Clifton Scannell Emerson Associates

Part 8 Preliminary Design Report

Dodder Greenway Phase 5 – Firhouse Road, Wellington Lane & Butterfield Avenue

Comhairle Contae Átha Cliath Theas
South Dublin County Council

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1 Introduction and Background

1.1 Background

South Dublin County Council (SDCC) have appointed Clifton Scannell Emerson Associates (CSEA) to provide Technical Consultancy Services for the planning process for the proposed Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Ave Scheme.

The Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Ave Scheme is a proposed road and junctions upgrade scheme that consists of approximately 1.59km of road upgrade, including segregated cycle tracks and footpaths that will link and complement two sections of the overall Dodder Greenway Scheme (Phase 2 and Phase 3). The scheme, considered to be an "on road" section of the Dodder Greenway, is also described as an extension to the overall Dodder Greenway Scheme.

The proposed scheme intends to rearrange the layout of 5 no. existing bus stops and to redesign the existing cycling facilities within the proposed scheme footprint. Furthermore, it is the scheme's objective to provide upgrades to existing road junctions and to existing pedestrian crossing facilities within the schemes extent thus making it safer for pedestrian and cyclists to ultimately utilize when brought into full service.

All works proposed for the scheme will include a fully integrated landscape plan and the introduction of all necessary underground services. The scheme will also include services diversionary works, if required (to be assessed during detail design stage).

The proposed scheme has been designed in compliance with the following guidance documents:

- Design Manual for Urban Roads and Streets (DMURS)
- Design Manual for Roads and Bridges (DMRB)
- National Cycle Manual (NCM)
- Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors
- Traffic Signs Manual (TSM)
- Greater Dublin Strategic Drainage Study (GDSDS)
- Smarter Travel objectives.

1.2 South Dublin County Council Development Plan 2016 - 2022

The development of greenway routes is in line with South Dublin's County Council Development Plan (2016 – 2022) document under Chapter No. 4 – Economic Development & Tourism (ET) - Policy 6 Greenways, Trails and Loops which states the Local Authority's aim as:

> *"It is the policy of the Council to support and facilitate the development of an integrated network of Greenways and Trails (combined off road cycle and walking routes) along suitable corridors, including natural linear open spaces such as riverbanks and canals, with local connections to villages and attractions and to take account of the environmental sensitivities along these corridors".*

South Dublin's County Council Development Plan (2016 – 2022) document under Chapter No. 6 – Transport & Mobility - Policy 3 Walking and Cycling identifies the Dodder Greenway as a key route in the six-year cycle network programme.

Furthermore, the intention of the scheme to deliver an enhanced and safer environment for pedestrians and cyclist is in line with the Transport and Mobility (TM) polices of the South Dublin County Council Development Plan 2016-2022.

As the proposed scheme is a section of the Dodder Greenway and it intends to upgrade the walking and cycling facilities on the road, it complies with the policies and objectives of the Local Authority as set out in the South Dublin County Council Development Plan (2016-2022).

1.3 The Proposed Scheme

The proposed scheme commences at Green Acre Court and traverses in a north easterly direction for approximately 1.15 km when it terminates at the existing Butterfield Ave-Kilvere Junction. The scheme also incorporates Wellington Lane, from Firhouse to Spawell Roundabaout, and Old Bridge Road from Firhouse Road to Templeogue Road as per figure 1.3.1 below. For further details and a better understanding of the proposed scheme please refer to the overall layout drawing located in **Appendix A** of this report.

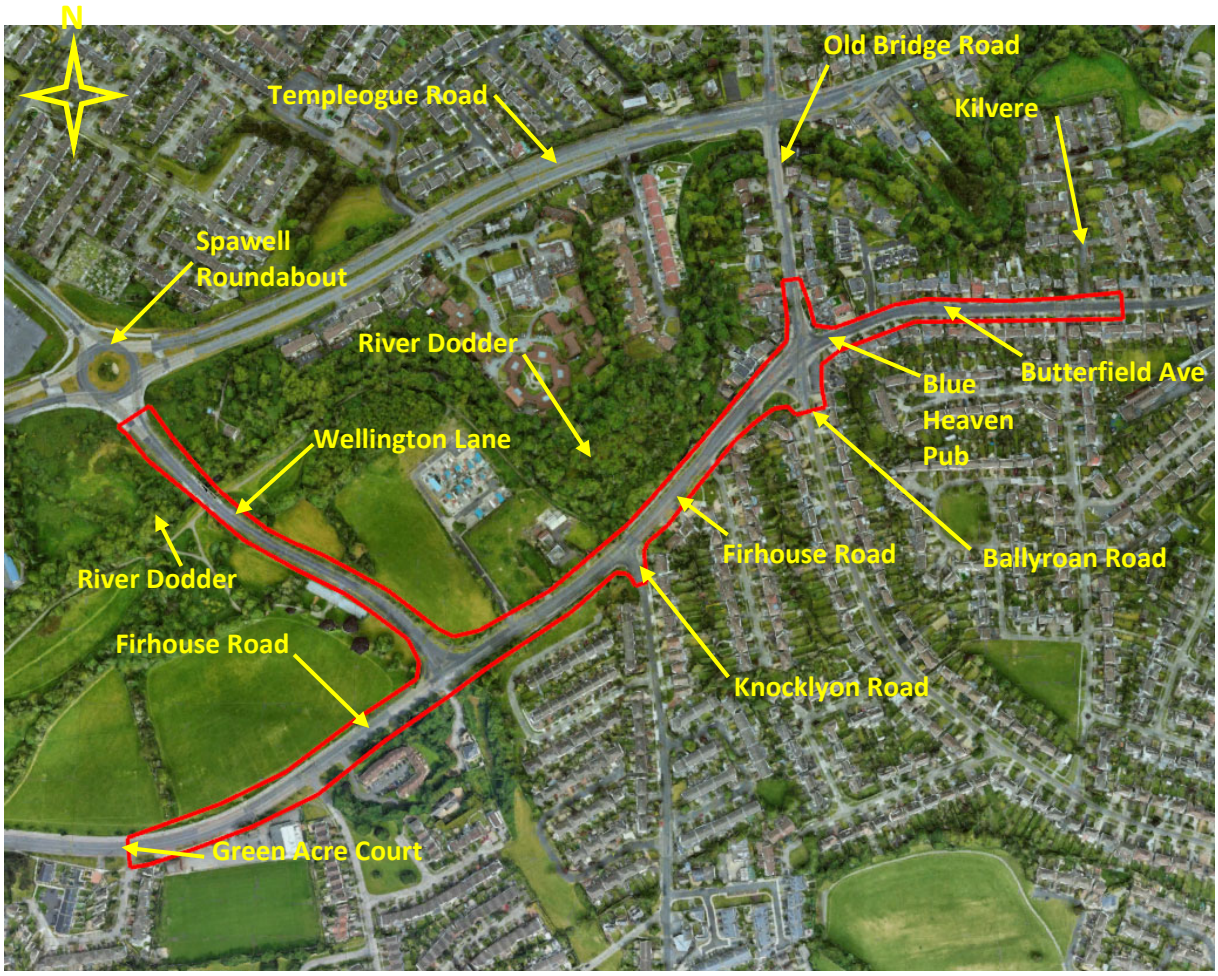


Figure 1.3.1 – Extent of proposed scheme.

The proposed Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Aves scheme comprises of the following:

- Approximately 1.59km of road upgrade including Firhouse Road, Wellington Lane, and Old Bridge Road.
- Old Bridge Road–Firhouse Road junction upgrade.
- Firhouse Road-Wellington Lane junction upgrade.
- Firhouse Road-Knocklyon Road junction upgrade.
- Approximately 800m of 2m wide segregated off road cycle track.
- Footpaths and shared surfaces upgrade along the entire proposed scheme extent.
- 5 no. bus stop redesign and upgrade
- Pedestrian crossings upgrade, including traffic lights and traffic signs.
- Landscaped Plaza Entrance to aesthetically harmonize with the Dodder Greenway routes.
- Road marking and road signs upgrade.
- Upgrade to existing entrances and accesses to Firhouse Road.
- All associated ancillary works and integrated landscape plans

1.4 Need for the Scheme

Over the last decade, the Great Dublin area has experienced significant traffic management changes that has raised people's awareness to the benefits of the use of public transport and other sustainable transport modes, such as cycling.

The Design Manual for Urban Roads & Streets (DMURS) states that to encourage more sustainable travel patterns and safer streets, designers must place pedestrians and cyclists at the top of the user hierarchy. It also notes that the movement of pedestrians and cyclists shall be prioritised in line with national, regional, and local policies. Therefore, the proposed scheme is imperative to encourage a modal shift to cycling and walking.

The demand for good and safer cycle facilities within the Great Dublin Area is clear and the proposed scheme intends to address that by delivering accessibility, permeability, and connectivity for the Dodder Greenway route and the surrounding areas. It will also provide enhanced and safer connectivity with other areas and routes, such as, Rathfarnham, Terenure, Templeogue and, Rathgar. Ultimately, the route should be delivered to improve safety, reduce journey times, and contribute towards increasing numbers of trips being made by bicycle and by foot in the local catchments.

The proposed scheme is essential to construct a well-defined and safer link between two sections of the overall Dodder Greenway route. Although the existing pedestrians and cyclists' facilities on Wellington Lane and Firhouse Road are in reasonable condition, they require improvements in order to achieve a high quality of service, which in turn will encourage more people on choosing a more sustainable travel option such as cycling and walking.

The overall Dodder Greenway Route Scheme was granted planning permission in 2017 and the scheme did not consider modifications on the existing pedestrians and cyclists' facilities on Firhouse Road or Wellington Lane. Upon revision of the overall Dodder Greenway Route, a section of the route – Firhouse Road – was considered as non-compliant with the objectives of a Greenway. Therefore, it was concluded that a separate Part 8 Planning application would be made for this section to fulfil the objectives of the Dodder Greenway.

1.5 Objectives of the Scheme

The following is a non-exhaustive list of objectives for the route taken into account by the project team in developing the overall Greenway and the proposed scheme to date:

I. To be a Greenway of international renown - the scheme must avoid compromises and be on a par with the best greenways in the world.
II. To improve the pedestrian and cycling offer and encourage modal shift to walking and cycling as a safe and convenient means of making local trips. The route should aim to serve a number of different trip types, both recreational and utilitarian.
III. To Improve junction crossing facilities for pedestrian and cyclists.
IV. To Improve infrastructure for pedestrians and cyclists.
V. To connect areas of parkland - the route should provide clear and coherent connectivity, both ecological and physical, between existing parks along the river corridor - such as Bushy Park, Herbert Park, Dodder Valley Park and Dodder Linear Park etc.
VI. To enhance the ecological corridor - the scheme should have a neutral to positive impact on local ecology. This can be achieved by inclusion of complementary planting and features for flora and fauna, providing ecological linkages and wildlife corridors.
VII. To cater for local amenity - the route should benefit local communities through enhancing existing amenity paths and providing new linkages to adjacent communities and village centres.
VIII. To benefit local business - the scheme will increase accessibility to local businesses and village centres along the river corridor.
IX. To cater for tourist amenity - it is envisaged that the route will attract walking and cycle tourists undertaking trails and circuits through the Dublin and Wicklow Mountains.
X. To cater for commuting – where commuting currently exists along the existing routes the scheme will either; ensure it is facilitated in a pedestrian priority environment or by provision of an alternative route for commuting cyclists if required.
XI. To achieve a Quality of Service[1] (QOS)1 A or A+ on all off-road sections in accordance with the National Cycle Manual (NCM).
XII. To achieve a Quality of Service (QOS) B or more on any on road sections in accordance with the National Cycle Manual (NCM)

1.6 Layout Options Considered

Several options were explored, assessed, and analysed during the preliminary design stage for the scheme. Details regarding options considered and assessments carried out can be found on the 'Options Report – Dodder Greenway Section Firhouse Road' in **Appendix B.**

The final proposed layout for the scheme, being put forward for this planning application, is a result of considerations and conclusions made from the following:

- Traffic Impact Assessments carried out by CSEA
- Submissions received during the Non-Statutory Public Consultation period.
- Road Safety Audit

[1] Quality of Service is a measurement of the degree to which the attributes and needs of the cyclist are met. In other words, it describes the quality of the cycling environment – a high Quality of Service will better meet the 5 Needs of the Cyclist.

- Independent traffic modelling audit carried out by PMCE Consultants
- Proposed Dodder Greenway Scheme objectives

With respect to the Firehouse Road – Wellington Lane and Old Bridge Road - Firhouse Road Junctions, specific modifications were undertaken at preliminary design stage to provide a safer and more coherent junction for cyclist and pedestrians to navigate through and ultimately access the Dodder Greenway infrastructure that is on offer. Based on pre-Covid traffic counts, Traffic analysis at each junction was undertaken to ensure that the upgrades proposed would not undermine or impact the performance or flow of traffic that traverses through on a daily basis. The results generated during the traffic assessment/analysis process are as conveyed int the 'Options Report – Dodder Greenway Section Firhouse Road' in **Appendix B** which ultimately dictated the final layout at both existing junction locations. Refer to **Appendix A** for junctions' layout.

1.7 Non-Statutory Public Consultation

Prior to this Statutory Public consultation (Planning Application – Part 8), a Non-Statutory Public Consultation was carried out during the period of 1st of December 2021 and the 14th of January 2022 to collect feedback from stakeholders to ensure that the proposed scheme is as optimum as it can be.

The outcome of this non-statutory public consultation is detailed in the 'Non-Statutory Public Consultation Report' in **Appendix C.**

2 Environmental Considerations

2.1 Environmental Impact Assessment Screening

This Environmental Impact Assessment (EIA) Screening Report (**Appendix D)** has determined that the proposed development does not exceed the thresholds that trigger the mandatory requirement for EIA and subsequently the proposed development is deemed to be a sub-threshold development. Accordingly, a Screening Assessment has been carried out in respect of this sub-threshold development in accordance with Schedule 7 of the Planning and Development Regulations 2001 – 2019. This EIA Screening assessment found that the proposed development is not likely to result in significant negative environmental effects. It is therefore recommended to South Dublin County Council that the proposed development would not be likely to have significant effects on the environment by virtue of its characteristics, location, size or potential impacts and does not require an Environmental Impact Assessment Report to be undertaken.

2.2 Screening for Appropriate Assessment

A Screening for Appropriate Assessment (AA) Report (**Appendix E)** has been prepared for the proposed development in accordance with Article 6(3) of the Habitats Directive, Part XAB of the Planning and Development Act, the relevant case law, established best practice and the Precautionary Principle. The AA Screening Report concluded that the proposed development, either individually or in combination with other plans or projects, is not likely to have significant effects on the South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay SAC, North Bull Island SPA or any other European site in view of best scientific knowledge and the Conservation Objectives of the site concerned.

2.3 Biodiversity

The site of the proposed development is of limited value, considering the totally artificial, built-up nature of the site and the lack of significant vegetation. The entire site of the proposed development corresponds with the Fossitt habitat classification 'Buildings and artificial surfaces' (BL3). The site is bounded by 'Amenity grasslands' (GA2), 'Scattered trees and Parkland' (WD5), 'Treelines' (WL2), and 'Depositing/lowland river' (FW2). The site itself does not support rare or protected species.

While the site itself is of little ecological value, part of the route runs adjacent to the River Dodder.

The River Dodder itself is an important wildlife corridor and contains rare and protected species including Otter, Kingfisher, Daubenton's Bat, Atlantic Salmon and Badger. Invasive species including Japanese Knotweed, Himalayan Balsam, Giant Rhubarb, Himalayan Honeysuckle and Cherry Laurel are also widespread in the Dodder catchment. Japanese Knotweed has been recorded on the riverbank at the bridge on Wellington Lane and the riverbank where the river comes in contact with the site boundary again on Firhouse Road. The works will not interfere with either of these areas and no control measures are required.

An Ecological Impact Assessment was prepared for the entire Dodder Greenway in 2019, and this is available as a standalone Report.

The landscape plans, included on the planning drawings (**Appendix A**), indicate that 89 no. existing trees will need to be removed, of which 4 no. will be replanted in the immediate curtilage, and the remainder of which (85 no.) will be permanently felled. Trees to be permanently felled include Norway Maple, Acer platanoides, Hornbeam, Carpinus betulus, and to a lesser degree, Salix spp. and Fraxinus spp. None of the trees to be removed are mature and the majority are non-native and planted as part

of roadside landscaping. They are young, well-spaced trees, which do not constitute linear habitat / treelines.

Otherwise, trees in the immediate vicinity will be retained. A cluster of mature riparian trees adjacent to the River Dodder will be retained, although some vegetation clearance will be required in this area to facilitate proposed paving, including removal of four young trees and some briar.

Eighty new trees will be planted, leaving a net loss (in absolute number of trees) of two. New trees which are proposed to be planted are Lime (Tilia cordata) (56 no.) Beech (Fagus sylvatica) (8 no.), Wild Cherry (Prunus avium) (4 no.), Downy Birch (Betula pubescens)(8 no.) and Hornbeam (Carpinus betulus) (4 no.).

As shown in **Appendix A**, the verges will be planted with a low growing native wildflower mix. In total this area will be 4,892m2. Native shrubs (Guelder Rose, Viburnum opulus (2 no.); Hazel, Corylus avellana (1 no.) and Dogwood, Cornus sanguinea (2 no.)) to the grass margin immediately north of the Firhouse Road – Wellington Lane junction. Note that the addition of these shrubs has not been included in the calculation of the net tree loss, as shown in Table 2.3.1, below.

Total removed (temporarily and permanently)	89
Total replanted	4
Total permanently felled	85 (= 89 – 4)
Total new trees planted	91
Net tree loss	-6 (= 89 – 95)

Table 2.3.1 – Envisaged Tree Feeling and Planting.

Owing to the location and scale of the proposed development, the fact that it will take place largely on the existing roadbed and the fact that routine construction best practice will be used for the duration of the construction phase, it can be concluded that there will be no significant impact on biodiversity during the construction phase. During the operational phase, the upgrading of the public lighting will reduce light spill onto the river which will improve this area of the river for nocturnal wildlife including bats.

It is proposed that industry standard pollution prevention measures are adhered to during construction and therefore it is considered that the proposed Scheme can be provided without any negative impact on the River Dodder. The following measures will be implemented during the construction and operation of the proposed development to prevent or reduce impacts on biodiversity.

During the construction phase, measures will be provided to ensure that run-off from the works is contained and sediment removed prior to discharge into the River Dodder. The works will be carried out in accordance with Guidelines for Crossing Watercourses during the Construction of National Road Schemes (TII, 2008); Inland Fisheries Ireland document Guidelines On Protection Of Fisheries During Construction Works In And Adjacent To Waters (IFI, 2016) and the CIRIA – Guideline Document C532 Control of Water Pollution from Construction Sites (CIRIA, 2001).

- The Contractor will ensure that construction compound(s) are situated a minimum of 10m from any watercourses and will feature best practice measures for pollution prevention.

• An Environmental Operating Plan (EOP) or Construction Environmental Management Plan (CEMP) will be prepared by the Contractor prior to the commencement of works, in accordance with the NRA Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan, and in agreement with South Dublin County Council. This will be a live document, to be maintained by the Contractor throughout the proposed works. It will address (at a minimum):

o Allocation of responsibilities in relation to environmental management;
o Details of environmental training for site personnel;
o Construction phase waste management;
o Good housekeeping procedures for the construction site;
o Efficient construction materials management;
o Construction phase traffic management (for all road-users, including cyclists and pedestrians, as well as construction traffic);
o Environmentally sound placement, set-up and management of construction compound(s) and storage areas;
o Implementation of best practice construction phase pollution prevention measures, particularly in relation to prevention of aquatic pollution;
o Implementation of best practice construction phase measures for the prevention of public nuisance due to noise, dust and any other relevant activities / aspects of the works; and
o Biosecurity protocols for all relevant construction activities.

• Additionally, the contractor will be required to comply with the noise and vibration levels as stipulated in the TII/NRA's Guidelines for the Treatment of Noise and Vibration in National Road Schemes.

• The proposed development will include for the upgrade of the existing public lighting along the Dodder Road Lower. The lighting design for the proposed development (not detailed at this stage) will be in accordance with Bat Conservation Ireland's Guidance Notes for Planners, Engineers, Architects and Developers (2010) and the Bat Conservation Trust & Institute of Lighting Professionals' guidance note (no. 08/18), Bats and Artificial Lighting in the UK: Bats and the Built Environment (2018). The proposed lighting will be directed away from river edge so as to minimise impacts on Fauna. The final design of lighting proposals proposed as part of the proposed development will be approved by both the NPWS and SDCC parks department. This approach aims to ensure that there will be a negligible impact on Fauna arising from the proposed lighting design.

• The Contractor will ensure that all vegetation clearance (including tree felling) will be carried out outside of the nesting season (i.e. no clearance between 1st of March and 31st of August, inclusive).

• The wildflower mix used in the proposed landscaping will be appropriate for the site context (i.e. soil pH, drainage, light, etc.) and utilise native species insofar as possible. No invasive species shall be permitted in the wildflower mix.

In addition to the four Natura 2000 sites identified in the AA Screening Report, there are two Proposed Natural Heritage Areas (pNHA) in the Zone of Influence of the proposed development. Dublin Bay is also designated as a United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Biosphere Reserve. Taking account of the location, nature and scale of the proposed development, there will be no impact whatsoever on any designated site.

Table 2.3.2 presents a summary of the designated sites which occur within the Zone of Influence, as such, are susceptible to significant ecological effects.

Designated site [site code]	Description
South Dublin Bay and River Tolka Estuary SPA [004024]	This site comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dún Laoghaire and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. The site is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. Notably, four of the species that regularly occur at this site are listed on Annex I of the Birds Directive, namely Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Parts of the site are also designated as the Ramsar Convention site "Sandymount Strand/Tolka Estuary".
North Bull Island SPA [004006]	This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529). The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance. The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter.

North Dublin Bay SAC [000206]	This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site. Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation. The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (Cakile maritima), Oraches (Atriplex spp.) and Prickly Saltwort (Salsola kali). The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "Salicornia flat", which is dominated by Salicornia dolichostachya, a pioneer glasswort species, and covers about 25 ha. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.
South Dublin Bay SAC [000210]	This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake. The bed of Dwarf Eelgrass (Zostera noltii) found below Merrion Gates is the largest stand on the east coast. Green algae (Enteromorpha spp. and Ulva lactuca) are distributed throughout the area at a low density. Fucoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include Fucus spiralis, F. vesiculosus, F. serratus, Ascophyllum nodosum and Pelvetia canaliculata. This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.
Dodder Valley pNHA [000991]	This stretch of the River Dodder extends for about 2km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City. The vegetation consists of woodland scrub mainly of willows (Salix spp.), but up to thirteen species of tree have been recorded. The understorey vegetation contains a food variety of plant species, including Early-purple Orchid (Orchis mascula) and a diversity of plant species. There is also a pond in the riverbed at Firville which has flourished greatly since the floods of 1986.m Forty-eight species have been recorded recently in the area including Little Grebe, Kingfisher, Dipper and Grey Wagtail. Part of the riverbank supports a Sand Martin colony of up to 100 pairs. The site represents the last remaining stretch of natural riverbank vegetation on the River Dodder in the built-up Greater Dublin Area (NPWS, 2009)

Dolphin, Dublin Docks pNHA [000201]	Both Common Tern and Arctic Tern breed in Dublin Docks, on a man- made mooring structure known as the E.S.B. dolphin. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007. South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

Table 2.3.2 – Designated Sites in the Zone of Influence.

2.4 Flooding

While the River Dodder does flood in the vicinity of the proposed development, it does not do so within the footprint of the proposed development. The proposed development is not expected to significantly increase the volume of run-off to the watercourse, nor does it constitute development within the known flood extents of the river. As such, the proposed development is not expected to exacerbate or be affected by flooding during the construction or operational phases.

2.5 Population and Human Health

The construction phase of the proposed development is likely to result in the emission of noise and small volumes of dust. It will also result in temporary closures of sections of footpath along the route in question. These aspects of the construction phase will result in, at worst, slight, temporary negative effects, in the form of nuisance to road- users and residents in the immediate vicinity. The works will be carried out in accordance with best practice in relation to health and safety, such that no direct, significant, negative human health effects are expected to arise as a result of on-site accidents or otherwise. Traffic management measures (including but not limited to signage and provision of alternative routes) will be implemented, as appropriate, to ensure convenient and safe movement of all road-users throughout the construction phase. Any utilities infrastructure will be diverted, if and as required, and interruptions to services will be avoided insofar as possible, such that no significant effects are anticipated.

The operational phase of the proposed development will provide safer and more convenient infrastructure for cyclists and pedestrians along the route in question and will also tie in with the greater Dodder Greenway. This is likely to facilitate and promote a modal shift away from private car use and towards cycling, walking or both along the route. In terms of human health in the locality, this will result in slight to moderate, permanent, positive effects, through reduced risk of road traffic accidents involving most vulnerable road-users, increased physical activity, improved access to outdoor recreation and reduced noise / air pollution due to internal combustion engines along the route.

2.6 Landscapes and sites of historical, cultural or archaeological significance

here are no recorded archaeological or architectural heritage sites in the footprint of or immediately adjacent to the proposed development. Considering that the vast majority of the footprint of the proposed development consists of existing roadbed and previously landscaped parkland, it is unlikely that any unrecorded archaeological features will be encountered during the limited excavations proposed. In the unlikely event that such a feature is encountered, the works in question will be immediately halted, and a suitably qualified archaeologist will be contracted to make a full written and photographic account of the remains before works in the area can proceed.

The proposed works may negatively affect visual amenity for residents in the immediate vicinity of the route in question. However, the associated negative effect will be slight at worst, and temporary in duration, and good housekeeping procedures on the part of the Contractor will minimise visual effects insofar as is practicable.

The proposed development is fully aligned with the vision for the 'Urban' LCA described in the South Dublin Landscape Character Assessment (2015), in that it will enhance pedestrian and cyclist infrastructure and improve access to recreational parkland in the Dodder Valley.

The proposed development design has been visually integrated into the existing landscape through careful design, as described above and illustrated in Figures on section 4.14.

The proposed development does not involve any high-rise / built elements which could obscure or negatively affect protected views / prospects across the wider area.

3 Preliminary Design

3.1 The Scheme

The proposed scheme intends to modify and upgrade the existing pedestrian and cyclists' facility on Wellington Lane and Firhouse Road. It proposes to segregate the cyclists' facilities from the carriageway and increase its width.

The overall extent of the Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Aves scheme is approximately 1.59km in total and is designed to link and supplement the overall Dodder Greenway Route. The scheme extents from Green Acre Court and traverses in a north easterly direction to the existing Butterfield Ave-Kilvere Junction. The extent of the proposed scheme also includes Wellington Lane, from Firhouse Road to Spawell Roundabout.

The proposed scheme intends to rearrange the layout of 5 no. existing bus stops and to rearrange the existing cycle lane facilities within the existing carriageways footprint. Furthermore, it is the schemes' objective to provide upgrades to existing road junctions and to existing pedestrian crossing facilities at Firhouse Road, Firhouse Road – Wellington Lane Junction and the Old Bridge Road - Firhouse Road Junction (Blue Haven Junction) thus making it safer for pedestrian and cyclists to ultimately utilize when brought into full service.

The proposed scheme's intention on the junctions' upgrade is to remove or reduce the existing concrete island on the road, as much as possible, while improving the junction efficiency.

As the scheme has the objective to be in line with the greenway strategy and to achieve a high quality of service for all the proposed routes, segregation is proposed throughout. The proposed width of the cycle paths and footpaths for the scheme also follows the recommendation of the National Transportations Authority's National Cycle Manual.

For a better understanding of the scheme please refer to the overall layout located in **Appendix A** of this report.

The proposed Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Aves scheme comprises of the following:

- Approximately 1.59km of road upgrade including Firhouse Road, Wellington Lane, and Old Bridge Road.
- Old Bridge Road–Firhouse Road junction upgrade.
- Firhouse Road-Wellington Lane junction upgrade.
- Firhouse Road-Knocklyon Road junction upgrade.
- Approximately 800m of 2m wide segregated off-road cycle track.
- Footpaths and shared surfaces upgrade along the entire proposed scheme extent.
- 5 no. bus stop redesign and upgrade
- Pedestrian crossings upgrade, including traffic lights and traffic signs.
- Landscaped Plaza Entrance to aesthetically harmonize with the Dodder Greenway routes.
- Road marking and road signs upgrade.
- Upgrade to existing entrances and accesses to Firhouse Road.
- All associated ancillary works and integrated landscape plans

3.2 Proposed Road Cross Section

Along the overall extension of the proposed Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Ave. scheme there will be different road cross sections proposed due to the varied conditions encountered along its intended route. Generally, the dedicated on-road cycle lane for commuting on Firhouse Road is proposed to be transformed into 2 meters wide off-road cycle track by raising its level in comparison with the carriageway and segregating it from the road by a proposed kerb line. The same design intention is proposed for Wellington Lane.

On Firhouse Road, from Knocklyon Road to Kilvere, a Two-way cycle track is proposed on the northern side of the road.

The road cross sections have been designed to encourage and maximise sustainable transport with particular emphasis on creating a modal shift to cycling and waling.

3.2.1 Proposed Road Cross Sections on Firhouse Road

The following figures are proposed road cross sections on Firhouse Road and the table below each figure details the existing and proposed condition of each road cross section, respectively. For road cross section locations please refer to proposed Part 8 drawings in **Appendix A**.

Figure 3.2.1.1 below details the proposed road cross section located on Firhouse Road in front of Ballyboden St Enda's GAA Club.

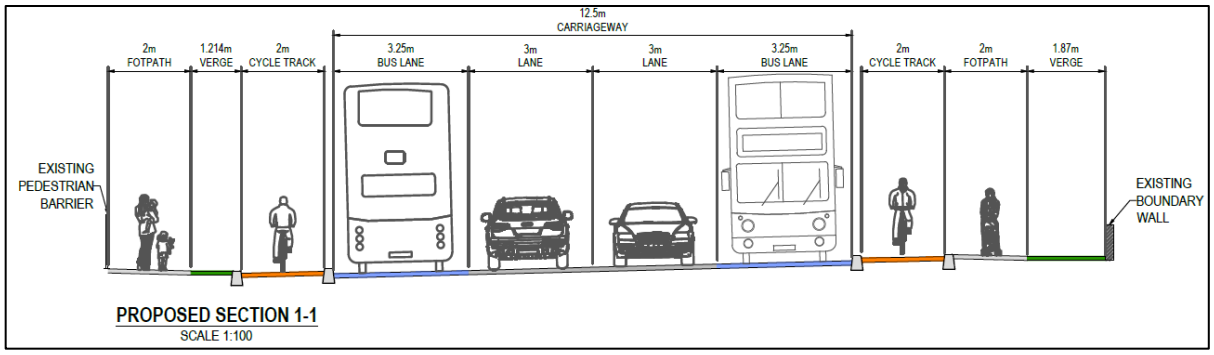


Figure 3.2.1.1 – Propose Road Cross Section No. 1 – Firhouse Road.

Road Cross Section No. 1	Details
Existing	From south to north (RHS to LHS) the existing road cross section comprises of the following facilities: • 1.5m stone verge • 1.75m concrete footpath • 1.17m grass verge • 16.32m carriageway with 2 traffic lanes, 2 bus lanes and 2 cycle lanes • 1.10m of concrete verge • 2.02m of concrete footpath
Proposed	From south to north (RHS to LHS) the proposed road cross section will comprise of the following facilities: • 1.87m verge

	• 2.00m footpath • 2.00m cycle path • 12.50m carriageway with 2 traffic lanes and 2 bus lanes • 2.00m cycle track • 1.21m verge • 2.00m footpath

Table 4.2.1.1 – Propose and existing Road Cross Section No. 1 Details.

Figure 3.2.1.2 below details the proposed road cross section located on Firhouse Road between Cherry field Way and Knocklyon Road.

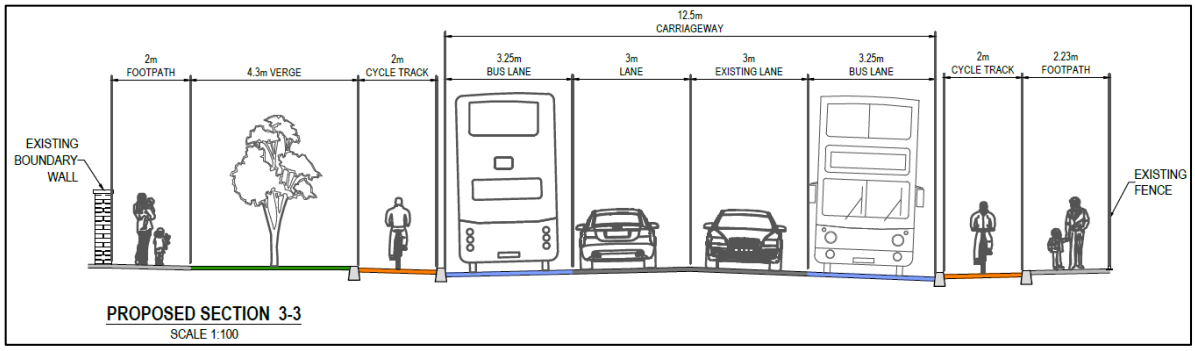


Figure 3.2.1.2 – Propose Road Cross Section No. 3 – Firhouse Road.

Road Cross Section No. 3	Details
Existing	From south to north (RHS to LHS) the existing road cross section comprises of the following facilities: • 2.07m concrete footpath • 1.71m bituminous cycle path • 13.63m carriageway with 3 traffic lanes, 1 bus lanes and 1 cycle lane • 5.90 m of grass verge • 2.23m concrete footpath
Proposed	From south to north (RHS to LHS) the proposed road cross section will comprise of the following facilities: • 2.23m footpath • 2.00m cycle track • 12.50m carriageway with 2 traffic lanes and 2 bus lanes • 2.00m cycle track • 4.30m grass verge • 2.00m footpath

Table 3.2.1.2 – Propose and existing Road Cross Section No. 3 Details.

Figure 3.2.1.3 below details the proposed road cross section located on Firhouse Road immediate west from Blue Heaven Junction (Firhouse Rd – Ballyroan Rd junction).

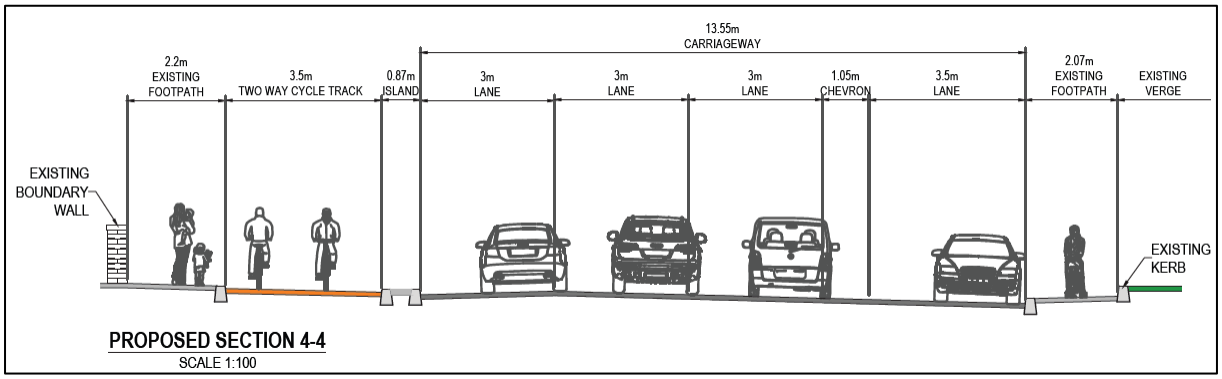


Figure 3.2.1.3 – Propose Road Cross Section No. 4 – Firhouse Road.

Road Cross Section No. 4	Details
Existing	From south to north (RHS to LHS) the existing road cross section comprises of the following facilities: • 1.77m concrete footpath • 13.53m grass verge • 2.07m concrete footpath • 17.41 carriageway with 4 traffic lanes and 3 cycle lane • 2.70m concrete footpath
Proposed	From south to north (RHS to LHS) the proposed road cross section will comprise of the following facilities: • 1.77m footpath (to be retained) • 13.53m verge (to be retained) • 2.07m footpath (to be retained) • 13.55m carriageway with 4 traffic lanes • 0.87m concrete island • 3.5m two-way cycle track • 2.20m footpath

Table 4.2.1.3 – Propose and existing Road Cross Section No. 4 Details.

3.2.2 Proposed Road Cross Sections on Butterfield Avenue

The following figures are proposed road cross sections on Butterfield Avenue and the table below each figure details the existing and proposed condition of each road cross section, respectively. For road cross section locations please refer to proposed Part 8 drawings in **Appendix A**.

Figure 3.2.2.1 below details the proposed road cross section located on Butterfield Avenue west from Anne Devlin Road.

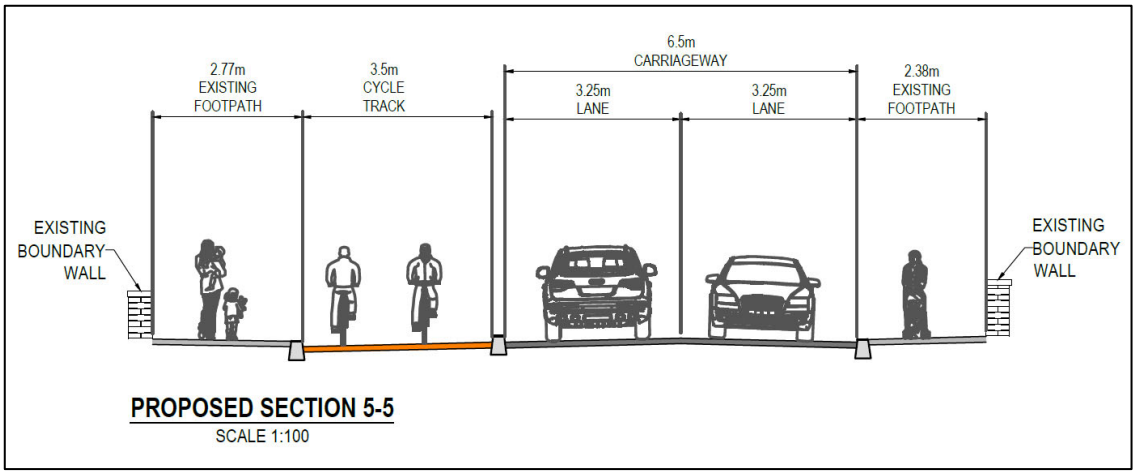


Figure 3.2.2.1 – Propose Road Cross Section No. 5 – Butterfield Ave.

Road Cross Section No. 5	Details
Existing	From south to north (RHS to LHS) the existing road cross section comprises of the following facilities: • 3.17m concrete footpath • 10.57 carriageway with 2 traffic lanes • 1.62m concrete footpath
Proposed	From south to north (RHS to LHS) the proposed road cross section will comprise of the following facilities: • 2.38m footpath • 6.50m carriageway with 2 traffic lanes • 3.5m two-way cycle track • 2.77m footpath

Table 3.2.2.1 – Propose and existing Road Cross Section No. 5 Details.

3.2.3 Proposed Road Cross Section on Wellington Lane

The following figures are existing and proposed road cross sections on Wellington Lane and the table below each figure details the existing and proposed condition of each road cross section. For road cross section locations please refer to proposed Part 8 drawings located in the Part 8 drawings **and Appendix A** of this report.

Figure 3.2.3.1 below details the proposed road cross section located on Wellington Lane at the existing bridge.

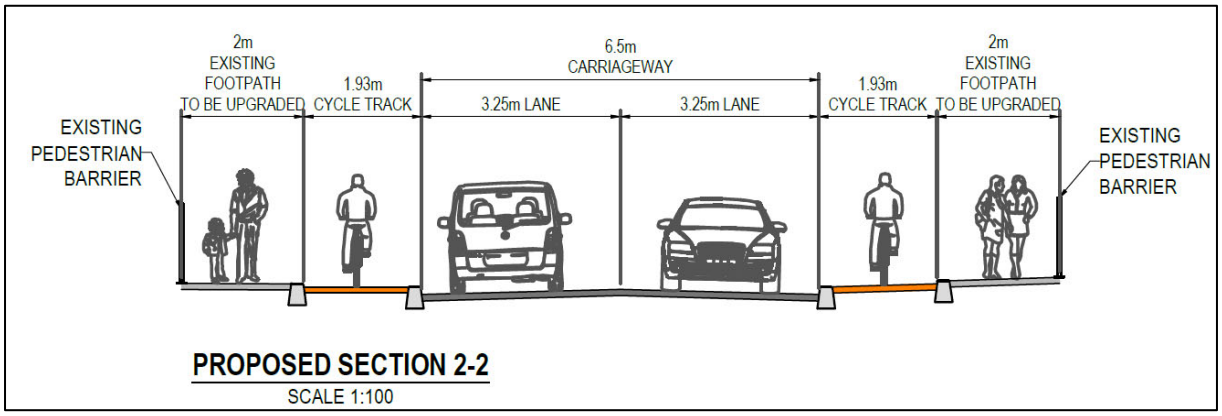


Figure 3.2.3.1 – Propose Road Cross Section No. 2 – Wellington Lane.

Road Cross Section No. 2	Details
Existing	From east to west (RHS to LHS) the existing road cross section comprises of the following facilities: • 2.36m concrete footpath • 9.03m carriageway with 2 traffic lanes • 2.93m concrete footpath
Proposed	From east to west (RHS to LHS) the proposed road cross section will comprise of the following facilities: • 2.00m footpath • 1.93m cycle track • 6.50m carriageway with 2 traffic lanes • 1.93m cycle track • 2.00m footpath

Table 4.2.2.1 – Propose and existing Road Cross Section No. 2 Details

3.3 Horizontal & Vertical Alignment

The horizontal alignment of the proposed scheme has been designed to optimize the junction's layout within the scheme and to facilitate space for the inclusion of segregated cycling facilities throughout the extent of the scheme.

The vertical alignment for the proposed Dodder Greenway Phase 5 - Firhouse Rd, Wellington Ln & Butterfield Aves scheme has been designed to have minimum impact on the existing profile of the carriageway. The proposed road cross sections slopes will aim to direct generated run off towards proposed catchment points (e.g., gullies, drainage channels, and drainage kerbs) and away from existing boundary walls, openings or third-party properties.

3.4 Sustainable Transport & Smarter Travel

One of the main objectives of the Dodder Greenway is to encourage modal shift to walking and cycling as a safe and convenient means of making local trips. By being part of the Dodder Greenway, the proposed scheme also has the same objective, and it will contribute to reduce the effects of climate change by reducing the carbon emission into the atmosphere.

The World Health Organization stated that approximately 92% of people around the world breathe air that is considered to be under the recommended level of quality. The overall intention of the scheme, apart from the physical upgrade on the existing urban infrastructure, is to contribute to a better and more sustainable planet. The proposal intends to work with the National Transport Authority's (NTA) Smarter Travel Programme, supporting people to choose more sustainable travel options such as cycling and walking in this case.

The aim of Smarter Travel Programme is to raise people's awareness on how and why we make travel choices for all the trips we make. It is about considering the impact our travel decisions have on others and on ourselves. According to the NTA, between workers and students, approximately 400,000 people travel 4 kilometres or less to work, school or college by car every day – distances that could easily be cycled or walked. It has been conjectured that if this number of people changed to walking or cycling, urban traffic congestion would reduce significantly, goods movement efficiency would improve considerably, and time travel times would reduce significantly.

As already declared above, the proposed scheme is part of the Dodder Greenway and it has the intention to encourage a modal shift to walking and cycling, which successfully falls in line with the European Greenways Association's (EGA) definition of Greenways. According to the EGA, greenways are communication routes reserved exclusively for nonmotorized journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient, and surface condition to ensure that they are both user-friendly and low risk for users of all abilities.

3.5 Road Lighting

The proposed scheme intends to relocate existing Public Lighting poles, if deemed in good conditions, or install new poles if necessary. The existing lanterns are proposed to be replaced by Light Emitting Diode (LED) lanterns as a measure to reduce energy consumption. At sensitive areas, a bat friendly light shall be introduced and light spill on the Dodder River will not be tolerated.

Furthermore, any proposed public lighting design attributed to the scheme Road development shall be cognisant of the recommendations outlined in Section 2. Construction and installation of the proposed Public Lighting system shall not be implemented on site until SDCC approval has been granted from SDCC Public Lighting Department.

3.6 Surface Water Drainage

Irish Water existing service records show that there are several outfall pipes that cross Firhouse road and discharge into the Dodder River. Refer to figure 3.7.1 below for an extract from Irish water's service records drawings made available to CSEA.

The existing surface water system will be surveyed to determine if its current conditions is appropriate to accommodate the designed run off rates. It is expected that the existing surface water pipe network is sufficient to cater for the generated run off, however, it is likely that remedial works, such as cleaning of the networks and repairs will be required.

As the scheme is deemed as an upgrade to existing pedestrian and cyclist infrastructure on the road, it is noted that it will not have an increase on the existing designed runoff rates. With the above in mind, the existing surface water system will be retained, as much as possible, and used as a connection point for all relocated gullies. It is also envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

3.7 Foul Water Drainage

Irish Water existing service records show that there is an existing gravity foul water drainage system within Firhouse Road and Butterfield Ave corridor. The existing records do not show any existing foul water drainage system within Wellington Lane corridor. Refer to figure 3.7.1 below for an extract from Irish water's service records drawings made available to CSEA.

The proposed scheme will not impact the existing foul water drainage system. However, it is envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

A survey of the existing foul water drainage system is proposed to be carried out at detail design stage to determine if service diversion works will be required. In the event where a service diversion is required the works will be carried out cognizant that the existing foul water drainage system shall not be negatively impacted.

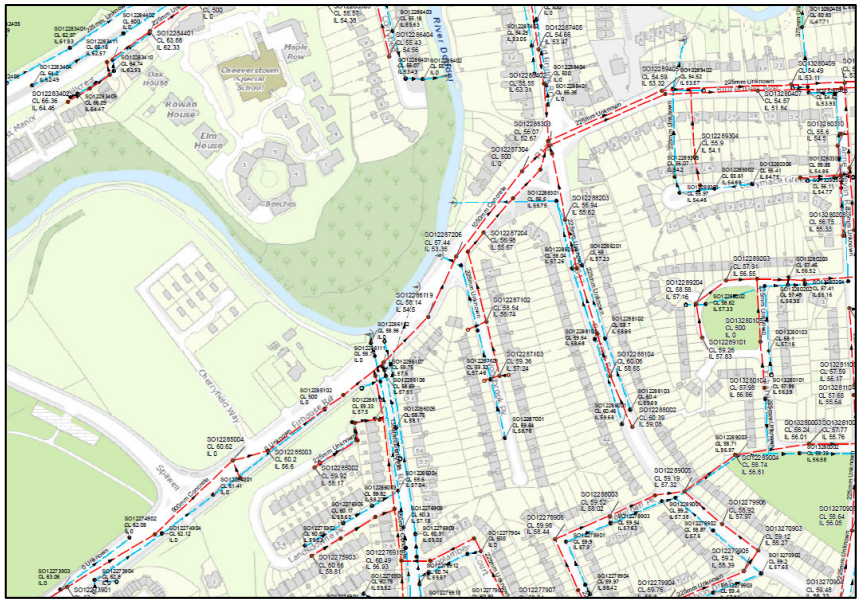


Figure 3.7.1 – Irish Water's Existing Service Records

3.8 Water Main

Irish Water existing service records show that there are several ductile iron pipes of different diameter within Firhouse Road and Butterfield Avenue corridor. The existing records do not show any existing watermain within Wellington Lane corridor. Refer to figure 3.8.1 below for an extract from Irish water's service records drawings made available to CSEA.

The proposed scheme will not impact the existing watermain system. However, it is envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

A survey of the existing watermain system is proposed to be carried out at detail design stage to determine if service diversion works will be required. In the event where a service diversion is required the works will be carried out cognizant that the existing watermain system shall not be negatively impacted.

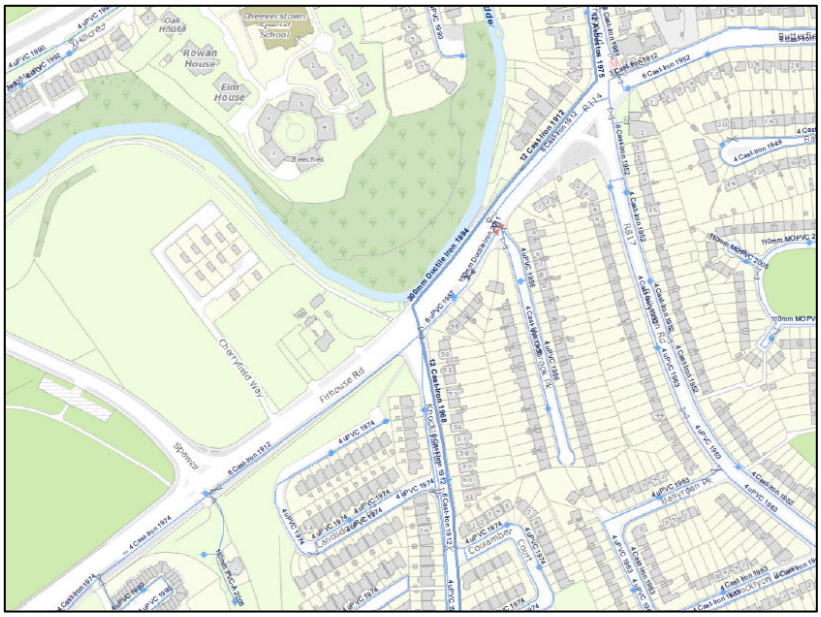


Figure 3.8.1 – Irish Water's Existing Service Records

3.9 Telecommunications

As per eircom and virgin media existing service records, there are various underground ducts and cables within the area of the proposed scheme. Refer to figure 3.9.1 below for an extract from eircom's existing service records drawings made available to CSEA.

The proposed scheme will not impact the existing telecom system. However, it is envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

As the scheme intends to provide a continue closed-circuit television (CCTV) system for the overall Dodder Greenway, an additional underground telecom and power supply system is proposed under the proposed route of the scheme.

A survey of the existing telecom system is proposed to be carried out at detail design stage to determine if service diversion works will be required. In the event where a service diversion is required the works will be carried out cognizant that the existing telecom system shall not be negatively impacted.

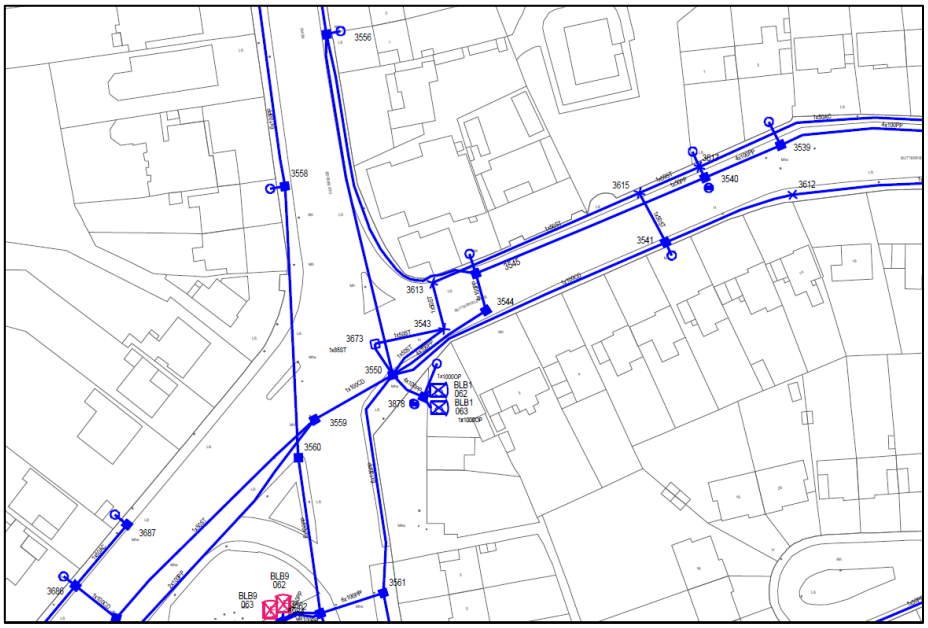


Figure 3.9.1 – Eircom's Existing Services Records – Blue Heaven Junction.

3.10 Gas

According to Gas Networks Ireland (GNI) existing service records the site of the proposed scheme includes existing low pressure and median pressure gas mains.

The proposed scheme will not impact the existing gas main system. However, it is envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

3.11 Power

The proposed scheme will not impact the existing power system. However, it is envisaged that existing chamber cover and frames will be removed and reinstalled at new finished levels.

As the scheme intents to provide a continue closed-circuit television (CCTV) system for the overall Dodder Greenway, an additional telecom and power supply system is proposed under the proposed route of the scheme. Additionally, connection applications will be made to connect and supply power to the proposed CCTV system.

3.12 Security

A proposed CCTV video surveillance system is earmarked to be installed along the overall Dodder Greenway covering the entire extension of the route. It's envisaged that to supply connectivity and power to all proposed CCTV Pole locations a new telecom and power system will be introduced throughout the length of the scheme. Connection applications will be made to connect and supply power to the proposed CCTV system.

3.13 Traffic Lights

Included under the proposed scheme is the upgrade of 3 no. junctions. These junctions will include an upgraded traffic lights phasing system that will provide safer and more coherent movement for all pedestrian and cyclist users.

These proposed traffic light infrastructures for the proposed scheme have been designed in accordance with South Dublin County Council Traffic Lighting Specification.

3.14 Landscape

Currently there are approximately 58 no. young sycamore (Acer platanoides) in the grass verge along Wellington Lane that are proposed to be removed as part of the scheme. At the corner of Dodder Valley Park to the east of the junction of Wellington Lane and Firhouse Road there is a row of lime (Tilia sp.) trees. 17 no. lime trees (Tilia cordata) are proposed along the park's boundary with Wellington Lane. This species matches the existing trees and works to create a continuous avenue of trees and mark the boundary of the park. 10no. lime trees are proposed in the verge to the south of wellington lane to replace trees removed.

Figure 4.14.1.– Proposed Tilia Cordata to form boundary between the park and Wellington Lane.

The junction of Wellington Lane and Firhouse Road will be altered which will provide additional greenspace at the corner of Dodder Valley Park. Two bird cherry (Prunus avium) and shrubs including dogwood (Cornus sanguinea), guelder rose (Viburnum opulus), hazel (Corylus avellana) is proposed for this corner. These plants have been chosen as they are native and beneficial for wildlife.

To the east of the junction between Firhouse Road and Wellington Lane thirteen hornbeam (Carpinus betulus) will be removed to allow for the development. Ten will be replanted within the new verges.

Further along the road three birch trees (Betula pubescens) are proposed along the verge near the new bus stop on Firhouse Road. 5 additional birch trees are incorporated into the verges on Butterfield avenue. These are native trees with attractive bark and foliage and are in keeping with the planting scheme used elsewhere on the greenway. The existing trees in the verges at the junction of Firhouse road and Butterfield avenue are retained in this development.

20 lime trees are removed along the southern side of Firhouse road to accommodate the new cycleway layout. 35 new lime trees are proposed to replace the trees removed and create a continuous avenue.

Figure 4.14.2– Prunus avium and Betula pubescens

A row of beech trees (Fagus sylvatica) run along the boundary of Dodder Valley Park and Firhouse Road to the west of the junction with Wellington Lane. These trees will not be impacted by the development. An additional eight beech trees are proposed to infill gaps in this row of trees. These are a majestic tree and in time will grow to form a strong boundary to the park.

Figure 4.14.3 – Example of mature beech trees used to form boundary to park

4 Traffic Impact Assessment

4.1 Introduction

This section of the Report sets out the traffic impacts of the proposed road changes to key junctions within area coverage of the proposed scheme. The industry standard LinSig traffic modelling software has been used for predicting capacities, queues, and delays. The contents within this section also present a description of the junctions under study, as well as the existing traffic conditions in the network.

4.2 Junctions Under Study

As noted in Chapter 3 of this Report, upgrade works are proposed for the following junctions:

- Old Bridge Road–Firhouse Road junction – also named Blue heaven junction - (J1)
- Firhouse Road-Knocklyon Road junction (J2)
- Firhouse Road-Wellington Lane junction (J3)

As a result of the proposed upgrade works for these junctions, it was deemed relevant to undertake a capacity analysis of the same.

Figures 4.2.1 below illustrates the location of these junctions within the road network under study.

Figure 4.2.1 - Junctions under Study

4.3 Existing Conditions

4.3.1 Road Network Characteristics

J1: Old Bridge Road/Butterfield Avenue/Ballyroan Road/Firhouse Road junction (Blue Heaven Junction)

Firhouse Road intersects with Old Bridge Road, Butterfield Avenue, and Ballyroan Road forming a 4-arm signal-controlled junction. The following junction layout is currently in place:

- Firhouse Road comprises the southwestern arm of the junction accommodating 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. 1 no. exit lane is provided on this arm. In addition to this, on-street cycle lanes are available on each approach. As well as an Advance Stop Line storage for cyclist. A third cycle lane is provided in between the left-turn slip lane and the remaining lanes of the junctions, to allow cyclist to transit straight-through the junction.
- Old Bridge Road comprises the northern arm of the junction. This accommodates 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. 1 no. exit lane is provided on this arm. A signalised pedestrian crossing is available across this arm and an on-street cycle lane is provided on the southbound approach. Advance Stop Line storage is provided for cyclist on this arm.
- Butterfield Avenue comprises the eastern arm of the junction and it accommodates 2 no. entry lanes, one to allow straight-through and left turn movements and one to allow right turning manoeuvres only. 1 no. exit lane is provided. A signalised pedestrian crossing is provided across this arm, in addition to an Advance Stop Line storage for cyclist. No cycle lanes are available on this arm.
- Ballyroan Road comprises the southern arm of the junction accommodating 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. 1 no. exit lane is provided on this arm. In addition to this, on-street cycle lanes are available on each approach, as well as Advance Stop Line storage for cyclist. A third cycle lane is provided in between the left-turn slip lane and the remaining lanes, to allow cyclist to transit straight-through the junction. A signalised pedestrian crossing is available across this arm

In addition to the facilities described above, footpaths are also available in all arms. All entry lanes on this junction measure approximately 3.0 metres wide.

J2: Firhouse Road / Knocklyon Road Junction

Firhouse Road intersects with Knocklyon Road via a 3-arm signal-controlled junction. The following junction layout is currently in place:

- Firhouse Road comprises the northeaster and southwestern arms of this junction. It accommodates 2 no. entry lane, one to allow straight through movements and one to allow right turns only into Knocklyon Road. 1 no. exit lanes on each arm are available in both ends. On-street cycle lanes and Advance Stop Line storage for cyclist is also provided. A signalised pedestrian crossing is available on the northeaster arm.

- Knocklyon Road comprises the southern arm of this junction. It accommodates 2 no. entry lanes for left turns and right turns, 1 no. exit lane. A signalised pedestrian crossing is available across this arm.

In addition to the facilities described above, footpaths are also available in all arms. All entry lanes on this junction measure ca. 3.0 metres wide.

J3: Firhouse Road / Spawell Link Road/ Charleville Manor junction

Firhouse Road intersects with Spawell Link Road and Charleville Manor via a 4-arm signal-controlled junction. The following junction layout is currently in place:

- Firhouse Road comprises the northeaster and southwestern arms of this junction. The northeaster arm accommodates 2 no. entry lane, one to allow straight through movements and one to allow right turns only. The southwestern arm accommodates 3 no. entry lanes, two allowing straight-through movements and left turning slip-lane into Spawell link Road. 1 no. exit lanes are provided on each arm. A signalised pedestrian crossing is available on the southwestern arm with a refuge island dividing both approaches.

- Spawell Link Road comprises the north-western arm of the junction. It accommodated 3 no. entry lanes, one allowing straight through/right turns, and two allowing left turns into R114 Firhouse Road. 1 no. exit lane is provided on this arm. A signalised crossing is provided across this arm with a refuge island available for pedestrians.

- Charleville Manor comprises the southeaster arm of the junction. This arm provides access to approximately 7 no. residential property located on the south side of the junction accommodating all movement on a single access lane.

  Charleville Manor

  The Charlevine Manor was not taken into consideration in the traffic modelling undertaken for this Traffic Impact Assessment due to the low activity associated with this arm. The traffic lights phase for this arm of the junction is only activated when requested (vehicle detected by detectors on this arm) and it has been estimated that it is requested approximately 2 no. times in a 1-hour period.

  When activated, the overall traffic lights' cycle time[2] for the junction is retained (120 seconds) and the time for the Charlevine Manor phase is incorporated within it.

  If the traffic lights phase for Charlevine Manor is included in the model, the software (LinSig) will assign a phasing (green time) to Charlesville manor in every cycle. This will not result on realistic performance indicators, as it is estimated that this arm will be activated two times in a 1-hour.

[2] Cycle Time is defined as the time that it takes for all traffic light phases to be concluded. In other words, for all arms to receive a green and a red light.

In addition to the facilities described above, footpaths are also available in all arms. All entry lanes on this junction measure ca. 3.0 metres wide. A staggered pedestrian crossing is currently provided across Firhouse Road southwestern arm and Spawell Link Road.

4.3.2 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 Junction 1 and Junction 3. The surveys 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. Figure 4.2.1, (overleaf), illustrates the location of the surveyed junctions as J1 and J3.

At the time of this assessment, a 2020 traffic survey was not available for Firhouse Road / Knocklyon Road Junction. The exiting and entry flows captured by the surveys described above have been utilised to estimate the existing traffic volumes transiting through this junction. Furthermore, a 2017 traffic survey has served as an input to determine the turning proportions at 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 4.3.2.1 below, summaries the total approach flows recorded to transit through Junction no. 1 and Junction no. 3 and estimated for Junction no. 2 during the critical periods. Traffic figures presented in the following table are in Passenger Car Units (PCUs) with the following factors assumed (Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 - October 2016):

- Medium goods vehicles = 1.5 PCUs
- Bus = 2.0 PCUs
- HGV = 2.3 PCUs

Junction No.	Approach Flows	
	AM Peak (08:00-09:00hrs)	PM Peak (16:30-17:30hrs)
J1	2,378	2,295
J2	1,540	2,073
J3	2,053	2,234

Table 4.3.2.1 - Traffic Survey Results

As shown on Table 4.3.2.1 above, Old Bridge Road/Butterfield Avenue/Ballyroan Road/Firhouse Road (Junction 1) carries the highest volume of traffic when compared to the other junctions. Figure 4.3.2.1, below, presents the turning PCUs volumes at each junction.

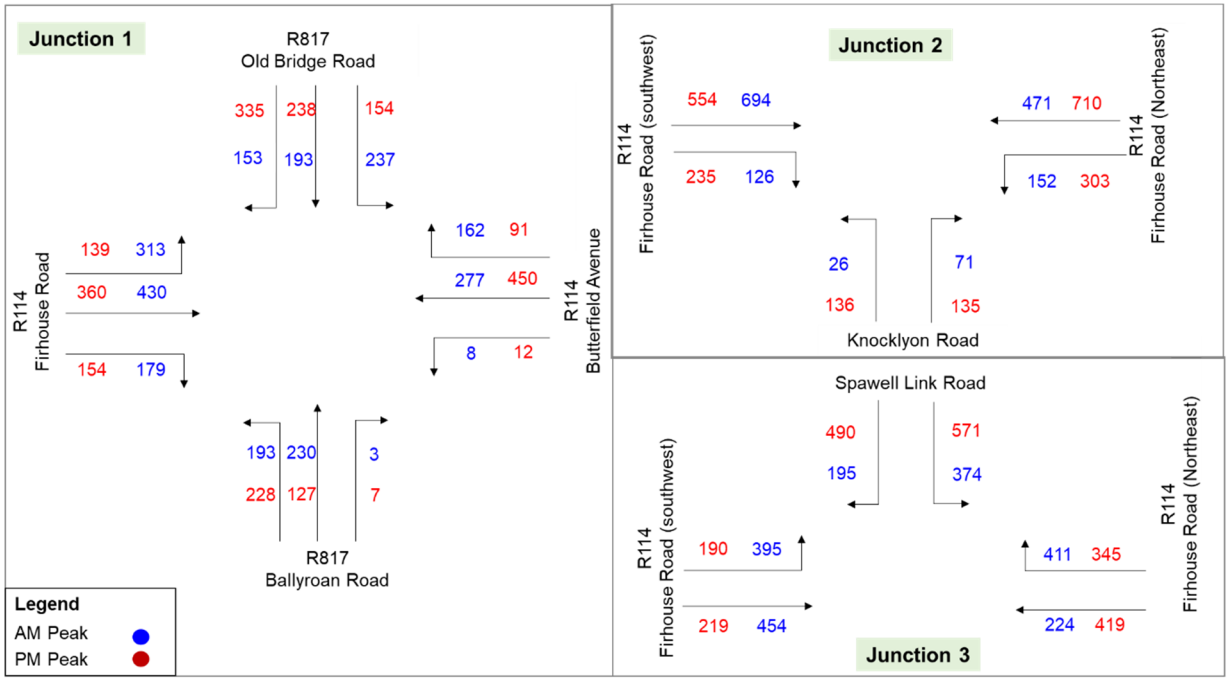


Figure 4.3.2.1 - Turning Volumes at Junctions

4.3.3 Existing Public Transport Services

Several bus routes currently serve the study area with stops located in the vicinity of the subject junctions. Stops for Bus services no. 49, 65b, and 75/75a can be found on both sides of Firhouse Road, in addition to Bus service 15 along Knocklyon Road. Table 4.3.3.1 below, sets out the routes and frequency of these services.

Bus No.	Provider	Route	Peak Frequency
49	Dublin Bus	Tallaght to Dublin City Centre	15 minutes
65b	Dublin Bus	City West to Dublin City Centre	30-45 Minutes
75/75a	Go Ahead	Tallaght to Dun Laoghaire	30-40 Minutes
15	Dublin Bus	Clongriffin To Ballycullen	8-12 Minutes

Table 4.3.3.1 - Existing Bus Services in Local Area

4.3.4 Road Safety

Data from the Road Safety Authority (RSA) collision database was used to assess the safety performance characteristics of the local road network. 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. The following Figure 4.3.4.1 illustrates all collisions recorded on the road network surrounding the site during the 12-year period from 2005 to 2016 inclusive.

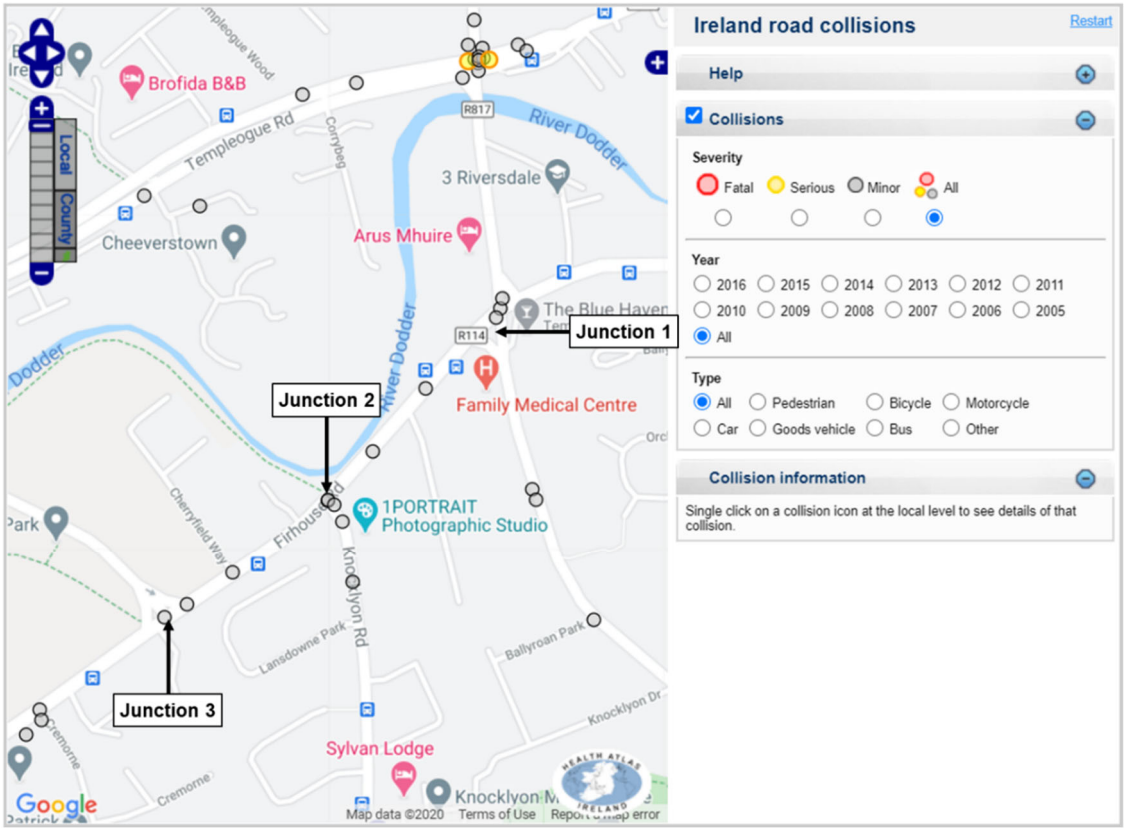


Figure 4.3.4.1 - RSA Collision Statistics

As shown on Figure 4.3.4.1, several minor collisions have been recorded within the area under study during the 12-year assessment period. The available data indicates that there are no location-specific road safety concerns of relevance within the local area, and such number of collisions are related to the high volumes of traffic transiting through the network. No serious or fatal collisions have been recorded in the junctions under study.

4.4 Traffic Impact Analysis

4.4.1 Traffic Modelling Approach and Inputs

Assessment Scenarios and Time Period

The assessment focuses on estimating the traffic impact of the proposed changes to the existing junction's layout. As recommended by TII's 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 4.3.2 of this report, have been utilised 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 the proposal on the local road network, first, the existing junction performance was established. This scenario is referred as the 'do-nothing' scenario and it is based on the existing traffic conditions.

- **Do-Something Scenario:** This scenario assesses the junction performance with the proposed junction layout as per the proposed scheme layout (**Appendix A**).

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.

The traffic signal stages and phases utilised for the do-something scenario in Junctions no.1 and Junction no. 3 have been modified to provide optimal green time use with the proposed layout. The Traffic signal inputs utilised for the models are provided within **Appendix E**.

Traffic Modelling Outputs

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

4.4.2 Do-Nothing Analysis Results

The modelling results obtained for the existing conditions or 'do-nothing' scenario for the AM peak are presented within Table 4.4.2.1, 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	**Old Bridge Road**	85.1%	9.6	40.20	-0.8%
	Butterfield Avenue	85.0%	10.4		
	Ballyroan Road	89.0%	13.4		
	Firhouse Road	90.8%	17.4		
2	**Fihouse Road (northeast)**	75.9%	16.4	17.9	14.40%
	Knocklyon Road	78.7%	10.2		
	Fihouse Road (southwest)	67.0%	16.3		
3	**Fihouse Road (northeast)**	70.3%	11.8	18.6	21.50%
	Spawell Link Road	74.1%	7.5		
	Fihouse Road (southwest)	64.9%	8.6		

Table 4.4.2.1 - Do-nothing AM Peak Capacity Analysis 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 PRc's 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.

PM Peak

The modelling results obtained for the existing conditions or 'do-nothing' scenario for the PM peak are presented within Table 4.4.2.2, 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	**Old Bridge Road**	96.9%	17.9	49.3	-7.7%
	Butterfield Avenue	94.6%	21.0		
	Ballyroan Road	86.7%	7.0		
	Firhouse Road	92.1%	11.4		
2	**Fihouse Road (northeast)**	98.9%	40.8	40.2	-9.9%
	Knocklyon Road	97.0%	14.1		
	Fihouse Road (southwest)	97.7%	14.1		
3	**Fihouse Road (northeast)**	81.5%	13.6	30.6	-3.4%
	Spawell Link Road	93.1%	20.9		
	Fihouse Road (southwest)	74.7%	5.7		

Table 4.4.2.2 - Do-nothing PM Peak Capacity Analysis 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.

4.4.3 Do-Something Analysis Results

LinSig traffic modelling results report can be found in **Appendix F** of this report.

AM Peak

The modelling results obtained for the AM peak with the proposed layout are presented within Table 4.4.3.1, which follows.

Junction No.	Layout AM Peak (08:00-09:00hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	**Old Bridge Road**	96.6%	21.5	56.6	-8.9%
	Butterfield Avenue	98.0%	10.9		
	Ballyroan Road	89.4%	14.6		
	Firhouse Road	93.7%	19.4		
2	**Fihouse Road (northeast)**	72.7%	15.8	26.2	-9.2%
	Knocklyon Road	98.3%	18.4		
	Fihouse Road (southwest)	63.6%	9.1		
3	**Fihouse Road (northeast)**	81.6%	11.3	25.2	9.5%
	Spawell Link Road	78.2%	7.7		
	Fihouse Road (southwest)	82.2%	16.1		

Table 4.4.3.1 - Do-something AM Peak Capacity Analysis Results

The performance obtained with the implementation of with the proposed layout indicates that both the Blue Haven junction and Knocklyon Road junction be operate over capacity obtaining PRCs of -8.9% and -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.

PM Peak

The modelling results obtained for the PM peak with the proposed layout are presented within Table 4.4.3.2 (overleaf).

Junction No.	Layout PM Peak (16:30-17:30hrs)				
	Arm	Degree of Saturation (%)	Maximum Queue (PCU)	Average Delay (Seconds)	Practical Reserve Capacity (PRC)
1	**Old Bridge Road**	95.0%	17.3	58.9	-8.1%
	Butterfield Avenue	97.3%	23		
	Ballyroan Road	94.8%	11.4		
	Firhouse Road	96.7%	14.2		
2	**Fihouse Road (northeast)**	98.0%	43.3	47.4	-9.3
	Knocklyon Road	96.9%	15.7		
	Fihouse Road (southwest)	98.4%	14.3		
3	**Fihouse Road (northeast)**	89.4%	16.3	33.5	0.2%
	Spawell Link Road	89.8%	19.3		
	Fihouse Road (southwest)	83.4%	9.2		

Table 4.4.3.2 - Do-something PM Peak Capacity Analysis Results

As shown above, with the proposed layout during the PM peak the Blue Haven junction's 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 -9.3% 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 Flood Risk Assessment

This section of the report is prepared in accordance with the Office of Public Works (OPW) guidelines for Planning Authorities published in November 2009. The scope of this assessment is a review of the existing flood risks and if it impacts the proposed scheme. Additionally, this review will assess if the proposed scheme impacts the existing flood risk to adjacent areas.

5.1 Flood Risk Identification

The flood risk assessment is undertaken to determine if a flood risk exists for the proposed scheme, and if so to determine the extent of the risk. For this assessment the following documents and sources were reviewed:

- Flood Risk Maps and Historical Flood Records from OPW
- Environmental Protection Agency (EPA) Maps
- Dodder Catchment Flood Risk Management Plan

Flood Risk Maps and Historical Flood Records from OPW

The Office of Public Works (OPW) make available, through the OPW's national flood information portal (floodinfo.ie), an online interactive map that allows the user to view flood hazards and flood risk information.

Figure 5.1.1 below is an extract from the OPW's flood risk map, and it identifies the modelled flood extent during extreme flood events. The modelled flood extent during a flood event is divided into the following categories:

- High Probability flood events have approximately a 1-in-a-10 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 10%.
- Medium Probability flood events have approximately a 1-in-a-100 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 1%.
- Low Probability flood events have an indicative 1-in-a-1000 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 0.1%.

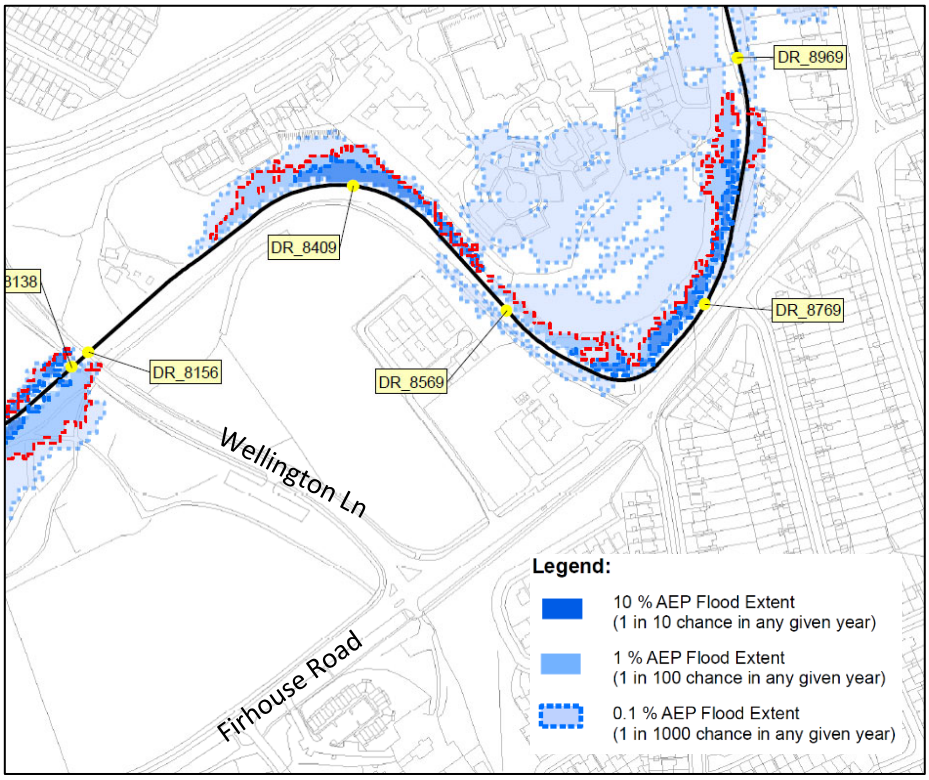


Figure 5.1.1 – Extract from OPW's Flood Risk Map.

OPW's national flood information portal also makes available records of past flood events. Figure 5.1.2 below is an extract from OPW's online interactive map, and it shows the recorded past flood events adjacent to the area of the proposed scheme.

Figure 5.1.2 – Extract from OPW's online interactive map.

Environmental Protection Agency (EPA) Maps

The EPA provides environmental data, assessments, and evidence to inform decision making and implements effective regulation and environmental compliance systems. The EPA's online interactive map identifies existing water features such as rivers, streams, and lakes which could contribute to

flooding. Figure 5.2.3 below is an extract from EPA's online interactive map, and it shows the existing water features adjacent to the area of the proposed scheme.

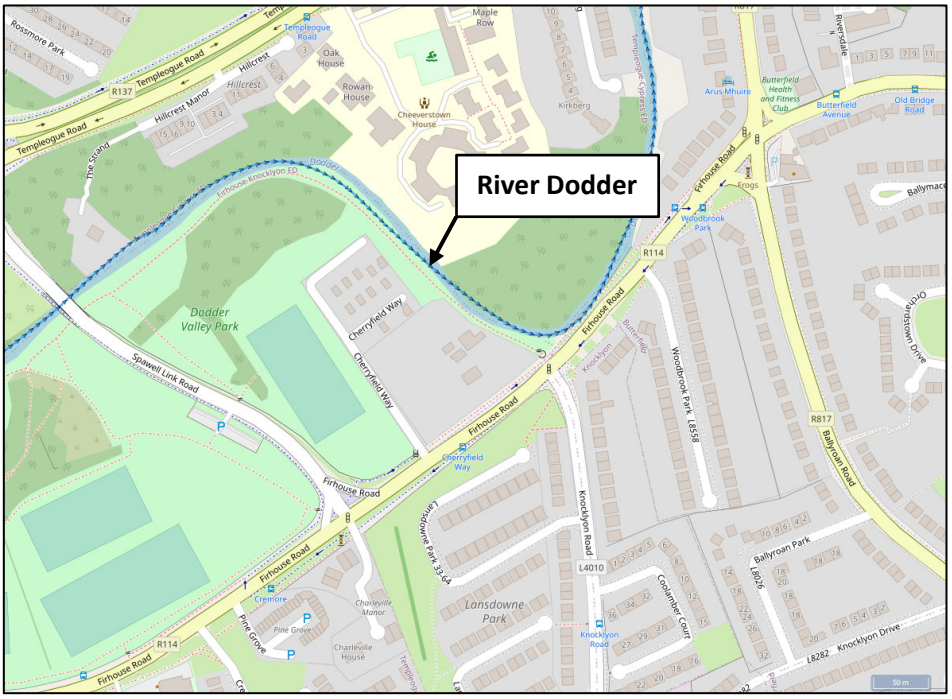


Figure 5.1.3 – Extract from EPA's online interactive map.

Dodder Catchment Flood Risk Management Plan

The Dodder Catchment Flood Risk Management Plan (FRMP) is a document developed by RPS Group published by the OPW in February of 2011. The Dodder FRMP have been prepared by RPS under the supervision of the OPW and its partners, Dublin City Council, Dún Laoghaire-Rathdown County Council and South Dublin County Council.

The dodder FRMP do not identifies the area of the proposed scheme as being areas of potential significant risks (APRS) so no flood risk management options were suggested.

5.2 Flood Risk Identification Conclusion

Considering the nature and scope of the proposed scheme and from reviewing and assessing the documents and the sources listed above it is clear that the proposed scheme is not located within flood risk areas and that it will not impact on the existing flood risk for upstream or downstream areas.

6 Cost of Scheme

6.1 Estimated Budget Construction Cost

The budget cost of the overall scheme is estimated at € 6,033,600.00 (excluding V.A.T.), excluding land costs. This figure is an estimative of the construction costs based on projects of similar magnitude and with similar scope of works. The cost estimation for the overall scheme also considers a contingency cost of 20% and preliminary works at 20% of the construction works.

Table 6.1.1 below details estimated costs for the proposed scheme based on Transport Infrastructure Ireland (TII) requirements for measuring and pricing (RMP).[3]

Part 8 Preliminary Budget Cost			
Series	**Description**		**Amount**
			€
100	Preliminaries (at 20%)	€	838,000.00
200	Site Clearance	€	400,000.00
300	Fencing and Environmental Noise Barriers	€	200,000.00
500	Drainage and Service Ducts	€	500,000.00
600	Earthworks	€	200,000.00
700	Pavements	€	800,000.00
1100	Kerbs, Footways and Paved Areas	€	850,000.00
1200	Traffic Signs and Road Markings	€	200,000.00
1300	Road Lighting Columns and Brackets	€	450,000.00
1400	Electrical Works for Road Lighting and Traffic Signs	€	200,000.00
1700	Structural Concrete	€	120,000.00
2400	Brickwork, Blockwork and Stonework	€	50,000.00
2500	Special Structures	€	50,000.00
2900	CCTV Survey of Road Drainage Systems	€	20,000.00
	Landscape	€	150,000.00
	Subtotal	**€**	**5,028,000.00**
	Contingency at 20%	**€**	**1,005,600.00**
	Inflation at 8%	**€**	**402,240.00**
	Total (excluding VAT)	**€**	**6,435,840.00**
	Total (including VAT)	**€**	**7,304,678.00**

Table 6.1.1 – Part 8 Preliminary Budget Cost

[3] The Requirements for Measuring and Pricing (RMP) in TII Publications (Standards) is published as a collective group of documents under the Construction and Commissioning activity within the TII Publications system. The Requirements for Measuring and Pricing (RMP) is intended for use for road contracts based on the Public Works Contract for Civil Engineering Works Designed by the Employer or the Public Works Contract for Minor Building and Civil Engineering Works Designed by the Employer.

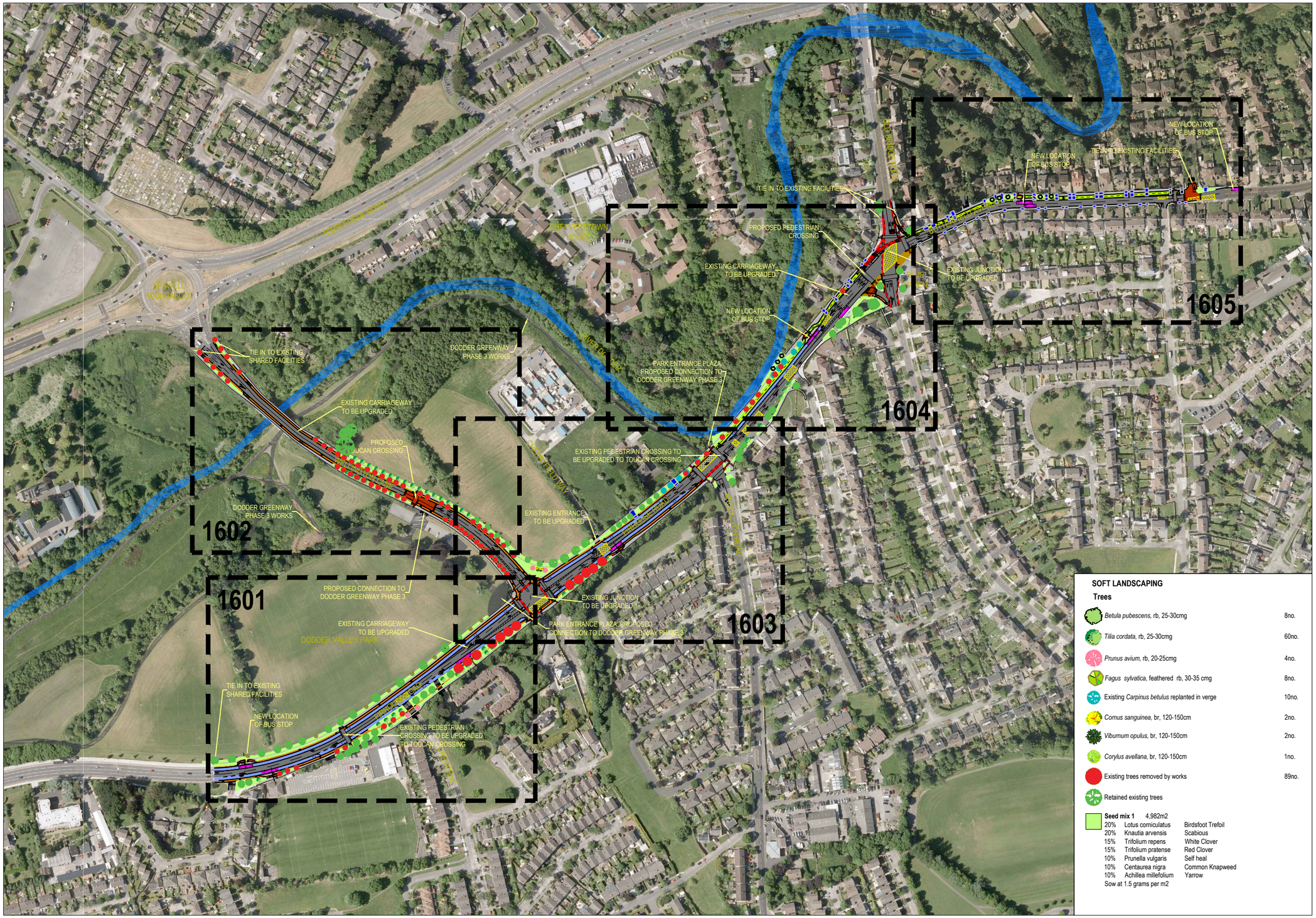
Appendix A – Overall Layout

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates


1601
1602
1603
1604
1605
SPAWELL ROUNDABOUT
DODDER GREENWAY PHASE 3 WORKS
TIE IN TO EXISTING SHARED FACILITIES
EXISTING CARRIAGEWAY TO BE UPGRADED
PROPOSED TOUCAN CROSSING
PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
EXISTING CARRIAGEWAY TO BE UPGRADED DODDER VALLEY PARK
NEW LOCATION OF BUS STOP
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
EXISTING ENTRANCE TO BE UPGRADED
EXISTING JUNCTION TO BE UPGRADED
PARK ENTRANCE PLAZA PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
PROPOSED PEDESTRIAN CROSSING
EXISTING CARRIAGEWAY TO BE UPGRADED
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
EXISTING JUNCTION TO BE UPGRADED
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
RIVER DODDER
QUARRY ROAD
QUARRY ROAD
QUARRY ROAD

Appendix B – Options Report – Dodder Greenway Section Firhouse Road

Clifton Scannell Emerson Associates

Options Report – Dodder Greenway Section Firhouse Road

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Client: South Dublin County Council

Date: November 2021

Job Number: 18_123D

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

Clifton Scannell Emerson Associates

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Document Control Sheet

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4th	DRAFT	10th November 2021	CDR	RG
5th	Final DRAFT	18th November 2021	CDR	RG
6th	Final (after public consultation)	04th July 2022	PS/CDR	RG

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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 'Blue Haven Junction', 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.

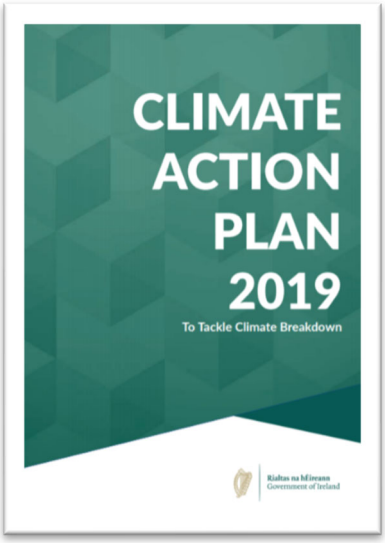
2.2 National and Regional Policy

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 Government's plan for tackling climate breakdown and reduce Ireland's 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 "*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 'Greenways' relates "*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

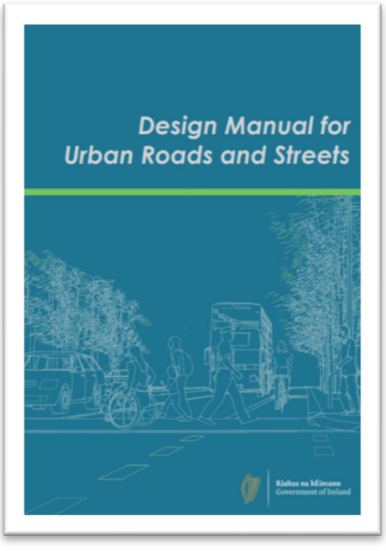
The National Cycle Manual (NCM), published by the National Transport Authority in 2011, sets out detailed guidance on implementation of cyclist facilities for all road types and environments. This document provides guidance to planners and engineers to improve cycling provision in urban areas.

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:

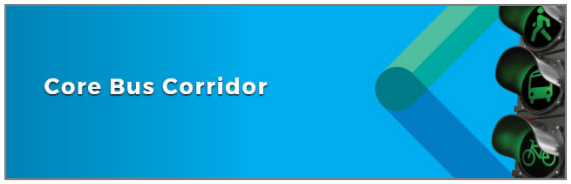
- *To support the creation of integrated street networks, which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.*
- *The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating 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 "*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 "*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 "*in new designs the standard lane width on Arterial and Link Streets should lie in the range of 2.75m to 3.5m.*"

BusConnects: Bus Network Redesign and Core Bus Corridors Project



Overview

The 'BusConnects' 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*"

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 "provide 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." Figure 2.2, below, illustrates the location of all 16 core bus corridors proposed under the BusConnects project within the Greater Dublin Area.

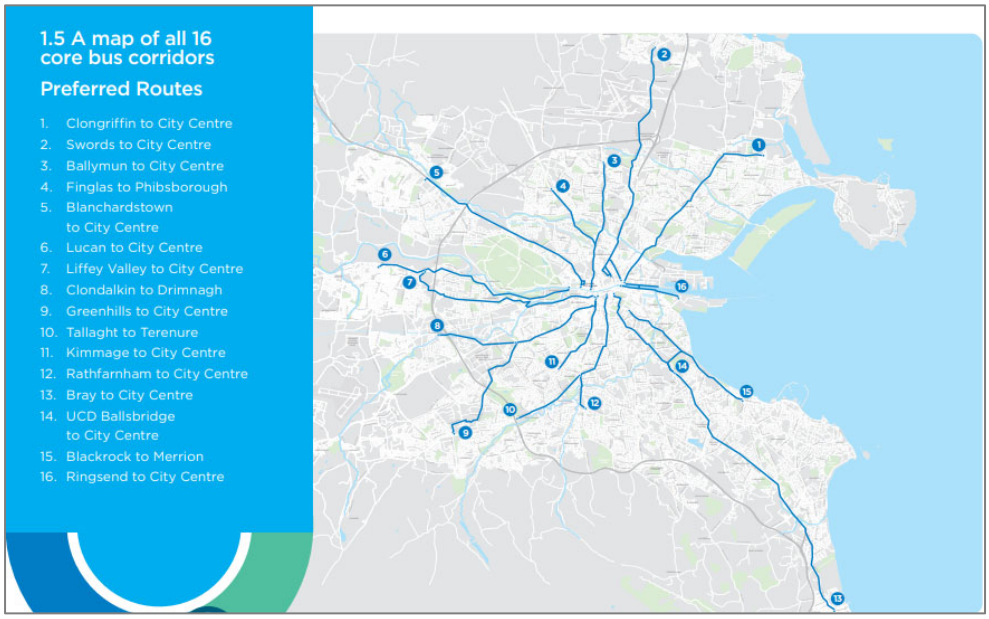


Figure 2.1 *BusConnects Core Bus Corridors (Source: busconnects.ie)*

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.

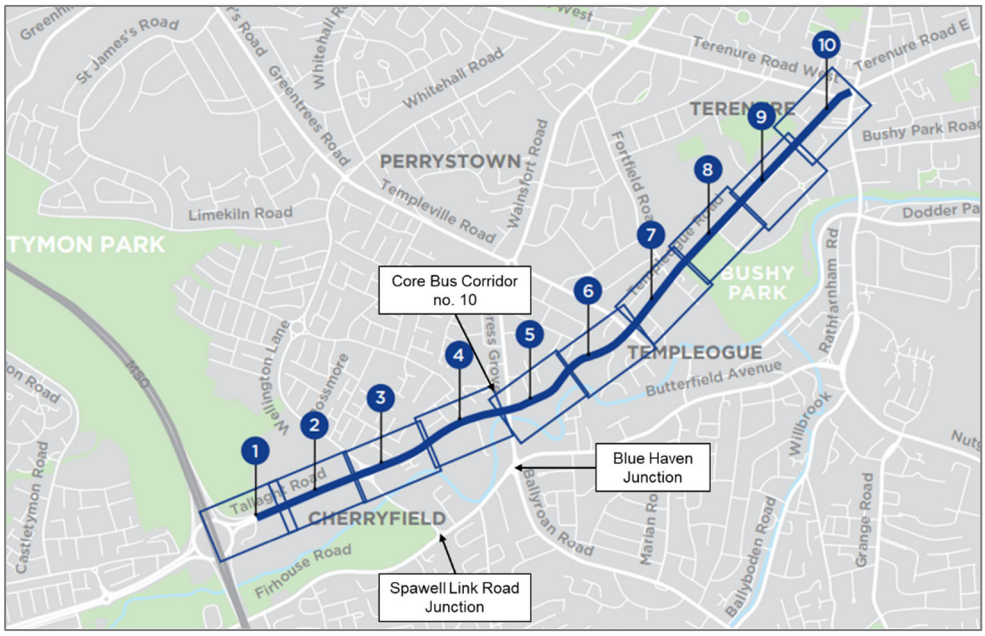


Figure 2.2 *Core Bus Corridor no. 10 (Source: busconnects.ie)*

A traffic assessment was undertaken by Jacobs, Arub, and Systra, on behalf of the NTA, "*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 'BusConnects' project.

The latest version of the Transport Modelling Report created for CBC no. 10 dates from October 2020, and it is available within the 'BusConnects' 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.

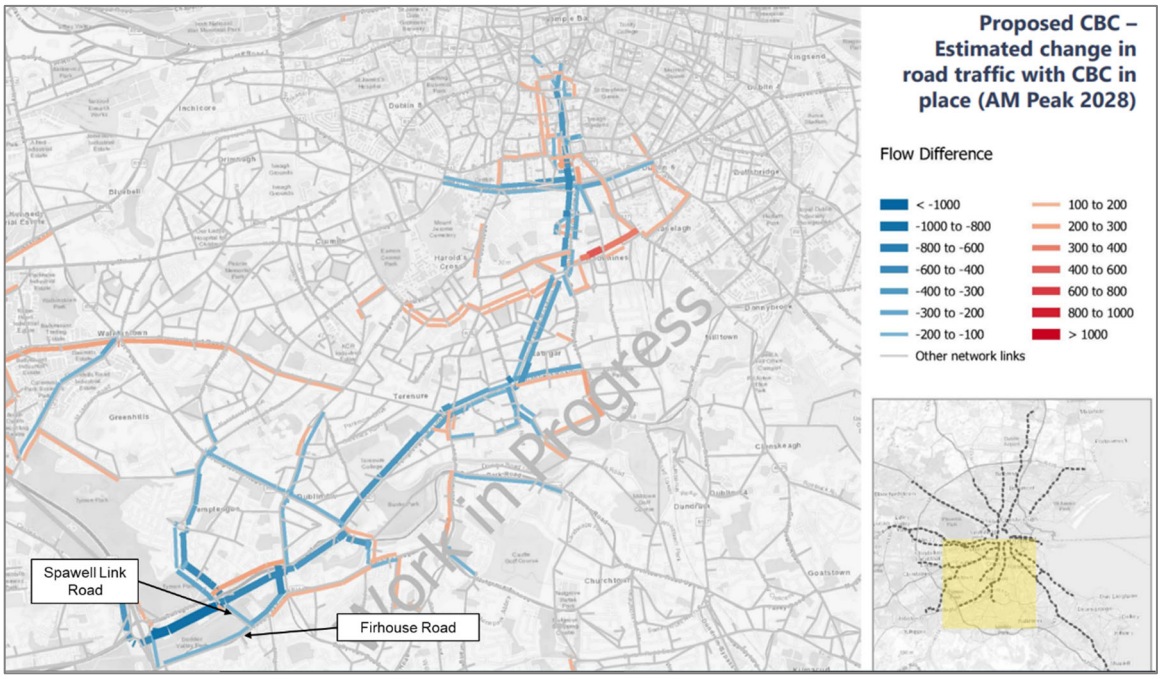


Figure 2.3 *AM Peak Traffic Modelling Results (Source: busconnects.ie)*

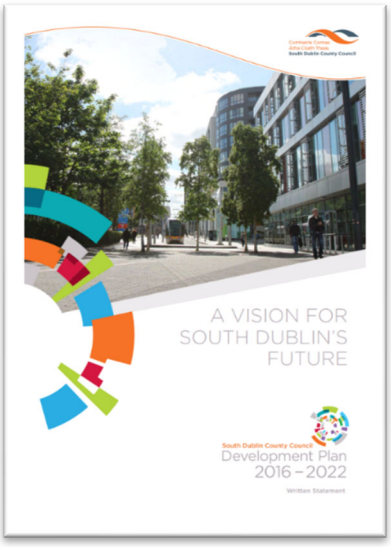
As shown on Figure 2.3, above, the results obtained from the modelling exercise estimates a reduction of up to 300 no. cars in Firhouse Road (northbound) during the AM peak. Around the same level of change should be expected for Spawell Link Road. This reduction comes as a result of travel mode shift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

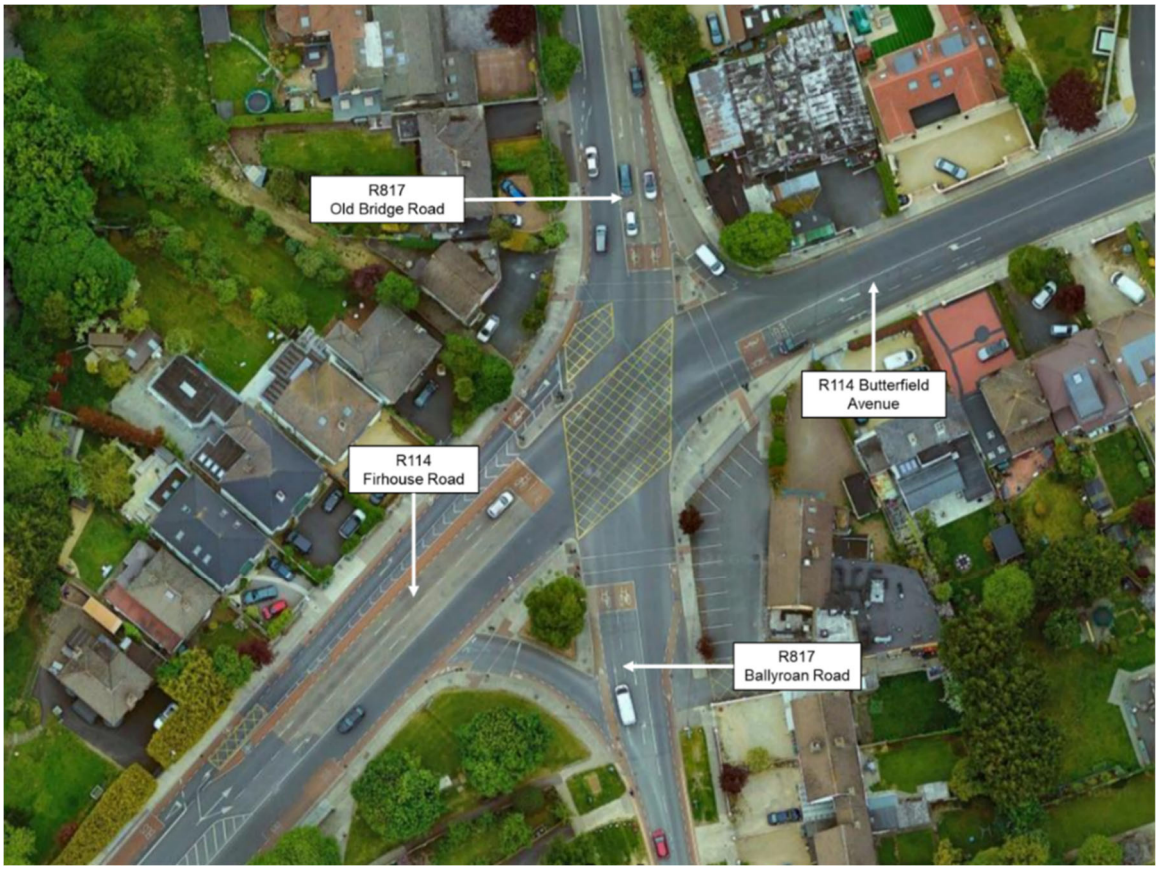


Figure 3.1 *Existing Blue Haven Junction Layout*

Old Bridge Road

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.

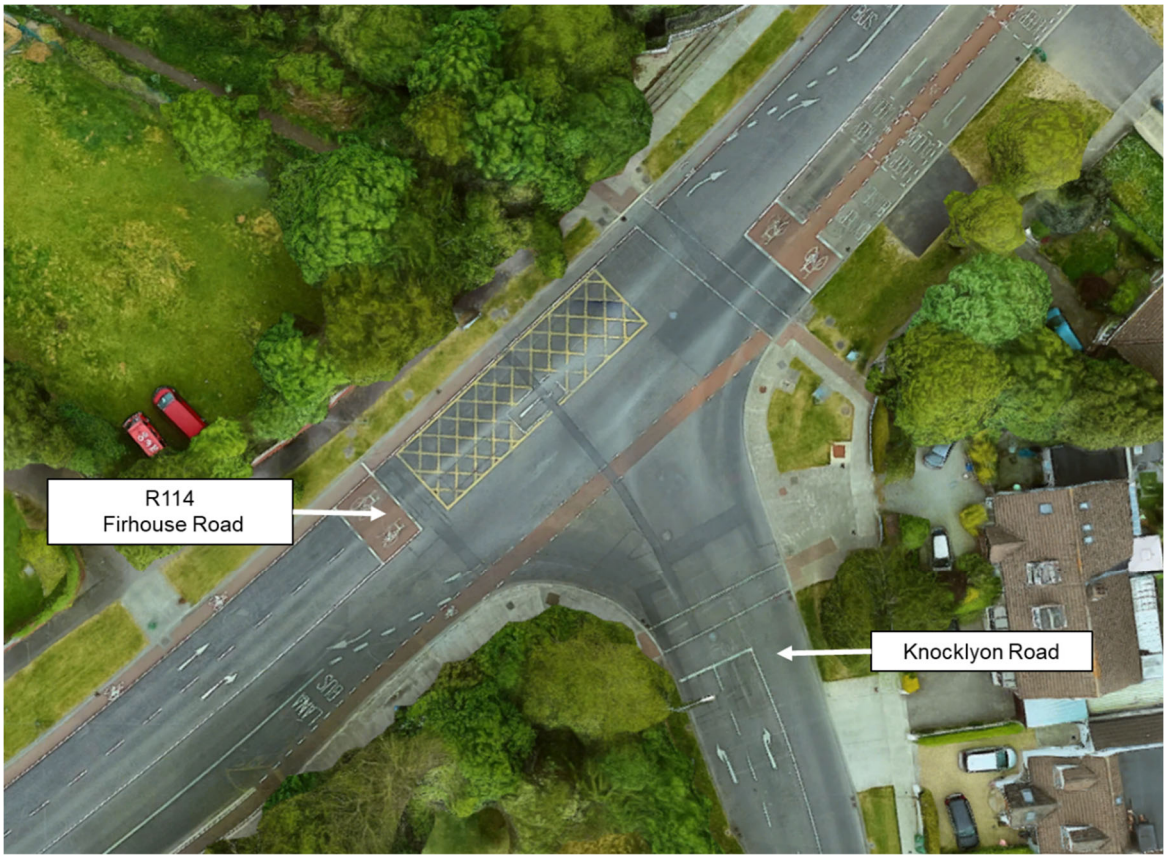


Figure 3.2 *Existing Knocklyon Road Junction Layout*

Firhouse Road

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.

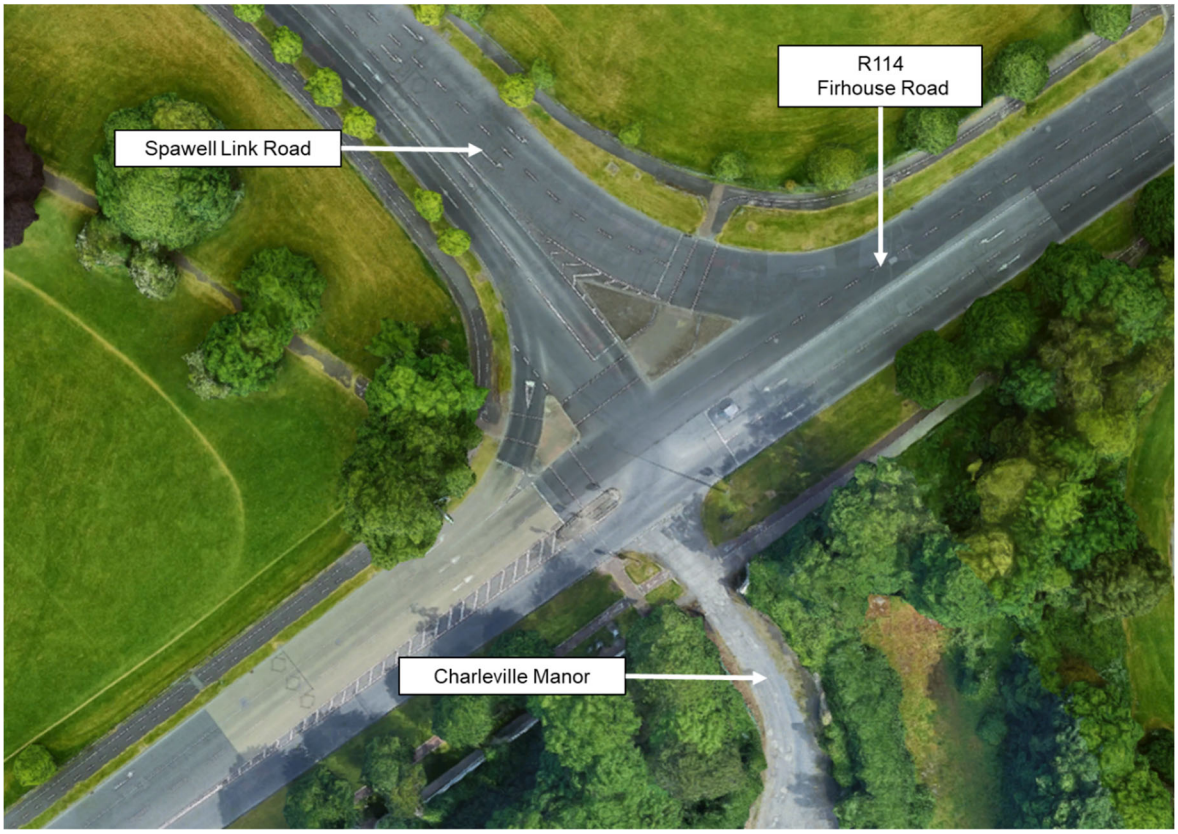


Figure 3.3 *Existing Spawell Link Road Junction Layout*

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 – 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.

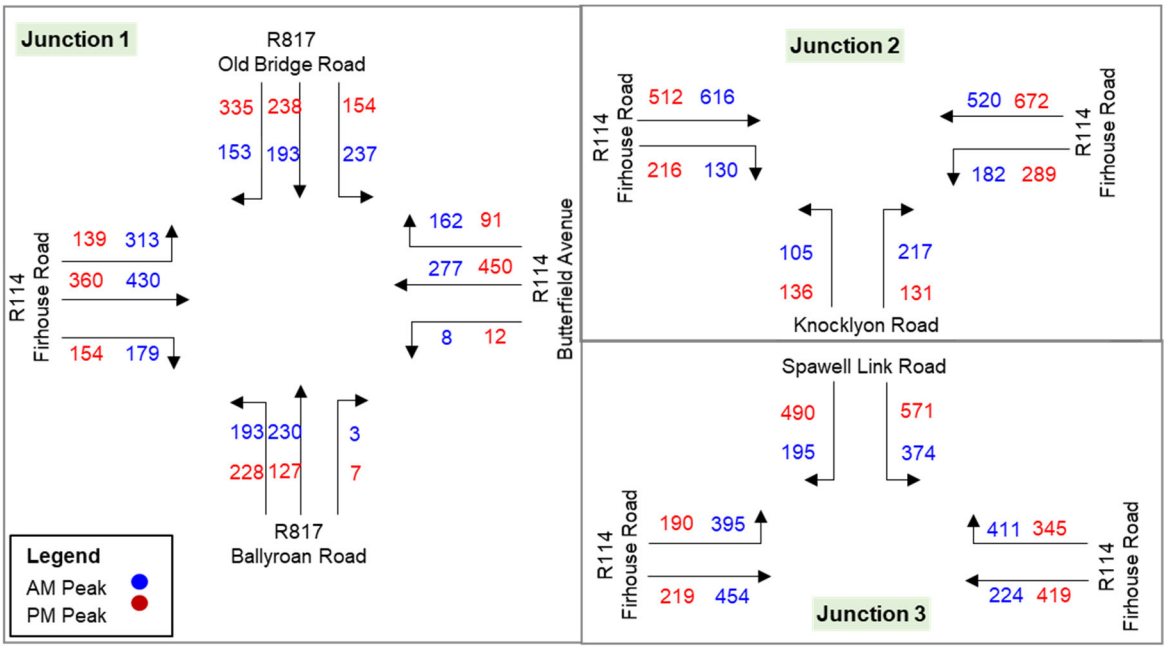


Figure 3.5 *Existing Turning Proportions at the Blue Haven Junction*

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.

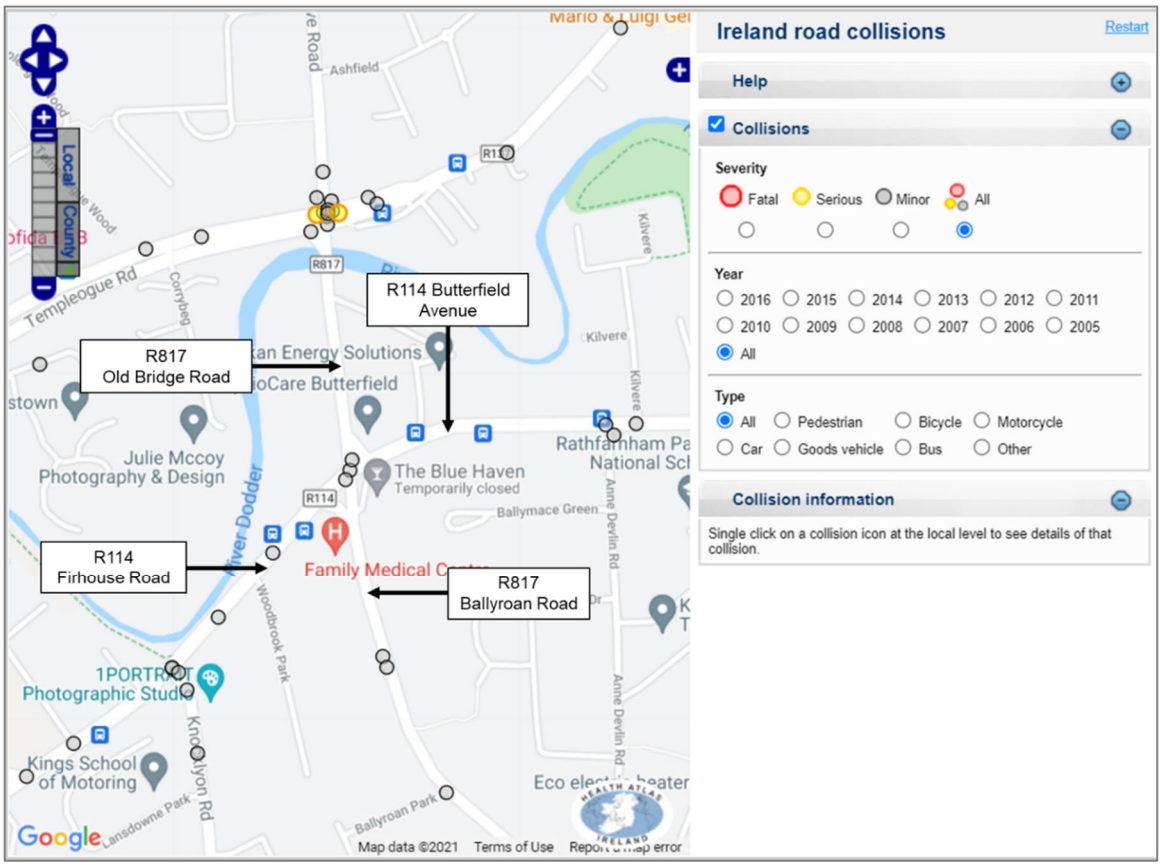


Figure 3.6 *RSA Collision Statistics*

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.

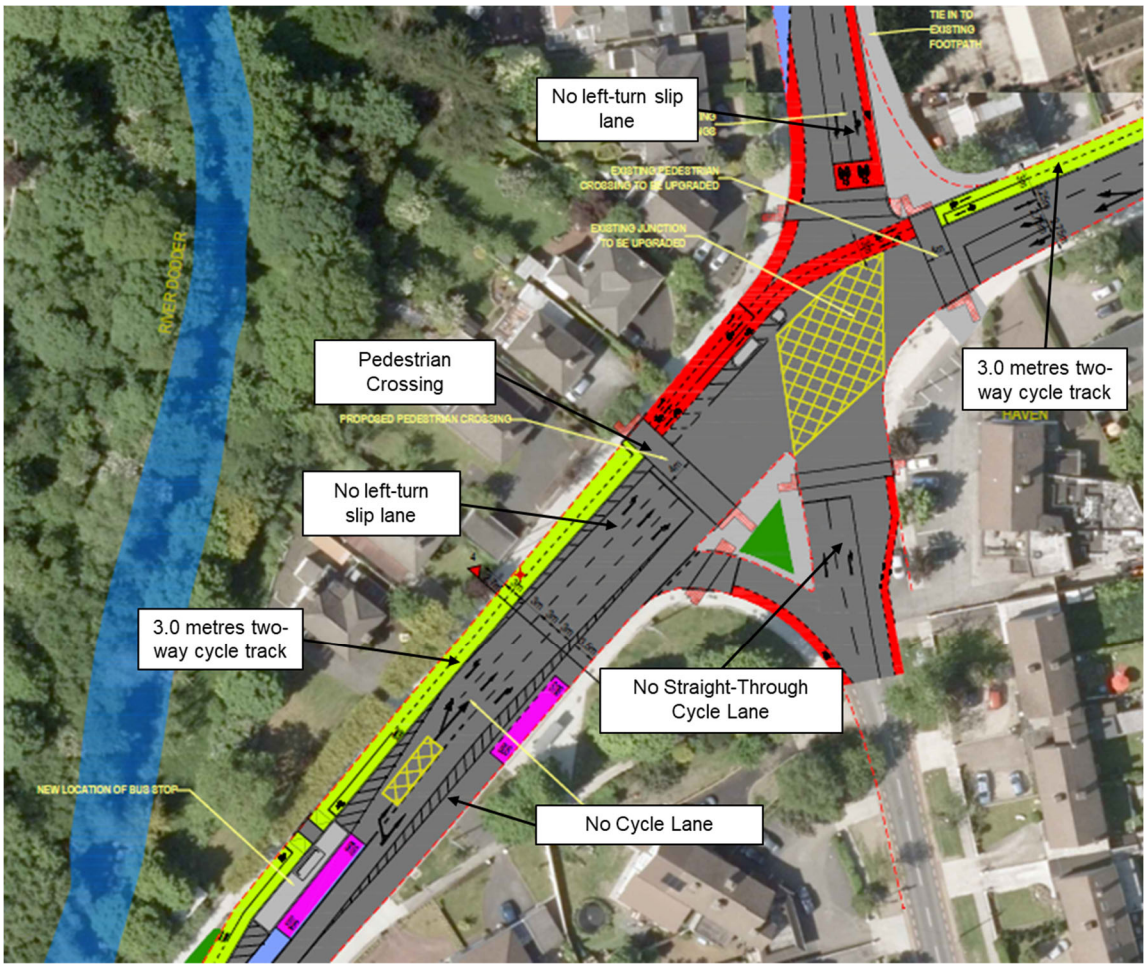


Figure 4.1 *Proposed Layout no. 1 for Blue Haven Junction*

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.

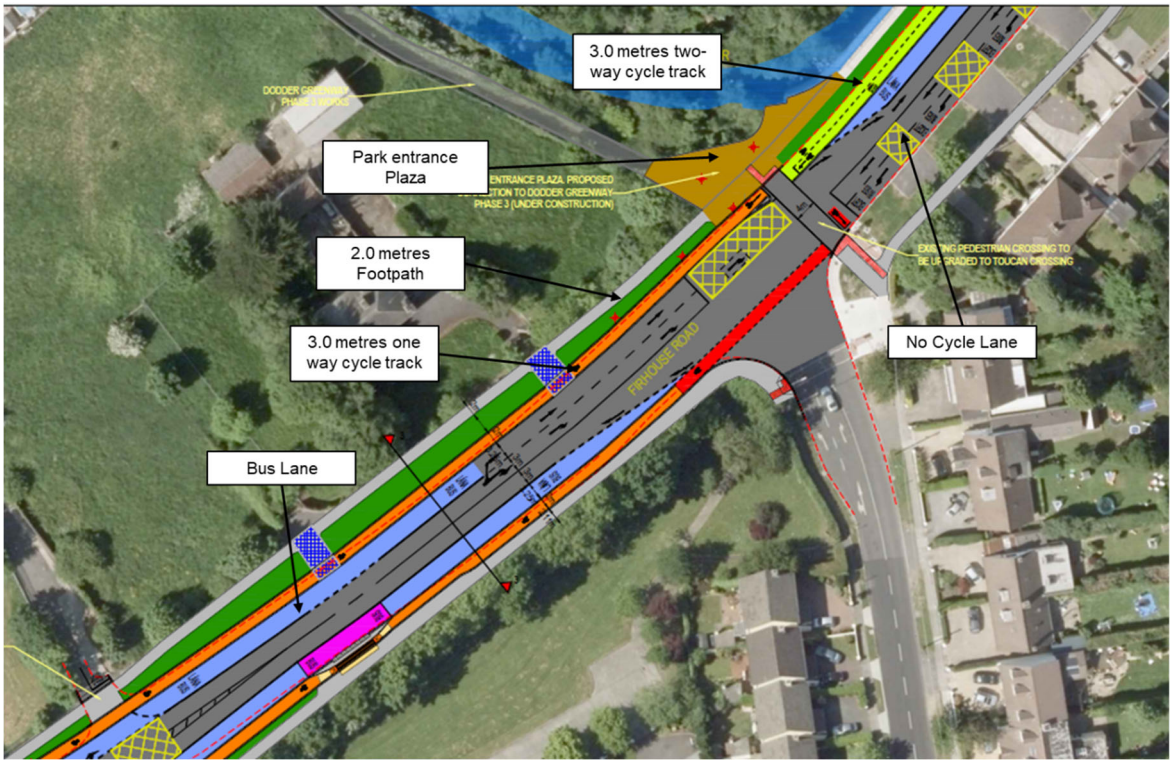


Figure 4.3 *Proposed Layout no. 1 for Knocklyon Road Junction*

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

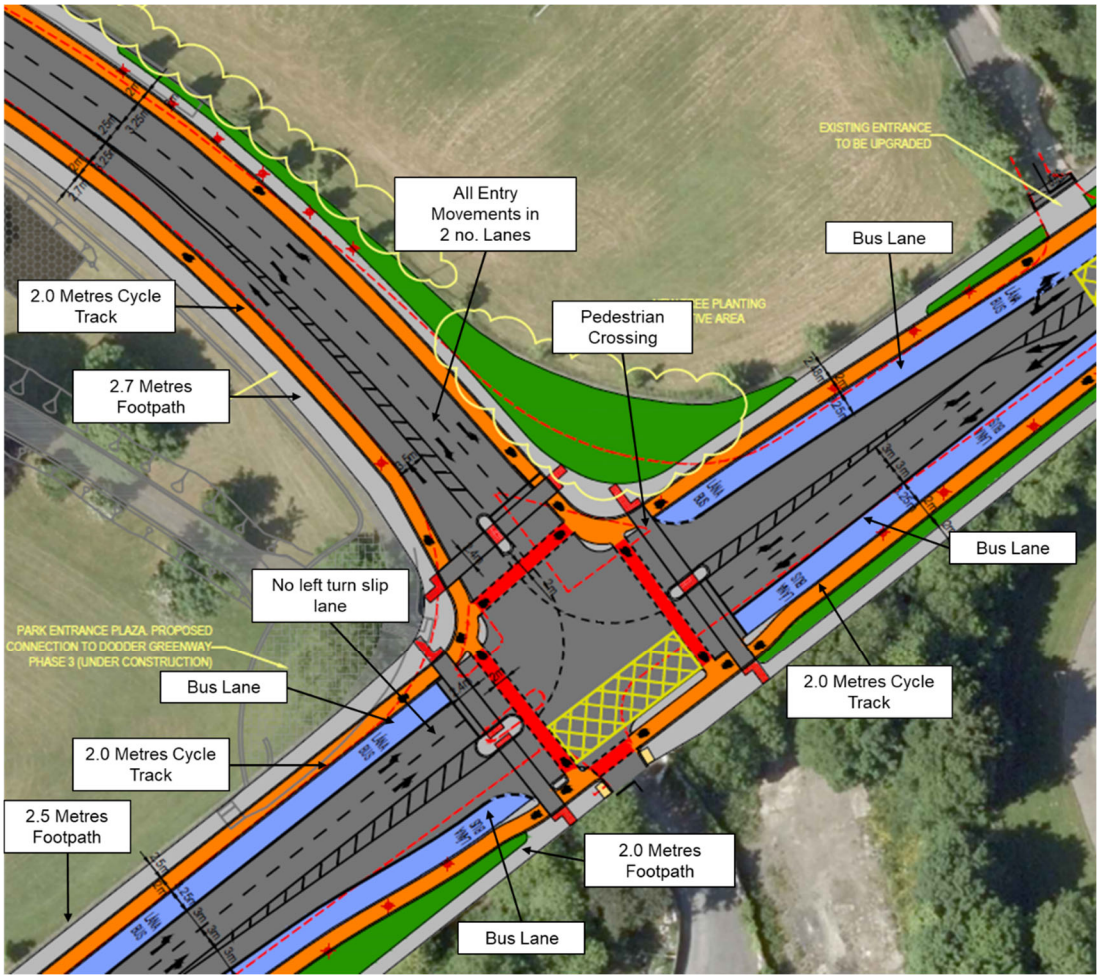


Figure 4.4 *Proposed Layout no. 1 for Spawell Link Road Junction*

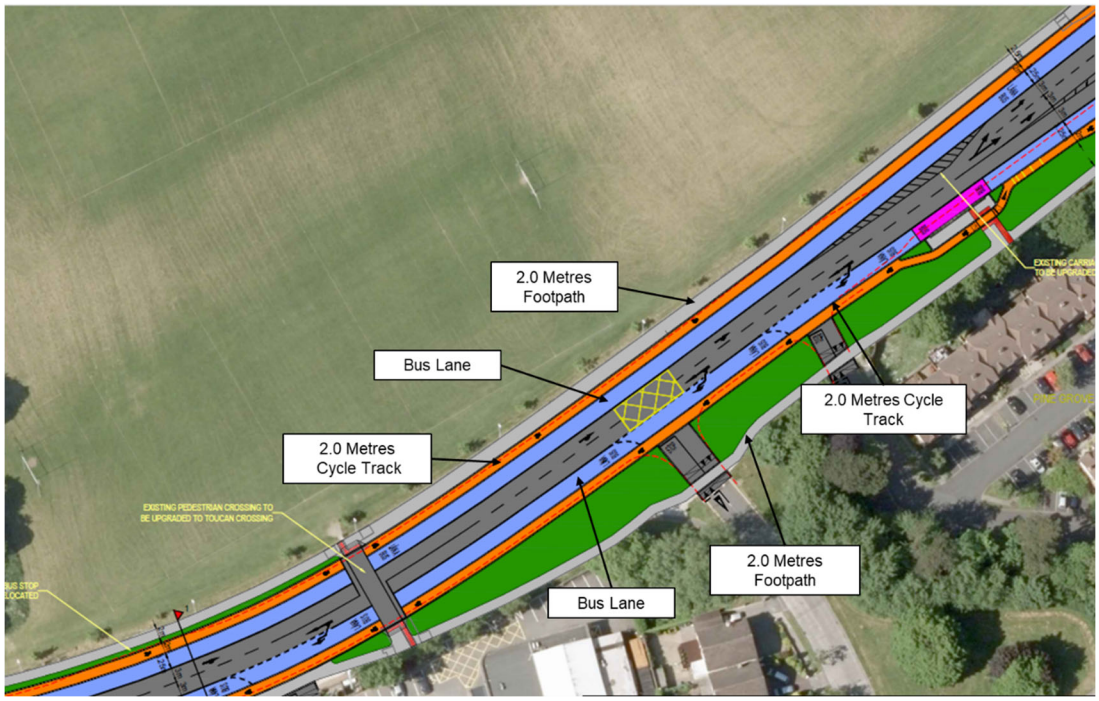


Figure 4.5 *Proposed Layout no. 1 for Firhouse Road (southwest arm)*

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.

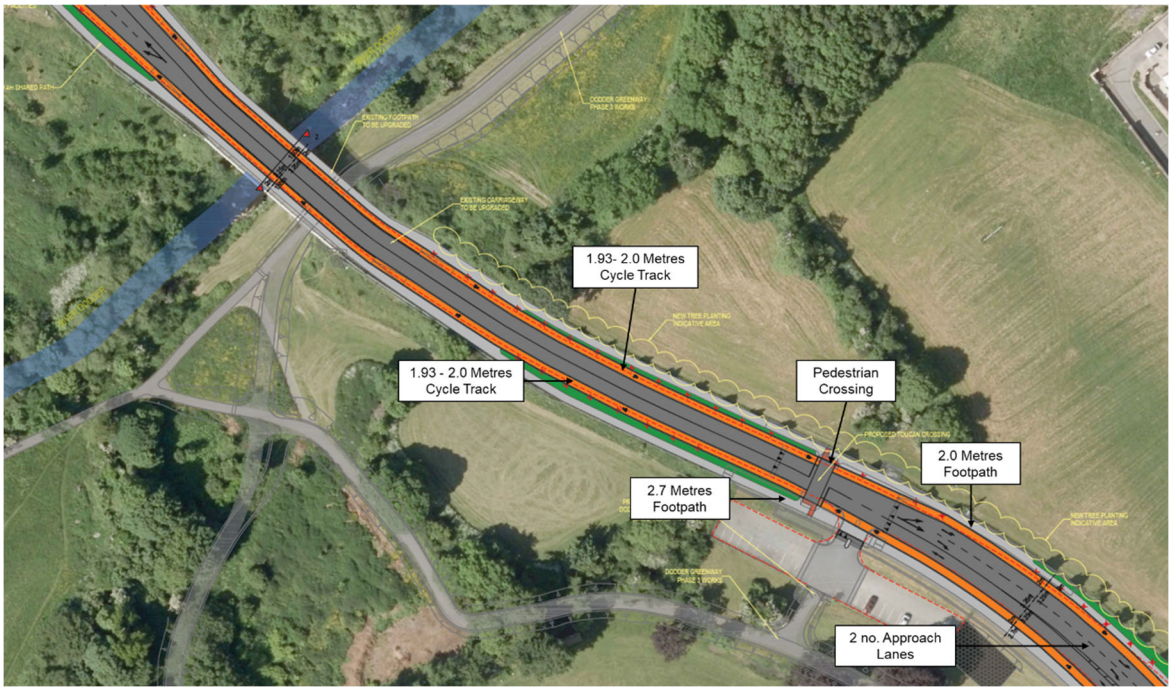


Figure 4.6 *Proposed Layout no. 1 for Spawell Link Road*

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).

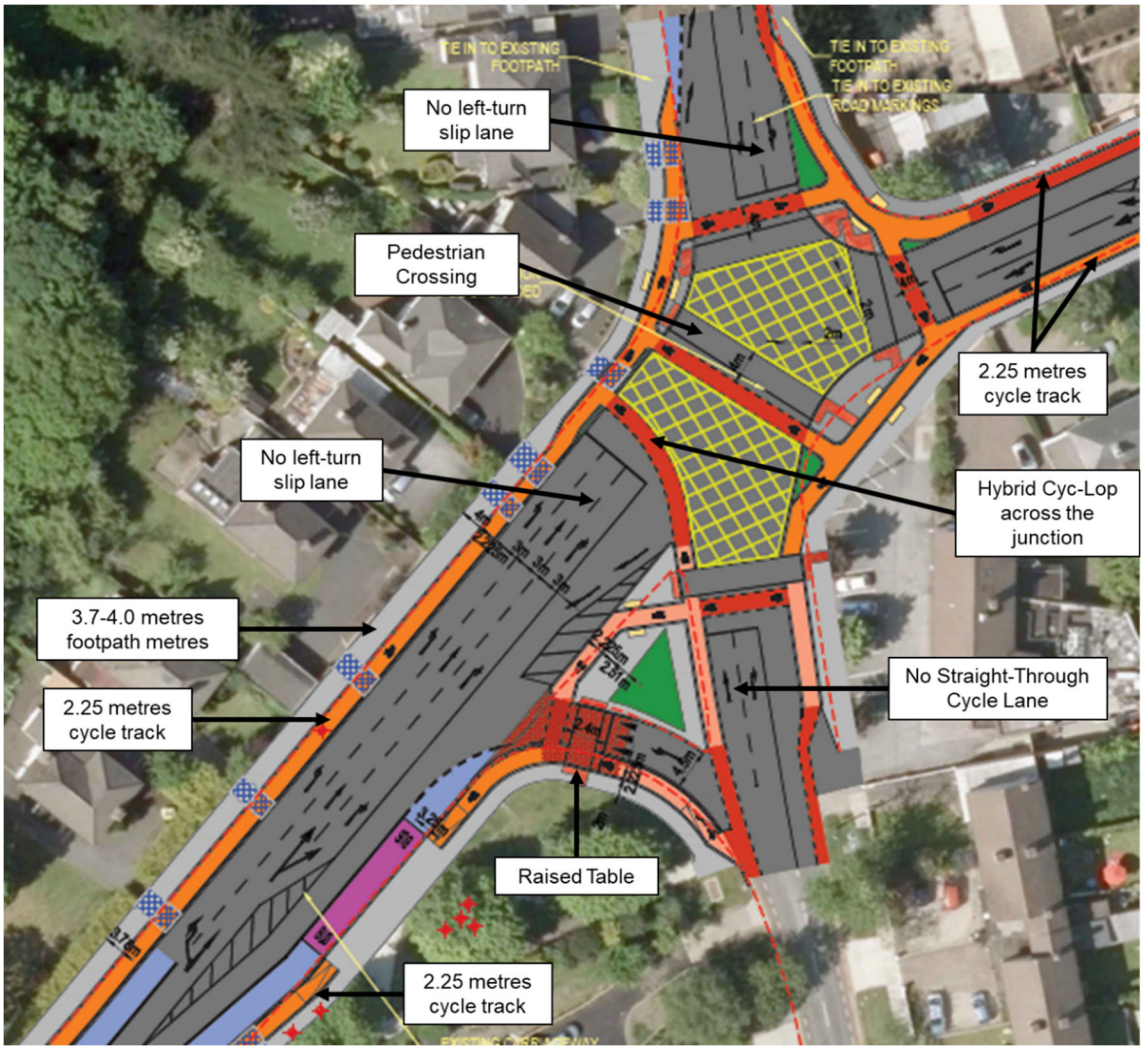


Figure 4.7 *Proposed Layout no. 2 for Blue Haven Junction*

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 cyclists' 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.

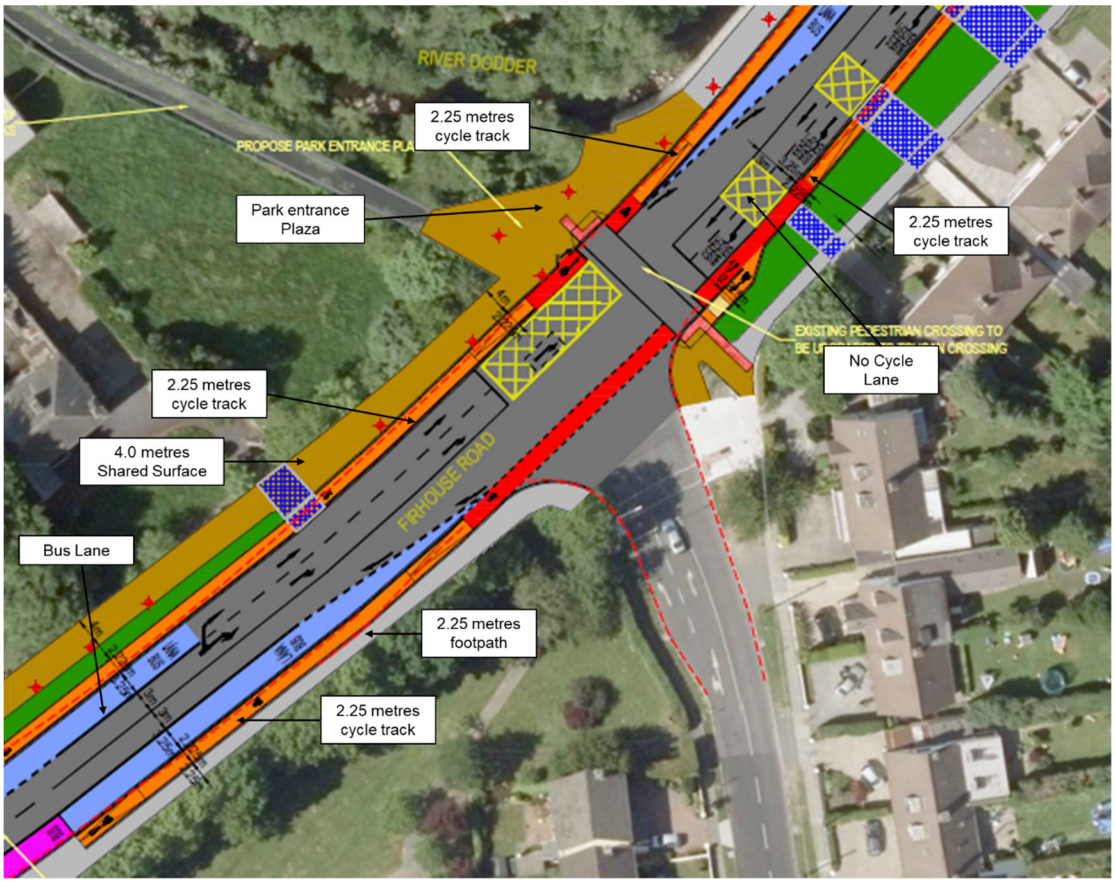


Figure 4.9 *Proposed Layout no. 2 for Knocklyon Road Junction*

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

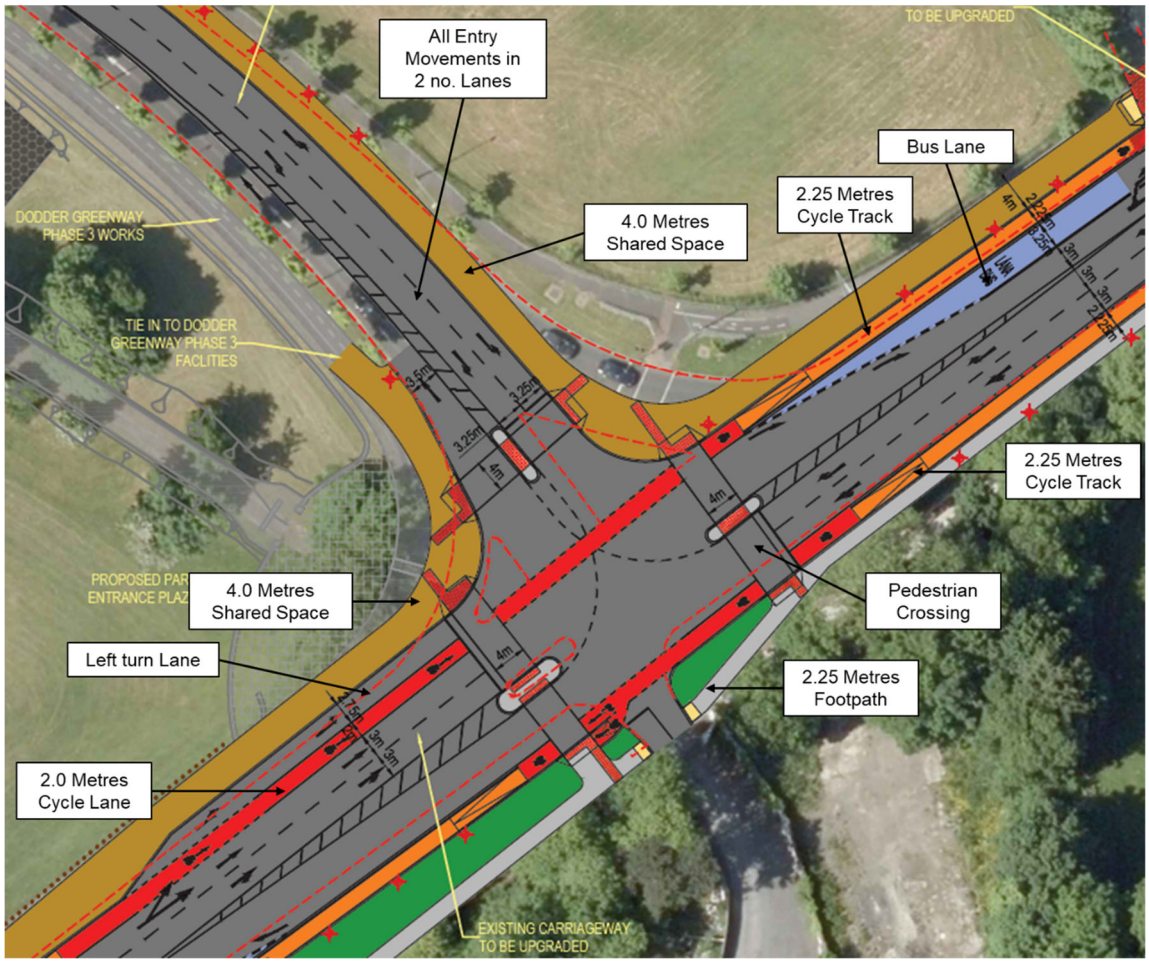


Figure 4.10 *Proposed Layout no. 2 for Spawell Link Road Junction*

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.

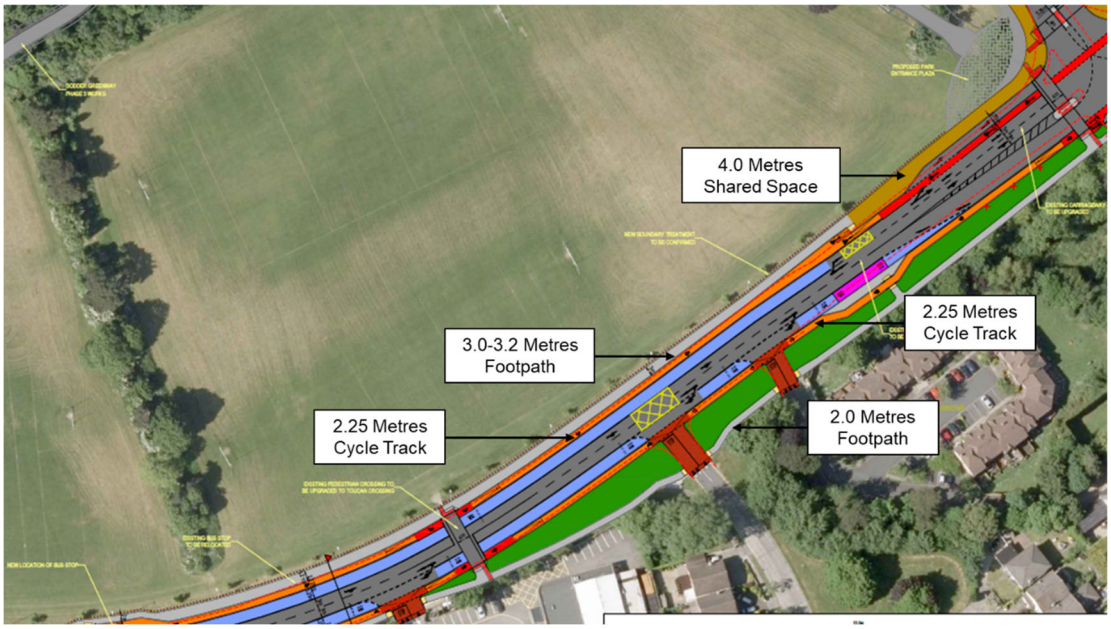


Figure 4.11 *Proposed Layout no. 2 for Firhouse Road (southwest arm)*

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.

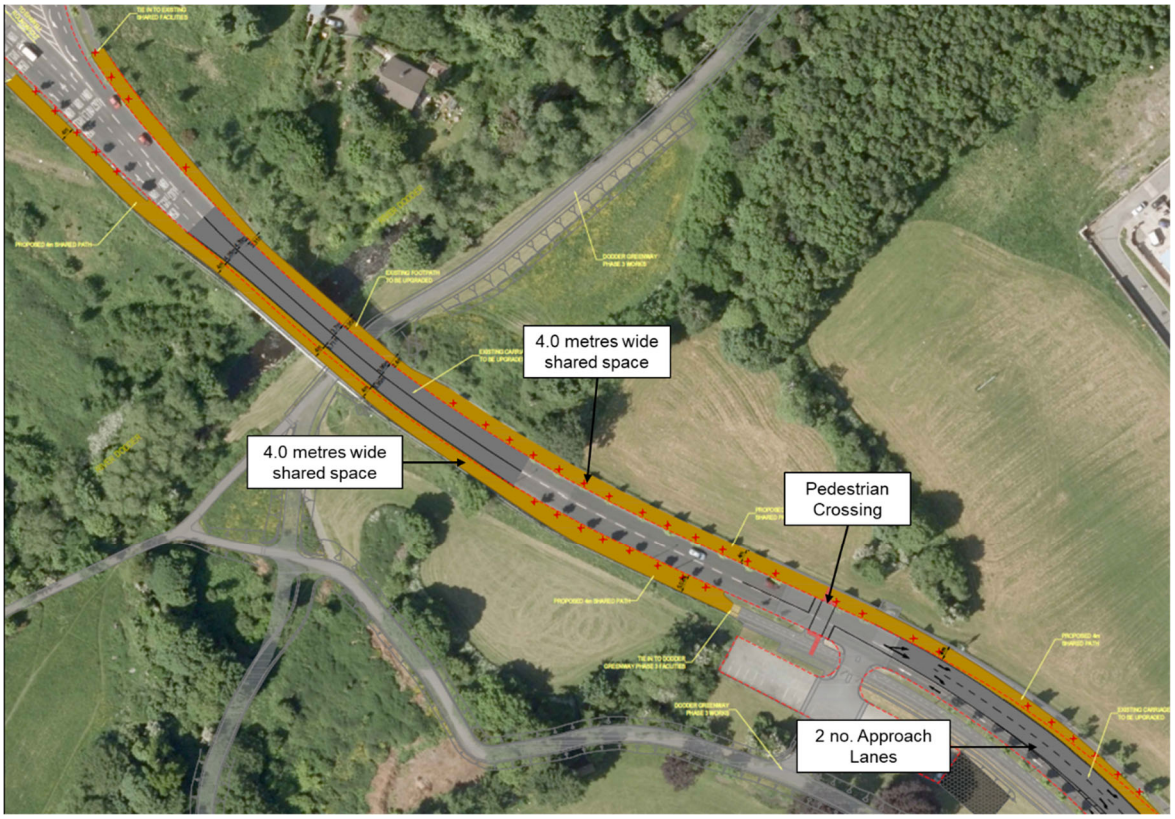


Figure 4.12 *Proposed Layout no. 2 for Spawell Link Road*

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.

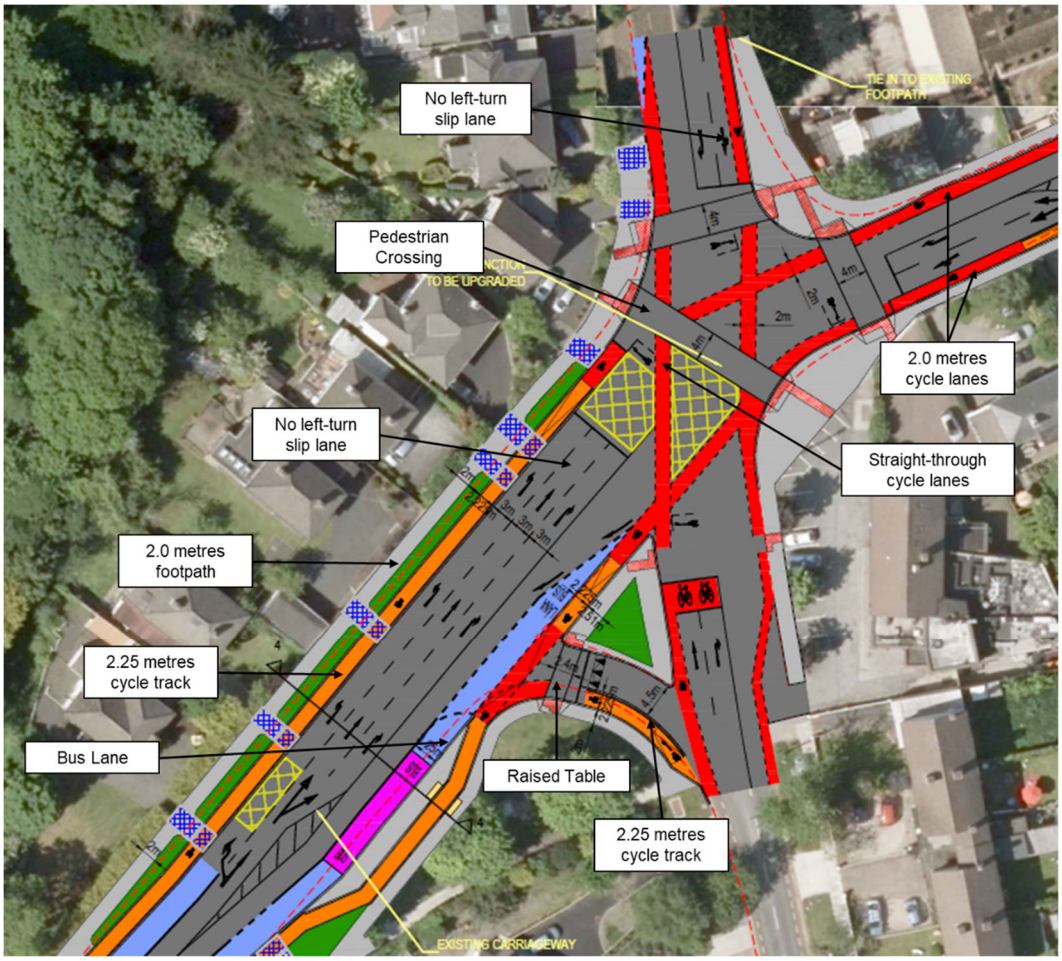


Figure 4.13 *Proposed Layout no. 3 for Blue Haven Junction*

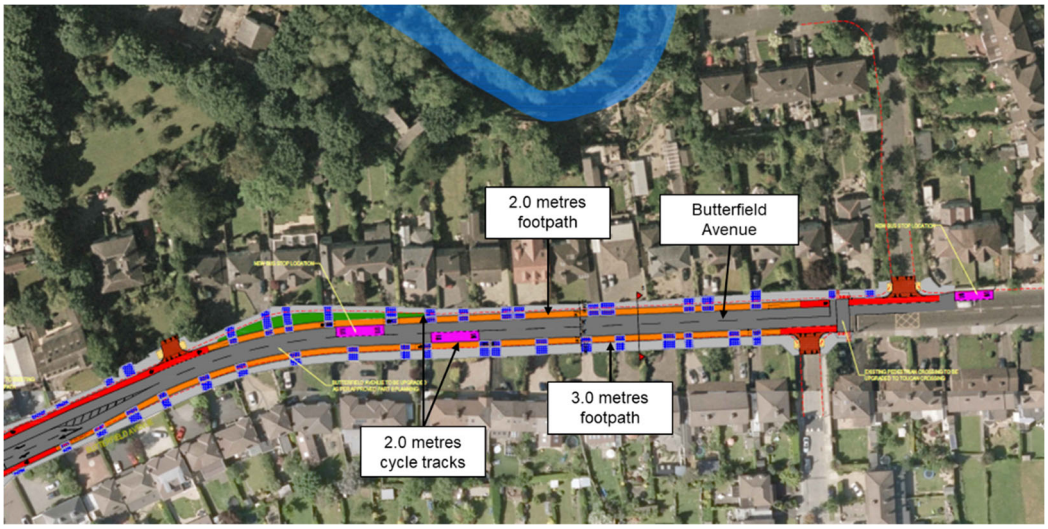


Figure 4.14 *Proposed Layout no. 3 for Butterfield Avenue*

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.

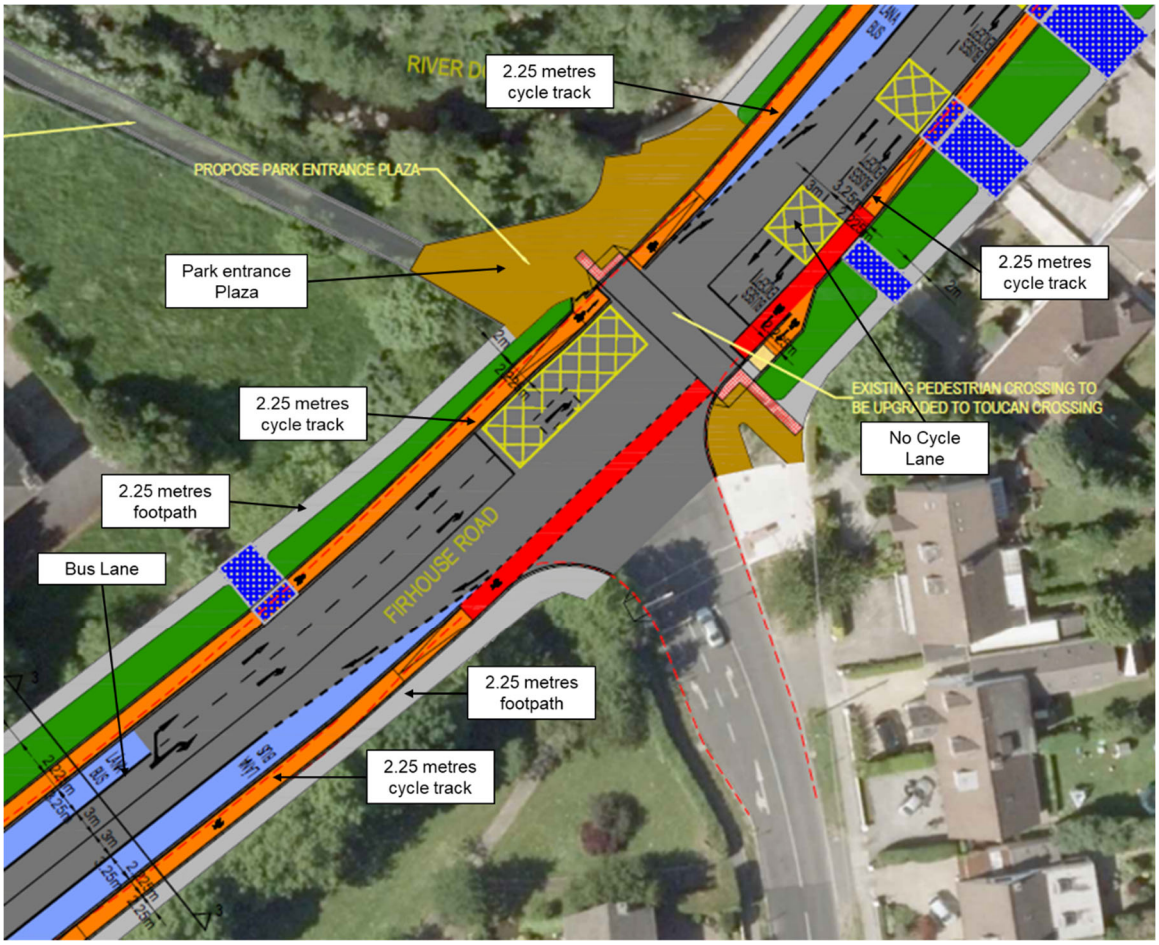


Figure 4.15 *Proposed Layout no. 3 for Knocklyon Road Junction*

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).

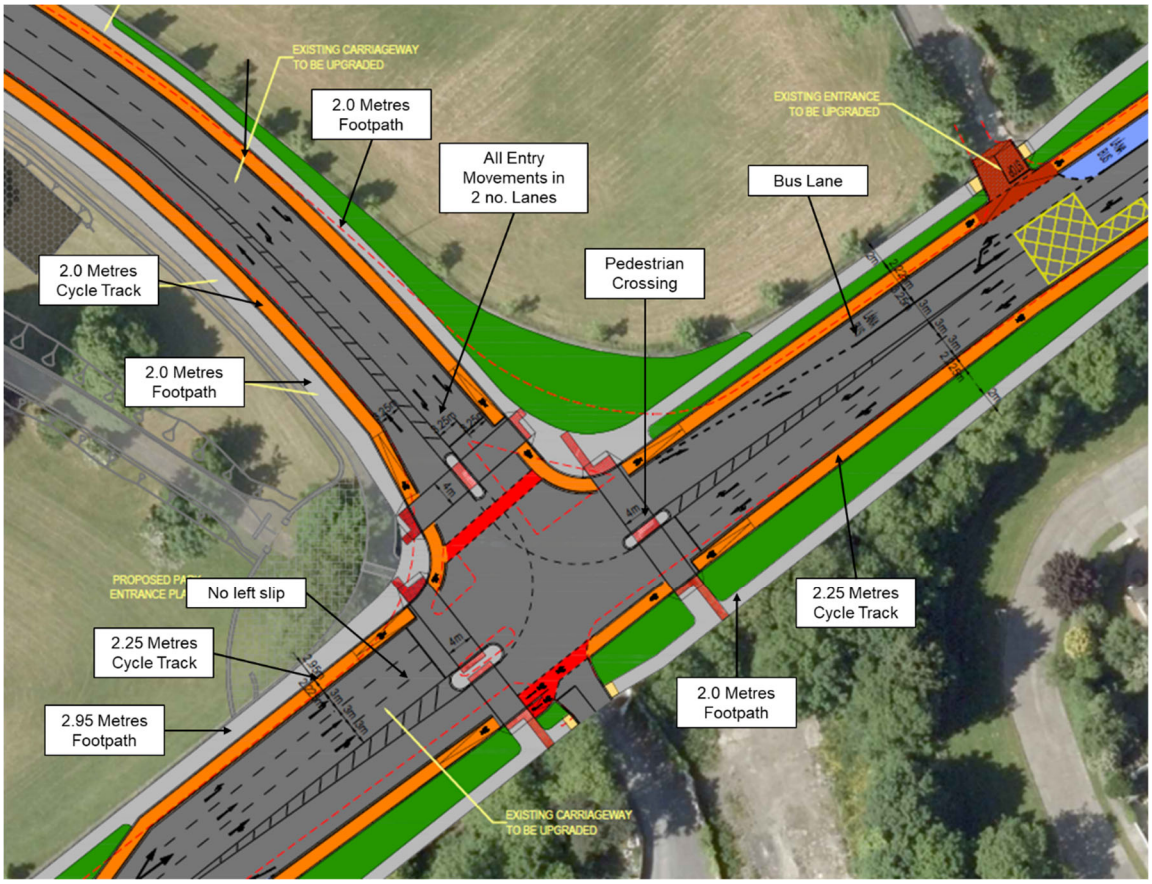


Figure 4.16 *Proposed Layout no. 3 for Spawell Link Road Junction*

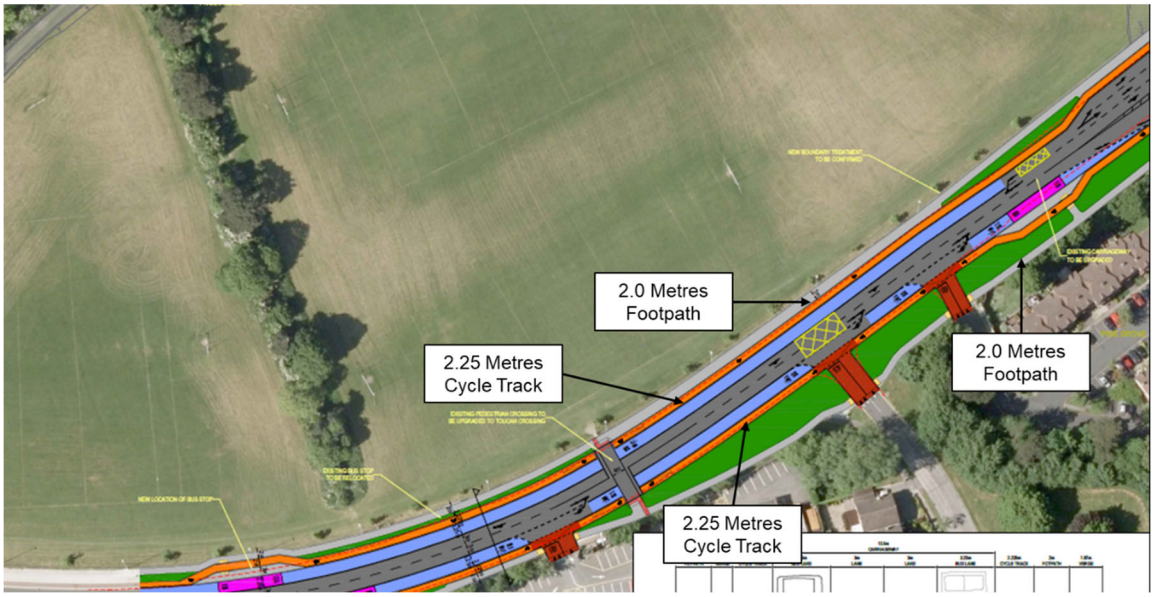


Figure 4.17 *Proposed Layout no. 3 for Firhouse Road (southwest arm)*

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.

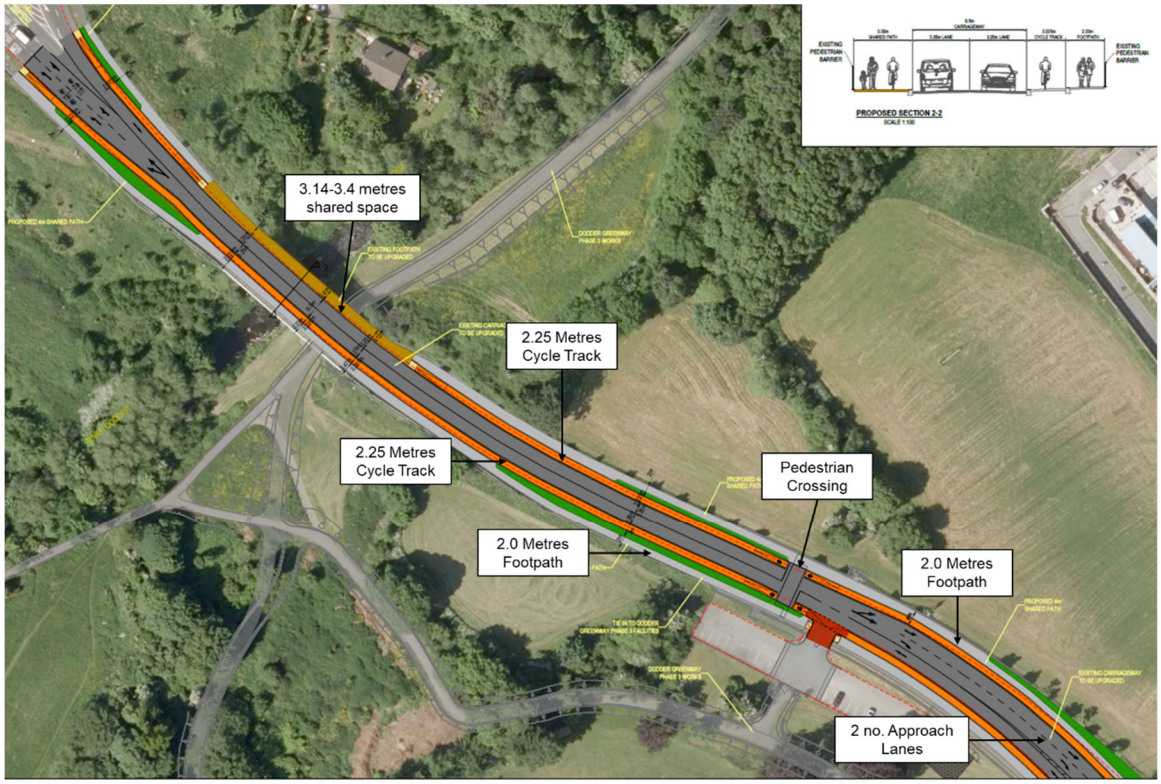


Figure 4.18 *Proposed Layout no. 3 for Spawell Link Road*

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 O'Donnell 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.

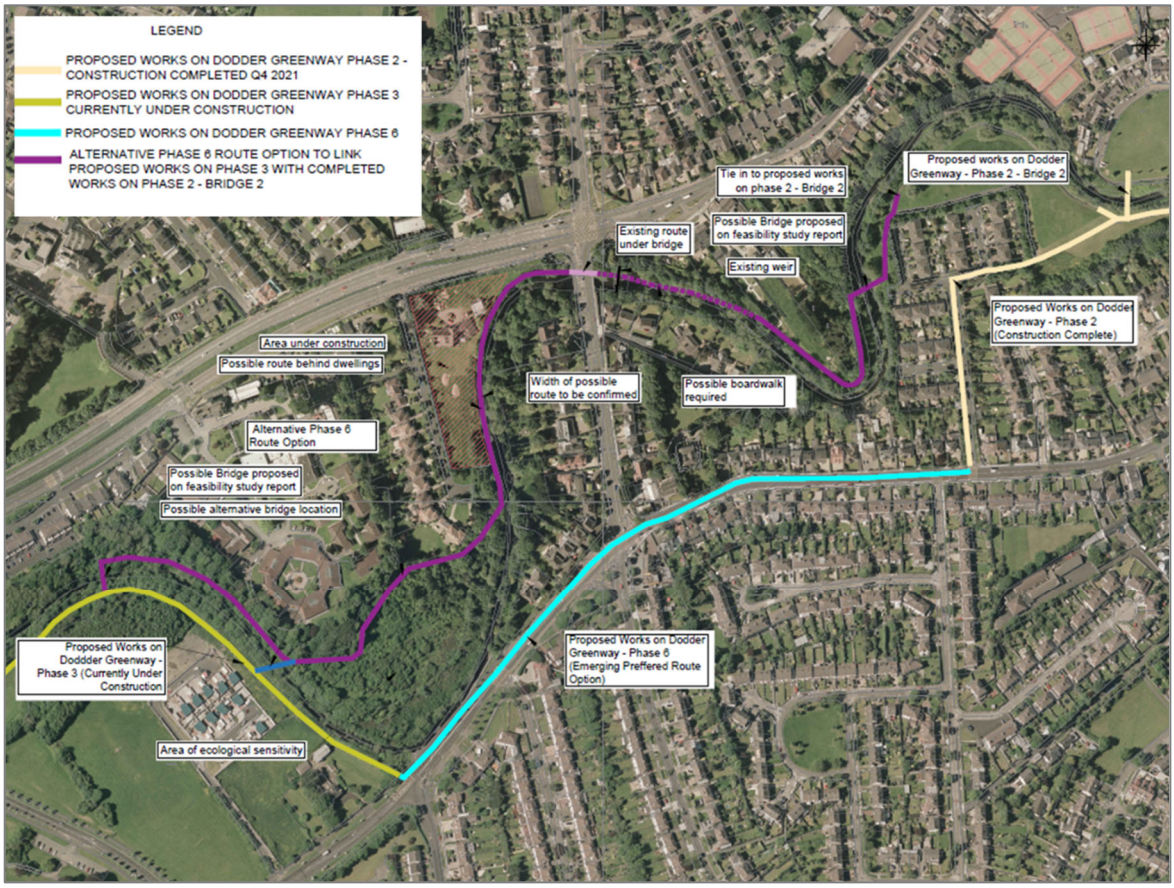


Figure 4.19 *Alternative Route Dodder Greenway Phase 5*

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.
- It's 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.

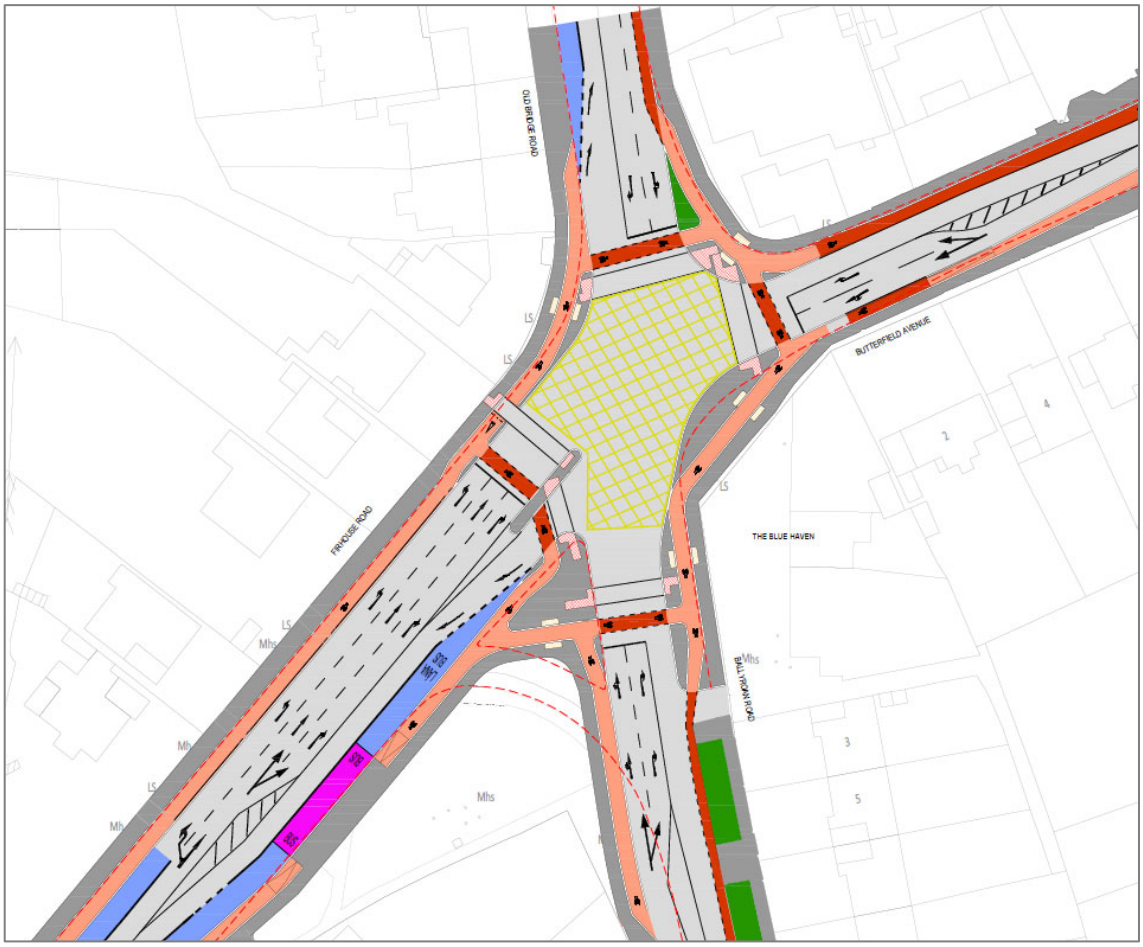


Figure 4.20 *Blue Haven Junction Layout no. 4*

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.

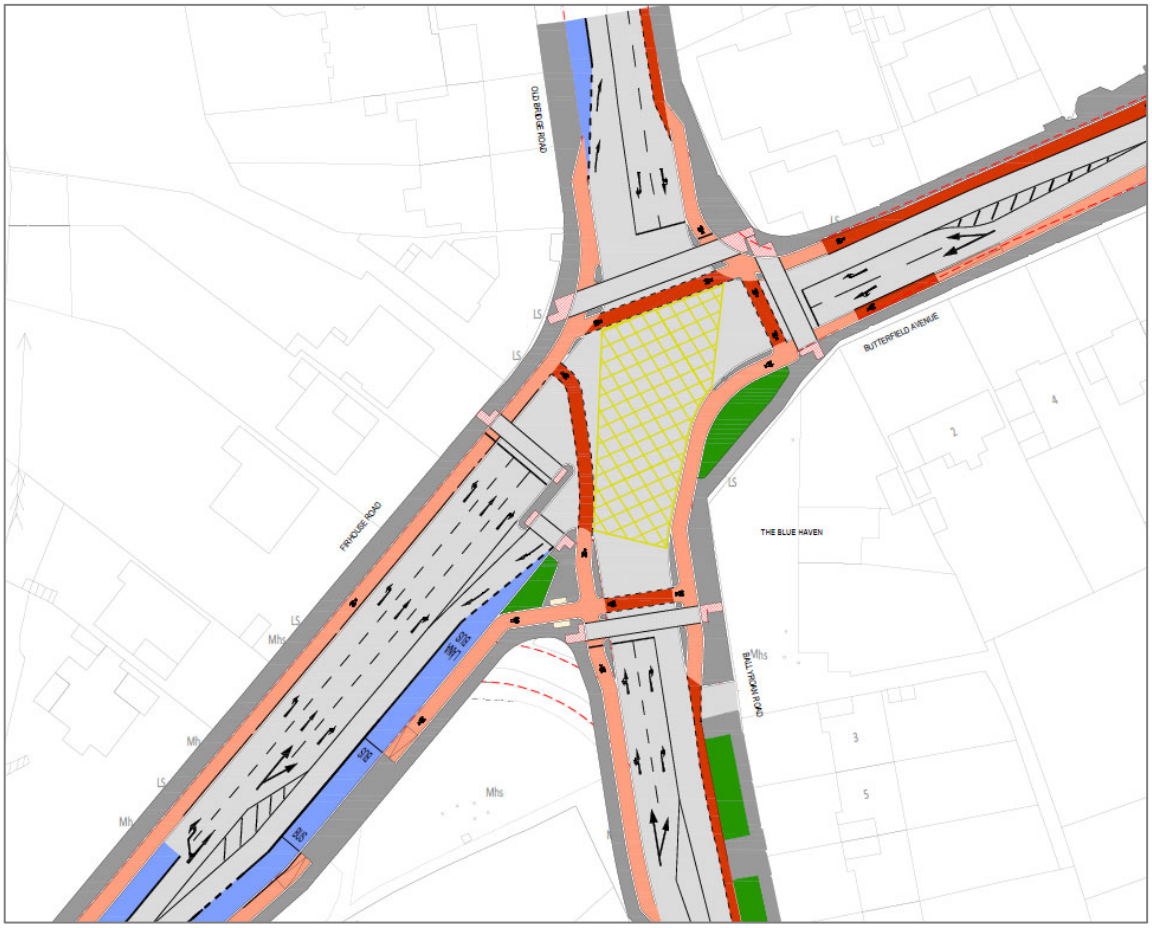


Figure 4.21 *Blue Haven Junction Layout no. 5*

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 cyclists' 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.

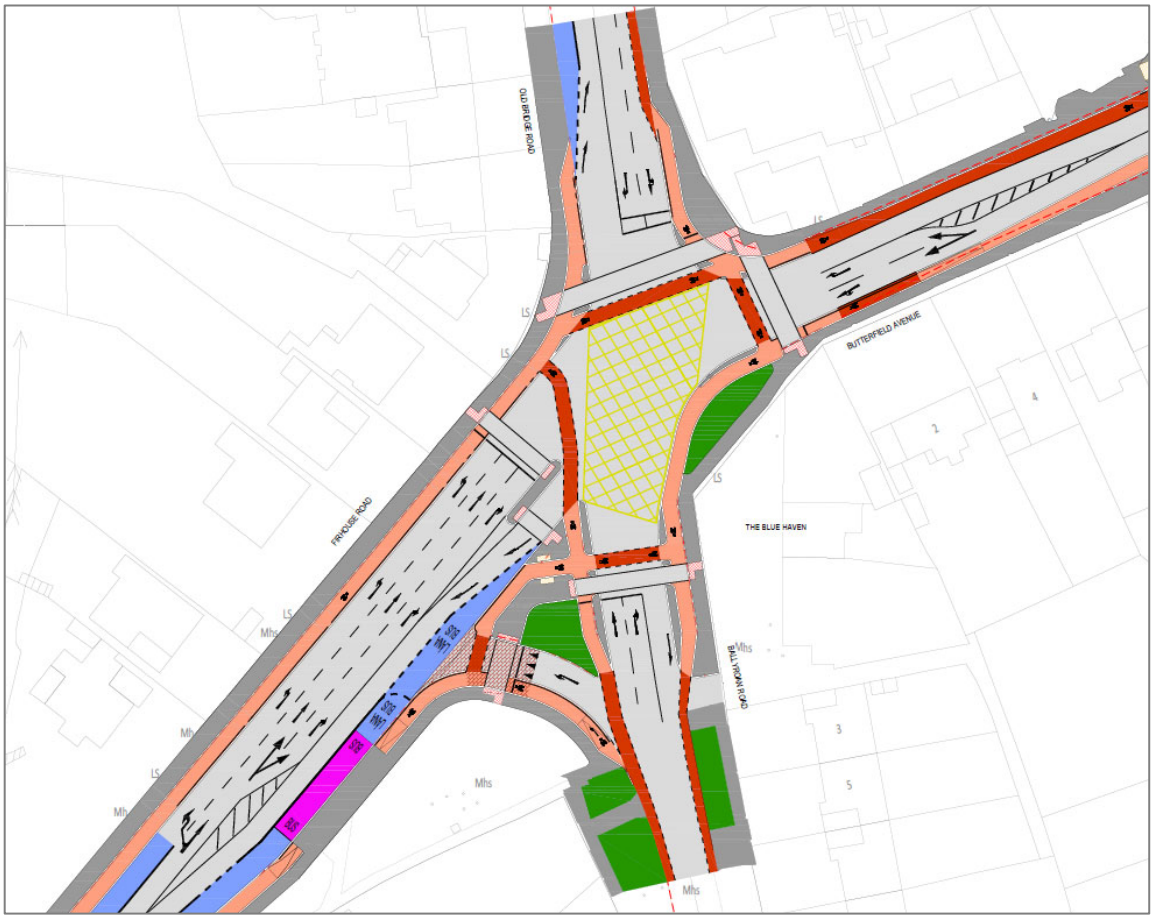


Figure 4.22 *Blue Haven Junction Layout no. 6*

Similar to option 4, this design was not included on the MCA due to safety concerns on pedestrians and cyclists' movements 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 cyclists' 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.

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 TII's 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 'do-nothing' scenario 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 'do-nothing' scenario 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 PRc's 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 'do-nothing' scenario 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 junction's 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 seconds' delay 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 seconds' delay. 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 '*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 'Multi Criteria Analysis' (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 Junctions' Geometry
- 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-minutes' walk 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 junction's 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 "dark green" and disadvantageous routes graded "red".

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.

6.6.1 Conclusion from Public Consultation

A Non-Statutory Public Consultation was held between 1st of December 2021 and the 14th of January 2022. A report named “Non-Statutory Public Consultation Report - Dodder Greenway Phase 5 – Firhouse Road, Wellington Lane & Butterfield Ave.” was prepared to detail and respond the queries submitted from stakeholders.

Following review and consideration of all submissions received during the non-statutory public consultation period CSEA have concluded that most of the submissions were in favour of the proposed emergency preferred route (Option 1) for the scheme.

On review of the submissions, CSEA have undertaken a review of the overall scheme and proposed some changes that will be presented at part 8 stage.

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 junction's geometry to accommodate all users.	1-Design does not fit the Blue Haven junction's geometry as cyclist cannot be accommodated on a complete Cyclop layout.	1-Design fits the junction's geometry to accommodate all users.
	Rank			

Assessment Criteria	Assessment Sub-Criteria	Option 1	Option 2	Option 3
Economy	Capital Cost	Estimated cost: €6,741,885.50 ex. VAT (refer to Appendix C for details)	Estimated cost: €6,311,849.259 ex. VAT (refer to Appendix C for details)	Estimated cost: €6,815,606.00 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			

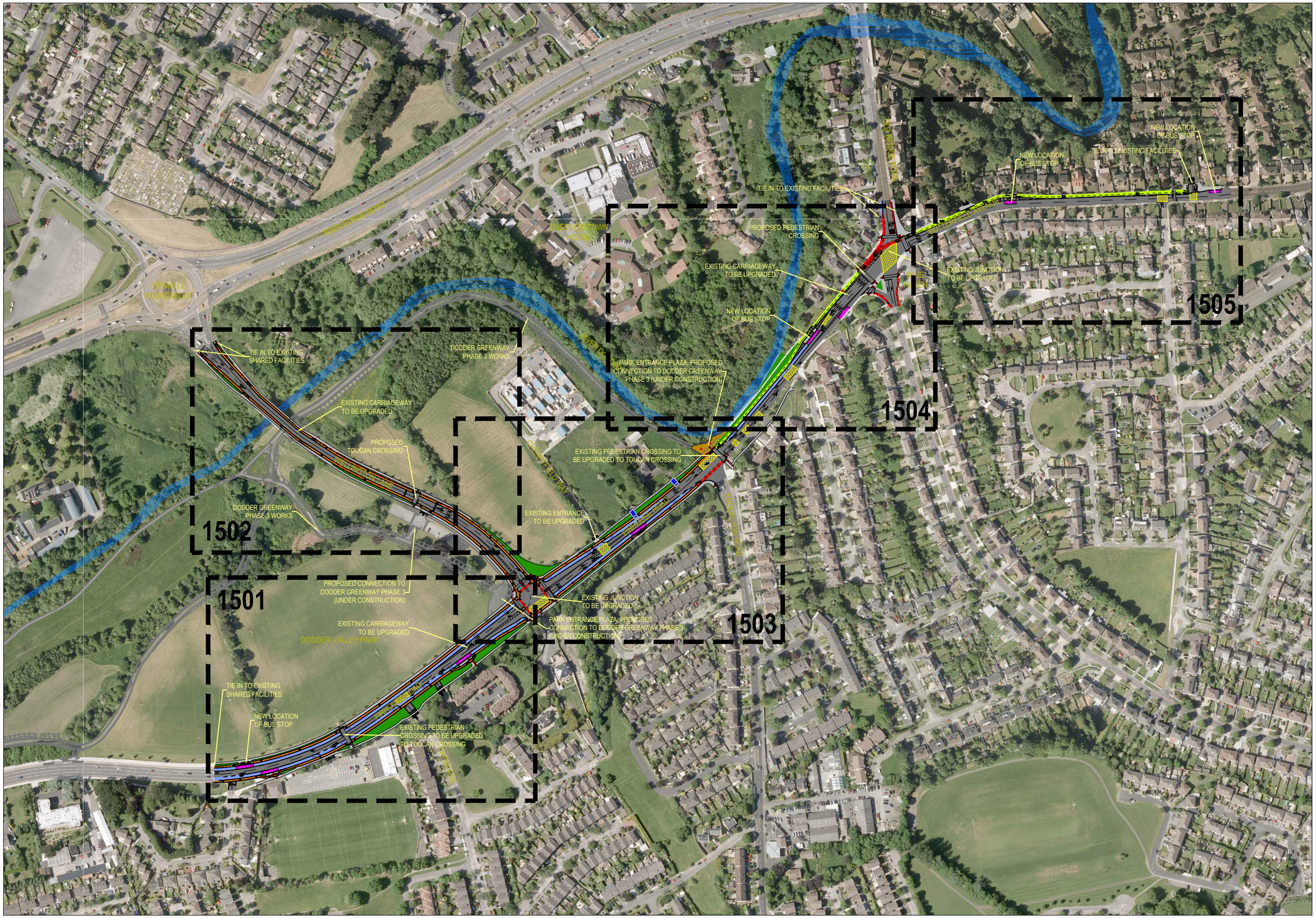
Appendix B Layout Options Drawings

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	Date	CSEA Job No.
KT	OCT. 2021	18_123D
Checked By	Scale	
DRL	1:2000 @ A1	

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

Status Code: S2 — FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

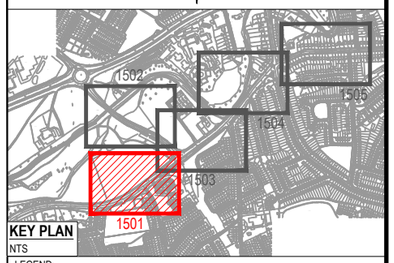
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Clifton Scannell Emerson Associates

PROPOSED SECTION 1-1
SCALE 1:100

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
- 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)
- 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

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	1501

Status Code: S2 — Suitability Description: FOR INFORMATION

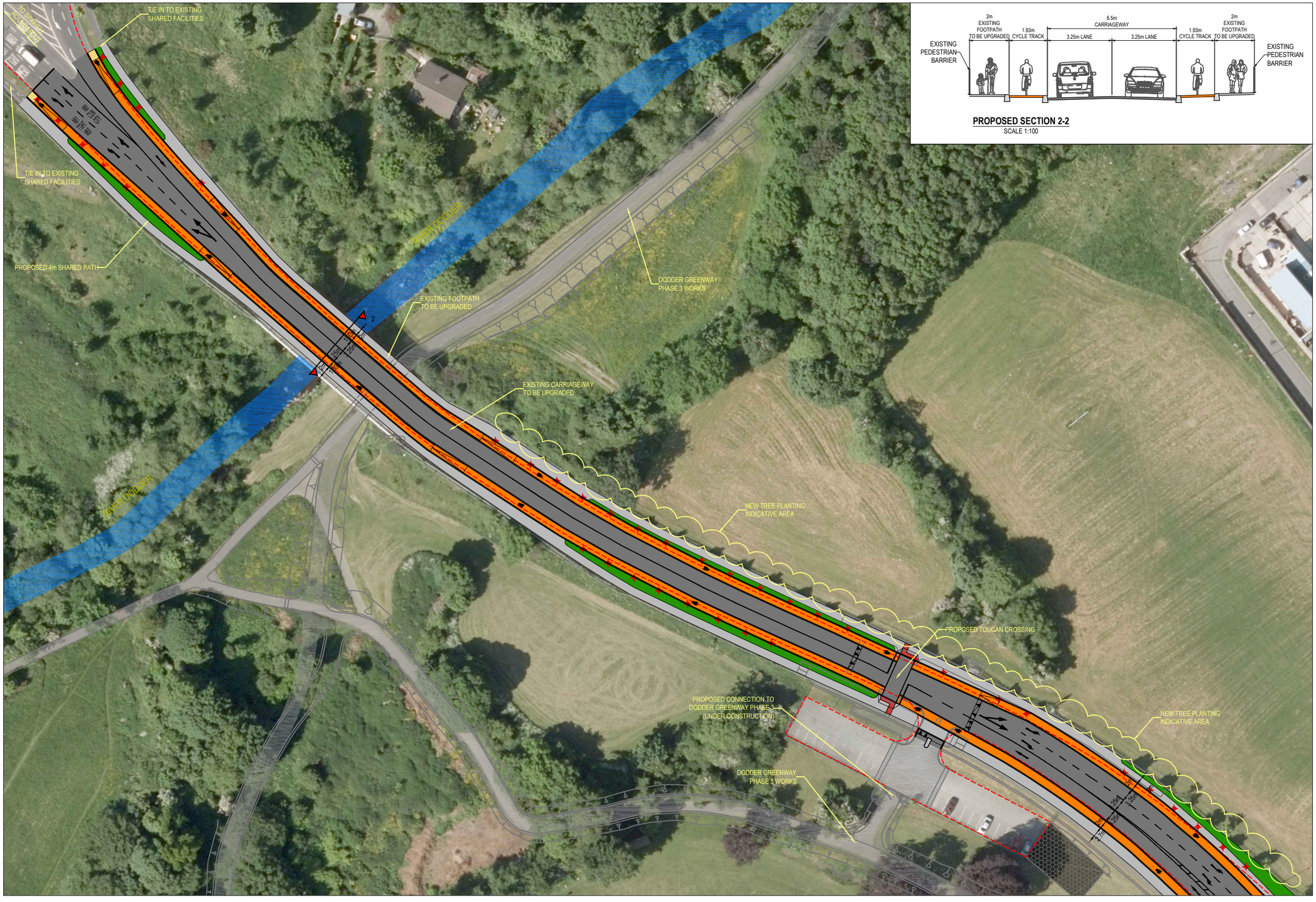
Revision: FINAL — Project Status: PRELIMINARY

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



PROPOSED SECTION 2-2
SCALE 1:100

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

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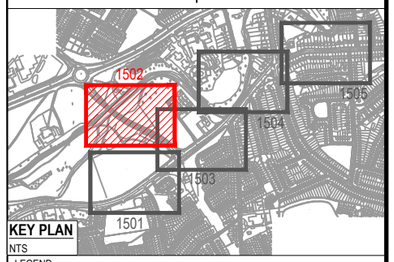

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
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- 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)
- 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 2 OF 5

Drawn By	Date	CSEA Job No.
KT	OCT. 2021	18_123D
Checked By	Scale	
DRL	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

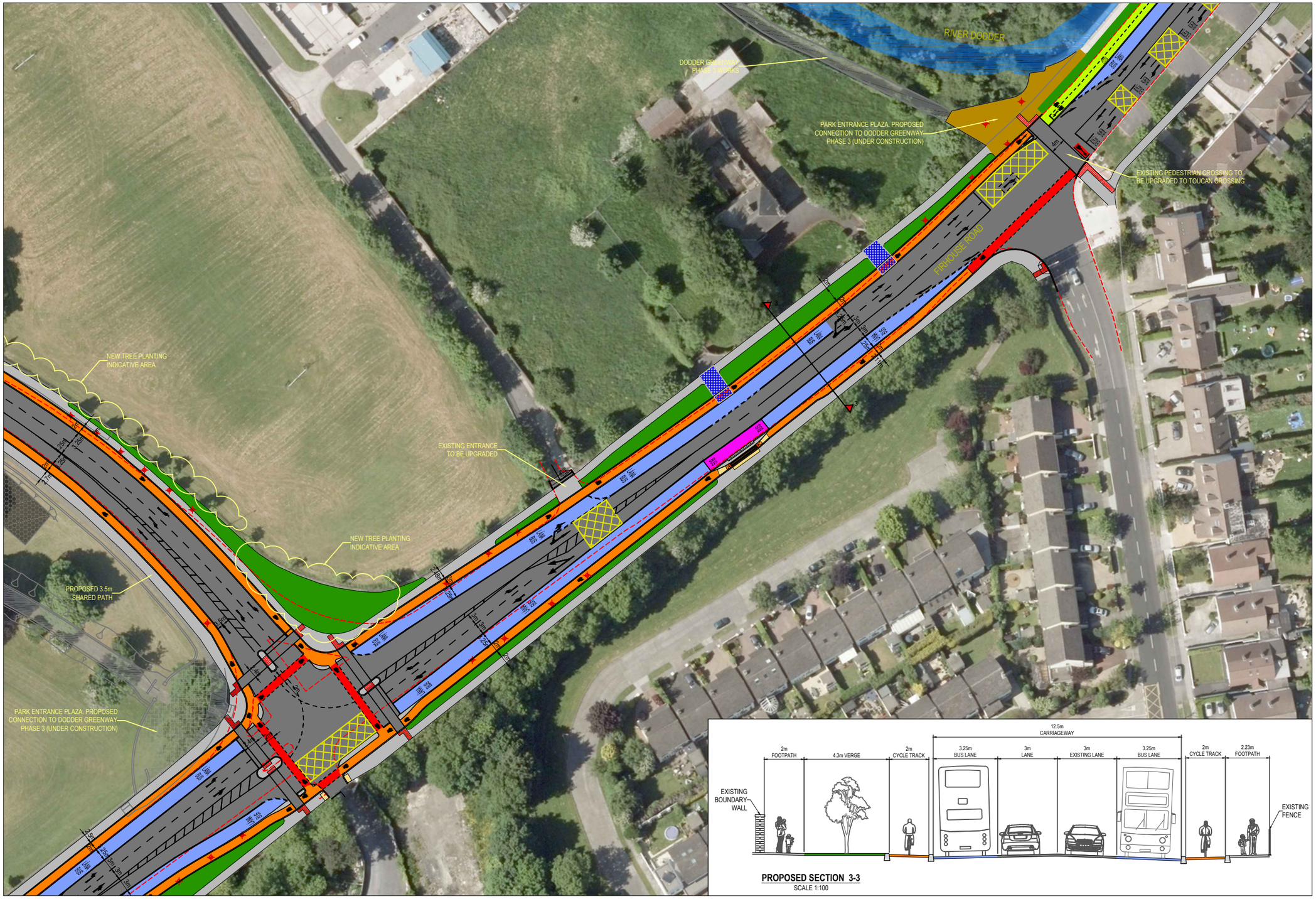
Revision: FINAL — Project Status: PRELIMINARY

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



PROPOSED SECTION 3-3
SCALE 1:100

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

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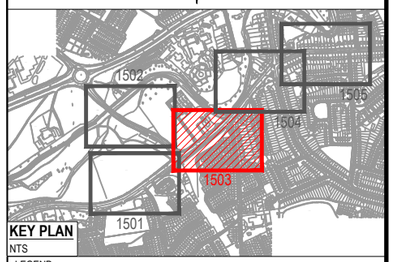

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
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- 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)
- 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 3 OF 5

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

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

Status Code: S2 — FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

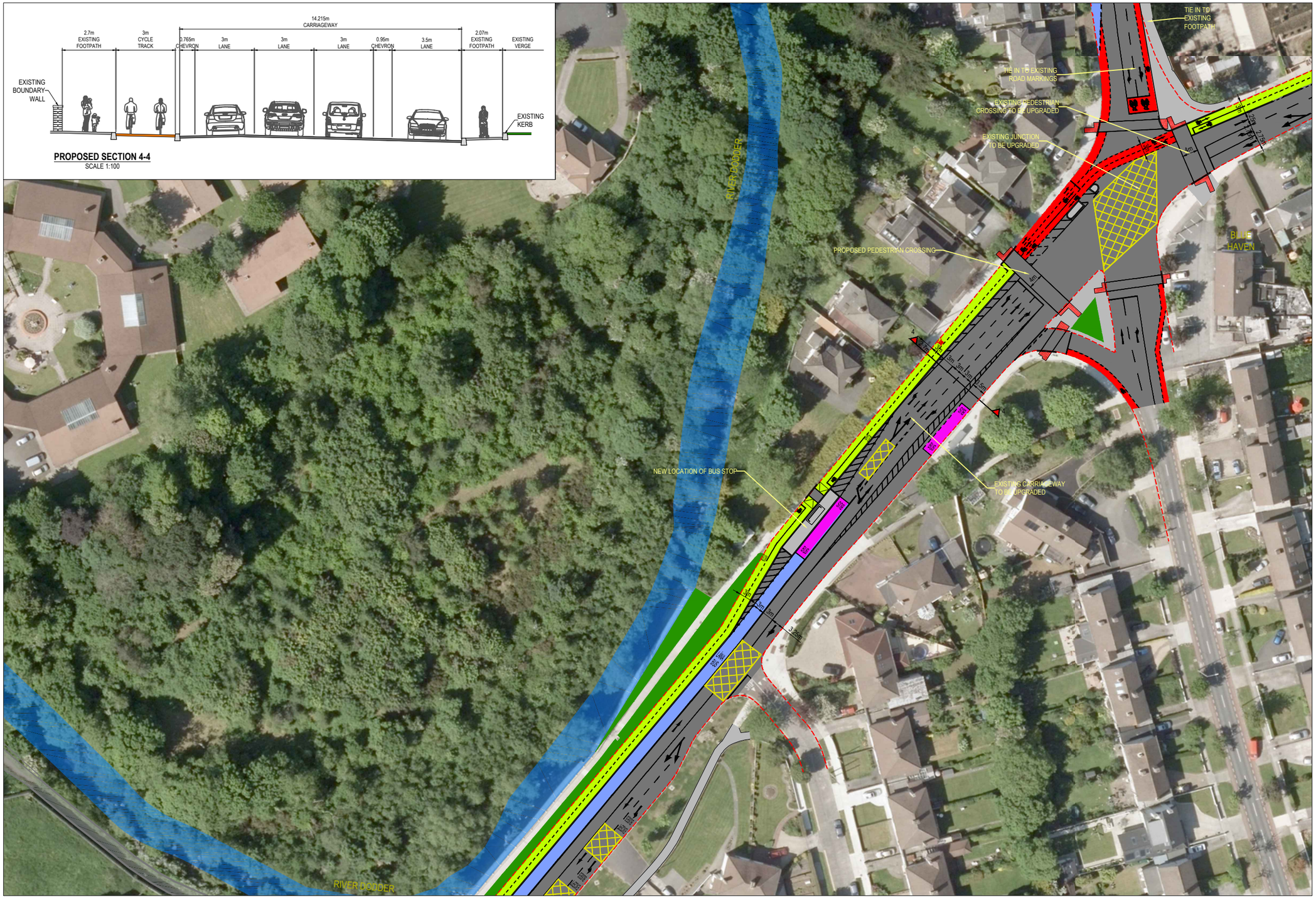
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

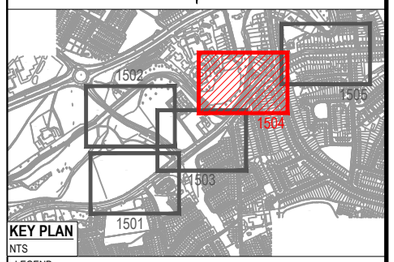
Clifton Scannell Emerson Associates

PROPOSED SECTION 4-4
SCALE 1:100



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

A1



KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
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- PROPOSED CARRIAGEWAY UPGRADE
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- 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)
- 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 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

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

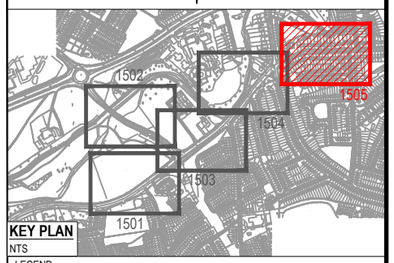
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 1

Clifton Scannell Emerson Associates

PROPOSED SECTION 5-5
SCALE 1:100

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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- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY 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 1 - SHEET 5 OF 5

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

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

S2 — FOR INFORMATION
Status Code — Suitability Description

FINAL — PRELIMINARY
Revision — Project Status

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

A1

N

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 OPTION 2 - OVERALL

Drawn By	Date	CSEA Job No.
KT	OCT. 2021	18_123D
Checked By	Scale	
DRL	1:2000 @ A1	

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

Status Code: S2 — FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

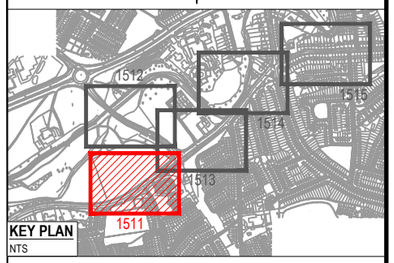
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Clifton Scannell Emerson Associates

PROPOSED SECTION 1-1
SCALE 1:100

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
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- 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 1 OF 5

Drawn By: KT
Checked By: DRL
Date: OCT. 2021
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

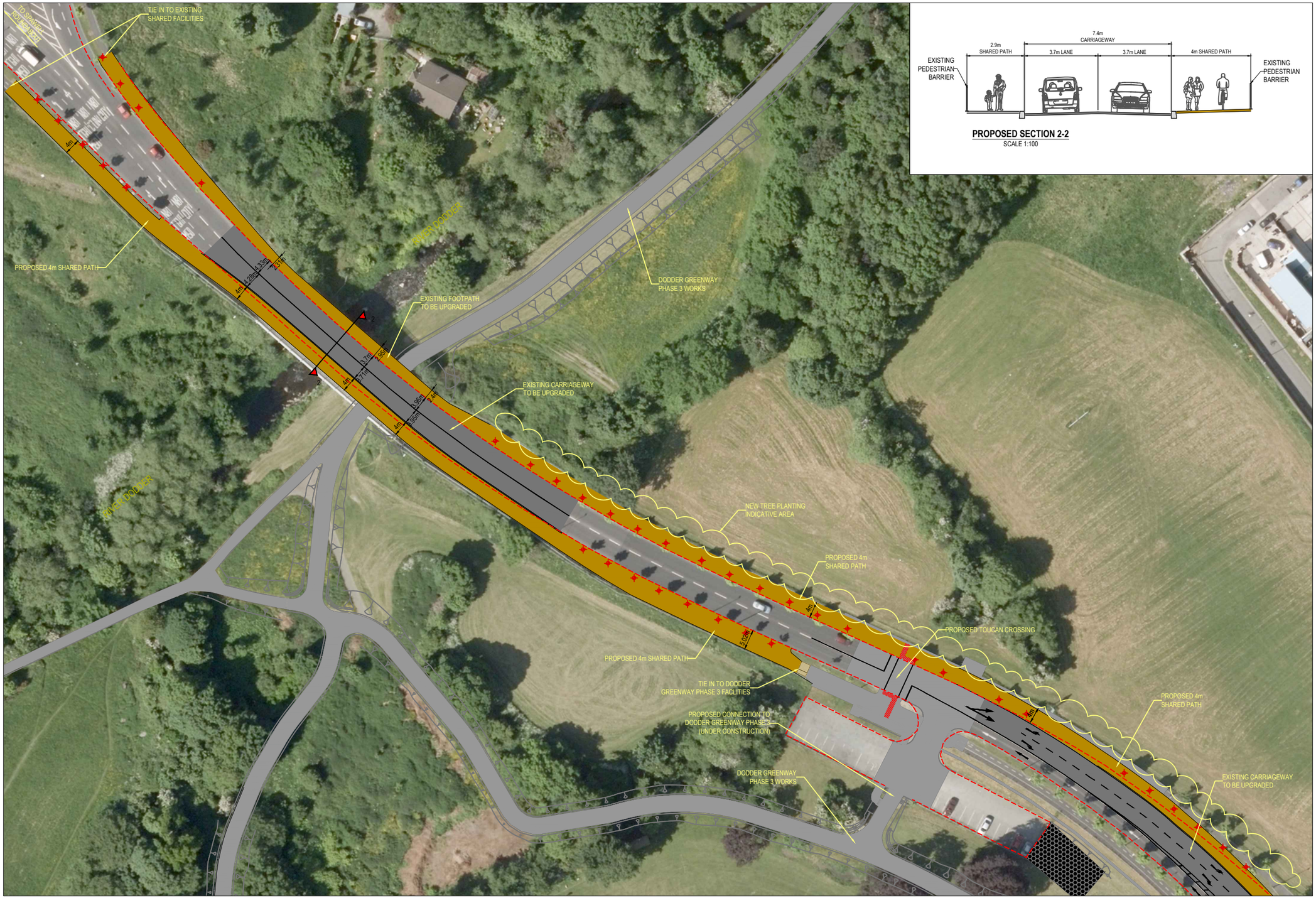
Status Code: S2 — FOR INFORMATION
Revision: FINAL — PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

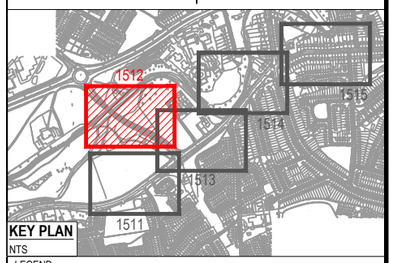
Clifton Scannell Emerson Associates



PROPOSED SECTION 2-2
SCALE 1:100

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
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- PROPOSED TACTILE PAVING (BUFF)
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- 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	Date	CSEA Job No.
KT	OCT. 2021	18_123D
Checked By	Scale	
DRL	1:500 @ A1	

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

Status Code: S2 — FOR INFORMATION

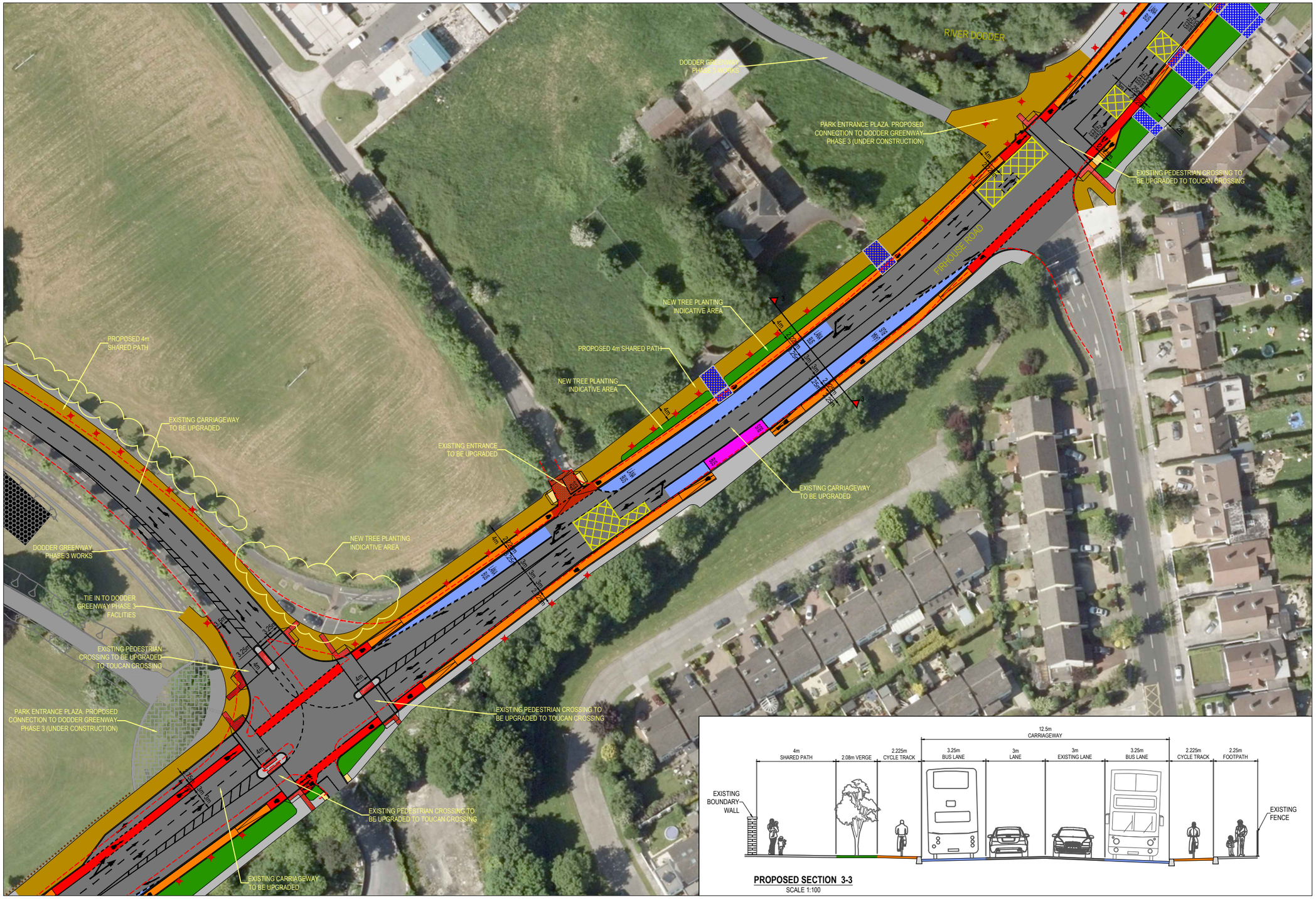
Revision: FINAL — Project Status: PRELIMINARY

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 3-3
SCALE 1:100

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

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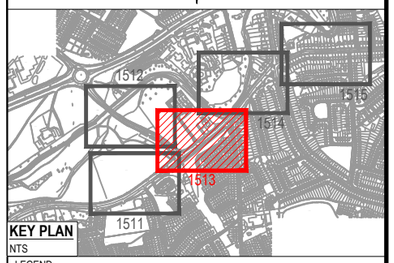

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
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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 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 — FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

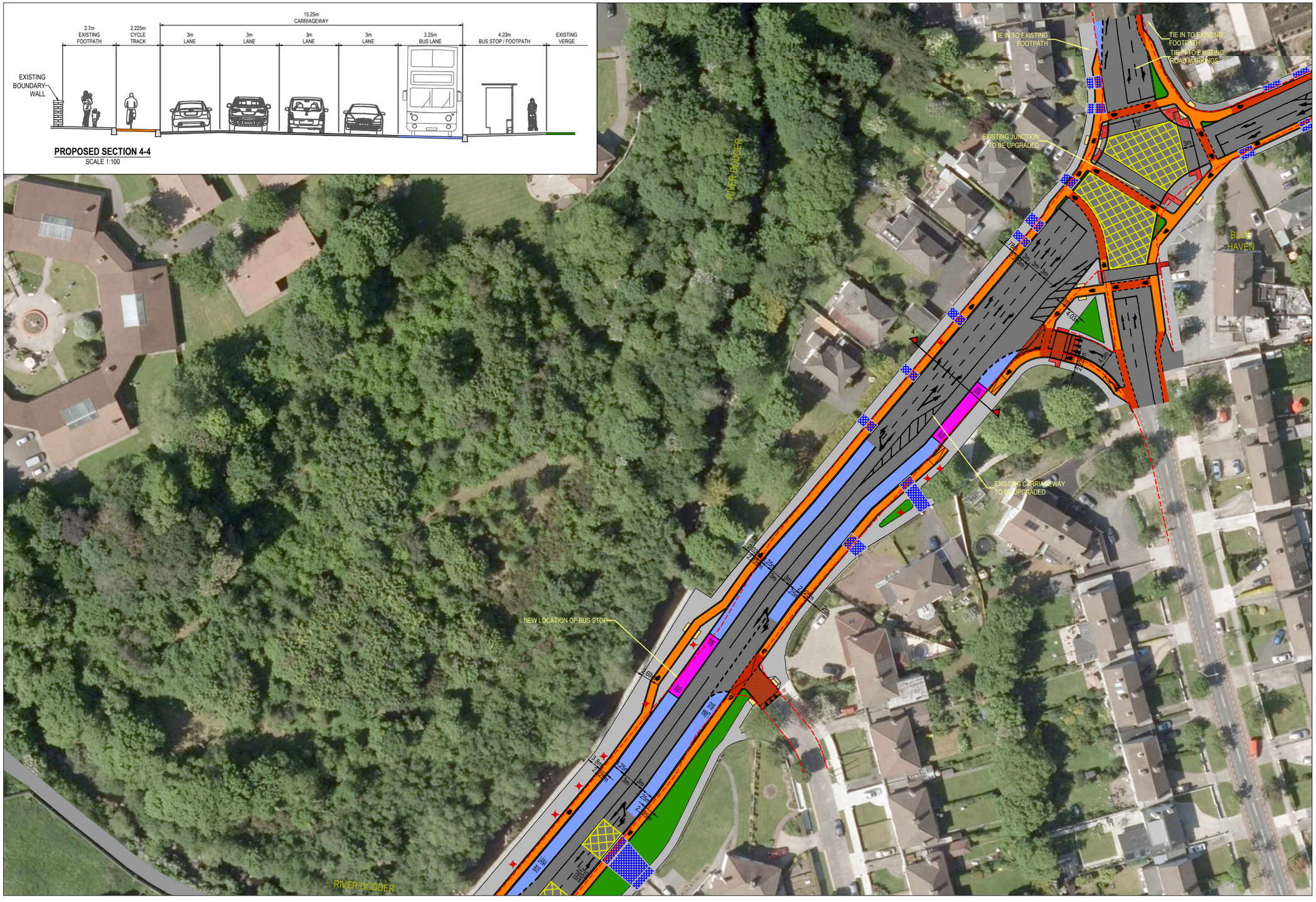
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 2

Clifton Scannell Emerson Associates

PROPOSED SECTION 4-4
SCALE 1:100



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

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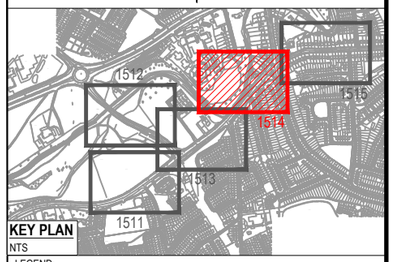

KEY PLAN
NTS

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

Clifton Scannell Emerson Associates Limited
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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
Checked By: DRL
Date: OCT. 2021
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	1514

Status Code: S2 — 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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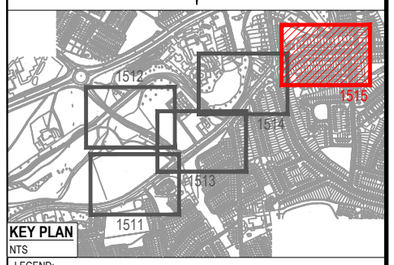

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
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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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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 — FOR INFORMATION

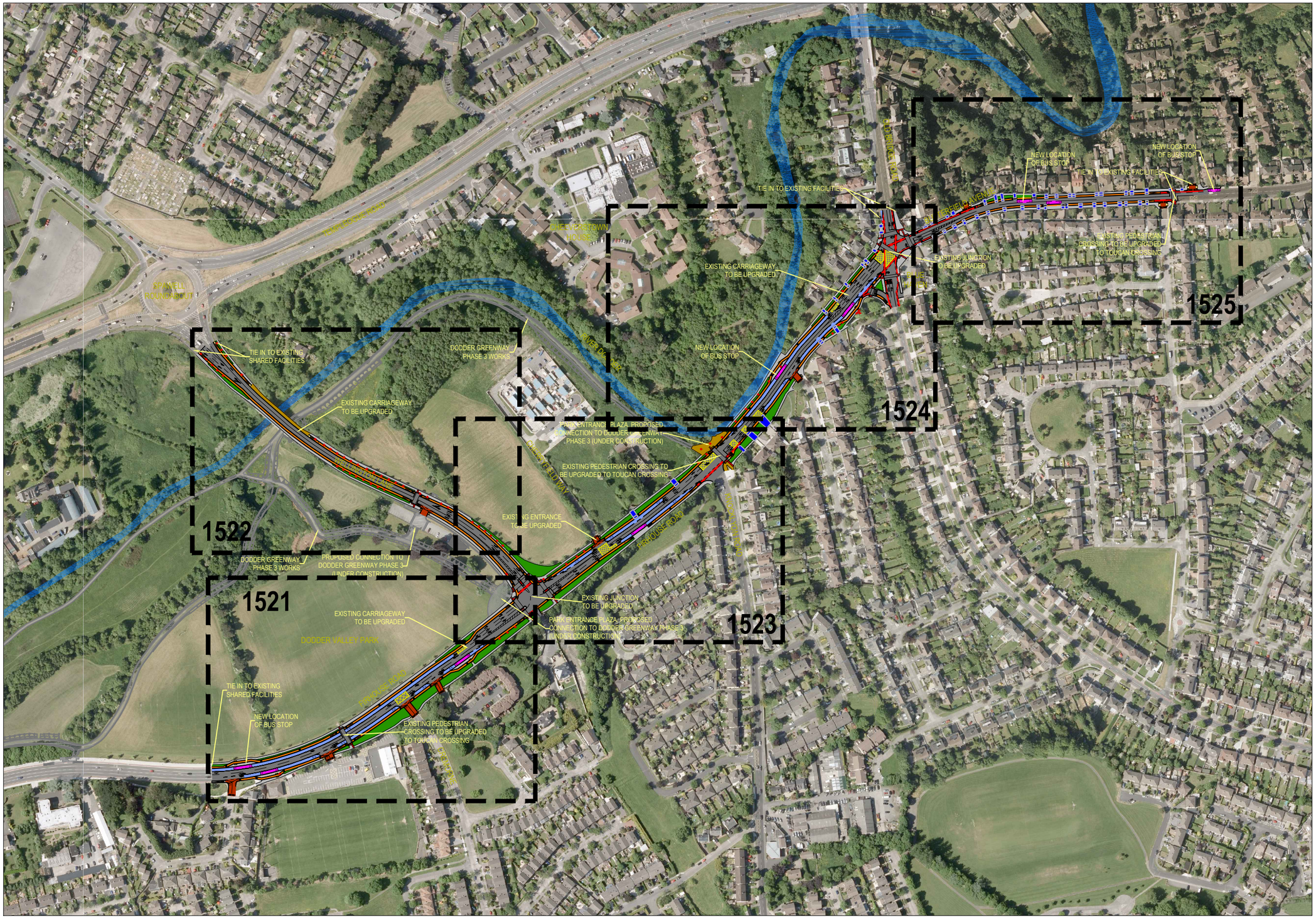
Revision: FINAL — Project Status: PRELIMINARY

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


SPANSIL ROUNDABOUT
TIE IN TO EXISTING SHARED FACILITIES
DODDER GREENWAY PHASE 3 WORKS
EXISTING CARRIAGEWAY TO BE UPGRADED
PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3 (UNDER CONSTRUCTION)
1522
1521
DODDER VALLEY PARK
TIE IN TO EXISTING SHARED FACILITIES
NEW LOCATION OF BUS STOP
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
PARK ENTRANCE PLAZA, PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3 (UNDER CONSTRUCTION)
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
EXISTING ENTRANCE TO BE UPGRADED
EXISTING JUNCTION TO BE UPGRADED
PARK ENTRANCE PLAZA, PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3 (UNDER CONSTRUCTION)
1523
1524
1525
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
EXISTING JUNCTION TO BE UPGRADED
TIE IN TO EXISTING FACILITIES
NEW LOCATION OF BUS STOP
EXISTING CARRIAGEWAY TO BE UPGRADED
DUE CYPRESTOWN HOUSE
SPANSIL HILL ROAD
DODDER VALLEY PARK
FIRHOUSE ROAD
GREENHILLS ROAD
GREENHILLS ROAD
GREENHILLS

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

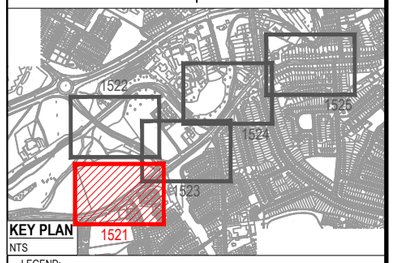
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates

PROPOSED SECTION 1-1
SCALE 1:100

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

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	1521

Status Code: S2 — FOR INFORMATION

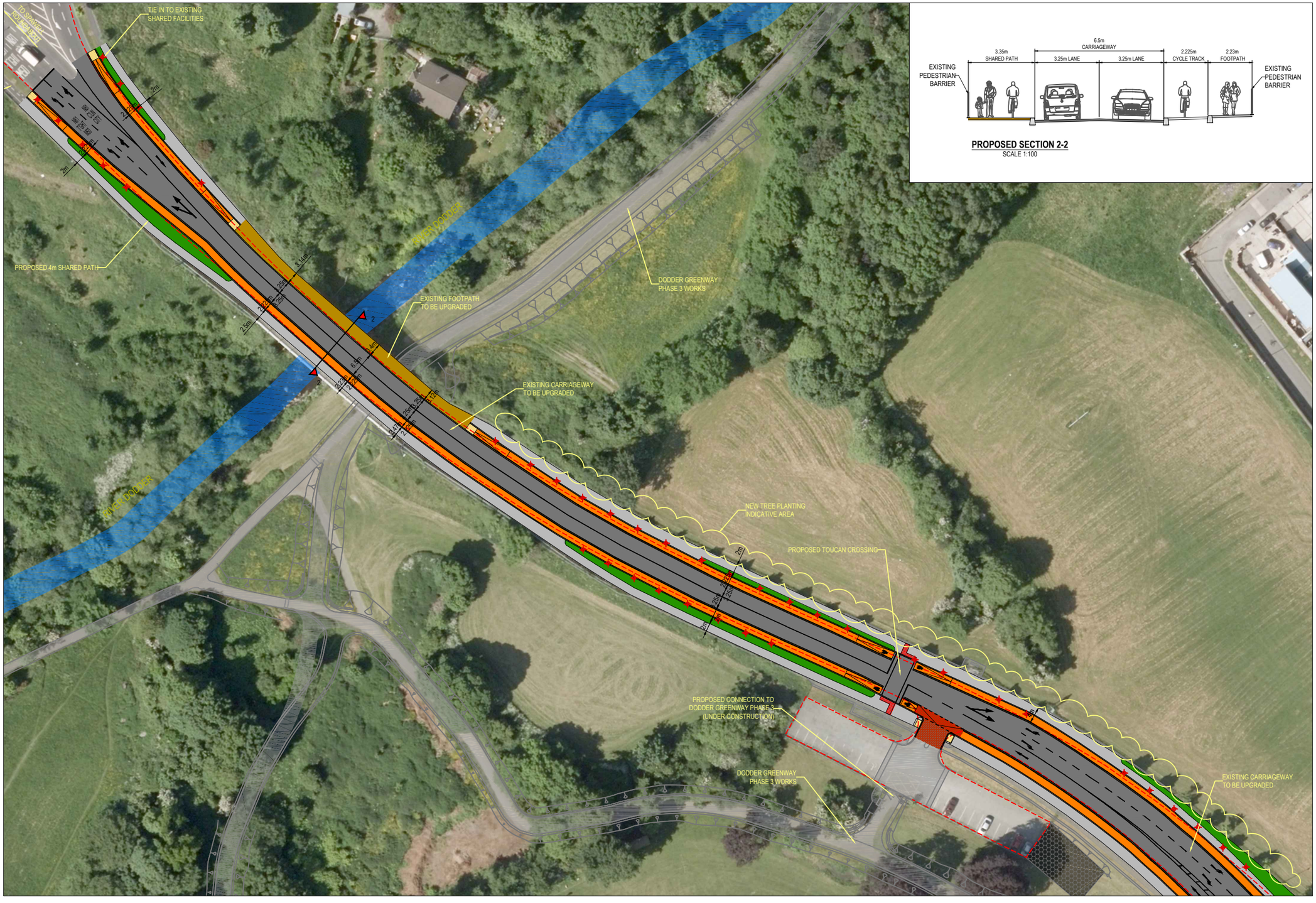
Revision: FINAL — Project Status: PRELIMINARY

Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

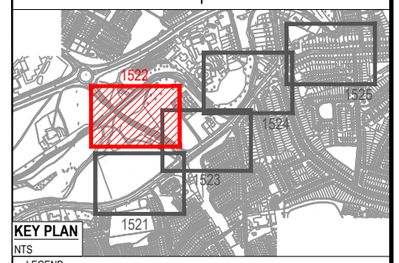
Clifton Scannell Emerson Associates



PROPOSED SECTION 2-2
SCALE 1:100

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
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- 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	Date	CSEA Job No.
KT	OCT. 2021	18_123D
Checked By	Scale	
DRL	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

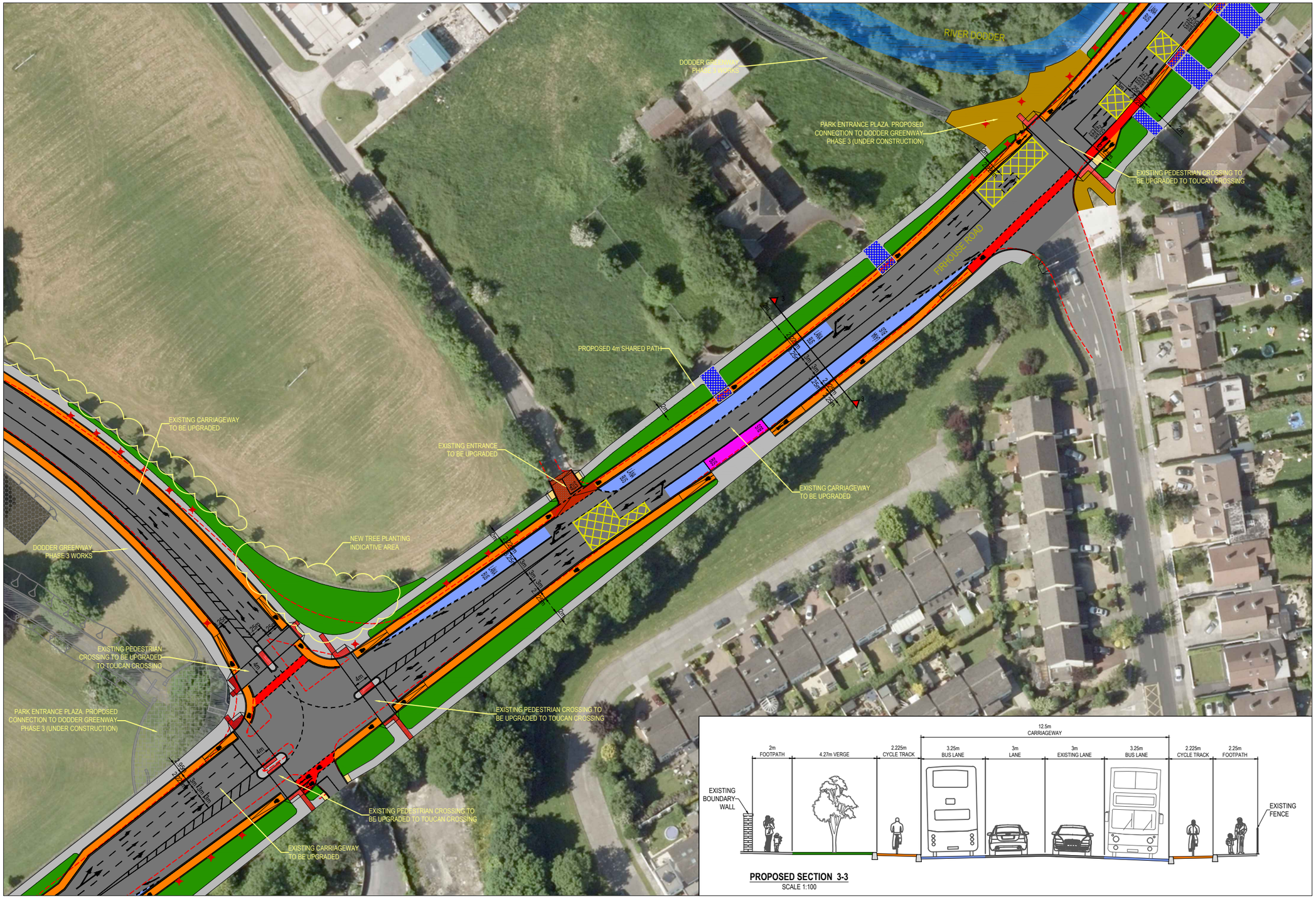
Revision: FINAL — Project Status: PRELIMINARY

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



PROPOSED SECTION 3-3
SCALE 1:100

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

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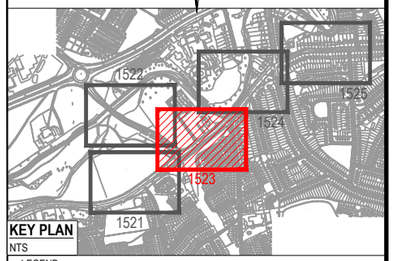

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
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- 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	1523

Status Code: S2 — FOR INFORMATION

Revision: FINAL — Project Status: PRELIMINARY

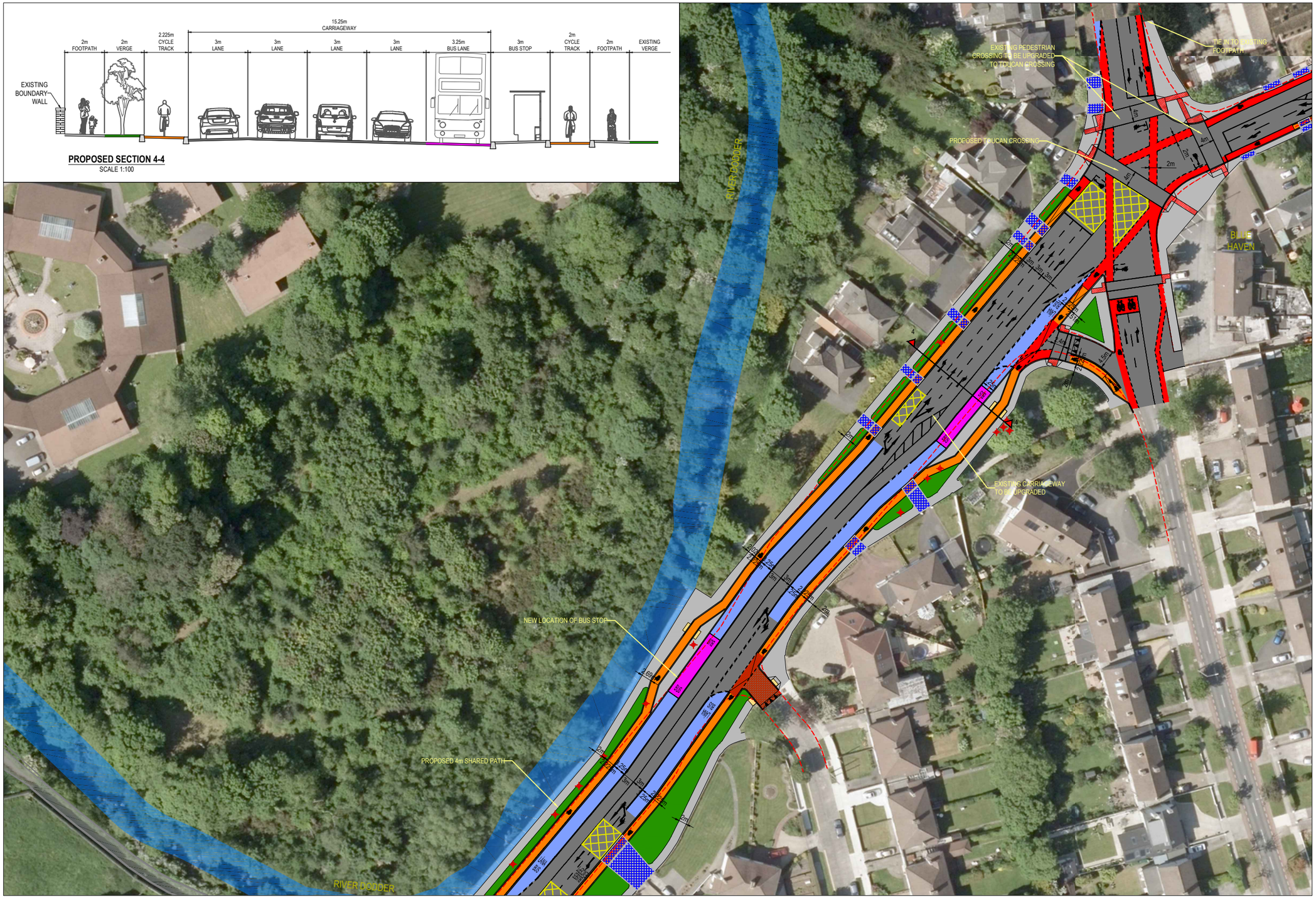
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

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



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

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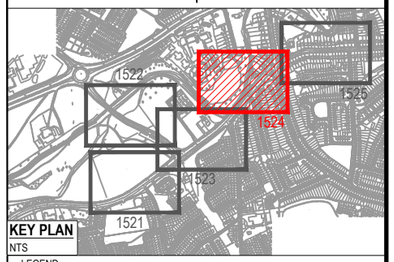

KEY PLAN
NTS

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 3 - SHEET 4 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	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

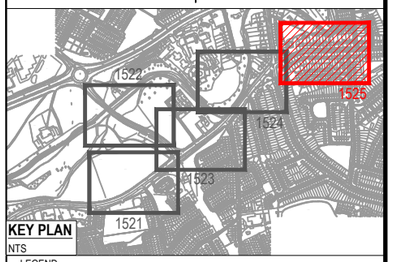
DODDER GREENWAY
FIRHOUSE ROAD LINKS
OPTION 3

Clifton Scannell Emerson Associates

PROPOSED SECTION 5-5
SCALE 1:100

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

A1



KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED CARRIAGEWAY UPGRADE
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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 3 - SHEET 5 OF 5

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

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

Status Code: S2 — FOR INFORMATION

Revision: FINAL — PRELIMINARY

Project Status

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

A1

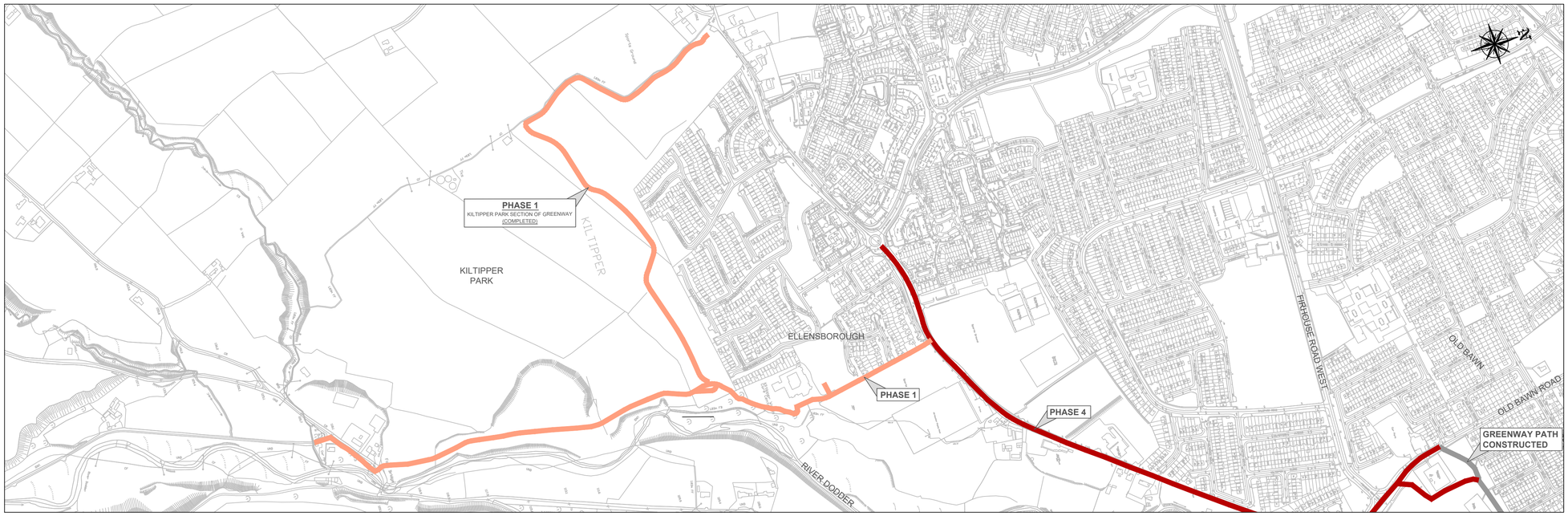
PROPOSED DODDER GREENWAY THROUGH SOUTH DUBLIN COUNTY COUNCIL

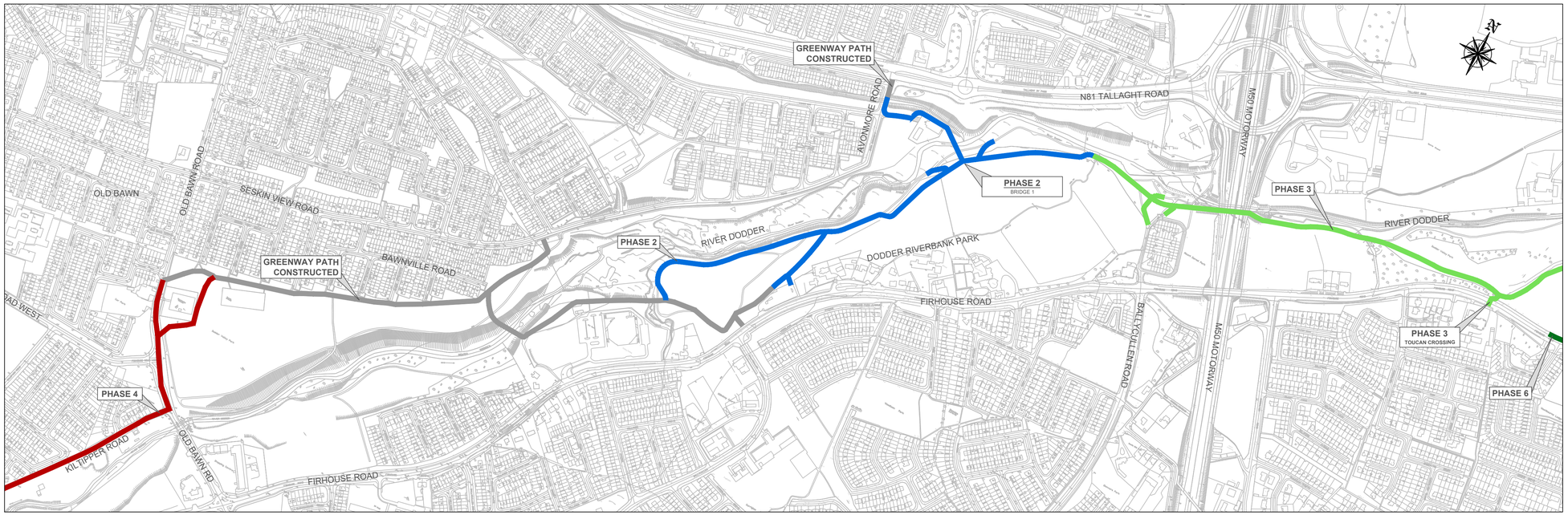
Comhairle Contae Átha Cliath Theas
South Dublin County Council

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	Date	CSEA Job No.
SM	DEC 2019	18_123A
Checked By	Scale	
JC	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

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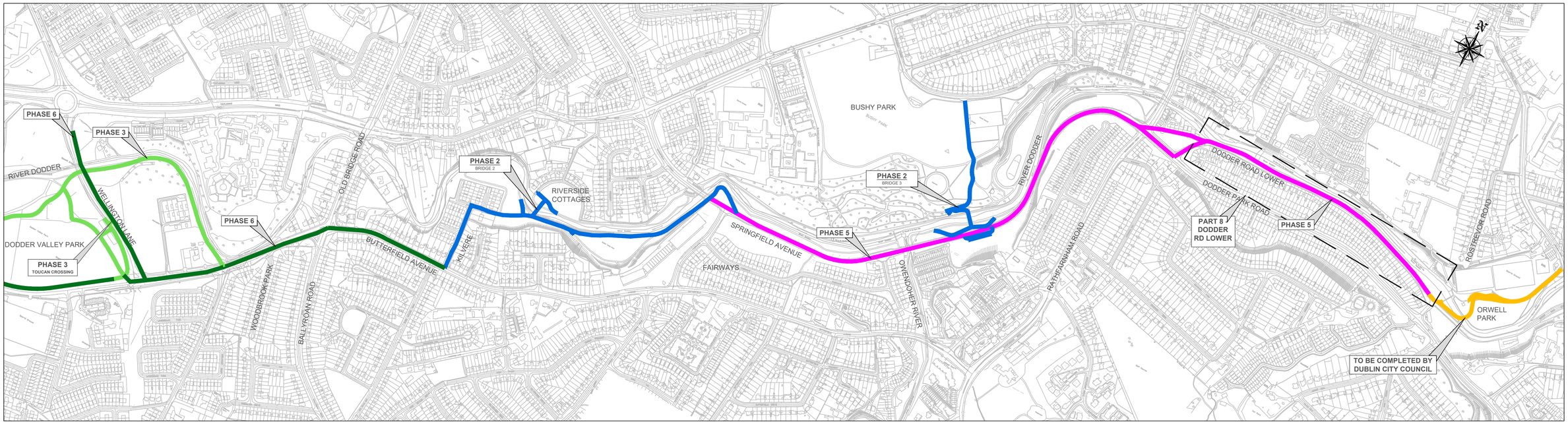
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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	07-01-2019

Clifton Scannell Emerson Associates

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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

Checked By: JC | Scale: AS INDICATED @ A1

CSEA Job No.: 18_123A

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

Status Code: S2 — FOR INFORMATION

Revision: P04 — Project Status: PRELIMINARY

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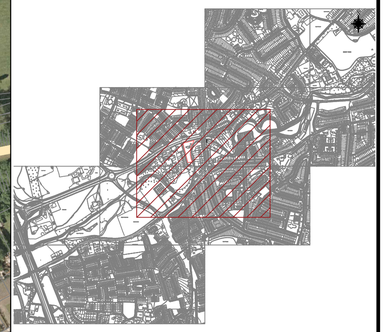
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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	Date	CSEA Job No.
PS	FEB 2020	18_123
Checked By	Scale	
RG	1:1500 @ A1	

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

Status Code: S2 — 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
15:15	0	0	0	0	0	0	39	5	1	0	0	45	56	5	0	0	0	61	51	7	0	0	3	61
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
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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

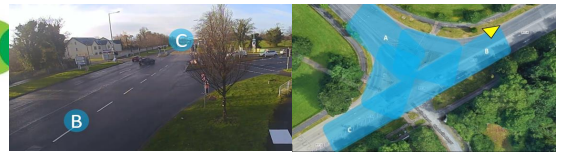
Survey Name :	ITS J-394 Dodder Greenway
Site:	
Date:	13.02.2020
Time:	07:00-19:00
Location:	53.290854, -6.314320
Classification:	Car, LGV, OGV1, OGV2, PSV, M/C, P/C

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

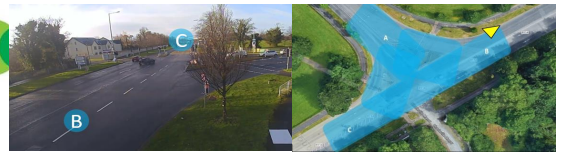
Irish Traffic Surveys



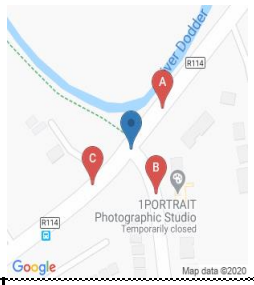
	B => A						B => B						B => C					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	61	9	2	0	0	72	0	0	0	0	0	0	11	0	0	0	1	12
07:15	70	4	1	0	0	75	0	0	0	0	0	0	12	1	0	0	4	17
07:30	98	7	0	0	0	105	0	0	0	0	0	0	22	1	0	0	4	27
07:45	98	11	0	2	0	111	0	0	0	0	0	0	36	3	0	0	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



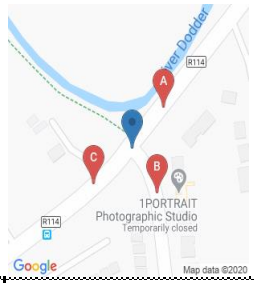
	C => A						C => B						C => C					
TIME	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	72	6	2	0	0	80	113	11	0	0	2	126	0	0	0	0	0	0
07:15	67	11	1	0	0	79	92	14	2	0	2	110	0	0	0	0	0	0
07:30	118	20	0	1	1	140	124	7	2	0	2	135	0	0	0	0	0	0
07:45	95	8	0	0	0	103	134	6	0	0	1	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

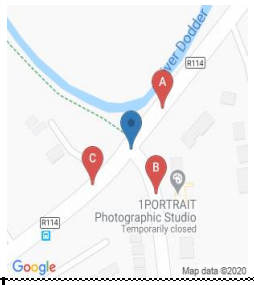
	A => A									A => B									A => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
00:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	7	8	3	0	12	0	0	1	0	16
00:15	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	8	2	0	20	0	0	0	0	22
00:30	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

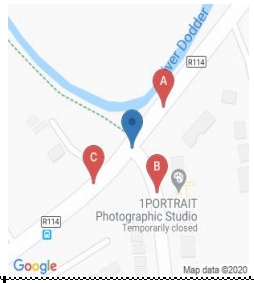
	A => A									A => B									A => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
12:00	0	0	0	0	0	0	0	0	0	0	0	45	0	1	0	1	47	48.5	1	0	93	6	1	0	2	103
12:15	0	0	0	0	0	0	0	0	0	2	0	43	4	1	0	2	52	52.9	4	1	88	10	2	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	234.1	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

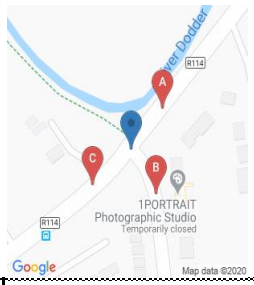
	B => A									B => B									B => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
00:00	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
00:15	1	0	5	0	0	0	0	6	5.2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
00:30	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

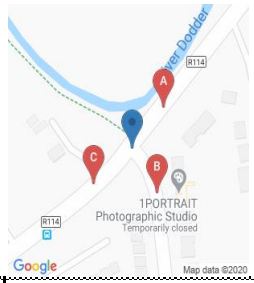
	B => A									B => B									B => C							
TIME	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT	PCU	PCL	MCL	CAR	LGV	OGV1	OGV2	PSV (BUS)	TOT
12:00	2	0	30	2	0	0	1	35	34.4	0	0	0	0	0	0	0	0	0	0	0	20	2	1	0	0	23
12:15	1	0	40	5	2	0	2	50	52.2	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	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	7729	22	14	2020	147	16	2	5	2226	2215.6	0	0	0	1	0	0	0	1

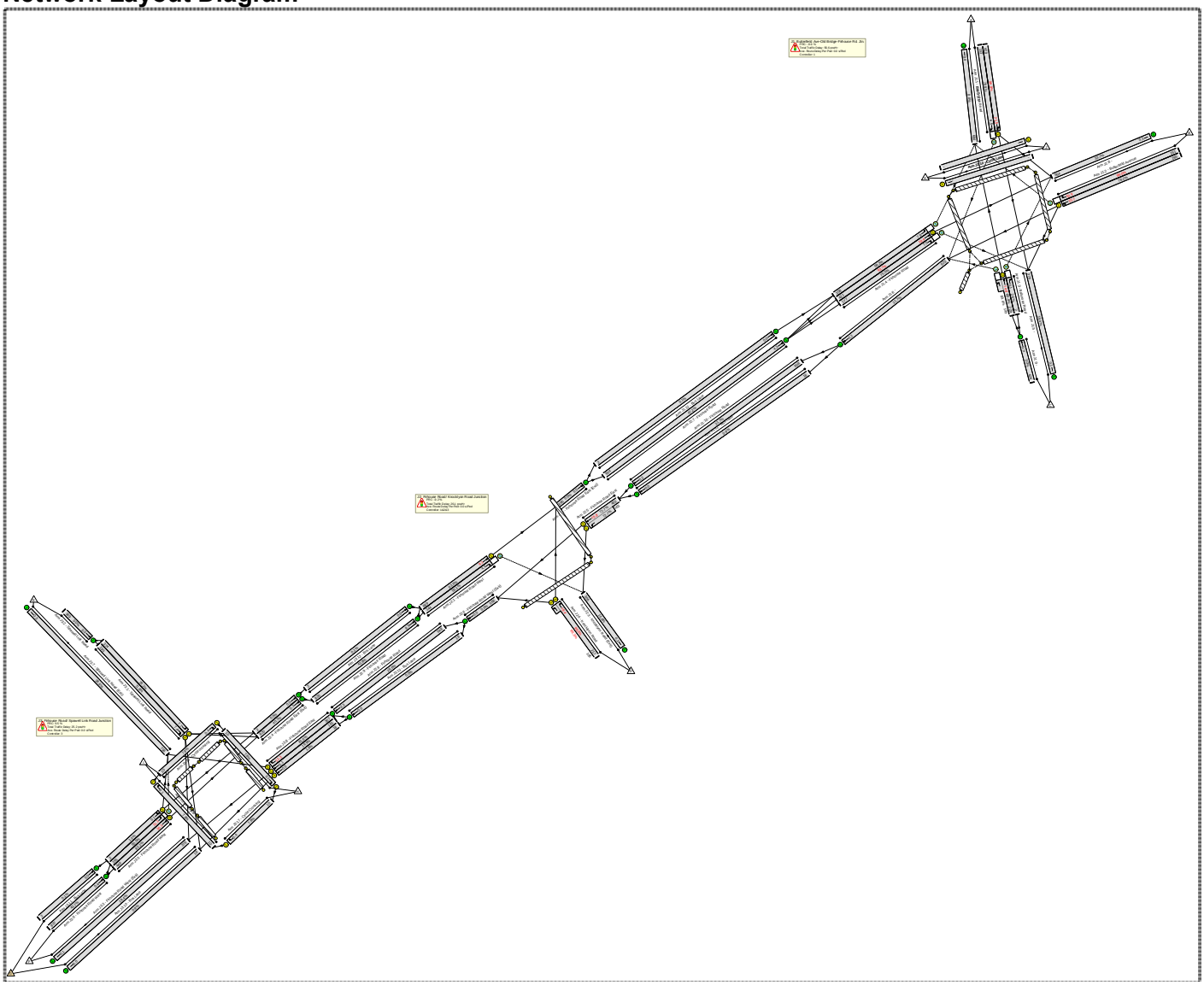
Appendix E Traffic Modelling Results

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

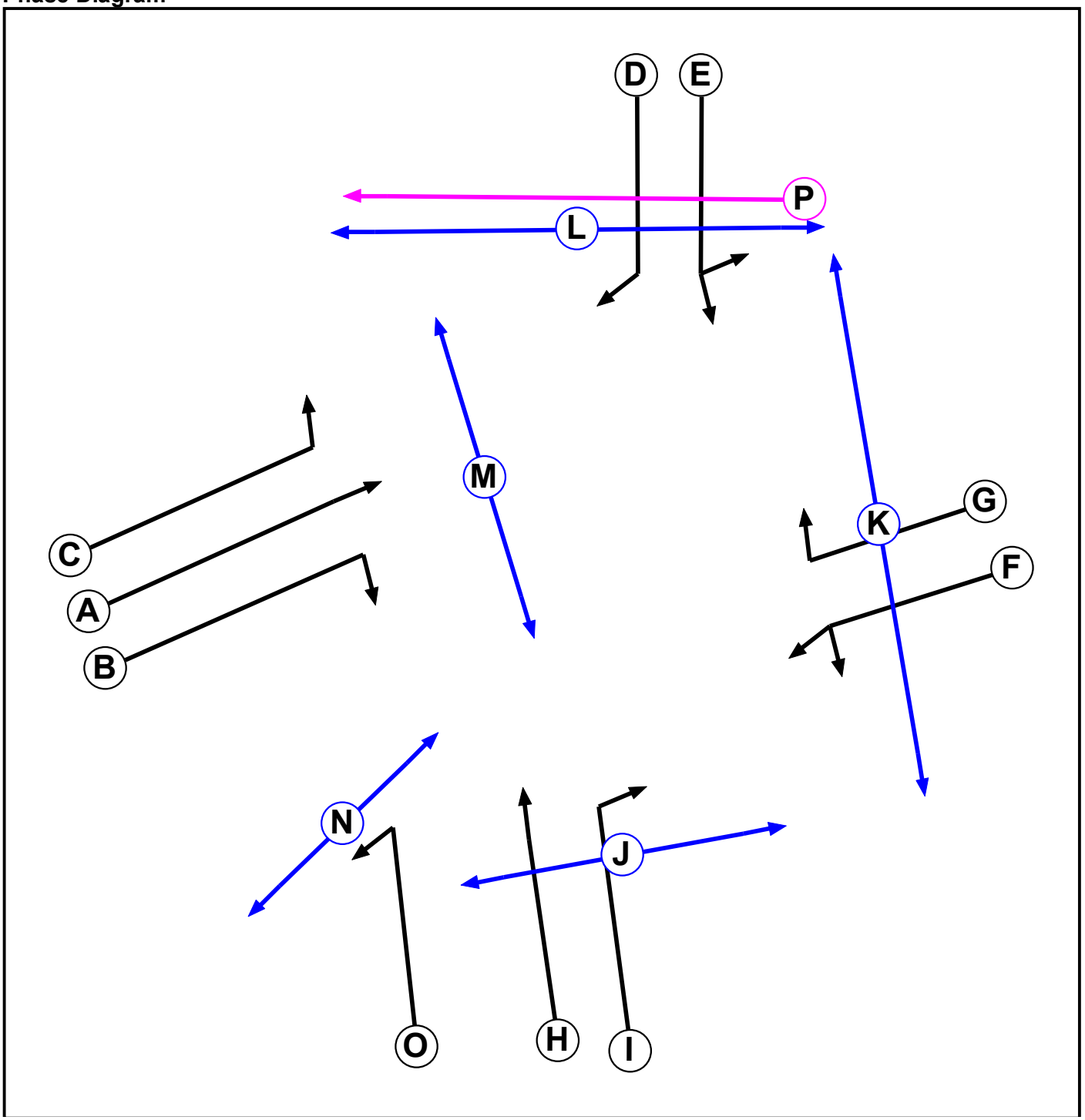
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

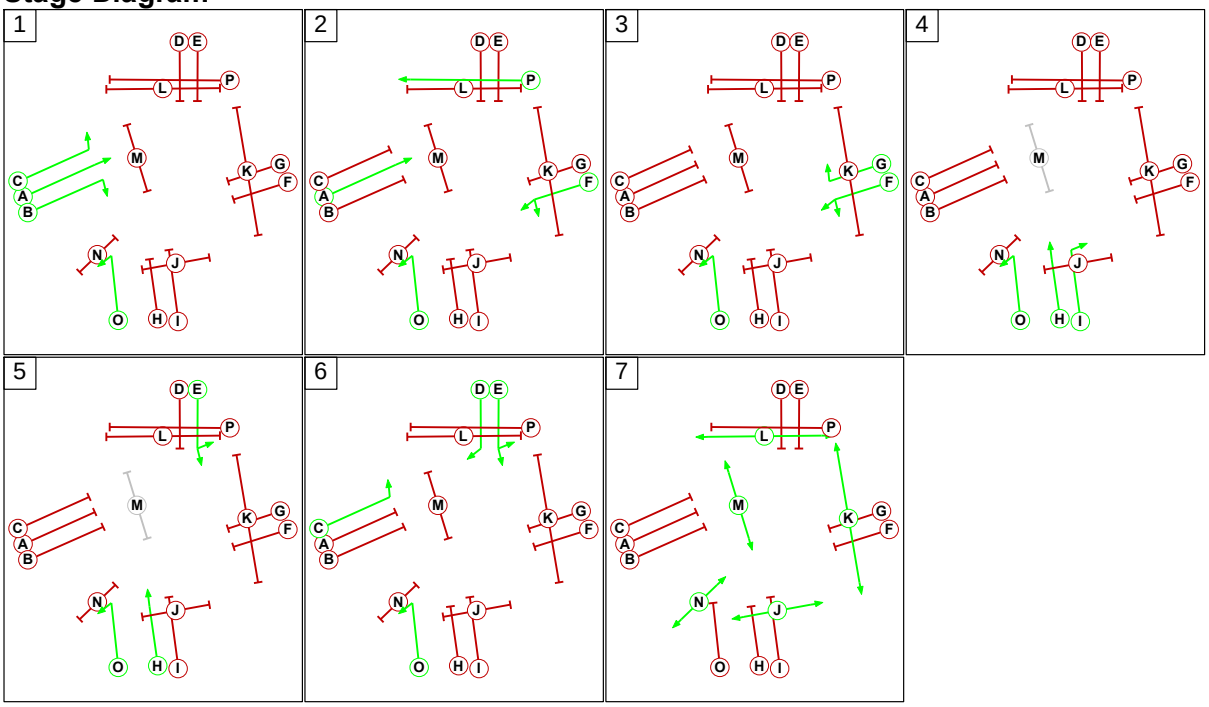
Phase Diagram



Phases in Stage

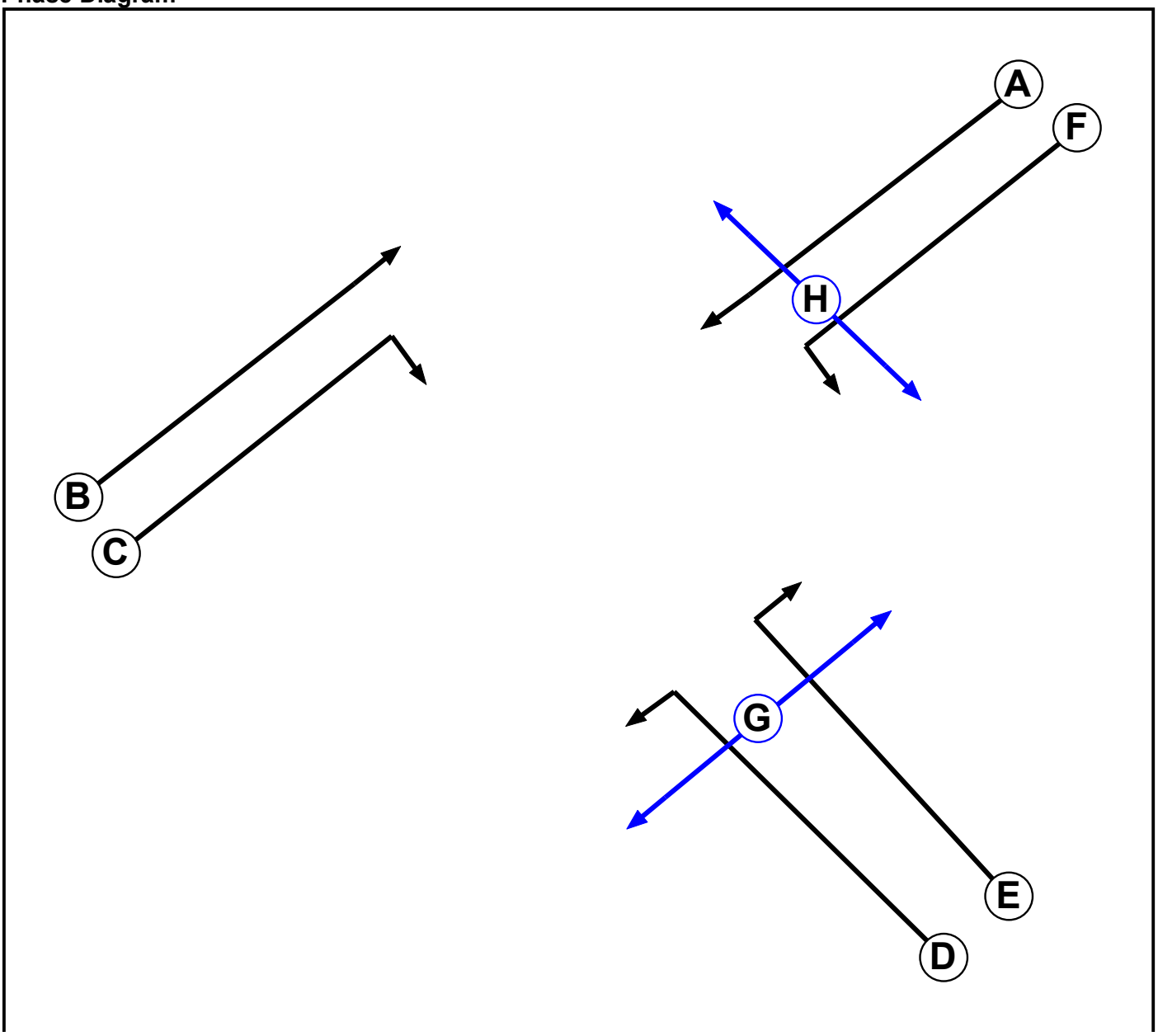
Stage No.	Phases in Stage
1	A B C O
2	A F O P
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N

Stage Diagram



C2

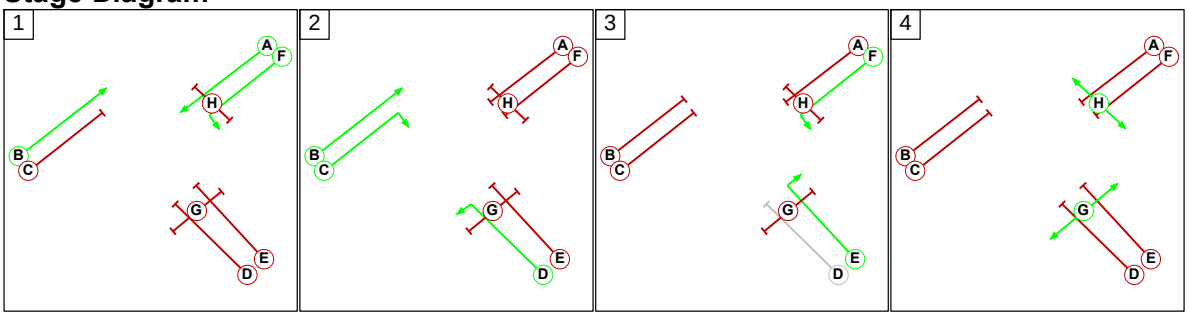
Phase Diagram



Phases in Stage

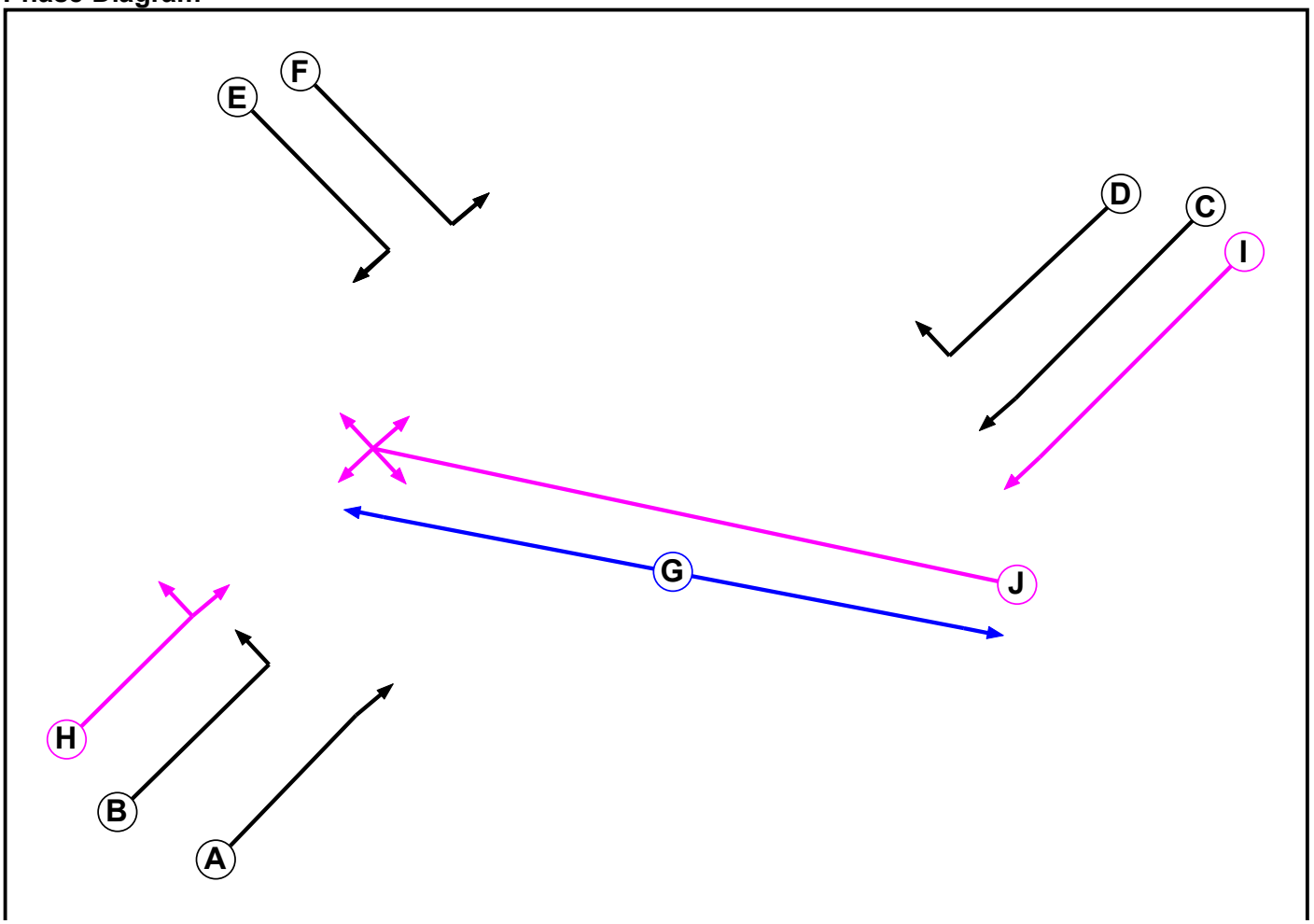
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

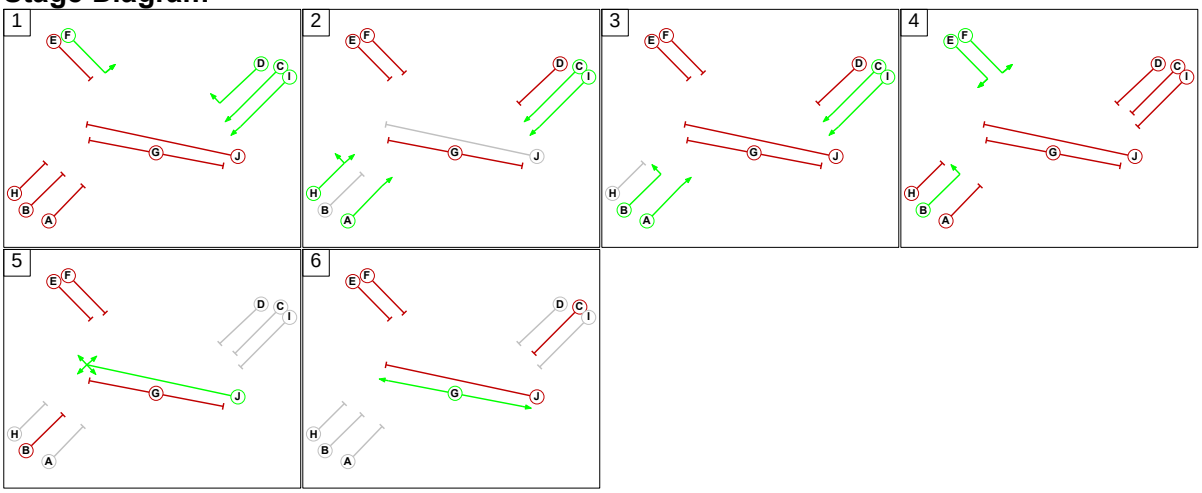
Phase Diagram



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

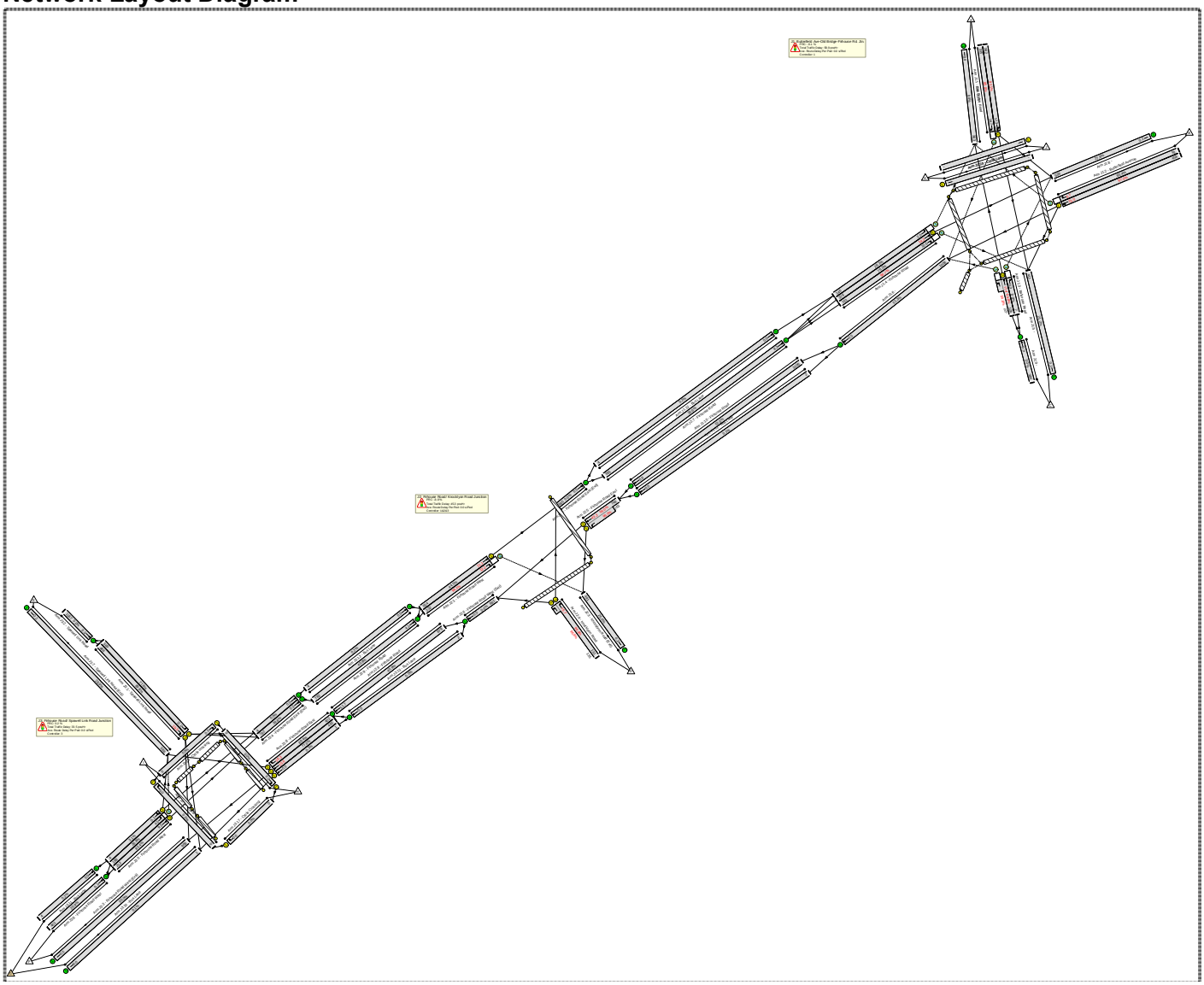
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
3/1	Firhouse Road West (Exit)	U	376	1935	1935	19.4%	-	-	-	0.1	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	

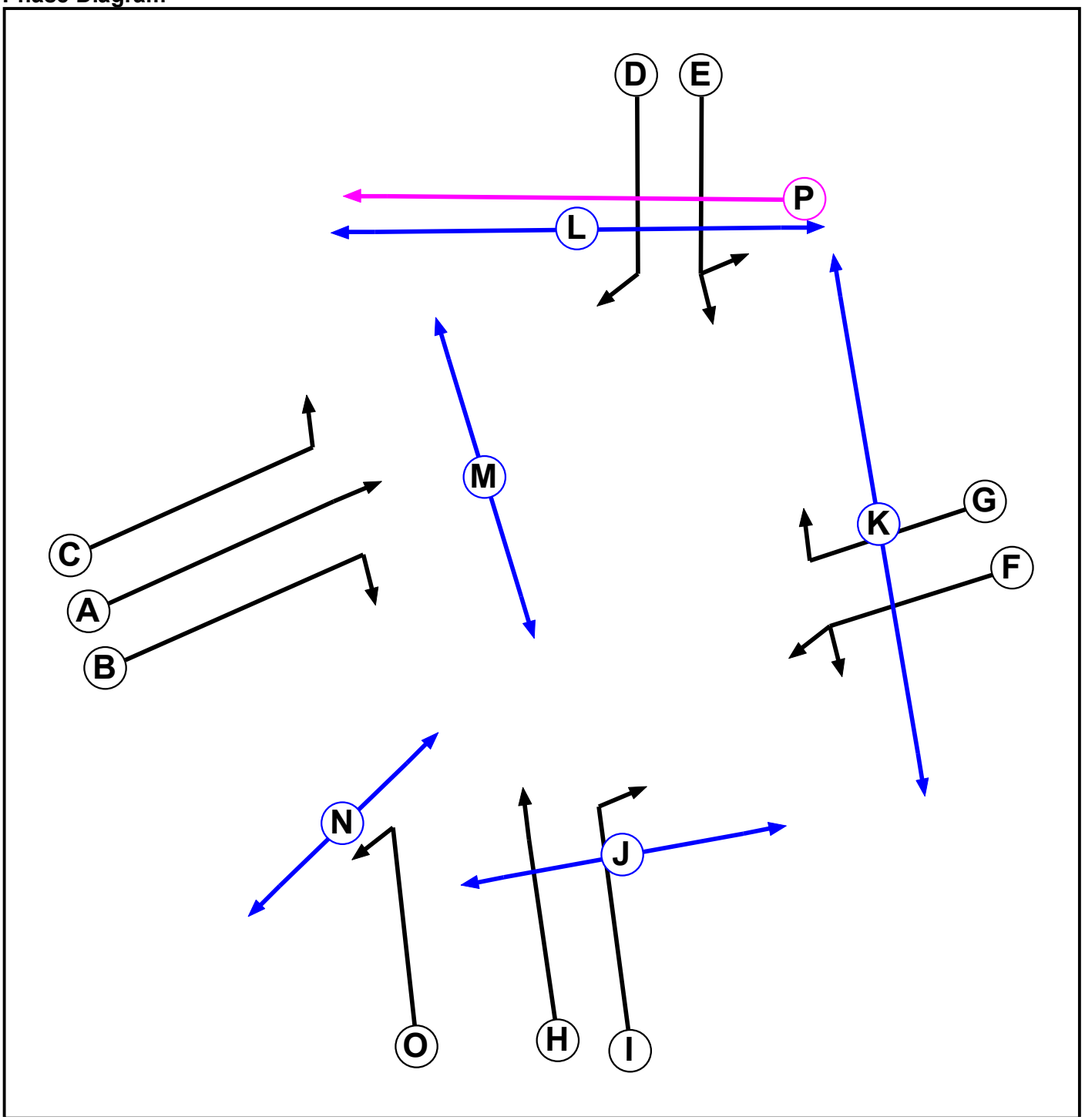
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

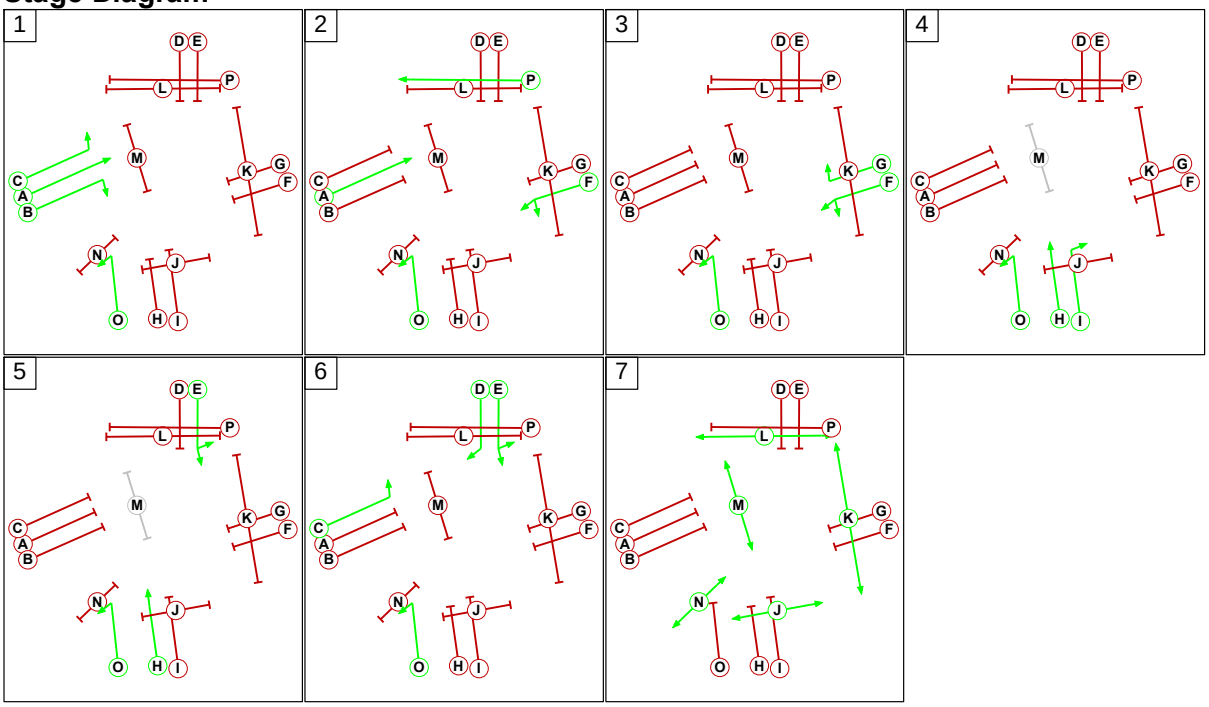
Phase Diagram



Phases in Stage

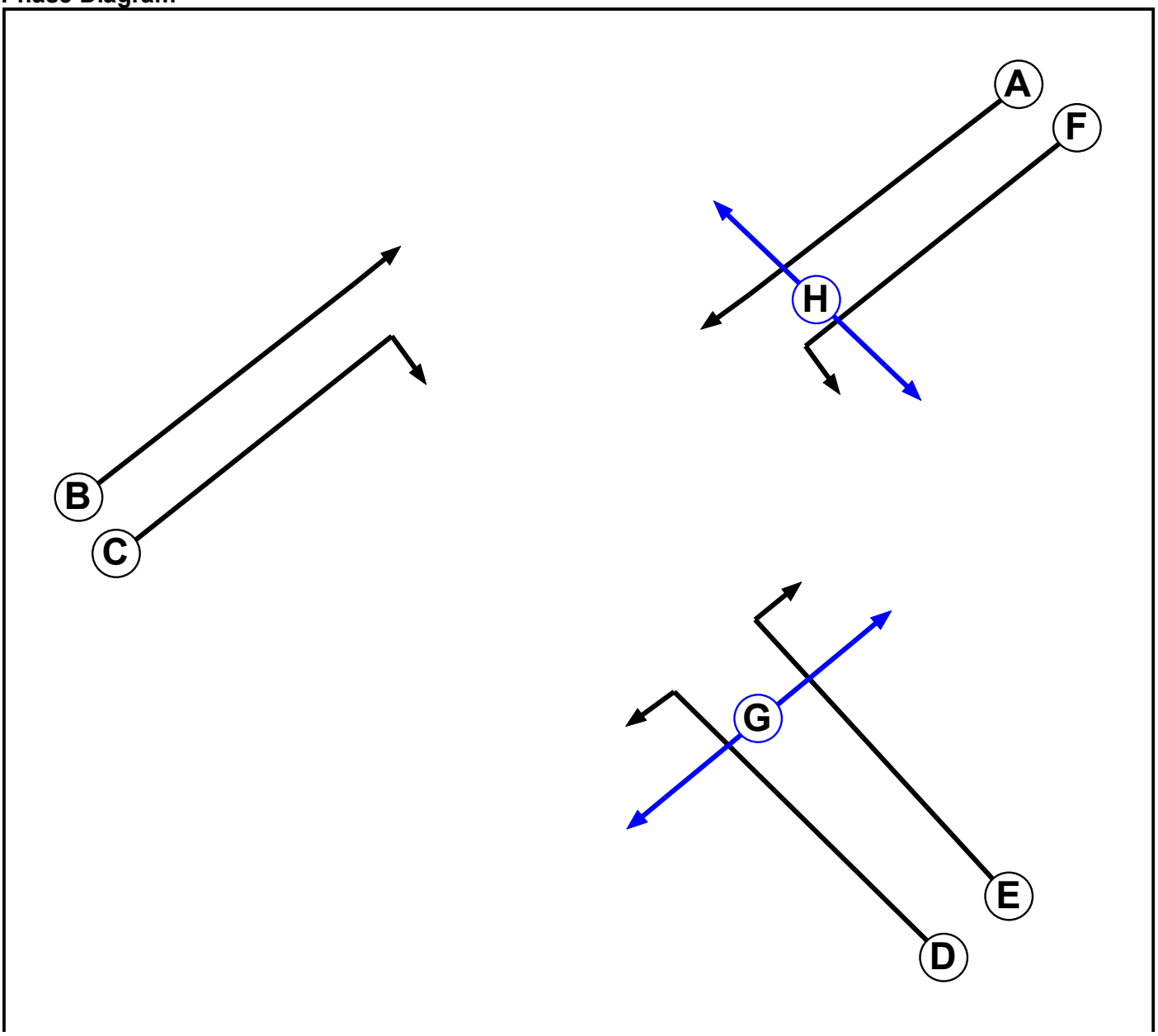
Stage No.	Phases in Stage
1	A B C O
2	A F O P
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N

Stage Diagram



C2

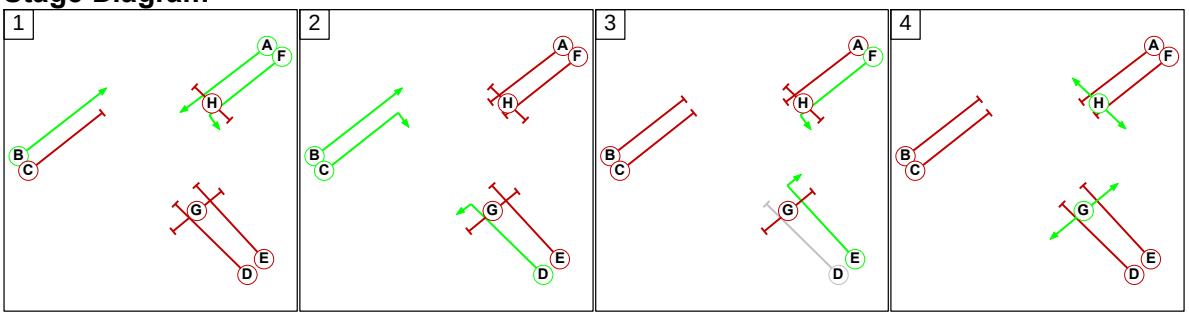
Phase Diagram



Phases in Stage

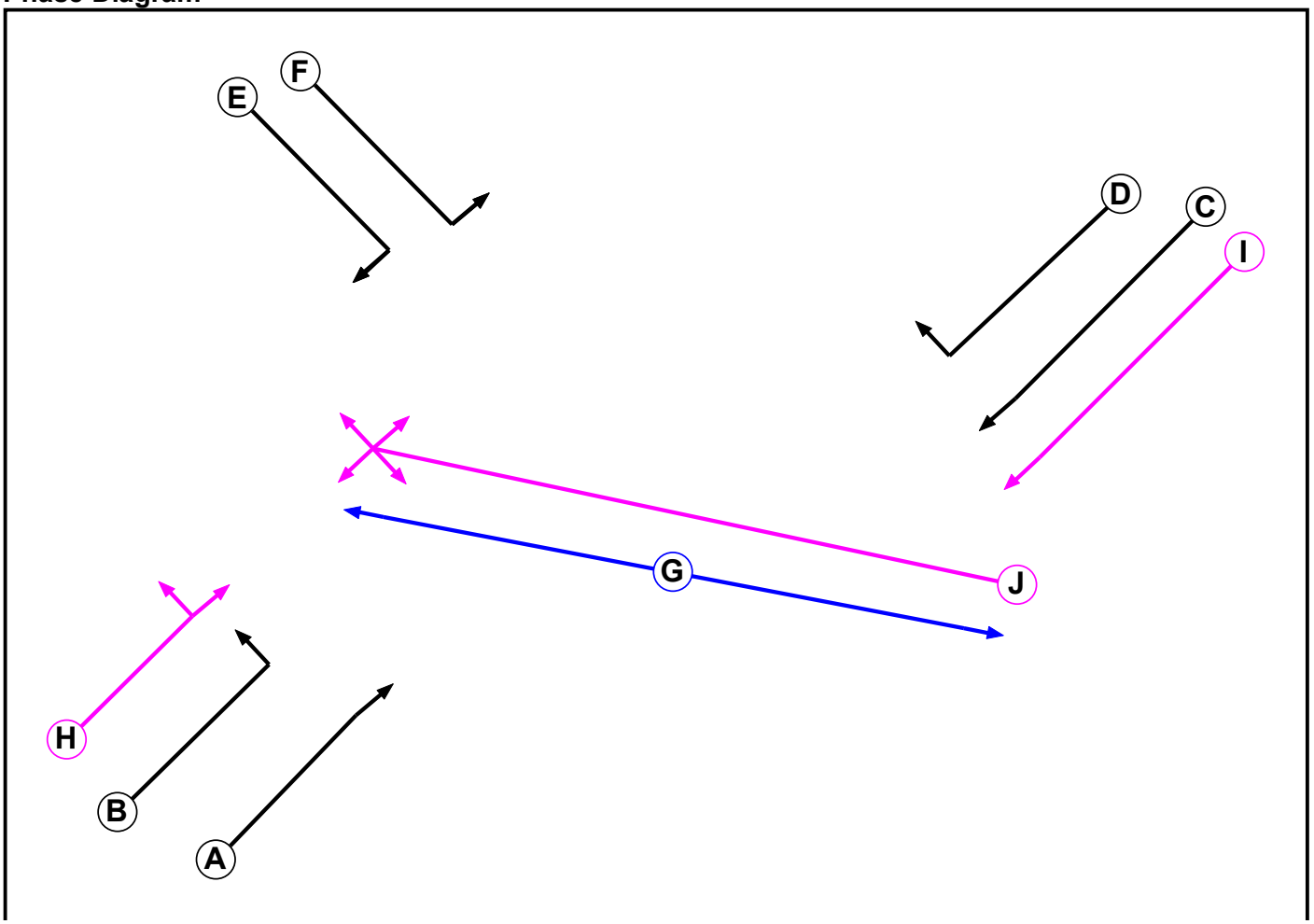
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

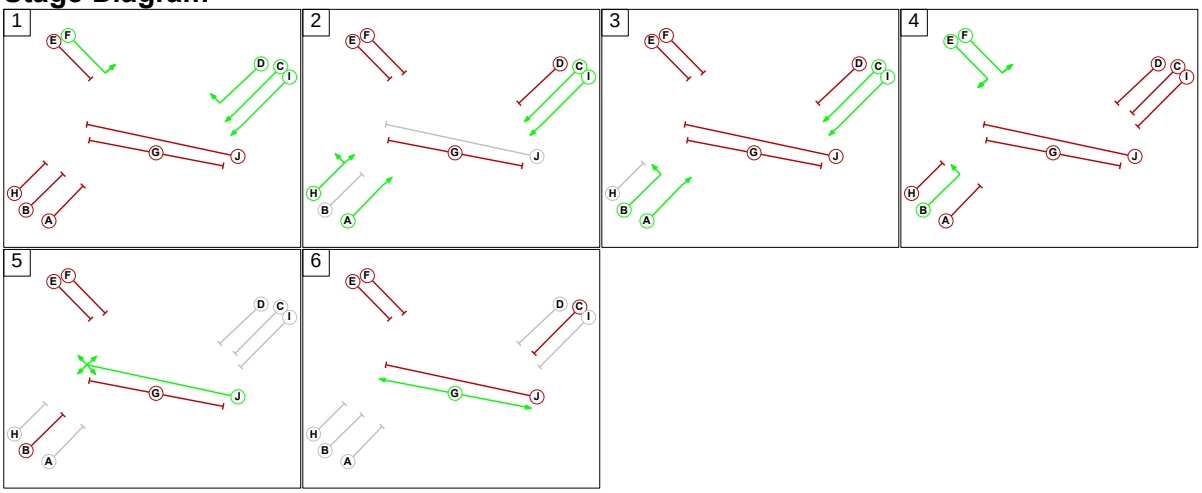
Phase Diagram



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%	-	-	-	-	-	-

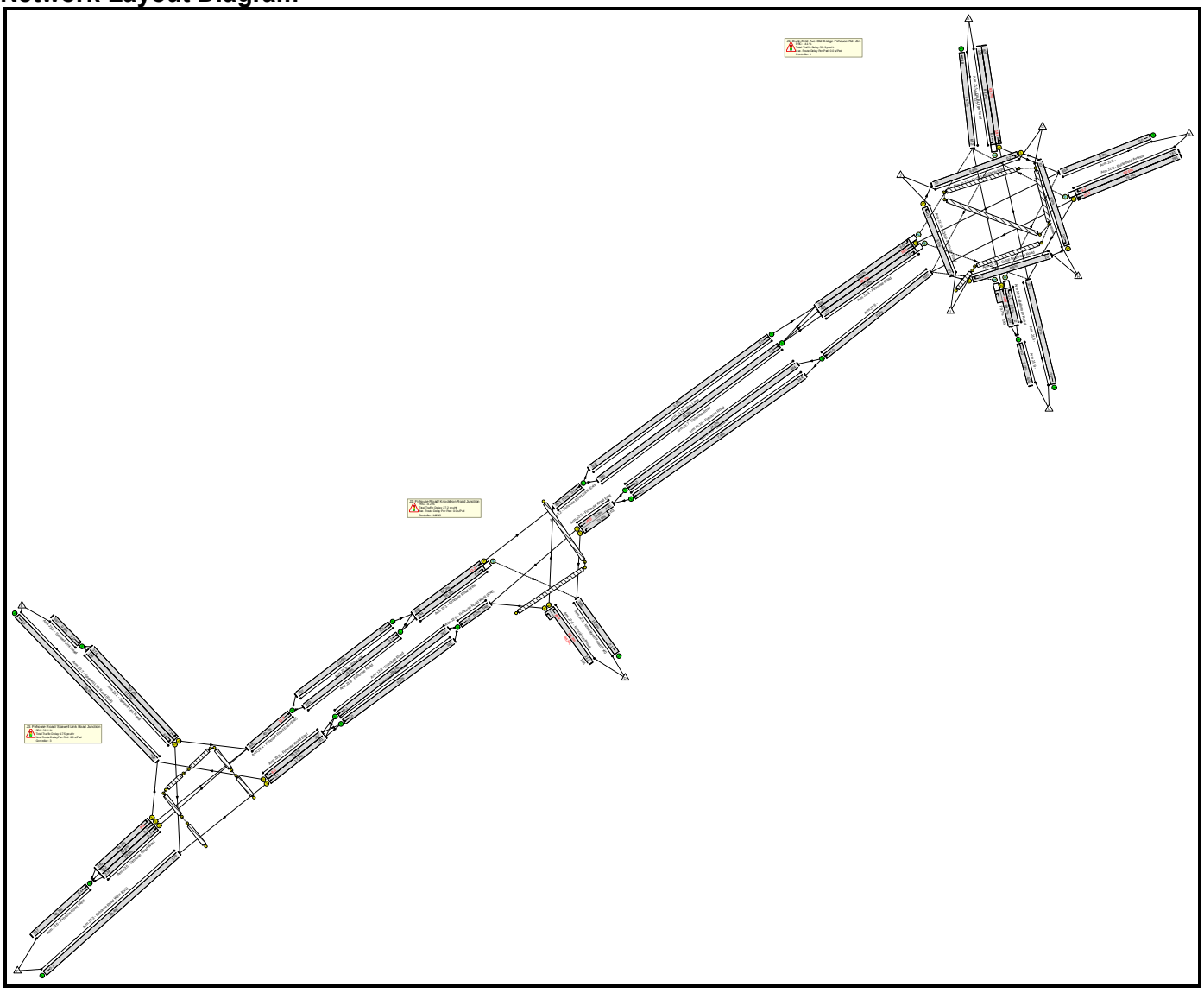
C1	PRC for Signalled Lanes (%):	-8.1	Total Delay for Signalled Lanes (pcuHr):	57.46	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-8.8	Total Delay for Signalled Lanes (pcuHr):	44.41	Cycle Time (s): 120
C3	PRC for Signalled Lanes (%):	0.2	Total Delay for Signalled Lanes (pcuHr):	31.98	Cycle Time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

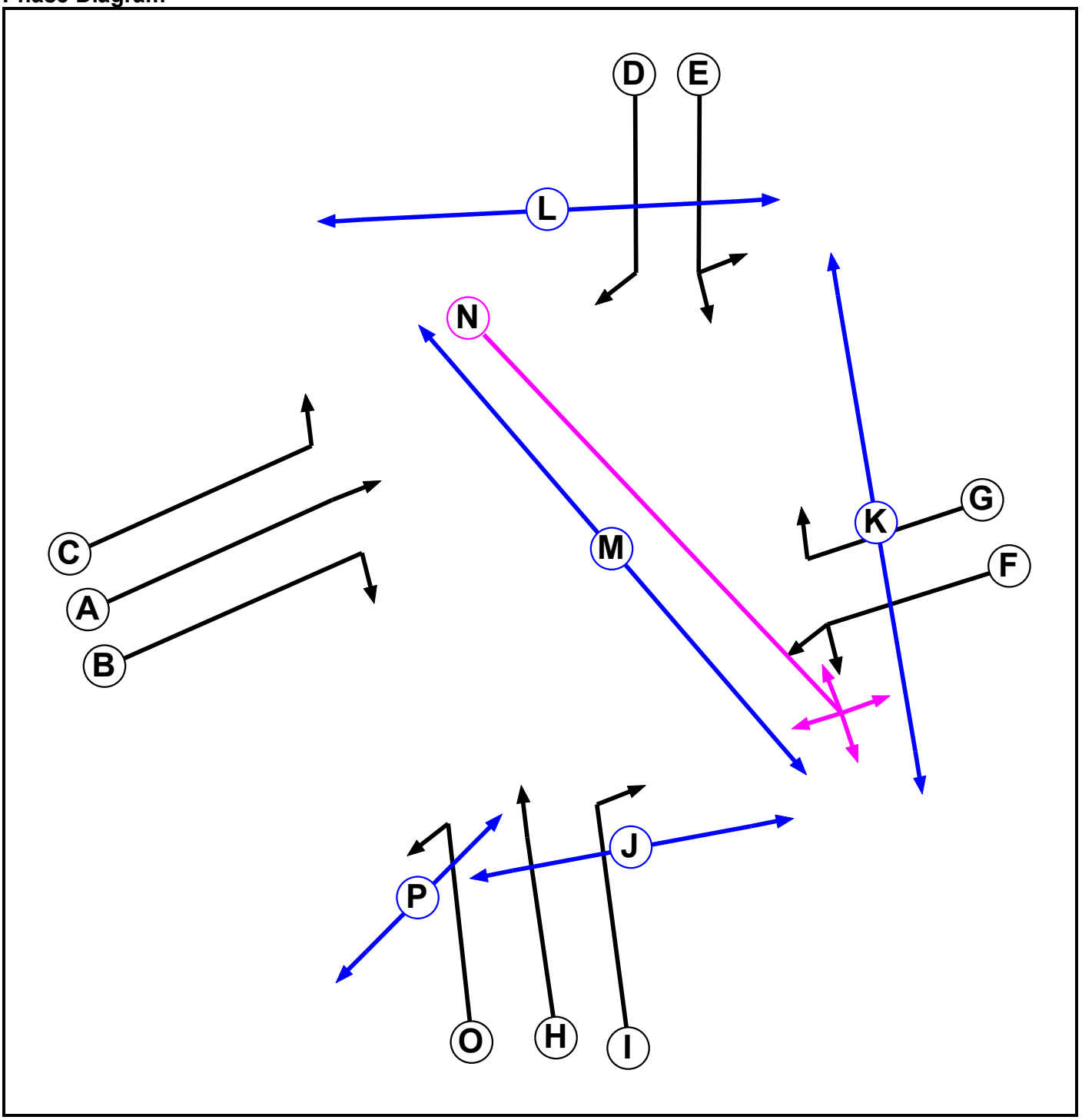
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

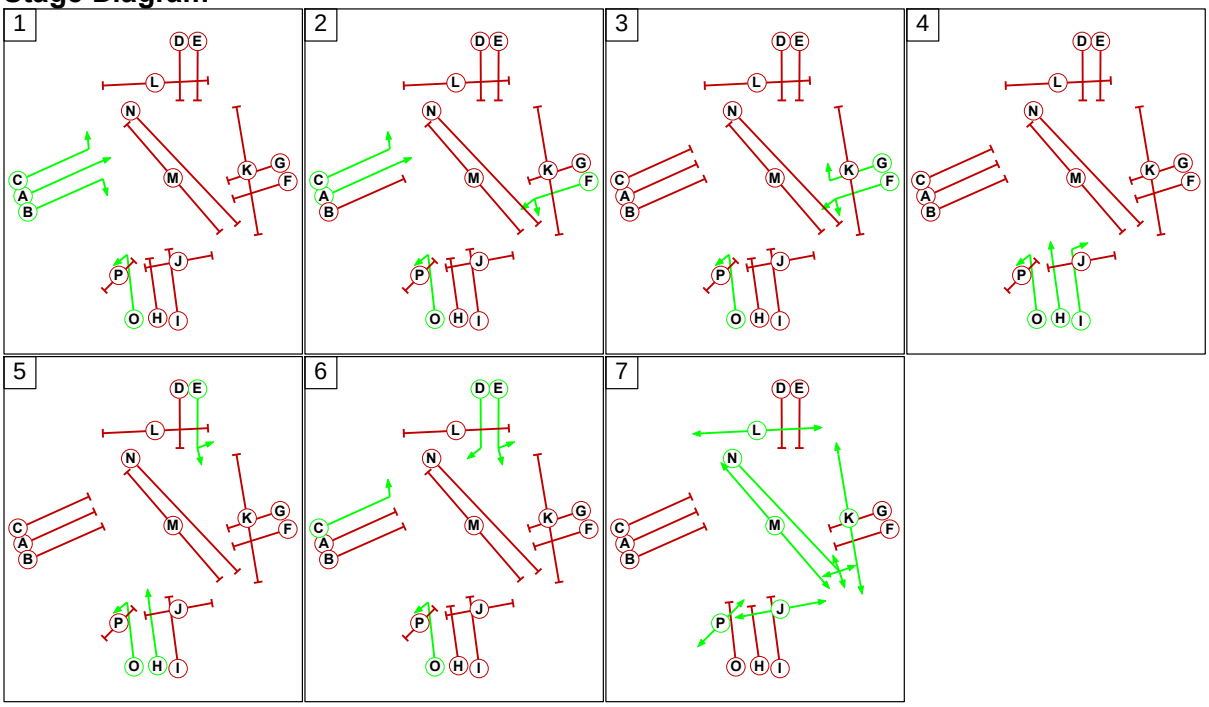
Phase Diagram



Phases in Stage

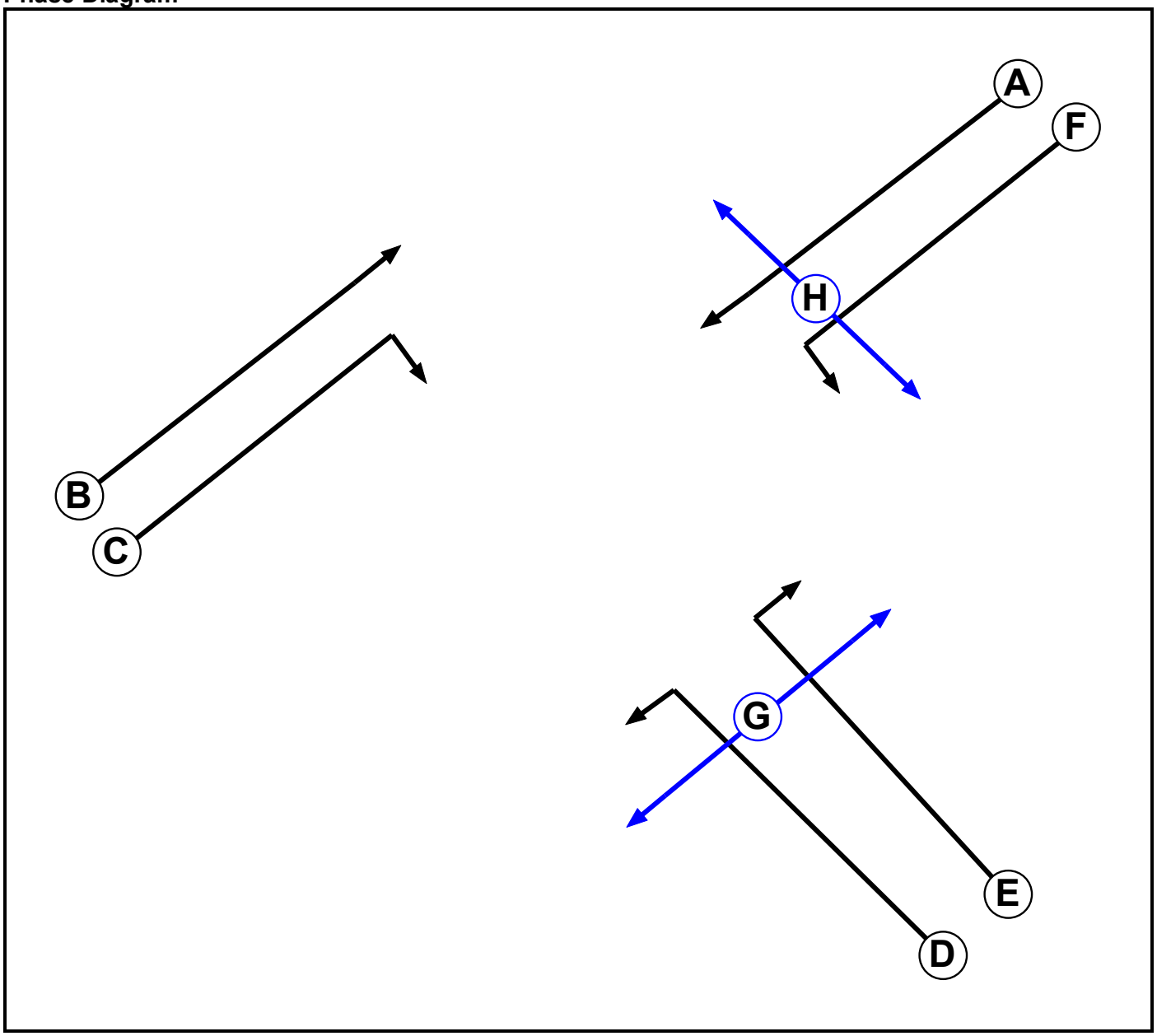
Stage No.	Phases in Stage
1	A B C O
2	A C F O
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N P

Stage Diagram



C2

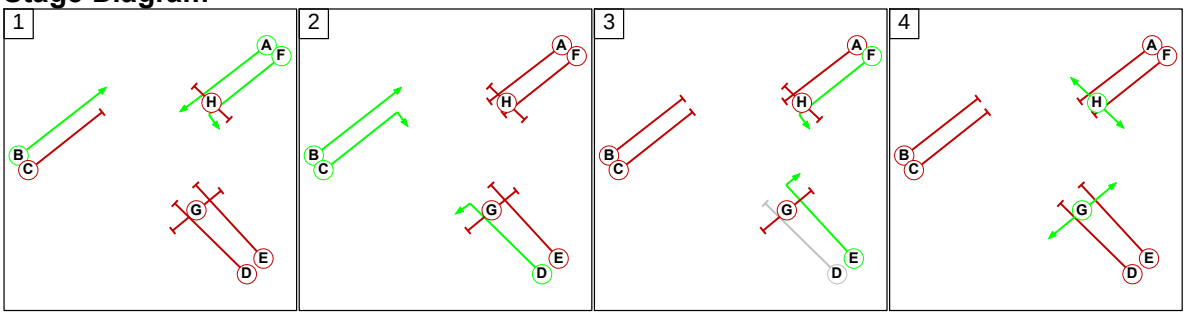
Phase Diagram



Phases in Stage

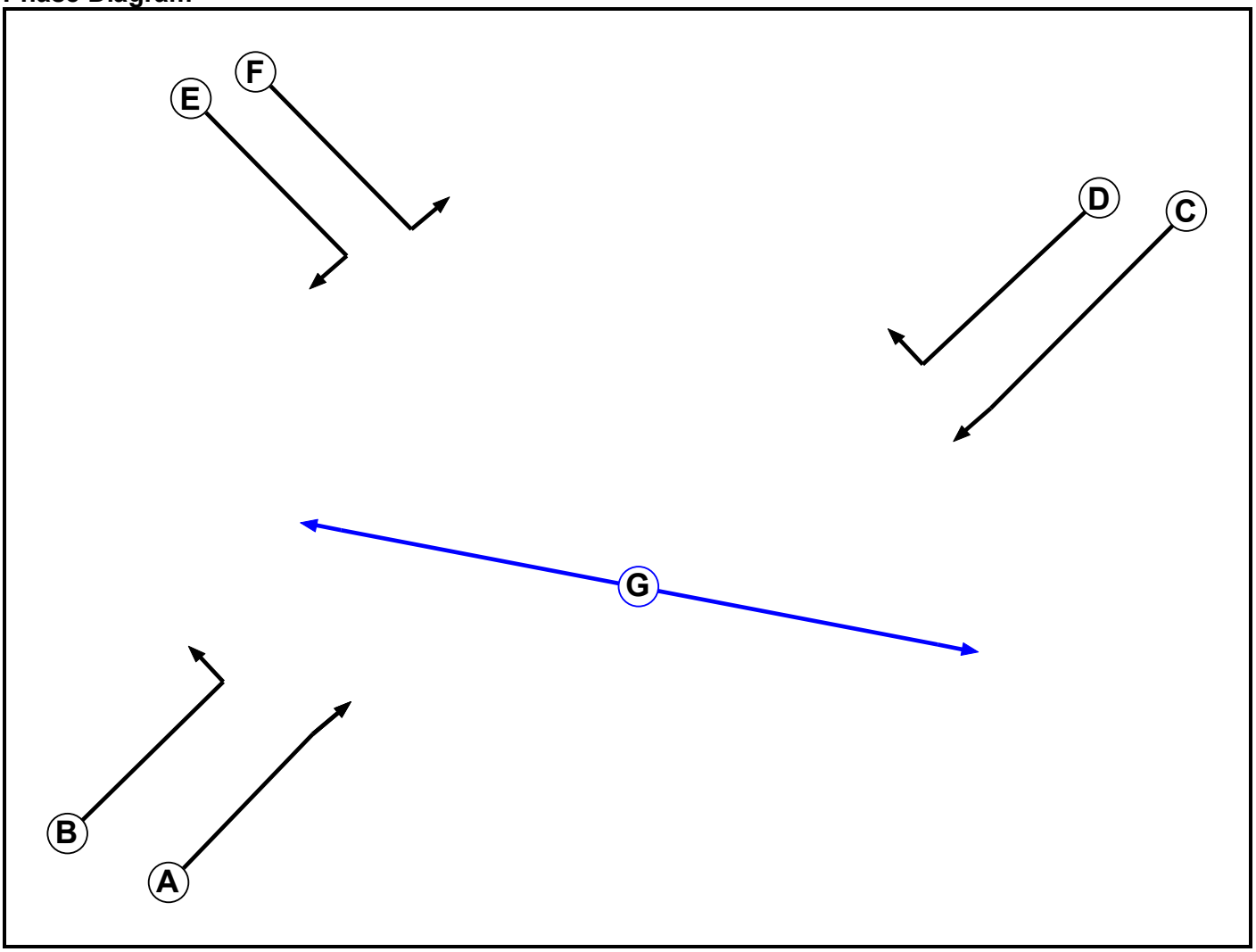
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

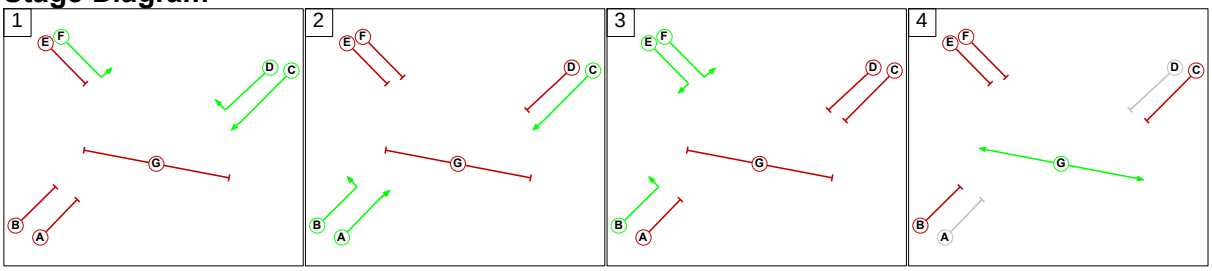
Phase Diagram



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%	-	-	-	-	-	-

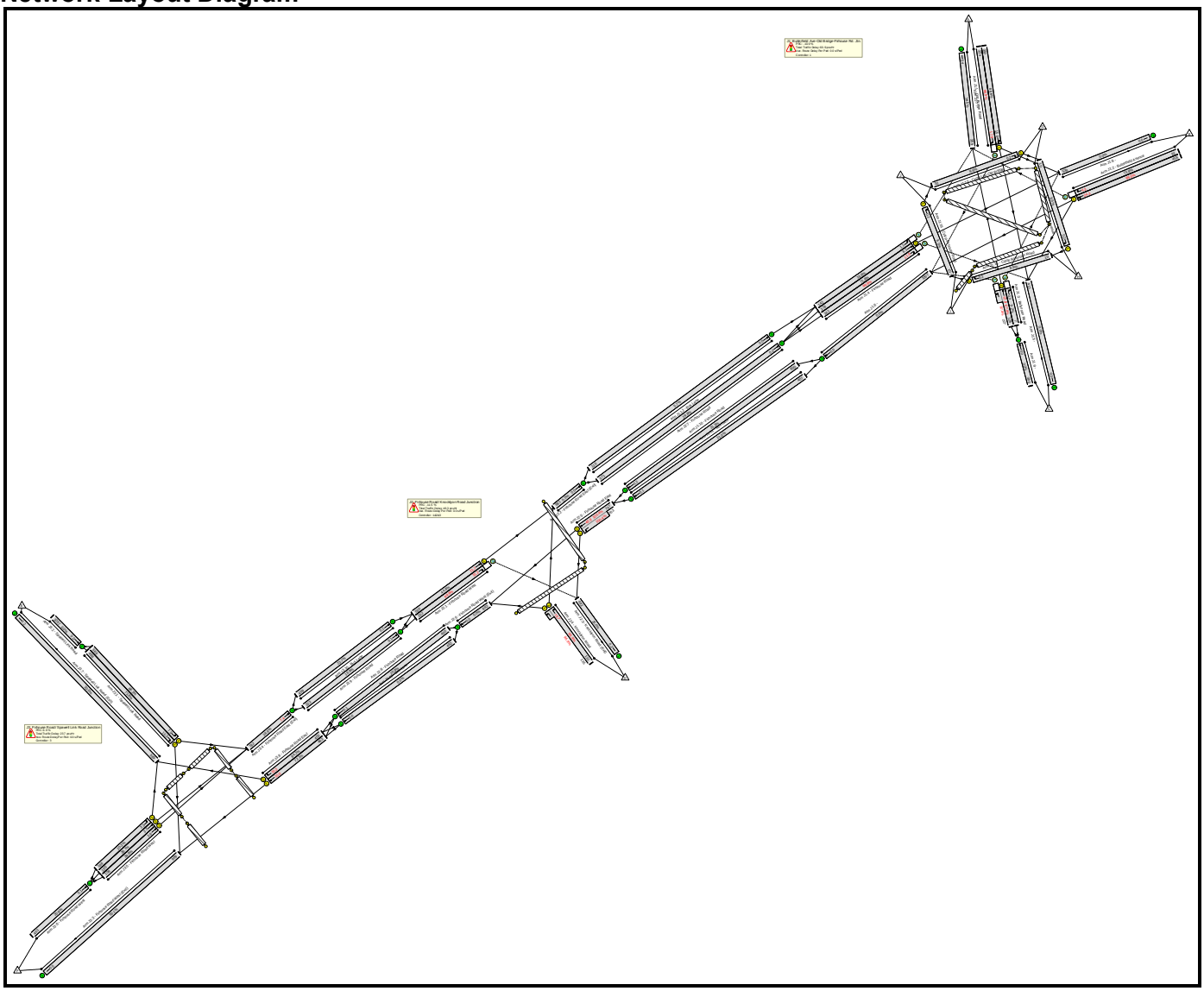
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Ped Link: P4	Unnamed Ped Link	-	0	-	0	0.0%	-	-	-	-	-	-
Ped Link: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

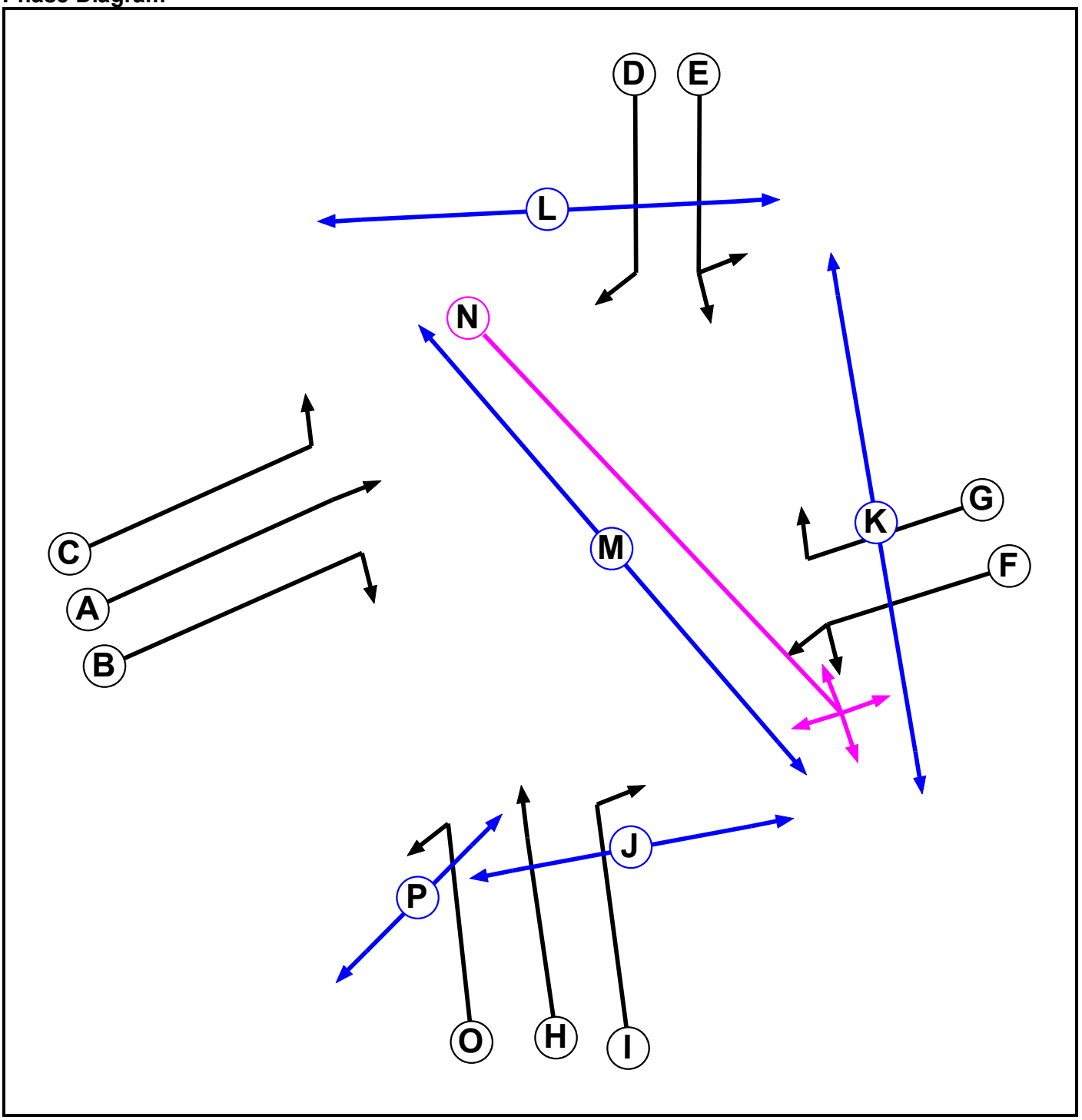
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

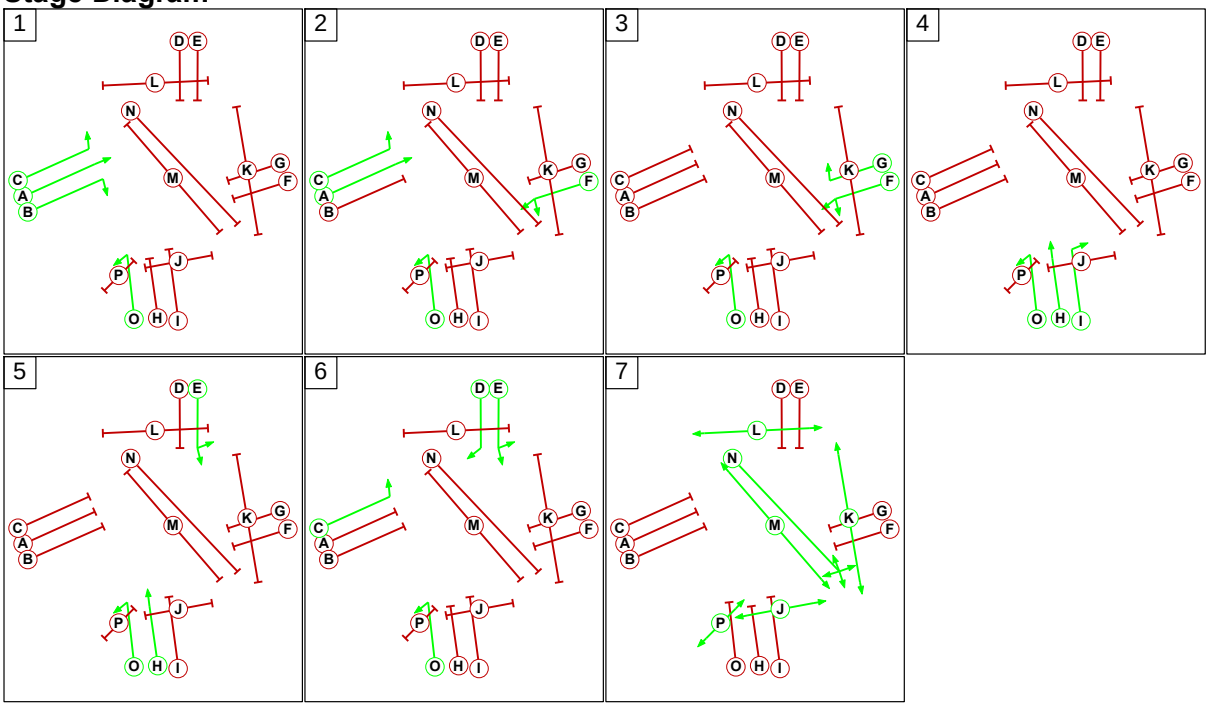
Phase Diagram



Phases in Stage

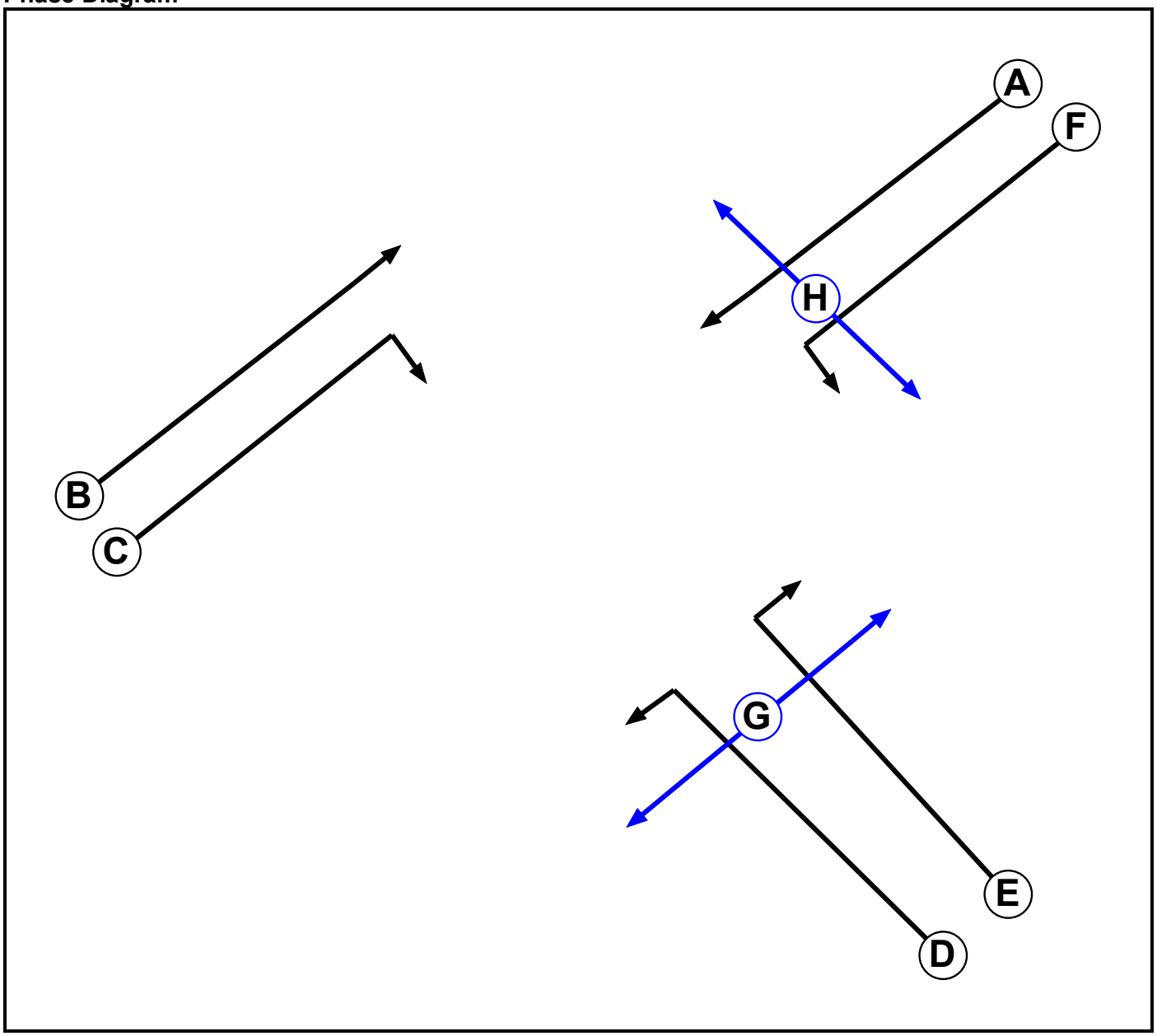
Stage No.	Phases in Stage
1	A B C O
2	A C F O
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N P

Stage Diagram



C2

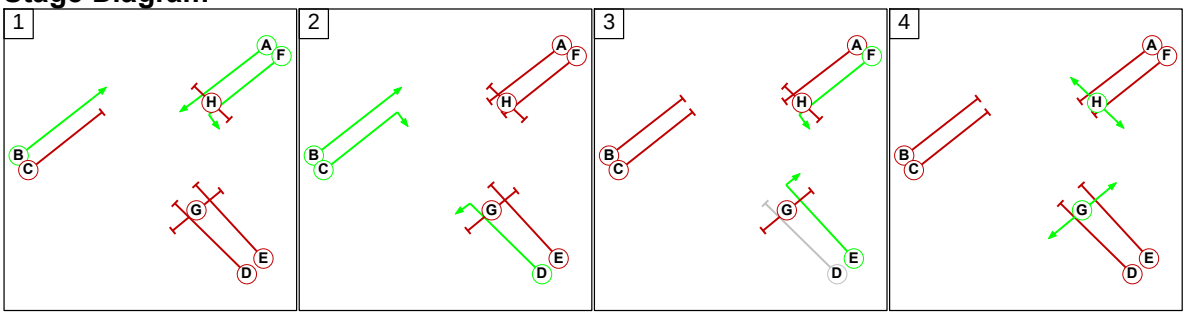
Phase Diagram



Phases in Stage

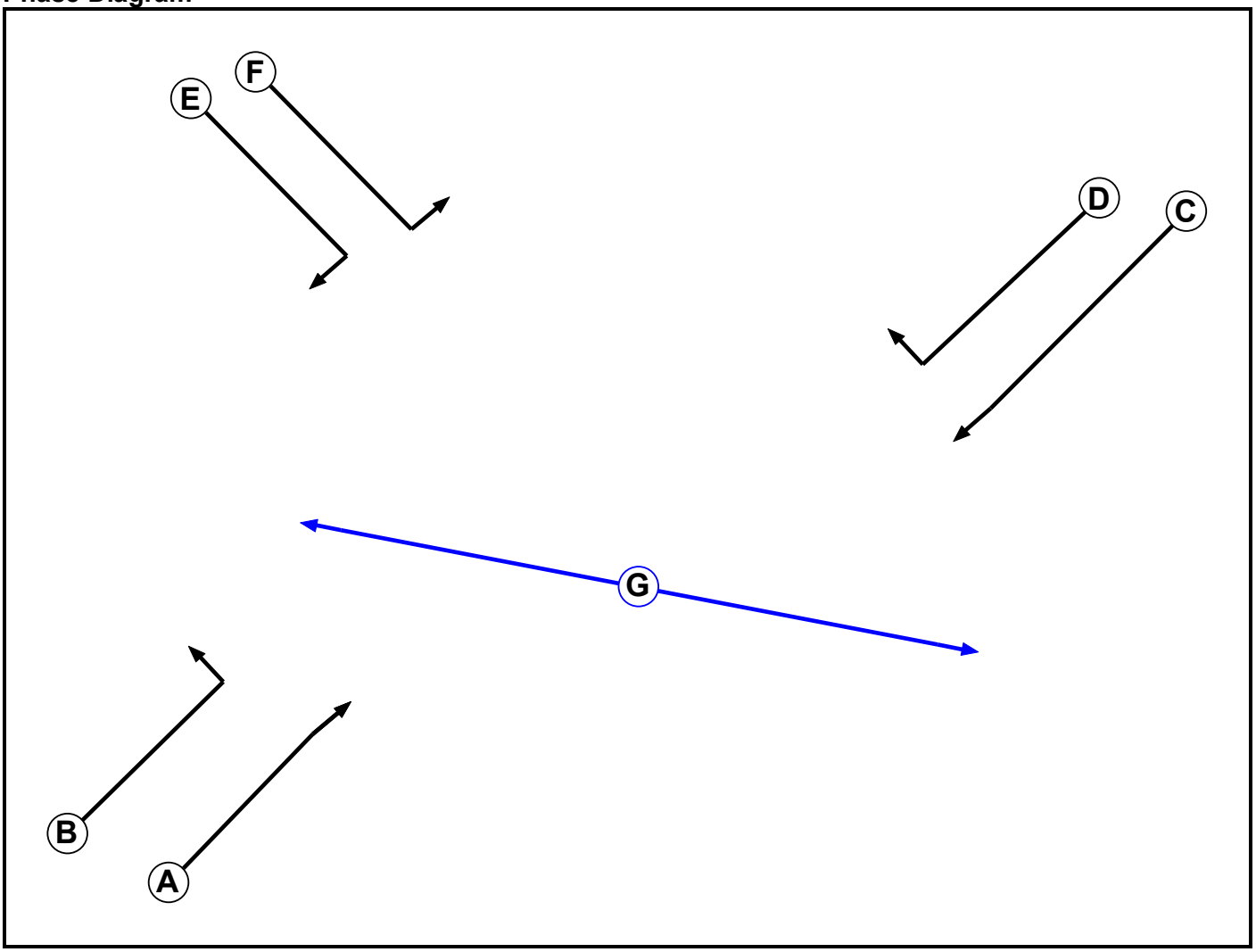
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

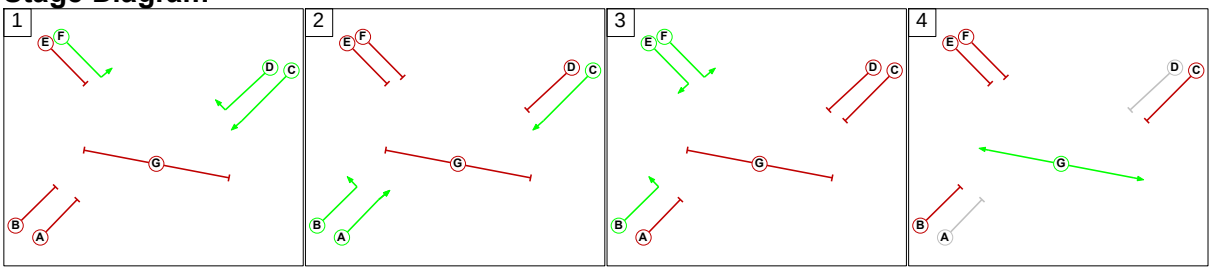
Phase Diagram



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%	-	-	-	-	-	-

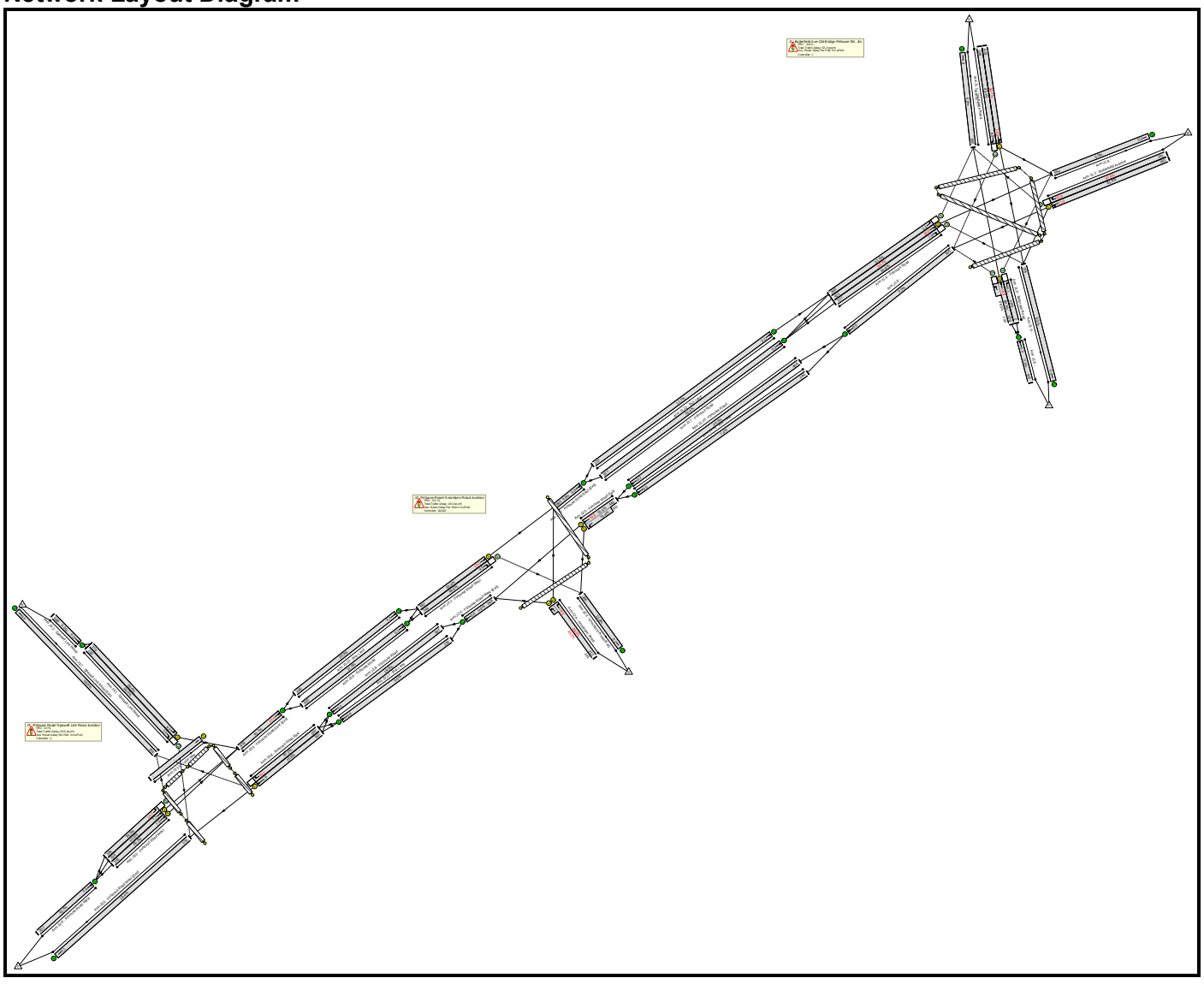
C1	PRC for Signalled Lanes (%):	-10.9	Total Delay for Signalled Lanes (pcuHr):	60.41	Cycle Time (s):	120
C2	PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	47.76	Cycle Time (s):	120
C3	PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	22.18	Cycle Time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

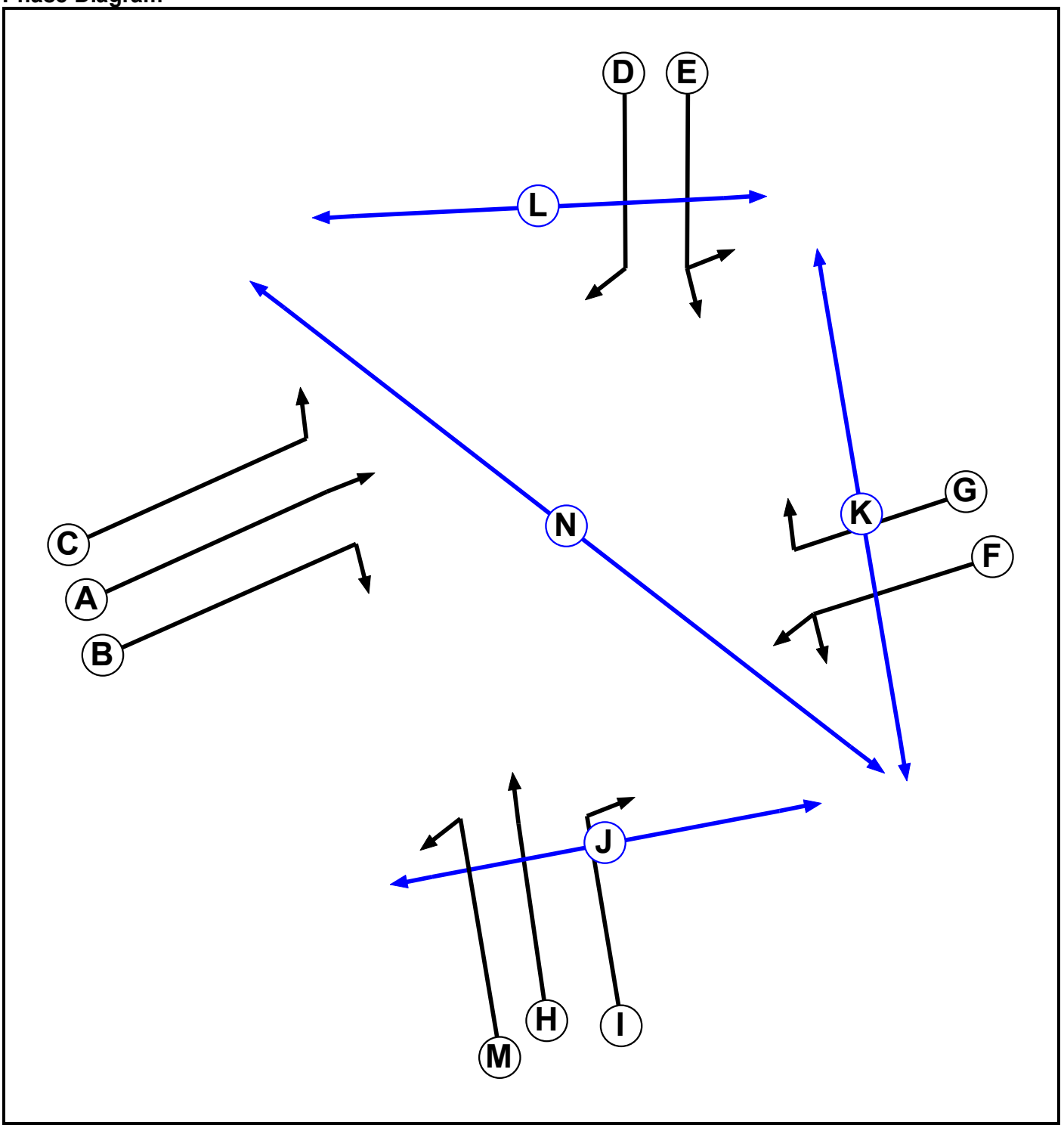
Scenario 1: '2020 AM Peak' (FG1: '2020 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

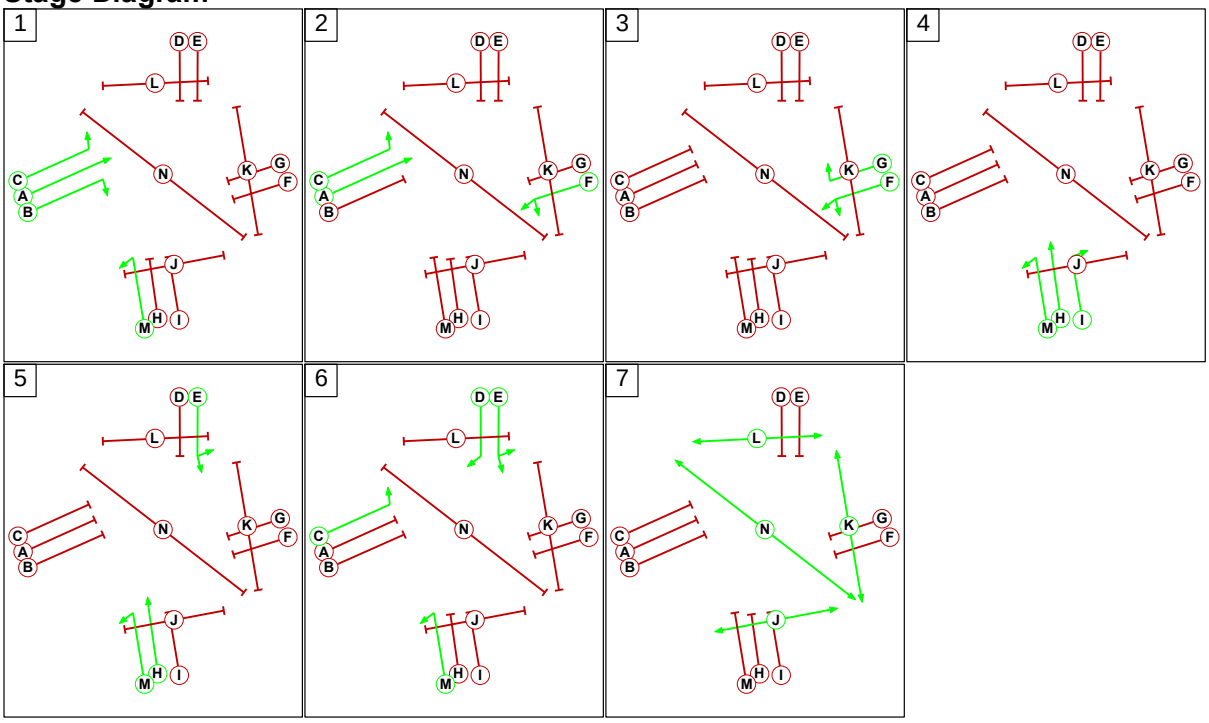
Phase Diagram



Phases in Stage

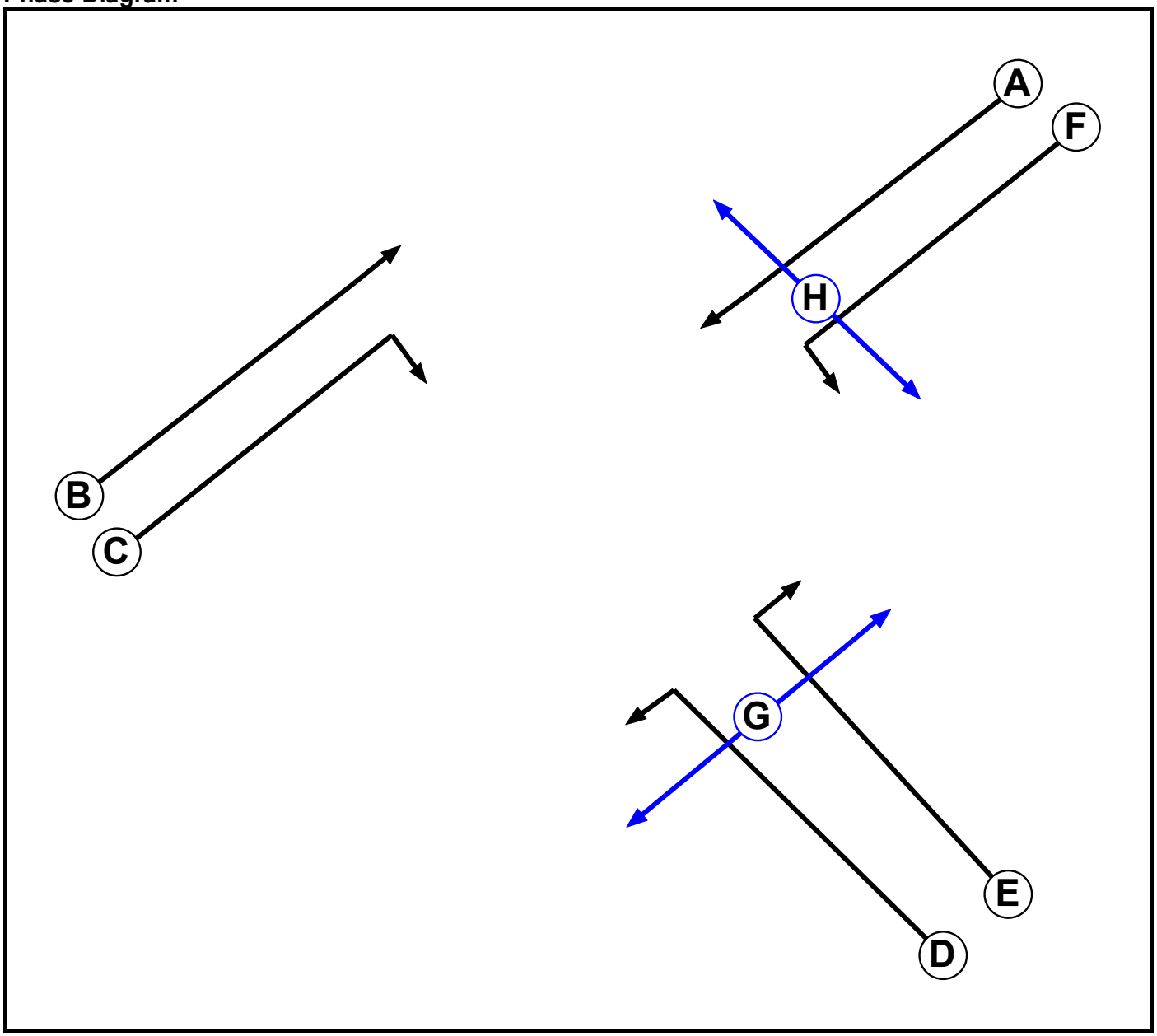
Stage No.	Phases in Stage
1	A B C M
2	A C F
3	F G
4	H I M
5	E H M
6	C D E M
7	J K L N

Stage Diagram



C2

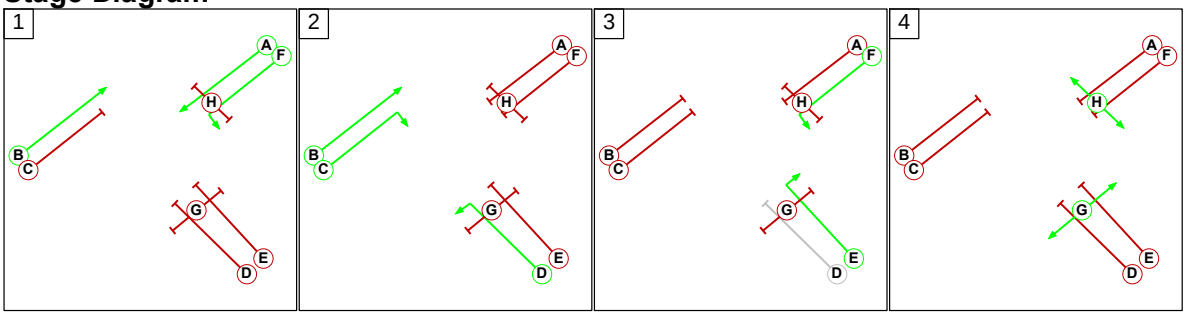
Phase Diagram



Phases in Stage

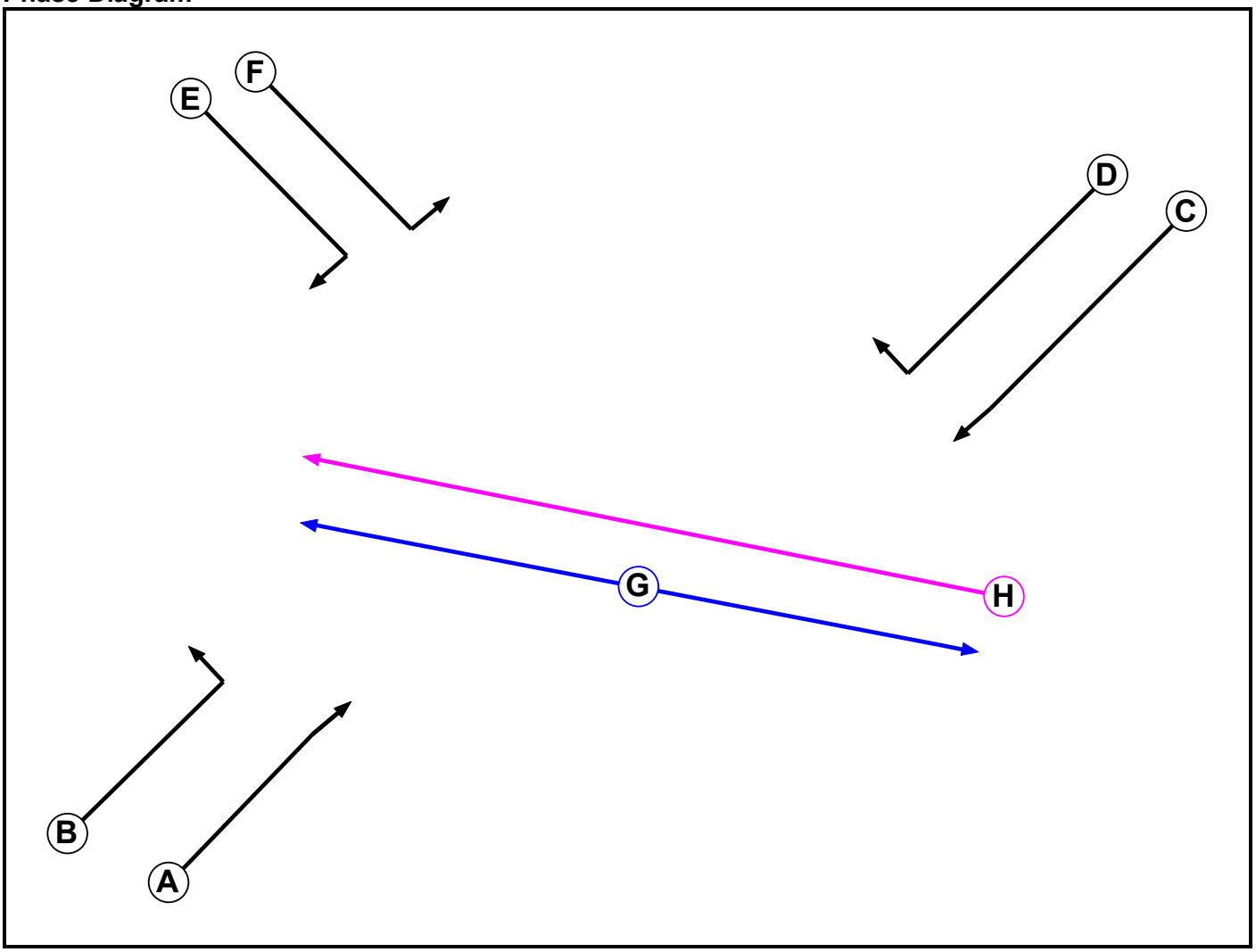
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

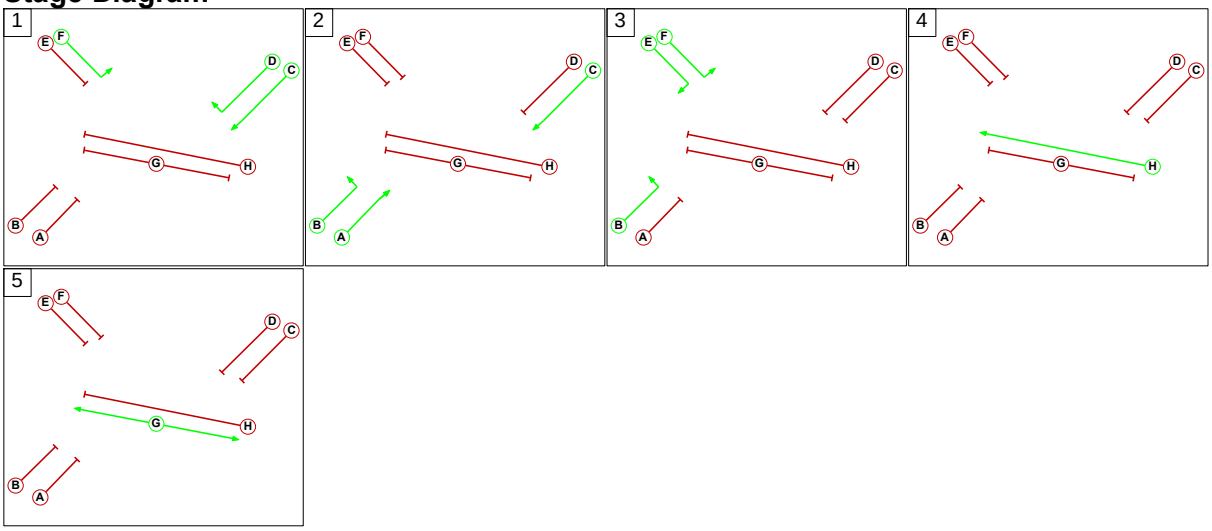
Phase Diagram



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

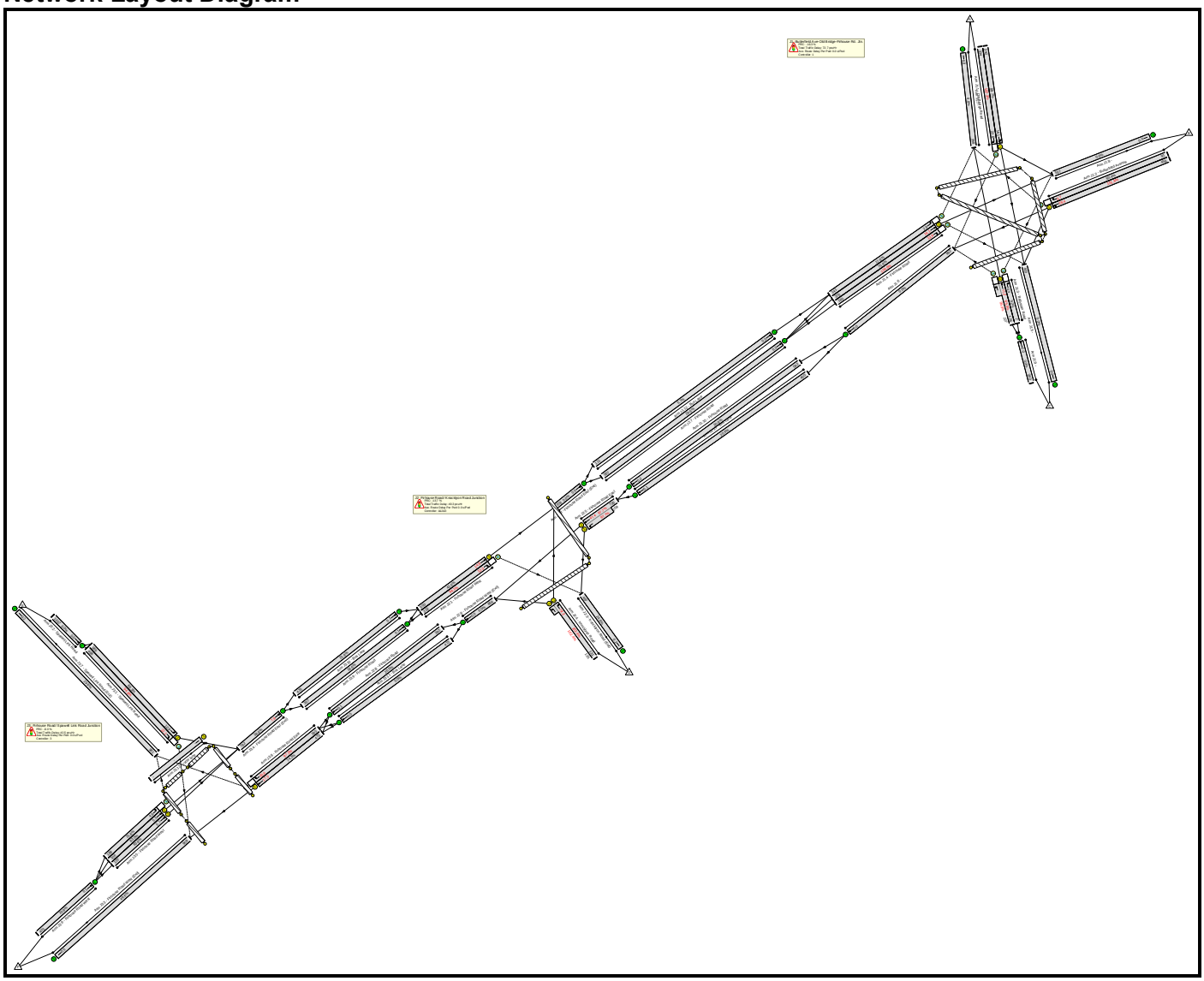
Item	Lane Description	Lane Type	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/2	Firhouse Road West Right	O	144	1741	290	49.6%	0	142	2	2.8	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		

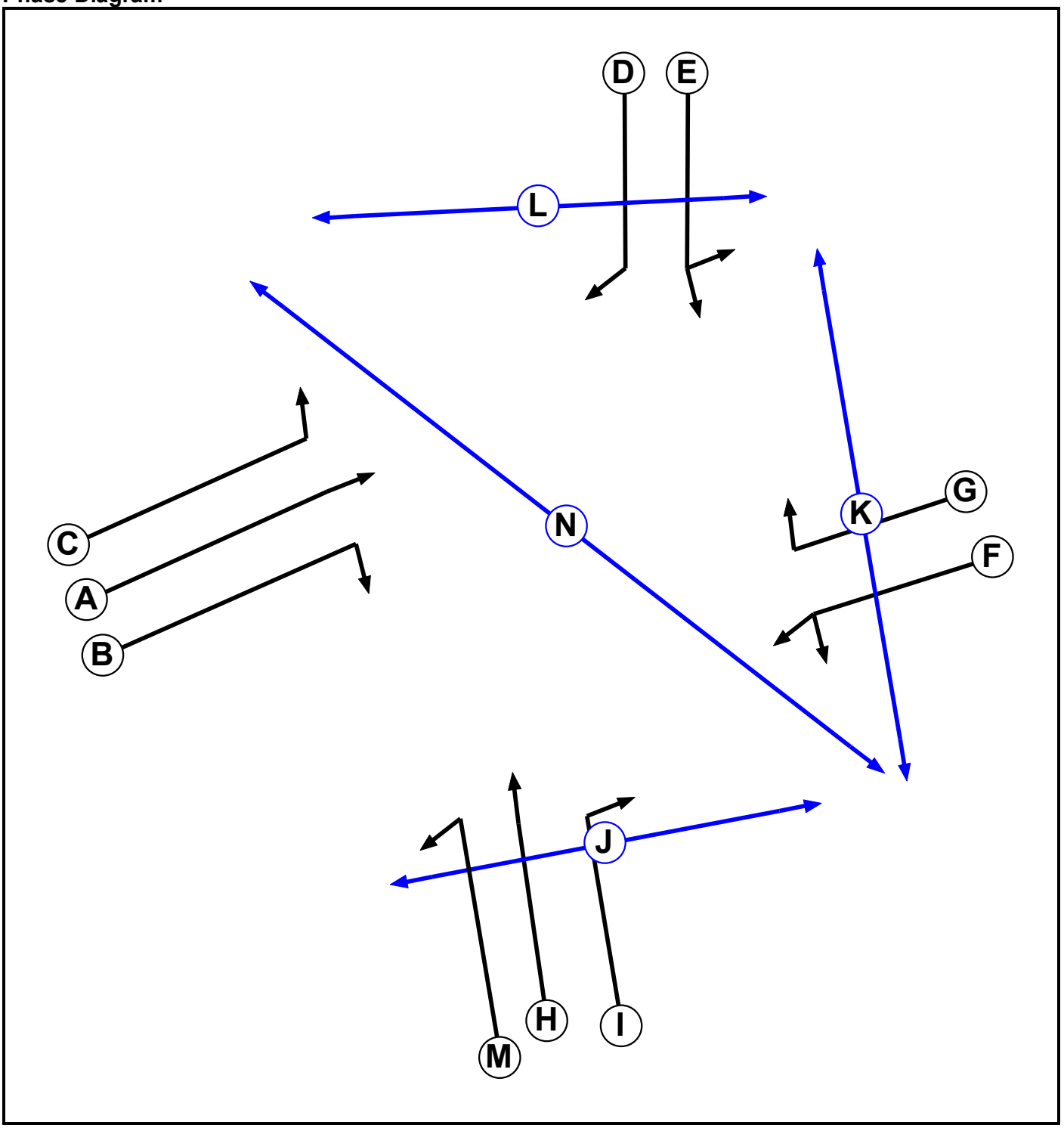
Scenario 2: '2020 PM Peak' (FG2: '2020 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



C1

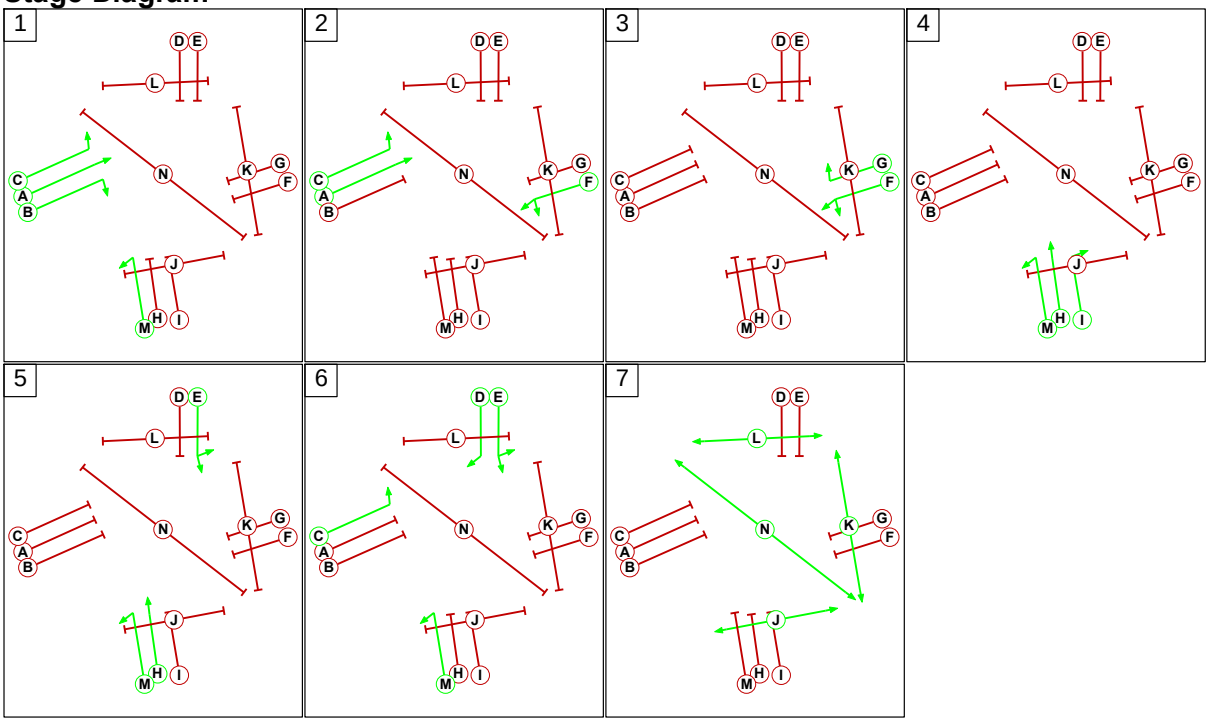
Phase Diagram



Phases in Stage

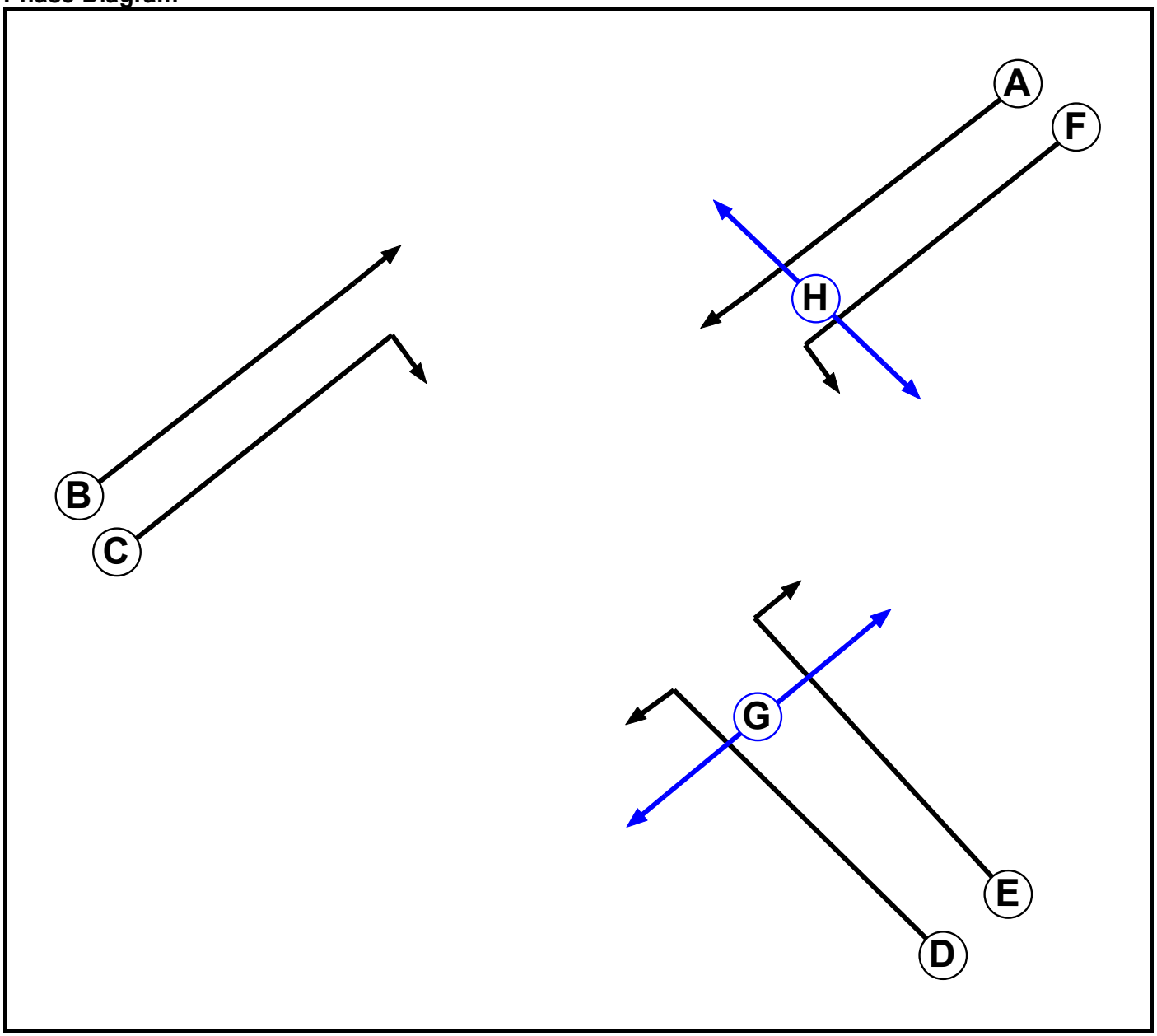
Stage No.	Phases in Stage
1	A B C M
2	A C F
3	F G
4	H I M
5	E H M
6	C D E M
7	J K L N

Stage Diagram



C2

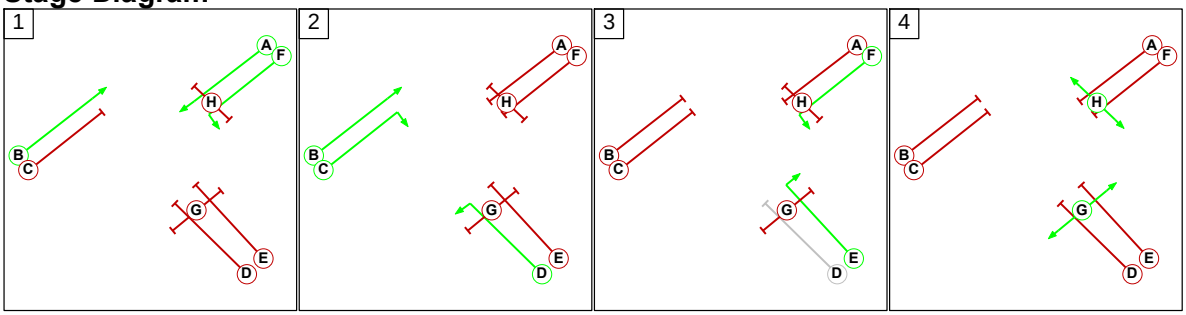
Phase Diagram



Phases in Stage

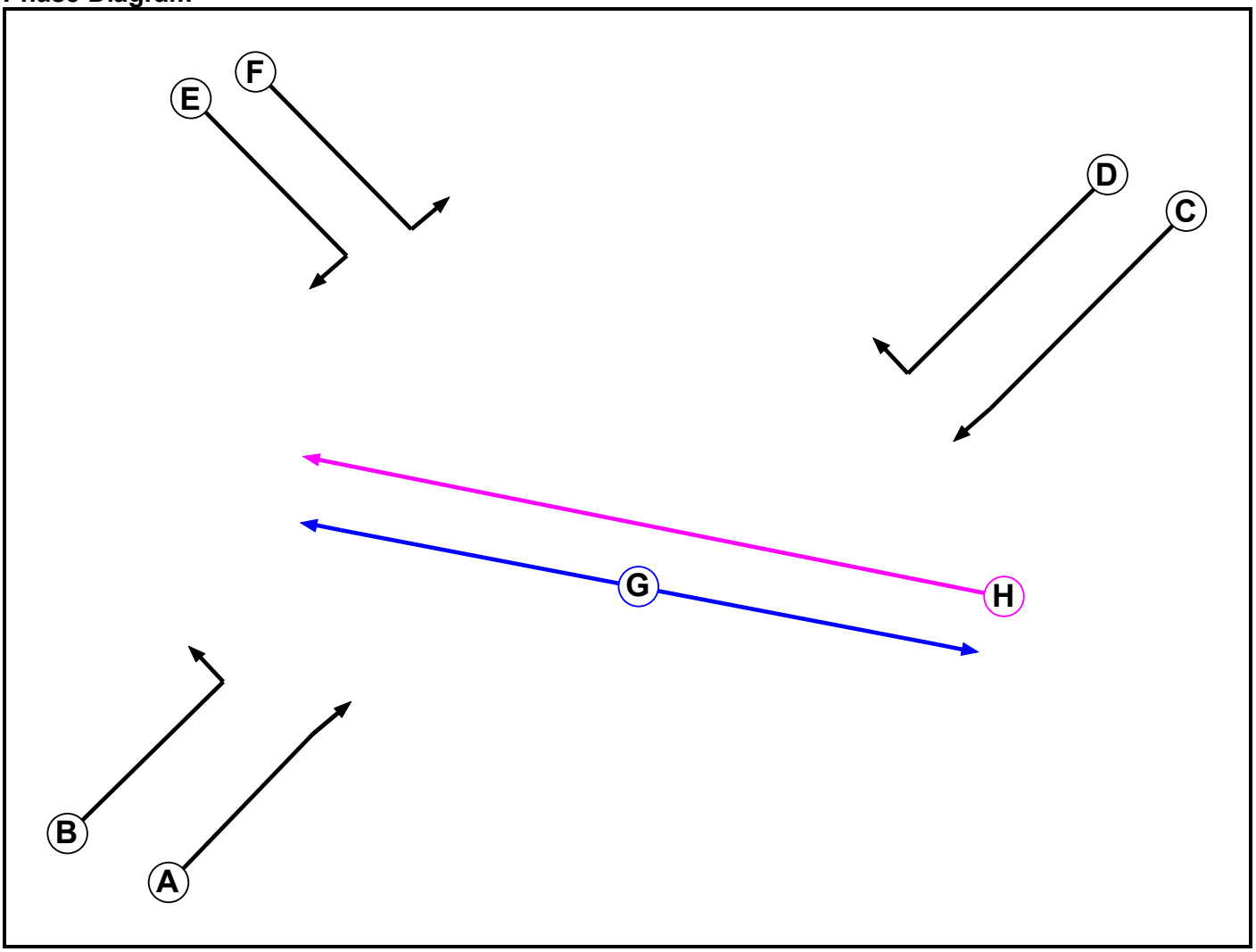
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H

Stage Diagram



C3

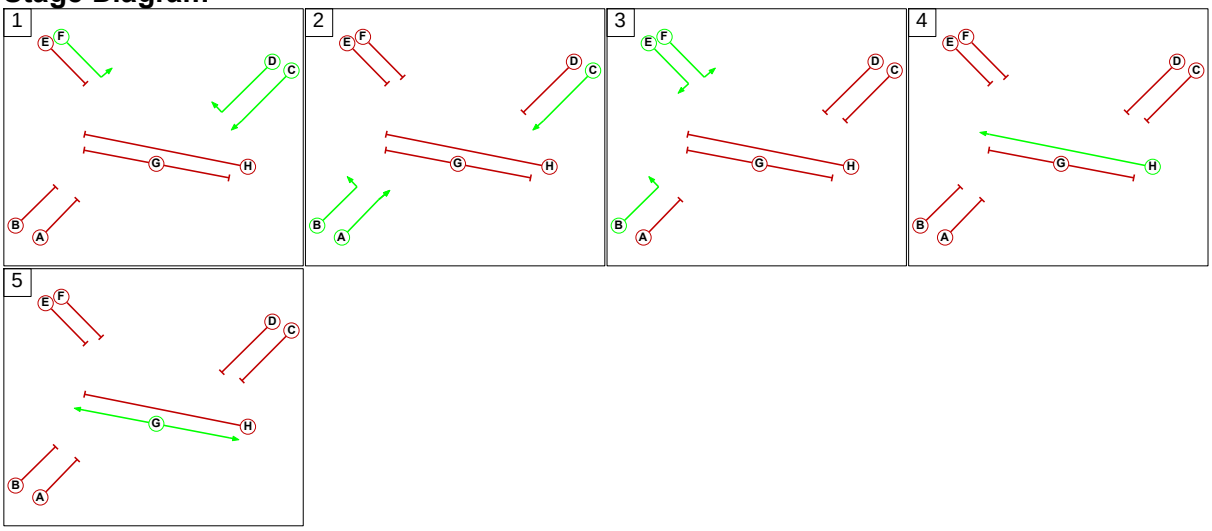
Phase Diagram



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: □ark 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 □uality and are impeding sightlines on entry and e□it of the compound. □t the interests of health and safety it is recommended that these trees be removed as re□uired to achieve satisfactory sightlines.

Figure 1 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. □t 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 □rotection 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. □or 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 geote□tile membrane.

□or wheeled or tracked construction traffic e□ceeding 2T gross weight a proprietary system to accommodate the likely loading must be put in place over the R□A of the trees.

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

There is a berm present within the R□A 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 R□A. This must be moved outside of the R□A of the trees.

□□ure □□□rees to t□e nort□ern ed□e o□co□ pound area

ure o of underneat tree A

ure er at nort eastern oundar

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Appendix C – Non-Statutory Public Consultation Report

Clifton Scannell Emerson Associates

Non-Statutory Public Consultation Report

Dodder Greenway Phase 5 – Firhouse Road, Wellington Lane & Butterfield Ave.

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Client: South Dublin County Council

Date: March 2022

Job Number: 18_123D

CONSULTING ENGINEERS

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Document Control Sheet

Project Name:	Dodder Greenway Phase 5 – Firhouse Road, Wellington Lane & Butterfield Ave.
Project Number:	18_123D
Report Title:	Non-Statutory Public Consultation Report
Filename:	18_123D – Public Consultation Report

Issue No.	Issue Status	Date	Prepared by	Checked by
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1 Introduction

1.1 Overview

This Report has been prepared by Clifton Scannell Emerson Associates (CSEA) on behalf of the South Dublin County Council (SDCC), to present the outcome of the Non-Statutory Public Consultation undertaken in relation to the proposed Dodder Greenway – Phase 5 – Firhouse Road, Wellington Lane & Butterfield Avenue scheme.

This report aims to summarise the concerns and recommendations submitted by the public, to respond to submissions made during the consultation period, and to make recommendations in relation to the proposed development where appropriate.

1.2 Purpose of the Non-Statutory Public Consultation

The purpose of a Non-Statutory Public Consultation is to ensure that, prior to a Statutory Consultation, a proposed scheme, or plan, is as optimum as it can possibility be. In that regard, if stakeholders have suggestions as to how to improve the scheme, they will be reviewed, assessed and, if positive, will be included on the final plans for the Statutory Publication.

1.3 Outline of Public Consultation Programme

1.3.1 Non – Statutory Consultation

The non-statutory consultation period took place between the 1st of December 2021 and the 14th of January 2022. A total of 70 No. submission were received during this period.

This consultation took place virtually through a virtual exhibition room available the link listed on section 2.2 below. Submissions were made online via feedback form where parties could response and submitted additional information or suggestions on one of the following options:

- Yes, I support the proposal
- I support it, but would like to see some changes
- No, I'm opposed to the proposal

Submission could also be made in writing by post to: Senior Engineer, NTA Schemes, LUPT, South Dublin County Council.

1.3.2 Statutory Consultation (Planning Application)

The statutory consultation period is envisaged to take place between the May 2022 and June 2022. This consultation period will be adjusted if the design team requires more time to review and consider each submission received.

A virtual public consultation room, similarly, to the non-statutory consultation, will be set up for all members of the public to access during the period of the consultation. Stakeholders will be able to submit their queries and/or recommendations through the virtual public consultation room or by post (address to be confirmed at public consultation period).

At the request of residents and Local Councillors, due to the circumstances associated with level 5 Covid restrictions the consultation period was extended from a closing date of April 26th to July 5th,2021.

Prior to the Statutory Consultation the proposal will undergo the following assessments:

I. **Appropriate Assessment Screening** (Habitats Directive 92/43/EEC)
II. a screening for **Environmental Impact Assessment** (EIA Directive 2014/52/EU)
III. Road Safety Audit

1.4 Legislative Background

Planning and Development Act 2000

Section 179 (3) of the Planning and Development Act 2000 (as amended), requires that the Chief Executive of a local authority shall, after the expiration of the period during which submissions or observations with respect to the proposed development may be made, in accordance with regulations under subsection (2), prepare a written report in relation to the proposed development and submit the report to the members of the authority.

Section 179(b) outlines that a report prepared in accordance with paragraph (a) shall:

I. describe the nature and extent of the proposed development and the principal features thereof, and shall include an appropriate plan of the development and appropriate map of the relevant area,

II. Evaluate whether or not the proposed development would be consistent with the proper planning and sustainable development of the area to which the development relates, having regard to the provisions of the development plan and giving the reasons and the considerations for the evaluation.

III. list the persons or bodies who made submissions or observations with respect to the proposed development in accordance with the regulations under subsection (2),

IV. summarise the issues, with respect to the proper planning and sustainable development of the area in which the proposed development would be situated, raised in any such submissions or observations, and give the response of the Chief Executive thereto, and (v) Recommend whether or not the proposed development should be proceeded with as proposed, or as varied or modified as recommended in the report, or should not be proceeded with, as the case may be.

Under Section 179(4) of the Planning and Development Act, members of a local authority shall, as soon as may be, consider the proposed development and the report of the Chief Executive. Following the consideration of the Chief Executive's report, the proposed development may be carried out as recommended in the Chief Executive's report, unless the local authority, by resolution, decides to vary or modify the development, otherwise than as recommended in the Chief Executive's report, or decides not to proceed with the development. A resolution must be passed not later than 6 weeks after receipt of the Chief Executive's report.

South Dublin County Council Development Plan 2016-2022

The *South Dublin County Council Development Plan 2016-2022* sets out the Council's 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.

2 Proposed Development

2.1 Description of Proposed Development

The proposed Dodder Greenway Phase 5 – Firhouse Road, Wellington Lane & Butterfield Avenue intents to upgrade the conditions of the existing road and pedestrian and cyclists' facilities.

The intent of the proposed scheme is to be in line with the greenway strategy and achieve a high quality of service for cyclists and pedestrians throughout the proposed route. The proposed width of the cycle tracks for the scheme follows the recommendation of the National Transportations Authority's National Cycle Manual.

The coverage offered under the proposed scheme extends from Ballyboden St Enda's GAA Club on Firhouse Road to Butterfiled Ave-Kilvere Junction and includes Wellington Lane, from Firhouse Road to Spawell Roundabout.

All proposed works for the project will include a fully integrated landscape plan and will accommodate all the required services or all required services diversion, if any.

The proposed Dodder Greenway Phase 5 scheme comprises of the following:

- Approximately 1.7km of road upgrade to create segregated cycle facilities throughout the extent of the scheme, where possible.
- Upgrade of 2 No. junction and its traffic lights phasing arrangements.
- Upgrade of the bus stop layout throughout the scheme, where possible, to safely accommodate cyclists and pedestrians.
- All associated ancillary infrastructure works, such as upgrade of the existing surface water system, and upgrade of the public lighting system
- Road marking and road sign upgrade.
- All associated ancillary works and integrated landscape plans.

2.2 Plans and Details

Plans and details are available at the following link:

https://consult.sdublincoco.ie/en/consultation/dodder-greenway-blue-haven-firhouse-road-spawell-link-road

3 Public Consultation Submissions Summary

This section presents an analysis of the submissions and includes a summary of each of the issues raised and the responses and recommendations of the Chief Executive. The responses of the Chief Executive have been framed taking account of the statutory obligations of the local authority, relevant Government and Ministerial guidelines and the proper planning and sustainable development of the area.

3.1 List of Submissions

Submissions received during the specified period of the non- statutory public consultation in respect of the proposed scheme are listed on the table below.

No.	Author	Response
1	What	Yes, I support it.
2	Aidan O'Connor	Yes, I support it.
3	Andy Morrisey	I support it but would like to see some changes.
4	Anthony Greene	Yes, I support it.
5	Bairbre Brennan	No, I'm opposed it.
6	Bill Finn	Yes, I support it.
7	Bradley Shortt	Yes, I support it.
8	Brian MacCormaic	I support it but would like to see some changes.
9	Brian MacCormaic	I support it but would like to see some changes.
10	Brian Mc Donagh	No, I'm opposed it.
11	Ciaran Mcnamara	Yes, I support it.
12	Claire Ingoldsby	Yes, I support it.
13	Clare Sullivan	I support it but would like to see some changes.
14	Clive Slattery	Yes, I support it.
15	Colm Ó Riain	I support it but would like to see some changes.
16	Conor Magee	Yes, I support it.
17	Dara Ingoldsby	I support it but would like to see some changes.
18	Deirdre Doyle	Yes, I support it.
19	Donal Brady	Yes, I support it.
20	Eamoon Morrissey	No, I'm opposed it.
21	Ellen Ni Cleirigh	I support it but would like to see some changes.
22	Eoin Brennan	I support it but would like to see some changes.
23	Eugene Barrett	I support it but would like to see some changes.
24	Gearoid Begley	Yes, I support it.
25	Gillian O'Brien	I support it but would like to see some changes.
26	Glenn Valentine	Yes, I support it.
27	Hazel Travers	I support it but would like to see some changes.

No.	Author	Response
28	Jeanette Cunningham	I support it but would like to see some changes.
29	Jenny Young	Yes, I support it.
30	Jim Brown	*No response provided but noted ''I think that this is a great initiative''*
31	Jim Higgins	Yes, I support it.
32	Joanne Gillen	I support it but would like to see some changes.
33	John O'Leary	No, I'm opposed it.
34	John Noonan	Yes, I support it.
35	Johnny Lew	Yes, I support it.
36	Karl Chatterton	Yes, I support it.
37	Kevin Baker	Yes, I support it.
38	Laura Cahill	Yes, I support it.
39	Leo Mc Carthy	Yes, I support it.
40	Lisa Brennan	No, I'm opposed it.
41	Lorcan Staines	Yes, I support it.
42	Lucy Slattery	I support it but would like to see some changes.
43	Mark Nolan	I support it but would like to see some changes.
44	Mary Stafford	No, I'm opposed it.
45	Maura Mahony	Yes, I support it.
46	Monica Nowlan	Yes, I support it.
47	Neil Reid	Yes, I support it.
48	Niels Warburton	Yes, I support it.
49	Pat Donnelly	No, I'm opposed it.
50	Patrick and Brady	I support it but would like to see some changes.
51	Paul Haran	Yes, I support it.
52	Paul Coyle	I support it but would like to see some changes.
53	Peter Greenan	Yes, I support it.
54	Quentin Heaney	Yes, I support it.
55	Rachael Whittle	No, I'm opposed it.
56	Richard Bloomfield	No, I'm opposed it.
57	Richard Richard	I support it but would like to see some changes.
58	Ronan Allen	Yes, I support it.
59	Sean Goulding	I support it but would like to see some changes
60	Sean Jennings	No, I'm opposed it.
61	Shane Moloney	I support it but would like to see some changes
62	Shane Hayes	I support it but would like to see some changes
63	Stephen Dolan	Yes, I support it.

No.	Author	Response
64	Steven Trundle	I support it but would like to see some changes
65	Tara O'Reilly	No, I'm opposed it.
66	Tony Cunningham	Yes, I support it.
67	Trevor Austen	I support it but would like to see some changes
68	William Martin Smith	I support it but would like to see some changes
69	William O'Neill	Yes, I support it.
70	Dublin Cycling Campaign	*Please refer to section 3.2 below that details all submission.*

3.2 Detailed Submissions

This section details submissions that include additional information provided or where the response was 'I support it but would like to see some changes' or 'No, I'm opposed it'.Each submission was interpretated, divided and numbered according to each issue or subjected raised. The numbering within the submission correlates to the numbering on the Chief Executives Responses section.

Please refer to **Appendix A** for the full submission from the Dublin Cycling Campaign.

Submission No. 5 – Bairbre Brennan

1. No, I don't like any of the options.
2. I disagree with closing the left lane off Oldbridge Road onto Butterfield Ave (option 1) as this will increase the volume of traffic on Ballyroan Road (already very congested in mornings and evenings) and then going down Anne Devlin - a narrow road which is unsuitable for large volumes of traffic.
3. I also think the straight cycle lane between Ballyroan Road and Oldbridge Road should be maintained as commuter cyclists are likely to want to take that route to the city rather than trying to join the Greenway.
4. In general, the Greenway is more recreational than commuter and both types of traffic need to be supported. Much of the Greenway is remote and isolated and not attractive to women cycling alone, so the cycle lanes along main thoroughfares are better for commuting.

Chief Executives Responses:

1. Noted
2. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route).
3. A straight cycle lane between Ballyroan Rd and Oldbridge Rd have been introduced into the design.
4. Noted

Chief Executives Recommendations:

1. Changes were proposed following the review of this submission.

Submission No. 8 – Brian MacCormaic

1. I note the exhibition enforces compulsory English on users. It is essential in any signage, posters or exhibitions along the Greenway, that equal status is given to the Irish language, not as an inconvenient afterthought.

Chief Executives Responses:

1. Any traffic related signs shown on the presented drawings have been preliminary designed in compliance with the Department of Transport Traffic Signs Manual.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 9 – Brian MacCormaic

1. I am concerned at the impact of increased pedestrian and cyclist traffic on the environs of the Greenway, and the River Dodder in particular. In particular the potential destruction/disturbance of wildlife habitat and native plant life, which will in turn affect the physical structure of the Dodder River.
2. **Priority for Habitat and Environment**
   Instead of developing the Greenway as a picturesque walkway giving priority to pedestrians and cyclists - tourists, priority should be given to ensuring the natural environment receives priority in all planning and development phases.
   Public lighting should only be installed where absolutely necessary, and should be kept to a minimum, with a set period of total darkness in order to prevent disturbing sleep and hunting patterns.
   Native trees and shrubbery - brambles, hawthorn etc - should only be used. These should be encouraged to grow wild and left un-manicured to enhance wildlife habitat.
   The banks of the Dodder should, at all points, be enclosed within a wide border of native trees and plants along its full length. This will not only provided privacy to wildlife habitat, but will also protect against erosion during natural flood that the river is prone to.
   Straight-line pathways should be avoided where possible, as these inhibit the movement of wildlife.
3. **Flood Alleviation**
   For example, following Hurricane Charlie in 1986, areas where the Dodder banks were restricted by concrete walls, or where trees were removed to provide grassed parklands down to the river bank, the flood caused immense damage, with whole areas washed away to cause further destruction downstream.
   Whereas, at the wooded wildlife sanctuary at Avonmore Road in Tallaght (known locally as Setanta Nature Reserve), the root systems in the soil along river bank kept the soil intact and acted as a brake to help stem the destructive surge of the river downstream.
4. **Community Involvement**
   Tree planting: encourage local schools - primary and secondary - to become involved in growing native trees from seed, and then seeing their own forests grow along the Greenway.
   Seek assistance from Irish Wildlife Trust, Biodiversity Ireland, Birdwatch Ireland etc to check the feasibility of introducing kingfishers, red squirrels, stoat and other more elusive native species.
5. **History & Heritage**

Develop the Greenway in a traditional country lane style, with stone walls, signposts, historic displays of families who lived along the route. Replant traditional hedgerow plants and trees. Where possible, install traditional style railings and gates.
This work could be carried out as a joint heritage project between volunteers in the community, local schools, and Council staff.
Seek the participation of schools children to carry out historic surveys to identify the location of former farmhouses and homes along the route; students to make contact and interview former residents or their descendants, along with older people who recall visiting the area in their youth; place historic markers, posters with photos of landmarks or families who lived in the area before the Greenway was developed.

6. **Wildlife Bridges**
   Consider the possibility of constructing wildlife bridges over busy traffic junctions, and to link the Greenway with local parks (Tymon Park, Bushy Park etc).
   This would create a natural highway for wildlife to move freely and expand its territory from the Dublin/Wicklow mountains right into the city centre.
   https://greennews.ie/44587-2/

Chief Executives Responses:

1. During design and construction of the previous Dodder Greenway phases (Phase 1, 2 and 3), CSEA and SDCC have liaised with an Ecologist and with National Parks and Wildlife (NPWS) for collaboration and advised on the impact of the proposed public lighting on the existing environment. The outcome of the liaison process has been applied to the previous phases of the Dodder Greenway scheme and will be taken into consideration during part 8 stage.
2. Priority to habit and environment and concerns about riparian area and the existing dodder river wildlife corridor are noted and were taken into consideration during design of part 8 proposal.
3. The proposed scheme will have zero impact on the existing flood risk for the area.
4. Suggestion regarding community involvement with the projects with regards to tree planting are noted and will be take into consideration during construction stage.
5. Suggestions regarding proposed features (e.g stone walls, traditional style railing etc) are noted and will be take into consideration during detail design stage.
6. Suggestion regarding construction of wildlife bridges, although a very good proposal, are deemed unfeasible for the proposed scheme.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 10 – Brian Mc Donagh

1. Prefers option 2.

Chief Executives Responses:

1. Preference is noted.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 13 – Clare Sullivan

1. Option 1 is a good start at a decent design. Options 2 and 3 have major flaws throughout and would need significant redesign before they could even be considered. Far too much shared space and conflicts all over the place between motorists and cyclists. In regards to Option 1 there are two main areas that need improvement. The first relates to the furthest east section on Butterfield Avenue where the scheme ends and cyclists are put back on the main carriageway with motorists, HERE IS NOT THE PLACE TO PUT A BUS STOP!!! Sorry to use capitals but, the whole point of good road design is to design to reduce conflicts, when there is one change happening don't introduce more when it is completely not necessary, a cyclists has to get used to having no protected infrastructure at the same time as a bus pulling in across them to let passengers out, this is a complete design failure. Please move the bus stop to a point where there is not another conflict happening with the road design at the same time. This should be common sense to road designers and council engineers. You have also build out a concrete curb precisely where a cyclists would want to continue their journey on the Butterfield Ave, this needs to be changed to allow cyclists safely merge back with the main carriageway. While I understand that schemes have an end point, the end point needs to merge safely with the existing infrastructure not stop cyclists and essentially say to them now get off - that's the message you are giving with the current design at that point.
2. The second relates to the Ballyroan Road and Butterfield Ave junction. This junction need to be significantly narrowed to make it much more pleasant for cyclists and pedestrians. In option 1 there is no provision for cyclists wishing to proceed straight from Ballyroad Road northbound through the junction. The left slip lane should be removed as left slip lanes are known to be dangerous to cyclists and the junction narrowed to allow the cyclist to be protected fully approaching the junction. Narrowing the junction significantly to make it more like a traditional cross roads will greatly enhance the safety of the junction as it will reduce traffic speed. All "red road" surface sections need to be fully segregated approaching this junction. In the main I am very supportive of this project and compliment the council and all the engineers working on it. I hope you won't take my criticism the wrong way but it is frustrating as a cyclist seeing some easy fixes built wrong and cyclists have had to endure horrendous facilities in Ireland for far to long - get it right and this will really be a great scheme and will significantly enhance cycling in the area. If in doubt ask yourselves (or ask someone who has lived in the Netherlands as I have), what would the Dutch do?

Chief Executives Responses:

1. The eastern section of Butterfield Ave. (bus stop and junction layout) has been reviewed with to avoid potential conflicts between road users. Please note that prior to a Part 8 application (statutory public consultation), a road safety audit has been carried out and the recommendations of such audit have been introduced on the scheme.
2. With regards to the Ballyroan Rd-Butterfield Ave Junction please refer to section 4.7.3 of the Options Report (Blue Haven Junction Option 5). It details options considered but not included on the assessment. The layout of option 5 proposed to remove the left slip lane on Ballyroan Rd and included a straight through cycle lane for cyclists going northbound. The following is an extract from the mentioned section of the report: *''This design (refers to option 5) 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 cyclists' 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. ''*

Chief Executives Recommendation:

1. Changes were proposed following the review of this submission.

Submission No. 15 – Colm Ó Riain

1. The two-way cycle design is welcome but it is too narrow at 3m and lacks a sufficient buffer between it and motorised traffic to make it attractive for young families and children alike. It seems excessive to have three traffic lanes in one direction at the Blue Haven crossroads. The straight ahead and left turning lanes should be amalgamated into one lane which would allow for a minimum 4 metre cycle track along with a green buffer which would make cycling the route a far more pleasant and attractive proposition for less confident people on bikes.
2. I also have an issue with the route I use when commuting by bike (from Old Bridge Road turning right onto Firhouse Road). It doesn't appear obvious from the drawings how it is suggested someone taking this route should safely enter the two way cycle track from Old Bridge Road. It also seems counterintuitive to reduce the width and add frankly dangerous tactile paving to the cycle lanes at bus stops. In general I am very supportive of the scheme but it would be disappointing to see the current designs implemented as they are given the scale of the scheme. The scheme's overarching principle should be to make walking and cycling attractive to all ages and abilities (especially children) and not just for leisure cyclists. I think that maintaining two turning lanes for motor traffic at the expense of making an attractive and 'safe feeling' cycle lane is a regressive step which should be amended in the final designs.

Chief Executives Responses:

1. With regards to the proposed two-way cycle track width CSEA have reviewed the design and have increased, where possible, the width of the two-way cycle track.
2. For cyclists intending to turn right from Old Bridge Rd to Firhouse Rd (to enter the two-way cycletrack heading west) they are expected to turn right onto the greenway during the appropriate traffic lights phasing. An advanced stacking location (ASL) is included on Old Bridge Road.

Chief Executives Recommendations:

1. Changes were proposed following the review of this submission.

Submission No. 17 – Dara Ingoldsby

1. I would like the north-south cycle route included and I would like cycle routes raised rather than just painted.

Chief Executives Responses:

1. With regards to the Ballyroan Rd-Butterfield Ave Junction, cyclists intending to transverse the junction on a north-south direction are expected to do so during the appropriate traffic lights phase. A raised cycle path traversing a junction is not feasible due to the level differences.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 20 – Eamonn Morrissey

1. I No, I don't like any of the options. Can we not build a raised platform and keep the whole thing off-road

Chief Executives Responses:

1. It is not clear which project area is referred to in this submission.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 21 – Ellen Ni Cleirigh

1. Keep the existing cycle lane on the south side of Firhouse Road**.**
2. Include the off road cycle track from option 2 at the approach to the Blue Haven Junction**.**
3. More consideration for cyclists joining/leaving the greenway.
4. Segregate from cars and pedestrians as much as possible - there are a number of schools in the area, and it would help allay parental fears

Chief Executives Responses:

1. The cycle lane on the south side of Firhouse Road is deemed redundant as cycling facilities are provided on the north side of the road.
2. The two-way cycle track (greenway) is segregated from the road by a kerb line.
3. The design intents to have a dedicated traffic lights phasing for the two-way cycle track (greenway). For cyclists intending to join the greenway from adjacent roads, they are expected to do so during the appropriate traffic lights phase.
4. The proposed cycle tracks are segregated, as much as possible, from the traffic lanes by a kerb line.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 22 – Eion Brennan

1. Keep The below improvements would make route option 1 more widely accessible to cyclists of all ages & abilities. This is key because if the route is only safe for adult male cyclists, then it is not fulfilling its purpose, and this will endanger the viability of the entire project. The user-friendliness of a route is judged by the weakest section of the route - it's no good having safe segregated greenway section if the 'complicated' sections aren't safe.
2. Cyclops style junction at the Blue Haven
3. Inclusion of raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (as shown in Option 2).
4. More space for cyclists at the bus-stop bypasses
5. Retention of the existing cycle lane on the south side of the Firhouse Road
6. Reduction of the traffic lane widths on Wellington Lane and Butterfield Avenue with the space reallocated to wider cycle tracks.

Chief Executives Responses:

1. Comments are noted.
2. With regards to the suggested cyclops style junction, please refer to sections 4.7.2 and 4.7.4 of the Options Report, where it details the reasons to not include a cyclops layout on the assessment.
3. Suggestions regarding a raised off-road cycle track on approach to the Blue Haven junction were will be reviewed on the design of the part 8 proposal.
4. The proposed layout shown, where cycle track transverse behind the bus stops, have been designed in accordance with the 'Preliminary Design Guidance Booklet for BusConnects'. Adequate space has been included on the design.
5. The cycle lane on the south side of Firhouse Road is deemed redundant as cycling facilities are provided on the north side of the road.
6. Traffic lanes width on Wellington Lane were defined based on existing traffic flow and road category.
   Traffic lanes width on Butterfield Ave. were reviewed and reduced to accommodate wider pedestrians and cyclists facilities.

Chief Executives Recommendations:

1. Changes were proposed following the review of this submission.

Submission No. 23 – Eugene Barrett

1. All cycleways should be separated from pedestrians

Chief Executives Responses:

1. All footpaths and cycle tracks are segregated

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 25 – Gillian O'Brien

1. I have concerns over the closure of the left turn from Old Bridge Road on to Butterfield Avenue. I live on Anne Devlin Road, which is the next viable turn left (ADR runs from Ballyroan Road to Butterfield Avenue). Its inevitable that motorists will use our residential road to access Butterfield Avenue. We already have problems with the road being used as a "rat run" and have requested traffic calming numerous times. This road will not be able to cope with the extra traffic. We are struggling as it is!

Chief Executives Responses:

1. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route).

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 27 – Hazel Travers

1. The greenway work so far is excellent. I don't support the greenway leaving the dodder and moving onto the main road, I think This will cause accidents if this greenway is even slightly as busy as Waterford. I think you should keep the cycle track following the river, there seems to be space to do this at the back of cheeverstown and into templeogue and connecting to the park behind Kilvere estate.

Chief Executives Responses:

1. This proposed alternative route has been considered and assess at earlier stages of the project (prior to part 8). However, it was deemed not viable. Please refer to section 4.7.1 of the Options Report.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 28 – Jeanette Cunningham

1. Can the new Greenway have some balance for the protection of native plants and wildlife please? SDCC are bulldozing all the natural habitats and ecosystem that exist along the route and replacing them with concrete and tarmac, making a man-made unnatural walkway. You are destroying a lot of the natural beauty that people love to see on a walk. Please reduce the negative impact on wildlife as much as possible on whatever route is decided.

Chief Executives Responses:

1. Suggestions and comments regarding protection of native plants and wildlife are noted and were taken into consideration during part 8 design stage.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 30 – Jim Brown

1. I think that this is a great initiative

Chief Executives Responses:

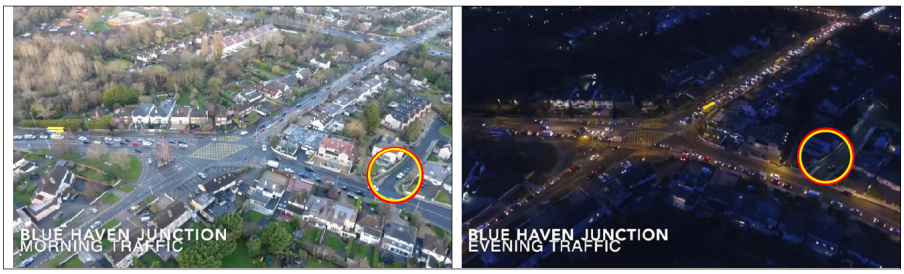
1. Comments are noted.

Chief Executives Recommendations:

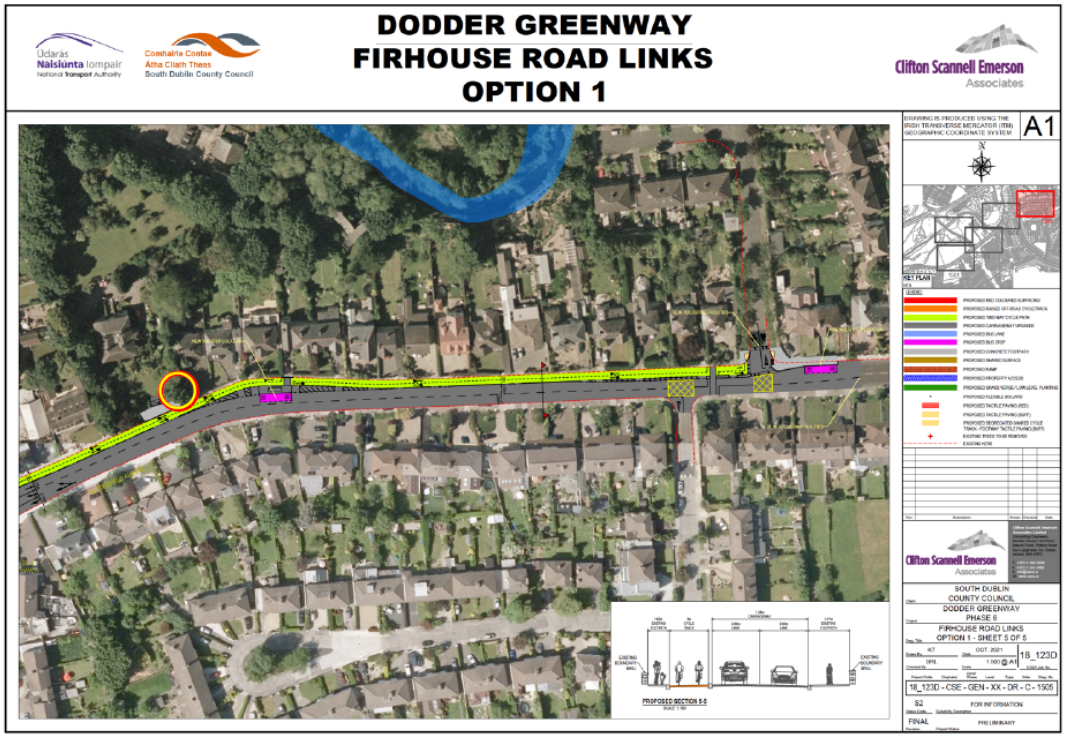
1. No changes proposed following the review of this submission.

Submission No. 32 – Joanne Gillen

1. Road safety concern regarding junction with Riversdale estate on Butterfield Avenue and sight-lines for oncoming westbound cycle traffic if Option 1 with two-way cycle path is selected. Please see attached summary and drawing. Thanks.
   My road safety concern relates to Option 1 which includes a proposed two-way cycle path along Butterfield Avenue between Old Bridge Road and Kilvere, as it affects the Riversdale estate on Butterfield Avenue. Sight-lines from the exit of Riversdale estate onto Butterfield Avenue do not allow for safe view of west-bound cycle traffic towards Old Bridge Road on the proposed two-way cycle path – i.e. a vehicle exiting the Riversdale estate would encroach on the proposed cycle path before having visibility of cycle traffic approaching from the left-hand side. The poor eastward sightline due to existing infrastructural constraints is likely to be exacerbated by increased nuisance parking at the entrance to Riversdale estate by motorists unable to park on Butterfield Avenue due to the new cycle path infrastructure. Examples of such casual parking are shown in both the morning and evening drone footage included in the consultation documentation.



2. The Riversdale estate and its junction with Butterfield Avenue is not pictured in the consultation drawings for Option 1, nor is its existing yellow box. For ease of reference, I have marked the entrance with a red circle in the below extract.



3. Suggested solutions include:
   • Traffic lights at the junction of Riversdale and Butterfield Avenue (if Option 1 remains the preferred option)
   • Re-engineering the road/path at the junction of Riversdale and Butterfield Avenue to facilitate
   eastward sight-lines of approaching cycle traffic on the near carriageway (if Option 1 remains the preferred option)
   • A one-way east-bound only cycle path on the east-bound side of Butterfield Avenue (as described in Options 2 and 3)
   • Regardless of eventual preferred Option selection, consideration should be given to:
      - Rumble strips/speed bumps on the cycle path either side of the Riversdale estate junction; and
      - Extending the existing yellow box across both carriageways of Butterfield Avenue as an additional visual cue to cyclists of a road junction on the new cycle path. This would have the further benefit of increased compliance with the yellow box – currently, there is poor compliance with the existing single carriageway yellow box, an example of which can be seen from the night time drone footage included in the consultation documents.

Chief Executives Responses:

1. Prior to a Part 8 application (statutory public consultation), a road safety audit has been carried out and the recommendations of such audit have been introduced on the scheme.
   A sign is located at the entrance of Riversdale stated indicating that parking is only permitted for residents. If illegal parking is occurring residents should contact the Garda
2. The entrance to Riversdale is included on the design, CSEA have reviewed the entrance sightline distances and layout to make it safer for all road users.
3. All suggestions were reviewed by CSEA on developing a part 8 proposal.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 33 – John O'Leary

1. No, I don't like any of the options, will cause excessive parking in Riversdale and kilvere.

Chief Executives Responses:

1. A sign is located at the entrance of Riversdale stated indicating that parking is only permitted for residents. If illegal parking is occurring residents should contact the Garda.
   At Kilvere, parking is undesignated.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 34 – John Noonan

1. Don't agree with the increased traffic on Butterfield Avenue. There has been a massive increase in traffic through Butterfield Avenue (past Kilvere) in recent years. This proposal will make matters even worse.

Chief Executives Responses:

1. The proposed scheme intends to encourage a modal shift to walking and cycling which will aid to reduce the number of motorized vehicles on the road. It is not expected that, alone, the proposed scheme will significantly reduce the amount of traffic, however, combined with other cycling schemes proposed to be delivered by SDCC, it is envisaged that the amount of traffic will be reduced and the degree of saturation of the junction within the proposed scheme will reduce.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 40 – Lisa Brennan

1. Prefers Options 2

Chief Executives Responses:

1. Preference is noted.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 42 – Lucy Slattery

1. I would like to see a safer and more reliable entry and exit from Woodbrook park Cul De Sac for all road users. Specifically, when turning right when existing.

Chief Executives Responses:

1. CSEA will, during part 8 stage, review junction layout with the aim to make it safer to all road users.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 43 – Mark Nolan

1. I would like to see option 3 as the preferred option. The start of the bi-directional cycle lane is poorly located in option 1. This will result in the majority of commuter cyclists staying on the road headed west until they reach the next stretch of cycle lane.

Chief Executives Responses:

1. The proposal intends to encourage cyclists to use the proposed facilities by providing a dedicated cycling traffic lights phase on the major junction within the scheme (Blue Heaven and Wellington Lane). That way, cyclists are unimpeded to move throughout the junction.
   At Knocklyon junction, cyclists are expected to use the proposed toucan crossing to cross Firhouse Road and access the single lane cycle track on the southern side of Firhouse Rd heading west.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 44 – Mary Stafford

1. No, I don't like any of the options
2. Will cause Excessive parking problems in Riversdale and Kilvere.

Chief Executives Responses:

1. Preference is noted.
2. A sign is located at the entrance of Riversdale stated indicating that parking is only permitted for residents. If illegal parking is occurring residents should contact the Garda. At Kilvere, parking is undesignated.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 49 – Pat Donnelly

Butterfield District Residents' Association
Rathfarnham, Dublin 14

Observation re change of route at junction of Old Bridge Road and Firhouse Road to accommodate the proposed Greenway (Phase 6).

Observation submitted on 14th January 2022 by Butterfield District Residents' Association, Rathfarnham, Dublin 14.

1. According to the NTA Greenway Draft Plan it seems that the emerging option, (Option 1), in relation to this plan is that traffic that would normally travel from the Old Bridge Road and turn left onto Butterfield Avenue will now have to proceed onto Ballyroan Road. As a result, motorists wishing to access the villages of Rathfarnham and Terenure will leave the Ballyroan Road and seek to access Butterfield Avenue via Ann Devlin Road and Marian Road. These are residential roads, both narrow and used by many pedestrian children on their way to and from school. They are designed for local use and not as "rat-runs" or thoroughfares. It is clear that increased volume of traffic on these roads will lead to a higher risk of road accidents for residents in the area. This extra traffic will lead to lengthy delays for local people seeking to go about their business, especially in the mornings.
2. The adoption of the route changes outlined in this plan will have serious and ongoing repercussions for locals both in the near and more distant future. The spirit of the plan to encourage and even prioritise cycle/ active travel is indeed laudable. However, the traffic arrangements envisaged in this plan in can only lead to absolute chaos for the residents of our area. The coming years will see an ever-increasing volume of car traffic competing for road space in the area. This will be due, in no small part, to the complete lack of planning for public transport provision in this area as revealed in the Draft Transport Development Plan for the Greater Dublin Area. The rollout of BusConnects – hardly an improvement on the present Dublin Bus provision – is the only public transport planned for this area between now and 2042. It is therefore clear that, if this plan is put in place, the number of cars using Marian Road and Ann Devlin Road will only increase over time.
3. The Greenway route, of necessity, already intersects with a number of motor traffic bearing routes along its length. No alternative or improved road plans have been made to allow for the new traffic flow on Ann Devlin or Marian Roads, both residential roads and both subject to a 30kph speed limit. For this reason BDRA would like to question what benefit will accrue from this diversion of potentially large numbers of vehicles to two narrow residential roads vis-à-vis the disruption, delays and danger such an arrangement will certainly bring about for the residents.

BDRA trusts that you will acknowledge this observation in due course.

Pat Donnelly,

Fíonán Ó Cuireáin. Committee (BDRA)

Chief Executives Responses:

1. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route).
2. The proposed scheme intends to encourage a modal shift to walking and cycling which will aid to reduce the number of motorized vehicles on the road. It is not expected that, alone, the proposed scheme will significantly reduce the amount of traffic, however, combined with other cycling schemes proposed to be delivered by SDCC, it is envisaged that the amount of traffic will be reduced and the degree of saturation of the junction within the proposed scheme will reduce.
3. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route). Therefore, there is no additional traffic flow envisaged for Ann Devlin or Marian Roads.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 50 – Patrick and Brady

1. Consultations with Kilvere Estate residents

Chief Executives Responses:

1. The present non-statutory public consultation has been put in place so that all stake holders could have their say on the project. Further public consultation will occur during part 8 stage.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 52 – Paul Coyle

1. It's not clear from the assessments as to what happens to displaced parking from Butterfield Avenue. It appears it will likely move into surrounding estates and potentially cause issues for residents of those estates. It would be useful to understand how this is considered

Chief Executives Responses:

1. CSEA have reviewed the existing parking conditions on Butterfield Ave. and noted that the spaces are not marked. The conditions of parking on Butterfield Ave. (within the proposed scheme's footprint) are classified as unregulated parking.

   CSEA have also noted that, according to "South Dublin County Council (control of parking) Bye-Laws" and "The Road Traffic (Traffic and Parking) Regulations 1997 SI 182/1997", a section of the Butterfield Ave., from Riversdale to approximately 65 metres to east, is an area where parking is not permitted.

   Furthermore, the granted 2017 Part 8 planning does not allow for parking on Butterfield Avenue. There appears to be good private residential parking within the houses of Butterfield Ave with the average driveway length 14m on houses to the Southern side and 10m on houses to the Northern side of Butterfield.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 55 – Rachael Whittle

1. No, I don't like any of the options
2. The cyclops junction or whatever it's called will result in sharp turning junctions which will be difficult for larger vehicles such as buses etc. i personally think an elevated cycling junction should happen here to not obstruct the road layout or have the cycle lanes on the footpath.
3. The 2 lane cycle lane looks difficult to turn left as cyclists often are in blind spots and are too fast.

Chief Executives Responses:

1. Preference is noted.
2. An elevated cycling junction usually requires substation space to accommodate maximum permitted slopes for ramps, so it is deemed unfeasible for this junction.
3. Cyclists turning left from Ballyroan Rd are expected to enter the two-way cycle path by crossing the junction through the pedestrian crossings.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 56 – Richard Bloomfield

1. Prefers Options 3

Chief Executives Responses:

1. Preference is noted.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 57 – Richard Sheehan

1. Should be a dual cycle track the whole way from Spawell link road (east side) to Blue Haven junction (north side of Firhouse Road). Should aim to have only one set of traffic lights from Kilvere to Dodder Valley.

Chief Executives Responses:

1. Suggestion regarding a two-way cycle track for the entire length of the scheme will be reviewed during part 8 stage.
2. A single set of traffic lights as suggested is deemed unsafe for all road user due to the traffic volume of these roads.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 59 – Sean Goulding

1. I have association with the Firhouse weir since 1952 when we moved into mt Carmel.pk I am wondering if the restoration of the sluace gates on either side of the weir is on the agenda I remember them working and the man that operated them hoping to hear from you regards Sean Goulding.

Chief Executives Responses:

1. Submission not related to this project.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 60 – Sean Jennings

1. No, I don't like any of the options
2. I disagree with the Option 1 layout regarding the replacement of the R114 Firhouse Road left turning slip-lane into the Spawell link Road. I see that the report only gives yellow Road Safety ratings at best for all three options and in this case, I can see why that is. The slip lane for this specific junction is currently much safer than any of the three new proposed options. With Option 1, a motorist turning left at this junction would now have three modes (Pedestrians, Bicycles & Buses/Taxis) to the left of it that can go straight on? Option 1 would also introduce situations where motorists and taxis/buses e.g., 65B would be attempting to merge whilst turning left into a single lane?
3. To me, Options 2/3 are clearly more appropriate in this regard as road traffic at least moves to a lane on the left side of the road to make the left turn. Regarding design & safety my preference would be in order; keeping a left turning slip-lane, Option 3, Option 2 and then Option 1.
   Regards
   Sean Jennings.

Chief Executives Responses:

1. Preference is noted.
2. Vehicles intending to turn left from Firhouse Rd onto Spawell Link Road are proposed to have a dedicated traffic lights phase to perform the movement.
3. The junction layout proposed that busses will have its dedicated traffic lights phase to move.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 61 – Shane Moloney

1. Approaching Blue Haven from Firhouse, there are 3 lanes of traffic going left, right and straight on to Rathfarnham. One lane travelling towards Firhouse. While I support the multidirectional cycle lane, by reducing the traffic lanes to 2 (one Turing right to ballyroan, one going left or straight.) you could install a bus lane or another cycle lane that could protect people coming from Ballyroan.
2. Additionally, as it stands residents park on the road instead of their driveways on the road running from blue haven to Kilvere estate. What makes you think they'll stop? We need physical dividers to ensure cyclists of all ages and abilities can safely join the greenway

Chief Executives Responses:

1. To reduce one lane from Firhouse road approaching the Blue Heaven junction would increase the junction's degree of saturation significantly and traffic flow would be impacted.
2. At part 8 stage CSEA will assess the vehicle parking impact on Kilvere state and propose solutions that will mitigate any issues arising from such review.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 62 – Shane Hayes

1. The current works near Mt Carmel/Firhouse weir, down through ballyboaden is brilliant. Being a local resident with young kids, I wouldn't take them to this section due to being so close to the busy road. It would be much better if this green way steered clear of the roads, went around the back of the Cheeverstown estates and joined up to the Kilvere part of the green way. Although it will take more money/time this would be a much more suitable option

Chief Executives Responses:

1. This proposed alternative route has been considered and assess at earlier stages of the project (prior to part 8). However, it was deemed not viable. Please refer to section 4.7.1 of the Options Report.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 64 – Steven Trundle

1. First thank you for the current greenway sections and resurfacing of spawell link both have been great help and allow me to travel to Rathfarnham SC, templeogue, Bushy park and Terenure villages safer and more often on bike with kids.
2. I prefer the 1st option. The segregation from cyclist and pedestrians on the Spawell link road is especially welcome. It can be scary for both at the moment. Also, the connection from existing greenway in Kilvere will be better in option 1.
3. Having to use the traffic lights to cross Butterfield avenue is not welcome and troublesome at the moment. This is due to it being offset and having to dismount on to the path to do so not easy with kids.

4. Lastly, if possible, the addition of a cyclops still crossing at blue haven would be welcome to ensure all elements join up. Thank you for putting this together and look forward to travelling on the new build.

Chief Executives Responses:

1. Noted.
2. Preference is noted.
3. Location of pedestrian crossing on Butterfield Ave will be retained.
4. With regards to the suggested cyclops style junction, please refer to sections 4.7.2 and 4.7.4 of the Options Report, where it details the reasons to not include a cyclops layout on the assessment.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 65 – Tara O'Reilly

1. No, I don't like any of the options
2. It makes no sense to remove permanently the left turn from Old Bridge Road on to Butterfield Ave when anyone on the greenway will still be stopped for the traffic going straight and turning right from this round. There is a lot of new developments in Knocklyon (and more being constructed) whose residents travel through this junction. Removing a left turn will cause traffic to drive up Ballyroan Road, turn left onto Ann Devlin Road and then turn right onto Butterfield Ave. This road is already a rat run and all the school traffic from Rathfarnham National School has to come onto the road as Washington lane operates as a system for the school traffic. There needs to be a left turn here to allow residents from Rathfarnham, Templeogue, Knocklyon and beyond to access Butterfield Ave to get to the Rathfarnham Shopping Centre.

Chief Executives Responses:

1. Preference is noted.
2. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route).

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 67 – Trevor Austen

1. In proposing the two way cycle route between Kilvere and the traffic lights at Old Bridge - it is the obvious choice, but it is noted that a lot of cars park on the north side of Butterfield Ave - some of which are attending the fitness business at the junction. Has the potential parking of these vehicles on the other side of the Butterfield Ave. been considered and the impact of the possible parking of these cars on adjoining estate roads - Kilvere, Anne Devlin Road, Ballymace Green - which are often conjested ?
2. Is the proposed elimination of the left filter from Old Bridge Road to Butterfield Ave due to the 2 way bike path location ? It does not seem to cause an issue when cycling East at the moment.

The elimination of the filter may result in traffic back up to Templeogue bridge and the current cycle route from the bridge is hazardous at best during commuting times.

Chief Executives Responses:

1. At part 8 stage CSEA will assess the vehicle parking impact on Kilvere state and propose solutions that will mitigate any issues arising from such review.
2. The emerging preferred route proposes to remove the left slip lane but not the 'turn-left' movement. The left turn from Old Bridge Road onto Butterfield Ave is still possible under option 1 (the emerging preferred route).

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 68 – Willian Martin Smith

1. Shared facilities should be avoided.
2. Property access/minor adjoining roads should yield right of way to this cycle route.
3. Cycle lanes should be segregated and separate from vehicular lanes.
4. Safe access by cyclists to the scheme should be considered. Junctions and routes should be safe for children to use.
5. Lane width should safely accommodate disability trikes, cargo bikes and overtaking of slower cyclists by faster ones.

Chief Executives Responses:

1. Shared facilities have been avoided on the emerging preferred option.
2. Priority is given to pedestrian and cyclists.
3. Cycle tracks are segregated from the road, where possible, by a kerb line.
4. A The proposal intends to encourage cyclists to use the proposed facilities by providing a dedicated cycling traffic lights phase on the major junction within the scheme (Blue Heaven and Wellington Lane). That way, cyclists are unimpeded to move throughout the junction.
   At Knocklyon junction, cyclists are expected to use the proposed toucan crossing to cross Firhouse Road and access the single lane cycle track on the southern side of Firhouse Rd heading west.
5. Lane widths will be reviewed during part 8 stage.

Chief Executives Recommendations:

1. No changes proposed following the review of this submission.

Submission No. 70 – Dublin Cycling Campaign

Submission on Dodder Greenway - Dodder Valley Park to Kilvere

Dublin Cycling Campaign is a registered charity that advocates for better cycling conditions in Dublin. Our vision for Dublin is a place with a cycle friendly culture, where everyone has a real choice to cycle and is encouraged to experience the joy, convenience, health and environmental benefits of cycling.

We broadly welcome the proposals to connect the Dodder Greenway between Dodder Valley Park and Kilvere. While also welcoming the presentation of the proposals online, we would like to see in all future online presentations that:

- Schemes of this nature should also include detailed 3D visualisations, for the average citizen to clearly understand
- The drawings displayed should be easily readable with clear instructions on how to manipulate them and increase the size

Essential Elements

Regardless of which option is chosen the following elements - many of which we commented on in our general Dodder Greenway submission of August 2018 – see https://www.dublincycling.com/cycling/dodder-greenway-route - need to be included, to ensure the design is up to greenway standard, and provides safe walking and cycling for all ages and abilities:

- The project team needs to clearly put the sustainable elements of transport, i.e. pedestrians, cyclists, and (in this case) buses first, above all other traffic elements, as outlined in the GDA DRAFT Transport Strategy and DMURS. In other words adequate and safe space to be provided.
- The project team needs to consider the needs and safety of disabled cyclists in any design decisions or when assessing any options and in making design decisions.
- The design needs to consider not only the needs and safety of cyclists on the Greenway, but also those joining or exiting at the various junctions, and locations along the route
- The design for the Blue Haven junction needs to include safe cycling connections to and from the Greenway from all arms of the junction
- Pedestrian and cycling facilities, should be segregated where possible
- Provision of buffer space (preferably vegetated verges) and kerb protection between the cycle facility and general traffic. Buffer space increases safety, gives an enhanced user feeling of safety and comfort, reduces / prevents casual illegal car parking and provides space for

people crossing the street / road on foot or bicycle. This type of segregation and buffer space may be particularly necessary on Butterfield Avenue where cars are currently routinely parked in the area of the proposed cycleway.

- Improvement to the public realm, in particular at the Blue Haven junction, such as the use of Sustainable Urban Drainage Schemes (SUDS), planting and landscaping which will make the cycle route more attractive to users
- Provide a high level of priority to sustainable modes of transport at crossings at junctions. Wait times at any push buttons should be minimised and the number of opportunities to progress maximised.
- The sequencing of the traffic signals at junctions is a critical element in ensuring that any new junction designs are successful, particularly in ensuring the safety and coherence of cyclists and pedestrians at junctions.
- Full size bus stop bypassess should be provided at all stops where possible.
- Ensure that clear directional signage is provided throughout, to enable users to navigate the route safely and easily.
- Care needs to be taken with tree planting close to the cycle tracks to ensure that the roots will not interfere with the surface in future years, and that foliage is not an obstruction, bearing in mind that a helmeted cyclist is several cms higher than the tallest pedestrian. Regular cleaning of the cycle tracks and footpaths will be needed to ensure a safe and comfortable surface.

Principles

We as cycling advocates, want to ensure that the below principles are adhered to in the basic design concept:

Cycling for All

The goal of the cycle routes must be to enable people of all ages and abilities to cycle. Cycling can be an option for many if designed correctly. If the cycle routes do not measure up to international best practices we will not see kids cycling to school with their parents, teenagers cycling to the cinema, commuters cycling to work or older people cycling to the shops. Only by enabling many people to cycle, by making it a realistic choice, can we deliver the potential modal shift changes. Whenever a new person starts cycling, society reaps the benefits of improved public health, reduced congestion, and better liveability for our urban places. The maximum benefits of cycling are only achieved by designing cycle routes that enable the largest cross-section of society to cycle.

Shared Space

Shared paths do not serve either pedestrians or cyclists well and invariably lead to irritation, conflict and the potential for collisions. Increased sales of electric-assisted bikes (or e-bikes) in the locality will mean that average speeds of cyclists (especially those commuting) could be higher than observed previously. Furthermore, the flat, off-road route would be ideal for use by those on electric scooters, which will likely continue to increase in popularity with the introduction of legislation to regulate their use which is being drafted presently, so this is an additional variable that should be considered.

Scheme Objectives

The stated objectives of the Options Report include “minimising the impacts [of the Dodder Greenway] to the traffic performance.” We believe a vital, but missing, objective is to encourage a significant modal shift to cycling. The Dodder Greenway runs through populated areas of the city, and will provide a safe, and attractive transport option for commuting, school runs, shopping and leisure trips. Cycles are traffic too, and should be considered as part of “traffic performance”.

In Section 10.5 of the NTA’s draft GDA Transport Strategy 2022-2042, the NTA specifically calls for local authorities to improve junctions which were "designed to cater for the maximum throughput of motorised traffic" and which “are not conducive to the promotion and facilitation of walking and cycling, in particular for local trips”.

The NTA has recommended “the creation of more compact junctions through the removal of slip lanes and/or the narrowing of carriageway entries / exits”, as well as the introduction of “all movements” pedestrian crossings at junctions.

Option 1 Comments (preferred option)

Option Choice

Of the three options presented, Option 1 is our preferred option but with a variety of modifications:

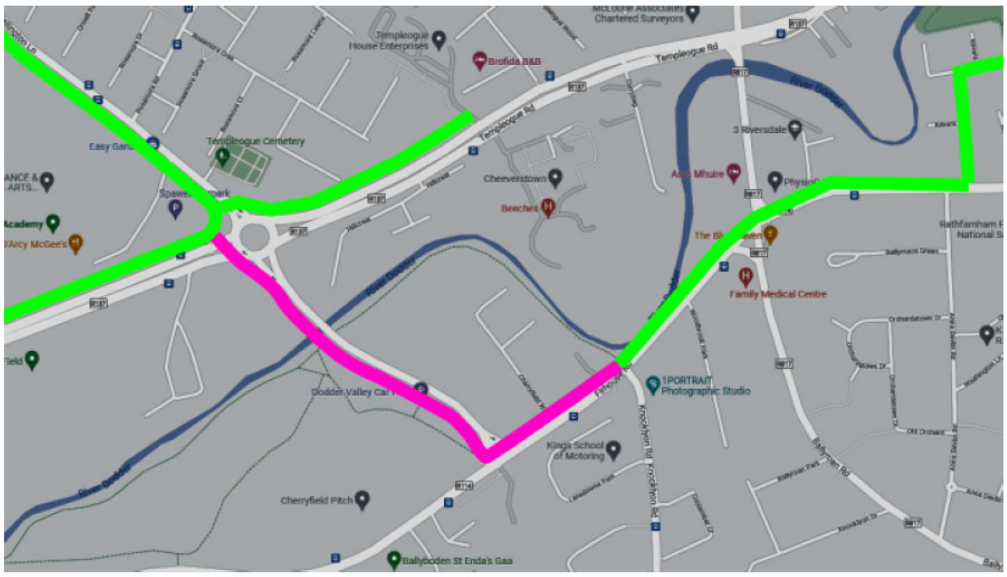
- It provides the most direct route for cyclists traveling in either direction
- It continues the greenway experience along this section
- It provides wobble room for inexperienced cyclists and will enable parents to cycle alongside their children

We welcome in particular the following elements of option 1:

- Two-way cycle track along Firhouse Road and Butterfield Avenue
- Segregated cycle tracks on Wellington Lane/Spawell Link Road

We would like to see the following improvements to option 1:

- Cyclops or Dutch style junction at the Blue Haven
- Inclusion of raised off-road cycle tracks on the approach to the Blue Havenjunction from Old Bridge Road and Ballyroan Road (as shown in Option 2)
- More space for cyclists at the bus-stop bypasses
- Retention of the existing cycle lane on the south side of the Firhouse Road
- Reduction of the traffic lane widths on Wellington Lane/Spawell Link Road and
- Butterfield Avenue with the space reallocated to wider cycle tracks, a minimum of 2m.
- Greater priority to cyclists and pedestrians with longer crossing times and and shorter wait times at signalised junctions
- Extending the two-way cycle track to connect Knocklyon Rd to the proposed two-way cycle track at Wellington Lane (see pink line on map below). This would help to connect existing and planned high quality two-way tracks in the area.



In the following sections we give detailed comments on each of the three options presented.

Option 1 Comments

Drawing Number 1501

We welcome

- The inclusion of bus stop bypasses
- The upgrade of the pedestrian crossing to a toucan crossing - but see comment below
- The segregation between the footpath and cycle track
- The separate crossings for pedestrians and cycles at the Wellington Lane junction

1. Segregation of the cycle track and the bus lane is required, ideally using physical barriers, to make the route safe for inexperienced cyclists and children, many of whom will be using these routes to access the Ballyboden St Endas (BBSE) club facilities. We would like to see a vegetated buffer separating cycling from bus and general lanes where at all possible. There is an existing segregated cycle track between the Spawell Link Rd Junction and Pine Grove (photo below) and we would really like to see this retained but with the cycle track widened. There are many high quality aspects to this section of cycle track including green verges separating cycling from general lanes and pedestrians from cycling. The existing bus stop bypass is also an excellent layout and has operated successfully for years, as the grass verges ensure pedestrians and cyclists can observe and anticipate each other's movements and react accordingly at a clear crossing point. The trees also serve to act as a wind barrier to cyclists heading towards Firhouse. We believe the council should be looking to replicate this level of cycling quality where possible, not relocating the cycle track to directly beside bus and general lanes.

Existing track and bus stop on Firhouse Rd

2. More space is required for cyclists at the relocated bus stop opposite BBSE. It should cut into the park slightly, as has been done in Options 2 and 3. The other two bus stop bypasses seem unnecessarily narrow also, given the amount of space to play with. Dimensioning is not provided on the exhibited drawing at these locations.
3. In all 3 options, stop lines are drawn before the cycle track, which is a welcome priority for cyclists.
4. We suggest that the location of the Toucan crossing be reconsidered to enable more direct access for cyclists and pedestrians into the BBSE grounds.
5. At the Toucan crossing, ensure that poles for traffic lights are not placed in the cycle track (unlike the setup at the new carpark and bridge into Bushy Park). This crossing is overly wide and crossing distances could be reduced by separating the cycle tracks from the crossing.
6. The bus lane continues all the way to the traffic lights. We would like to see clear protection of the bus lane leading up to and through the junction to prevent cars from cutting into the bus lane when turning left. This would ensure cars are perpendicular to the cycle lane when they cross it, reducing risk to cyclists of being left hooked.
7. An Advanced Stop Line (ASL) should be provided at Wellington Lane to facilitate experienced cyclists who plan to do a right turn.
8. The proposed junction protection could be improved, and full Dutch design would be far safer.
9. Provide stacking space for cyclists waiting to turn right onto Wellington Lane. Bus priority at traffic lights could be provided for traffic coming from the Blue Haven direction to enable this. This seems to be the approach taken in Options 2 &3.

Drawing Number 1502

10. The option 1 design for Wellington Lane/Spawell is preferable to other options, as it maintains segregation and there is no shared space.
11. The traffic lanes are 3.25m width at the tightest point over the bridge (Section 2-2). We question whether they need to be so wide. A reduction in the traffic lane width to 3m would permit a minimum width of 2m for the cycle track

12. The location of the Toucan crossing should ensure clear access to the main greenway route. It is not clear from this drawing whether this is facilitated. Ensure there are no poles in the cycle track at the toucan crossing.
13. A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1503

14. The bus stop bypass appears to be far too narrow. Dimensions are not supplied. The road alignment needs to be shifted slightly, as there's adequate space available on the opposite side of the road.
15. The Knocklyon Road junction crossing is a very wide junction, with a long crossing time for pedestrians and a long-exposed section with no protection for cycles. The junction width needs to be narrowed/redesigned, with reduced corner radii.
16. Is there a need for two separate main traffic lanes on all arms?
17. We fail to understand why the bus lane feature is not part of the eastern leg of this junction.
18. On the exhibited drawing it is not clear if the existing traffic light system is proposed to be retained. If so, ASLs should be a feature of the Knocklyon Road and western Firhouse Road legs.
19. We request the Council to examine the option of providing a Dutch or Cyclops junction in line with international best practice at this location. We wish to refer you to a junction document we submitted to the NTA as part of the latest round of Busconnects consultations. The document can be found at this link (https://www.dubcyc.ie/hubfs/BusConnects%20Round%203/Junction%20Design%20Final.pdf)
20. On the Wellington Lane/Firhouse Road Junction ASLs should be included on the Spawell/Wellington Lane arm and the Eastern leg of the Firhouse Road, to facilitate cycling right turns. Is there a need for two separate main traffic lanes on all arms?
21. The two-way cycle track on the northside of Firhouse Road is a good idea, although the removal of the existing (murder strip) cycle lane on the south side is a bad idea. The retention of this south side cycle lane is critical for cyclists coming off Ballyroan Road and taking a left on to Firhouse Road. This should be realigned and segregated as in Options 2 & 3. There is plenty of space available to do both, and no trees will be affected.
22. We suggest that the major exits from private property along this section should have clear STOP lines behind the footpath, to protect vulnerable road users.

Drawing Number 1504

As this is the preferred option we have assessed it in more detail below.

We welcome the following elements and we would like to see them incorporated into the final design:

- the two-way cycle track provided for the greenway
- the removal of the left slip lanes from Old Bridge Road to Butterfield Avenue, and from Firhouse Road to Old Bridge Road, but recommend that a bike only left slip lane be included from Old Bridge Road to Butterfield Avenue
- the provision of pedestrian crossings across each arm

We request the following and we would like to see these requests incorporated into the final design:

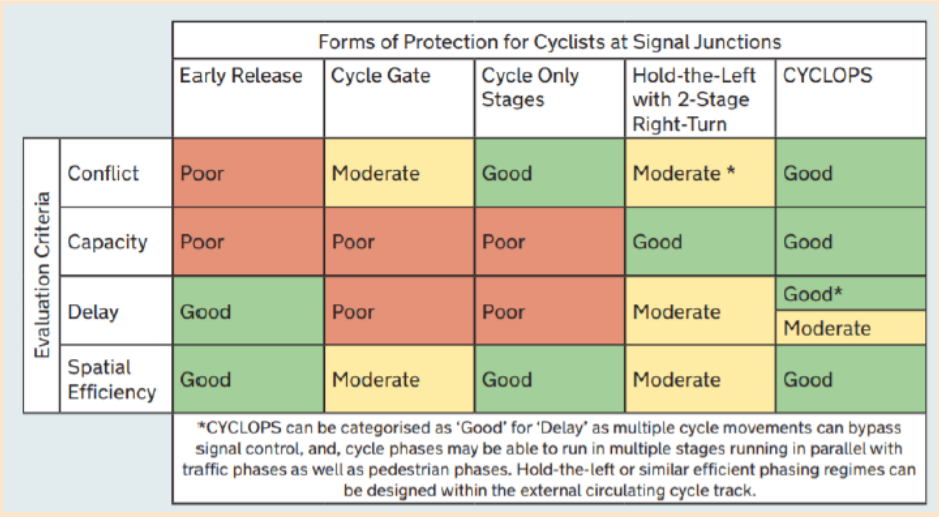
23. <u>The overall configuration of the junction arms and the junction design should be reconsidered to make it easier for all vulnerable road users to negotiate it with priority and comfort from all directions.</u>

24. The left slip traffic lane from Ballyroan Road to Firhouse Road should also be removed in line with NTA policy, but retained for cycling (as per the latest NTA strategy).
25. The cycle lane on Ballyroan Road should continue up to the junction, for cyclists heading to Old Bridge Road. An ASL should be included for cyclists wishing to turn right on to the new Dodder Greenway route.
26. We see no clear design for cyclists coming from Ballyroan Road and wanting to connect with the Dodder Greenway. This needs to be rectified.
27. As referred to re Drawing Number 1503 a cycle lane should be provided on the south side of the Firhouse Road between Ballyroan Road and Knocklyon Road junctions if possible.
28. We request ASLs are provided in all lanes to accommodate people who are cycling on the road.
29. On the two-way cycle track 2 sets of stop lines are provided for people cycling in a straight movement, it should be 1.
30. Safe and segregated cycling access should be provided from Templeogue Bridge - this is the primary access to the Greenway for many residents.
31. Where possible, buffer space (preferably vegetated verge + kerb) should be provided between the cycle tracks and general/bus lanes. The two-way cycle track section on the Firhouse Road and Blue Haven junction should then be widened to 4m where possible.
32. The cycle lanes should be upgraded to raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (similar to as shown in Option 2 but within the left turn slip at Ballyroan).
33. The Bus Lane along Firhouse Road (west of junction) should be continued right up to the junction, and main traffic lanes reduced to 2 lanes.
34. Firhouse Rd - The space for the hatching in the median should be repurposed as buffer space to cycle tracks and a bus stop bypass should be provided on the south side of Firhouse Rd. It is illegal to drive onto hatched areas to overtake buses (and other traffic) in any case.

We really like the option of the 2-way cycle track however we feel the junction layout presented in Option 1 does not fully deliver on the 5 needs of cycling outlined in Section 1.2 of the National Cycle Manual, sustainable safety or prioritise users as required by DMURS.

In Appendix A we have assessed the junction according to UK guidance LTN 120, and it emerges with a score of only 20% (fail).

In relation to the junction type and options considered, the Options Report outlines how a Cyclops style junction without a slip lane off Ballyroan was discounted (Option 4), and states "*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*." However the associated diagram indicates an excessively tight turning radius was utilised in Option 4 (and 5) to assess the traffic flows. The UK Cyclops junction and Dutch style protected junctions are capable of being applied to similar junctions as the Blue Haven. The Cyclops was specifically developed to cater for junctions with similar geometry, including where slip lanes are provided and where general traffic flows are a concern. This is a summary table illustrating how a UK Cyclops junction compares against other junction types.



		Forms of Protection for Cyclists at Signal Junctions				
		Early Release	Cycle Gate	Cycle Only Stages	Hold-the-Left with 2-Stage Right-Turn	CYCLOPS
Evaluation Criteria	Conflict	Poor	Moderate	Good	Moderate *	Good
	Capacity	Poor	Poor	Poor	Good	Good
	Delay	Good	Poor	Poor	Moderate	Good* / Moderate
	Spatial Efficiency	Good	Moderate	Good	Moderate	Good

*CYCLOPS can be categorised as 'Good' for 'Delay' as multiple cycle movements can bypass signal control, and, cycle phases may be able to run in multiple stages running in parallel with traffic phases as well as pedestrian phases. Hold-the-left or similar efficient phasing regimes can be designed within the external circulating cycle track.

Extract from "CYCLOPS – Creating Protected Junctions" Link to Cyclops Guidance Note

The guidance note concludes "CYCLOPS maximises the opportunities for safe cycling and walking whilst optimising the overall junction performance for all modes." We were therefore surprised to see this junction type discounted from consideration on grounds of not being able to provide the traffic flows.

We therefore request the Council to reexamine the option of providing a Dutch or Cyclops junction in line with international best practice at this location, while using an appropriate left turn radius from Ballyroan Rd in the assessment. Both of these junction types can offer the following advantages which can be of benefit to people walking, cycling and in motor vehicles:

- Decreased pedestrian crossing distances & pedestrians can cross less lanes in one single crossing.
- Decreased cycling crossing distances.
- Pedestrian and cycling signalised crossing of the road can be run in parallel.
- The above then frees up green signal time within the junction cycle, meaning:
    - more pedestrian & cycling crossing opportunities can be provided, therefore less standing/waiting to cross the road and/or
    - more green time is available for general traffic flow.

We also wish to refer you to a junction document we submitted to the NTA as part of the latest round of Busconnects consultations. The document can be found at this link

Drawing Number 1505

35. The width of the main traffic lanes should be reduced to 3m, to allow for a 4m wide two-way cycle track and to increase the width of the northbound footpath.
36. The existing pedestrian crossing close to Kilvere should ideally be relocated to the east of Kilvere junction and upgraded to a Toucan crossing, to facilitate cyclists travelling westwards on Butterfield Avenue to enter the Greenway.

37. The design of the Kilvere junction should be redesigned, to make it easier for cyclists of all ages and abilities to link into the Greenway from Kilvere. We note that Kilvere is already busy with parked cars for people who are using the greenway.
38. This is also a critical point for directional signage, as referred to generally in Section 2 above.
39. What segregation will be provided between the 2-way cycle track and the carriageway? There should be some buffer space between the 2 to provide for inexperienced cyclists. And the cycle tracks need to be protected from illegal parking along this section of the road.
40. The existing footpaths on either side of Butterfield Ave are not shown in the drawing although they are shown in the cross-section. There appears to be no provision to segregate the pedestrians on the footpath from the cycle track. Both pedestrians (and their dogs) and cyclists will be encroaching on each others' spaces.
41. Exits from private properties should give a clear right-of-way to cyclists.

Option 2 Comments

While our clear preference is for option 1 we have included comments on Option 2 and 3 below.

General Comments

We welcome:

- The raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road.

We don't like

- The Shared Space for Cyclists and Pedestrians proposed along Wellington Lane. This is a disimprovement on the current situation.

Drawing Number 1511

We welcome the bus stop bypasses and the upgrade of pedestrian crossings to toucan crossings.

We are concerned that the filter lane on the inside of the cycle lane will put cyclists at risk from left turning traffic.

Drawing Number 1512

The shared paths for cyclists and pedestrians is a disimprovement on the current situation. Shared paths do not serve either pedestrians or cyclists well and invariably lead to conflict and the potential for collisions.

As discussed for option 1, the width of the traffic lanes should be reduced to 3m, which will allow for segregated footpaths and cycle tracks.

A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1513

We welcome the upgrade of the pedestrian crossing to a toucan crossing.

Better segregation between the cycle track and the bus lane is desirable. For example the 2m grass verge could be split to have a 1m grass verge between the footpath and the cycle track, and 1m between the cycle track and the bus lane.

Similarly, better segregation between the cycle track and bus lane is desirable on the southbound approach to the Knocklyon Road junction.

The Knocklyon Road crossing is a very wide junction, with a long crossing time for pedestrians and a long exposed section with no protection for cycles. The junction width needs to be narrowed, with reduced corner radii.

Drawing Number 1514

We like the raised off-road cycle tracks on the approach from all arms of the junction.

The left slip lane from Ballyroan Road to Firhouse Road should be removed to improve safety for cyclists who are continuing straight on.

Drawing Number 1515

The toucan crossing should be moved to line up with Kilvere to facilitate pedestrians and cyclists traveling from Kilvere westwards.

Option 3 Comments

General Comments

We welcome:

- Proposed cycle tracks on both sides of Firhouse Road and Spawell Link Road.
- Proposed traffic calming measures at Ballyroan Road left turning slip.

We don't like:

- The layout pushes cyclists to move through Blue Haven Junction in conjunction with the vehicular traffic.
- Shared cyclist/pedestrian path along Wellington Lane

Drawing Number 1521

We are concerned that the filter lane on the inside of the cycle lane will put cyclists at risk from left turning traffic.

Drawing Number 1522

The shared paths for cyclists and pedestrians is a disimprovement on the current situation. Shared paths do not serve either pedestrians or cyclists well and invariably lead to conflict and the potential for collisions.

As discussed for option 1, the width of the traffic lanes should be reduced to 3m, which will allow for segregated footpaths and cycle tracks.

A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1523

We welcome the upgrade of the pedestrian crossing to a toucan crossing.

Better segregation between the northbound cycle track and the bus lane is desirable. For example the 2m grass verge could be split to have a 1m grass verge between the footpath and the cycle track, and 1m between the cycle track and the bus lane.

Similarly, better segregation between the cycle track and bus lane is desirable on the southbound approach to the Knocklyon Road junction.

The Knocklyon Road crossing is a very wide junction, with a long crossing time for pedestrians and a long exposed section with no protection for cycles. The junctionwidth needs to be narrowed, with reduced corner radii.

Drawing Number 1524

The cycle lanes should be upgraded to raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (as shown in Option 2).

The cycle lane from Old Bridge Road should continue and connect with the cycle lane on Butterfield Avenue.

The slip road from Ballyroan Road to Firhouse Road should be removed.

Drawing Number 1525

The toucan crossing should be moved to line up with Kilvere to facilitate pedestrians and cyclists traveling from Kilvere westwards.

Conclusion

This section of the Dodder Greenway is key to ensuring a continuous, safe greenway through South Dublin. We think there are a number of design possibilities along this route that could be improved for pedestrians and cyclists.

We trust that our observations will be taken into account as the design for this scheme progresses from a concept design to a preliminary design. We would be happy to engage with the council on any of the points raised above. And we look forward to engaging with the council as the design progresses.

Yours sincerely

Muireann O'Dea
Dublin Cycling Campaign
South Dublin Sub-Group
muireann.odea@gmail.com
Tel 086 179 1128

Chief Executives Responses:

Drawing Number 1501

1. CSEA have reviewed the designed to include, where possible, vegetated buffer between proposed cycle track and carriageway.
2. CSEA have reviewed the design to increase, where possible, the width of the proposed pedestrian and cyclists' facilities around the bus stop opposite of the BBSE.
3. Comments on stop lines are note.
4. CSEA considers that the toucan crossing at BBSE is proposed at an optimum location and has sufficient width to cater, safely, for pedestrians and cyclists. The toucan crossing is located aligned with the existing entrances to the Dodder Valley Park and to the BBSE. CSEA have reviewed the design and included upgrade works for both entrances.
5. Please note that prior to a Part 8 application (statutory public consultation), a road safety audit has been carried out and the recommendations of such audit have been introduced on the scheme.
6. CSEA have reviewed the design to include a segregation between the bus lane and the regular lane on approach to the Wellington Lane junction (from west) to avoid car going into the bus lane to make the left turn.
7. The proposal intends to encourage cyclists to use the proposed facilities by providing a dedicated cycling traffic lights phase on the major junction within the scheme (Blue Heaven and Wellington Lane). That way, cyclists are unimpeded to move throughout the junction.
   At Knocklyon junction, cyclists are expected to use the proposed toucan crossing to cross Firhouse Road and access the single lane cycle track on the southern side of Firhouse Rd heading west.
8. CSEA considers that the junction design reflects a Dutch/cyclops design where cycle tracks are protected with a kerb or concrete island and have a dedicated traffic lights phase for cyclists.
9. A dedicated traffic lights phase is proposed for cyclists so that they are not stacked on the cycle track waiting to turn right.

Drawing Number 1502

10. Preference is noted.
11. A minimum traffic lane width of 3.25m has been applied to Wellington Lane based on the existing traffic volumes and on the classification status of this existing Regional Road. For the vast majority of Wellington Lane, a minimum width of 2m is provided, on both sides of Wellington Lane, for the proposed cycle tracks. At the existing bridge on Wellington Road, due to lack of space available (pinch point) and in order to achieve a minimum traffic lane width of 3.25m, the cycle tracks widths proposed are slightly reduced to 1.93m as detailed on section 2-2 of drawing 1502.
12. Pedestrian and Cyclist access to the main Dodder Greenway route within Dodder Valley Park is facilitated under the Dodder Phase 3 Scheme (currently under construction). It includes a ramped access through the upgraded Dodder Valley Car Park that ultimately provides linkage to the Dodder Greenway constructed within the confines of Dodder Valley Park.

13. A stop line has been included, at part 8 stage, on the exist of the Dodder Valley Car Park.

Drawing Number 1503

14. CSEA have reviewed the design and relocated the bus stop approximately 20m to the west where space availability is better.
15. CSEA have undertaken an engineering design review on the Knocklyon-Firhouse Rd junction and have amended the design based on such review.
16. Yes. If traffic lanes are reduced, the junction traffic performance deteriorates significantly.
17. Because from Ballyroan Road to Knocklyon Road there is only one lane going straight.
18. The existing traffic lights will be retained and improved. The proposed layout intends to have a separate traffic lights phase for pedestrians and cyclists (toucan crossings), which will avoid conflicts between vehicles and cyclists throughout the junction. Therefore, during the cyclists traffic lights phase, cyclists are free to safely move, within the cycle lanes/tracks, around the junction.
19. CSEA have reviewed the junction design and concluded that a Dutch/Cyclops layout are not feasible at this junction.
20. CSEA notes that a ASL is not required as cyclists will have a dedicated traffic lights phase to move around the junction.
21. Cyclists intending to turn left onto Firhouse Road from Ballyroan Road are expected to enter the two-way cycle track (greenway) and not cycle on the southern side of Firhouse Rd. For cyclists arriving at the Blue Haven Junction from Ballyroan Road and intending to turn left, a dedicated traffic lighting phase is proposed so that they can cross the junction safely through the proposed toucan crossings and enter the greenway.
22. The design of private entrances crossing the proposed pedestrian and cyclists' facilities have been designed in accordance with the NTA's National Cycle Manual and the 'Preliminary Design Guidance Booklet for BusConnects'

Drawing Number 1504

23. The proposed layout includes dedicated traffic lights phase for all road users.
24. The traffic performance of the junction deteriorates significantly with the removal of the left turning slip on Ballyroan Road.
25. The proposed layout intends to encourage cyclists to cross the Blue Haven Junction through the proposed pedestrian/cyclists' crossing points during a dedicated traffic lighting phase.
26. Cyclists intending to enter the Dodder Greenway from Ballyroan Road are expected and encouraged to cross the Blue Haven Junction through the pedestrian/cyclists crossing facilities provided during a dedicated traffic lighting phase and join the two-way cycle track.
27. Cyclists intending to turn left onto Firhouse Road from Ballyroan Road are expected to enter the two-way cycle track (greenway) and not cycle on the southern side of Firhouse Rd.
28. CSEA notes that a ASL is not required as cyclists will have a dedicated traffic lights phase to move around the junction.
29. Comments on double stope line is noted and will be reviewed.
30. The proposed project scope does not extend to the existing Templeogue Bridge. Connections to the existing facilities at Old Bridge Road are being provided. A Cycle Lane on the south side of Firhouse Road is deemed redundant as cycling facilities are provided on the north side of the road.
31. CSEA have reviewed the design and increased, where possible the width of the proposed two-way cycle track.
32. CSEA have reviewed the design and concluded that a raised off-road cycle track on the approach to the Blue Heaven Junction from Old Bridge Road and Ballyroan Road are not feasible for these arms.

33. A reduction of traffic lanes to two would result on a significant deterioration of the traffic performance on the junction.
34. CSEA have reviewed the design and amended bus stop by-pass layout in accordance with Preliminary Design Guidance Booklet for BusConnects'.A bus stop bypass is not necessary on the southern side of the road, there is an existing bus stop at this location.

Drawing Number 1505

35. CSEA have undertaken an engineering design review of the road cross section and amended the design on Butterfield Ave.
36. Existing toucan crossing will be retained.
37. Kilvere Junction have been reviewed at to make it safer for all road users.
38. Suggestions regarding locations for directional signage will be reviewed.
39. A kerb line is proposed to segregate the two-way cycle track from the road and from the footpath. Please refer to Section 5-5 for further information.
40. Existing footpaths on the northern side of Butterfield Ave will be retained.
41. The design of private entrances crossing the proposed pedestrian and cyclists' facilities have been design in accordance with the NTA's National Cycle Manual.

Chief Executives Recommendations:

1. Changes were proposed following the review of this submission

4 Conclusion and Chief Executive Recommendations

4.1 Conclusion

Following review of all submissions received during the non-statutory public consultation period CSEA concluded that 84.29% of stakeholders support or partially support the emerging preferred route for the scheme.

The following table is an analysis of the number of submissions received for the scheme.

Total number of Submissions	**70 (100%)**		
Supports the Scheme	32	45.72%	84.29%
Partially Supports the Scheme	27	38.57%	
Do not Support the Scheme	11	15.71%	

4.2 Recommendations

Following consideration of the submissions the Chief Executive is of the view that the issues raised by way of the submissions can be satisfactorily addressed as outlined in the foregoing report.

The report recommended the following:

- Introduction of a buffer space between proposed cycle tracks and traffic lanes
- Increased width for the two-way cycle track where possible
- More space on bus stop bypass
- Upgrades to Knocklyon Junction

Appendix A – Dublin Cycling Campaign Submission

Dublin Cycling Campaign
% Tailor's Hall,
Back Lane,
Dublin 8

14 January 2022

Submission on Dodder Greenway - Dodder Valley Park to Kilvere

1.0 Introduction

Dublin Cycling Campaign is a registered charity that advocates for better cycling conditions in Dublin. Our vision for Dublin is a place with a cycle friendly culture, where everyone has a real choice to cycle and is encouraged to experience the joy, convenience, health and environmental benefits of cycling.

We broadly welcome the proposals to connect the Dodder Greenway between Dodder Valley Park and Kilvere. While also welcoming the presentation of the proposals online, we would like to see in all future online presentations that:

1. Schemes of this nature should also include detailed 3D visualisations, for the average citizen to clearly understand
2. The drawings displayed should be easily readable with clear instructions on how to manipulate them and increase the size

2.0 Essential Elements

Regardless of which option is chosen the following elements - many of which we commented on in our general Dodder Greenway submission of August 2018 - see https://www.dublincycling.com/cycling/dodder-greenway-route - need to be included, to ensure the design is up to greenway standard, and provides safe walking and cycling for all ages and abilities:

- The project team needs to clearly put the sustainable elements of transport, i.e. pedestrians, cyclists, and (in this case) buses first, above all other traffic elements, as outlined in the GDA DRAFT Transport Strategy and DMURS. In other words adequate and safe space to be provided.
- The project team needs to consider the needs and safety of disabled cyclists in any design decisions or when assessing any options and in making design decisions.
- The design needs to consider not only the needs and safety of cyclists on the Greenway, but also those joining or exiting at the various junctions, and locations along the route
- The design for the Blue Haven junction needs to include safe cycling connections to and from the Greenway from all arms of the junction
- Pedestrian and cycling facilities, should be segregated where possible
- Provision of buffer space (preferably vegetated verges) and kerb protection between the cycle facility and general traffic. Buffer space increases safety, gives an enhanced user feeling of safety and comfort, reduces / prevents casual illegal car parking and provides space for people crossing the street / road on foot or bicycle. This type of segregation and buffer space may be particularly necessary on Butterfield Avenue where cars are currently routinely parked in the area of the proposed cycleway.
- Improvement to the public realm, in particular at the Blue Haven junction, such as the use of Sustainable Urban Drainage Schemes (SUDS), planting and landscaping which will make the cycle route more attractive to users
- Provide a high level of priority to sustainable modes of transport at crossings at junctions. Wait times at any push buttons should be minimised and the number of opportunities to progress maximised.
- The sequencing of the traffic signals at junctions is a critical element in ensuring that any new junction designs are successful, particularly in ensuring the safety and coherence of cyclists and pedestrians at junctions.
- Full size bus stop bypassess should be provided at all stops where possible.
- Ensure that clear directional signage is provided throughout, to enable users to navigate the route safely and easily.

- Care needs to be taken with tree planting close to the cycle tracks to ensure that the roots will not interfere with the surface in future years, and that foliage is not an obstruction, bearing in mind that a helmeted cyclist is several cms higher than the tallest pedestrian. Regular cleaning of the cycle tracks and footpaths will be needed to ensure a safe and comfortable surface.

3.0 Principles

We as cycling advocates, want to ensure that the below principles are adhered to in the basic design concept:

Cycling for All

The goal of the cycle routes must be to enable people of all ages and abilities to cycle. Cycling can be an option for many if designed correctly. If the cycle routes do not measure up to international best practices we will not see kids cycling to school with their parents, teenagers cycling to the cinema, commuters cycling to work or older people cycling to the shops. Only by enabling many people to cycle, by making it a realistic choice, can we deliver the potential modal shift changes. Whenever a new person starts cycling, society reaps the benefits of improved public health, reduced congestion, and better liveability for our urban places. The maximum benefits of cycling are only achieved by designing cycle routes that enable the largest cross-section of society to cycle.

Shared Space

Shared paths do not serve either pedestrians or cyclists well and invariably lead to irritation, conflict and the potential for collisions. Increased sales of electric-assisted bikes (or e-bikes) in the locality will mean that average speeds of cyclists (especially those commuting) could be higher than observed previously. Furthermore, the flat, off-road route would be ideal for use by those on electric scooters, which will likely continue to increase in popularity with the introduction of legislation to regulate their use which is being drafted presently, so this is an additional variable that should be considered.

4.0 Scheme Objectives

The stated objectives of the Options Report include *"minimising the impacts [of the Dodder Greenway] to the traffic performance."* We believe a vital, but missing, objective is to encourage a significant modal shift to cycling. The Dodder Greenway runs through populated areas of the city, and will provide a safe, and attractive transport option for commuting, school runs, shopping and leisure trips. Cycles are traffic too, and should be considered as part of "traffic performance".

In Section 10.5 of the NTA's draft GDA Transport Strategy 2022-2042, the NTA specifically calls for local authorities to improve junctions which were *"designed to cater for the maximum throughput of motorised traffic"* and which "*are not conducive to the promotion and facilitation of walking and cycling, in particular for local trips".*

The NTA has recommended ***"the creation of more compact junctions through the removal of slip lanes and/or the narrowing of carriageway entries / exits"***, as well as the introduction of "*all movements*" pedestrian crossings at junctions.

5.0 Option 1 Comments (preferred option)

5.1 Option Choice

Of the three options presented, Option 1 is our preferred option but with a variety of modifications:

- It provides the most direct route for cyclists traveling in either direction
- It continues the greenway experience along this section
- It provides wobble room for inexperienced cyclists and will enable parents to cycle alongside their children

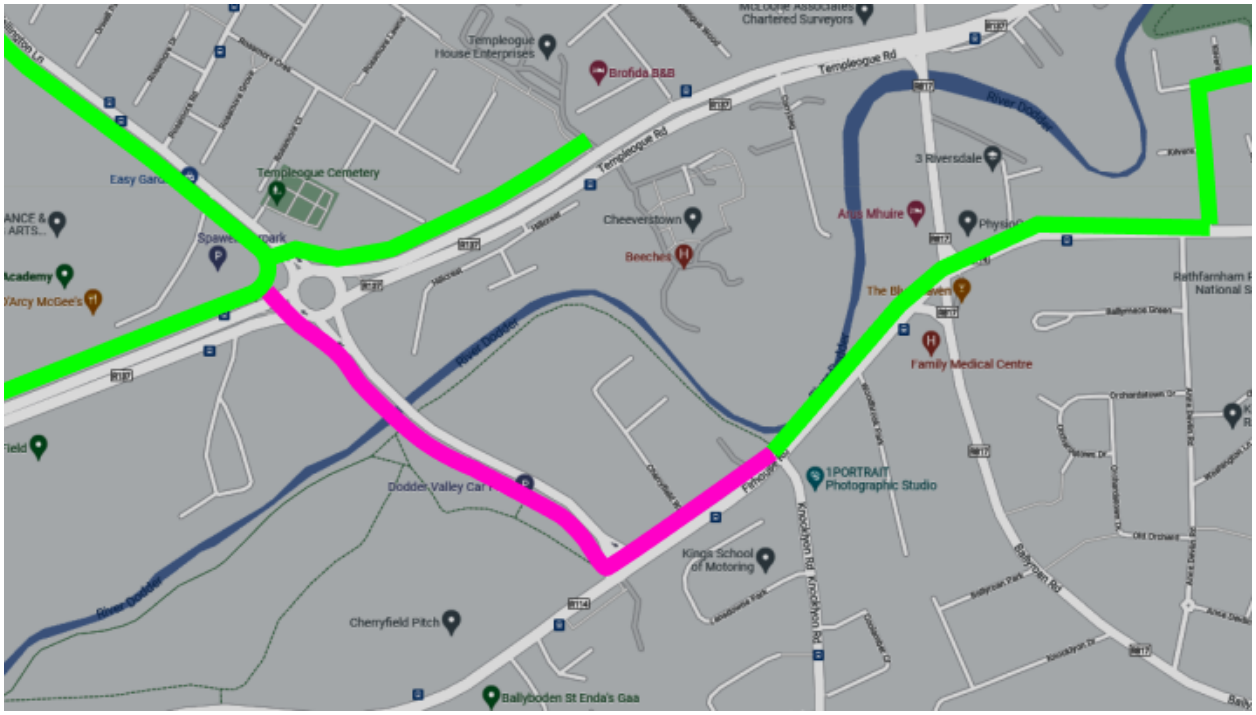
We welcome in particular the following elements of option 1:

- Two-way cycle track along Firhouse Road and Butterfield Avenue
- Segregated cycle tracks on Wellington Lane/Spawell Link Road

We would like to see the following improvements to option 1:

- Cyclops or Dutch style junction at the Blue Haven
- Inclusion of raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (as shown in Option 2)
- More space for cyclists at the bus-stop bypasses

- Retention of the existing cycle lane on the south side of the Firhouse Road
- Reduction of the traffic lane widths on Wellington Lane/Spawell Link Road and Butterfield Avenue with the space reallocated to wider cycle tracks, a minimum of 2m.
- Greater priority to cyclists and pedestrians with longer crossing times and and shorter wait times at signalised junctions
- Extending the two-way cycle track to connect Knocklyon Rd to the proposed two-way cycle track at Wellington Lane (see pink line on map below). This would help to connect existing and planned high quality two-way tracks in the area.



In the following sections we give detailed comments on each of the three options presented.

Drawing Number 1501

We welcome

- The inclusion of bus stop bypasses
- The upgrade of the pedestrian crossing to a toucan crossing - but see comment below
- The segregation between the footpath and cycle track
- The separate crossings for pedestrians and cycles at the Wellington Lane junction

Segregation of the cycle track and the bus lane is required, ideally using physical barriers, to make the route safe for inexperienced cyclists and children, many of whom will be using these routes to access the Ballyboden St Endas (BBSE) club facilities. We would like to see a vegetated buffer separating cycling from bus and general lanes where at all possible. There is an existing segregated cycle track between the Spawell Link Rd Junction and Pine Grove (photo below) and we would really like to see this retained but with the cycle track widened. There are many high quality aspects to this section of cycle track including green verges separating cycling from general lanes and pedestrians from cycling. The existing bus stop bypass is also an excellent layout and has operated successfully for years, as the grass verges ensure pedestrians and cyclists can observe and anticipate each other's movements and react accordingly at a clear crossing point. The trees also serve to act as a wind barrier to cyclists heading towards Firhouse. We believe the council should be looking to replicate this level of cycling quality where possible, not relocating the cycle track to directly beside bus and general lanes.

Existing track and bus stop on Firhouse Rd

More space is required for cyclists at the relocated bus stop opposite BBSE. It should cut into the park slightly, as has been done in Options 2 and 3. The other two bus stop

bypasses seem unnecessarily narrow also, given the amount of space to play with. Dimensioning is not provided on the exhibited drawing at these locations.

In all 3 options, stop lines are drawn before the cycle track, which is a welcome priority for cyclists.

We suggest that the location of the Toucan crossing be reconsidered to enable more direct access for cyclists and pedestrians into the BBSE grounds. At the Toucan crossing, ensure that poles for traffic lights are not placed in the cycle track (unlike the setup at the new carpark and bridge into Bushy Park). This crossing is overly wide and crossing distances could be reduced by separating the cycle tracks from the crossing.

The bus lane continues all the way to the traffic lights. We would like to see clear protection of the bus lane leading up to and through the junction to prevent cars from cutting into the bus lane when turning left. This would ensure cars are perpendicular to the cycle lane when they cross it, reducing risk to cyclists of being left hooked. An Advanced Stop Line (ASL) should be provided at Wellington Lane to facilitate experienced cyclists who plan to do a right turn.

The proposed junction protection could be improved and full Dutch design would be far safer.

Provide stacking space for cyclists waiting to turn right onto Wellington Lane. Bus priority at traffic lights could be provided for traffic coming from the Blue Haven direction to enable this. This seems to be the approach taken in Options 2 &3.

Drawing Number 1502

The option 1 design for Wellington Lane/Spawell is preferable to other options, as it maintains segregation and there is no shared space.

The traffic lanes are 3.25m width at the tightest point over the bridge (Section 2-2). We question whether they need to be so wide. A reduction in the traffic lane width to 3m would permit a minimum width of 2m for the cycle track

The location of the Toucan crossing should ensure clear access to the main greenway route. It is not clear from this drawing whether this is facilitated. Ensure there are no poles in the cycle track at the toucan crossing.

A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1503

The bus stop bypass appears to be far too narrow. Dimensions are not supplied. The road alignment needs to be shifted slightly, as there's adequate space available on the opposite side of the road.

The Knocklyon Road junction crossing is a very wide junction, with a long crossing time for pedestrians and a long exposed section with no protection for cycles. The junction width needs to be narrowed/redesigned, with reduced corner radii. Is there a need for two separate main traffic lanes on all arms? We fail to understand why the bus lane feature is not part of the eastern leg of this junction. On the exhibited drawing it is not clear if the existing traffic light system is proposed to be retained. If so, ASLs should be a feature of the Knocklyon Road and western Firhouse Road legs.

We request the Council to examine the option of providing a Dutch or Cyclops junction in line with international best practice at this location. We wish to refer you to a junction document we submitted to the NTA as part of the latest round of Busconnects consultations. The document can be found at this link

On the Wellington Lane/Firhouse Road Junction ASLs should be included on the Spawell/Wellington Lane arm and the Eastern leg of the Firhouse Road, to facilitate cycling right turns. Is there a need for two separate main traffic lanes on all arms?

The two-way cycle track on the northside of Firhouse Road is a good idea, although the removal of the existing (murder strip) cycle lane on the south side is a bad idea. The retention of this south side cycle lane is critical for cyclists coming off Ballyroan Road and taking a left on to Firhouse Road. This should be realigned and segregated as in Options 2 & 3. There is plenty of space available to do both, and no trees will be affected.

We suggest that the major exits from private property along this section should have clear STOP lines behind the footpath, to protect vulnerable road users.

Drawing Number 1504

As this is the preferred option we have assessed it in more detail below.

We welcome the following elements and we would like to see them incorporated into the final design:

- the two-way cycle track provided for the greenway
- the removal of the left slip lanes from Old Bridge Road to Butterfield Avenue, and from Firhouse Road to Old Bridge Road, but recommend that a bike only left slip lane be included from Old Bridge Road to Butterfield Avenue
- the provision of pedestrian crossings across each arm

We request the following and we would like to see these requests incorporated into the final design:

- The overall configuration of the junction arms and the junction design should be reconsidered to make it easier for all vulnerable road users to negotiate it with priority and comfort from all directions.
- The left slip traffic lane from Ballyroan Road to Firhouse Road should also be removed in line with NTA policy, but retained for cycling (as per the latest NTA strategy).
- The cycle lane on Ballyroan Road should continue up to the junction, for cyclists heading to Old Bridge Road. An ASL should be included for cyclists wishing to turn right on to the new Dodder Greenway route.
- We see no clear design for cyclists coming from Ballyroan Road and wanting to connect with the Dodder Greenway. This needs to be rectified.
- As referred to re Drawing Number 1503 a cycle lane should be provided on the south side of the Firhouse Road between Ballyroan Road and Knocklyon Road junctions if possible.
- We request ASLs are provided in all lanes to accommodate people who are cycling on the road.
- On the two-way cycle track 2 sets of stop lines are provided for people cycling in a straight movement, it should be 1.
- Safe and segregated cycling access should be provided from Templeogue Bridge - this is the primary access to the Greenway for many residents.
- Where possible, buffer space (preferably vegetated verge + kerb) should be provided between the cycle tracks and general/bus lanes. The two-way cycle track section on the Firhouse Road and Blue Haven junction should then be widened to 4m where possible.
- The cycle lanes should be upgraded to raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (similar to as shown in Option 2 but within the left turn slip at Ballyroan).

- The Bus Lane along Firhouse Road (west of junction) should be continued right up to the junction, and main traffic lanes reduced to 2 lanes.
- Firhouse Rd - The space for the hatching in the median should be repurposed as buffer space to cycle tracks and a bus stop bypass should be provided on the south side of Firhouse Rd. It is illegal to drive onto hatched areas to overtake buses (and other traffic) in any case.

We really like the option of the 2-way cycle track however we feel the junction layout presented in Option 1 does not fully deliver on the 5 needs of cycling outlined in Section 1.2 of the National Cycle Manual, sustainable safety or prioritise users as required by DMURS.

In Appendix A we have assessed the junction according to UK guidance LTN 120, and it emerges with a score of only 20% (fail).

In relation to the junction type and options considered, the Options Report outlines how a Cyclops style junction without a slip lane off Ballyroan was discounted (Option 4), and states "*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.*" However the associated diagram indicates an excessively tight turning radius was utilised in Option 4 (and 5) to assess the traffic flows. The UK Cyclops junction and Dutch style protected junctions are capable of being applied to similar junctions as the Blue Haven. The Cyclops was specifically developed to cater for junctions with similar geometry, including where slip lanes are provided and where general traffic flows are a concern. This is a summary table illustrating how a UK Cyclops junction compares against other junction types.

		Forms of Protection for Cyclists at Signal Junctions				
		Early Release	Cycle Gate	Cycle Only Stages	Hold-the-Left with 2-Stage Right-Turn	CYCLOPS
Evaluation Criteria	Conflict	Poor	Moderate	Good	Moderate *	Good
	Capacity	Poor	Poor	Poor	Good	Good
	Delay	Good	Poor	Poor	Moderate	Good* Moderate
	Spatial Efficiency	Good	Moderate	Good	Moderate	Good
		*CYCLOPS can be categorised as 'Good' for 'Delay' as multiple cycle movements can bypass signal control, and, cycle phases may be able to run in multiple stages running in parallel with traffic phases as well as pedestrian phases. Hold-the-left or similar efficient phasing regimes can be designed within the external circulating cycle track.				

Extract from "CYCLOPS – Creating Protected Junctions" Link to Cyclops Guidance Note

The guidance note concludes "*CYCLOPS maximises the opportunities for safe cycling and walking whilst optimising the overall junction performance for all modes.*" We were therefore surprised to see this junction type discounted from consideration on grounds of not being able to provide the traffic flows.

We therefore request the Council to reexamine the option of providing a Dutch or Cyclops junction in line with international best practice at this location, while using an appropriate left turn radius from Ballyroan Rd in the assessment. Both of these junction types can offer the following advantages which can be of benefit to people walking, cycling and in motor vehicles:

1. Decreased pedestrian crossing distances & pedestrians can cross less lanes in one single crossing.
2. Decreased cycling crossing distances.
3. Pedestrian and cycling signalised crossing of the road can be run in parallel.
4. The above then frees up green signal time within the junction cycle , meaning:
    a. more pedestrian & cycling crossing opportunities can be provided, therefore less standing/waiting to cross the road and/or
    b. more green time is available for general traffic flow.

We also wish to refer you to a junction document we submitted to the NTA as part of the latest round of Busconnects consultations. The document can be found at this link

Drawing Number 1505

The width of the main traffic lanes should be reduced to 3m, to allow for a 4m wide two-way cycle track and to increase the width of the northbound footpath.

The existing pedestrian crossing close to Kilvere should ideally be relocated to the east of Kilvere junction and upgraded to a Toucan crossing, to facilitate cyclists travelling westwards on Butterfield Avenue to enter the Greenway. The design of the Kilvere junction should be redesigned, to make it easier for cyclists of all ages and abilities to link into the Greenway from Kilvere. We note that Kilvere is already busy with parked cars for people who are using the greenway.

This is also a critical point for directional signage, as referred to generally in Section 2 above.

What segregation will be provided between the 2-way cycle track and the carriageway? There should be some buffer space between the 2 to provide for inexperienced cyclists. And the cycle tracks need to be protected from illegal parking along this section of the road.

The existing footpaths on either side of Butterfield Ave are not shown in the drawing although they are shown in the cross-section. There appears to be no provision to segregate the pedestrians on the footpath from the cycle track. Both pedestrians (and their dogs) and cyclists will be encroaching on each others' spaces.

Exits from private properties should give a clear right-of-way to cyclists.

6.0 Option 2 Comments

While our clear preference is for option 1 we have included comments on Option 2 and 3 below.

General Comments

We welcome:

- The raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road.

We don't like

- The Shared Space for Cyclists and Pedestrians proposed along Wellington Lane. This is a disimprovement on the current situation.

Drawing Number 1511

We welcome the bus stop bypasses and the upgrade of pedestrian crossings to toucan crossings.
We are concerned that the filter lane on the inside of the cycle lane will put cyclists at risk from left turning traffic.

Drawing Number 1512

The shared paths for cyclists and pedestrians is a disimprovement on the current situation. Shared paths do not serve either pedestrians or cyclists well and invariably lead to conflict and the potential for collisions.

As discussed for option 1, the width of the traffic lanes should be reduced to 3m, which will allow for segregated footpaths and cycle tracks.

A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1513

We welcome the upgrade of the pedestrian crossing to a toucan crossing.

Better segregation between the cycle track and the bus lane is desirable. For example the 2m grass verge could be split to have a 1m grass verge between the footpath and the cycle track, and 1m between the cycle track and the bus lane.

Similarly, better segregation between the cycle track and bus lane is desirable on the southbound approach to the Knocklyon Road junction.

The Knocklyon Road crossing is a very wide junction, with a long crossing time for pedestrians and a long exposed section with no protection for cycles. The junction width needs to be narrowed, with reduced corner radii.

Drawing Number 1514

We like the raised off-road cycle tracks on the approach from all arms of the junction.

The left slip lane from Ballyroan Road to Firhouse Road should be removed to improve safety for cyclists who are continuing straight on.

Drawing Number 1515

The toucan crossing should be moved to line up with Kilvere to facilitate pedestrians and cyclists traveling from Kilvere westwards.

7.0 Option 3 Comments

General Comments

We welcome:

- Proposed cycle tracks on both sides of Firhouse Road and Spawell Link Road.
- Proposed traffic calming measures at Ballyroan Road left turning slip.

We don’t like:

- The layout pushes cyclists to move through Blue Haven Junction in conjunction with the vehicular traffic.
- Shared cyclist/pedestrian path along Wellington Lane

Drawing Number 1521

We are concerned that the filter lane on the inside of the cycle lane will put cyclists at risk from left turning traffic.

Drawing Number 1522

The shared paths for cyclists and pedestrians is a disimprovement on the current situation. Shared paths do not serve either pedestrians or cyclists well and invariably lead to conflict and the potential for collisions.

As discussed for option 1, the width of the traffic lanes should be reduced to 3m, which will allow for segregated footpaths and cycle tracks.

A stop line should be painted at the car park exit just before it meets the footpath.

Drawing Number 1523

We welcome the upgrade of the pedestrian crossing to a toucan crossing.

Better segregation between the northbound cycle track and the bus lane is desirable. For example the 2m grass verge could be split to have a 1m grass verge between the footpath and the cycle track, and 1m between the cycle track and the bus lane.

Similarly, better segregation between the cycle track and bus lane is desirable on the southbound approach to the Knocklyon Road junction.

The Knocklyon Road crossing is a very wide junction, with a long crossing time for pedestrians and a long exposed section with no protection for cycles. The junction width needs to be narrowed, with reduced corner radii.

Drawing Number 1524

The cycle lanes should be upgraded to raised off-road cycle tracks on the approach to the Blue Haven junction from Old Bridge Road and Ballyroan Road (as shown in Option 2).

The cycle lane from Old Bridge Road should continue and connect with the cycle lane on Butterfield Avenue.

The slip road from Ballyroan Road to Firhouse Road should be removed.

Drawing Number 1525

The toucan crossing should be moved to line up with Kilvere to facilitate pedestrians and cyclists traveling from Kilvere westwards.

8.0 Conclusion

This section of the Dodder Greenway is key to ensuring a continuous, safe greenway through South Dublin. We think there are a number of design possibilities along this route that could be improved for pedestrians and cyclists.

We trust that our observations will be taken into account as the design for this scheme progresses from a concept design to a preliminary design. We would be happy to engage with the council on any of the points raised above. And we look forward to engaging with the council as the design progresses.

Yours sincerely

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Appendix A - Assessment of the Blue Haven Junction against LTN 120

UK guidance document LTN 120 contains a helpful junction assessment tool to assess whether all cycling movements at a junction have been considered. It says that a "junction assessment should consider ALL potential cycle movements through a junction. It is not sufficient to plan a cycle route as a linear corridor from A to B if joining or leaving it midway is problematic, dangerous or impossible." We agree.

An arrow is drawn for each cycle moment at a junction and given a colour. Movements designated as red are the most uncomfortable or unsafe for cyclists, and so on:

- Red: where conditions exist that are most likely to give rise to the most common collision types, then the movement should be represented on the plan as a red arrow
- Amber: where the risk of those collision types has been reduced by design layout or traffic management interventions, then the movement should be coloured amber
- Green: where the potential for collisions has been removed entirely, then the movement should be coloured green. Green movements will exceed the standards that have typically been achieved in the UK (or Ireland in this case) to date.

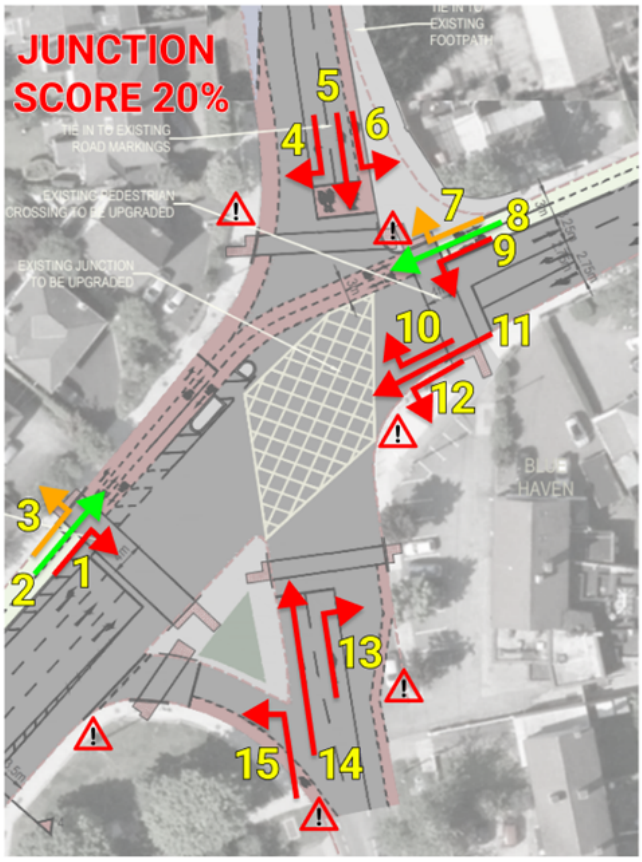
A score of 0, 1 and 2 is then given to the red, amber and green movements respectively. An overall percentage score for the junction is derived by dividing the total score for all of the possible movements with the maximum possible score, if all movements were green.

We assessed the preferred option using this tool and we believe this helps demonstrates how all cycle movements have not been adequately considered in the design. The junction score demonstrates a failure with a 20% score. We believe that, as presented at this early stage option, it would be a junction which is unsafe, uncomfortable to use and wouldn't afford adequate priority to sustainable modes of transport. We believe it is still too large and some crossing distances for walking and cycling are excessively long.

Expecting people cycling to dismount and use pedestrian crossings is unacceptable and amounts to the pedestrianisation of cycling. This type of provision does not deliver national or regional policy, the Development Plan commitments and is inconsistent with DMURS and the NCM. It will not achieve modal shift or help to meet climate

change targets. We do not believe this design adequately accounts for human behaviour. This is a major junction along the greenway and it should be safe, comfortable and afford people cycling adequate priority both on the greenway and from all approaches.

The following figure illustrates the various cycle movements assessed using the LTN 120 method, while the table summarises some of the criteria relevant to each score. Only straight ahead movements on the greenway itself appear to be up to standard and the overall junction score is 20%, which is a failure. Perhaps some movements could be argued to have an alternate score, however the junction would still not achieve the required score to demonstrate quality.



Plan on Blue Haven Junction: Assessment using LTN 120 (UK Guidance)

Blue Haven LTN120 Junction Assessment				
Turn	Rating	Criteria #1	Criteria #2	Criteria #3
1	0	Pinch points on junction entry or exit (lane width 3.2m-3.9m).		
2	2	Assumed segregated in space & time.		
3	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration		
4	0	Cycle movement in potential conflict with heavy motor traffic flow.	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	
5	0	Cycle movement in potential conflict with heavy motor traffic flow.	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	Pinch points on junction entry or exit (lane width 3.2m-3.9m).
6	0	Cycle movement in potential conflict with heavy motor traffic flow.	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	Pinch points on junction entry or exit (lane width 3.2m-3.9m).
7	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under		
8	2	Assumed segregated in space & time.		
9	0	Pinch points on junction entry or exit (lane width 3.2m-3.9m).		
10	0	Cycle movement in potential conflict with heavy motor traffic flow.	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	Pinch points on junction entry or exit (lane width 3.2m-3.9m).
11	0	Cycle movement in potential conflict with heavy motor traffic flow.	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge taper or slip lane.
12	0	Pinch points on junction entry or exit (lane width 3.2m-3.9m).		
13	0	Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge	Junctions with unsignalised left turn merge/diverge and signalised ahead	
14	0	Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge	Single or multiple queuing lanes with no cycle lanes or tracks on approaches.	Junctions with unsignalised left turn merge/diverge and signalised ahead
15	0	Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge	Junctions with unsignalised left turn merge/diverge and signalised ahead	
30		Total Available Score		
6		Actual Score for the junction		
20%		% Score for the junction		
FAIL				

Blue Haven Junction: Assessment criteria using LTN 120 (UK Guidance)

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Appendix D – EIA Screening

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Dodder Greenway

Firhouse Road and Wellington Lane Links

EIA SCREENING REPORT | June 2022

Client:
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ROD
ROUGHAN & O'DONOVAN

Firhouse Road and Wellington Lane Links

EIA Screening Report

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1. INTRODUCTION

The purpose of this Environmental Impact Assessment (EIA) Screening Report is to inform the Competent Authority, in this case South Dublin County Council, as to whether the proposed Dodder Greenway – Firhouse Road and Wellington Lane Links, referred hereafter as 'the 'proposed development', is subject to the requirements of the EIA Directive (as amended) and, therefore, whether an Environmental Impact Assessment Report (EIAR) is required for same.

This EIA Screening Report will provide the Competent Authority with the information required to form an opinion as to whether the proposed development is likely to have significant effects on the environment and, as such, whether an EIA should be completed in respect thereof.

This EIA Screening Report is presented in accordance with the information required as per Schedule 7A of the Planning and Development Regulations 2001 – 2020. The information is presented in the following sections:

Section 1: Introduction, Need for the Proposed Development and Methodology
Section 2: Provisions of the EIA Legislation
Section 3: Characteristics of the Proposed Development
Section 4: Location of the Proposed Development
Section 5: Types and Characteristics of Potential Impacts

A separate Appropriate Assessment (AA) Screening Report has also been prepared by ROD in respect of the proposed development.

1.1 Terms of Reference

Roughan & O'Donovan Consulting Engineers have been engaged by Clifton Scannell Emerson Associates to prepare an EIA Screening Report for the proposed development in accordance with the relevant legislative provisions to form an opinion as to whether EIA is required for same.

1.2 Introduction to the Proposed Development

Approximately 90% of the cycling network in the greater Dublin area consists of on-road lanes which are not physically separated from motorised traffic. Research indicated that many people are discouraged from cycling in the greater Dublin area by a perception of risk and there is evidence for a demand for more off-road pedestrian and cycling facilities which are physically separated from motorised traffic.

According to the European Greenways Association, Greenways are communication routes reserved exclusively for non-motorised journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low risk for users of all abilities.

The Dodder Greenway will create an attractive linear park and Greenway along the River Dodder in Co. Dublin, linking Sir John Rogerson's Quay in the Docklands area of Dublin City with the entrance to the Bohernabreena reservoirs at Glenasmole, in south Co. Dublin. The Dodder Greenway aims to segregate cyclists and motorised traffic in the vicinity of the River Dodder, to create a more comfortable environment for both, using a combination of on-road and off-road tracks. Although the existing

pedestrians and cyclists' facilities along the River Dodder corridor are in good condition, they require improvement in order to satisfy the definition of a 'Greenway'.

The overall Dodder Greenway Route Scheme was granted planning permission in 2017 and the scheme did not consider modifications on the existing pedestrians and cyclists' facilities on Firhouse Road or Wellington Lane. Upon revision of the overall Dodder Greenway Route, a section of the route – Firhouse Road – was considered as non-compliant with the objectives of a Greenway. Therefore, it was concluded that a separate planning application would be made for this section to fulfil the objectives of the Dodder Greenway.

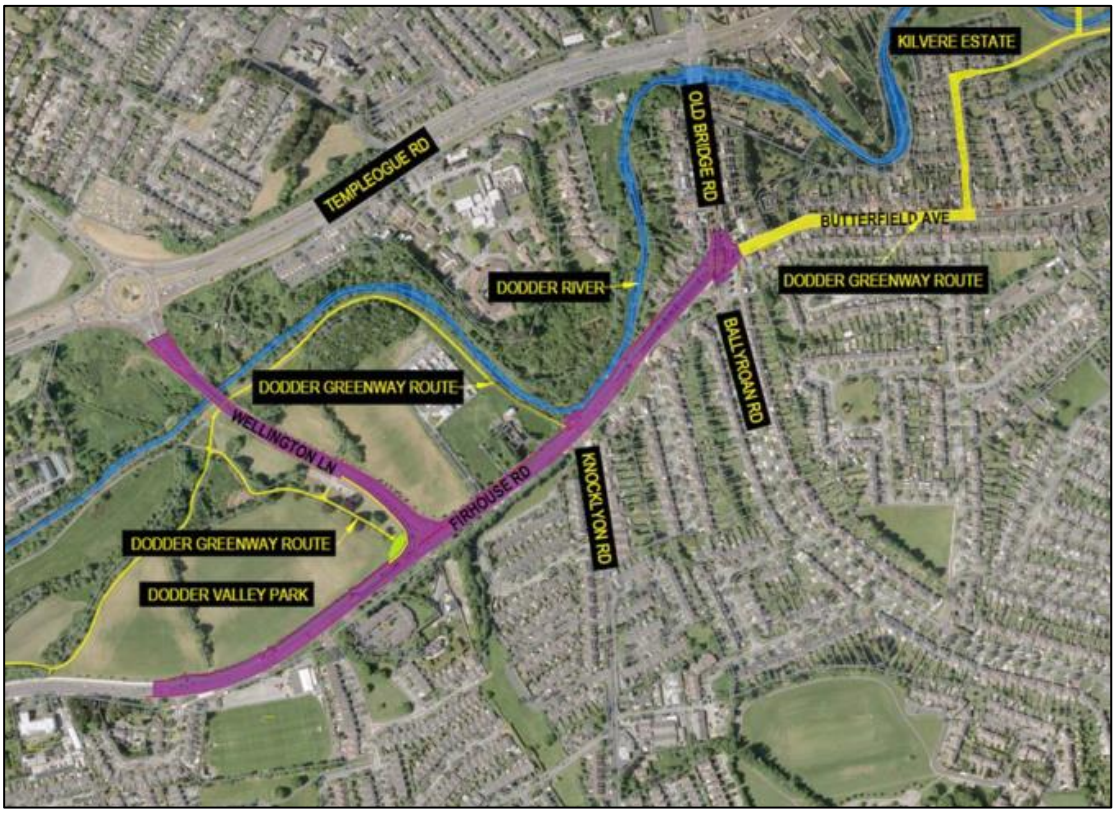


Plate 1.1 Proposed development (pink) in relation to Dodder Greenway (yellow)

The proposed Firhouse Road and Wellington Lane Links development is an on-road section of the proposed Dodder Greenway (Figure 1.1). It is a road upgrade scheme and contains approximately 1.53km of 4m wide shared path that will link up with, and complement two other sections of the Dodder Greenway. It is proposed to relocate 2 no. bus stops and rearrange the existing cycle facilities on the road. In addition, the existing pedestrian crossings on Firhouse Road will be upgraded and the Old Bridge Road –Firhouse Road junction will be redesigned, making it safer for pedestrian and cyclists. It is also proposed to include a 'plaza entrance' at the Firhouse Road – Knocklyon Road junction, to aesthetically harmonize with the Dodder Greenway.

All proposed works will include a fully integrated landscape plan and will accommodate all the required services / service diversions, if any. The proposed development has been designed to current standards including the Design Manual for Urban Roads and Streets (DMURS), TII Design Manual for Roads and Bridges (DMRB) and the National Cycle Manual (NCM).

1.3 Need for the Proposed Development

The following is a non-exhaustive list of objectives for the route taken into account by the project team in developing the Greenway to date:

- To be a Greenway of international renown - the development must avoid compromises and be on a par with the best greenways in the world.
- To improve the pedestrian and cycling offer and encourage modal shift to walking and cycling as a safe and convenient means of making local trips. The route should aim to serve a number of different trip types, both recreational and utilitarian.
- To Improve junction crossing facilities for pedestrian and cyclists.
- To Improve infrastructure for pedestrians and cyclists.
- To connect areas of parkland – the route should provide clear and coherent connectivity, both ecological and physical, between existing parks along the river corridor – such as Bushy Park, Herbert Park, Dodder Valley Park and Dodder Linear Park, etc.
- To enhance the ecological corridor – the development should have a neutral to positive impact on local ecology. This can be achieved by inclusion of complementary planting and features for flora and fauna, providing ecological linkages and wildlife corridors.
- To cater for local amenity – the route should benefit local communities through enhancing existing amenity paths and providing new linkages to adjacent communities and village centres.
- To benefit local business – the development will increase accessibility to local businesses and village centres along the river corridor.
- To cater for tourist amenity – it is envisaged that the route will attract walking and cycle tourists undertaking trails and circuits through the Dublin and Wicklow Mountains.
- To cater for commuting – where commuting currently exists along the existing routes the development will either; ensure it is facilitated in a pedestrian priority environment or by provision of an alternative route for commuting cyclists if required.

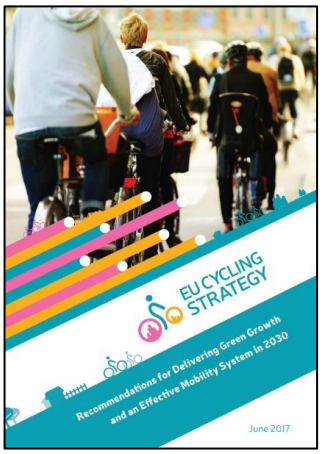
The need for the proposed development is supported by the objectives of a number of European, national, regional and local planning and development policies, including:

- EU Cycling Strategy (2017 – 2030)
- National Planning Framework to 2040
- Smarter Travel: A Sustainable Transport Future (2009 – 2020)
- Eastern & Midland Regional Assembly Regional Economic and Spatial Strategy (2019 – 2031)
- Greater Dublin Area Cycle Network Plan 2013
- South Dublin County Council Development Plan (2016 – 2022)
- Dublin City Council Development Plan (2016-2022)

1.3.1 Planning Context

1.3.1.1 National Planning Policy

EU Cycling Strategy (2017 – 2030*)*



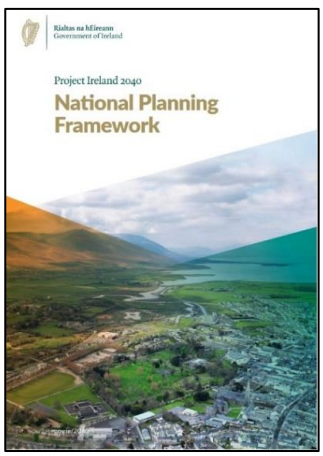
The EU Cycling Strategy constitutes the first consolidation of a systematic review of all EU policies related to cycling. It reviews the current scenario and trends in cycling in the EU and identifies the benefits offered by greater uptake of cycling. It subsequently sets out its vision for cycling in the EU to 2030 through its four overall policy objectives, as follows:

1. *"Cycling should be an equal partner in the mobility . . cycling over individual motorised transport."*
2. *"Cycle use in the EU will increase by 50% in the decade from 2019 2020–2030. 12 0.48 trips per person per day on average."*
3. *"The rates of fatalit 2019 2020–2030."*
4. *"The EU should double its investments in cycle projects to EUR 3 billion during 2021–2027 1.5 2014–2020 6 2028–2034 period."*

In order to achieve these objectives, the Strategy sets out a suite of recommended policy changes for EU, national, regional and local levels, including to *"Develop and maintain regional and local cycle route networks"*, and to *"Adopt a clear of pedestrians, cyclists and public transport users"*.

By providing enhanced cycling infrastructure along the Firhouse Road, to tie in with the existing and future wider cycle network in South Dublin, the proposed development will contribute to the achievement of the policy objectives of the EU Cycling Strategy.

National Planning Framework to 2040



2040 is the Government's overarching policy for spatial planning and development in Ireland to 2040. It is comprised of two major policy documents, the *2040* (NPF) and the *2018 – 2027* (NDP). The NPF presents a broad national-level policy to guide strategic planning and development across Ireland, while the NDP sets out the 10-year public capital investment strategy required to support its implementation.

The NPF sets out ten National Strategic Outcomes (NSOs), *"a shared set of goals for ever country"* (p. 10). Among these are NSO No. 4, Sustainable

Mobility, and NSO No. 7, Enhanced Amenity and Heritage. As stated in respect of Sustainable Mobility:

"Dublin and other cities and major urban areas are too heavily dependent

more sustainable alternative." (p. 143)

The NPF aims to deliver this sustainable alternative by directing investment towards a number of public transport and transport infrastructure projects, including development of *"a comprehensive network of safe cycling routes in metropolitan areas"* (p. 143). More specifically, *"Delivery of the metropolitan cycle network set out in the Greater Dublin Area Cycle Network Plan"* is identified as a 'key future growth enabler' for Dublin City (p. 37). The need for enhanced cycling and pedestrian infrastructure is further emphasised in National Policy Objective (NPO) No. 27, to *"Ensure the integration of*

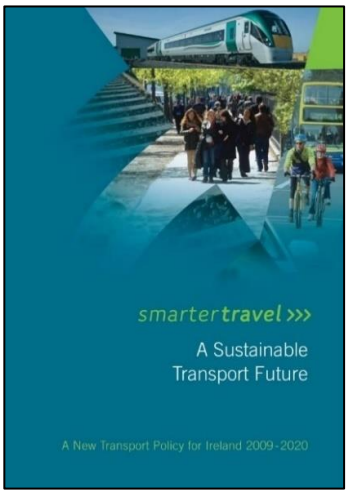
developments" (p. 82).

In respect of NSO No. 7, Enhanced Amenity and Heritage, it is stated that:

"This [NSO] will ensure that our cities, towns and villages are attractive and can offer

includes public spaces, parks and streets, as well as recreational infrastructure" (p. 15).

Smarter Travel: A Sustainable Transport Future (2009 – 2020)



presents a transport policy for Ireland to 2020. It presents a description of the baseline scenario in Ireland, in terms of transport and travel, at the time of publishing. It sets out a framework of goals, targets and actions with a view to achieving a more sustainable transport future. The document presents a stark picture of the 'business as usual' scenario:

"Transport and travel trends in Ireland are unsustainable […] if we continue with present policies, congestion will

decline." (p. 8)

In order to address these negative trends, the plan sets out five 'key goals' for the Irish transport sector:

1. Improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport.
2. Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks.
3. Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions.

4. Reduce overall travel demand and commuting distances travelled by the private car.
5. Improve security of energy supply by reducing dependency on imported fossil fuels.

In order to deliver on these goals, the plan sets out a number of 'key targets' to 2020, including that *"*
share of 65% to 45% …" and that *"Car drivers will be accommodated on other modes*

by these modes will rise to 55% by 2020)" (p. 28). Regarding the role of cycling, the policy documents states that:

"Our vision is to create a strong cycling culture in Ireland and en

ary school. […] A culture of
2020 *160 000*
35 000 *2006.*
2020 10

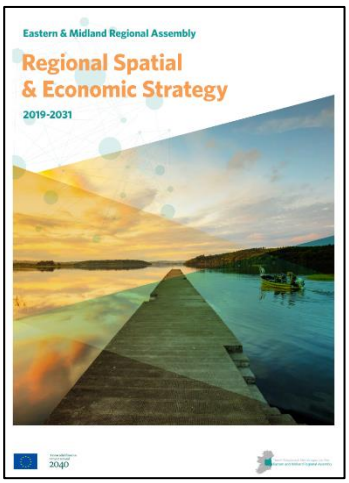
by bike." (p. 43)

Forty-nine specific actions are identified in the policy document. Those of greatest relevance to the proposed development are listed in Table 3.1.

By providing improved cycling infrastructure to tie in with the existing and future cycle network in Dublin City, the proposed development will facilitate and promote greater uptake of cycling as an alternative to less sustainable and healthy modes of personal mobility, thereby contributing to the achievement of the goals of the transport policy.

1.3.1.2 Regional Planning Policy

Eastern Midland Regional Assembly Regional Spatial Economic Strategy (RSES) (2019 – 2031)



The Regional Spatial and Economic Strategy is a strategic plan and investment framework to shape the future development of the Eastern and Midlands Region to 2031 and beyond. The vision of the plan is:

"To create a sustainable and competitive Region that

housing, travel and employment opportunities for all."

The RSES promotes the development of green infrastructure including greenways, blueways and peatways noting that they can provide a number of important functions including ecological corridors, local amenity, climate change adaptation and mitigation, and mentally restorative environment. Table 7.1 of the strategy outlines Strategic Natural, Cultural and Green Infrastructure Assets in the Region and lists the Dodder Greenway as being under development.

The following are Regional Policy Objectives of the Strategy:

RPO 5.8: Support the promotion and development of greenway infrastructure and facilities in the Dublin metropolitan area and to support the expansion and connections between key strategic cycle routes and greenways as set out in the NTA Greater Dublin Area Cycle Network Plan.

RPO 7.22: Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species.

RPO 7.23: Support the further development of Green Infrastructure policies and coordinate the mapping of strategic Green Infrastructure in the Region.

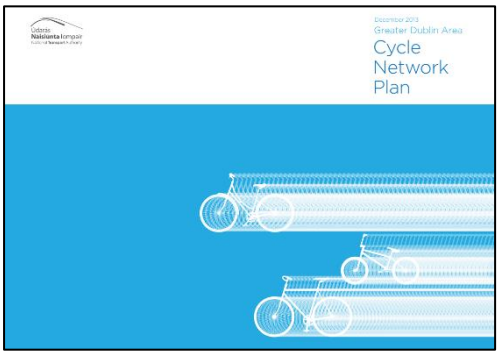
RPO 7.24: Promote the development of a sustainable Strategic Greenway Network of national and regional routes, with a number of high capacity flagship routes that can be extended and /or linked with local greenways and other cycling and walking infrastructure, notwithstanding that capacity of a greenway is limited to what is ecologically sustainable.

RPO 7.25: Support local authorities and state agencies in the delivery of sustainable strategic greenways, blueways, and peatways projects in the Region under the Strategy for the Future Development of National and Regional Greenways.

Sustainable transport options through enhanced development of the Blueway and Greenway networks will further enable strategic connections and heightened collaboration for the benefit of the tourism industry.

The Dodder Greenway will help achieve the above RPOs in developing green infrastructure that complements the natural environment and which will provide connectivity and opportunity for increased tourism and economic development in the area.

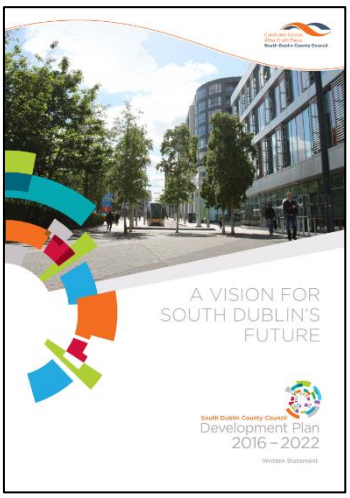
Greater Dublin Area (GDA) Cycle Network Plan 2013



The Greater Dublin Area (GDA) Cycle Network Plan identifies and determines the networks in the GDA, including the Urban Cycle Network, the Inter-Urban Cycle Network, and the Green Route Network to provide for a consistent network across the local authority boundaries. The Plan sets out certain proposals in respect of individual network links. The Plan identifies the Dodder Valley Way as one of the network corridors as the route has the potential to have recreational and commuter functions to significant employment districts.

1.3.1.3 Local Planning Policy

South Dublin County Council Development Plan (2016 – 2022)



The South Dublin County Council Development Plan (2016-2022) supports the development of the Dodder Greenway under the following objectives:

" *6 1*

"

" *10 6*
River plays in the County's Green Infrastructure network

of the Dodder Valley (Zoning Objective 'HA – DV') as a

"

" *3 1*

9

"

" *3 3*

"

The proposed development is a section of the Dodder Greenway and complies with the policies and objectives of the Local Authority as set out in the South Dublin County Council Development Plan (2016-2022).

Dublin City Council (DCC) Development Plan (2016 – 2022)

The Dublin City Council Development Plan (2016-2022) supports the development of greenway routes under the following objectives:

"SC3: To develop a sustainable network of safe, clean,

order to make the city more coherent and navigable."

"MTO9: To develop, within the lifetime of this plan

national cycle network, and to implement the NTA's Greater Dublin Area Cycle Network Plan"

"MTO10: To improve existing cycleways and bicycle

appropriate and feasible"

"GIO4: To improve pedestrian and cycle access routes to strategic level amenities compromised, and existing biodiversity and heritage is protected and enhanced."

"GIO18: To protect and improve the natural character of watercourses, including uses along them, having regard to environmental sensitivities."

The Dodder Greenway complies with the objectives of the Local Authority as set out in the Dublin City Council Development Plan (2016-2022) by improving the condition of the existing pedestrian and cycle lanes and creating a sustainable travel network within Dublin City.

1.4 Guidance and Methodology

This EIA Screening Report has been prepared with reference to the relevant legislation, EU and national guidance documents. The methodology devised for this EIA Screening is based on established best practice with particular reference to: -

- Schedules 7 and 7A of the Planning and Development Regulations 2001 (as amended);
- (DEHLG, 2003);
- *2017*
- *2018*
- *2017 .*

The following draft guidance document has also been consulted:

- (EPA, 2022).

The screening exercise is divided into two separate but consecutive stages in order to determine if the project requires an EIA.

(i) The first stage is to determine if the proposed development requires a mandatory EIA i.e. if it is a development listed in Schedule 5 of the Planning and Development Regulations 2001 as amended.

(ii) If the proposed development is deemed not to require a mandatory EIA. The proposed sub-threshold development must be assessed on a case by case basis to determine whether or not the sub-threshold development requires a discretionary EIA based on considerations such as the nature, size or location of the development and if the proposed development is likely to have significant effects on the environment.

Section 3 of this report includes a screening matrix informed by the criteria detailed in Schedule 7 and 7A of the Planning and Development Regulations 2001 (as amended), and assesses the proposed development's likely significant effects on environmental receptors. The rationale or basis for the Screening determination is provided in Table 1.1 below.

Table 1.1 Schedule 7A Information to be provided by the applicant or developer for the purposes of Screening sub-threshold development for Environmental Impact Assessment

1. A description of the proposed development, including in particular—
   (a) a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and
   (b) a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.
2. A description of the aspects of the environment likely to be significantly affected by the proposed development.
3. A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—
   (a) the expected residues and emissions and the production of waste, where relevant, and
   (b) the use of natural resources, in particular soil, land, water and biodiversity.
4. The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7.

2001

The assessment draws on the separate Appropriate Assessment Screening Report prepared by Roughan & O'Donovan (2022) on behalf of South Dublin County Council and desk-based information.

1.4.1 Description of Effects

A key document that has informed the methodology for assessing the effects of the proposed development is the (May, 2022) produced by the Environmental Protection Agency (EPA). Section 3.7 of the Guidelines includes a standardised methodology for describing effects as recreated in Table 1.2 below and forms the basis for describing the impacts as part of this assessment. The consideration of impacts includes direct, indirect, secondary and cumulative impacts as appropriate.

Table 1.2 Description of Effects

Quality of Effects:	
Positive	A change which improves the quality of the environment.
Neutral	No effects, or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment.
Describing Significance of effect:	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.

Significant Effects	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Very significant Effects	An effect which, by its character, magnitude, duration or intensity significant alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects:	
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of the Effects:	
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measure are properly implemented.
Describing the Duration and Fre uency of Effects:	
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects last less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years
Medium-term Effects	Effects lasting seven to fifteen years
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years
Reversible effects	Effects that can be undone, for example through remediation or restoration.
Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hour, daily, weekly, monthly, annually).
Source: *2022*	

2. LEGISLATION

Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive) requires that all public and private projects that are likely to have significant effects on the environment shall be subject to an Environmental Impact Assessment (EIA) prior to the granting of development consent by the Competent Authority. Projects listed in Annex I of the EIA Directive require mandatory EIA while projects listed in Annex II require a Sub-threshold EIA Screening Assessment. As defined by the European Commission (2017, p.10), the EIA Screening process *"… ascertains whether the Project's e . . 'Screened' to determine whether an EIA is necessary"*. Annex I and Annex II of the EIA Directive have been transposed into Irish Law in the Planning and Development Regulations 2001 (as amended) and in particular Schedule 5 (Part 1 and Part 2).

2.1 Screening for Mandatory EIA

All projects can be placed into one of the following two categories:

- Those that **exceed the thresholds** laid down in planning policy and therefore have a mandatory requirement to prepare an EIAR; and
- Those projects that are **sub-threshold** and must be assessed on a case-by-case basis to determine whether or not they are likely to have significant effects on the environment.

This first part of the EIA Screening exercise is to determine if EIA is required as set out in the Annex I of the EIA Directive, and the mandatory and discretionary provisions of the Planning and Development Act, 2000 (as amended) (the Act) and Schedule 5 of the Planning and Development Regulations 2001 (as amended), and in the case of road projects, Section 50 of the Roads Act 1993 (as amended) and Article 8 of the Roads Regulations 1994. Section 172 of the Act provides the legislative basis for mandatory EIA.

In this case, the proposed development is not of a class listed in Annex I (of the EIA Directive) or Schedule 5 (Part 1) of the Planning and Development Regulations and therefore **does not re uire mandatory EIA**. Section 50 of the Roads Act 1993 (as amended) is also required to be reviewed for this proposed development. Table 2.1 below provides an overview of the relevant road legislation and assesses if the proposed development meets or exceeds the mandatory thresholds contained therein.

Table 2.1 Screening Matrix for mandatory EIA

Mandatory Threshold	Regulatory Reference	Assessment
a) A road authority or the Authority shall prepare a statement of the likely effects on the environment ('environmental impact statement') [EIAR] of any proposed road development it proposes consisting of-		
(i) Construction of a Motorway	S. 50(1)(a) of the Roads Act, 1993, as amended by S. 9(1)(d)(i) of the Roads Act, 2007 (as amended)	The proposed development is **not** a Motorway. **Mandatory Threshold is not reached.**
(ii) Construction of a Busway	S. 50(1)(a) of the Roads Act, 1993, as amended by S. 9(1)(d)(i) of the Roads Act, 2007(as amended)	The proposed development is **not** a Busway. **Mandatory Threshold is not reached.**
(iii) Construction of a Service Area or	S. 50(1)(a) of the Roads Act, 1993, as amended by S. 9(1)(d)(i) of the Roads Act, 2007(as amended)	The proposed development is **not** a Service Area and does **not** incorporate a Service Area. **Mandatory Threshold is not reached.**
(iv) Any prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road, namely: • The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area • The construction of a new bridge or tunnel which would be 100 metres or more in length.	Article 8 of the Roads Regulations, 1994 (as amended) (prescribed type of road development for the purposes of S. 50(1)(a)(iii) (now replaced by S. 1(a)(iv) of Section 50 of the Act amended	The proposed development is a 700 m greenway for pedestrian and cyclist use only and will not include the construction of a new road of four or more lanes. **Mandatory Threshold is not reached.** The proposed development does not include a new bridge or tunnel **Mandatory Threshold is not reached.**
(b) Where An Bord Pleanála considers that any proposed road development (other than development to which paragraph (a) applies) consisting of the construction of a proposed public road or the improvement of an existing public road would be likely to have significant effects on the environment, they shall direct the road authority to prepare an environmental impact statement [EIAR] in respect of such a proposed road development and the authority shall comply with such direction.	S. 50(1)(b) of the Roads Act, 1993, as amended	An Bord Pleanála has not directed the road authority to prepare an EIAR. **Mandatory Threshold is not reached.**

Mandatory Threshold	Regulatory Reference	Assessment
(c) Where a road authority considers that any proposed road development (other than development to which paragraph a) applies) consisting of the construction of a proposed public road or the improvements of an existing public road **would be likely to have significant effects on the environment,** it shall inform An Bord Pleanála in writing and where An Bord Pleanála concurs with the road authority they shall give direction to the road authority under paragraph (b).	S. 50(1)(c) of the Roads Act, 1993, as amended	**The Purpose of this EIA Screening Report** is to undertake an assessment to determine if the proposed development is likely to have significant effects on the environment. **See Section 6 of this Report.**
d) Where a proposed road development (other than development to which paragraph (a) applies consisting of construction of a proposed public road or the improvement of a public road or the improvement of an existing public road would be located on: (i) a European Site, meaning (ii) a candidate site of Community importance, (iii) a site of Community importance, (iv) a candidate special area of conservation, (v) a special area of conservation, (vi) a candidate special protection area, or (vii) a special protection area (viii) land established or recognised as a nature reserve within the meaning of section 15 or 16 of the Wildlife Act, 1976 (No. 39 of 1976) the road authority concerned shall decide whether the proposed road development would or would not be likely to have significant effects on the environment, and if the authority decides that the proposed road development would be likely to have such effects, paragraph (c) shall apply accordingly.	S.50(1)(d) of the Roads Act, 1993, as amended by Reg.56(7) of the European Communities (Birds and Natural Habitats) Regulations 2011	The proposed development is not located on any of the criteria (i) – (v) and therefore there will be no likely significant effects on the environment. A Habitats Directive Screening for Appropriate Assessment (AA) has been carried out for the proposed development. The AA Screening Report concluded that the proposed development is not likely to have significant effects on the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC or any other European site in view of best scientific knowledge and the Conservation Objectives of the site concerned. **Mandatory Threshold is not reached.**

As can be seen from Table 2.1, the proposed development **does not re uire a mandatory EIA** under the thresholds of Section 50 of the Roads Act 1993. It follows that the proposed development is a sub-threshold development.

The criteria set out in Annex III (which is the same as what is contained in Schedule 7 of the Planning and Development Regulations 2001 (as amended)) Annex IIA of the EIA Directive (2014/52/EU) comprise the information to be provided by the applicant for the purposes of screening sub threshold development for an Environmental Impact Assessment. The Planning and Development Regulations equivalent of Annex IIA is Schedule 7A. Therefore, for the purposes of this EIA Screening, Schedule 7A is used.

2.2 Screening Sub-threshold Development

Part 10 of the Planning and Development Regulations 2001 (as amended) defines "*development of a type set out in Part 2 of Schedule 5*" as "

."

For projects that fall below a class or threshold specified in Schedule 5, it is the decision of the Competent Authority to determine if an EIA is required. This is determined by examining if the sub-threshold development is likely to result in significant environmental effects. Significant environmental effects may arise due to the characteristics of the potential effects based on the nature and extent of the proposed development, and / or its location in relation to the characteristics of the receiving environment, particularly sensitive environments.

An examination of the relevant sections of Part 2 of Schedule 5 has been completed. Based on the nature and extent of the proposed development, it was determined that it does not fall under the project criteria described under Section 10 of Part 2.

The criteria set out in Schedule 7 of the Planning and Development Regulations 2001 (as amended) form the basis of the examination of likely significant effects on the environment. Schedule 7A of the Planning and Development Regulations 2001 (as amended) stipulates the information which the Applicant / Developer is required to provide regarding the proposed development to inform the sub-threshold EIA Screening Assessment. (Table 1.1). In developing Sections 3 and 4 of this report, which describe the proposed development and its receiving environment, respectively, efforts have been made to ensure all of the information listed in Schedule s 7 and 7A has been disclosed and considered.

The assessment is undertaken under three main headings:

- Characteristics of the Proposed Development (Section 3);
- Location of the Proposed Development (Section 4); and,
- Types and Characteristics of Potential Impacts (Section 5).

These three headings, together with the associated Schedule 7A criteria, are used as the basis for the examination of likely significant effects on the environment and are discussed in the following sections of this EIA Screening Report.

3. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

This section describes the characteristics of the proposed development which could potentially give rise to environmental effects. The corresponding screening exercise is presented in Section 5.

3.1 Description of the Proposed Development

This section should be read in conjunction with the development drawings presented in Appendix A.

The proposed Firhouse Road and Wellington Lane Links development is an on-road section of the proposed Dodder Greenway. The proposed development will modify the existing pedestrian and cyclists' facility on Wellington Lane and Firhouse Road, increasing the width of existing shared facilities, and transforming it to a safer route for both pedestrians and cyclists by separating the existing on-road cycle lane from the road, introducing a kerb line on Firhouse Road. It is a road upgrade scheme and contains approximately 1.53km of a 4m wide shared path that will link and complement two other sections of the Dodder Greenway.

Table 3.1, below, summarises the differences between the existing and proposed road cross-section along Firhouse Road.

The proposed development involves the following elements:

- Approximately 1.53km of a 4m wide shared route for pedestrians and cyclists along Firhouse Road and Wellington Lane;
- 460m of Carriageway upgrade with kerb realignment and slip lane readjustment on the approaches to the Old Bridge Road – Firhouse Road junction ;
- Relocation of 2 no. bus stops on Firhouse Road;
- Approximately 665m of a 2m wide raised off-road cycle track;
- Upgrade of 2 no. existing pedestrian crossings, including traffic lights and traffic signs;
- Landscaped Plaza Entrance to aesthetically harmonize with the Dodder Greenway routes;
- Old Bridge Road – Firhouse Road junction upgrade;
- Road marking and road signs to upgraded carriageway and realigned slip lanes;
- Upgrade to existing entrance at Cherryfield Way; and
- All associated ancillary works and integrated landscape plans.

Table 3.1 Existing and Proposed Road Cross-section on Firhouse Road

Existing	On the south side of the road, the existing road cross section includes a 2.41m wide footpath between two large verge areas of 8.54m and 2.67m wide. The existing 4 lane carriageway is 15.54m wide (kerb to kerb distance) and includes one on-road cycle lane in each direction. On the north side of the road, the existing 1.75m wide footpath is segregated from the road by a 2.24m wide concrete verge that is too steep for pedestrian use.
Proposed	The proposal intents to rearrange the existing pedestrian and cyclist facilities on the north side of the road. The existing cycle lane will be transformed into a segregated cycle track, giving continuity to the existing cycle track to the west, and will be diverted to pass behind the relocated Bus stop, changing the traditional Bus stop layout and bringing more safety for cyclists. The existing 1.75m wide footpath will be widen to 4m and transformed into a shared path for both pedestrians and cyclists. See drawings in Appendix A for proposed cross-sections.

All proposed works will include a fully integrated landscape plan and will accommodate all the required services / service diversions, if any. The proposed development design has been visually integrated into the existing landscape through careful design.

The landscape drawings (Appendices D), indicate that 86 no. existing trees will need to be removed, of which 4 no. will be replanted in the immediate curtilage, and the remainder of which (82 no.) will be permanently felled. Trees to be permanently felled include Norway Maple, , Hornbeam, , and to a lesser degree, spp. and spp. None of the trees to be removed are mature and the majority are non-native and planted as part of roadside landscaping. They are young, well-spaced trees, which do not constitute linear habitat / treelines.

Otherwise, trees in the immediate vicinity will be retained. A cluster of mature riparian trees adjacent to the River Dodder will be retained, although some vegetation clearance will be required in this area to facilitate proposed paving, including removal of four young trees and some briar.

Eighty new trees will be planted, leaving a net loss (in absolute number of trees) of two. New trees which are proposed to be planted are Lime ((56 no.) Beech ((8 no.), Wild Cherry ( ) (4 no.), Downy Birch ((8 no.) and Hornbeam ( ) (4 no.).

As shown in Appendix D, the verges will be planted with a low growing native wildflower mix. In total this area will be 4,892m^2. Native shrubs (Guelder Rose, (2 no.) Hazel, (1 no.) and Dogwood, (2 no.)) to the grass margin immediately north of the Firhouse Road – Wellington Lane junction. Note that the addition of these shrubs has not been included in the calculation of the net tree loss, as shown in Table 3.2, below.

Table 3.2 Envisaged tree felling and planting

Total removed (temporarily and permanently)	86
Total replanted	4
Total permanently felled	82 (= 86 – 4)
Total new trees planted	80
Net tree loss	2 (= 82 – 80)

The proposed development been designed to current standards including the Design Manual for Urban Roads and Streets (DMURS), TII Design Manual for Roads and Bridges (DMRB) and the National Cycle Manual (NCM).

The envisaged duration of the construction phase is one year.

The construction methodology of the proposed development has not been detailed, although information has been provided insofar as is necessary for the purposes of this screening exercise, and is detailed herein, where relevant.

3.2 Cumulative Effects

The potential for cumulative effects in combination with other existing or proposed projects and plans has been assessed as part of this EIA Screening exercise. See Table 5.1 and Appendix B.

3.3 Demolition Works

The proposed development will not require any demolition works.

3.4 Use of Natural Resources

Whilst exact quantities of materials required have not been determined at this stage, the amount of aggregates that will be required during the construction phase is likely to be relatively minor as the footprint of the proposed development is mostly confined to the existing footpaths and carriageway along the Firhouse Road and Wellington Lane, with the exception of a number of areas where the proposed shared pedestrian and cycle path will extend beyond the existing roadbed into landscaped / vegetated areas. A relatively small amount of excavation will be required in these areas. There is no requirement to use water over and above a normal construction site or operational station requirements.

3.5 Production of Waste

Relatively small quantities (exact quantities not determined at this stage) of unsuitable material may be generated as a result of excavations during the construction phase.

3.6 Pollution and Nuisance

The proposed development involves (i) works immediately adjacent to the River Dodder and (ii) works on an existing bridge which crosses the River Dodder. As such, there is a potential pathway for pollution of the watercourse at these two locations (Plates 3.1 and 3.2, below). No in-stream works are proposed.

In terms of air pollution, there is the potential for relatively small quantities of dust (i.e. particulate matter) and greenhouse gas and other vehicular emissions to be generated during the construction phase. Construction phase greenhouse gas and other vehicular emissions may be expected to arise principally as a result of construction vehicles and plant (of which there will be relatively few), and due to embodied carbon in construction materials (which will be relatively small).

The works themselves may result in minor nuisance for property owners along the route of the proposed development, e.g. as a result of noise and air pollution, and temporary closure of footpaths. No particularly noisy works or particularly lengthy noise-generating works (e.g. piling, blasting) are proposed.

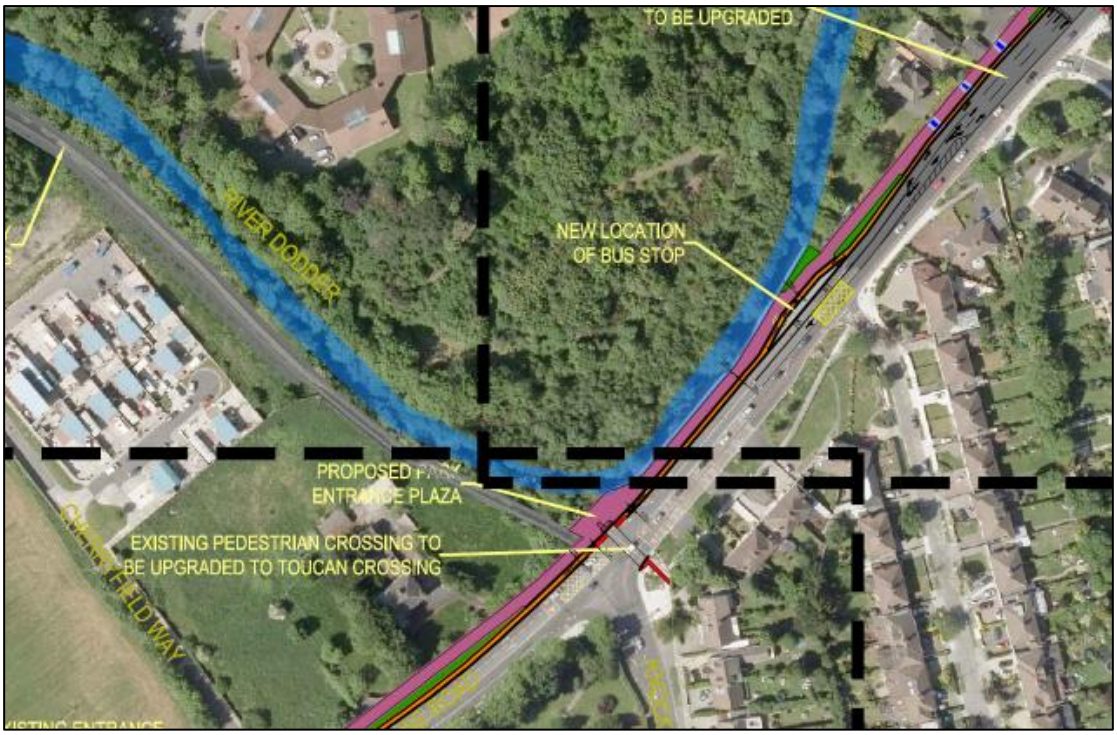


Plate 3.1 Proposed works immediately adjacent to River Dodder on Firhouse Road

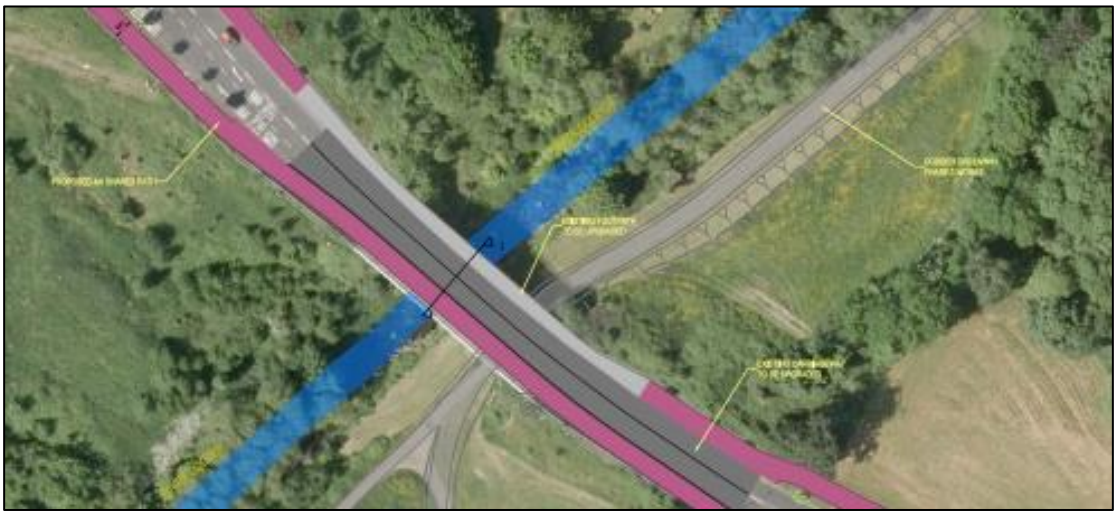


Plate 3.2 Proposed works to existing bridge crossing of River Dodder on Wellington Lane

During the operational phase of the proposed development, emissions of noise and air pollution may be expected to reduce somewhat, as a result of a modal shift from private car use to cycling and / or walking, promoted by the provision of enhanced cyclist and pedestrian infrastructure.

The lighting design of the proposed development (if any) has not been detailed at this stage. However, any lighting incorporated into the design of the proposed development will be in accordance with Bat Conservation Ireland's (2010) and the Bat Conservation Trust & Institute of Lighting Professionals' guidance note (no. 08/18), (2018). This is reflected in the standard mitigation measures set out in Section 6, below.

3.7 Surface water run-off from the proposed development will be either over the edge or directed to the existing surface water drainage system. Risk of Major Accidents and / or Disasters

Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU ('the EIA Directive' hereafter) mandates the consideration of major accidents and disasters (MADs) in EIA.

MADs may be defined as hazards to which vulnerable receptors (i.e. humans, cultural heritage and / or the environment) are exposed, resulting in major negative impacts on one or more of these, which requires the use of resources beyond those of the Applicant or its appointed representatives (i.e. Contractors) to manage.

The IEMA (2020) guidelines state that *"During screening it should be sufficient to*

o consider whether a development could lead to a significant effect" (p. 10). Questions to consider at this stage include the following (adapted from IEMA, 2020):

- Is the proposed development a source of hazard itself that could conceivably result in a major accident and / or disaster occurring?
- Does the proposed development interact with any sources of external hazards that may conceivably make it vulnerable to a major accident and / or disaster?

- If an external major accident and/or disaster occurred, would the existence of the proposed development conceivably increase the risk of a significant effect to an environmental receptor occurring?

The UK National Risk Register of Civil Emergencies (2017) has been reviewed in respect of the proposed development and, on the basis of this, it is considered that the proposed development is not likely to (in and of itself) cause a MAD of any of the classes listed. This risk is considered to be exceedingly low, considering the nature and scale of the proposed development, the fact that the design of the proposed development will be in accordance with the relevant codes and standards, and the fact that best practice construction practices (in respect of pollution prevention, human health and safety, .) will be implemented.

The only sources of external hazard which could conceivably interact with or render the proposed development susceptible to a MAD is a major traffic accident. However, the proposed development is no more at risk than any other road in the vicinity of the project in respect of major traffic accidents.

3.8 Risk to Human Health

The construction phase of the proposed development may give rise to minor, temporary impacts in relation to traffic, noise and air quality, which could potential result in indirect effects on human health of residents and road-users along the proposed works. As stated above, the works themselves may result in minor nuisance for property owners along the route of the proposed development, e.g. as a result of noise and air pollution, and temporary closure of footpaths.

During the operational phase, the proposed development will provide substantially enhanced cyclist and pedestrian infrastructure along the length of the proposed development, facilitating and promoting physical activity, with direct, positive effects on human health. The operation of the proposed development may also be expected to promote some degree of a modal shift from private car use to cycling and / or walking for commuters / residents using the route, which can in turn result in positive human health effects, due to improved air quality along the route. Furthermore, provision of safer infrastructure for cyclists and pedestrians may prevent negative human health outcomes as a result of traffic accidents involving these road-users.

4. LOCATION OF THE PROPOSED DEVELOPMENT

This section describes the location of the proposed development (i.e. receiving environment) with particular regard to the environmental sensitivity of areas which may potentially be affected by the proposed development, as described above. The corresponding screening exercise is presented in Section 5.

The proposed development is located along a section of the Firhouse Road and Wellington Lane in the residential Firhouse area of south Dublin (Plates 4.1 and 4.2; also refer to development drawings in Appendix A). The proposed development extents are from Green Acre Court to the Old Bridge Road – Firhouse Road Junction and from the Firhouse Road – Wellington Lane junction to Spawell Roundabout (Plate 4.1).

Plate 4.1 Extent of Proposed Development

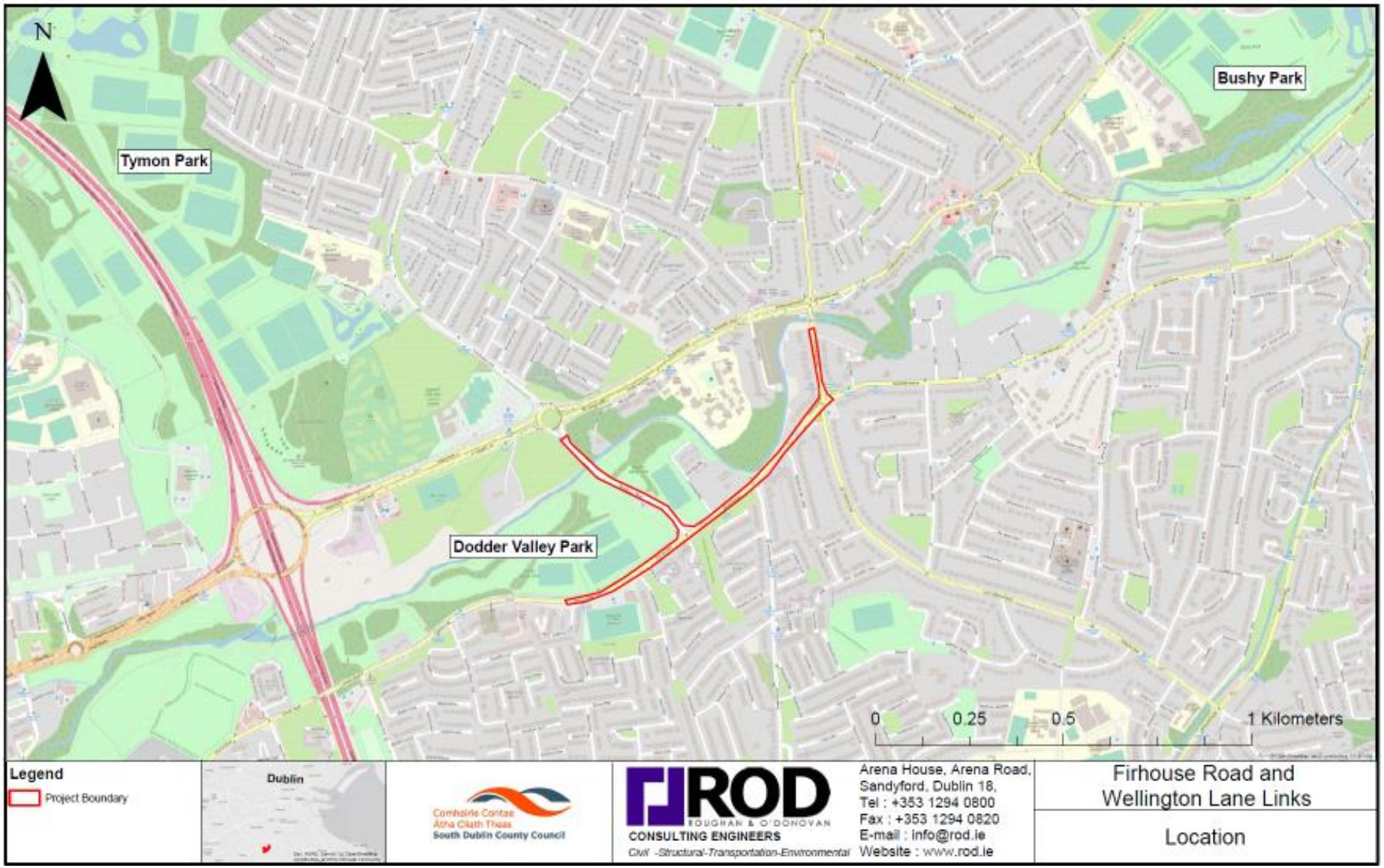


Plate 4.2 **Location and Extent of the Proposed Development**

4.1 Existing and Approved Land Use

Predominant land use types at the location of the proposed development and in the immediate vicinity include road transportation, residential and recreational. Development in the vicinity is dominated by housing estates. There are a number of public amenities in the immediate vicinity, including St. Enda's GAA Club, the Dodder Valley Park (recreational parkland), a family medical clinic, bar / restaurant and a small number of scattered commercial premises.

There are three land use zones (as designated by South Dublin County Council in their extant County Development Plan (2016 – 2022)) at the location of the proposed development and in the immediate vicinity. The Dodder Valley Park is designated as zone type 'HA-DV', for which the corresponding Development Plan objective is "
". Existing residential areas in the immediate vicinity are designated as zone type 'RES', for which the corresponding Development Plan objective is to "protect and / or improve residential amenity". The remaining areas of undeveloped land in and around the residential development in the immediate vicinity are designated as zone type 'OS', for which the corresponding Development Plan objective is to "preserve and provide for open space and residential amenities". The footprint of the proposed development will be largely confined to the existing roadbed at the location, which has not been designated as any particular land use zone, but will impinge slightly (as described below) upon the Dodder Valley Park.

Please refer to Section 1.3.1, above, which discusses South Dublin County Council's planning and development objectives for the area, and how they relate to the proposed development.

4.2 The Absorption Capacity of the Natural Environment

Soils, Geology and Hydrogeology

In terms of bedrock geology, the location of the proposed development, as much of Dublin, is underlain by the Lucan Formation, which is characterised by dark-grey to black, fine-grained, occasionally cherty, micritic limestones, with rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar. The GSI quaternary sediments mapping shows that the location of the proposed development is predominantly underlain by limestone till, with alluvium indicated beneath and alongside the River Dodder. The Teagasc soil mapping for the location of the proposed development indicates three soil types: (1) mineral poorly drained (mainly basic), (2) deep well drained mineral (mainly basic) and (3) alluvial (the later underlying and alongside the River Dodder).

Groundwater body status for the WFD 2013 – 2018 period is classified as 'Good' at the location of the proposed development. The underlying bedrock aquifer is classified as 'Bedrock which is Moderately Productive only in Local Zones'. The vulnerability for the underlying groundwater is classified as 'Low', except immediately adjacent to and underlying the River Dodder, where it is classified as 'Moderate'.

Wetlands, Riparian Areas and River Mouths

The location of the proposed development runs adjacent to and (at one point) traverses the River Dodder, which flows from Kippure Ridge in the Dublin / Wicklow Mountains to Ringsend / Grand Canal Dock, in Dublin City, where it enters the Liffey Estuary. The River Dodder at the location of the proposed development (Dodder_040) is classified under the Water Framework Directive (WFD) as having 'Poor' ecological status, based on 'Poor' invertebrate status (i.e. Q Value) during the period 2013 – 2018. The river is

situated within the Dodder_SC_010 sub-catchment, which is within the broader Liffey and Dublin Bay catchment. Diffuse urban run-off has been identified as the key pressure affecting the watercourse's ecological status.

The Flood Maps mapping for the location of the proposed development indicates that the River Dodder does flood in the vicinity of the proposed development, although not within the footprint of the proposed development.

The riverine and riparian habitats along the Dodder corridor provide habitat for flora and fauna, including Otter, Badger, Kingfisher, Daubenton's Bat and Atlantic Salmon. There are a number of weirs along the length of the river, including the Firhouse / Balrothy Weir. Invasive alien plant species including Japanese Knotweed, Himalayan Balsam, Giant Rhubarb, Himalayan Honeysuckle and Cherry Laurel are widespread in the Dodder catchment. Japanese Knotweed has been recorded on the riverbank at the bridge on Wellington Lane and the riverbank where the river comes in contact with the site boundary again on Firhouse Road. The works will not interfere with either of these areas and no control measures are required.

Coastal ones and the Marine Environment

The proposed development is not located in a coastal or tidal area, although it is situated immediately adjacent to a watercourse, the River Dodder, which drains into the Liffey Estuary. The River Dodder becomes tidal below Donnybrook, approximately a 6km linear distance away (and further again, following the contours of the watercourse). Considering the characteristics and location of the proposed development, it is considered that there is no feasible mechanism for significant effects on the coastal or marine environment, and this aspect of the environment is discounted from further consideration herein.

Mountain and Forest Areas

There are no mountains or large areas of woodland / forestry in the immediate vicinity of the proposed development, which is a relatively densely developed, residential area. However, there are small areas of riparian woodland, treelines and improved grassland associated with the River Dodder and the Dodder Valley Park in the immediate vicinity.

As discussed above and illustrated in the landscape design drawings (Appendix D), 67 no. existing trees will need to be removed, of which 8 no. will be replanted in the immediate curtilage, and the remainder of which (59 no.) will be permanently felled. None of the trees to be removed are mature and the majority are non-native and planted as part of roadside landscaping. They are young, well-spaced trees, which do not constitute linear habitat / treelines.

Otherwise, trees in the immediate vicinity will be retained. A cluster of mature riparian trees adjacent to the River Dodder will be retained, although some vegetation clearance will be required in this area to facilitate proposed paving, including removal of four young trees and some briar.

Approximately 23 new trees will be planted, leaving a net loss (in absolute number of trees) of approximately 36. New trees which are proposed to be planted are Beech, (7 no.), Small-leaved Lime, (11 no.), Wild Cherry, (2 no.), and Downy Birch, (3 no.).

Nature Reserves and Parks

There are no nature reserves in the vicinity of the proposed development. The Dodder Valley Park is situated immediately adjacent to the proposed development, and the

proposed development will impinge slightly upon this area, resulting in the loss of a relatively small area of improved grassland and the permanent loss of approx. 59 no. trees, as illustrated in the landscape drawings (Appendix D). Approx. 23 no. new trees will be planted, such that there will be a net loss of approx. 36 no. trees. It is also proposed to add min. 1 m wildflower strips along the margins of the proposed development (as shown in Appendix D), as well as a small patch of native shrubbery on the northern side of the Firhouse Road – Wellington Lane junction.

The proposed development will form part of the overall Dodder Greenway, which will link up a number of public parks along the Dodder corridor.

European or National Designated Sites

There are no Designated Sites within or immediately adjacent to the location of the proposed development.

The nearest Designated Site, the Dodder Valley Proposed Natural Heritage Area (pNHA), is approx. 1km upstream of the proposed works on the watercourse crossing on Wellington Lane. There is no pathway for effects and this site is discounted from further consideration.

The location of the proposed development is situated approx. 14 – 15km upstream of several Designated Sites in the Liffey Estuary / Dublin Bay, via the Liffey; namely the Dolphins Dublin Docks pNHA, the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA), the South Dublin Bay pNHA, the South Dublin Bay Special Area of Conservation (SAC), and the North Dublin Bay pNHA. Considering the nature of the proposed development and its substantial remove from the aforementioned sites, it is considered highly unlikely that any significant effects will accrue to any of same. A Screening for Appropriate Assessment (AA) Report has been prepared for the proposed development, which has concluded that, on the basis of objective information, that the Project, either individually or in combination with other plans or projects, in view of best scientific knowledge, is not likely to give rise to impacts which would constitute significant effects in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, the North Dublin Bay SAC or any other European site.

Areas with Exceedances in Environmental Standards

There are no known areas / features with exceedances of environmental standards at the location of the proposed development, with the exception of the River Dodder which, as stated above, is classified as having 'Poor' ecological status under the WFD monitoring. This is as a result of the river's Q-Value of 3. Otherwise, the river is not recorded as having any exceedances of physicochemical parameters during the 2013 – 2018 period.

Densely Populated Areas

The route of the proposed development passes through a residential, suburban area in South Dublin. The route of the proposed development traverses the following Electoral Divisions (Plate 4.4):

- Firehouse-Knocklyon, which had a total population of 3,514 in the most recent (2016) census, down 2.4% from 3,602 in the previous census (2011);
- Rathfarnham-Ballyroan, which had a total population of 2,678 in the most recent (2016) census, up 7.4% from 2,493 in the previous census (2011);
- Templeogue-Cypress, which had a total population of 2,717 in the most recent (2016) census, down 3% from 2,800 in the previous census (2011); and

- Templeogue-Osprey, which had a total population of 2,262 in the most recent (2016) census, down 3.1% from 2,334 in the previous census (2011).

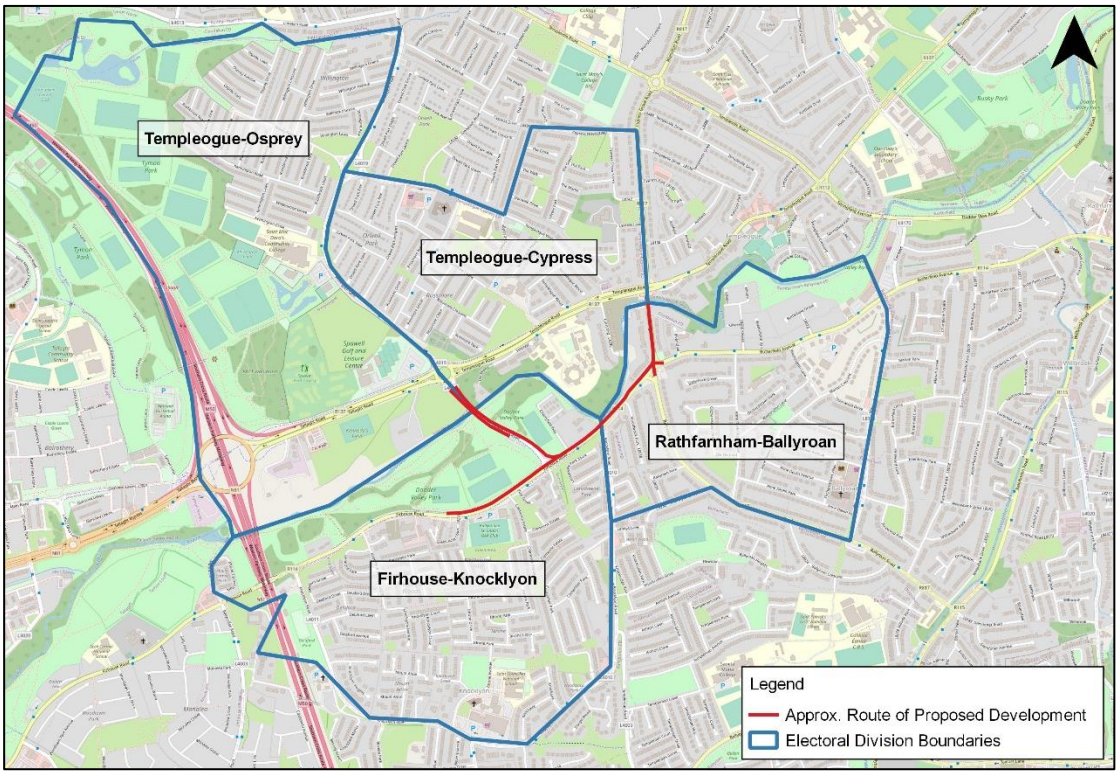


Plate 4.4. Electoral Divisions at the location of the proposed development

Landscapes and Sites of Historical, Cultural or Archaeological Significance

The River Dodder corridor is rich in archaeological significance due to settlement activities tending to occur adjacent to watercourses. There are no recorded archaeological or architectural heritage sites in the footprint of the proposed development. The nearest sites are listed in Table 4.1, below.

Table 4.1 Archaeological and Architectural Heritage Sites within 200m of the Proposed Development

Type	Ref.	Description	Approx. Linear Distance
Architectural heritage	Reg. No. 11216095	House (1820 – 1870)	27 m
	Reg. No. 11216067	Weir (1770 – 1840)	32 m
	Reg. No. 11216050	Country house (1820 – 1860)	107 m
	Reg. No. 11216041	Graveyard (1700 – 1730)	142 m
	Reg. No. 11215008	Spawell House (1700 – 1705)	190 m
Archaeological heritage	DU022-059----	Well	146 m
	DU022-009001-	Church	138 m
	DU022-009002-	Graveyard	147 m
	DU022-009003-	Graveslab	147 m
	DU022-009006-	Graveslab	147 m

There is the possibility that unrecorded subsurface archaeological remains are present in the vicinity of the proposed development, although it is unlikely that such items are present in the footprint of the proposed development, which is situated on existing roadbed and in the immediate landscaped margins of same.

Designated Focal Points / Views

A Landscape Character Assessment of South Dublin County was published in 2015, and has informed the extant (2016 – 2022) Development Plan for the area. The Landscape Character Area (LCA) in which the location of the proposed development is situated is LCA 5, 'Urban'. The area extends east from Tallaght / Oldbawn to Rathfarnham, and north / north-west along the county boundary to Clondalkin. The landscape values of the LCA are listed as (i) public parks with recreational and ecological resources, (ii) the Dodder River Valley, (iii) 19th century industrial heritage, and (iv) views out to the Dublin Mountains and agricultural hinterland. Forces for (negative) change in the LCA are listed as (i) untidy urban development impacting upon character of and views towards hinterland, (ii) road improvements generating increased volumes of traffic and (iii) infill development which is insensitive to the historical and vernacular features of the area. A suite of mitigation measures for protecting the landscape character of the area are set out, as follows (p. 79):

- "
  .
- .
- .
- *– particularly on 'miscellaneous 'open*
  .
- .
- .
  ."

On the basis of the Landscape Character Assessment, the Development Plan sets out a list of views and prospects to be protected. None of these are at or in the immediate vicinity of the location of the proposed development.

5. TYPES AND CHARACTERISTICS OF POTENTIAL IMPACTS

5.1 Assessment of the Characteristics of the Proposed Development

Table 5.1 details the screening assessment relating to the characteristics of the proposed development.

Table 5.1 Types and Characteristics of Potential Impacts

EIA Topic	Screening Assessment	Screen In / Out
Population and Human Health	**Construction Phase** The construction phase of the proposed development is likely to result in the emission of noise and small volumes of dust. It will also result in temporary closures of sections of footpath along the route in question. These aspects of the construction phase will result in, at worst, slight, temporary negative effects, in the form of nuisance to road-users and residents in the immediate vicinity. The works will be carried out in accordance with best practice in relation to health and safety, such that no direct, significant, negative human health effects are expected to arise as a result of on-site accidents or otherwise. Traffic management measures (including but not limited to signage and provision of alternative routes) will be implemented, as appropriate, to ensure convenient and safe movement of all road-users throughout the construction phase. Any utilities infrastructure will be diverted, if and as required, and interruptions to services will be avoided insofar as possible, such that no significant effects are anticipated. **Operational Phase** The operational phase of the proposed development will provide safer and more convenient infrastructure for cyclists and pedestrians along the route in question and will also tie in with the greater Dodder Greenway. This is likely to facilitate and promote a modal shift away from private car use and towards cycling, walking or both along the route. In terms of human health in the locality, this will result in slight to moderate, permanent, positive effects, through (i) reduced risk of road traffic accidents involving most vulnerable road-users, (ii) increased physical activity, (iii) improved access to outdoor recreation and (iv) reduced noise / air pollution due to internal combustion engines along the route. ***No likely, significant effects predicted.***	Out
Biodiversity	**Construction Phase** As discussed above, and illustrated in the landscape design drawings in Appendix D, the construction phase of the proposed development will result in the permanent loss of 59 no. existing trees from the site extents. These will be offset to some degree by the planting of 23 no. new trees, such that there will be a net loss of 36 no. trees. The trees lost are predominantly non-native, small in stature and do not form part of woodland or linear habitats. Rather, they have been planted in parkland and public realm as part of landscaping, with the exception of a small number (4 no.) of young trees in the vicinity of the River Dodder on Firhouse Road. A small area of vegetation clearance (including clearance of bramble) will also be required at this location; however, existing mature riparian trees on the banks of the River Dodder will be retained. Otherwise, existing trees in the footprint of the proposed development will be retained in situ. As shown in the landscaping drawings (Appendix D), it is also proposed to add min. 1 m mixed wildflower strips on the roadside margins along the length of the	Out

	proposed development, as well as a small cluster of native shrubbery, on the north side of the Firhouse Road – Wellington Lane junction. The wildflower strips will replace the existing short sward (mown) lawn, which is of very limited biodiversity value, providing an enhanced habitat for invertebrates, birds and other wildlife. Considering that the trees lost as a result of the proposed development are of limited biodiversity value (due to their relatively small size and predominantly non-native status), and that the proposed landscaping will see the addition of a number of native trees and shrubs, as well as the replacement of mown lawn with wildflower strips, it is considered that the net ecological impact will be moderately negative (at the local scale) to neutral (i.e. not significant). As illustrated in Plates 3.1 and 3.2, the proposed development involves works over and immediately adjacent to the River Dodder at two locations. No in-stream works will be required. Protecting the watercourse from pollution and the introduction of invasive alien species is imperative, considering its existing 'poor' ecological status. Best practice measures in relation to pollution control and biosecurity will be implemented during throughout the duration of the proposed works, such that significant negative impacts on aquatic ecology are not expected to occur. No Annex I or high biodiversity value habitats will be affected by the proposed works. Considering the nature and scale of the proposed development, and its substantial remove from any hydrologically-connected Designated Sites, there will be no impacts whatsoever on any national or European (Natura 2000) Designated Site.. A Screening for Appropriate Assessment (AA) Report has been prepared for the proposed development. It has concluded that, on the basis of objective information, that the Project, either individually or in combination with other plans or projects, in view of best scientific knowledge, is not likely to give rise to impacts which would constitute significant effects in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, the North Dublin Bay SAC or any other European site. **<u>Operational Phase</u>** There are no features / activities associated with the operational phase of the proposed development which are likely to result in significant effects on biodiversity. As stated in Section 6, below, any lighting under the scope of the proposed development will be bat-friendly, in accordance with Bat Conservation Ireland (2010) and Bat Conservation Trust & Institution of Lighting Professionals (2018). ***No likely, significant effects predicted.***	
Soils, Geology and Hydrogeology	Only minor excavations are proposed under the scope of the proposed development. Excavated material will be re-used on-site (e.g. in landscaping) insofar as is possible, or , where the former is not possible, transported off-site for re-use, disposal or otherwise, in accordance with waste hierarchy and the relevant waste management legislation. No rock-breaking, cutting or blasting is required. As discussed in the following section, no significant effects on hydrology are anticipated. No significant effects in relation to soils, geology or hydrogeology are anticipated. ***No likely, significant effects predicted.***	Out
Hydrology	**<u>Construction Phase</u>** As stated above in respect of biodiversity, the proposed development involves works over and immediately adjacent to the River Dodder at two locations (Plates 3.1 and 3.2). No in-stream works will be required.	Out

	Protecting the watercourse from pollution and the introduction of invasive alien species is imperative, considering its existing 'poor' ecological status. Best practice measures in relation to pollution control and biosecurity will be implemented during throughout the duration of the proposed works, such that significant negative impacts on water quality are not expected to occur. **Operational Phase** Surface water run-off from the proposed development will be either over the edge or directed to the existing surface water drainage system. As such, run-off may enter the River Dodder at the two locations where the proposed development is over or adjacent to the watercourse (Plates 3.1 and 3.2). The additional volume of run-off will be negligible, since the proposed development is largely on the existing roadbed. Since the new infrastructure will be used by pedestrians and cyclists and the surfacing will be of a high standard, run-off generated from paved areas during the operational phase is not anticipated to cause any appreciable degradation in water quality in the River Dodder. While the River Dodder does flood in the vicinity of the proposed development, it does not do so within the footprint of the proposed development. The proposed development is not expected to significantly increase the volume of run-off to the watercourse, nor does it constitute development within the known flood extents of the river. As such, the proposed development is not expected to exacerbate or be affected by flooding during the construction or operational phases. ***No likely, significant effects predicted.***	
Air Quality and Climate	**Construction Phase** The proposed development is likely to generate nuisance dust and gaseous vehicular emissions (including greenhouse gases) from the movement of vehicles transporting construction material to and from site during the construction stage, as well as the activities of construction plant and machinery. However, due to the small scale and limited works required, no significant effects are likely in any of these respects. The volumes of materials required will be relatively small, as will the associated volumes of embodied carbon. **Operational Phase** By facilitating and promoting a modal shift away from private car use in favour of cycling, walking or both, the operational phase of the proposed development may be expected to reduce somewhat the volume of traffic using the route, and, hence, the volume of greenhouse gas emissions generated per unit time along the route. The associated positive, permanent effect is difficult to quantify, but is not expected to be significant in magnitude. ***No likely, significant effects predicted.***	Out
Noise and Vibration	**Construction Phase** Certain aspects of the proposed works may be expected to result in nuisance level noise. No particularly noisy or lengthy noise-inducing activities (e.g. piling, blasting) are proposed and it is not expected that any noise limits will be exceeded at the facades of any buildings. As stated above in respect of population and human health, any associated nuisance for residents / road-users will constitute a slight, brief to temporary (at worst) negative effect. No hydroacoustic impacts are anticipated. Structurally damaging levels of noise and vibration are not expected to occur. **Operational Phase**	Out

	By promoting a modal shift from private car use in favour of cycling / walking along the route, the proposed development may result in reduced noise pollution along the route in question during the operational phase. The effect in terms of population and human health is not expected to be of a significant magnitude, however. ***No likely, significant effects predicted.***	
Material Assets and Land	**Construction Phase** There will be no land acquisition necessary for the proposed development and, therefore, no significant effect on businesses or property will occur. No road closures are anticipated, and access will be maintained across the site insofar as possible, such that no severance is expected to occur. **Operational Phase** During the operational phase, the proposed development will improve connectivity of existing outdoor recreational areas and will improve accessibility across the area for cyclists and pedestrians, resulting in a moderate positive effect in terms of material assets. ***No likely significant effects are predicted.***	Out
Archaeological and Architectural Heritage	There are no recorded archaeological or architectural heritage sites in the footprint of or immediately adjacent to the proposed development. No direct or indirect effects are anticipated in relation to any recorded sites in the vicinity. Considering that the vast majority of the footprint of the proposed development consists of existing roadbed and previously landscaped parkland, it is unlikely that any unrecorded archaeological features will be encountered during the limited excavations proposed. In the unlikely event that such a feature is encountered, the works in question will be immediately halted, and a suitably qualified archaeologist will be contracted to make a full written and photographic account of the remains before works in the area can proceed. ***No likely, significant effects predicted.***	Out
Landscape and Visual Amenity	**Construction Phase** The proposed works may negatively affect visual amenity for residents in the immediate vicinity of the route in question. However, the associated negative effect will be slight at worst, and temporary in duration, and good housekeeping procedures on the part of the Contractor will minimise visual effects insofar as is practicable. **Operational Phase** The proposed development is fully aligned with the vision for the 'Urban' LCA described in the South Dublin Landscape Character Assessment (2015), in that it will enhance pedestrian and cyclist infrastructure and improve access to recreational parkland in the Dodder Valley. The proposed development design has been visually integrated into the existing landscape through careful design (as shown in the landscape drawings in Appendix D). The proposed development does not involve any high-rise / built elements which could obscure or negatively affect protected views / prospects across the wider area. ***No likely, significant effects predicted.***	Out
Major Accidents and Disasters	As stated above, the only sources of external hazard which could conceivably interact with or render the proposed development susceptible to a MAD is a major traffic accident. Standard traffic management and safety measures will be implemented during the construction phase of the proposed development, such that the proposed	Out

	works are not expected to cause or significantly exacerbate a traffic accident and the associated risk is considered to be as low as reasonably practicable. By providing segregated cyclist and pedestrian infrastructure along the route, the operational phase of the proposed development is expected to reduce the risk of traffic accidents involving these vulnerable road users relative to the baseline scenario. ***No likely, significant effects predicted.***	
Interactions	No interactions between different classes of effects are expected to occur which could give rise to significant effects. ***No likely, significant effects predicted.***	Out
Cumulative Impacts	A review of plans and projects (recently granted planning applications) was undertaken in the vicinity of the proposed development and assessed in Table B.1 in Appendix B of this EIA Screening Report. The sources of information included: • An Bord Pleanála Website (Planning Searches); • EIA Portal (Planning Search); • Dublin City Council Online Planning Search; • South Dublin County Council Planning Search; • Dun Laoghaire Rathdown County Council Planning Search. Having considered the anticipated overall potential impact with respect to each of these developments it is considered that the there are no likely significant effects on the environment when considered in combination with each other. It is therefore considered that the cumulative impact of the proposed development in combination with existing baseline actions is not significantly worse than any of the individual impacts associated with site preparation, construction and subsequent maintenance of the proposed development. ***No likely, significant cumulative effects predicted.***	Out

6. STANDARD MITIGATION MEASURES

The following standard mitigation measures will be implemented during the construction phase of the proposed development:

- The Contractor will ensure that excavated material is re-used on-site (e.g. in landscaping) insofar as possible.

- The Contractor will ensure that any excavated material which cannot be re-used on-site will be transported off-site for re-use, disposal or otherwise (as appropriate), in accordance with waste hierarchy and the relevant waste management legislation.

- The Contractor will ensure that all vegetation clearance (including tree felling) will be carried out outside of the nesting season (i.e. no clearance between 1st of March and 31st of August, inclusive).

- The wildflower mix used in the proposed landscaping will be appropriate for the site context (i.e. soil pH, drainage, light, .) and utilise native species insofar as possible. No invasive species shall be permitted in the wildflower mix.

- The Contractor will ensure that best practice pollution prevention measures will be implemented throughout the proposed works, with a focus on the prevention of run-off of pollutants and sediment to the River Dodder, in accordance with (at a minimum) the following guidance documents:

  - (TII, 2008);
  - (IFI, 2016)
  - *532* (CIRIA, 2001).

- The lighting design for the proposed development (not detailed at this stage) will be in accordance with Bat Conservation Ireland's (2010) and the Bat Conservation Trust & Institute of Lighting Professionals' guidance note (no. 08/18), (2018).

- The Contractor will ensure that construction compound(s) are situated a minimum of 10m from any watercourses and will feature best practice measures for pollution prevention.

- In the unlikely event that archaeological remains are encountered during excavations, the Contractor will ensure that the works in question are immediately halted, and a suitably qualified archaeologist is contracted to make a full written and photographic account of the remains before works in the area can proceed.

- The Contractor will be required to comply with the noise and vibration levels as stipulated in the NRA's (2004).

- An Environmental Operating Plan (EOP) or Construction Environmental Management Plan (CEMP) will be prepared by the Contractor prior to the commencement of works, in accordance with the NRA

, and in agreement with South Dublin County Council. This will be a live document, to be maintained by the Contractor throughout the proposed works. It will address (at a minimum):

- Allocation of responsibilities in relation to environmental management;
- Details of environmental training for site personnel;
- Construction phase waste management;
- Good housekeeping procedures for the construction site;
- Efficient construction materials management;
- Construction phase traffic management (for all road-users, including cyclists and pedestrians, as well as construction traffic);
- Environmentally sound placement, set-up and management of construction compound(s) and storage areas;
- Implementation of best practice construction phase pollution prevention measures, particularly in relation to prevention of aquatic pollution;
- Implementation of best practice construction phase measures for the prevention of public nuisance due to noise, dust and any other relevant activities / aspects of the works; and
- Biosecurity protocols for all relevant construction activities.

7. SCREENING CONCLUSION AND RECOMMENDATION

This EIA Screening Report has determined that the proposed development does not exceed the thresholds that trigger the mandatory requirement for EIA and subsequently the proposed development is deemed to be a sub-threshold development. This sub-threshold development has been assessed in accordance with Schedule 7 and 7A of the Planning and Development Regulations 2001 (as amended).

Having regard to this assessment with regard in particular to the (1) characteristics of proposed development; (2) location of proposed development; (3) characteristics of potential impacts; this EIA Screening Report found that the proposed development is **not likely** to result in significant negative environmental effects.

It is therefore recommended to South Dublin County Council that the proposed development would not be likely to have significant effects on the environment by virtue of its characteristics, location, size or potential impacts and does not require an Environmental Impact Assessment Report to be undertaken.

8. BIBLIOGRAPHY

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APPENDIX A

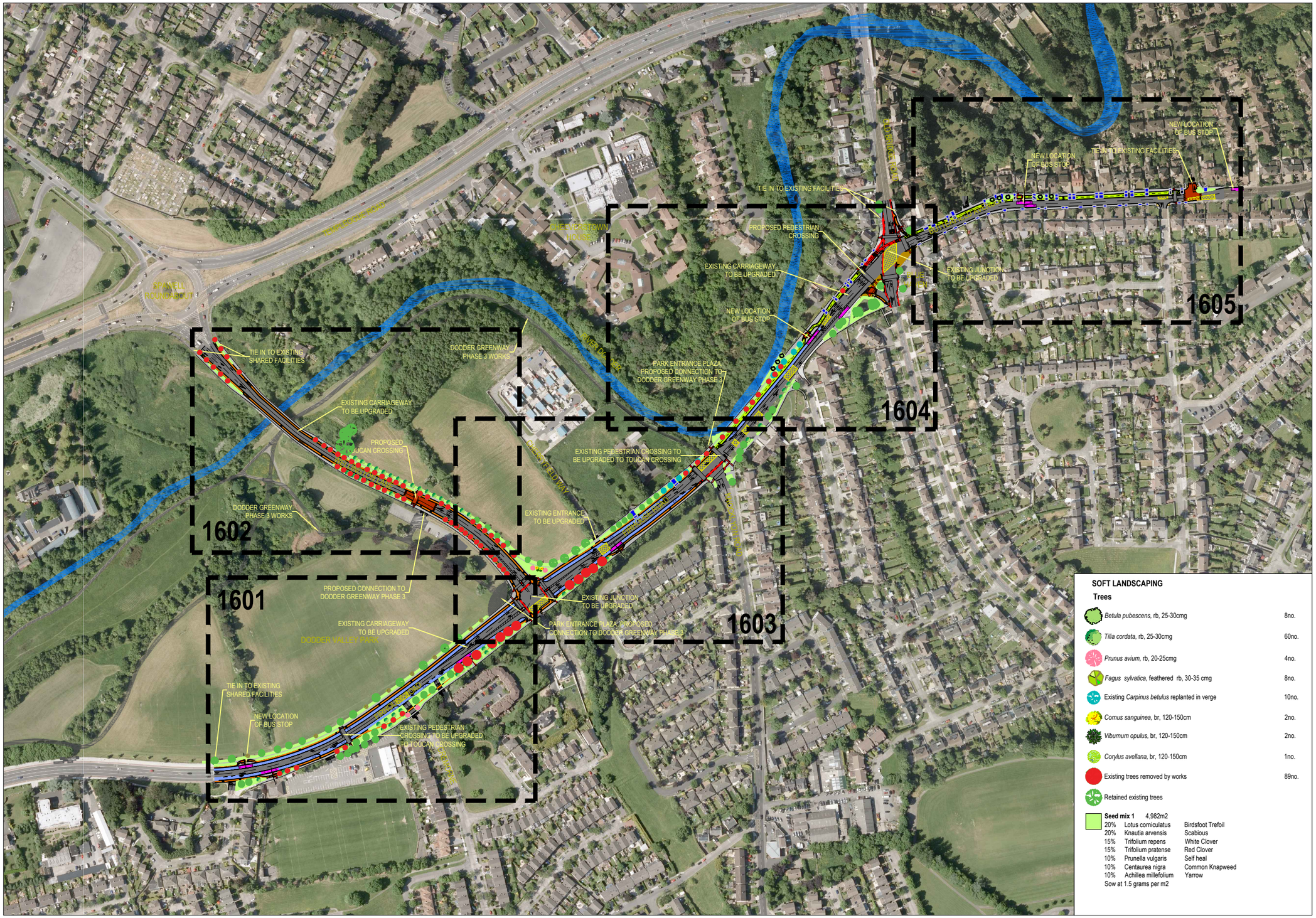
DEVELOPMENT DRAWINGS

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates


1601
1602
1603
1604
1605
SPAWELL ROUNDABOUT
DODDER GREENWAY PHASE 3 WORKS
TIE IN TO EXISTING SHARED FACILITIES
EXISTING CARRIAGEWAY TO BE UPGRADED
PROPOSED TOUCAN CROSSING
PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
EXISTING CARRIAGEWAY TO BE UPGRADED DODDER VALLEY PARK
NEW LOCATION OF BUS STOP
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
BLUE CYCLETOWN HOUSE
PROPOSED PEDESTRIAN CROSSING
EXISTING CARRIAGEWAY TO BE UPGRADED
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
EXISTING JUNCTION TO BE UPGRADED
PARK ENTRANCE PLAZA PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
EXISTING ENTRANCE TO BE UPGRADED
EXISTING JUNCTION TO BE UPGRADED
PARK ENTRANCE PLAZA PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING SHARED FACILITIES
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
RIVER DODDER
RIVER DODDER
RIVER DODDER

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

PROPOSED SECTION 1-1
SCALE 1:100

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

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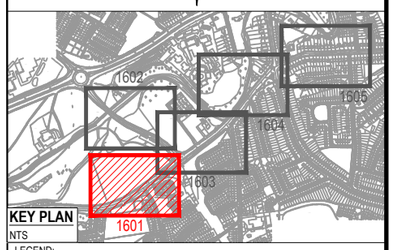

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- EXISTING 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 KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

Clifton Scannell Emerson Associates

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E. info@csea.ie
W. www.csea.ie

Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 1 OF 5

Drawn By: KT | Date: MAR. 2022 | 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	1601

18_123D - CSE - GEN - XX - DR - C - 1601

Status Code: S2 — Suitability Description: FOR INFORMATION

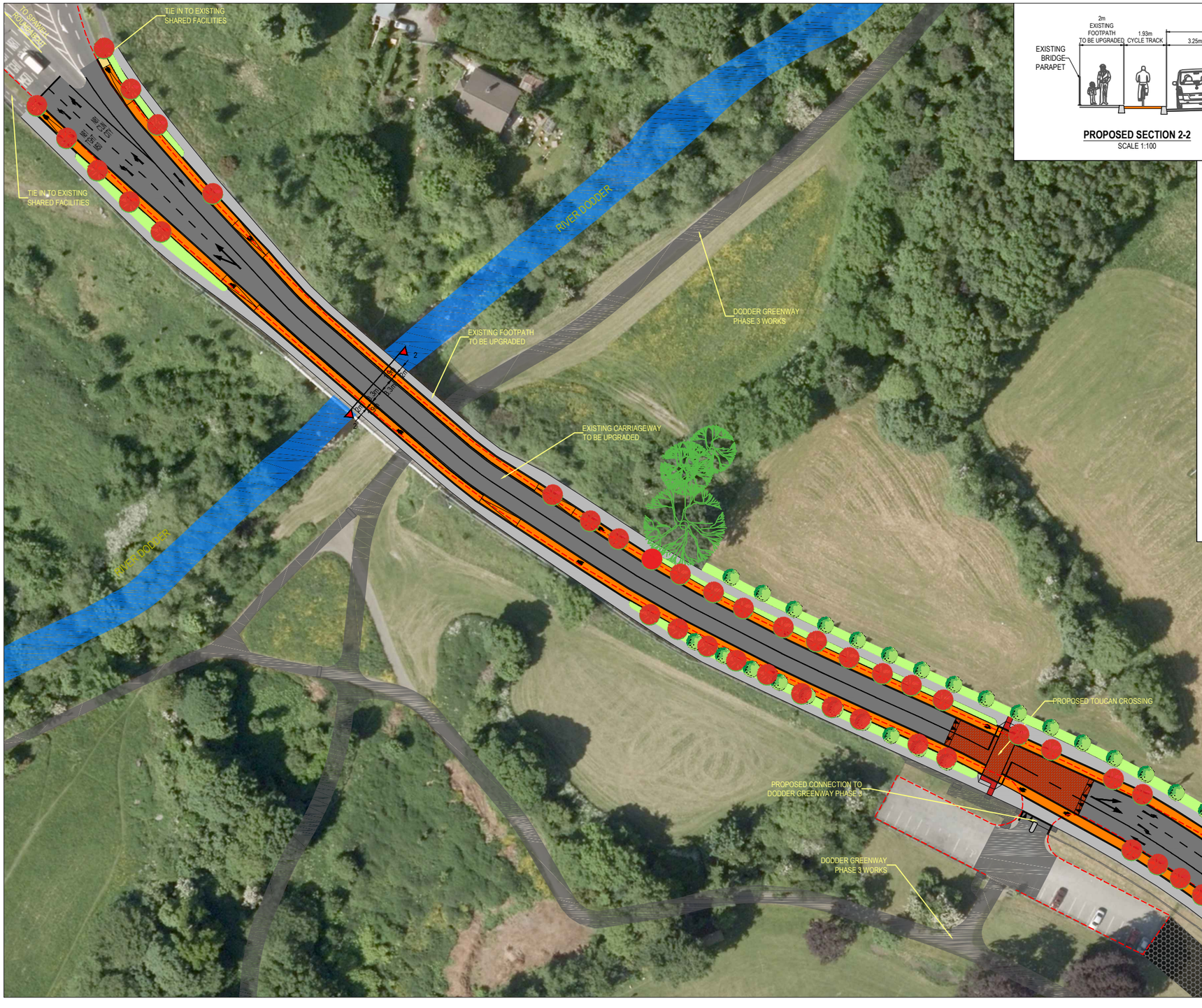
Revision: P01 — Project Status: PLANNING

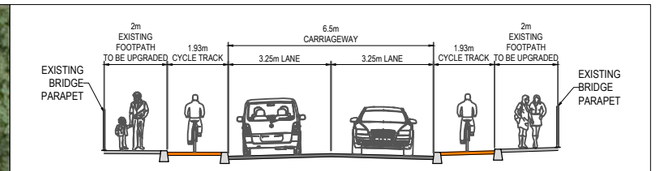
DODDER GREENWAY - PHASE 5
PART 8

NTA 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

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

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

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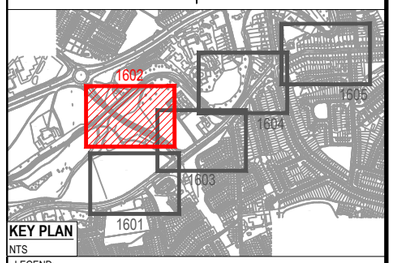

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- EXISTING 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 KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 2 OF 5

Drawn By: KT | Date: MAR. 2022

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	1602

Status Code: S2 — Suitability Description: FOR INFORMATION

Revision: P01 — Project Status: PLANNING

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY - PHASE 5
PART 8

Clifton Scannell Emerson Associates

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

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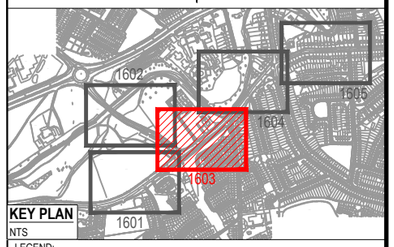

KEY PLAN
NTS

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- PROPOSED TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
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- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING KERB

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

PROPOSED SECTION 3-3
SCALE 1:100

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

Clifton Scannell Emerson Associates

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W. www.csea.ie

Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 3 OF 5

Drawn By: KT	Date: MAR. 2022	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	1603

Status Code: S2 — FOR INFORMATION

Revision: P01 — PLANNING

Suitability Description / Project Status

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY - PHASE 5
PART 8

Clifton Scannell Emerson
Associates

PROPOSED SECTION 4-4
SCALE 1:100

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
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Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

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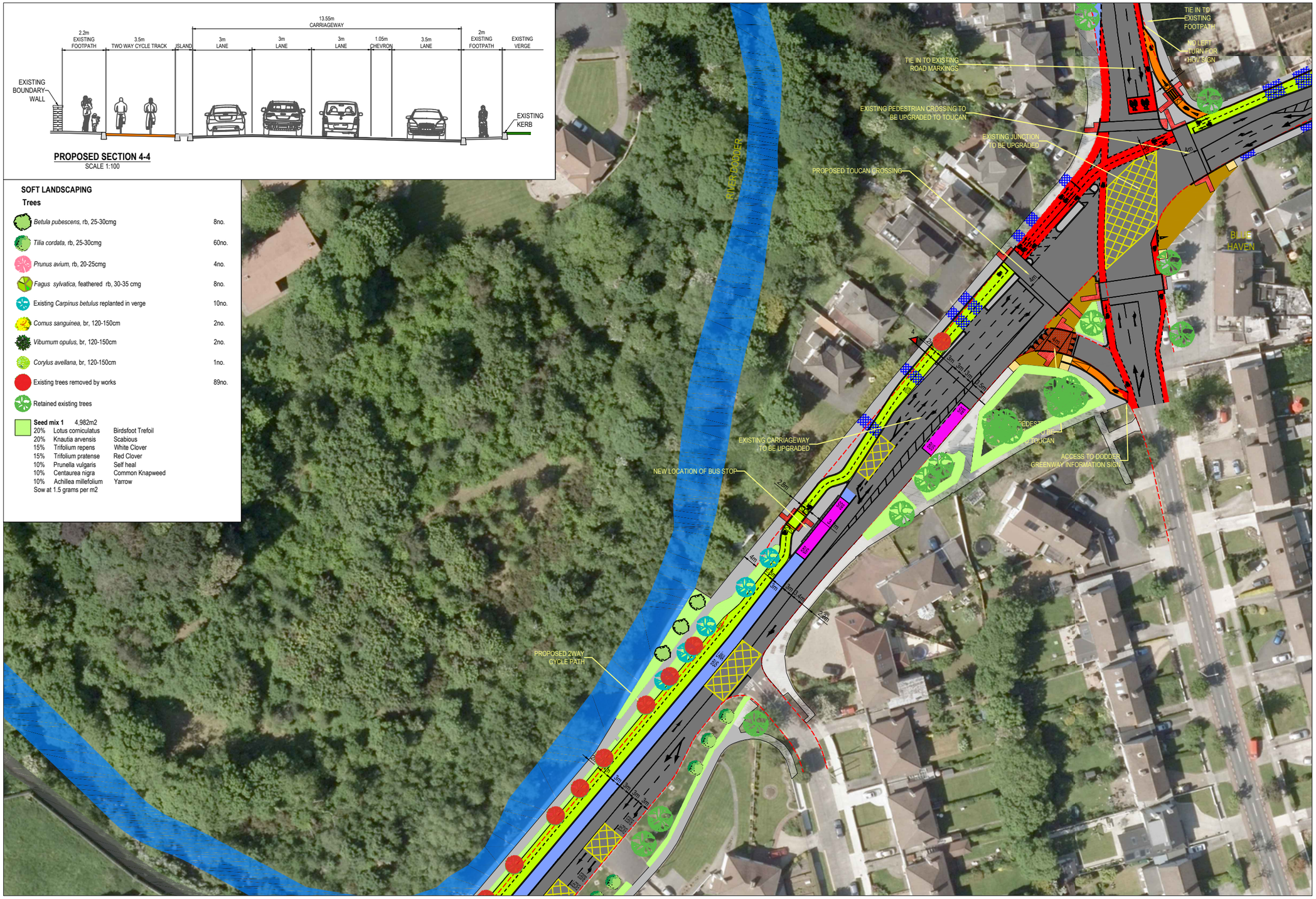
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2



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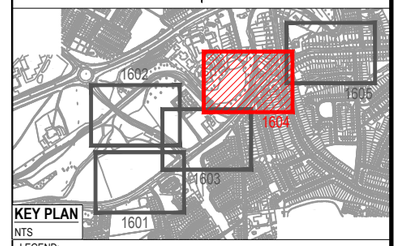

KEY PLAN
NTS

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
- EXISTING 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 KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

Clifton Scannell Emerson Associates

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Ireland, A96 K6P3

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E. info@csea.ie
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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 4 OF 5

Drawn By: KT | Date: MAR. 2022 | 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	1604

Status Code: S2 — FOR INFORMATION

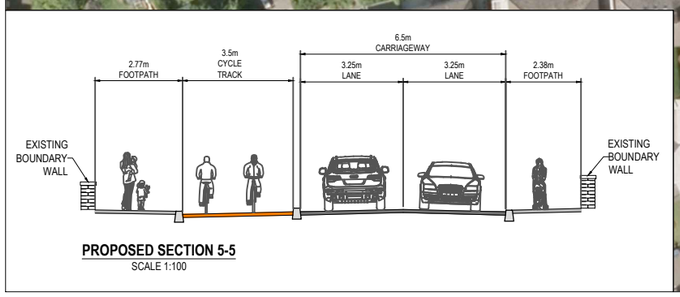
Revision: P01 — Project Status: PLANNING

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates



PROPOSED SECTION 5-5
SCALE 1:100

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
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Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

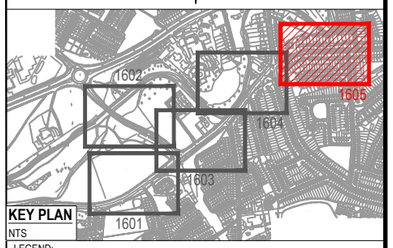
Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

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
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
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- PROPOSED RAMP
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- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

Clifton Scannell Emerson Associates Limited
Consulting Engineers,
Mentec House (1st Floor),
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Dun Laoghaire, Co. Dublin,
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E. info@csea.ie
W. www.csea.ie

Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 5 OF 5

Drawn By: KT | Date: MAR. 2022

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	1605

Status Code: S2 — FOR INFORMATION

Suitability Description

Revision: P01 — PLANNING

Project Status

APPENDIX B

ASSESSMENT OF CUMULATIVE IMPACTS

Table B.1: Assessment of Projects in Respect of their Potential to Result in Cumulative/ in-combination Effects with the Proposed Development

Plan or Project	Description of Plan or Project	In-combination effect(s)
Dodder Greenway (SDCC Section)	The Dodder Greenway (SDCC Section) is a c. 12km 3-4m wide cycling and pedestrian path between Orwell Park and Fort Bridge near Bohernabreena. The project is currently under construction in phases and will include three new cycling/ pedestrian bridges, bat friendly public lighting and toucan crossings. This project will link up with the proposed development. The SDCC Section received planning in 2017.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway (DCC Section)	The Dodder Greenway (DCC Section) is a c. 5km 3-4m wide cycling and pedestrian path between Orwell Park and Sir John Rogerson's Quay. The project will include bat friendly public lighting and toucan crossings. This project will link up with the proposed development, forming a contiguous 17km Greenway between Dublin City and the Dublin Mountains. The planning application is currently being prepared by the NTA.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway- Springfield Avenue Upgrade	The proposed Springfield Avenue Upgrade scheme is an upgrade on 1.5km of carriageway, footpaths, and cycle tracks. The scheme is part of the Dodder Greenway overall scheme, and it will link two phases of the Dodder Greenway. The scheme, considered to be an "on road" section of the Dodder Greenway, and it is also described as an extension and a supplement to the Dodder Greenway. The project proposes to upgrade two junctions and rearrange and upgrade the existing cycle facilities on the road. It also intends to upgrade existing pedestrian crossings and create a continuously 5 m wide shared path along Springfield Avenue. SDCC intend to apply for Part VIII consent in December 2020.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway Dodder Road Lower Upgrade	The Dodder Road Lower Upgrade intends to upgrade the conditions of the existing Dodder Road Lower. The proposal contains approximately 730m of a 5m wide shared path that will link the Dodder Greenway route on Springfield Ave – passing through Rathfarnham Rd–Springfield Ave junction – and the continuation of the Dodder Greenway Route within Dublin City Council boundaries. The proposed development is considered to be an "on road" section of the Dodder Greenway and its major proposed adjustment is to convert the Dodder Road Lower, currently a two-way system road, into a one-way system road to accommodate the proposed 5m wide shared path. The proposed one-way system layout has been designed considering recent traffic counts and predicted traffic increase for all junction surrounding the area of the proposed development. The proposed development comprises of the following: • 730 meters of a 5 meters wide shared path. • 730 meters of road upgrade and realignment. • Road marking and road sign upgrade. • 730 meter of concrete footpath upgrade. • Public Lighting upgrade.	There are no significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	• All associated ancillary works and integrated landscape plans The lighting design for the proposed development will be devised to avoid significant impacts on bats and other wildlife within the Dodder corridor while balancing the need for adequate lighting for Greenway users. The existing street trees and vegetated areas on the north side of the Dodder Road Lower will be retained. Grass verges are proposed on the south side of the road between the trees and property access points.	
Proposed Royal Canal Greenway	The Royal Canal Greenway will involve the construction of a Premium Cycle and Pedestrian Route along the Royal Canal from North Wall Quay to Ashtown. The overall length of the scheme is 7.1 km from Sheriff Street Upper to Ashtown. The scheme has been broken into four phases: • Phase 1: Guild Street (North Wall Quay) to Sheriff Street Upper (completed); • Phase 2: Sheriff Street Upper to North Strand (work started March 2019); • Phase 3: North Strand to Phibsborough; • Phase 4: Phibsborough to Ashtown. An AA Screening has been undertaken at planning stage and it was concluded that there will be no likely significant effects on any Natura 2000 site(s) either alone or in-combination with other plans or projects. This project is 5km north of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Flood Alleviation Works- Planning Amendment to the previously approved Planning Application 2504/13 at Donnybrook RFC	Dublin City Council is currently engaged in River Dodder Flood Alleviation Works, Phases 2c/2d/2e under a Part 8 planning permission issued in 2013. Part of this project includes works to the western bank of the river Dodder between Herbert Park and Anglesea Bridge (Donnybrook). The preferred option for the Dodder Greenway through the Donnybrook area has been identified as a route along the western bank of the River Dodder between Anglesea Bridge (Donnybrook) and Herbert Park. The current proposals for the flood alleviation works in this area would require major alteration in the future to allow for the Dodder Greenway to be provided along this preferred route. Dublin City Council therefore proposes to amend the current proposals for the flood alleviation works between Herbert Park and Anglesea Bridge so that the greenway can be constructed as part of the current on-going flood defences in this area. As part of the amended works it is proposed: • To widen a 120m section of the originally planned flood embankment to allow for the construction of a 4m wide walking and cycling route along its length. • To alter the line of approx.140m, and cantilever over the riverbank approximately 130m, of the originally planned flood wall in order that the walking and cycling route can be constructed between the flood wall and the neighbouring pitches and tennis courts. • To remove some existing low value trees and provide a new tree planting scheme	There are no significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	• To install a new boundary fence between the walking and cycling route and the neighbouring property belonging to the Leinster Branch of the IRFU. To provide beech hedging or similar as screening on the Leinster Branch side of the boundary fence.	
Dodder Flood Alleviation Scheme (Phase 3)	The purpose of the River Dodder Flood Alleviation Scheme Phase 3 is to assess and develop a viable, cost effective and sustainable Flood Alleviation Scheme in order to alleviate flooding along the River Dodder between Clonskeagh Road Bridge to Orwell Road Bridge including Little Dargle Stream at Braemor Road-Woodside Drive south-eastern junction. This project is being developed between Dún Laoghaire- Rathdown County Council and the Office of Public Works is currently at preliminary discussion stage. In the absence of any design or even design options, an assessment of in-combination effects with this project cannot be undertaken at this stage. Once developed, this project will be required to undertake the appropriate assessments including EIA Screening and AA Screening and consider the cumulative effects resulting from all other projects, as appropriate.	There is no design available for this project and therefore an assessment of in-combination effects cannot be undertaken at this time. The Dodder Flood Alleviation Scheme (Phase 3) will be assessed for in-combination effects when the design is completed.
Proposed Dodder Public Transportation Opening Bridge	Dublin City Council has commenced the planning and design of the Dodder Public Transportation Opening Bridge. The scheme comprises a new public transportation opening bridge over the River Dodder at its confluence with the River Liffey along with the construction of approach roads associated with the bridge; the construction of a new control building; the provision of a new club house and facilities for St Patrick's Boat Club; the reclamation of land to the west of Tom Clarke Bridge to facilitate the build; the landscaping of the area between York Road/Thorncastle street and the R131 over the extents of the project. An EIAR and Natura Impact Statement will be prepared in support of the project.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2868/16 (Granted)	Demolition of a 5-storey commercial building on Shelbourne Road and the construction of a 4 to 6 story commercial building over basement level that will provide office space. Ground level will provide space for either retail or a café. Car and bicycle parking spaces will also be provided by the development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 3726/09, 2669/11, 3810/11, 2744/12,	Demolition of existing buildings at Orwell Park and the construction of 77 residential units mainly consisting of terraced, townhouse-style buildings. Car and bicycle parking spaces are also included alongside an ESB sub-station, communal gardens. Public open spaces, and all associated infrastructure and site	There are no significant effects predicted to arise from the combination of

Plan or Project	Description of Plan or Project	In-combination effect(s)
2427/13, 3624/13, 3012/14, 2250/15, 2259/15, 4005/15, 4216/15, 2766/16, 3187/17 (Granted)	development works including landscaping and boundary treatment. Located 200m north-east of the proposed development.	this development with the proposed development.
DCC Planning Application No. 2212/13 (Granted)	Construction of 3 floors above ground floor slab, extension and change of building uses to provide 116 nursing home bedrooms at Orwell Nursing Home, dining and day rooms, ancillary accommodations, office and training rooms, and car parking spaces will also be included. A single storey concierge and sub-station building will also be constructed. Landscaping and boundary works are also included in the development. Located 250m north-east of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2659/13, 2013/14 (Granted)	The development involves the construction on 8 apartments and 8 town houses at Orwell Park alongside associated site development and landscape works. Located 280m north-east of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2676/11 (Granted)	The development involves the demolition of an existing building at Clonskeagh House and the construction of a 4-storey multi-purpose building. Reconfiguration and resurfacing of an existing car park will be carried out, alterations to existing access and associated site development works are also included.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No, 2620/14 (Granted)	The development involves the demolition of existing offices, factory buildings, yards, chimneys and ancillary accommodation and alterations to surrounding buildings will also be carried out on Clonskeagh Road. 92 apartments will be constructed in 4 apartment blocks ranging between 2 and 4 storeys and will also contain a creche. A river walk and landscaping will be carried out along the banks of the River Dodder. A new site entrance will be provided that will provide access to car and bicycle parking spaces. Improvements to existing boundary walls, landscaping and associated works will also be carried out. Located 2.5km north-east of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2749/19 (Granted)	Construction of an air dome over 2 existing tennis courts on Beech Hill Road, Clonskeagh.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
SDCC Planning Application No. SD128/0003 (Pending)	The proposed development of the Tallaght to Ballyboden Cycle Route Scheme. This involves the construction of new off-road cycle tracks on Oldbawn Road, Knocklyon Road and Templeroan Road. The construction of shared facilities through Dodder Valley Park, Monlea Park and Knocklyon Road. Upgrade of existing off-road cycle tracks on the Firhouse Road and Scholarstown Road. The incorporation of cyclist facilities along Oldbawn Road and Tallaght Village. Cycle lanes will be provided through the N21, junction and road safety improvements are also included. Located 2.5 km south-west of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD198/0006 (Pending)	Construction of 3 play spaces and a play trail route in the Dodder Valley Park. The play spaces will require play equipment, surfacing, boundary treatments, seating areas, planting and paving. Play equipment, surfacing, boundary treatments, seating areas, and planting will also be involved in the development of the trail. All associated works will also be included. This development was subject to an Appropriate Assessment Screening and an Environmental Impact Assessment. Located 3 km south-west of the proposed development.	There are no significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD178/0004 (Granted)	Construction of a grass athletics track, a playing pitch, a BMX track, and a signed nature trail at Mt. Carmel Park. Shared changing room/club house facilities are also proposed. The development has been subject of an Appropriate Assessment Screening.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD11A/0144 (Granted)	Construction of 5 2-storey houses at Ladywell, Temepleogue Road. Landscaping, boundary treatment and site development works are all included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD14A/0107 (Granted)	Demolition of an existing house and surrounding sheds and the construction of 18 3-storey houses at Ladywell, Templeogue. A new access road, landscaping, new boundary walls, and associated works will be involved. A portion of the site adjoining the River Dodder to be ceded to South Dublin County Council for a walkway.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD13A/0139,	Demolition of the existing out-buildings at Riversdale House, Rathfarnham, and the construction of 10 detached houses ranging from 2 to 2.5 storeys. Associated works such as landscaping, foul and surface water drains and associated parking provision will also be included.	There are no likely significant effects predicted to arise from the

Plan or Project	Description of Plan or Project	In-combination effect(s)
SD14A/0275 (Granted)		combination of this development with the proposed development.
DLRCC Planning Application No. D16A/0082 (Granted)	Removal of the existing car wash, sheds, workshop and associated structures and the closure of 2 vehicular entrances at 149 Braemor Road, Churchtown. A 4-storey nursing home consisting of 101 bedrooms with associated ancillary/common facilities, office/administration areas, signage and green roof, and a new entrance will be constructed. Car and bicycle parking and bin storage will be provided, and all associated site development, landscaping and boundary treatments are also included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DLRCC Planning Application No. D15A/0191 (Granted)	Construction of 54 residential units including 42 houses and 12 apartments at Bird Avenue, Clonskeagh. The development includes a new vehicular access, parking spaces, landscaping, drainage and boundary treatments.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

APPENDIX C

EIA SCREENING CHECKLIST

Table C.1 EIA Screening Checklist (as per European Commission, 2017)

This checklist has informed the screening exercise presented above. All relevant details in relation to the checklist questions below are presented in the main text, above.

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
Brief Project Description: Refer to main text.		
1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?	**es.** The project will include the upgrade and realignment of cyclist and pedestrian facilities and the upgrade of a junction.	**No.** Physical changes will be very minor, mainly confined to the existing roadbed and impinging slightly upon adjacent areas of landscaping. Changes will be mostly in terms of how the infrastructure is used during the operational phase.
2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?	**es.** The proposed development will require the importation of relatively small volumes of construction materials. It will also involve some minor earthworks. Relatively small volumes of water will be required. Energy will be used to produce and transport construction materials and by on-site plant.	**No.** Resources consumed are not in short supply, will be relatively small and minimised insofar as is practicable.
3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	**es.** During the construction phase, it will be necessary to transport, handle, store and use certain hazardous substances (such as hydrocarbon fuels, solvents, cleaning / disinfectant products, .). During the operational phase, it is not expected that any such substances will be stored on-site.	**No.** Best practice measures in relation to the transport, storage and handling of hazardous substances, and human health and safety, will be implemented during the construction phase.
4. Will the Project produce solid wastes during construction, operation or decommissioning?	**es.** During the construction phase, small volumes of solid waste will be generated.	**No.** Waste will be minimised insofar as possible during the construction phase (e.g. through the on-site re-use of excavated material in landscaping). Solid waste which does not to be transported off-site for treatment, disposal or otherwise will be managed in accordance with waste hierarchy and the relevant waste management legislation.

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?	**Possibly.** The proposed development has the potential to result in the emissions of pollutants to environmental media, such as air, water and soil. Small volumes of dust and vehicular emissions will be emitted during the proposed works.	**No.** Best practice pollution prevention measures will be implement in respect of all environmental media. Volumes of air pollutants expected to be emitted will not be of a type or volume / concentration which could result in significant effects.
6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?	**es.** The construction phase of the proposed development will involve activities capable of generating moderate amounts of noise and vibration.	**No.** The proposed works do not necessitate any especially noisy or especially lengthy noise or vibration-generating works (such as piling or blasting). The construction phase will be managed so as to minimise nuisance to members of the public, and noise limits are not expected to be exceeded. While noise generated may result in some temporary nuisance for road-users and local residents, significant effects are not anticipated.
7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	**es.** The proposed development has the potential to result in the emission of pollutants (e.g. sediment, hydrocarbons, concrete) to a sensitive surface water body, the River Dodder.	**No.** Works over / immediately adjacent to the River Dodder are confined to two locations. Best practice measures in relation to prevention of surface water pollution will be implemented during the construction phase.
8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?	**es.** As with all construction sites, the site of the proposed works will entail some level of risk of accidents.	**No.** The proposed development does not involve any unusually dangerous works. The construction phase will be managed in accordance with the best practice guidelines and relevant legislation in relation to workplace / site safety. The operation of the proposed development will improve safety for the cyclists and pedestrians.
9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?	**Possibly.** The proposed development will facilitate and promote greater levels of physical activity and outdoor recreation in the area. It may create or improve opportunities for associated businesses (e.g. bike rental, café / restaurant).	**No.**

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
10. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?	**No.**	**N/A**
11. Is the project located within or close to any areas which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?	**es.** The Dodder Valley pNHA, is approx. 1km upstream of the proposed works on the watercourse crossing on Wellington Lane. There are a number of European (Natura 2000) Designated Sites within 15km of the proposed development: the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, and the North Dublin Bay SAC. There are several archaeological and architectural heritage sites in the vicinity of the proposed development.	**No.** There is no feasible pathway for impacts on the Dodder Valley pNHA, which is upstream of the proposed development. All of the Natura 2000 sites listed are at a substantial remove from the location of the proposed development. A Screening for Appropriate Assessment (AA) Report has been prepared for the proposed development. It has concluded that, on the basis of objective information, that the Project, either individually or in combination with other plans or projects, in view of best scientific knowledge, is not likely to give rise to impacts which would constitute significant effects in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, the North Dublin Bay SAC or any other European site. There are no recorded archaeological or architectural heritage sites which will be directly or indirectly affected by the proposed development.

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
12. Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, which could be affected by the project?	**es.** As discussed above, the proposed development has the potential to affect the River Dodder. There are a number of existing trees (67 no.) which will need to removed, of which 8 no. will be replanted. It is proposed to plant 23 no. new trees, such that there will be a net loss of 36 trees as a result of the proposed development. It is proposed to sow wildflower strips along the margins of the proposed development, as shown in Appendix D. A small cluster of native shrubbery is also proposed on the northern side of the Firhouse Road – Wellington Lane junction.	**No.** As stated above, best practice pollution prevention measures will be employed, with a particular emphasis on preventing run-off of pollutants to the River Dodder. While there will be a net loss in the absolute number of trees in the site extents, the trees permanently lost are of limited biodiversity value, being immature and predominantly non-native. The addition of wildflower strips and native shrubbery will also provide new opportunities for native wildlife. No Annex I or high biodiversity value habitat will be lost as a result of the proposed development. Biosecurity protocols will be finalised and implemented by the Contractor, under the scope of an EOP / CEMP.
13. Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project?	**es.** The River Dodder and associated riverine / riparian habitats are important for wildlife in and of themselves, but also as an ecological corridor. Protected species of flora and fauna have been recorded in the River Dodder corridor. The proposed development is largely confined to the existing hardstanding / roadbed but will impinge slightly on the adjacent, roadside landscaped area (mainly of the Dodder Valley Park) and some improved grassland and existing trees will need to be removed (as detailed above). A small area of riparian vegetation will need to be cleared under the scope of the proposed works.	**No.** No Annex I or high biodiversity value habitats will be lost as a result of the proposed development. While there will be a net loss in the absolute number of trees in the site extents, the trees permanently lost are of limited biodiversity value, being immature and predominantly non-native. The addition of wildflower strips and native shrubbery will also provide new opportunities for native wildlife. Significant effects on the River Dodder will be prevented through the implementation of best practice pollution prevention measures. No protected species are likely to be directly affected and no significant indirect effects on protected species are anticipated.
14. Are there any inland, coastal, marine or underground waters (or features of the marine environment) on or around the location which could be affected by the project?	**es.** The proposed development passes over and adjacent to the River Dodder at two locations.	**No.** Effects on the River Dodder discussed above. There are no works proposed that are likely to negatively affect groundwater, and the proposed development is situated at a substantial remove from coastal / marine waters, such that there is no feasible pathway for effects.

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?	**No.**	**N/A**
16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	**es.** The proposed development involves works on the existing roadbed on sections of Firhouse Road and Wellington Lane. Access across the site will be maintained for all users, but temporary footpath closures may occur.	**No.** Footpath closures will be avoided insofar as possible and, where required, alternative routes will be signposted. Traffic management measures will be implemented in order to avoid / minimise effects on road-users. The operational phase of the proposed development will improve access for cyclists and pedestrians.
17. Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?	**es.** The proposed development is situated on sections of the existing roadbed on Firhouse Road and Wellington Lane, in the Firhouse area of south Dublin. There are roads in the vicinity which are subject to congestion.	**No.** The proposed development will not necessitate any road closures, and traffic delays will be minimised through the implementation of traffic management measures. During the operational phase of the proposed development, improved cyclist and pedestrian facilities at the location will facilitate / promote a modal shift away from private car use in favour of more sustainable modes of personal mobility. This may result in positive effects, by reducing local congestion, although this effect has not been quantified and is unlikely to be significant.
18. Is the project in a location where it is likely to be highly visible to many people?	**No.** The proposed development does not involve the construction of any buildings or tall / high-rise structures, and will only be visible to local road-users and residents.	**N/A**
19. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?	**es.** There are several recorded archaeological and architectural heritage sites in the vicinity of the proposed development, as detailed in the main text, above.	**No.** None of these recorded sites will be directly or indirectly affected by the proposed development.
20. Is the project located in a previously undeveloped area where there will be loss of greenfield land?	**No.**	**N/A**

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
21. Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?	**No.**	**N/A**
22. Are there any plans for future land uses on or around the location which could be affected by the project?	**No.**	**N/A**
23. Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?	**es.** The proposed development is situated in a suburban, residential area of south Dublin, and is surrounded by housing estates.	**No.** The proposed works may result in some slight nuisance for local residents, e.g. as a result of noise, dust, temporary footpath closures and / or visual intrusion. However, the proposed works will be managed in accordance with the relevant best practice guidelines and relevant legislation, such that associated effects are avoided or minimised. During the operational phase, the proposed development is expected to benefit local residents, by providing safe and convenient cyclist and pedestrian infrastructure and improving accessibility to-and-from the Dodder Greenway.
24. Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project?	**es.** The proposed development is situated in a suburban, residential area which features some community amenities, such as a GP clinic.	**No.** No severance will occur as a result of the proposed and, as such, access to community facilities will not be constrained. While there may be some slight nuisance for users of local facilities, no significant effects are anticipated.
25. Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?	**es.** As discussed above, the River Dodder passes in close proximity to the proposed development.	**No.** As detailed above, no significant effects on the River Dodder are anticipated.

Questions to be Considered	es / No	Is this likely to result in a significant effect es / No
26. Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	**es.** Under the monitoring for the WFD, the River Dodder has been classified as having 'Poor' ecological status. As such, it is imperative that effects on the watercourse are avoided.	**No.** As detailed above, no significant effects on the River Dodder are anticipated.
27. Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	**No.**	**N/A**
Summary of features of Project and of its location indicating the need for EIA: No features of the proposed development or of its location indicate the need for an EIA.		

Table C.2 Checklist of Criteria for Evaluating the Significance of Environmental Impacts

CHECKLIST OF CRITERIA FOR EVALUATING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS		
Questions to be Considered	**es / No**	**Significant**
1. Will there be a large change in environmental conditions?	No	Not Significant
2. Will new features be out-of-scale with the existing environment?	No	Not Significant
3. Will the impact be unusual in the area or particularly complex?	No	Not Significant
4. Will the impact extend over a large area?	No	Not Significant
5. Will there be any potential for transboundary impact?	No	Not Significant
6. Will many people be affected?	No	Not Significant
7. Will many receptors of other types (fauna and flora, businesses, facilities) be affected?	No	Not Significant
8. Will valuable or scarce features or resources be affected?	No	Not Significant
9. Is there a risk that environmental standards will be breached?	No	Not Significant
10. Is there a risk that protected sites, areas, features will be affected?	No	Not Significant
11. Is there a high probability of the effect occurring?	No	Not Significant
12. Will the impact continue for a long time?	No	Not Significant
13. Will the effect be permanent rather than temporary?	No	Not Significant
14. Will the impact be continuous rather than intermittent?	No	Not Significant
15. If it is intermittent will it be frequent rather than rare?	n/a	n/a
16. Will the impact be irreversible?	n/a	n/a
17. Will it be difficult to avoid, or reduce or repair or compensate for the effect?	n/a	n/a

APPENDIX D

LANDSCAPE DRAWINGS

DD_01 Landscape layout 1:500

DD_02 Landscape layout 1:500

DD_03 Landscape layout 1:500

DD_04 Landscape layout 1:500

Legend

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

Rev	Date	By	Details
I	04/07/22	LJ	Update trees
H	29/06/22	LJ	Update trees
G	20/06/22	LJ	Update to new layout
F	06/05/22	LJ	Update to new layout
E	01/12/20	LJ	Trees on wellington lane
D	27/11/20	LJ	Road junction changes
C	10/11/20	LJ	Park entrance changes
B	21/09/20	LJ	Landscape plan
A	18/09/20	DB	Landscape plan

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Appendix E – Appropriate Assessment Screening

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Firhouse Road and Wellington Lane Links

Appropriate Assessment Screening Report

June 2022

Client:
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ROD
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Firhouse Road and Wellington Lane Links

Screening for Appropriate Assessment

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1. INTRODUCTION

1.1 Introduction

Roughan & O'Donovan (ROD) was appointed by South Dublin County Council, to produce, on its behalf, an Appropriate Assessment (AA) Screening Report in respect of the proposed Firhouse Road and Wellington Lane Links ("the Project"). The AA Screening Report is intended to determine whether or not the Project, either individually or in combination with other plans or projects, is likely to have a significant effect on areas designated as being of European importance for nature conservation ("European sites"), thereby enabling South Dublin County Council, as the competent authority in this case, to fulfil its obligations under Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive").

This document comprises the AA Screening Report in respect of the Project and was prepared by ROD on behalf of the South Dublin County Council and in accordance with the requirements of the Habitats Directive, as transposed into Irish law by Part XAB of the Planning and Development Act, 2000 (as amended) ("the Planning and Development Act"). The aim of this AA Screening Report is to inform and assist the competent authority in carrying out its AA Screening by determining whether or not the Project, either individually or in combination with other plans and projects, has the potential to significantly affect one or more European sites, in view of their Conservation Objectives.

It is the considered opinion of ROD, as the author of this AA Screening Report, that the Project, either individually or in combination with other plans or projects, in view of best scientific knowledge, does not have the potential to significantly affect the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA or the North Dublin Bay SAC or any other European site, in view of their Conservation Objectives, and, therefore, that AA is not required in respect of the Project.

1.2 Competent Experts

This AA Screening Report was prepared by ROD Ecologist Patrick O'Shea. Patrick holds a Bachelor's degree in Botany from Trinity College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. He is a full member of the Chartered Institute of Ecological and Environmental Management (CIEEM) and has 9 years' experience in ecological consultancy.

1.3 Legislative Context

The Habitats Directive and Directive 2009/147/EC of the European Parliament and of the Council of 30th November 2009 on the conservation of wild birds ("the Birds Directive") list habitats and species which are, in a European context, important for conservation and in need of protection. This protection is afforded in part through the designation of sites that, in a European context, support significant examples of habitats or populations of species. These sites are generally referred to as "European sites". Specifically, sites designated for wild birds are termed "Special Protection Areas" (SPAs) and sites designated for natural habitat types or other species are termed "Special Areas of Conservation" (SACs). The complete network of European sites is referred to as "Natura 2000".

In order to ensure the protection of European sites in the context of land use planning and development, Article 6(3) of the Habitats Directive requires that:

"

."

The Court of Justice of the European Union (CJEU) has interpreted this requirement as follows[1]:

"

site in view of the site's conservation objectives if it cannot be excluded, on the

."

In accordance with the Precautionary Principle, the CJEU interpreted the word "likely" as meaning that as long as it cannot be conclusively demonstrated that a given effect will not occur, that effect is considered "likely" to occur. A likely effect considered to be "significant" only if it interrupts or causes delays in progress towards achieving the Conservation Objectives[2] of the relevant European site(s).

Article 6(3) of the Habitats Directive requires that AA be carried out in respect of plans and projects that are likely to have significant effects on European sites, "either individually or in combination with other plans or projects". Therefore, regardless of whether or not the likely effects of a plan or project are significant when considered on their own, the significance of the combined effects of the plan or project under assessment and other past, present or foreseeable future plans or projects must also be evaluated.

In Ireland, this requirement is transposed into national law by Part 5 of the Habitats Regulations and Part XAB of the Planning and Development Act, and the process is termed "Appropriate Assessment" (AA). Stage 1 of the process, i.e. determining whether or not a plan or project meets the above criteria for requiring AA, is referred to as "AA Screening".

In its judgment in People Over Wind[3], the CJEU concluded that AA Screening must be undertaken without consideration of "

". This judgment informed the High Court's conclusion in Kelly (Aldi Laytown)[4] that certain measures which formed part of a Project were not required to be excluded from consideration at the screening stage because the policy requiring their inclusion as part of the Project was "

potentially be affected by a particular development" and also *"having regar*

[such measures]

".

[1] Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse vereniging tot Bescherming van Vogels . Staatssecretaris van Landbouw, Naturbeheer en Visserij (Waddenzee) [2004] C-127/02 ECR I-7405.

[2] Conservation Objectives are referred to, but not defined, in the Habitats Directive. In Ireland, Conservation Objectives are set for Qualifying Interests (the birds, habitats or other species for which a given European site is selected) and represent the overall target that must be met for that Qualifying Interest to reach or maintain favourable conservation condition in that site and contribute to its favourable conservation status nationally.

[3] People Over Wind and Peter Sweetman . Coillte Teoranta (People Over Wind) [2018] C-323/17.

[4] Eoin Kelly . An Bord Pleanála [2019] IEHC 84.

Article 6(3) of the Habitats Directive specifies that AA must be undertaken by the "competent national authorities". In Ireland, the "competent authority" is the relevant planning authority for each plan or project, e.g. the local authority or An Bord Pleanála. Consequently, the responsibility for carrying out AA Screening lies solely with the competent authority. In that respect, the AA Screening Report is not in itself an AA Screening, but provides the competent authority with the information it needs in order to carry out its AA Screening.

1.4 Screening Methodology

At this stage of the process, the AA Screening Report assesses the potential effects from the plan or project on the European sites within the likely zone of impact and evaluates them in view of the sites' Conservation Objectives.
This AA Screening Report has had regard inter alia to the following matters[5]:

- The threshold test is that an appropriate assessment will be required if the proposed development is likely on (a) European site(s) either individually or in combination with other plans or protects.
- It is not necessary, in order to trigger the requirement to proceed to stage 2 AA that the proposed development will ' ' have significant effects on the protected site, but such a requirement will arise if it is a ' ' that such an effect exists. The requirement to carry out an AA will be satisfied if there is a 'probability ' that the proposed development will have ' ' on (a) European site(s).
- Consequent upon the application of the precautionary principle, such a ' ' will be found to exist if '*it cannot be excluded on the basis of objective information*' that the particular proposed development ' ' on (a) European site(s).
- An AA will be required if, on the basis of objective information, a ' ' on a European site 'cannot be *excluded'.* An AA will not be required if, on the basis of objective information, a ' ' on (a) European site(s) ' '.
- In the case of ' ' an AA must be carried out.
- The requirement to conduct an AA will arise where, at the screening stage, it is ascertained that the particular development is ' ' (albeit this must be any ' ') on (a) European site(s).
- The ' ' of there being a ' ' on (a) European site(s) will give rise to a requirement to carry out an AA for the purposes of Article 6(3). There is no need to ' ' such an effect and it is merely necessary to determine that there ' ' such an effect.
- In order to meet the threshold of likelihood of significant effect, the word '*likely*' in Article 6(3) means less than the balance of probabilities. The test does not require any *'hard and fast evidence' that such a significant effect was likely.* It merely has to be shown that there is a '*possibility'* that this significant effect is likely.
- The assessment of whether there is a risk of '*significant effect'* on the European site must be made in light, inter , of the ' ' by the relevant plan or project.

5 See Eoin Kelly v. An Bord Pleanála [2019] IEHC 84; Kelly v. An Bord Pleanála [2014] IEHC 400; Connelly v. An Bord Pleanála [2018] IESC 31; [2018] ILRM 453.

- Plans or projects or applications for developments which have on European sites are excluded from the requirement to proceed to AA. If all applications for permission for proposed developments capable of having on such sites were to be caught by Article 6(3)

.

While the threshold at the screening stage of Article 6(3) is very low nonetheless it is a threshold which must be met before it is necessary to proceed to the stage 2 AA. Accordingly, best practice in undertaking AA Screening involves five steps as follows:

(1) The first step involves gathering the information and data necessary to carry out a screening assessment. These include, but are not limited to, the details of all phases of the plan or project, environmental data pertaining to the area in which the plan or project is located, e.g. rare or protected habitats and species present or likely to be present, and the details of the European sites within the likely zone of impact.

(2) The second step involves examining the information gathered in the first step and a scientific analysis of the potential impacts of the project on the receiving environment, particularly the European sites in the likely zone of impact.

(3) The third step evaluates the impacts analysed in the second step against the Conservation Objectives of the relevant European sites, thereby determining whether or not those impacts constitute "likely significant effects", within the meaning of Article 6(3) of the Habitats Directive.

(4) The fourth step involves considering the potential for likely significant effects to arise from the combination of the impacts of the plan or project with those of other plans or projects. If it is determined in the third step that Stage 2 (AA) is required, consideration of potential cumulative impacts may be deferred to that stage.

(5) The last step involves the issuing of a statement of the determination of the AA Screening. Notwithstanding the recommendation made in the AA Screening Report, the responsibility for completing this step lies solely with the competent authority.

The following guidance documents informed the assessment methodology:

- EC (2021) *2000* *6 3 4* *92 43* . Environment Directorate-General of the European Commission.
- EC (2018) *2000* *6* *92 43* . European Commission, Brussels.
- DEHLG (2010) – . Department of the Environment, Heritage and Local Government, Dublin.
- NPWS (2010) *6* . Circular Letter NPWS 1/10 & PSSP 2/10. National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.
- OPR (2021) *01* . Office of the Planning Regulator.

1.5 Ecological Assessment

Desk Studies

During the desk study, the statutory consultee, the National Parks & Wildlife Service (NPWS), provided data on designations of sites, habitats and species of conservation interest. This included reporting pursuant to Article 17 of the Habitats Directive[6] (NPWS, 2019a, b, c) and Article 12 of the Birds Directive[7] (Eionet, 2018), as well as the Site Synopses and Conservation Objectives for the relevant European sites. Where no Conservation Objectives have been developed for a Qualifying Interests within a site, Conservation Objectives from European Sites with the same Qualifying Interests in similar conditions have been used, as recommended by the NPWS.

The desk study involved a thorough review of existing information relating to ecology in the vicinity of the Project and in the surrounding area. A number of web-based geographic information systems (GISs) were used to obtain information relating to the natural environment surrounding the Project. These included the NPWS (NPWS, 2020), which provided information on the locations of protected sites, the National Biodiversity Data Centre's (NBDC, 2022), which provided recent and historic records of rare and protected species in the area.

Field Surveys

Multidisciplinary ecological surveys were conducted within the study area by suitably qualified ecologists from Roughan & O'Donovan between March and July 2016 and were updated in August and September 2019. The surveys aimed to identify "protected species and natural habitats", as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including: bird species listed on Annex I to the Birds Directive and other regularly occurring migratory species and their habitats; natural habitat types listed on Annex I to the Habitats Directive; species listed on Annex I to the Habitats Directive and their habitats; and, species listed on Annex IV to the Habitats Directive and their breeding and resting places. The surveys also aimed to identify any potential bat roosts, other rare or protected species, particularly those listed in the Irish Red Lists, and invasive alien species (IAS), particularly plant species listed on Part 1 of the Third Schedule to the Habitats Regulations.

The surveys for protected habitats and species, and invasive species, adhered to the methodology outlined in the Heritage Council's (Smith et al., 2011) and (TII, 2009).

Habitats present were classified in accordance with (Fossitt, 2000) and conformity to Annex I-type habitats was evaluated using the – *28* (EC, 2013).

Assessment

The ecological baseline which was established by the desk studies and field surveys described above was used to inform the assessment of the potential ecological effects arising from the Project, particularly with regard to European sites. Any assumptions that were made in view of gaps in the ecological data were made in accordance with the Precautionary Principle.

[6] Under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive.

[7] Every three years, Member States of the European Union are required by Article 12 of the Birds Directive to report on implementation of the Directive. The most recent reporting available is for the period 2008-2012.

2. DESCRIPTION OF THE PROJECT

2.1 Overview

South Dublin County Council granted planning permission for the South Dublin section of the Dodder Greenway in October 2017. The Firhouse Road to Wellington Lane Links will define a safe link between two sections of the Dodder Greenway Route. Although the existing pedestrian and cyclists' facilities on the Firhouse Road and Wellington Lane are in good condition, they require improvements in order to be classified as a Greenway and to encourage a modal shift to cycling and walking.

The proposed Firhouse Road and Wellington Lane Links project is a road upgrade scheme and contains approximately 1.53 km of a 4 m wide shared path that will link and complement two sections of the Dodder Greenway. The scheme, considered to be an "on road" section of the Dodder Greenway, is also described as an extension and a supplement to the Dodder Greenway. The project proposes to relocate 2 no. bus stops and rearrange the existing cycle facilities on the road. It also intends to upgrade existing pedestrian crossings on Firhouse Road and redesign the Old Bridge Road - Firhouse Road junction making it sager for pedestrians and cyclists.

Along the 1.53 km of proposed shared path of the Firhouse Road and Wellington Lane Links scheme, a plaza entrance is proposed at the Firhouse Road – Knocklyon Road junction to aesthetically harmonize with the Dodder Greenway. The Project includes a fully integrated landscape plan and will accommodate all the required services or all required services diversion, if any.

2.2 Location

The Project is located alongside the River Dodder and runs along a section of Firhouse Road and Wellington Lane at the eastern side of the Dodder Valley Park, Co. Dublin. The Dodder flows from Kippure Ridge in the Dublin/Wicklow Mountains to Glenasmole Valley where the Bohernabreena Reservoirs are located. The Dodder then flows north-east through Tallaght and then Firhouse. From Firhouse the Dodder travels through Rathfarnham, Templeogue, Rathgar, Milltown, Clonskeagh, Donnybrook, and finally Ballsbridge before it enters the Liffey near Ringsend. The river becomes tidal between Ballsbridge and Donnybrook. The location of the Project is shown in Figure 2.1.

The footprint of the Project is entirely along Firhouse Road and Wellington Lane. The existing land use along the route is primarily recreational parkland and residential housing to the south. The River Dodder flows under Wellington Land and briefly flows alongside Firhouse Road.

2.3 General Description of the Proposed Greenway

The proposed Firhouse Road and Wellington Lane Links scheme comprises of the following:

- Approximately 1.53 km of a 4 m wide shared route for pedestrians and cyclists.
- 460 m of carriageway upgrade with kerb realignment and slip lane readjustment.
- 2 no. bus stop relocation.
- Approximately 665m of a 2m wide raised off road cycle track.
- Upgrade to existing 2 no. of pedestrian crossings, including traffic lights and traffic signs.
- Landscaped plaza entrance to aesthetically harmonize with the Dodder Greenway routes.
- Old Bridge Road – Firhouse Road junction upgrade.
- Road marking and road signs to upgraded carriageway.
- Upgrade to existing entrance at Cherryfield Way.
- All associated ancillary works and integrated landscape plans.
- Upgrade of public lighting, as required.

The landscape drawings (Appendices B), indicate that 67 no. existing trees will need to be removed, of which 8 no. will be replanted in the immediate curtilage, and the remainder of which (59 no.) will be permanently felled. Trees to be permanently felled include Norway Maple, , Hornbeam, , and to a lesser degree, spp. and spp. None of the trees to be removed are mature and the majority are non-native and planted as part of roadside landscaping. They are young, well-spaced trees, which do not constitute linear habitat / treelines.

Otherwise, trees in the immediate vicinity will be retained. A cluster of mature riparian trees adjacent to the River Dodder will be retained, although some vegetation clearance will be required in this area to facilitate proposed paving, including removal of four young trees and some briar.

Approximately 23 new trees will be planted, leaving a net loss (in absolute number of trees) of approximately 36. New trees which are proposed to be planted are Beech, (7 no.), Small-leaved Lime, (11 no.), Wild Cherry, (2 no.), and Downy Birch, (3 no.).

As shown in Appendix B, it is also proposed to add min. 1 m mixed wildflower strips on either side of new paving construction in grass areas, and to add a small patch of native shrubs (Guelder Rose, (2 no.) Hazel, (1 no.) and Dogwood, (2 no.)) to the grass margin immediately north of the Firhouse Road – Wellington Lane junction. Note that the addition of these shrubs has not been included in the calculation of the net tree loss, as shown in Table 2.1, below.

Table 2.1 Envisaged tree felling and planting

Total removed (temporarily and permanently)	67
Total replanted	8
Total permanently felled	59 (= 67 – 8)
Total new trees planted	23
Net tree loss	36 (= 59 – 23)

2.4 Likely Effects on the Natural Environment

A number of elements of the Project are considered likely to give rise to environmental and ecological impacts.

Construction Phase Impacts

Noise, vibration, lighting and visual disturbance will cause impacts during the construction phase and have the potential to impede the movement of species, including mammals and birds, in and around the area of the proposed development.

During construction works there is potential for pollutants and sediment to discharge to the Dodder, continue downstream into Dublin Bay and its associated European sites, and negatively affect water quality.

A small amount of habitat will be lost or damaged as a result of the Project. The habitats which will be affected include buildings and artificial surfaces, scattered trees and amenity grasslands. These habitats do not represent rare or protected vegetative communities/associations and do not support important populations of rare or protected species at the local level or higher. Therefore, the loss or damage of these habitats is not considered to be significant.

Operational Phase Impacts

Aspects of the operation of the Project with the potential to cause environmental and ecological effects include the increase in artificial light spill and increased human presence.

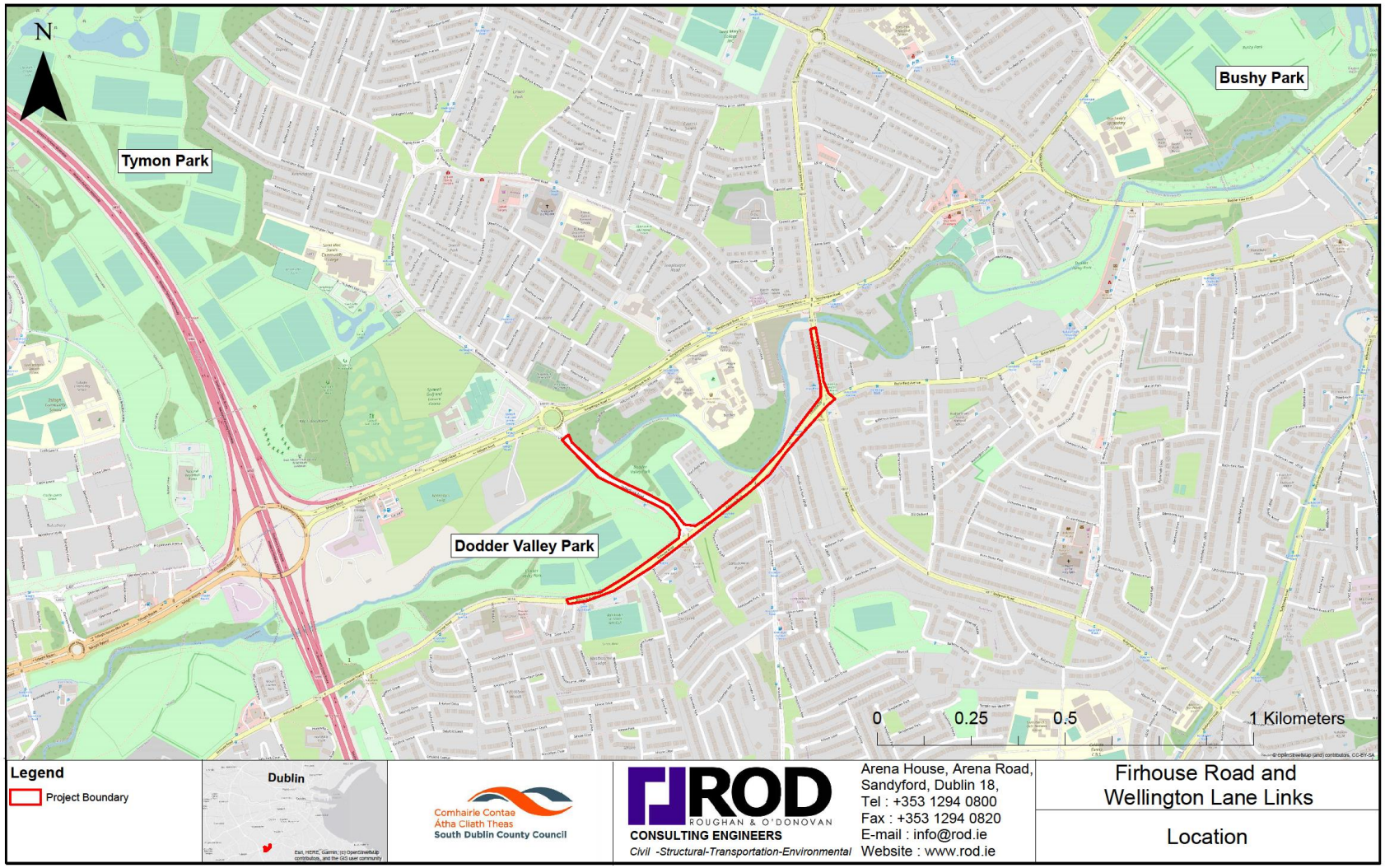

Figure 2.1 Location of the Project

3. LIKEL SIGNIFICANT EFFECTS

3.1 Establishing the Likely one of Impact

Section 3.2.3 of DEHLG (2010) outlines the procedure for selecting the European sites to be considered in AA. It states that European sites potentially affected should be identified and listed, bearing in mind the potential for direct, indirect and cumulative effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the plan or project area;
- All European sites within the likely zone of impact of the plan or project; and
- In accordance with the Precautionary Principle, all European sites for which there is doubt as to whether or not they might be significantly affected.

The "likely zone of impact" of a plan or project is the geographic extent over which significant ecological effects are likely to occur. In the case of plans, this zone should extend to a distance of 15km in all directions from the boundary of the plan area. In the case of projects, however, the guidance recognises that the likely zone of impact must be established on a case-by-case basis, with reference to the following key variables:

- The nature, size and location of the project;
- The sensitivities of the ecological receptors; and,
- The potential for cumulative effects.

For example, in the case of a project that could affect a watercourse, it may be necessary to include the entire upstream and/or downstream catchment in order to capture all European sites with water-dependent features of interest.

Having regard to the above key variables, the likely zone of impact was defined as the Project boundary plus a 1 km buffer and the entire river downstream of the Project including the transitional waters of Dublin Bay. This was based on the maximum potential extent of impacts associated with the Project.

A geographical representation of the likely zone of impact was produced in ArcGIS 10.5.1 using the Project boundary and publicly available Ordnance Survey Ireland maps. This was used in combination with NPWS shapefiles to identify the boundaries of European sites in relation to the likely zone of impact (Figure 3.1).

It was determined that four European sites occur within or adjacent to the likely zone of impact. Table 3.1 assesses if and how these sites are connected to the Project. Detailed descriptions of these sites are given in Section 3.2.

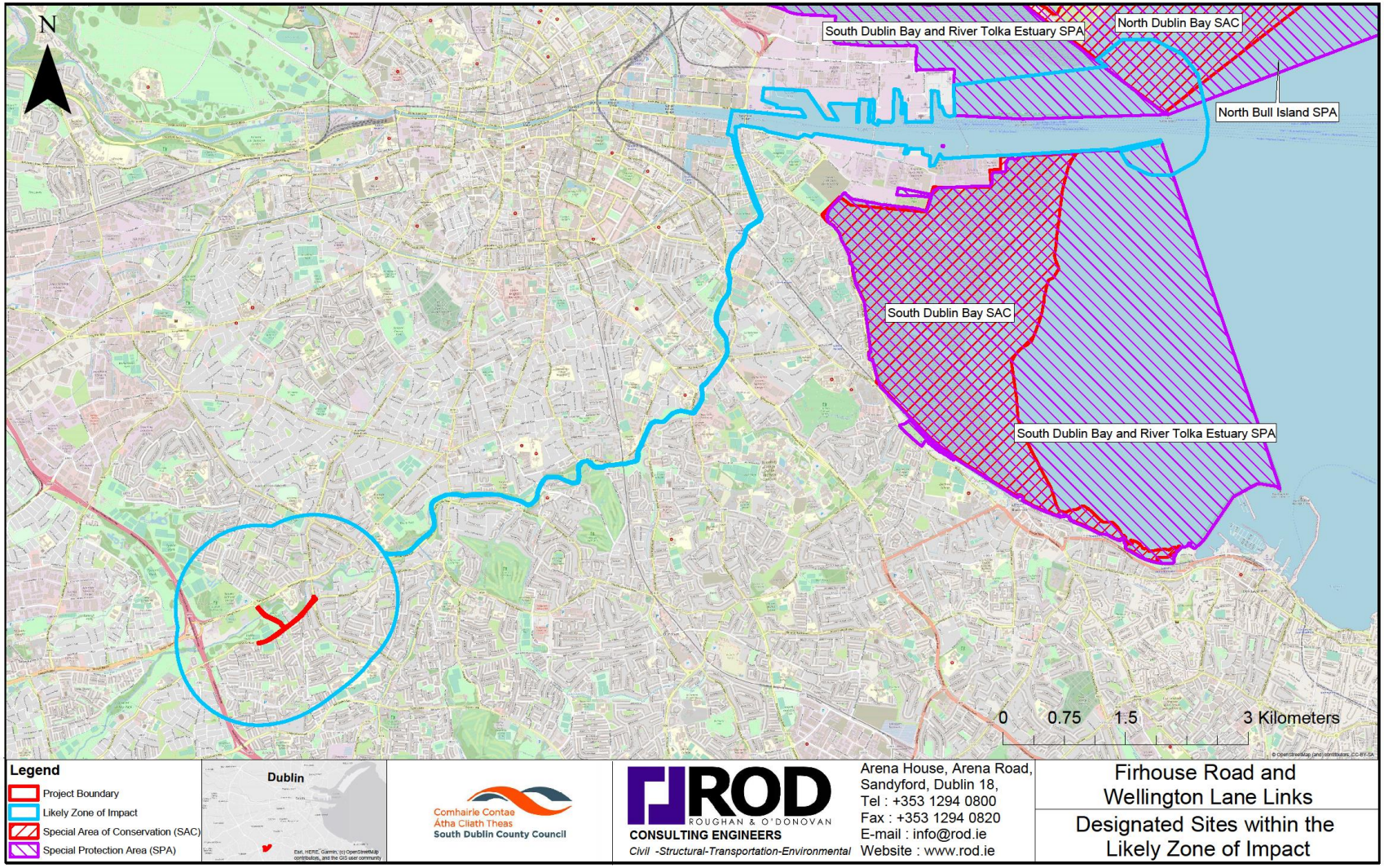

Figure 3.1 Location of European sites in the likely one of impact

Table 3.1 European sites located within and adjacent to the likely one of impact

European site site code	Are there potential pathways for impacts from the Project to this site Explain.
South Dublin Bay and River Tolka Estuary SPA 004024	**es.** The shortest absolute distances from the Project to this site is c. 7.5 km north east to Sandymount. This distance is over land and this location is outside of the likely zone of impact. The shortest distance from the Project to the site via a hydrological connection is 13.7 km north east (through the River Liffey) to the ESB Dolphin in Dublin Port, which is within the likely zone of impact. Therefore, the effective distance to the site is considered to be 13.7 km.
North Bull Island SPA 004006	**es.** The shortest absolute distance from the Project to this site is c. 12.2 km north east to the North Bull Lighthouse. This distance is over land and the River Liffey at this location is within the likely zone of impact. The shortest distance from the Project to the site via a hydrological connection is 15.3 km north east (through the River Liffey) to the Star of the Sea Statue, which is within the likely zone of impact. Therefore, the effective distance to the site is considered to be 16.3 km.
North Dublin Bay SAC 000206	**es.** The shortest absolute distance from the Project to this site is c. 12.2 km north east to the North Bull Lighthouse. This distance is over land and the River Liffey and this location is within the likely zone of impact. The shortest distance from the Project to the site via a hydrological connection is 15.3 km north east (through the River Liffey) to the Star of the Sea Statue, which is within the likely zone of impact. Therefore, the effective distance to the site is considered to be 16.3 km.
South Dublin Bay SAC 000210	**No.** The shortest absolute distance from the Project to this site is c. 7.5 km north east to Sandymount. This distance is over land and this location is outside of the likely zone of impact. The shortest distance from the Project to the site via a hydrological connection is 17.3 km north east (through the River Liffey and Dublin Bay) to the southern side of the Great South Wall. Therefore, the effective distance to the site is considered to be 17.3 km. This site is not located within the likely zone of impact as it is sheltered from the Liffey and its transitional waters by the Great South Wall. Therefore, there are no potential pathways for impacts on this site.

3.2 Site Descriptions

South Dublin Bay and River Tolka Estuary SPA

The description of the South Dublin Bay and River Tolka Estuary SPA provided here is based on the Site Synopsis (NPWS, 2015c), Conservation Objectives (NPWS, 2015b) and Natura 2000 Standard Data Form (NPWS, 2018c) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2014a).

[A046] Light-bellied Brent Goose ( )

[A130] Oystercatcher ( )

[A137] Ringed Plover ( )

[A141] Grey Plover ( )

[A143] Knot ( )

[A144] Sanderling ( )

[A149] Dunlin ( )

[A157] Bar-tailed Godwit ( )

[A162] Redshank ( )

[A179] Black-headed Gull ( )

[A192] Roseate Tern ( )

[A193] Common Tern ( )

[A194] Arctic Tern ( )

[A999] Wetlands

This site comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dún Laoghaire and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

The site is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. Notably, four of the species that regularly occur at this site are listed on Annex I of the Birds Directive, namely Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Parts of the site are also designated as the Ramsar Convention site "Sandymount Strand/Tolka Estuary".

Being an integral part of the internationally important Dublin Bay complex, the site is important for wintering waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there.

An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at the Merrion Gates. At the time of designation, the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the ESB Dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

As this site is mostly comprised of coastal wetlands and is located directly adjacent to a major city and port, expansion of the city and port poses the greatest threat to its integrity. Reclamation of land from the sea, estuary or marsh represents a direct loss of key Qualifying Interests of the site. Roads, urbanisation, human habitation, industrial and commercial activities and discharges present pressures on the site in terms of disturbance and pollution.

Watersports, walkers, horse riding and non-motorised vehicles also cause persistent disturbance to the birds within the site. Angling, particularly bait collection, causes both disturbance to birds and reduces food availability. The site is also subject to some natural eutrophication pressures.

North Bull Island SPA

The description of the South Dublin Bay and River Tolka Estuary SPA provided here is based on the Site Synopsis (NPWS, 2014b), Conservation Objectives (NPWS, 2015a) and Natura 2000 Standard Data Form (NPWS, 2018b) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2014a).

[A046] Light-bellied Brent Goose ( )

[A048] Shelduck ( )

[A052] Teal ( )

[A054] Pintail ( )

[A056] Shoveler (

[A130] Oystercatcher ostralegus)

[A140] Golden Plover ( )

[A141] Grey Plover ( )

[A143] Knot ( )

[A144] Sanderling ( )

[A149] Dunlin ( )

[A156] Black-tailed Godwit ( )

[A157] Bar-tailed Godwit ( )

[A160] Curlew ( )

[A162] Redshank ( )

[A169] Turnstone ( )

[A179] Black-headed Gull (Chroicocephalus ridibundus)

[A999] Wetland and Waterbirds

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th Centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses. Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay.

The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529). The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance. The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter.

The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.

As this site is located directly adjacent to a major city and port, expansion of the city and port poses the greatest threat to its integrity. Reclamation of land from the sea, estuary or marsh represents a direct loss of key Qualifying Interests of the site. Roads, urbanisation, human habitation, industrial and commercial activities and accumulation of organic material present pressures on the site in terms of disturbance and pollution. Walkers, horse riding and non-motorised vehicles also cause persistent disturbance to the birds within the site.

North Dublin Bay SAC

The description of the North Dublin Bay SAC provided here is based on the Site Synopsis (NPWS, 2013b), Conservation Objectives (NPWS, 2013a) and Natura 2000 Standard Data Form (NPWS, 2018a) for the site, as well as the Conservation Objectives Supporting Documents (NPWS, 2013d).

[1140] Tidal mudflats and sandflats not covered by seawater at low tide

[1210] Annual vegetation of drift lines

[1310] Salicornia and other annuals colonising mud and sand

[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

[1410] Mediterranean salt meadows (Juncetalia maritimi)

[2110] Embryonic shifting dunes

[2120] Shifting dunes along the shoreline with (white dunes)

[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)

[2190] Humid dune slacks

[1395] Petalwort ( )

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site.

North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees ( ). The water table is very near the surface and is only slightly brackish.

Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.

The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket ( ), Oraches (spp.) and Prickly Saltwort ( ).

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the " flat", which is dominated by , a pioneer glasswort species, and covers about 25 ha. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 2015 have been recorded on the North Bull Island. These are Lesser Centaury ( ), Red Hemp-nettle ( ) and Meadow Saxifrage ( ). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage ( ) and Spring Vetch ( ), have also been recorded. A rare liverwort, , was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin). The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. A well-known population of Irish Hare is resident on the island.

The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland.

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.

This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a number of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

As this site is located directly adjacent to a major city and port, expansion of the city and port poses the greatest threat to its integrity. Reclamation of land from the sea, estuary or marsh represents a direct loss of key Qualifying Interests of the site. Roads, urbanisation, human habitation, industrial and commercial activities and accumulation of organic material present pressures on the site in terms of disturbance and pollution. Walkers, horse riding and non-motorised vehicles also cause persistent disturbance to the birds within the site.

3.3 Evaluation against Conservation Objectives

Table 3.2, 3.3 and 3.4 below detail the evaluation of the likely effects of the Project in view of the Conservation Objectives of the sites identified in Section 3.1 and described in Section 3.2. As explained in Sections 1.2 and 1.3, AA Screening is carried out in view of the Conservation Objectives of the relevant European sites, which are in turn defined by detailed Attributes and corresponding Targets. Therefore, the evaluation of whether or not a likely effect is significant (in view of the Conservation Objective in question) is made with regard to these Attributes and Targets.

Where site-specific Conservation Objectives have not been set for a particular site, the definition of "favourable conservation status" provided in the Habitats Directive is used to define the "favourable conservation condition" of the Qualifying Interests of that site. In such cases, likely effects are considered to be significant if they delay or interrupt the restoration or maintenance of the favourable conservation condition of any of the site's Qualifying Interests.

Table 3.2 Evaluation of the likely effects of the Project in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA 004024

Qualifying Interest	Conservation Objective as per NPWS (2015b)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Light-bellied Brent Goose (*Branta bernicla hrota*) A046	*"To maintain the favourable* *Tolka Estuary SPA"*	The Attributes of these Conservation Objectives focus on " " and " ". The main impacts arising from the Project on these Attributes relate to spillages of contaminants which could affect habitats downstream and potentially deter species from certain areas. The North Bull Island SPA is hydrologically connected to the Project which is located c. 9.6 km upstream. This provides a pathway for contaminants such as concrete and sediments that may be spilled during construction to be transported to the site. However, the quantities of concrete and sediment that will be used and produced during construction will be small and the level of impact these spillages may have on water quality within the site will be negligible considering the volume of water and the dilution capacity of the River Dodder and River Liffey. There are no water quality impacts associated with the operational phase of the Project. Considering the temporary nature and small scale of the works, and location of the Project in relation to the roosting and foraging locations for these Qualifying Interests as well as the assimilative capacity of the River Dodder and River Liffey, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect these Qualifying Interests.	No
Oystercatcher (*Haematopus ostralegus*) A130	*"To maintain the favourable* *Estuary SPA"*		No
Ringed Plover (*Charadrius hiaticula*) A137	*"To maintain the favourable* *Estuary SPA"*		No
Grey Plover (*Pluvialis squatarola*) A141	*"Grey Plover is proposed* . *for this species."*		No
Knot (*Calidris canutus*) A143	*"To maintain the favourable* *SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2015b)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Sanderling (*Calidris alba*) A144	*"To maintain the favourable Estuary SPA"*	As above.	No
Dunlin (*Calidris alpina alpina*) A149	*"To maintain the favourable SPA"*		No
Bar-tailed Godwit (*Limosa lapponica*) A157	*"To maintain the favourable Estuary SPA"*		No
Redshank (*Tringa totanus*) A162	*"To maintain the favourable Estuary SPA"*		No
Black-headed Gull (*Chroicocephalus ridibundus*) A179	*"To maintain the favourable Estuary SPA"*		No
Roseate Tern (*Sterna dougallii*) A192	*"To maintain the favourable Estuary SPA"*	The closest hydrologically connected nesting site of these Qualifying Interests to the Project is at the lock gates at Grand Canal Dock (10.8 km downstream of the Project) for Common Tern and the Electricity Supply Board dolphin on the River Liffey between Poolbeg power station and the Pigeon House (. 13.5 km downstream of the Project) for Roseate Tern and Arctic Tern. The occurrence of both nesting, roosting sites and feeding	No

Qualifying Interest	Conservation Objective as per NPWS (2015b)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Common Tern (*Sterna hirundo*) A193	*"To maintain the favourable Estuary SPA"*	areas are of sufficient distance from the Project to ensure that the Project does not provide for any effect on the passage population, number of nests, productivity rate, distribution of roosting and breeding sites, prey biomass available, barriers to connectivity or disturbance of Roseate Tern within the site. Therefore, the Project does not have the potential to significantly affect this Qualifying Interest, in view of its Conservation Objective.	No
Arctic Tern (*Sterna paradisaea*) A194	*"To maintain the favourable Estuary SPA"*		No
Wetlands A999	*"To maintain the favourable utilise it"*	The sole Attribute of this Conservation Objective is " ". The Project will not result in the loss of any areas of this habitat within this North Bull Island SPA. The only potential impact that the Project may have on this Qualifying Interest is an impact on water quality. The hydrological connection provides a pathway for contaminants such as concrete and sediments that may be spilled during construction to be transported to the site. However, the quantities of concrete and sediment that will be used and produced during construction will be small and the level of impact these spillages may have on water quality within the site will be negligible considering the volume of water and the dilution capacity of the River Dodder and River Liffey. There are no water quality impacts associated with the operational phase of the Project. Thus, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect this Qualifying Interest.	No

Table 3.3 Evaluation of the likely effects of the Project in view of the Conservation Objectives of the North Bull Island SPA 004006

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Light-bellied Brent Goose (*Branta bernicla hrota*) A046	*"To maintain the favourable North Bull Island SPA"*	The Attributes of these Conservation Objectives focus on " " and " ". The main impacts arising from the Project on these Attributes relate to spillages of contaminants, altering suitable habitats for these species which could deter species away from certain areas. The North Bull Island SPA is hydrologically connected to the Project which is located c. 15.3 km upstream. This provides a pathway for contaminants such as concrete and sediments that may be spilled during construction to be transported to the site. However, the quantities of concrete and sediment that will be used and produced during construction will be small and the level of impact these spillages may have on water quality within the site will be negligible considering the volume of water and the dilution capacity of the River Dodder and River Liffey. There are no water quality impacts associated with the operational phase of the Project. Considering the temporary nature and small scale of the works, and location of the Project in relation to the roosting and foraging locations for these Qualifying Interests as well as the assimilative capacity of the River Dodder and River Liffey, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect these Qualifying Interests.	No
Shelduck (*Tadorna tadorna*) A048	*"To maintain the favourable Island SPA"*		No
Teal (*Anas crecca*) A052	*"To maintain the favourable SPA"*		No
Pintail (*Anas acuta*) A054	*"To maintain the favourable SPA"*		No
Shoveler (*Anas clypeata*) A056	*"To maintain the favourable Island SPA"*		No
Oystercatcher (*Haematopus ostralegus*) A130	*"To maintain the favourable Island SPA"*		No
Golden Plover (*Pluvialis apricaria*) A130	*"To maintain the favourable Island SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Grey Plover (*Pluvialis squatarola*) A141	*"To maintain the favourable* *Island SPA"*	As above.	No
Knot (*Calidris canutus*) A143	*"To* *SPA"*		No
Sanderling (*Calidris alba)* A144	*"To maintain the favourable* *Island SPA"*		No
Dunlin (*Calidris alpine*) A149	*"To* *SPA"*		No
Black-tailed Godwit (*Limosa limosa*) A156	*"To maintain the favourable* *Bull Island SPA"*		No
Bar-tailed Godwit (*Limosa lapponica*) A157	*"To maintain the favourable* *Bull Island SPA"*		No
Curlew (*Numenius arquata*) A160	*"To maintain the favourable* *SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Redshank (*Tringa tetanus*) A162	*"To maintain the favourable* *Island SPA"*	As above.	No
Turnstone (*Arenaria interpres*) A169	*"To maintain the favourable* *Island SPA"*		No
Black-headed Gull (*chricocephalus ridibundus*) A179	*"To maintain the favourable* *Bull Island SPA"*		No
Wetlands A999	*"To maintain the favourable* *waterbirds that utilise it"*	The sole Attribute of this Conservation Objective is " ". The Project will not result in the loss of any areas of this habitat within this North Bull Island SPA. The only potential impact that the Project may have on this Qualifying Interest is an impact on water quality. The hydrological connection provides a pathway for contaminants such as concrete and sediments that may be spilled during construction to be transported to the site. However, the quantities of concrete and sediment that will be used and produced during construction will be small and the level of impact these spillages may have on water quality within the site will be negligible considering the volume of water and the dilution capacity of the River Dodder and River Liffey. There are no water quality impacts associated with the operational phase of the Project. Thus, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect this Qualifying Interest.	No

Table 3.4 Evaluation of the likely effects of the Project in view of the Conservation Objectives of the North Dublin Bay SAC 000206

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Mudflats and sandflats not covered by seawater at low tide 1140	*"* *SAC"*	Mudflats and sandflats not covered by seawater at low tide are located within the likely zone of impact at the southernmost point of North Bull Island. This habitat is sensitive to the types of impacts that could potentially arise from the Project (i.e. water quality impacts). The habitat is hydrologically connected to the Project which is located c. 15.3 km upstream. This provides a pathway for contaminants such as concrete and sediments that may be spilled during construction to be transported to the site. However, the quantities of concrete and sediment that will be used and produced during construction will be small and the level of impact these spillages may have on water quality within the site will be negligible considering the volume of water and the dilution capacity of the River Dodder and the River Liffey. There are no water quality impacts associated with the operational phase of the Project. Thus, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect this Qualifying Interest.	No
Annual vegetation of drift lines 1210	*"To restore the favourable* *SAC"*	These terrestrial coastal habitats do not occur within the likely zone of impact and are not sensitive to the types of impacts that could potentially arise from either construction or operational phases of the Project (i.e. water quality impacts) as there is no hydrological connection or other pathway for impacts. Therefore, it can be concluded beyond reasonable scientific doubt that the Project will not significantly affect this Qualifying Interest.	No
Salicornia and other annuals colonising mud and sand 1310	*"To restore the favourable* *North Dublin Bay SAC"*		No
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1330	*"To maintain the favourable* *Bay SAC"*		No

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the Project provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets	Likely Significant Effect
Mediterranean salt meadows (Juncetalia maritime*) [1410]*	*"To maintain the* Juncetalia maritime *Dublin Bay SAC"*	As above.	No
Embryonic shifting dunes 2110	*"To restore the favourable* *Dublin Bay SAC"*		No
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2120	*"To restore the favourable* Ammophila arenaria *('white dunes') in North Dublin Bay SAC"*		No
Fixed coastal dunes with herbaceous vegetation (grey dune) 2130	*"To restore the favourable* *vegetation ('grey dunes') in North Dublin Bay SAC"*		No
Humid dune slacks 2190	*"To restore the favourable* *Dublin Bay SAC"*		No
Petalwort *Petalophyllum ralfsii [1395]*	*"To maintain the* *SAC"*	Petalwort does not occur within the likely zone of impact of the Project. Petalwort is a terrestrial species, therefore there is no hydrological connection from the Project and this species. Thus, it can be concluded beyond reasonable scientific doubt that the proposed works will not significantly affect the Conservation Objective for this Qualifying Interest.	No

3.4 Summary of Likely Significant Effects

In Section 3.1, it was established that three European sites, namely the South Dublin Bay and River Tolka Estuary SPA, The North Bull Island SPA and the North Dublin Bay SAC, occur within the likely zone of impact of the Project. It was determined that potential pathways for effects exist between the Project and these sites. There are no pathways for effects between the Project and any other European sites. The SAC and SPAs were described in detail in Section 3.2.

In Section 3.3, it was established, in light of best scientific knowledge, that the Project will not give rise to ecological impacts which would constitute significant effects on the SAC or SPAs, in view of the sites' Conservation Objectives. This finding had regard to the nature, size and location of the Project, the assimilative capacity of the River Dodder and the River Liffey, the existing levels of noise and visual disturbance in the area and the sensitivities of the Qualifying Interest of the sites concerned.

4. IN-COMBINATION ASSESSMENT

4.1 Introduction

Article 6(3) of the Habitats Directive requires that AA be carried out in respect of plans and projects that are likely to have significant effects on European sites, " ". Therefore, regardless of whether or not the likely effects of a plan or project are significant when considered on their own, the significance of the combined effects of the plan or project under assessment and other plans and projects must also be evaluated.

4.2 Methodology

Plans and projects with potential for interactions with the Project were selected for assessment. For the purposes of the assessment, small scale and domestic developments were not considered given the nature of the Project and the fact that these developments would be subject to stringent planning controls.

The ePlanning websites for South Dublin County Council, Dun Laoghaire Rathdown County Council and Dublin City Council as well as the EIA Portal was used to search for planning applications.

4.3 Outcome

Table 4.1 below details the assessment of the likelihood of significant effects arising from the Project in combination with other plans or projects. This assessment was undertaken in view of the Conservation Objectives of the relevant European site and found that the Project does not have the potential to significantly affect any European site in combination with other plans or projects.

Table 4.1 Assessment of the likelihood of significant effects on ecology arising from the combination of the Project with other plans and projects.

Plan or Project	Description of Plan or Project	In-combination effect(s)
Dodder Greenway (SDCC Section)	The Dodder Greenway (SDCC Section) is a c. 12km 3-4m wide cycling and pedestrian path between Orwell Park and Fort Bridge near Bohernabreena. The project is partially constructed and includes a number of new cycling/ pedestrian bridges, bat friendly public lighting and toucan crossings. This project will link up with the DCC on the Dodder Road Lower, forming a contiguous 17km Greenway between Dublin City and the Dublin Mountains. The SDCC Section received planning in 2017 and is currently under construction.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway (DCC Section)	The Dodder Greenway (DCC Section) is a c. 5km 3-4m wide cycling and pedestrian path between Orwell Park and Sir John Rogerson's Quay. The project will include bat friendly public lighting and toucan crossings. This project will link up with the SDCC section on the Dodder Road Lower, forming a contiguous 17km Greenway between Dublin City and the Dublin Mountains. The DCC has not received planning consent to date.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway- Springfield Avenue Upgrade	The proposed Springfield Avenue Upgrade scheme is an upgrade on 1.5km of carriageway, footpaths, and cycle tracks. The scheme is part of the Dodder Greenway overall scheme, and it will link two phases of the Dodder Greenway. The scheme, considered to be an "on road" section of the Dodder Greenway, and it is also described as an extension and a supplement to the Dodder Greenway scheme. The project proposes to upgrade two junctions and rearrange and upgrade the existing cycle facilities on the road. It also intends to upgrade existing pedestrian crossings and create a continuously 5 m wide shared path along Springfield Avenue.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Greenway- Dodder Road Lower Upgrade	The proposed Dodder Road Lower Upgrade scheme aims to upgrade the existing condition of the Dodder Road Lower. It is proposed that 730 m of a 5 m shard path will be constructed in order to link the Dodder greenway route on Springfield Avenue, through Rathfarnham Road and Springfield Avenue, to the continuation of the Dodder Greenway Route within Dublin City Council boundaries. The scheme is considered to be an "on road" section of the Dodder Greenway and its major proposed adjustment is to convert the Dodder Road Lower, currently a two-way system road, into a one-way adjustment road to accommodate he proposed 5 m wide shared path.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
Proposed Royal Canal Greenway	The Royal Canal Greenway will involve the construction of a Premium Cycle and Pedestrian Route along the Royal Canal from North Wall Quay to Ashtown. The overall length of the scheme is 7.1 km from Sheriff Street Upper to Ashtown. The scheme has been broken into four phases: • Phase 1: Guild Street (North Wall Quay) to Sheriff Street Upper (completed); • Phase 2: Sheriff Street Upper to North Strand (work started March 2019); • Phase 3: North Strand to Phibsborough; • Phase 4: Phibsborough to Ashtown. An AA Screening has been undertaken at planning stage and it was concluded that there will be no likely significant effects on any Natura 2000 site(s) either alone or in-combination with other plans or projects.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
Dodder Flood Alleviation Works- Planning Amendment to the previously approved Planning Application 2504/13 at Donnybrook RFC	Dublin City Council is currently engaged in River Dodder Flood Alleviation Works, Phases 2c/2d/2e under a Part 8 planning permission issued in 2013. Part of this project includes works to the western bank of the river Dodder between Herbert Park and Anglesea Bridge (Donnybrook). Separately, Dublin City Council with the support of the National Transport Authority (NTA) has been developing proposals for a high-quality walking and cycling route along the river Dodder. The Dodder Greenway project is a proposed 29km walking and cycling route from Sir John Rogerson's Quay through Grand Canal Dock, Ringsend, Lansdowne, Ballsbridge, Donnybrook, Clonskeagh, Milltown, Rathfarnham, Tallaght and into the Dublin Mountains. The preferred option for the Dodder Greenway through the Donnybrook area has been identified as a route along the western bank of the River Dodder between Anglesea Bridge (Donnybrook) and Herbert Park. The current proposals for the flood alleviation works in this area would require major alteration in the future to allow for the Dodder Greenway to be provided along this preferred route. Dublin City Council therefore proposes to amend the current proposals for the flood alleviation works between Herbert Park and Anglesea Bridge so that the greenway can be constructed as part of the current on-going flood defences in this area. As part of the amended works it is proposed: • To widen a 120m section of the originally planned flood embankment to allow for the construction of a 4m wide walking and cycling route along its length.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	• To alter the line of approx.140m, and cantilever over the riverbank approximately 130m, of the originally planned flood wall in order that the walking and cycling route can be constructed between the flood wall and the neighbouring pitches and tennis courts. • To remove some existing low value trees and provide a new tree planting scheme • To install a new boundary fence between the walking and cycling route and the neighbouring property belonging to the Leinster Branch of the IRFU. To provide beech hedging or similar as screening on the Leinster Branch side of the boundary fence.	
Dodder Flood Alleviation Scheme (Phase 3)	The purpose of the River Dodder Flood Alleviation Scheme Phase 3 is to assess and develop a viable, cost effective and sustainable Flood Alleviation Scheme in order to alleviate flooding along the River Dodder between Clonskeagh Road Bridge to Orwell Road Bridge including Little Dargle Stream at Braemor Road-Woodside Drive south-eastern junction. This project is being developed between Dún Laoghaire- Rathdown County Council and the Office of Public Works is currently at preliminary discussion stage. In the absence of any design or even design options, an assessment of in-combination effects with this project cannot be undertaken at this stage. Once developed, this project will be required to undertake the appropriate assessments including EIA Screening and AA Screening and consider the cumulative effects resulting from all other projects, as appropriate.	There is no design available for this project and therefore an assessment of in-combination effects cannot be undertaken at this time. The Dodder Flood Alleviation Scheme (Phase 3) will be assessed for in-combination effects when the design is completed.
Proposed Dodder Public Transportation Opening Bridge	Dublin City Council has commenced the planning and design of the Dodder Public Transportation Opening Bridge. The scheme comprises a new public transportation opening bridge over the River Dodder at its confluence with the River Liffey along with the construction of approach roads associated with the bridge; the construction of a new control building; the provision of a new club house and facilities for St Patrick's Boat Club; the reclamation of land to the west of Tom Clarke Bridge to facilitate the build; the landscaping of the area between York Road/Thorncastle street and the R131 over the extents of the project. An EIAR and Natura Impact Statement will be prepared in support of the project.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
Proposed Bloodstoney Footbridge	Dublin City Council has commenced the planning and design of the Bloodstoney Footbridge. The proposed bridge will cross the River Liffey upstream of the confluence with its tributary, River Dodder in central the Docklands area of Dublin. The Blood Stoney Bridge will connect the two river banks at the projection of the Blood Stoney Road and New Wapping Street, at Sir John Rogerson's Quay (in the South) and North	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	Wall Quay (in the North), respectively (Figure 2.1). In this area the river channel is c.125m wide. The bridge will carry pedestrians and cyclists in both directions with the cycle path segregated from the footpaths. The bridge must move to allow for passing river traffic, maintaining unlimited head clearance across the full width of the navigation channel (31.5m) in the open position. An EIAR and Natura Impact Statement will be prepared in support of the project.	
Liffey Cycle Route	The Liffey Cycle Route is a Primary Route in the Greater Dublin Area Cycle Network Plan published by the National Transport Authority (NTA) in December 2013, and as such is a key objective of the NTA and Dublin City Council (DCC). It is one of a number of routes being developed by DCC as part of its overall 470km of safer cycling routes suitable for cyclists of all ages and abilities. The scheme will deliver pedestrian improvements, a high-quality cycle route that will meet the requirements of cyclists of varied experience and will provide an optimal balance of provision between the various road users along the route. The design will have particular regard to any engineering, architectural and environmental constraints along the route. In 2017 DCC and the NTA agreed that the NTA would undertake a review of all design options considered to date and identify any new design options. In March 2019 the NTA presented an Emerging Preferred Design to DCC. This Emerging Preferred Design includes the following • The existing road layout will be reconfigured to provide a one-way segregated cycle track on the north and south quays, located on the building side from the Phoenix Park to O Donovan Rossa Bridge where it then crosses to the river side of the road to Matt Talbot Memorial Bridge, • Provision of boardwalks at various locations, • Upgrade of junctions to provide pedestrian and cyclist improvements, • Public realm improvements and • Improvements to existing traffic signal operational infrastructure. Dublin City Council carried out a non-statutory public consultation from 2nd May 2019 to 6th June 2019. Comments and observations received will be considered as the scheme design progresses. Following extensive internal DCC consultation, key areas which require scoping prior to the engagement of an engineering service provider have been identified, DCC is	An assessment of cumulative effects with this project without detail on location, scale and design is not feasible at this stage and is not included as part of this assessment.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	currently progressing these scoping exercises. This information along with the comments received as part of the non-statutory public consultation will help in fully defining the scope of the scheme. This will form the basis for appointing a design team in Q2 2020.	
City Quay to Ringsend Core Bus Corridor (Route 16)	The Ringsend to City Centre Core Bus Corridor (CBC) commences at Talbot Memorial Bridge. The scheme encompasses bus lane and cycle infrastructure on both north and south quays linking the city centre with the Docklands and onto Ringsend and Irishtown. The scheme will involve works on existing streets and new road links. The second round of public consultation for the Core Bus Corridor (the "bus lanes and cycle lanes/tracks") will commence in 2020. This will be a further interim step in the planning process - it will take another 12 months of technical, environmental, and transport impact assessment work before any final plans are complete for presentation to An Bord Pleanála for statutory approval in 2020.	An assessment of cumulative effects with this project without detail on location, scale and design is not feasible at this stage and is not included as part of this assessment.
Dublin Eastern Bypass / Southern Port Access Route (SPAR)	Link between north Dublin Port and the Southern Cross / South Eastern Motorway via an eastern bypass of the city. Preferred method is by means of a bored tunnel. Preferred route is under Sandymount Strand and Booterstown Marsh. Not likely to proceed until after 2030 at the earliest. Split into two schemes: (1) Port Tunnel to South Port and (2) South Port to M50. SPAR is the northern section.	An assessment of cumulative effects with this project without detail on location, scale and design is not feasible at this stage and is not included as part of this assessment.
DCC Planning Application No. DSD 3197/16, DSD 2577/17, DSD 4134/17, DSD 3647/08, DSD 2572/19 (Granted)	Construction of a new residential and commercial development at Hanover Quay within a 7-8 storey building comprising 122 apartments, resident's gym, café, and restaurant. Single level basement will provide car and bicycle parking spaces and services and storage areas. Landscaping, boundary treatment, services provision and associated site development works are included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. DSD 2546/15, DSD 4345/15, DSD 2663/16, DSD 3796/16, DSD 4102/16, DSD 3572/17, DSD 4135/17, DSD 2145/18 (Granted)	Removal and reconfiguration of a 2-level basement and the construction of a mixed-use development ranging from 3 to 19 storeys at Sir John Rogerson's Quay. This will accommodate office and atrium space, residential areas including 204 apartments, retail, cultural and amenity uses/services, a creche and restaurant. Two basement levels will serve as space for bicycle and car parking and will also accommodate toilet, shower and storage facilities. Landscaping will also be involved.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2268/14 (Granted)	Phased development at Marian College of sports hall, changing facilities, demountable seating, reception, ancillary accommodation and a gym. Car and bicycle parking space will also be provided. Lighting and landscaping will be included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
DCC Planning Application No. 2868/16 (Granted)	Demolition of a 5-storey commercial building on Shelbourne Road and the construction of a 4 to 6 story commercial building over basement level that will provide office space. Ground level will provide space for either retail or a café. Car and bicycle parking spaces will also be provided by the development.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 3726/09, 2669/11, 3810/11, 2744/12, 2427/13, 3624/13, 3012/14, 2250/15, 2259/15, 4005/15, 4216/15, 2766/16, 3187/17 (Granted)	Demolition of existing buildings at Orwell Park and the construction of 77 residential units mainly consisting of terraced, townhouse-style buildings. Car and bicycle parking spaces are also included alongside an ESB sub-station, communal gardens. Public open spaces, and all associated infrastructure and site development works including landscaping and boundary treatment.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application N. 2219/15 (Granted)	Construction of a 2-storey building at the Leinster Branch IRFU Grounds on Donnybrook Road that will accommodate a gym, medical room, changing rooms and administration facilities.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 3947/17 (Granted)	Construction of 3 2-storey houses at Briarfield Grove. All associated site development works, service provision, access, car parking, landscaping and boundary treatment works are included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2212/13 (Granted)	Construction of 3 floors above ground floor slab, extension and change of building uses to provide 116 nursing home bedrooms at Orwell Nursing Home, dining and day rooms, ancillary accommodations, office and training rooms, and car parking spaces will also be included. A single storey concierge and sub-station building will also be constructed. Landscaping and boundary works are also included in the development.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2659/13, 2013/14 (Granted)	The development involves the construction on 8 apartments and 8 town houses at Orwell Park alongside associated site development and landscape works.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2593/18 (Granted)	The development involves the construction of 4 single storey apartments over existing ground floor retail unit on Milltown Road.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
DCC Planning Application No. 2709/19 (Granted)	The development involves the construction of 9 offices/consulting rooms, a waiting area and toilets in a single storey building at Glenmalure Day Hospital.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2676/11 (Granted)	The development involves the demolition of an existing building at Clonskeagh House and the construction of a 4-storey multi-purpose building. Reconfiguration and resurfacing of an existing car park will be carried out, alterations to existing access and associated site development works are also included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No, 2620/14 (Granted)	The development involves the demolition of existing offices, factory buildings, yards, chimneys and ancillary accommodation and alterations to surrounding buildings will also be carried out on Clonskeagh Road. 92 apartments will be constructed in 4 apartment blocks ranging between 2 and 4 storeys and will also contain a creche. A river walk and landscaping will be carried out along the banks of the River Dodder. A new site entrance will be provided that will provide access to car and bicycle parking spaces. Improvements to existing boundary walls, landscaping and associated works will also be carried out.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2749/19 (Granted)	Construction of an air dome over 2 existing tennis courts on Beech Hill Road, Clonskeagh.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 4144/09 (Granted)	Construction of an air dome over 3 existing tennis courts at Donnybrook Tennis Club.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 2963/09 (Granted)	Demolition of an existing gym at Old Belvedere Rugby Club and the construction of a single storey building that will host kit rooms, laundry rooms, meeting room and office.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. 4049/09 (Granted)	Demolition of an existing 2-storey building and the construction of 29 apartments in 4 blocks between 4 and 6 storeys on Anglesea Road. Ancillary stores and office will be located at ground level, car and bicycle parking spaces will also be provided. Anglesea Road will be widened to 4.8m width.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
DCC Planning Application No. 4219/10 (Granted)	Partial demolition of an existing boundary wall and the construction of 2 single storey buildings at St. Patrick's Church, Bridge Street that will accommodate a reception hall, kitchen, storerooms, toilets and an office.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DCC Planning Application No. DSD 3475/15 (Granted)	Partial demolition of an existing double basement and reconfiguration of the basement as a car park at St. Patrick's Church, Bridge Street. This will also involve the addition of 10 shower cubicles, and relocation of plant, water storage tank, and ESB switch room. A floodwall will also be constructed.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD128/0003 (Pending)	The proposed development of the Tallaght to Ballyboden Cycle Route Scheme. This involves the construction of new off-road cycle tracks on Oldbawn Road, Knocklyon Road and Templeroan Road. The construction of shared facilities through Dodder Valley Park, Monlea Park and Knocklyon Road. Upgrade of existing off-road cycle tracks on the Firhouse Road and Scholarstown Road. The incorporation of cyclist facilities along Oldbawn Road and Tallaght Village. Cycle lanes will be provided through the N21, junction and road safety improvements are also included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD198/0006 (Pending)	Construction of 3 play spaces and a play trail route in the Dodder Valley Park. The play spaces will require play equipment, surfacing, boundary treatments, seating areas, planting and paving. Play equipment, surfacing, boundary treatments, seating areas, and planting will also be involved in the development of the trail. All associated works will also be included. This development was subject to an Appropriate Assessment Screening and an Environmental Impact Assessment.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD178/0004 (Granted)	Construction of a grass athletics track, a playing pitch, a BMX track, and a signed nature trail at Mt. Carmel Park. Shared changing room/club house facilities are also proposed. The development has been subject of an Appropriate Assessment Screening.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD11A/0144 (Granted)	Construction of 5 2-storey houses at Ladywell, Temepleogue Road. Landscaping, boundary treatment and site development works are all included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
SDCC Planning Application No. SD14A/0107 (Granted)	Demolition of an existing house and surrounding sheds and the construction of 18 3-storey houses at Ladywell, Templeogue. A new access road, landscaping, new boundary walls, and associated works will be involved. A portion of the site adjoining the River Dodder to be ceded to South Dublin County Council for a walkway.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
SDCC Planning Application No. SD13A/0139, SD14A/0275 (Granted)	Demolition of the existing out-buildings at Riversdale House, Rathfarnham, and the construction of 10 detached houses ranging from 2 to 2.5 storeys. Associated works such as landscaping, foul and surface water drains and associated parking provision will also be included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DLRCC Planning Application No. D16A/0082 (Granted)	Removal of the existing car wash, sheds, workshop and associated structures and the closure of 2 vehicular entrances at 149 Braemor Road, Churchtown. A 4-storey nursing home consisting of 101 bedrooms with associated ancillary/common facilities, office/administration areas, signage and green roof, and a new entrance will be constructed. Car and bicycle parking and bin storage will be provided, and all associated site development, landscaping and boundary treatments are also included.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.
DLRCC Planning Application No. D15A/0191 (Granted)	Construction of 54 residential units including 42 houses and 12 apartments at Bird Avenue, Clonskeagh. The development includes a new vehicular access, parking spaces, landscaping, drainage and boundary treatments.	There are no likely significant effects predicted to arise from the combination of this development with the proposed development.

5. CONCLUSION

In accordance with Article 6(3) of the Habitats Directive, Part XAB of the Planning and Development Acts, the relevant case law, established best practice and the Precautionary Principle, this AA Screening Report has examined the details of the Firhouse and Wellington Lane Links and the relevant European sites and has concluded, on the basis of objective information, that the Project, either individually or in combination with other plans or projects, in view of best scientific knowledge, is not likely to give rise to impacts which would constitute significant effects in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, the North Dublin Bay SAC or any other European site.

In light of this conclusion, it is the considered opinion of ROD, as the author of this AA Screening Report, that South Dublin County Council, as the Competent Authority, may find in completing its AA Screening in respect of the Firhouse Road and Wellington Lane Links, that the Project, either individually or in combination with other plans and projects, is not likely to have a significant effect on the South Dublin Bay and River Tolka Estuary SPA, the North Bull Island SPA, the North Dublin Bay SAC or any other European site, in view of best scientific knowledge and the Conservation Objectives of the site concerned. Therefore, it is the recommendation of the author of this AA Screening Report that the Competent Authority may determine that AA is not required in respect of the Project.

6. REFERENCES

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APPENDI A

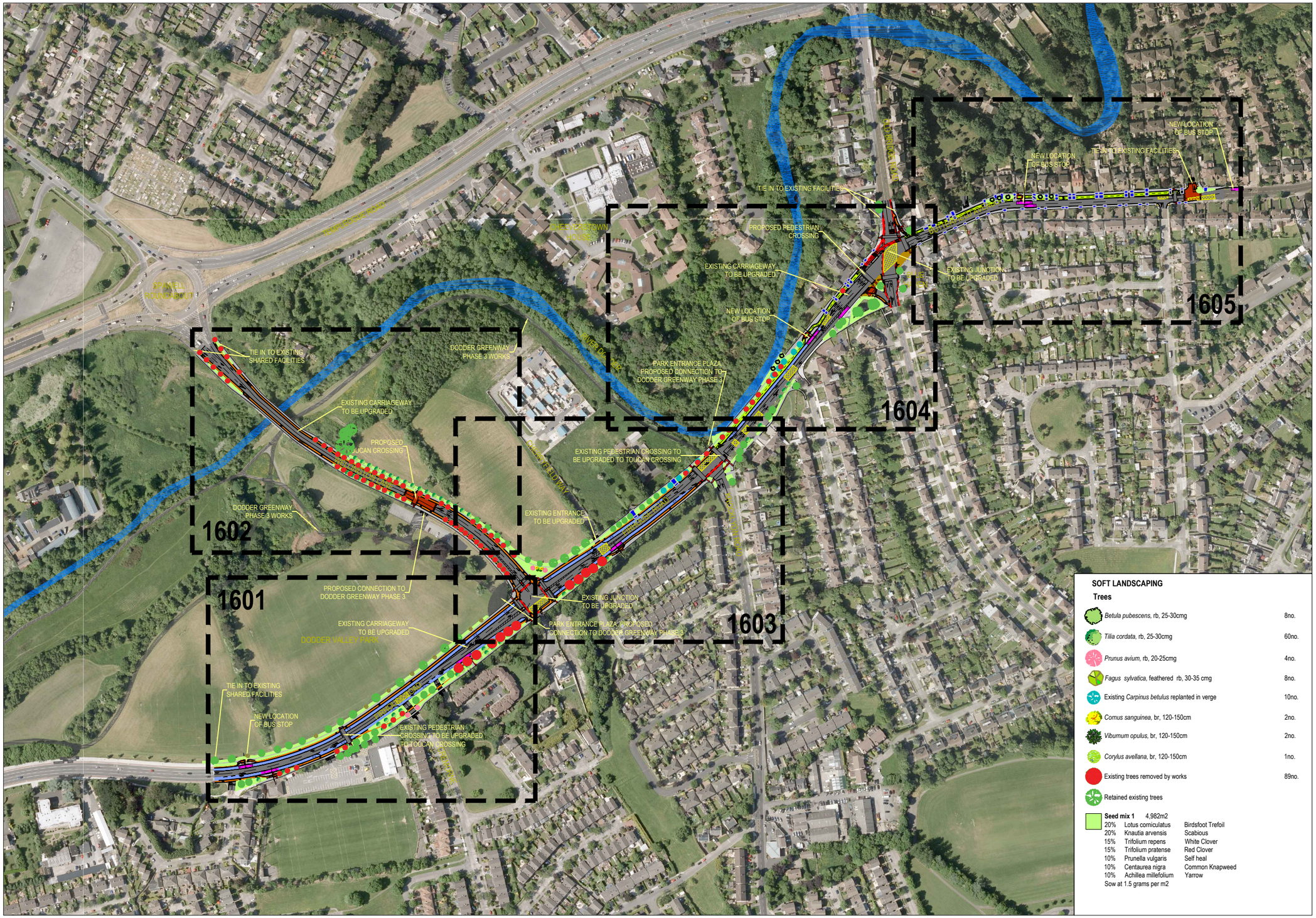
Project Drawings

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates


1601
1602
1603
1604
1605
SPAWELL ROUNDABOUT
DODDER GREENWAY PHASE 3 WORKS
TIE IN TO EXISTING SHARED FACILITIES
EXISTING CARRIAGEWAY TO BE UPGRADED
PROPOSED TOUCAN CROSSING
PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
EXISTING CARRIAGEWAY TO BE UPGRADED DODDER VALLEY PARK
NEW LOCATION OF BUS STOP
EXISTING PEDESTRIAN CROSSING TO BE UPGRADED TO TOUCAN CROSSING
EXISTING ENTRANCE TO BE UPGRADED
EXISTING JUNCTION TO BE UPGRADED
PARK ENTRANCE PLAZA PROPOSED CONNECTION TO DODDER GREENWAY PHASE 3
PROPOSED PEDESTRIAN CROSSING
EXISTING CARRIAGEWAY TO BE UPGRADED
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
EXISTING JUNCTION TO BE UPGRADED
NEW LOCATION OF BUS STOP
TIE IN TO EXISTING FACILITIES
RIVER DODDER
QUARRY ROAD
QUARRY ROAD
QUARRY ROAD

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

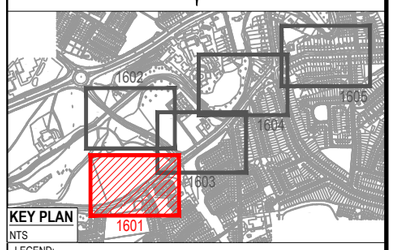
20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

PROPOSED SECTION 1-1
SCALE 1:100

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
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- EXISTING 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 KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

Clifton Scannell Emerson Associates

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 1 OF 5

Drawn By: KT | Date: MAR. 2022 | 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	1601

18_123D - CSE - GEN - XX - DR - C - 1601

Status Code: S2 — Suitability Description: FOR INFORMATION

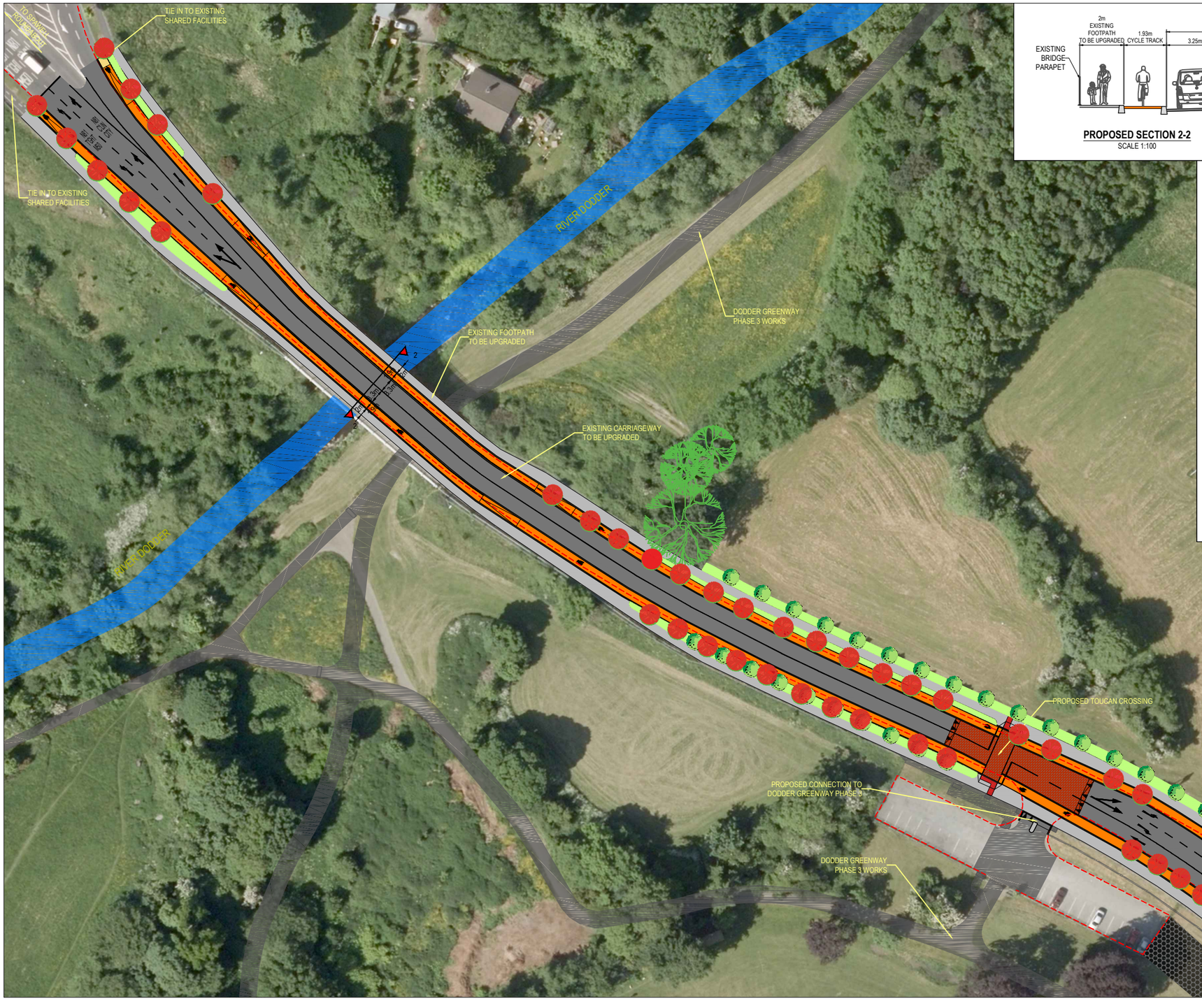
Revision: P01 — Project Status: PLANNING

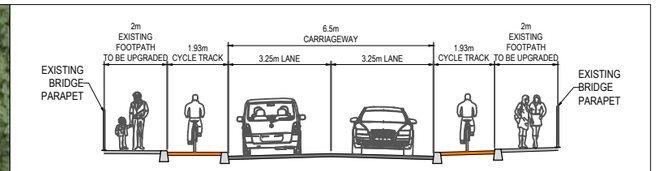
DODDER GREENWAY - PHASE 5
PART 8

NTA 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

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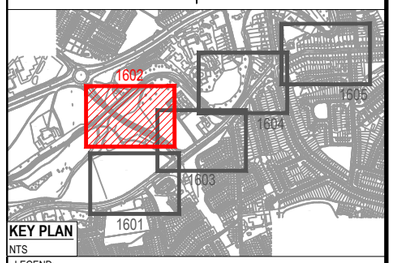

KEY PLAN
NTS

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- PROPOSED TACTILE PAVING (RED)
- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 2 OF 5

Drawn By: KT | Date: MAR. 2022

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	1602

Status Code: S2 — Suitability Description: FOR INFORMATION

Revision: P01 — Project Status: PLANNING

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY - PHASE 5
PART 8

Clifton Scannell Emerson Associates

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

A1

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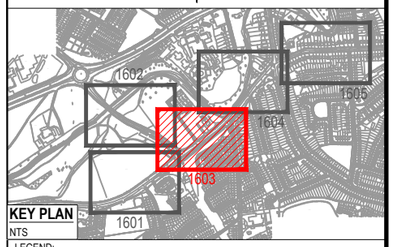

KEY PLAN
NTS

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
- EXISTING 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 KERB

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

PROPOSED SECTION 3-3
SCALE 1:100

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 3 OF 5

Drawn By: KT	Date: MAR. 2022	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	1603

Status Code: S2 — FOR INFORMATION

Revision: P01 — PLANNING

Suitability Description / Project Status

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

DODDER GREENWAY - PHASE 5
PART 8

Clifton Scannell Emerson
Associates

PROPOSED SECTION 4-4
SCALE 1:100

SOFT LANDSCAPING

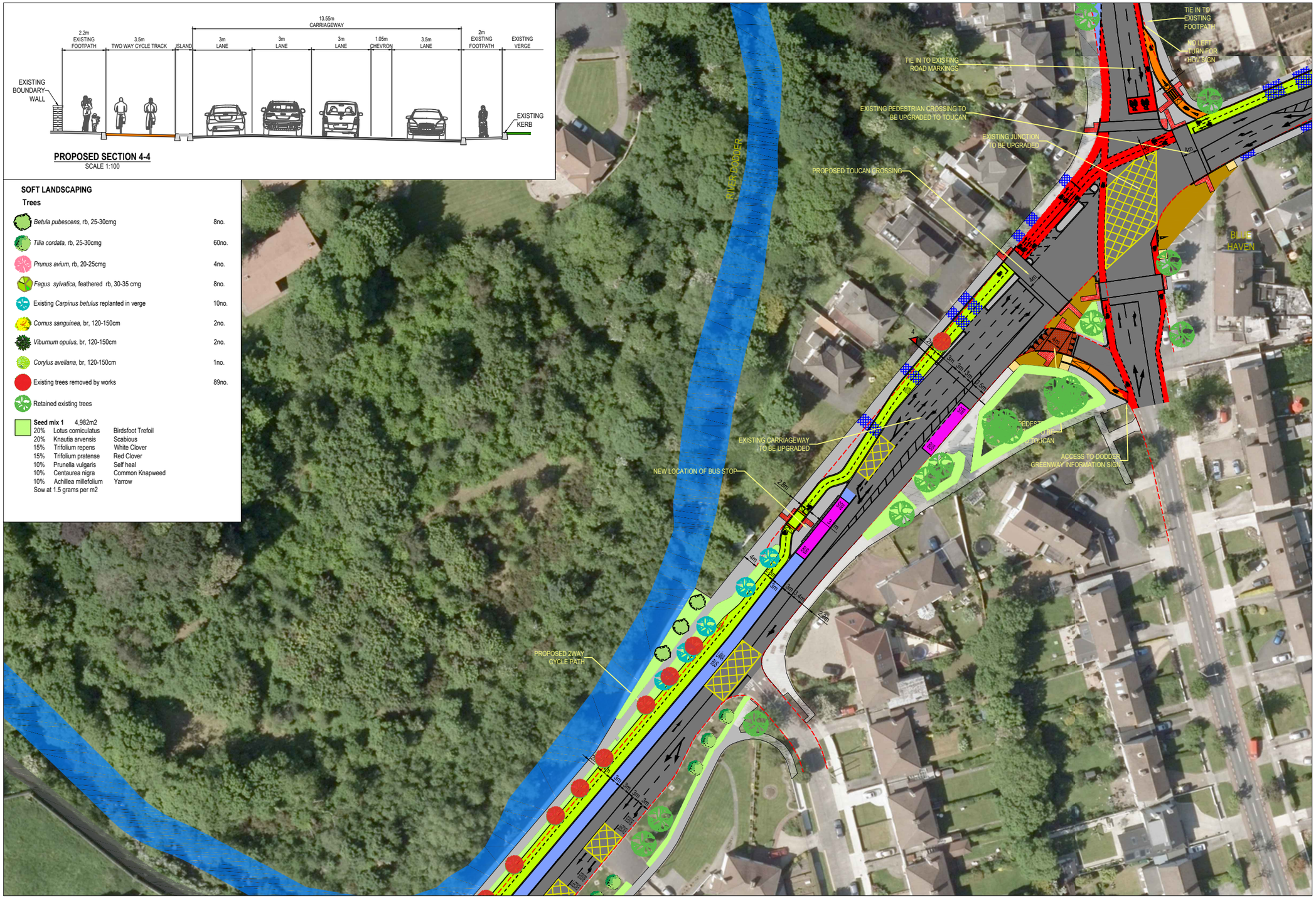
Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
Cornus sanguinea, br, 120-150cm	2no.
Viburnum opulus, br, 120-150cm	2no.
Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

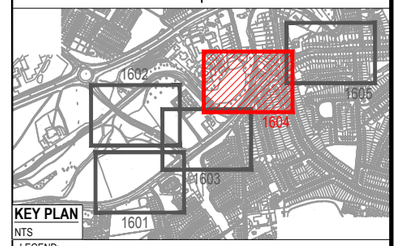
Sow at 1.5 grams per m2



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 TWO WAY CYCLE PATH
- PROPOSED CARRIAGEWAY UPGRADE
- PROPOSED BUS LANE
- PROPOSED BUS STOP
- PROPOSED CONCRETE FOOTPATH
- EXISTING FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED RAMP
- PROPOSED PROPERTY ACCESS
- PROPOSED GRASS VERGE / LOW LEVEL PLANTING
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- PROPOSED TACTILE PAVING (BUFF)
- PROPOSED SEGREGATED SHARED CYCLE TRACK - FOOTWAY TACTILE PAVING (BUFF)
- EXISTING KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 4 OF 5

Drawn By: KT | Date: MAR. 2022 | 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	1604

Status Code: S2 — FOR INFORMATION

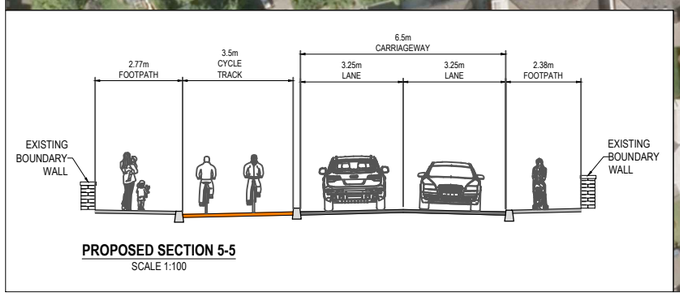
Revision: P01 — Project Status: PLANNING

DODDER GREENWAY - PHASE 5
PART 8

NTA Údarás Náisiúnta Iompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council

Clifton Scannell Emerson Associates



PROPOSED SECTION 5-5
SCALE 1:100

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
Fagus sylvatica, feathered rb, 30-35 cmg	8no.
Existing *Carpinus betulus* replanted in verge	10no.
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Corylus avellana, br, 120-150cm	1no.
Existing trees removed by works	89no.
Retained existing trees	

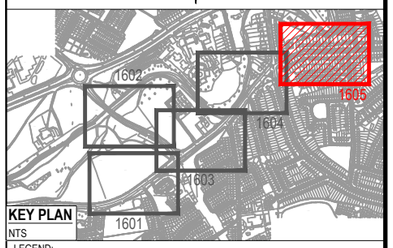
Seed mix 1 4,982m2

20%	Lotus corniculatus	Birdsfoot Trefoil
20%	Knautia arvensis	Scabious
15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

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

A1



KEY PLAN
NTS

LEGEND:

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- EXISTING KERB

Rev	Description	Drawn	Checked	Date
P01	PART 8 PLANNING	KT	DRL	04/07/22

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Client: SOUTH DUBLIN COUNTY COUNCIL

Project: DODDER GREENWAY PHASE 5

Dwg. Title: PART 8 LAYOUT SHEET 5 OF 5

Drawn By: KT | Date: MAR. 2022

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	1605

Status Code: S2 — FOR INFORMATION

Suitability Description

Revision: P01 — PLANNING

Project Status

APPENDI B

Landscape Drawings

DD_01 Landscape layout 1:500

DD_02 Landscape layout 1:500

DD_03 Landscape layout 1:500

DD_04 Landscape layout 1:500

Legend

SOFT LANDSCAPING

Trees

Betula pubescens, rb, 25-30cmg	8no.
Tilia cordata, rb, 25-30cmg	60no.
Prunus avium, rb, 20-25cmg	4no.
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15%	Trifolium repens	White Clover
15%	Trifolium pratense	Red Clover
10%	Prunella vulgaris	Self heal
10%	Centaurea nigra	Common Knapweed
10%	Achillea millefolium	Yarrow

Sow at 1.5 grams per m2

Rev	Date	By	Details
I	04/07/22	LJ	Update trees
H	29/06/22	LJ	Update trees
G	20/06/22	LJ	Update to new layout
F	06/05/22	LJ	Update to new layout
E	01/12/20	LJ	Trees on wellington lane
D	27/11/20	LJ	Road junction changes
C	10/11/20	LJ	Park entrance changes
B	21/09/20	LJ	Landscape plan
A	18/09/20	DB	Landscape plan

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T: 0404 66827
Email: designdesk@austenassociates.ie | Web: www.austenassociates.ie
landscape architecture arboriculture
design project management

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Client:
South Dublin County Council & National Transport Authority

Project title:
Dodder Greenway Phase 6 - Firhouse Road & Wellington Lane Links

Drawing title:
Landscape Plan

Drawn by: DB
Approved by: TA
Status: Planning
Scale: 1:500 on A1
Date: September 2020

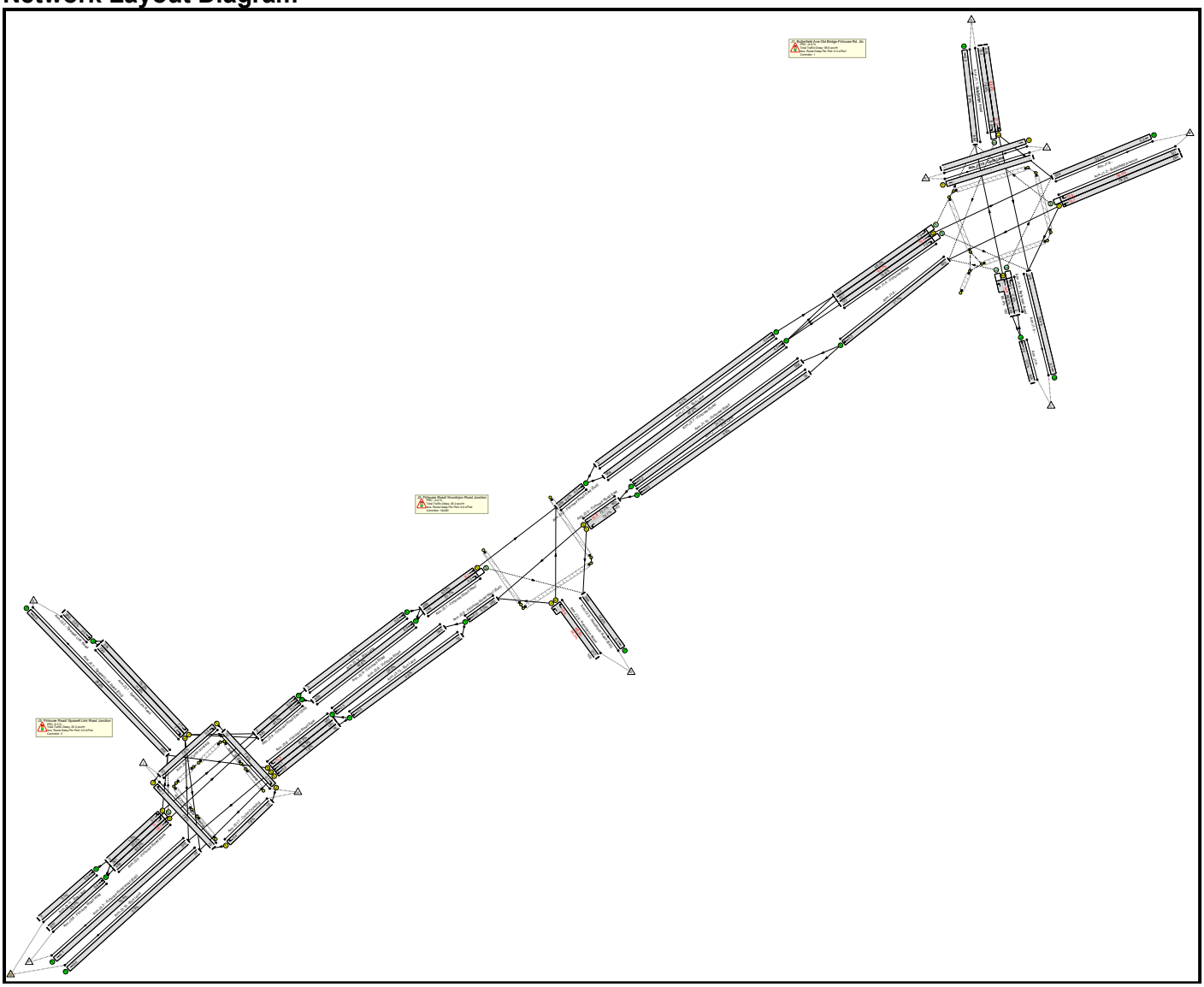
Drawing no: 066620 _LP_01
Revision: I

Appendix F – LinSig Traffic Modelling Results

User and Project Details

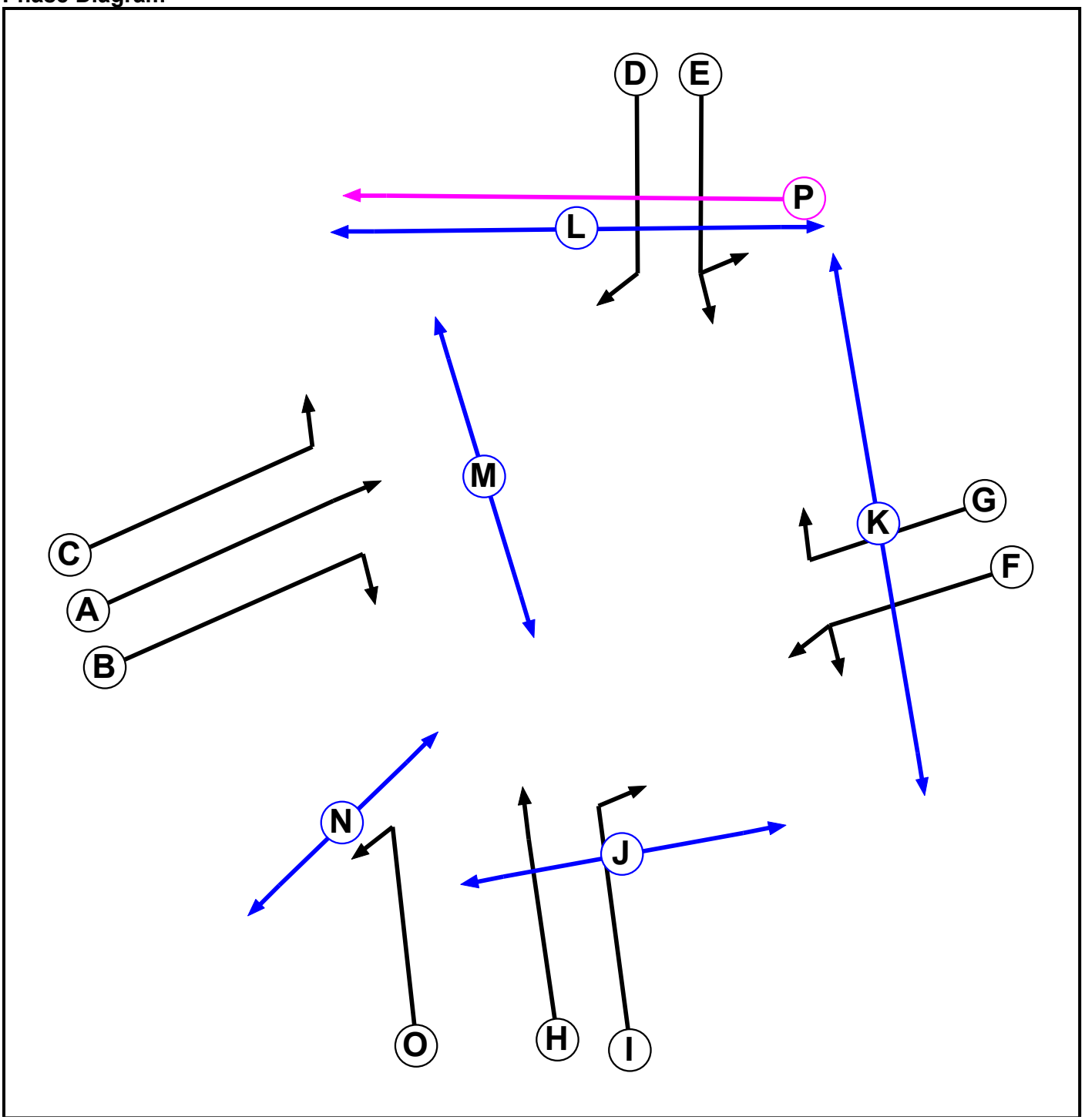
Project:	**18_123 - Dodder Greenway**
Title:	**Butterfield Ave-Old Bridge-Firhouse Rd. Jtn. - Existing Junction Configuration**
Location:	
Date Started:	September 2020
Checked By:	RG
Additional detail:	
File name:	Firhouse Road - Layout 1 v2.0.lsg3x
Author:	CDR
Company:	CSEA
Address:	
Linsig Version:	3, 2, 40, 0

Network Layout Diagram



C1

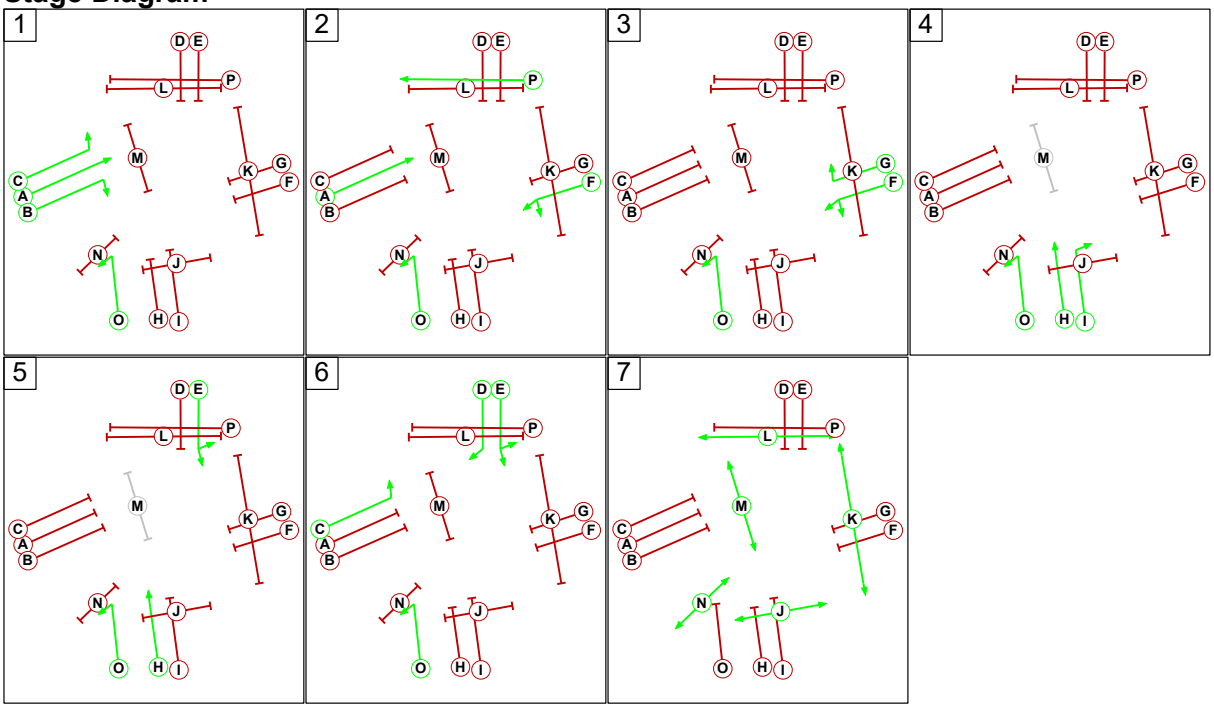
Phase Diagram



Phases in Stage

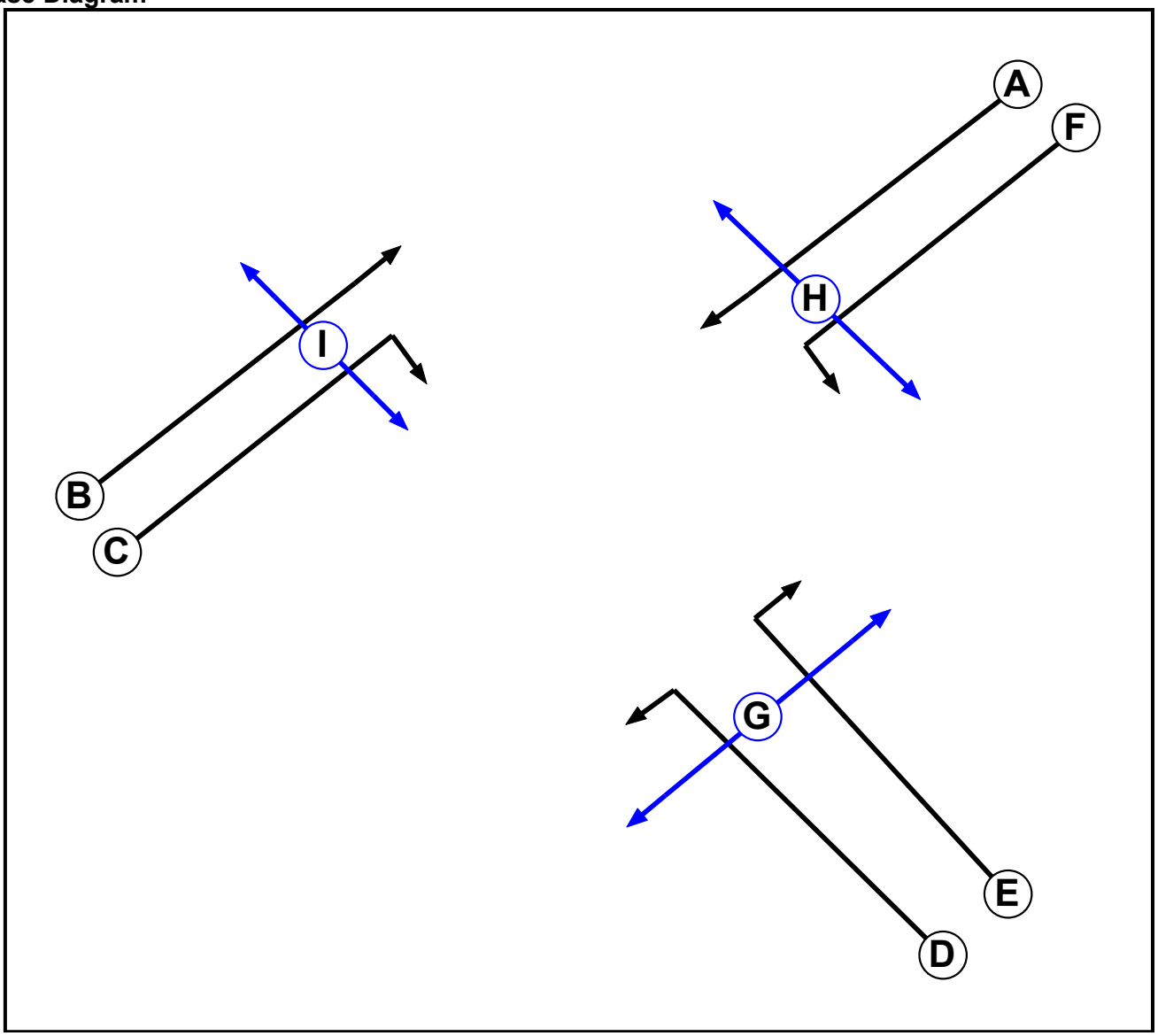
Stage No.	Phases in Stage
1	A B C O
2	A F O P
3	F G O
4	H I O
5	E H O
6	C D E O
7	J K L M N

Stage Diagram



C2

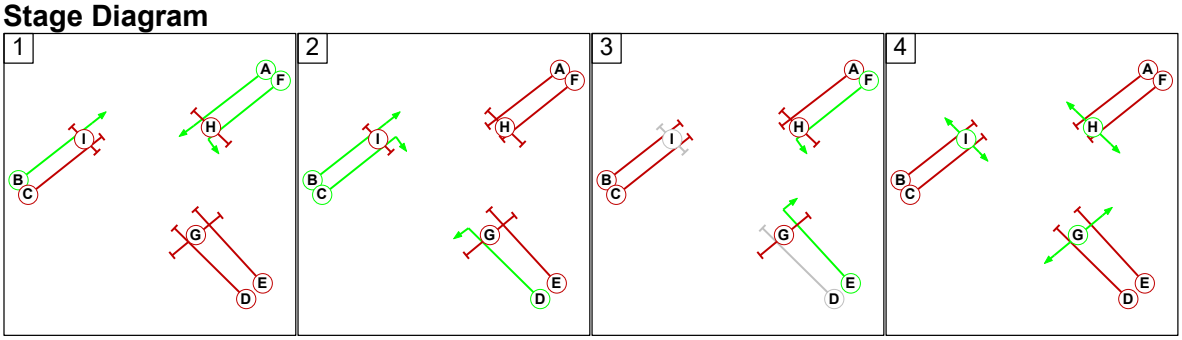
Phase Diagram



Phases in Stage

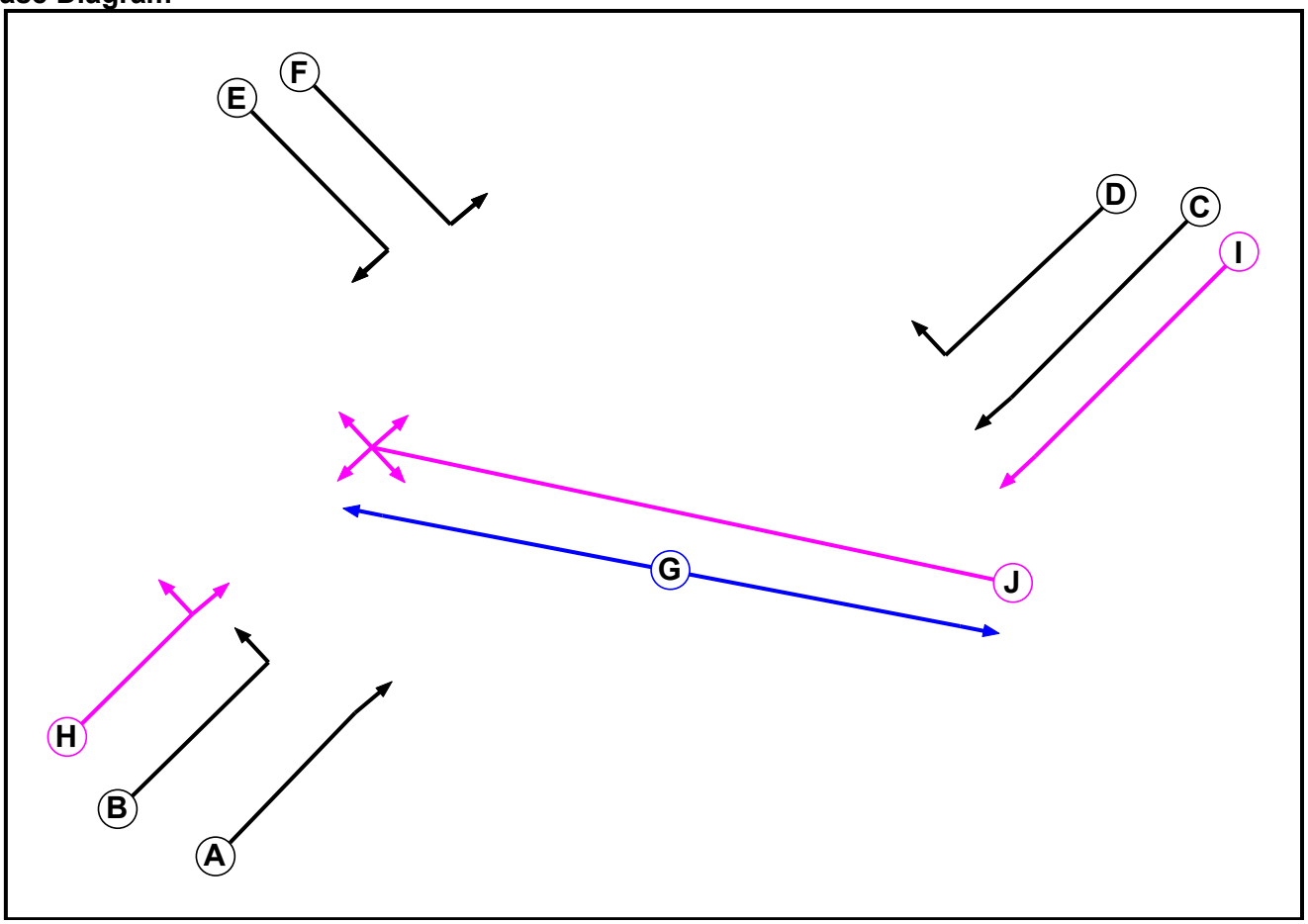
Stage No.	Phases in Stage
1	A B F
2	B C D
3	E F
4	G H I

Stage Diagram



C3

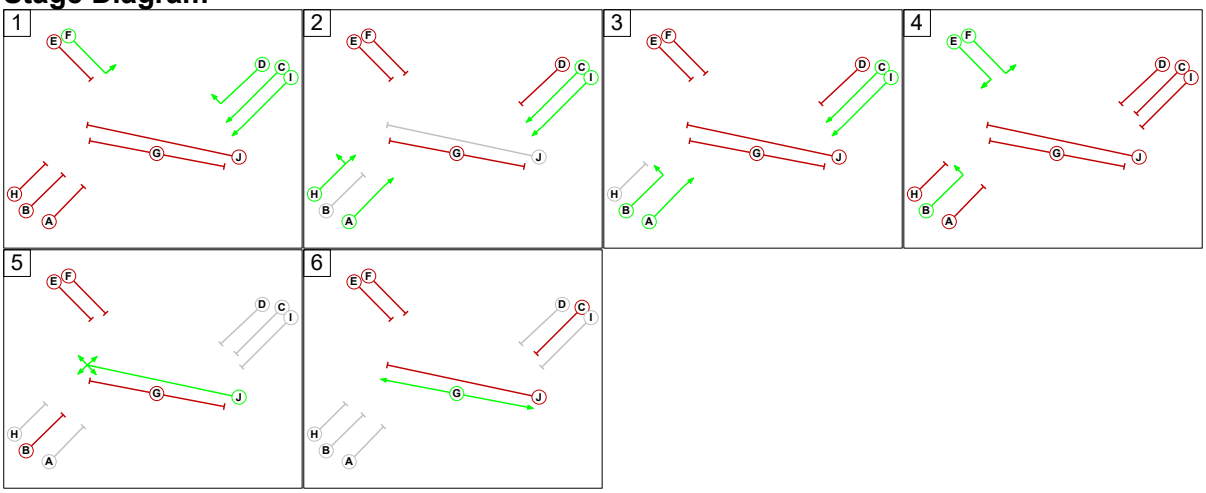
Phase Diagram



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



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

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: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn. - Existing Junction Configuration	-	-	-	-	-	**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	-	-	-	-	-	-	-	-

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: 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%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.3%**	**0**	**138**	**6**	**26.2**	**-**	**-**
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	1665	250	57.7%	0	138	6	2.1	52.7	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+5.4)	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%	-	-	-	-	-	-
Ped Link: P3	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

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	Spawell Link Road Right Right2	U	195	1811	272	71.8%	-	-	-	3.9	71.3	7.4
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

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)
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%	-	-	-	-	-	-
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):	25.47	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):	108.02	

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

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: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn. - Existing Junction Configuration	-	-	-	-	-	**98.4%**	**16**	**1269**	**102**	**139.7**	-	-
J1: Butterfield Ave-Old Bridge-Firhouse Rd. Jtn.	-	-	-	-	-	**97.3%**	**16**	**875**	**77**	**58.8**	-	-
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	14.6	2.0
4/2	Firhouse Road Ahead	U	378	1859	496	76.3%	-	-	-	6.3	59.9	14.2
4/3	Firhouse Road Right	O	161	1665	167	96.7%	0	139	22	6.8	153.1	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	-	-	-	-	-	-	-	-

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: 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%	-	-	-	-	-	-
J2: Firhouse Road/ Knocklyon Road Junction	**-**	**-**	**-**	**-**	**-**	**98.4%**	**0**	**208**	**24**	**47.4**	**-**	**-**
1/1	Firhouse Road West Ahead	U	554	1940	1245	44.5%	-	-	-	3.1	19.8	11.1
1/2	Firhouse Road West Right	O	232	1665	236	98.4%	0	208	24	10.1	157.4	14.3
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%	-	-	-	-	-	-
Ped Link: P3	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	745	76.4%	-	-	-	4.1	26.1	11.1

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	Spawell Link Road Right Right2	U	488	1811	543	89.8%	-	-	-	9.3	68.8	19.3
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	638	29.5%	0	186	2	1.6	29.7	4.5
5/3	Firhouse Road West Ahead	U	213	1915	239	89.0%	-	-	-	6.3	106.5	10.2
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	464	86.7%	-	-	-	5.9	52.4	15.6
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

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)
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%	-	-	-	-	-	-
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):	57.44	Cycle Time (s):	120
C2	PRC for Signalled Lanes (%):	-9.3	Total Delay for Signalled Lanes (pcuHr):	46.49	Cycle Time (s):	120
C3	PRC for Signalled Lanes (%):	0.2	Total Delay for Signalled Lanes (pcuHr):	32.01	Cycle Time (s):	120
	PRC Over All Lanes (%):	-9.3	Total Delay Over All Lanes(pcuHr):	139.74		

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