse Road West Left	O	391	1724	466	84.0%	90	295	7	7.1	65.7	14.7
5/2	Firhouse Road West Ahead	U	224	1915	351	63.8%	-	-	-	3.7	59.3	7.7
5/3	Firhouse Road West Ahead	U	222	1915	351	63.2%	-	-	-	3.6	59.0	7.6
6/1	Firhouse Road West Ahead	U	837	1915	1915	43.7%	-	-	-	0.4	1.7	0.4
7/1	Spawell Link Road (Exit)	U	758	1965	1965	38.6%	-	-	-	0.3	1.5	0.3

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
8/1	Firhouse Road East Ahead	U	181	1915	878	20.6%	-	-	-	1.3	25.2	4.9
8/2	Firhouse Road East Right	O	367	1741	421	87.2%	0	366	1	5.9	58.4	15.2
9/1	Firhouse Road Ahead	U	335	1915	1915	17.5%	-	-	-	0.1	1.1	0.1
10/1	Bus Lane Ahead	U	485	1940	1940	25.0%	-	-	-	0.2	1.2	0.2
12/1	cycle lane	U	0	1940	-	-	-	-	-	-	-	-
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

C1	PRC for Signalled Lanes (%):	-8.8	Total Delay for Signalled Lanes (pcuHr):	52.06	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-9.2	Total Delay for Signalled Lanes (pcuHr):	27.77	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	3.2	Total Delay for Signalled Lanes (pcuHr):	27.40	Cycle Time (s): 120
	PRC Over All Lanes (%):	-9.2	Total Delay Over All Lanes(pcuHr):	110.13	

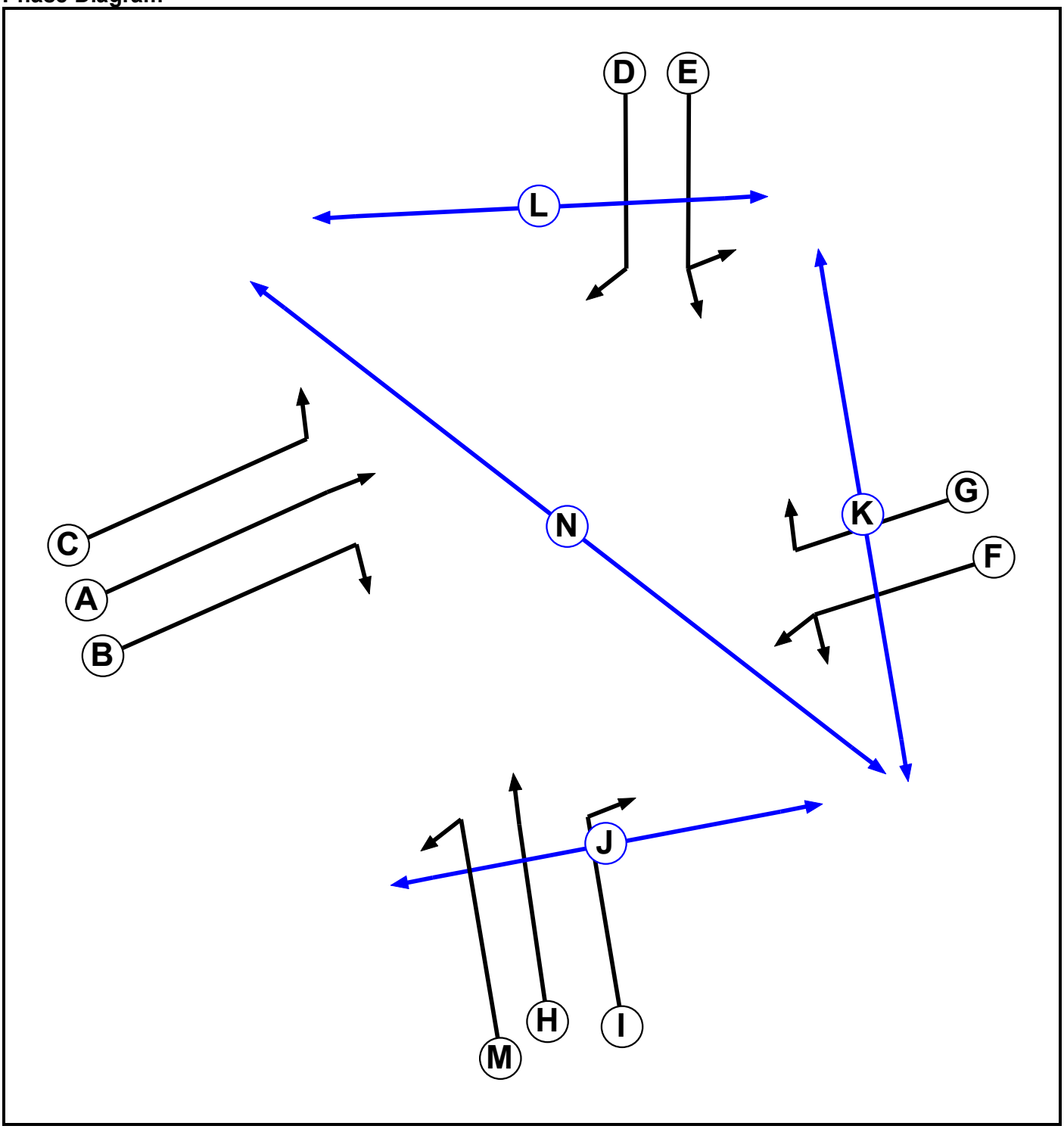
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

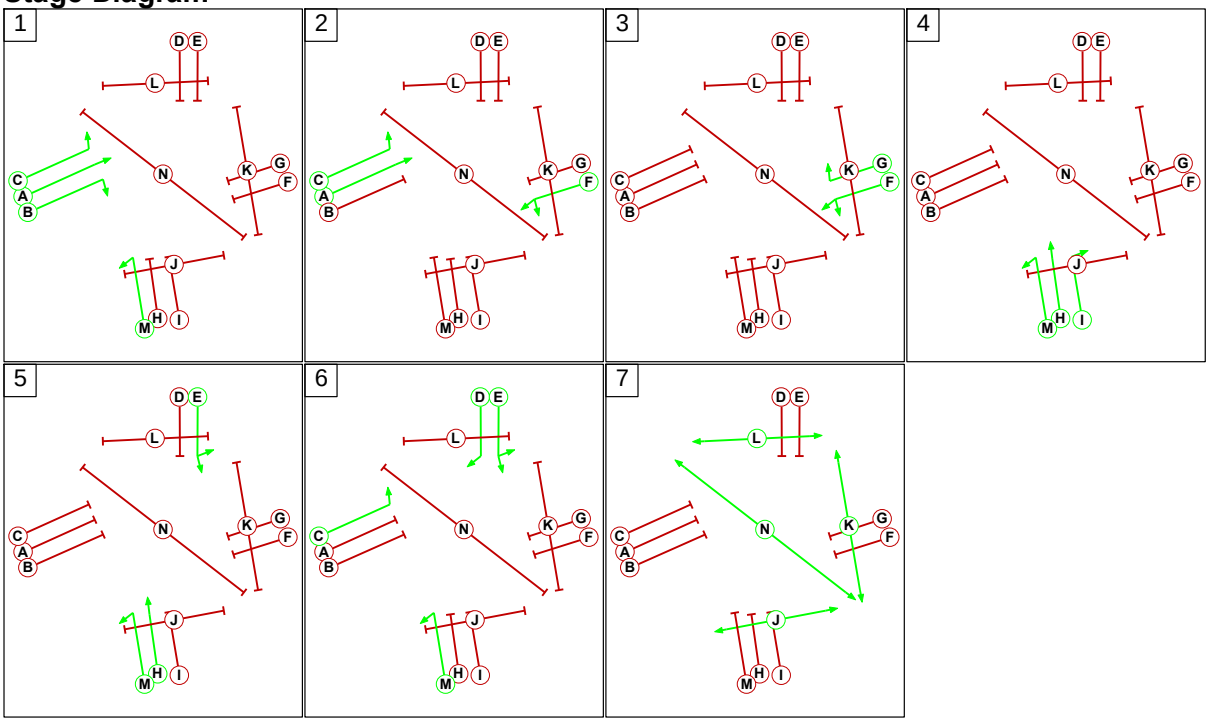
Phase Diagram



Phases in Stage

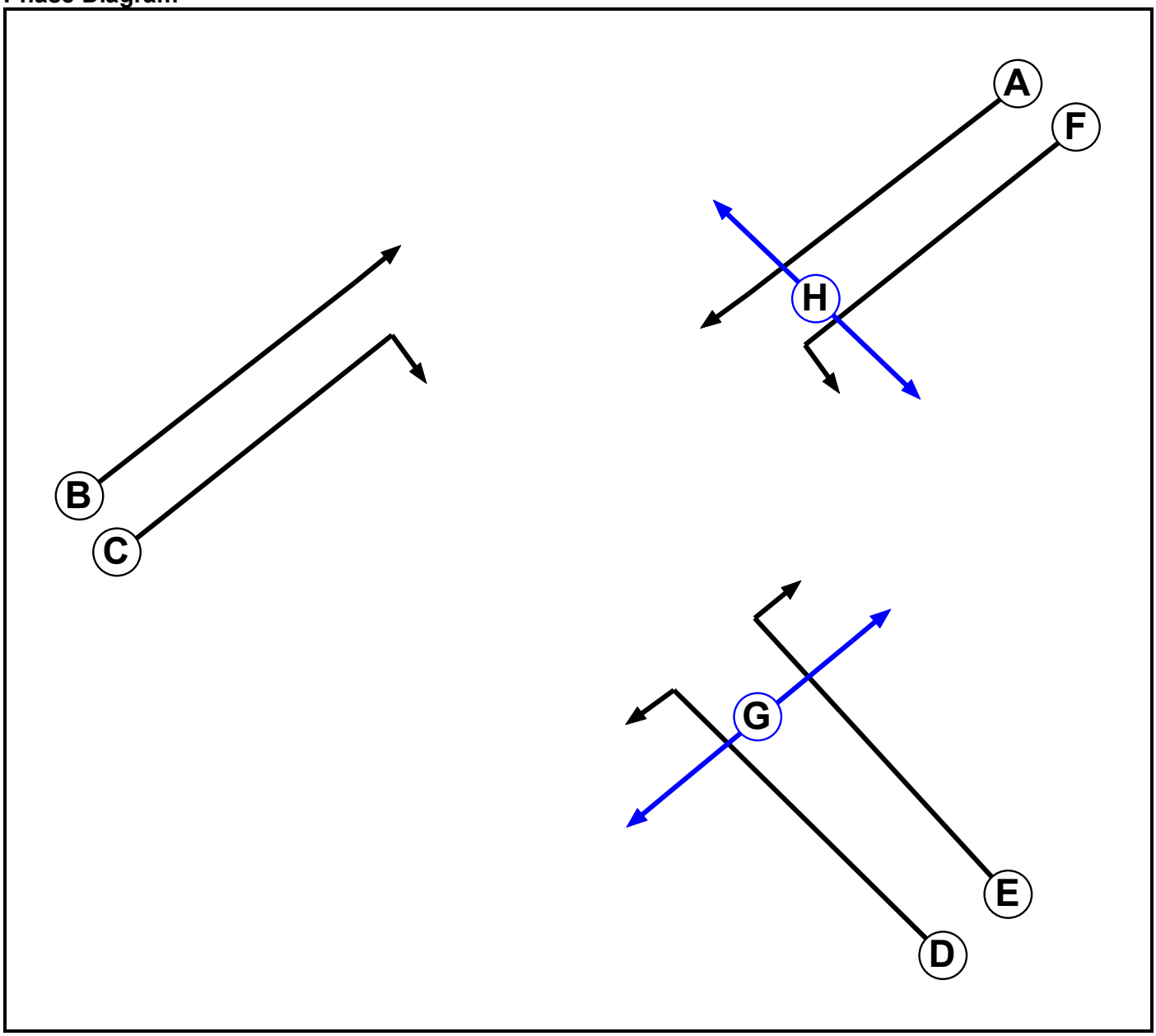
Stage No.	Phases in Stage
1	A B C M
2	A C F
3	F G
4	H I M
5	E H M
6	C D E M
7	J K L N

Stage Diagram



C2

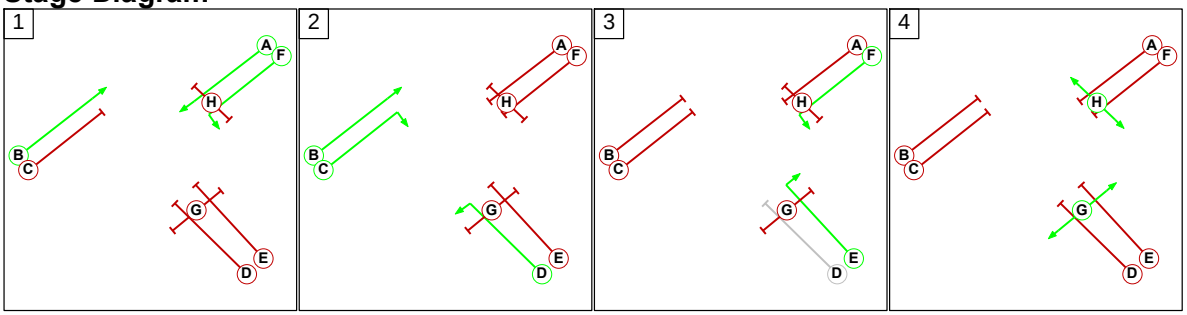
Phase Diagram



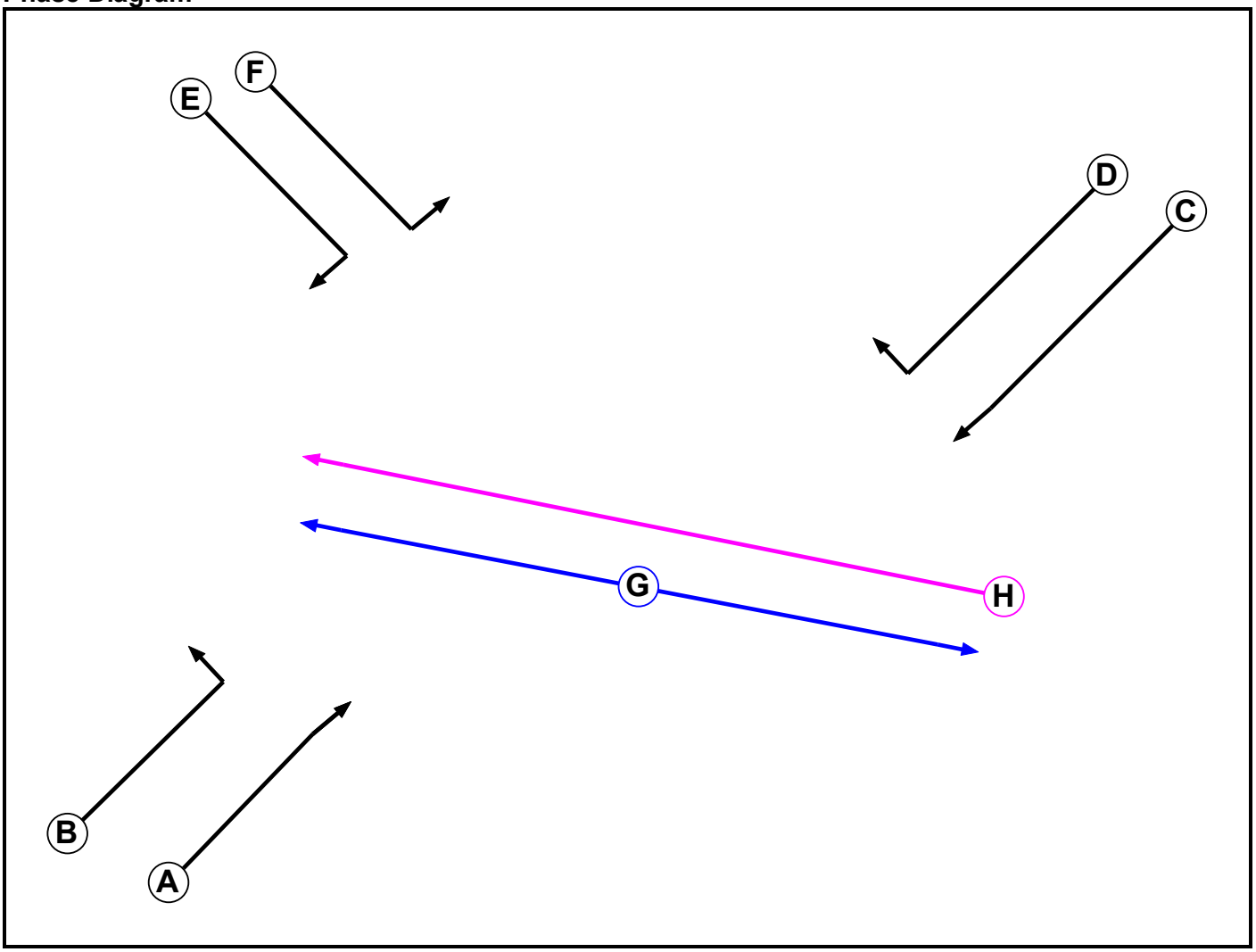
Phases in Stage

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

Stage Diagram



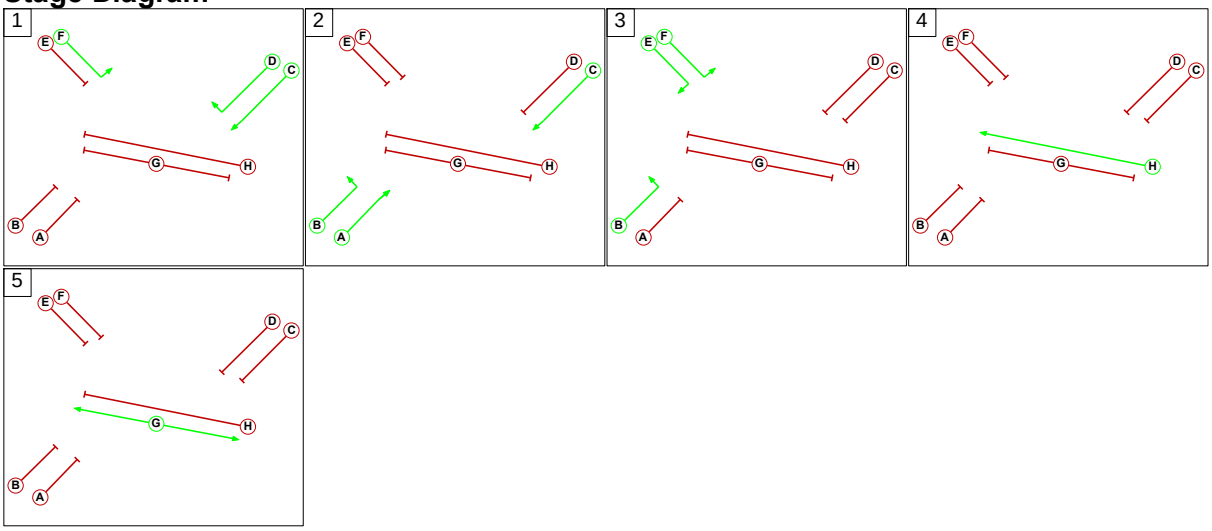
C3
Phase Diagram



Phases in Stage

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

Stage Diagram



Network Results

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**104.6%**	**20**	**2080**	**147**	**164.4**	**-**	**-**
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	**-**	**-**	**-**	**-**	**-**	**104.6%**	**8**	**835**	**104**	**72.7**	**-**	**-**
1/1	Old Bridge Road Ahead Left	U	392	1893	442	88.7%	-	-	-	8.3	76.3	16.1
1/2	Old Bridge Road Right	O	334	1781	327	102.3%	0	297	30	16.0	173.0	22.6
2/1	Butterfield Avenue Left Ahead	U	458	1800	450	101.8%	-	-	-	19.0	149.7	28.4
2/2	Butterfield Avenue Right	O	91	1644	151	60.4%	0	89	2	2.1	81.8	3.7
3/2+3/1	Ballyroan Road Left Ahead	U+O	353	1901:1956	132+238	95.3 : 95.3%	8	178	42	8.7 (4.0+4.7)	89.1 (114.1:75.2)	11.2
3/3	Ballyroan Road Right	O	7	1819	76	9.2%	0	7	0	0.2	81.7	0.3
4/1	Firhouse Road Left	O	142	1781	801	17.6%	0	136	5	0.8	20.6	2.9
4/2	Firhouse Road Ahead	U	378	1859	496	75.9%	-	-	-	6.5	62.0	14.1
4/3	Firhouse Road Right	O	161	1532	153	104.6%	0	128	26	10.6	238.5	13.9
10/1	Firhouse Road Ahead	U	601	1915	1915	30.9%	-	-	-	0.2	1.4	0.2
11/1	Bus Lane Ahead	U	406	1940	1940	20.6%	-	-	-	0.1	1.2	0.1
12/1	Bus Lane Ahead	U	111	1940	1940	5.7%	-	-	-	0.0	1.0	0.0
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**102.4%**	**0**	**218**	**14**	**49.3**	**-**	**-**
1/1	Firhouse Road West Ahead	U	550	1940	1261	43.6%	-	-	-	3.8	24.9	14.8

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/2	Firhouse Road West Right	O	232	1741	247	94.1%	0	218	14	9.0	139.9	12.3
3/1	Knocklyon Road (Exit)	U	492	1965	1965	24.8%	-	-	-	0.2	1.2	0.2
4/2+4/1	Knocklyon Road Right Left	U	266	1799:1721	128+132	102.4 : 102.4%	-	-	-	15.2 (6.9+8.3)	205.7 (190.0:221.0)	19.3
5/2+5/1	Firhouse Road East Left Ahead	U	1010	1915:1724	753+265	97.7 : 97.7%	-	-	-	20.7 (16.2+4.5)	75.0 (79.5:62.2)	41.4
7/1	Firhouse Road Ahead	U	570	1915	1915	29.6%	-	-	-	0.2	1.3	0.2
8/1	Firhouse Road Ahead	U	400	1915	1915	20.5%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
J3: Firhouse Road/ Spawell Link Road Junction	**-**	**-**	**-**	**-**	**-**	**97.2%**	**13**	**1027**	**29**	**42.5**	**-**	**-**
1/1	Spawell Link Road Left	U	569	1634	831	68.5%	-	-	-	3.1	19.6	10.9
1/2	Spawell Link Road Right	O	488	1764	515	94.8%	0	480	8	11.9	87.8	22.1
3/1	Firhouse Road West (Exit)	U	969	1935	1935	49.6%	-	-	-	0.5	1.8	0.5
4/1	Firhouse Road East (Exit) Ahead Ahead2	U	782	2015	2015	38.8%	-	-	-	0.5	2.2	7.8
5/1	Firhouse Road West Left	O	188	1724	592	31.8%	13	172	3	1.8	34.5	4.8
5/2	Firhouse Road West Ahead	U	106	1915	128	83.0%	-	-	-	3.7	125.2	5.5
5/3	Firhouse Road West Ahead	U	107	1915	128	83.8%	-	-	-	3.8	127.5	5.7
6/1	Firhouse Road West Ahead	U	401	1915	1915	20.9%	-	-	-	0.1	1.2	0.1
7/1	Spawell Link Road (Exit)	U	589	1965	1965	29.6%	-	-	-	0.2	1.3	0.2

Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
8/1	Firhouse Road East Ahead	U	483	1915	638	74.2%	-	-	-	5.6	42.4	17.0
8/2	Firhouse Road East Right	O	403	1741	406	97.2%	0	375	18	11.1	100.9	20.6
9/1	Firhouse Road Ahead	U	357	1915	1915	18.6%	-	-	-	0.1	1.2	0.1
10/1	Bus Lane Ahead	U	425	1940	1940	21.9%	-	-	-	0.1	1.2	0.1
12/1	cycle lane	U	0	1940	-	-	-	-	-	-	-	-
Ped Link: P1	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P2	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P3	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P5	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: P6	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-

C1	PRC for Signalled Lanes (%):	-16.3	Total Delay for Signalled Lanes (pcuHr):	72.27	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-13.7	Total Delay for Signalled Lanes (pcuHr):	48.75	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	40.92	Cycle Time (s): 120
	PRC Over All Lanes (%):	-16.3	Total Delay Over All Lanes(pcuHr):	164.40	

Appendix F Dodder Greenway Tree Protection Report

AUSTEN ASSOCIATES

Project: 062320 Dodder Greenway

For: South Dublin County Council **Date:** 08/06/2021

Location: Wellington Lane, Rathfarnham

Dodder Greenway Tree Protection phase 3 contractors compound set up

The site was visited on Monday 31st May by Arborist Eunan O'Donnell of this practice and trees affected by the compound were inspected. The trees affected are:

1. **A line of street trees either side of the compound entrance,**
2. **Trees to the northern perimeter of the compound**

1: Street trees either side of the compound entrance

These trees are juvenile Sycamore *Acer pseudoplatanus* classed as category C trees and tagged as 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389 & 2390. They are planted in the grass verge bordering the carriageway on Wellington Lane.

Comments:

2382: Die back present to the top centre of the crown, scale insect present.

2383: Die back present to the top centre of the crown, scale insect present, bark damage on the north side of the trunk at ground level.

2384: Die back present to the top centre of the crown, scale insect present, bark damage on the north side of the trunk at ground level.

2385: Die back present to the top centre of the crown, scale insect present, bark damage on the south side of the trunk at ground level.

2386: Scale insect present, roots are lifting tarmacadam ta cycle track

2387: Die back present to the top centre of the crown, scale insect present, bark damage on the trunk at ground level.

2388: Die back present to the top centre of the crown, scale insect present, older bark damage on the trunk at ground level, good occlusion (new bark growth).

2389: Substantial bark damage at ground level, scale insect present.

2390: Bark damage at ground level, scale insect present.

These trees are young street trees that are to be removed as part of the plans for the Dodder Greenway phase 6. They are of poor quality and are impeding sightlines on entry and exit of the compound. In the interests of health and safety it is recommended that these trees be removed as required to achieve satisfactory sightlines.

Figure 2 Location of street trees either side of contractor's compound entrance

2: Trees to the northern perimeter of the compound

These trees are mature parkland trees located to the northern side of the compound and tagged as 1945 & 1946 along with an inaccessible tree recorded as tree A.

Comments:
1945: Mature multi-stemmed Sycamore *Acer pseudoplatanus* growing on top of a low c. 1.0 m high berm. It has heavy arboreal ivy growth on the stems and branches, making it a potential bat roost.
1946: Mature multi-stemmed Sycamore *Acer pseudoplatanus* growing on top of a low c. 1.0 m high berm.

Recommendation: The Root Protection Area of the tree (orange circles in figure 2 below) need to be protected. A ground protection system is to be installed to eliminate compaction from the movement of vehicles and machinery in and out of the compound. For pedestrian operated vehicles and plant up to 2T in weight, proprietary interlinked ground protection boards placed on top of a compression resistant layer, such as 150mm depth of woodchip, laid onto a geotextile membrane.

For wheeled or tracked construction traffic exceeding 2T gross weight a proprietary system to accommodate the likely loading must be put in place over the RPA of the trees.

Tree A is a large mature beech tree with some decay in the main crown. Top soil is being stored within the RPA of the tree. The weight of this topsoil is causing compaction to the soil/growing medium within the RPA of the tree and must be moved outside of the RPA of the tree.

There is a berm present within the RPA of scrub woodland to the north eastern edge of the Compound. As with the soil in tree A above, this is causing compaction to the soil/growing medium within the RPA. This must be moved outside of the RPA of the trees.

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