Belfield / Blackrock to City Centre Core Bus Corridor Scheme

February 2022

Preferred Route Option Report

BUS CONNECTS

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

Contents

Appendices

Appendix A

General Arrangement Drawings

Appendix B

Public Consultation Submissions Reports – 1st Non-Statutory Public Consultation

Appendix B1

UCD Ballsbridge to City Centre Core Bus Corridor – 1st Non-Statutory Public Consultation Submission Report

Appendix B2

Blackrock to Merrion Core Bus Corridor – 1st Non-Statutory Public Consultation Submission Report

Appendix C

Public Consultation Submissions Report – 2nd and 3rd Non-Statutory Public Consultation

Appendix C1

UCD Ballsbridge to City Centre Core Bus Corridor – 2nd and 3rd Non-Statutory Public Consultation Submission Report

Appendix C2

Blackrock to Merrion Core Bus Corridor – 2nd and 3rd Non-Statutory Public Consultation Submission Report

Appendix D

Section 1a: UCD Ballsbridge to City Centre Section - Fitzwilliam Street Lower Route Options Assessment MCA Tables

Appendix E

Section 1b: UCD Ballsbridge to City Centre Section – Pembroke Road Route Options Assessment MCA Table

Appendix F

Section 1c: UCD Ballsbridge to City Centre Section – Merrion Road Route Options Assessment MCA Table

Appendix G

Section 2: UCD Ballsbridge to City Centre Section - Nutley Lane Route Options Assessment MCA Table

Appendix H

Route Selection Reports

Appendix H1

Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report

Appendix H2

Ballsbridge to UCD Bus Corridor – Route Options Assessment

Appendix I

Emerging Preferred Route - 1st Non-Statutory Public Consultation - Brochures

Appendix I1

Ballsbridge to City Centre Core Bus Corridor – 1st Non-Statutory Public Consultation - Brochure

Appendix I2

Blackrock to Merrion Core Bus Corridor – 1st Non-Statutory Public Consultation – Brochure

Appendix J

Preferred Route - 2nd Non-Statutory Public Consultation - Brochures

Appendix J1

Ballsbridge to City Centre Core Bus Corridor – 2nd Non-Statutory Public Consultation - Brochure

Appendix J2

Blackrock to Merrion Core Bus Corridor – 2nd Non-Statutory Public Consultation – Brochure

Appendix K

Preferred Route - 3rd Non-Statutory Public Consultation - Brochures

Appendix K1

Ballsbridge to City Centre Core Bus Corridor – 3rd Non-Statutory Public Consultation - Brochure

Appendix K2

Blackrock to Merrion Core Bus Corridor – 3rd Non-Statutory Public Consultation – Brochure

Glossary of Technical Terms

Signal Controlled Priority – Signal Controlled Priority (SCP) uses traffic signals to enable buses to get priority ahead of other traffic on single lane road sections, but it is only effective for short distances. This typically arises where the bus lane cannot continue due to obstructions on the roadway. An example might be where a road has pinch-points where it narrows due to existing buildings or structures that cannot be demolished to widen the road to make space for a bus lane. It works through the use of traffic signal controls (typically at junctions) where the bus lane and general traffic lane must merge ahead and share the road space for a short distance until the bus lane recommences downstream. The general traffic will be stopped at the signal to allow the bus pass through the narrow section first and when the bus has passed, the general traffic will then be allowed through the lights

Bus Gate – A Bus Gate is a sign-posted short length of stand-alone bus lane. This short length of road is restricted exclusively to buses, taxis, and cyclists plus emergency vehicles. It facilitates bus priority by removing general through traffic along the overall road where the bus gate is located. General traffic will be directed by signage to divert away to other roads before they arrive at the Bus Gate.

Cycle Lane – A cycle lane is a lane on the carriageway that is reserved either exclusively or primarily for cycling and is separated from general traffic or bus lanes by road markings.

Cycle Track – A cycle track is a separate section of the road dedicated for cycling only. This space will generally be isolated from other vehicular traffic by a physical kerb.

Virtual Bus Priority – This refers to cases where physical bus priority (i.e. bus lanes) is not provided, and instead, bus priority is provided within the general traffic lane through the use of signal-controlled bus priority or bus gates to control the movements of general traffic.

Protected Junctions - Refers to junctions, which provide physical kerb buildouts to protect cyclists through the junction. Due to the inherently complex nature of mixed mode movements at junctions, the provision for cyclists at junctions is a critical factor in managing conflict and providing safe junctions for all road users. As such, this is the preferred layout for signalised junctions as part of the CBC Infrastructure Works where practicable.

Greenway – A greenway is a recreational corridor 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.

Carbon - The term Carbon is used to refer to carbon emissions or Green House Gas Emissions interchangeably.

Executive Summary

Introduction

The purpose of this report is to present an overview of the Preferred Route Option (PRO) for the 'Belfield / Blackrock to City Centre' Core Bus Corridor (CBC) Scheme as well as describing the options assessed, and changes made to the Proposed Scheme since the first non-statutory public consultation in February 2019.

The aim of delivering the Belfield / Blackrock to City Centre CBC Scheme is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor.

The objectives are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

Scheme Overview & Assessment Process

The Proposed Scheme consists of two sections, namely:

- The University College Dublin (UCD) Ballsbridge to City Centre Section (previously UCD Ballsbridge to City Centre Core Bus Corridor); and
- The Blackrock to Merrion Section (previously Blackrock to Merrion Core Bus Corridor).

The UCD Ballsbridge to City Centre Section commences on the southern end of Nutley Lane at the tie-in with the signalised junction on the R138 Stillorgan Road.

It routes along Nutley Lane towards the junction with Merrion Road, continues onto Merrion Road, through Ballsbridge village and Pembroke Road to its junction with Lansdowne Road, continues on Pembroke Road, Baggot Street Upper, Baggot Street Lower, turns onto Fitzwilliam Street Lower and terminates at the junction with Mount Street Upper / Merrion Square South / Merrion Square East.

The Blackrock to Merrion Section commences on the on the R113 at Temple Hill, approximately 80m to the north of the R827 Stradbrook Road, travels along the N31 Frascati Road, the R118 Rock Road and Merrion Road and terminates at its junction with Nutley Lane.

Priority for buses and cyclists is provided along the entire route, consisting primarily of dedicated bus lanes in each direction, and continuous segregated cycle tracks.

The Blackrock to Merrion Section connects to the route of the UCD Ballsbridge to City Centre Section at the junction of Merrion Road and Nutley Lane, providing a continuous route from Blackrock to the City Centre.

Where substantial revisions have been made to the design since the publication of the Emerging Preferred Route (EPR) Option in February 2019, options have been assessed using a Multi-Criteria Analysis (MCA) to determine the preferred option. The methodology used is consistent with that carried out during the initial route optioneering work which informed the EPR Option.

This additional assessment does not supersede work done during earlier stages but rather builds on it and is a direct response to issues raised by the public during the non-statutory public consultation process and further design development. This assessment has also been carried out in the context of more detailed information now available, including topographical survey.

The following list highlights the main scheme changes between the published EPR Option and the PRO:

- The previously proposed layby bus stop on Temple Hill, encroaching past the existing wall at St. Vincent's Park, has been relocated to the north and the requirement for widening at St. Vincent's Park has been removed from the design. Along with the relocation of the bus stop, a new pedestrian crossing has been introduced on the northern arm of the Temple Hill / Monkstown Road Junction;
- Cycle crossing infrastructure on Frascati Road at George's Avenue has been introduced into the design to reflect the existing, recently constructed, arrangement;
- A controlled exit, for authorised vehicles only, has been provided from George's Avenue (South) onto Frascati Road to address noise pollution concerns resulting from traffic modelling projections. The proposed exit will include restrictions to general traffic, to be located in the carriageway of the left turn from George's Avenue (South) to Frascati Road, making George's Avenue a cul-de-sac to the north of Frascati Park, however, cyclists and pedestrians will be able to pass through;

- The access and egress arrangements to the Frascati Centre have been amended in the design to reflect the existing, recently-constructed, arrangement;
- The junction of the Rock Road and Mount Merrion Avenue has been reconfigured with the removal of left-turn slip lanes and improved public realm and cycle facilities;
- The new right-turn lanes from Rock Road to Blackrock Clinic and Seafort Parade are no longer being proposed to reflect existing turning movements and operations, maximising space available for pedestrians and reducing landtake;
- The rotation of the gates, railings, and piers forming the existing entrance to Blackrock College on the westernmost pier has been included in the design to accommodate the realigning of the adjacent boundary while preserving the symmetry of the protected entrance;
- Land acquisition from residential properties and Blackrock College has been reduced along the Rock Road;
- The new right-turn lane from Rock Road to Booterstown DART station has been removed from the proposals to improve junction operation and maximise space available for pedestrians;
- At the junction of the Elmpark Green Development on Merrion Road, the arrangement has been revised to remove the proposed traffic island on the inbound arm, which has removed the need for land take onto Landaff Terrace to the south;
- The Merrion Gates junction has been significantly altered to a consolidated T-junction with improved cycle facilities;
- The cross-section from the Merrion Gates junction (junction of Merrion Road and Strand Road) to the Elm Court apartments has been reduced to a 3-lane arrangement with 2 no. general traffic lanes and an outbound only bus lane. This is to avoid the permanent acquisition/demolition of property along this stretch of road;
- The cross-section in front of St. Vincent's University Hospital and Estate Avenue has been reduced generally with a reduction in land take;
- At the access junction to St. Vincent's University Hospital from Merrion Road, the left-turn lane into St. Vincent's University Hospital and dedicated right-turn lane into Merrion Avenue have been removed in order to improve cyclist safety and reduce the necessary land acquisition;
- A two-way cycle track and removal of footpath is proposed along Nutley Lane in front of Elm Park Golf Club. This proposal significantly reduces the amount of land acquisition necessary and significantly reduces the number of trees required to be removed to facilitate the preferred option for Nutley Lane. The two-way cycle track continues on Nutley Lane between St. Vincent's University Hospital and the R138 Stillorgan Road (which was previously proposed to cross over to the RTÉ side of the road via a toucan crossing at Nutley Park) to tie in better with the proposed Stillorgan Road junction design under the Bray to City Centre Core Bus Corridor Scheme;

- A right turn lane from Nutley Lane into St. Vincent's University Hospital (SVUH) has been introduced into the design, with consideration for planning permission for the development of the National Maternity Hospital (NMH) at SVUH (granted by An Bord Pleanála) – which included provision of right-turn lane;
- A three-lane option with signal-controlled bus priority is proposed on Merrion Road between Shrewsbury Road and Ailesbury Road to avoid the requirement for land acquisition from a number of properties and reduce the impacts on trees;
- Revisions to the road layout on Merrion Road between Shrewsbury Road and Sandymount Avenue / Simmonscourt Road (including land acquisition from the Clayton Hotel Ballsbridge) are proposed to reduce the impacts on trees;
- A revised access to Ballsbridge Avenue with an entry and exit to/from Ballsbridge Park is proposed;
- At the Anglesea Road / Merrion Road junction, the vehicular access into the City of Dublin Educational and Training Board (CDETB) premises has been relocated with the removal of the left-turn slip, and has been positioned to minimise the impact on historic railings;
- At the Anglesea Road / Merrion Road junction, the proposed right turn lane from Ballsbridge onto Anglesea Road, which previously reflected the approximate length of the existing provision, is proposed to be reduced in length with associated reallocation of space to the adjacent footpaths;
- At the Ballsbridge Junction, the Herbert Park arm has been realigned in order to minimise the impact on adjacent properties and to retain a number of existing trees to the south-east of the junction;
- A left-turn entry only to Elgin Road from Ballsbridge is proposed;
- A large proportion of trees are to be retained between Northumberland Road and Ballsbridge by revising the alignment of the road and by reducing the length of the right turn lane being proposed onto Lansdowne Road;
- Offline traffic management measures, to offset potential traffic diversions as a result of the proposed Bus Gate on Pembroke Road, are proposed as follows: to make the westernmost 70m of Clyde Lane one-way north/westbound on approach to Clyde Road, and to introduce a No Right turn onto Herbert Park from Pembroke Park.
- A bus gate is proposed on Pembroke Road at the Baggot Street Upper end, permitting the removal of bus lanes along Pembroke Road. Land acquisition along Pembroke Road would no longer be required;
- The cross-section of Baggot Street Upper is proposed to be adjusted to reduce the carriageway width and improve the urban realm;
- The existing median along Baggot Street Lower is proposed to be retained and a new signalised Toucan crossing is proposed south of James Street East;
- The Proposed Scheme has been extended to include Fitzwilliam Street Lower from Baggot Street Lower to Mount Street Upper / Merrion Square;
- 13 no. bus stops along the route have been redesigned as island bus stops where space allows; and

- Bus stop locations have been modified in this revised proposal – some bus stops have been relocated or removed to achieve a better spacing between stops, while also ensuring that each stop is sited in the best location to serve surrounding neighbourhoods. These proposals will also ensure a more efficient bus network operation. In a number of locations, separate bus stop laybys have been provided which will accommodate private coaches.

1. Introduction and Background

1.1 Introduction

This report presents the Preferred Route Option (PRO) for the Belfield / Blackrock to City Centre Core Bus Corridor (CBC) Scheme (herein after called the **Proposed Scheme**).

The Proposed Scheme consists of two sections namely:

- The University College Dublin (UCD) Ballsbridge to City Centre Section (previously UCD Ballsbridge to City Centre Core Bus Corridor); and
- The Blackrock to Merrion Section (previously Blackrock to Merrion Core Bus Corridor).

During the non-statutory public consultations and the route selection process (up to the choice of the PRO), these two sections had been considered separately. These sections have now been combined as the Proposed Scheme. The principal reasons for combining the University College Dublin (UCD) Ballsbridge to City Centre and the Blackrock to Merrion Sections into the Proposed Scheme include their geographical association and functional interdependence and the fact that the Blackrock to Merrion Section joins the UCD Ballsbridge to City Centre Section at the junction of Nutley Lane and the Merrion Road, and shares the remaining section of the route from that junction to the City Centre.

The Proposed Scheme has an overall length of approximately 8.3km. The UCD Ballsbridge to City Centre Section commences on the southern end of Nutley Lane at the tie-in with the signalised junction on the R138 Stillorgan Road. It routes along Nutley Lane towards the junction with Merrion Road, continues onto Merrion Road, through Ballsbridge village and Pembroke Road to its junction with Lansdowne Road, continues on Pembroke Road, Baggot Street Upper, Baggot Street Lower, turns onto Fitzwilliam Street Lower and terminates at the junction with Mount Street Upper / Merrion Square South / Merrion Square East.

The Blackrock to Merrion Section commences on the on the R113 at Temple Hill, approximately 80m to the north of the R827 Stradbrook Road, travels along the N31 Frascati Road, the R118 Rock Road and Merrion Road and terminates at its junction with Nutley Lane.

The Nutley Lane portion of the UCD Ballsbridge to City Centre Section to the junction with the Merrion Road is approximately 0.83km. The Blackrock to Merrion Section to the junction with Nutley Lane and the Merrion Road is approximately 4km in its entirety, and the shared section from the junction of Nutley Lane and the Merrion Road to the City Centre is approximately 3.39km.

The Proposed Scheme will significantly enhance travel by public transport by providing continuous bus priority as well as improved pedestrian and cycling infrastructure on both Nutley Lane to/from the City Centre and between Blackrock and the City Centre.

Currently these key access corridors are characterised by traffic congestion and discontinuous inadequate bus and cycling infrastructure, meaning that for most of the journey, buses and cyclists are competing for space with the general traffic, impacting on the attractiveness of these sustainable modes. The objectives of the Proposed Scheme include the provision of necessary bus, cycle, and walking infrastructure enhancements that will facilitate modal shift from car dependency contributing to an efficient, low carbon and climate resilient City. Refer to **Figure 1.1**.

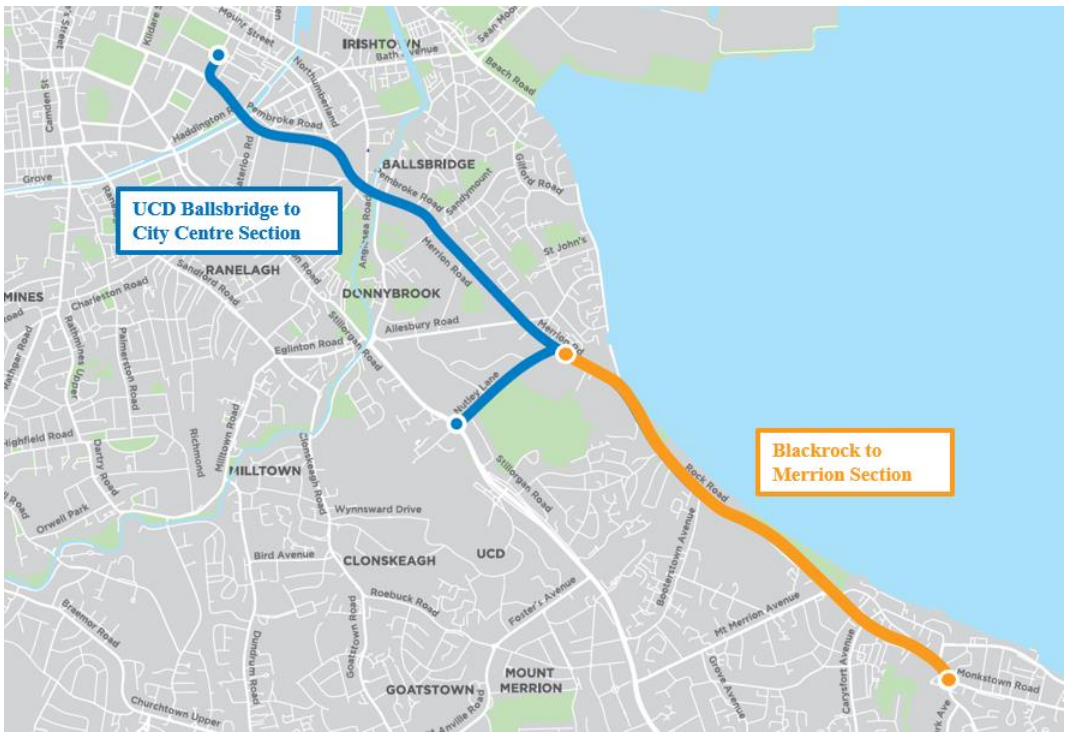

Figure 1.1: Belfield / Blackrock to City Centre Core Bus Corridor Scheme

1.2 The Core Bus Corridor Infrastructure Works

The Proposed Scheme is one of 12 stand-alone core bus corridor schemes to be delivered under the BusConnects Dublin - Core Bus Corridors Infrastructure Works (herein after called the CBC Infrastructure Works). The CBC Infrastructure Works, once completed, will deliver the radial core corridors identified in the Greater Dublin Area Transport Strategy 2016-2035 (herein after called the GDA Transport Strategy) Core Bus Network which is discussed below.

The BusConnects Dublin Programme is the National Transport Authority's (NTA) programme to greatly improve bus services in the Greater Dublin Area and the CBC Infrastructure Works is one element of that Programme, itself containing 12 stand-alone Core Bus Corridor Schemes. It is a key part of the Government's polices to improve public transport and address climate change in Dublin and other cities.

The NTA established a dedicated BusConnects Infrastructure team to advance the planning and construction of the CBC Infrastructure Works.

It comprises an inhouse team including technical and communications resources and external service providers procured from time-to-time to assist the internal team in the planning and design of the 12 Proposed Schemes.

The CBC Infrastructure Works will deliver a major component of the overall Core Bus Network as identified in the GDA Transport Strategy, encompassing the delivery of approximately 230km of dedicated bus lanes and 200kms of cycle tracks along 12 stand-alone CBC Schemes.

The 12 stand-alone CBC Schemes to be delivered under the CBC Infrastructure Works are (see **Figure 1.2)**:

- The Clongriffin to City Centre Core Bus Corridor Scheme;
- The Swords to City Centre Core Bus Corridor Scheme;
- The Ballymun / Finglas to City Centre Core Bus Corridor Scheme;
- The Blanchardstown to City Centre Core Bus Corridor Scheme;
- The Lucan to City Centre Core Bus Corridor Scheme;
- The Liffey Valley to City Centre Core Bus Corridor Scheme;
- The Tallaght / Clondalkin to City Centre Core Bus Corridor Scheme;
- The Kimmage to City Centre Core Bus Corridor Scheme;
- The Templeogue / Rathfarnham to City Centre Core Bus Corridor Scheme;
- The Bray to City Centre Core Bus Corridor Scheme;
- **The Belfield / Blackrock to City Centre Core Bus Corridor Scheme;** and
- The Ringsend to City Centre Core Bus Corridor Scheme.

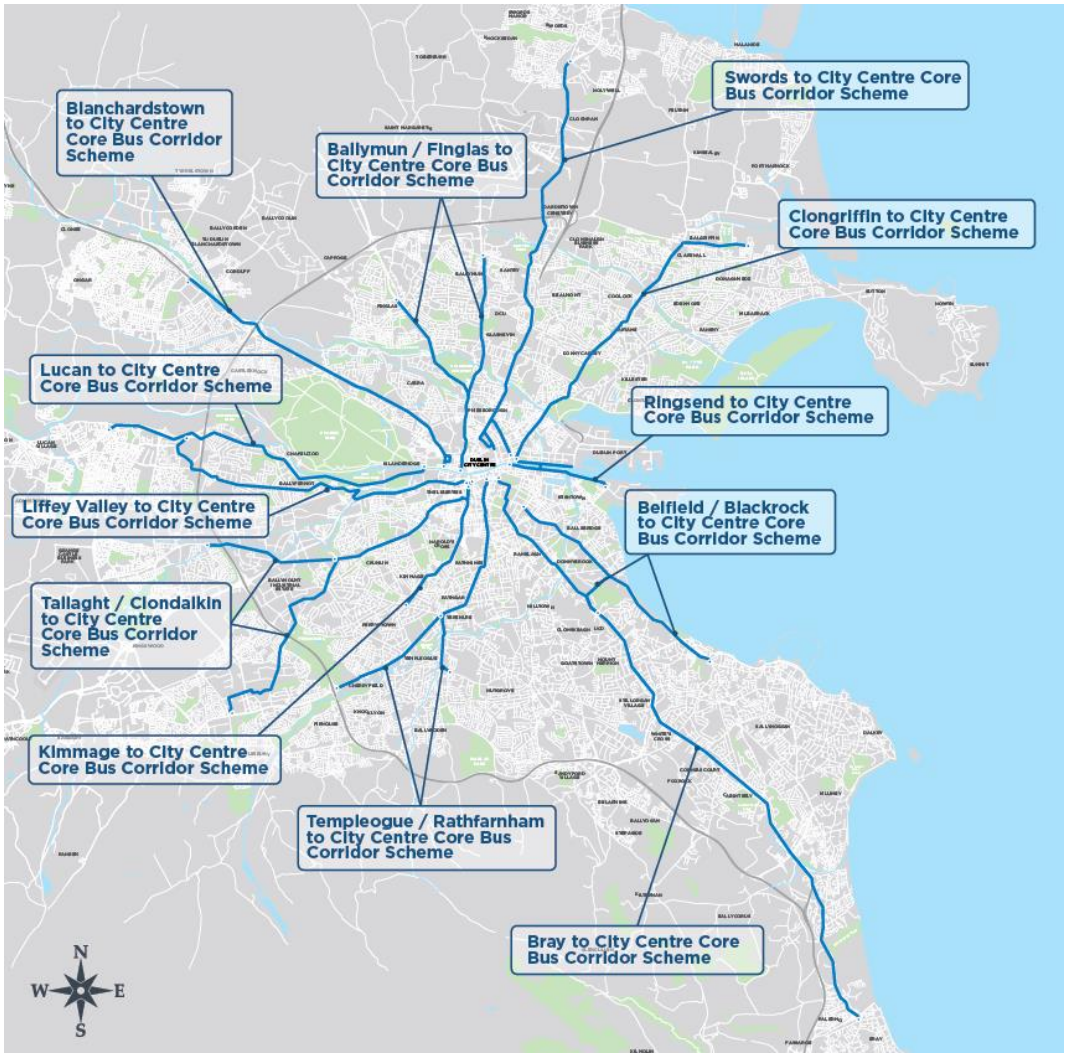

Figure 1.2: Core Bus Corridor Infrastructure Works

1.3 Approach for this Report

In June 2018, the NTA published the Core Bus Corridors Project Report. The report was a discussion document outlining proposals for the delivery of a CBC network across Dublin. The 'UCD Ballsbridge to City Centre Core Bus Corridor' and the 'Blackrock to Merrion Core Bus Corridor' are identified in this document as forming part of the radial Core Bus Network.

As part of this process, the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' report were published, which identified feasible options along each corridor, assessed these options and arrived at an Emerging Preferred Route (EPR) Option for each CBC. Submissions were invited from the public to provide comment on the EPR Option proposals and to inform subsequent design stages.

This 'Preferred Route Option Report' has been prepared for the Proposed Scheme, which will build on the assessment carried out in the Feasibility Reports.

These Feasibility and Options Assessment reports referenced above, along with their associated appendices as published, are included in Appendix H.

The Study Area Analysis and Multi-Criteria Analysis (MCA) for the previously proposed feasible route options are considered to still be valid unless otherwise detailed and updated in this PRO Report. Any additional design work or optioneering has been assessed against the previously identified EPR Option and draft PRO in order to determine the PRO. Additional design development has been detailed in this report, and the resulting PRO referenced in this report has been based on:

- Updated topographical survey information;
- Output from engagement and consultation activities on the EPR Option and draft PRO proposals;
- Clarifications to the previous assessment in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' report;
- Further design development and options assessment; and
- Change in the extent of the Proposed Scheme.

1.4 Report Structure

This report combines the option assessment studies carried out for both the UCD Ballsbridge to City Centre CBC (herein referred to as **UCD Ballsbridge to City Centre Section**) and the Blackrock to Merrion CBC (herein referred to as **Blackrock to Merrion Section**). The structure for the remainder of this report is set out as follows:

- Chapter 2: Planning and Policy Context ‐ This chapter summarises a review of transport and planning policy which is relevant to the route selection process for the Proposed Scheme.
- Chapter 3: UCD Ballsbridge to City Centre Section
    - Chapter 3.1: Background and Non-Statutory Public Consultation for the UCD Ballsbridge to City Centre Section – This chapter outlines the summary of the non-statutory public consultation process.
    - Chapter 3.2: The Study Area for the UCD Ballsbridge to City Centre Section – In this chapter, the study area for the UCD Ballsbridge to City Centre Section is detailed. The integration of the Proposed Scheme with existing and planned transport networks is considered, along with considerations of the Proposed Scheme for other road users.
    - Chapter 3.3: Review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment'– This chapter is a summary of the options assessment that was previously carried out in each section of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report'.

An assessment has been carried out on the validity of the previous options assessment in the context of additional information collected, including through more detailed survey work undertaken and feedback from the non-statutory public consultation process. Issues arising and changes resulting from the design development are detailed.

- Chapter 3.4: Options Assessment for the UCD Ballsbridge to City Centre Section – This chapter subsequently updates the previous options assessment work undertaken in light of the additional considerations set out in Chapter 3.3.
- Chapter 3.5: Preferred Route Option for the UCD Ballsbridge to City Centre Section – This chapter gives the overall conclusions of the option assessment process and describes the PRO proposal.

- Chapter 4: Blackrock to Merrion Section
  - Chapter 4.1: Background and Non-Statutory Public Consultation for the Blackrock to Merrion Section – This chapter outlines the summary of the non-statutory public consultation process.
  - Chapter 4.2: The Study Area for the Blackrock to Merrion Section – In this chapter, the study area for the Blackrock to Merrion Section is detailed. The integration of the Proposed Scheme with existing and planned transport networks is considered, along with considerations of the Proposed Scheme for other road users.
  - Chapter 4.3: Review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' – This chapter is a summary of the options assessment that was previously carried out in each section of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report'. An assessment has been carried out on the validity of the previous options assessment in the context of additional information collected, including through more detailed survey work undertaken and feedback from the non-statutory public consultation process. Issues arising and changes resulting from the design development are detailed.
  - Chapter 4.4: Preferred Route Option for the Blackrock to Merrion Section – This chapter gives the overall conclusions of the option assessment process and describes the PRO proposal.

2. Planning and Policy Context

2.1 Transport Strategy for the Greater Dublin Area, 2016 - 2035

2.1.1 Introduction

The GDA Transport Strategy, which was published by the National Transport Authority (NTA) in 2016, provides a statutory planning basis and framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA).

The GDA Transport Strategy has been prepared in accordance with Section 12 of the Dublin Transport Authority Act, 2008 (as amended) and was approved in 2016 by the then Minister for Transport, Tourism and Sport (now the Department of Transport). The GDA Transport Strategy, along with supporting Government investment programmes, is an essential component for the orderly development of the GDA over the next 20 years. The purpose of the GDA Transport Strategy is stated as being "to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods".

2.1.2 The Core Bus Network as identified in the GDA Transport Strategy

The delivery of an efficient reliable bus service is an essential component of the GDA Transport Strategy as it will provide a viable and readily accessible alternative to private general traffic that is causing congestion problems in the GDA. As Dublin is a low density city there are few areas with the size and concentration of population for rail based public transport. This means that for most corridors in Dublin, bus travel represents the optimum form of public transport. Dublin City Bus Services carried 153 million passengers in 2019. In percentage terms, the bus system accounts for over 65% of public transport passenger journeys in the GDA; the Luas carries 20%, and DART and commuter rail services deliver the remaining 15%.

In terms of geographical reach and coverage, bus operations extend across every corridor in the Dublin region. Luas operates two fixed lines - Red and Green and heavy rail operates four railway services – Kildare, Maynooth, Northern and South-eastern lines. While the GDA Transport Strategy identified key rail-based enhancements it is underpinned by the bus-based city-wide public transport system. The GDA Transport Strategy identified a "Core Bus Network", representing the most important bus routes within the GDA, generally characterised by high passenger volumes, frequent services and significant trip attractors along the routes.

The Core Bus Network forms part of an overall integrated transport system planned for the GDA. In developing the GDA Transport Strategy, alternatives were considered by the NTA at both a corridor and overall network level.

The identified core bus network comprised radial bus corridors, orbital bus corridors and regional bus corridors. These corridors are generally characterised by discontinuity, whereby the corridors currently have dedicated bus lanes along only less than one third of their lengths which means that for most of the journey, buses and cyclists are competing for space with general traffic and are negatively affected by the increasing levels of congestion. This results in delayed buses and unreliable journey times for passengers.

The GDA Transport Strategy states that it is intended to provide continuous bus priority, as far as is practicable, along the core bus routes, with the objective of supporting a more efficient and reliable bus service with lower journey times, increasing the attractiveness of public transport in these areas and facilitating a shift to more sustainable modes of transport.

In Section 5.5.4 of the GDA Transport Strategy it states that "[a] number of the Core Radial Bus Corridors are proposed to be developed as Bus Rapid Transit (BRT) routes, where the passenger numbers forecast on the routes are approaching the limits of conventional bus route capacity."

As design and planning work was progressed by the BusConnects Infrastructure team, it became clear that the level of differentiation between the BRT corridors and the Core Bus Corridors would, ultimately, be limited, and that all of the radial Core Bus Corridors should be developed to provide a similarly high level of priority service provision (i.e. to provide a consistency in terms of bus priority and infrastructure to support the bus services).

2.2 Greater Dublin Area Cycle Network Plan

The ‘Greater Dublin Area Cycle Network Plan’ (the ‘GDA Cycle Network Plan’) was adopted by the NTA in early 2014 following a period of consultation with the public and various stakeholders. This plan forms the strategy for the implementation of a high quality, integrated cycle network for the GDA.

There are two primary cycle routes (Cycle Route 13 and Cycle Route 13A) identified running along the majority of the Proposed Scheme, as well as Secondary Cycle Routes on Nutley Lane and Fitzwilliam Street. The Proposed Scheme also intersects with two other primary cycle routes, namely SO1 and SO3 (the Grand Canal Greenway and the Dodder Greenway respectively) as well as a number of secondary cycle routes (including Cycle Routes SO2, SO6, 13E, SO4). In addition, a proposed greenway (N5 East Coast Trail) is identified running parallel to a section of the corridor.

During the earlier assessment process which identified the EPR Option, the provision of these cycle routes was considered at all stages.

Therefore, as part of the options assessment process, any upgrading of infrastructure to provide bus priority also needs to consider and provide for the required cycling infrastructure, where practicable, to the appropriate level and quality of service (as defined by the NTA National Cycle Manual) required for primary and secondary cycle routes.

2.3 Development Plan, Local Area Plans and Strategic Development Zones

Dublin City Council Development Plan (2016 – 2022)

The current Development Plan for Dublin City Council (DCC) came into effect on the 21st October 2016. The DCC Development Plan recognises the challenge that Transport has in making an important contribution towards achieving a sustainable city. These key challenges for the City are outlined as follows:

- *Effective integration of land-use and transportation, and the management of access and mobility.*
- *Pro-active engagement and collaboration with communities to bring about further modal shift and effective mobility management.*
- *The expansion of the strategic cycle network along all major water bodies including the River Liffey and the canals.*
- *Improving the city centre environment for pedestrians through public realm enhancements and through improvement of the strategic pedestrian network.*
- *Ensuring maximum benefits are achieved from public transport improvements including Luas cross-city and the anticipated Bus Rapid Transit network.*
- *Managing city centre road-space to best address the competing needs of public transport, pedestrians, cyclists, and the private car.*
- *Increasing significantly the existing mode share for active modes, i.e. walking and cycling, and supporting the forthcoming National Policy Framework for Alternative Fuels Infrastructure.*

Therefore, sustainable forms of transport such as public transport, walking, and cycling are strongly promoted in this plan, which takes a pro-active approach to influencing travel behavior and effective traffic management. Relevant policies are outlined in **Table 2.1** and **Table 2.2**.

Table 2.1: DCC Development Plan Policies for Modal Change and Active Travel aligned with the proposed development

Movement and Transport: Promoting Modal Change and Active Travel	
MT2	Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport, and to co-operate with the NTA, Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

Table 2.2: DCC Development Plan Policies for Public Transport aligned with the proposed development

Movement and Transport: Public Transport	
MT3	To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.
MT4	To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.
MT5	To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.
MT6 (i)	To work with Iarnród Eireann, the NTA, Transport Infrastructure Ireland (TII) and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

Dún Laoghaire-Rathdown County Council Development Plan (2016 – 2022)

The current Development Plan for DLRCC came into effect on 16th March 2016. The vision of the development plan is '*To continue to facilitate appropriate levels of sustainable development predicated on the delivery of high quality community, employment and recreational environments - allied to the promotion of sustainable transportation and travel patterns - but all the while protecting Dún Laoghaire–Rathdown's unique landscape, natural heritage and physical fabric, to ensure the needs of those living and working in the County can thrive in a socially, economically, environmentally sustainable and equitable manner.'*

The Development Plan contains a Sustainable Communities Strategy which acknowledges the role sustainable travel and transport has in meeting the vision of the Development Plan.

This strategy *'recognises that the current trends in transportation, in particular the domination of the private car as the preferred mode choice – are unsustainable'*.

The strategy identifies a number of policies which align with the Proposed Scheme proposals. Some of these policies are set out below in **Table 2.3**.

Table 2.3: DLRCC Development Plan Policies for Sustainable Travel and Transportation

Sustainable Travel and Transportation Policies	
ST3	It is Council policy to promote, facilitate and cooperate with other transport agencies in securing the implementation of the transportation strategy for the County and the wider Dublin Region as set out in Department of Transport's 'Smarter Travel, A Sustainable Transport Future 2009 –2020' and the NTA's 'Greater Dublin Area Draft Transport Strategy 2016-2035'. Effecting a modal shift from the private car to more sustainable modes of transport will be a paramount objective to be realised in the implementation of this policy.
ST4	It is Council policy to support suitable access for people with disabilities, including improvements to buildings, streets and public spaces.
ST5	It is Council Policy to secure the development of a high quality walking and cycling network across the County in accordance with relevant Council and National policy and guidelines.
ST11	It is Council policy to secure improvements to the public transport system as set out in 'Smarter Travel, A Sustainable Transport Future 2009-2020' and the NTA's 'Greater Dublin Area Draft Transport Strategy 2016-2035' by optimising existing or proposed transport corridors and interchanges and by developing new Park and Ride and taxi rank facilities at appropriate locations.
ST12	It is Council policy to co-operate with the NTA and other relevant agencies to facilitate the implementation of the Bus Network measures as set out in the NTA's 'Greater Dublin Area Draft Transport 2016-2035' and to extend the bus network to other areas where appropriate, subject to design, public consultation, approval, finance and resources.
ST13	It is Council policy to co-operate with the NTA and other relevant agencies to facilitate the introduction of Bus Rapid Transit measures as set out in the NTA's 'Greater Dublin Area Draft Transport Strategy 2016- 2035' where appropriate, subject to design, public consultation, approval, finance and resources.
ST30	It is Council policy to introduce traffic management schemes on particular roads and in appropriate areas throughout the County to reduce vehicle speeds to an acceptable level and to reduce the potential for traffic congestion and associated vehicular emissions in urban areas.

2.4 The Aim and Objectives of delivering the Belfield/Blackrock to City Centre Core Bus Corridor Scheme

The aim of delivering the Belfield / Blackrock to City Centre CBC Scheme is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor.

The objectives are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

3. UCD Ballsbridge to City Centre Section

3.1 Background and Non-Statutory Public Consultation for the UCD Ballsbridge to City Centre Section

3.1.1 Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment and Ballsbridge to UCD Bus Corridor – Route Options Assessment and Emerging Preferred Route

In early 2016, the NTA initiated plans to develop the network of CBCs identified in the GDA Transport Strategy. As part of this body of work, the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' were prepared, which identified feasible options along the corridors, assessed these options and arrived at an EPR Option. These proposals formed the basis for the first Non-Statutory Public Consultation on the UCD Ballsbridge to City Centre Section.

3.1.2 First Non-Statutory Public Consultation – Emerging Preferred Route

The first non-statutory public consultation on the BusConnects CBCs took place on a phased basis. The first phase of consultation occurred from 14th November 2018 to 29th March 2019. The second phase ran from 23rd January 2019 to the 30th April 2019 and the final phase ran from 26th February 2019 until the 31st May 2019. The UCD Ballsbridge to City Centre Section EPR Option formed part of the final phase of consultation, which closed on the 31st of May 2019. The Information Brochure published as part of this consultation is included in Appendix I1.

There were 773 submissions received for the UCD Ballsbridge to City Centre Section. These submissions ranged from personal submissions sent in by residents, commuters and local representatives, to detailed proposals from public bodies, various associations and private sector businesses. A number of community forums, meetings with resident groups, and one-to-one meetings were also held as part of the process.

A brief summary of the feedback received on the UCD Ballsbridge to City Centre Section during the public consultation is presented in this chapter of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Need for Scheme;
2. Extension/Alternate Route Required;

3. Pedestrian Safety;
4. Insufficient Consultation of Scheme;
5. Loss of Bus Services;
6. Loss of Residential/Amenity Access;
7. Loss of Parking;
8. Removal of Trees;
9. Potential Land Acquisition/Boundary Treatments;
10. Safety relating to Conflicting Modes; and
11. Devaluation of Property.

Further detail on these issues can be found in the Public Consultation Submissions Report – 1st Non-Statutory Public Consultation in Appendix B1.

3.1.3 Development of Draft Preferred Route Option

Following the first non-statutory public consultation, a review was undertaken of the scheme proposals along the UCD Ballsbridge to City Centre Section based on the following new information which was available for consideration:

- Detailed topographical survey along the route corridor;
- Submissions received during the first non-statutory public consultation; and
- Issues raised during meetings with community fora, resident groups and one-on-one meetings with directly impacted landowners.

As part of this review, several new options were developed for consideration in specific areas where issues were identified. These new options were subject to further options assessment (as detailed in Chapter 3.4 of this report) to identify the draft PRO. The selected draft PRO identified formed the basis for the second non-statutory public consultation in March/April 2020.

3.1.4 Second Non-Statutory Public Consultation – Draft Preferred Route Option

The draft PRO was published in March 2020 and a second round of non-statutory public consultation commenced on 4th March 2020 to the 17th of April 2020. The Information Brochure published as part of this consultation is included in Appendix J1.

Due to COVID-19 restrictions being imposed by Government in mid-March 2020, the planned Public Information Events were impacted. Consequently, there were 34 submissions received relating to the UCD Ballsbridge to City Centre Section (compared to 773 submissions following the First Public Consultation). These submissions ranged from individual submissions by residents, commuters and local representatives, to detailed proposals from various associations and private sector businesses.

A number of community forums, meetings with resident groups, and one-to-one meetings were also held as part of the process prior to the COVID-19 restrictions being imposed.

A brief summary of the feedback received on the UCD Ballsbridge to City Centre Section during the second non-statutory public consultation is presented in this chapter of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Cyclist Safety;
2. Pedestrian Safety;
3. Loss of Residential/Amenity Access;
4. Supportive of the Scheme;
5. Additional Traffic;
6. Removal of Trees;
7. Loss of Parking;
8. Increased Air & Noise Pollution;
9. Nutley Lane;
    a. Option A; and
    b. Option B.
10. Insufficient Consultation of Scheme;
11. Merrion View Avenue Access;
12. Need for the Scheme; and
13. Devaluation of Property.

The issues raised during the second non-statutory public consultation were considered in the further development of the draft PRO. Further detail on these issues can be found in the Public Consultation Submissions Report – 2nd and 3rd Non-Statutory Public Consultation in Appendix C1.

Subsequently, it was determined by the NTA that a third non-statutory public consultation would be conducted prior to finalising the PRO.

3.1.5 Development of the Updated Draft Preferred Route Option

Following the second non-statutory public consultation, a review was undertaken of the scheme proposals along the UCD Ballsbridge to City Centre Section based on the following new information which was available for consideration:

- Updated topographical survey along the route corridor;
- Submissions received during the second non-statutory public consultation; and

- Issues raised during meetings with community fora, resident groups and one-to-one meetings with directly impacted landowners.

As part of this review, options were reviewed further, and new options were developed for consideration in specific areas where issues were identified.

These new options were subject to further options assessment (as detailed in Chapter 3.4 of this report) to identify the updated draft PRO. The updated draft PRO that was subsequently identified formed the basis for the third non-statutory public consultation in November / December 2020.

3.1.6 Third Non-Statutory Public Consultation – Updated Draft Preferred Route Option

The third round of non-statutory public consultation for the UCD Ballsbridge to City Centre Section took place from the 4th of November 2020 until 16th of December 2020 on the updated draft PRO. The Information Brochure published as part of this consultation is included in Appendix K1.

With the continuing effect of the COVID-19 pandemic and associated Government restrictions, the third non-statutory public consultation was held virtually. Virtual consultation rooms for each CBC were developed and published. Along with offering a call back facility, these rooms provided a description of each Preferred Route from start to finish with supporting maps and included information of all revisions made, if any, since the previous rounds of non-statutory public consultation as well as other supporting documents.

The consultation period remained open until 16th December 2020 and submissions were accepted by email, through the virtual consultation rooms or by post. All relevant information including the updated Information Brochures and the Emerging Preferred Route public consultation reports were made available on the BusConnects website (https://busconnects.ie) to view and download. In addition, landowner meetings were held over the phone and/or online, and minutes were recorded as part of the consultation process.

A total of 292 submissions were received relating to the UCD Ballsbridge to City Centre Section as part of the third public consultation. These submissions ranged from individual submissions by residents, commuters and local representatives, to detailed proposals from various associations and private sector businesses. A number of community forums, meetings with resident groups, and one-to-one meetings were also held online as part of the process.

A brief summary of the feedback received on the UCD Ballsbridge to City Centre Section during the third non-statutory public consultation is presented in this chapter of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Cyclist Safety;
2. Pedestrian Safety;

3. Loss of Residential/Amenity Access;
4. Supportive of the Scheme;
5. Additional Traffic;
6. Removal of Trees;
7. Loss of Parking;
8. Increased Air & Noise Pollution;
9. Nutley Lane;
10. Insufficient Consultation of Scheme;
11. Need for the Scheme; and
12. Devaluation of Property.

The issues raised during the third non-statutory public consultation have been considered in the further development of the PRO. Further detail on these issues can be found in the Public Consultation Submissions Report – 2nd and 3rd Non-Statutory Public Consultation in Appendix C1.

3.2 The Study Area for the UCD Ballsbridge to City Centre Section

3.2.1 Introduction

The overall study area within this assessment is shown in **Figure 3.1**. It is noted that the UCD Ballsbridge to City Centre Section was not previously assessed within one single report as the two Sections within the Study Area each formed part of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment', respectively.

For the purposes of this report, the study area has been split into two sections. Section 1, the portion from the City Centre to Nutley Lane reflects Study Area Section (SAS) 1 assessed within the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' (December 2017). Section 2, the Nutley Lane portion reflects the entirety of the study area within the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' (February 2018). These Sections were combined and designated as the 'UCD Ballsbridge to City Centre CBC'.

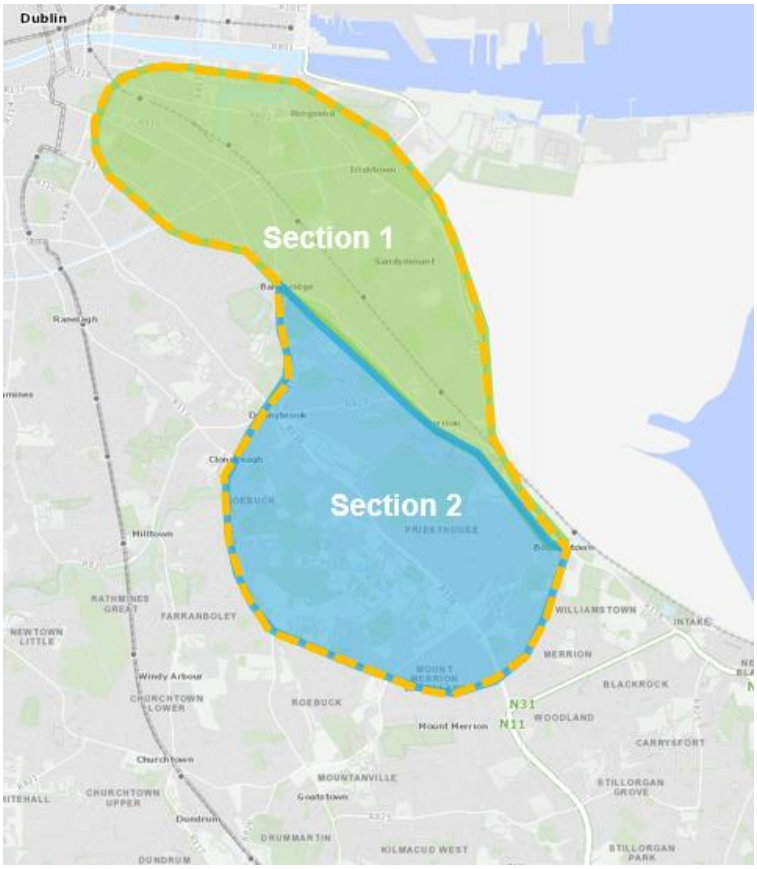

Figure 3.1: Study Area and Section Breakdown
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(*Section 1 herein refers to SAS 1 described within the* 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment', *while Section 2 refers to approximately the Study Area described within the* 'Ballsbridge to UCD Bus Corridor – Route Options Assessment', *both combined and updated*.)

Arising from the transport policy context and scheme objectives set out for both the Dún Laoghaire to City Centre CBC and Ballsbridge to UCD Bus Corridor, the study area includes the road network in the vicinity of the existing bus routes and extends to include additional, potentially-feasible route options.

The Study Area is generally bounded to the north by the City Centre and to the south by UCD.

3.2.2 Study Area Sections

3.2.2.1 Section 1

Section 1 consists primarily of the areas around Merrion Road (between Booterstown and Ballsbridge), Pembroke Road, Baggot Street Upper and Lower, Fitzwilliam Street, and Northumberland Road. This section of the study area also includes sections of the Strand Road and Beach Road, as well as the Sandymount, Ringsend and Grand Canal Dock areas.

It is noted that although Fitzwilliam Street fell within the Study Area of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment', it did not form part of the route sections assessed in the development of the EPR Option.

The Proposed Scheme has since been extended onto Fitzwilliam Street Lower for reasons including the following:

- To improve the integration with new and existing sustainable transport facilities on the street itself and on Merrion Square;
- To provide cycle facilities on the Secondary Route of the GDA Cycle Network Plan; and
- To increase the catchment of the Proposed Scheme in terms of Combined Activity Density - refer to **Figure 3.2**. In particular, this relates to the significant new and existing commercial properties in this area.

Figure 3.2: Combined Activity Density Map

(Source: Dublin Area Bus Network Redesign Revised Proposal (October 2019) – the Proposed Scheme highlighted in blue for information. Note darker colours represent areas with a higher density of activity)

Fitzwilliam Street Lower has therefore been assessed herein as part of the UCD Ballsbridge to City Centre Section (refer to Chapter 3.4.1.1.2).

3.2.2.2 Section 2

Section 2 consists primarily of the areas around the R138 Stillorgan Road (between Mount Merrion Avenue and Donnybrook), and Nutley Lane.

This section of the study area includes Ballsbridge Village and the UCD Campus, as well as numerous roads connecting the R138 Stillorgan Road to the R118 Merrion Road, sections of the R825 and is bounded to the east by Booterstown Avenue.

The Proposed Scheme extends along Nutley Lane, tying in with the signalised junction of Nutley Lane and the R138 Stillorgan Road. This extent was determined for the following reasons:

- It facilitates connectivity to and from key trip attractors such as St. Vincent's University Hospital, RTÉ, and UCD;
- It provides significant improvements for existing services on this section of the route which suffer from journey time unreliability, particularly at peak times, as well as providing for any and all future public transport services on the route;
- It provides public transport connectivity to the R138 Stillorgan Road – which is both an existing core transport corridor and the proposed route of the Bray to City Centre CBC Scheme (and the proposed E Spine bus route within the New Dublin Area Bus Network);
- It provides dedicated cycling facilities on a Secondary Cycle Route within the GDA Cycle Network which currently has no dedicated facilities, in turn providing cycling connectivity to the R138 Stillorgan Road, both via the signalised junction on the southern end of Nutley Lane and via Nutley Park as an alternative route; and
- To tie-in with the existing environment at the junction, minimising potential alterations to the signalised junction of the R138 Stillorgan Road and Nutley Lane, hence avoiding risk to the future-proofing of that junction for the Bray to City Centre CBC Scheme.

It is noted that the section of CBC along the Stillorgan Road connecting Nutley Lane to UCD, which was previously included in the UCD Ballsbridge to City Centre CBC, has been removed from the Proposed Scheme and is now to be provided as part of the Bray to City Centre CBC Scheme. This change has been made to allow a more effective delivery of this section as part of the Bray to City Centre CBC Scheme which extends along the R138 Stillorgan Road.

3.2.3 Physical Constraints and Opportunities

There are a number of potential constraints, both natural (i.e. the existing natural environment) and physical (the built environment), which constrain route options for the UCD Ballsbridge to City Centre Section within the defined study area including:

- Street trees and other natural features along the route;

- The existing urban and sub-urban roads and street network;
- Bridges at identified natural constraints (e.g. across the River Dodder and across the Grand Canal);
- The existing DART railway line;
- Availability of land in urban and suburban areas;
- Ballsbridge Village and Balls Bridge;
- Numerous properties listed on the Record of Protected Structures along Merrion Road, Pembroke Road, Baggot Street Upper and Lower, and Fitzwilliam Street Lower with boundaries in close proximity to the carriageway; and
- The available width along Merrion Road and Nutley Lane.

There are also a number of potential opportunities, which could enhance the UCD Ballsbridge to City Centre Section within the defined study area including:

- The opportunity to enhance connectivity to, from, and between two major hospitals – namely St. Vincent's University Hospital and the National Maternity Hospital (Holles Street) – through sustainable transport modes;
- The opportunity to enhance connectivity to educational centre such as St. Michael's College through sustainable transport modes;
- The natural amenity of the River Dodder, and the opportunity for integration with the proposed Dodder Greenway Scheme;
- The natural amenity of the Grand Canal, and the opportunity for integration with the Grand Canal Cycleway; and
- The opportunity for the provision of enhanced public realm within the various villages and urban centres within the study area including Ballsbridge Village, Baggot Village and within the city centre north of the Grand Canal along Baggot Street Lower.

3.2.4 Integration with Existing and Proposed Public Transport Network

One of the key objectives of the CBC Infrastructure Works is to enhance interchange between the various modes of public transport operating in the city and wider metropolitan area, both now and in the future. Route options within the study area have therefore been developed with this in mind and, in so far as is practicable, seek to provide for improved interchange opportunities with existing transport services, including:

- Potential for interchange with existing 39a, 145, and 155 bus routes at the R138 Stillorgan Road;
- Potential for interchange with existing 47 and 27x bus routes along Nutley Lane;

- Potential for interchange with existing 4, 7, and 7a bus routes along Merrion Road;
- Potential for interchange with existing 18 bus route at Ballsbridge;
- Potential for interchange with existing 18, 38, 38a, 39, 39a, and 70 bus routes at Baggot Village (Baggot Street Upper);
- Potential for interchange with existing 37 bus route at Baggot Street Lower;
- Potential for interchange with multiple city centre services at Merrion Square; and
- Potential for interchange with the existing DART rail service at the Lansdowne, Sandymount and Sydney Parade DART Stations.

Figure 3.3 highlights the potential for interchange with existing public transport services along the UCD Ballsbridge to City Centre Section.

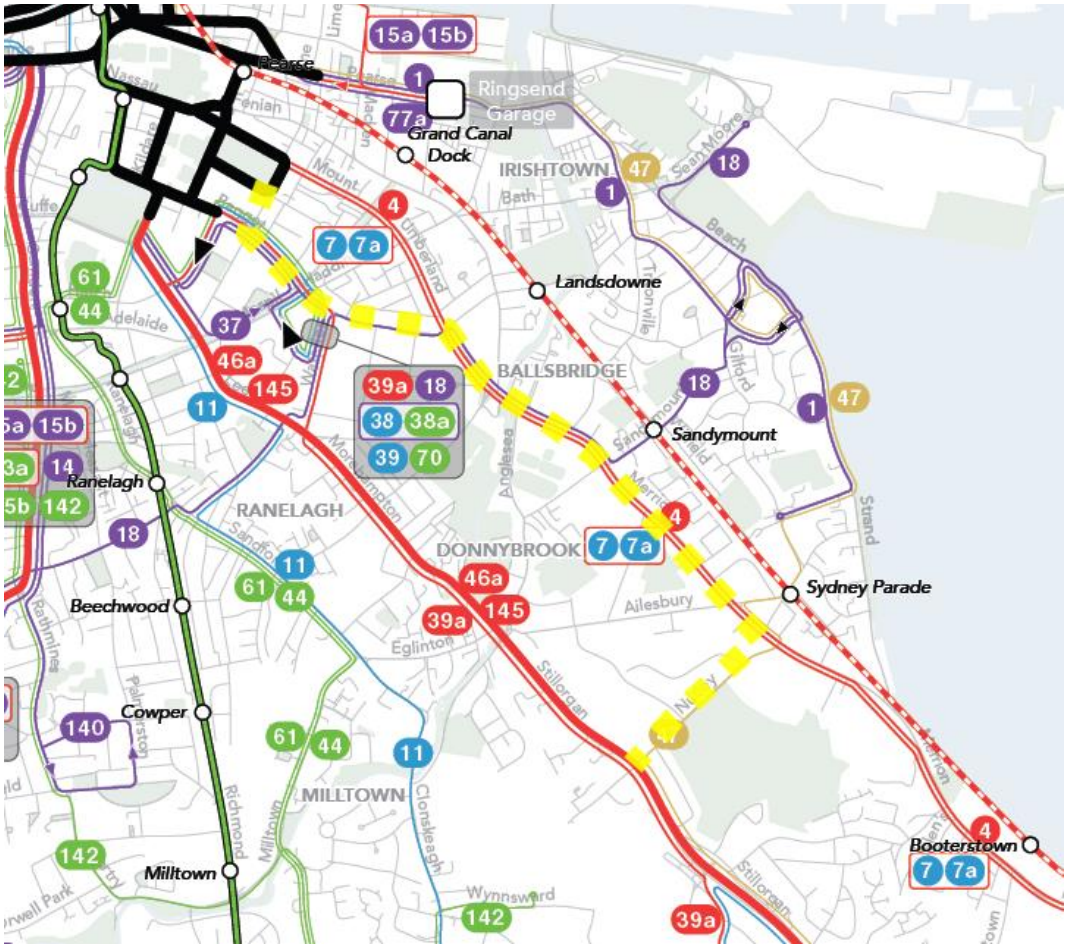

Figure 3.3: Existing Public Transport Services

(UCD Ballsbridge to City Centre Section highlighted in yellow dashed line)

The route options also seeks to provide for interchange opportunities with new transport services proposed within the New Dublin Area Bus Network, including:

- Potential for interchange with the proposed E Spine bus routes at the Stillorgan Road end of Nutley Lane;

- Potential for interchange with the proposed B3 and B4 spine bus routes at the Merrion Road end of Nutley Lane;
- Potential for interchange with the proposed S2 orbital bus route and No. 36 feeder bus route at Ballsbridge;
- Potential for interchange with the proposed O orbital bus route at the Grand Canal;
- Potential for interchange with the proposed 34, 35 and 37 feeder bus routes at Baggot Street Upper; and
- Potential for interchange with the proposed 22, 23, and 24 feeder bus routes at Merrion Square.

Figure 3.4 extracted from the New Dublin Area Bus Network Maps, highlights the potential for interchange with other proposed bus routes along the UCD Ballsbridge to City Centre Section.

Figure 3.4: Extract from New Dublin Area Bus Network Maps

(UCD Ballsbridge to City Centre Section highlighted in yellow)

3.2.5 Compatibility with Other Road Users

A key objective of the Proposed Scheme is to improve pedestrian and cyclist facilities along the route. For cyclists, segregated facilities should be provided where practicable to do so. The GDA Cycle Network Plan proposes a network of cycle links throughout the GDA, categorised as follows:

- **Primary Routes:** Main cycle arteries that cross the urban area and carry most cycle traffic;
- **Secondary Routes:** Link between principal cycle routes and local zones;
- **Feeder Routes:** Cycle routes within local zones and/or connections from zones to the network levels above;
- **Inter Urban Routes:** Links the towns and city across rural areas and includes the elements of the National Cycle Network within the GDA; and
- **Green Route Network:** Cycle routes developed predominately for tourist, recreational and leisure purposes but may also carry elements of the utility cycle route network above. Many National Cycle Routes will be of this type.

Specifically, Primary Cycle Routes 13 and 13A and Secondary Cycle Route 13E from the GDA Cycle Network Plan run along or are intercepted by the UCD Ballsbridge to City Centre Section, with their provision considered at all stages of the options assessment process.

The interaction of the UCD Ballsbridge to City Centre Section with other schemes progressing through the planning and design process has also been considered, specifically the ongoing development of the East Coast Trail, the Dodder Greenway Scheme and the Fitzwilliam Cycle Route.

An extract for the GDA Cycle Network Plan is shown in **Figure 3.5** which highlights the UCD Ballsbridge to City Centre Section in the context of the planned cycle network.

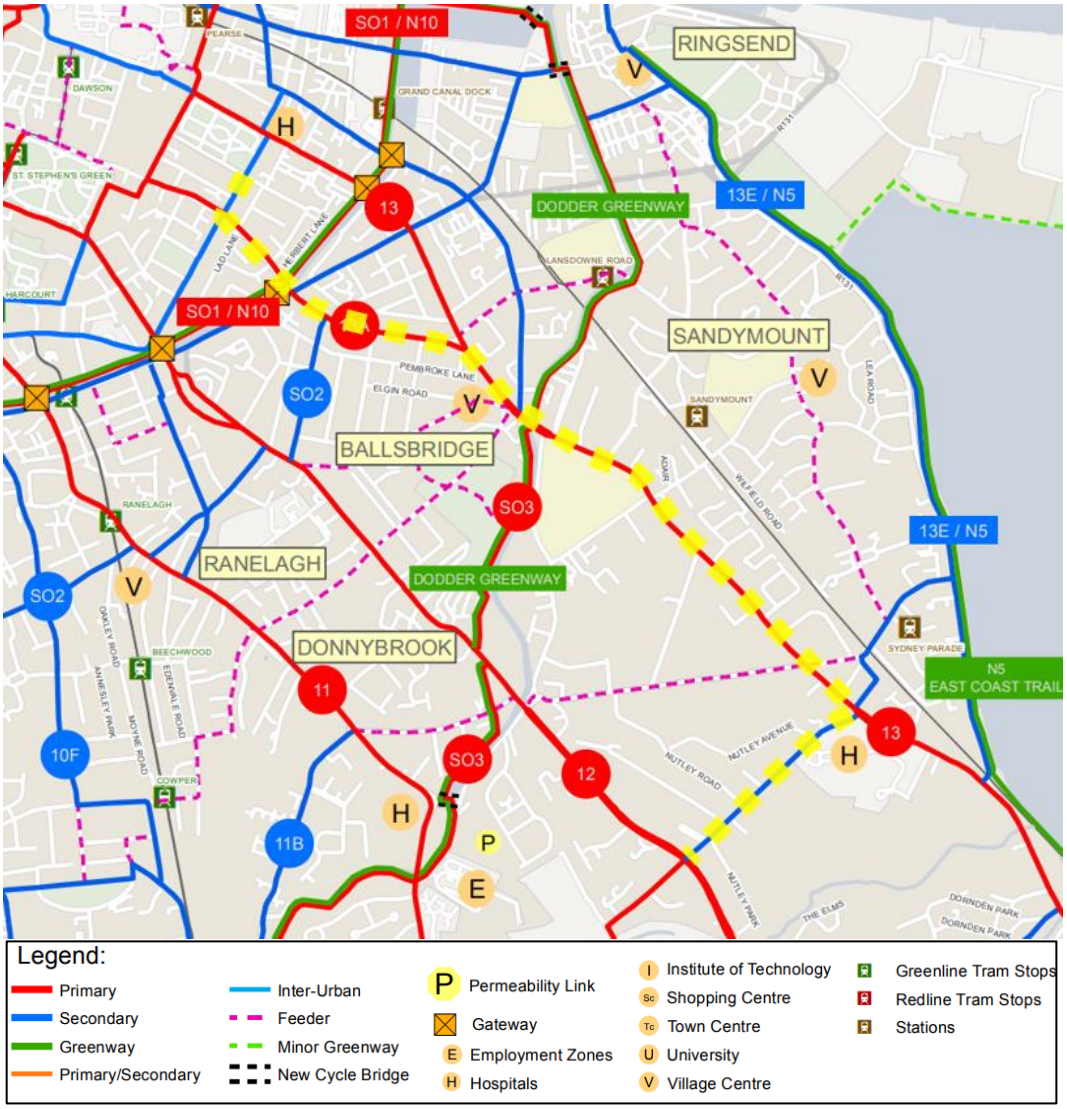

Figure 3.5: Extract from GDA Cycle Network Plan

(UCD Ballsbridge to City Centre Section highlighted in yellow)

3.3 Review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment'

3.3.1 Introduction

From a review of submissions received as part of the public consultation process, as well as a review of the topographical survey carried out since the EPR Option's publication, a number of issues have been identified which may be overcome through the implementation of alternative design solutions. These issues are described in the following chapters.

3.3.2 Assessment Methodology

3.3.2.1 Route Option Assessment Methodology

The first step in the assessment process was to review the EPR Feasibility Study and Options Assessment Reports.

Each of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' utilised a two-stage assessment process to determine the EPR Option, comprising:

- An initial 'Stage 1' high-level route options assessment or 'sifting' process which appraised routes in terms of ability to achieve scheme objectives and whether they could be practically delivered; and
- Routes which passed this initial stage were taken forward to a more detailed Stage 2 assessment.

At the start of the Stage 1 assessment, an initial 'spider's web' of potential route options that could accommodate a CBC was identified for each study area section.

Figure 3.6 and **Figure 3.7** are extracts from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment', respectively, illustrating the 'spider's web' of potential routes considered in the Stage 1 assessment of each.

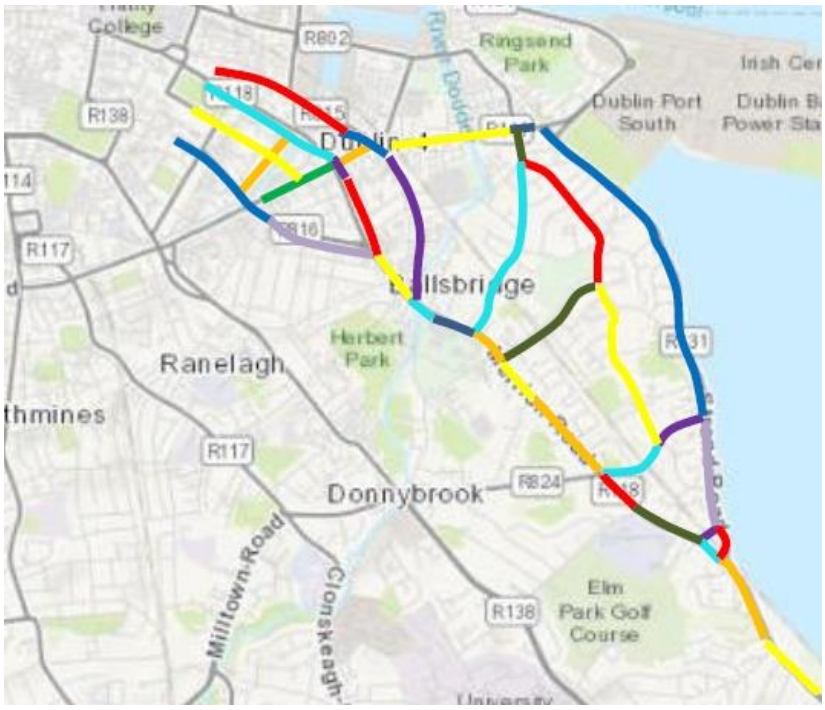

Figure 3.6: Spider's Web of Route Options extracted from 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' [Section 1 herein]

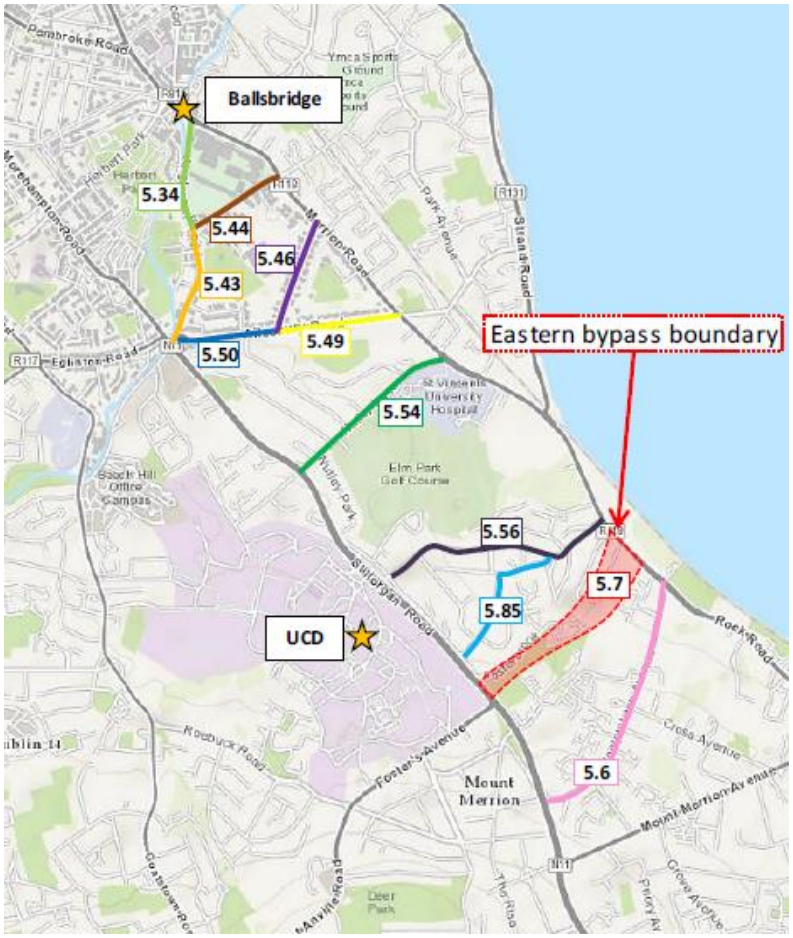

Figure 3.7: Spider's Web of Route Options extracted from 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' [Section 2 herein]

The following extract from both the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' describes the two-stage process used to determine the EPR Option:

"*At the Stage 1, i.e. sifting stage, the initial "spider's web" of route sections was narrowed down using a high level qualitative method based on professional judgement and a general appreciation for existing physical conditions / constraints within the Study Area from available survey information and site visits.*

This exercise identified route sections that would either not achieve the scheme objectives or would be subject to significant cost and/or impact to achieve these objectives (e.g. excessive land-take)." ….

…. "*Following completion of the 'Stage 1' assessment, the remaining potentially feasible route sections were progressed to Stage 2 of the assessment process. This stage comprised a more detailed qualitative and quantitative assessment of scheme options identified along each potential route, using criteria established to compare scheme options.*

The first step in the Stage 2 assessment was to combine shorter route sections which passed the Stage 1 assessment, to form longer end-to-end potential routes within the Study Area.

After developing routes options, each was explored using different design concepts to identify the degree of facility provision and necessary infrastructure requirements." .....

…. "The scheme options for each route were then progressed to a multi-criteria analysis.

The 'Common Appraisal Framework for Transport Projects and Programmes' published by the Department of Transport, Tourism and Sport (DTTAS), March 2016, requires schemes to undergo a 'Multi-Criteria Analysis' (MCA) under the following criteria;

- *Economy;*
- *Integration;*
- *Accessibility and Social Inclusion;*
- *Safety;*
- *Environment; and*
- *Physical Activity.*

Physical Activity has been scoped out of the multi-criteria analysis at this stage. This is because all route options are considered to promote physical activity equally and as such it is not considered to be a key differentiator between route options."

A number of locations along the EPR Option were identified where there was potential to revisit scheme proposals to address issues raised in the public consultation or identified through a review of additional information. For each area identified, additional options were developed and, if considered feasible, would be assessed through an MCA in a similar manner to Stage 2 of the EPR Option assessment process.

In addition to the new options considered, any alternative options previously considered within the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' were considered to determine whether they could potentially address the issues being encountered now. No options were brought forward in this regard. All new options were assessed against the EPR Option, in some cases refined to reflect issues identified upon review of the topographical survey and subsequent design refinement.

This additional assessment does not intend to supersede work undertaken during earlier stages but complements it and responds to issues raised by the public during the non-statutory public consultation process or issues identified by additional information available to the Design Team.

The proposed methodology for the assessment of new options explored at this stage is the same as outlined in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment'. A summary of the main criteria and sub-criteria used in the options assessment process is presented in **Table 3.1**. Further details on the assessment methodology are presented in the two aforementioned reports.

Table 3.1: Assessment Criteria

Assessment Criteria	Assessment Sub-Criteria
Economy	1.a. Capital Cost
	1.b. Transport Reliability and Quality (Journey Time)
Integration	2.a. Land Use Integration
	2.b. Residential Population and Employment Catchments
	2.c. Transport Network Integration
	2.d. Cycle Network Integration
	2.e. Traffic Network Integration
Accessibility & Social Inclusion	3.a. Key Trip Attractors (Education/Health/Commercial/Employment)
	3.b. Deprived Geographic Areas
Safety	4.a. Road Safety
	4.b. Pedestrian Safety
Environment	5.a. Archaeology and Cultural Heritage
	5.b. Architectural Heritage
	5.c. Flora & Fauna
	5.d. Soils and Geology
	5.e. Hydrology
	5.f. Landscape and Visual
	5.g Air Quality
	5.h. Noise & Vibration
	5.i. Land Use Character

In keeping with the assessment undertaken in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment', Physical Activity has been scoped out of the MCA at this stage as all options are considered to promote physical activity equally and it is, therefore, not considered to be a key differentiator between options.

Again, in keeping with the assessment undertaken in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment', route options were compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other route options. **Table 3.2** shows the colour coding of the five-point scale, with advantageous routes graded "dark green" and disadvantageous routes graded "red".

Table 3.2: Route Options Colour Coded Ranking Scale

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.

Where the design has undergone a change in respect of infrastructure provision or route choice, this has been recorded and explained. An MCA has been undertaken which assessed the newly developed and designed solutions against the EPR Option from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' and the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment'.

Where the design has undergone more general updates and enhancements, as expected during design development, these have not been subject to a new MCA.

3.3.3 Section 1: Fitzwilliam Street Lower to Nutley Lane – Fitzwilliam Street Lower, Baggot Street Lower, Baggot Street Upper, Pembroke Road, Merrion Road

3.3.3.1 Section 1 Emerging Preferred Route

The EPR Option previously identified within this study area section of the UCD Ballsbridge to City Centre Section is presented in **Figure 3.8**. It is noted that Fitzwilliam Street Lower did not form part of the EPR Option, however, it now forms part of the Proposed Scheme within the UCD Ballsbridge to City Centre Section and is assessed herein, as outlined in Section 3.2.2.1.

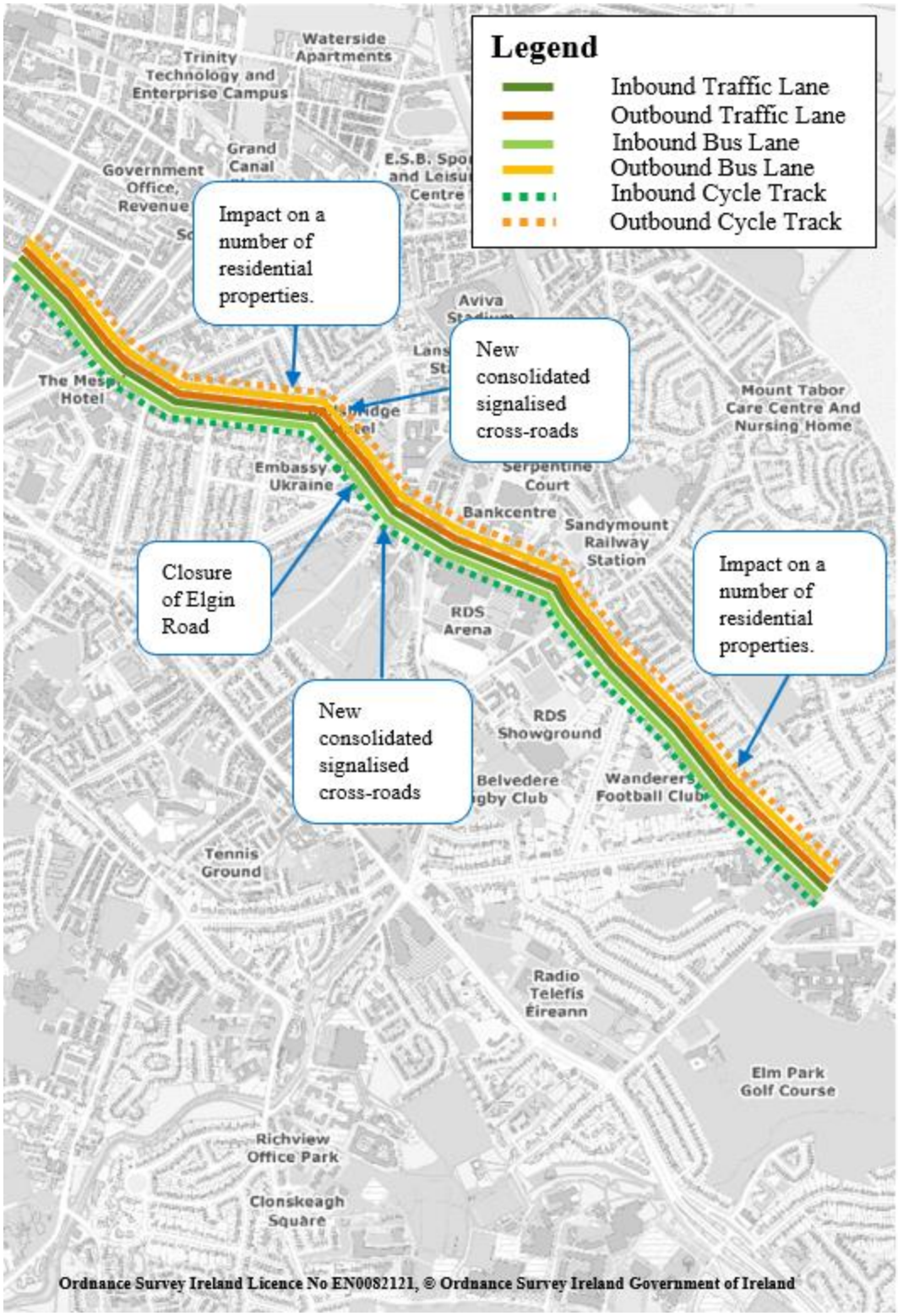

Figure 3.8: Section 1 EPR Option

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The previous MCA undertaken determined that a route along Baggot Street Lower and Upper, Pembroke Road, and Merrion Road was the EPR Option.

It is considered that the options assessment presented in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists, and buses.

However, upon review of the topographical survey and public consultation submissions, a number of issues were identified that could potentially be addressed through the consideration of alternative options along this route section.

These are summarised in the following sub-chapter.

3.3.3.2 Areas Identified for Re-examination

3.3.3.2.1 Fitzwilliam Street Lower – Between Baggot Street Lower and Mount Street Upper

As the EPR Option did not include this section, which is now forming part of the Proposed Scheme within the UCD Ballsbridge to City Centre Section, a Route Options Assessment has been carried out to examine potential options.

3.3.3.2.2 Pembroke Road – Between Baggot Street Upper and Northumberland Road

The EPR Option between Baggot Street Upper and Northumberland Road consisted of the 'optimum BusConnects cross-section', i.e. two general traffic lanes, two bus lanes, two cycle tracks and two footpaths, from the Waterloo Road/ Baggot Street Upper junction to the Northumberland Road junction. In order to achieve this, the EPR Option design indicated a reduction in on-street parking along both sides of the road, narrowing of existing footpaths, as well as potential land take on the southern side of the road between Raglan Road and Wellington Road, and the northern side of the road between Wellington Road and Eastmoreland Place.

From a review of submissions received as part of the non-statutory public consultation of this route, as well as a review of the topographical survey carried out since the route's publication, a number of issues have been identified with the delivery of this section of the EPR Option as previously proposed.

It was highlighted through the public consultation process that this proposal impacted on several properties with heritage value, including the loss of mature trees from within these properties – many with antique railing and steps. Additionally, a review of the EPR Option proposals against the detailed topographical survey showed the full nature of the impact to existing properties and access steps on the northern side of the road, and it was determined that the design merited further review to avoid land take to this area if practicable.

The potential removal of on-street mature trees and those in front gardens was also a cause for concern amongst residents and among the general submissions.

A number of submissions expressed concerns with the removal of on-street parking along Pembroke Road, as it is suggested that many residents rely on this for parking as they do not have driveways or parking to the rear. Concerns were expressed over the narrowing of the footpaths and the increasing of pedestrian crossing widths along this section, in relation to potential safety issues and universal access. Residents raised concerns over the potential impacts to their gardens and the potential devaluation of property.

It is considered that the options assessment presented in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists, and buses. That assessment compared route options via Pembroke Road and Northumberland Road. The route via Pembroke Road was considered to be the preferred route forming the EPR Option.

The UCD Ballsbridge to City Centre Section of the Proposed Scheme is routed via Pembroke Road for reasons including the following:

- To improve the integration with new and existing sustainable transport facilities on the street itself and through Baggot Village;
- To provide cycle facilities on the Secondary Route of the GDA Cycle Network Plan; and
- To increase the catchment of the Proposed Scheme in terms of Combined Activity Density – refer to **Figure 3.2** within Chapter 3.2.2.1 of this report.

However, upon review of the topographical survey and public consultation submissions, a number of issues were identified that could potentially be addressed through the consideration of alternative options along this route section.

Alternative design solutions have therefore been explored in this area in determining a PRO. Further details are presented in Chapter 3.4.1.

3.3.3.2.3 Merrion Road – Between Sandymount Avenue and Nutley Lane

The EPR Option between Sandymount Avenue and Nutley Lane consisted of the 'optimum BusConnects cross-section', i.e. two general traffic lanes, two bus lanes, two cycle tracks and two footpaths, from Sandymount Avenue to the Nutley Lane junction. In order to achieve this, the EPR Option design indicated a loss of existing trees along the length, narrowing of existing footpaths, provision of narrow cycle tracks, as well as potential land take on the northern side of the road between Ailesbury Road and Merlyn Park.

From a review of submissions received as part of the non-statutory public consultation of this route, as well as a review of the topographical survey carried out subsequent to the route's publication, a number of issues have been identified with the delivery of this section of the EPR Option as previously proposed. The potential removal of on-street mature trees and those in front gardens was also a cause for concern amongst residents and among the general submissions.

Concerns were expressed over the perceived narrowing of the footpaths along this section, in relation to potential safety issues and universal access. Many submissions related to safety concerns focussing on cyclists on a busy arterial route which might become busier with more buses and traffic. Residents raised concerns about the potential impacts to their gardens and the potential devaluation of property.

Although many of these issues were in relation to the proposals along Merrion Road in its entirety, the land take along the section between Nutley Lane and Sandymount Avenue was significantly impacted upon within the EPR Option, in terms of loss of trees, narrowing of existing footpaths, sub-optimum cycle facilities, and potential impact to properties.

It was also determined, following the review of the topographical survey information, that land take would likely be required from a significant number of properties which were not previously identified in the EPR Option (with the information available at the time of production) to progress the EPR Option as published. It was also determined, unlike other areas along Merrion Road, that the issues identified could not be addressed through minor design refinements without amendments to the proposed cross-section.

It is considered that the options assessment presented in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists and buses. However, upon review of the topographical survey and public consultation submissions, a number of issues were identified that could potentially be addressed through the consideration of alternative options along this route section.

Alternative design solutions have therefore been explored in this area in determining a PRO. Further details are presented in Chapter 3.4.1.

3.3.4 Section 2: Nutley Lane (Merrion Road to R138)

3.3.4.1 Section 2 Emerging Preferred Route

The EPR Option previously identified within this study area section of the UCD Ballsbridge to City Centre Section is presented in **Figure 3.9**.

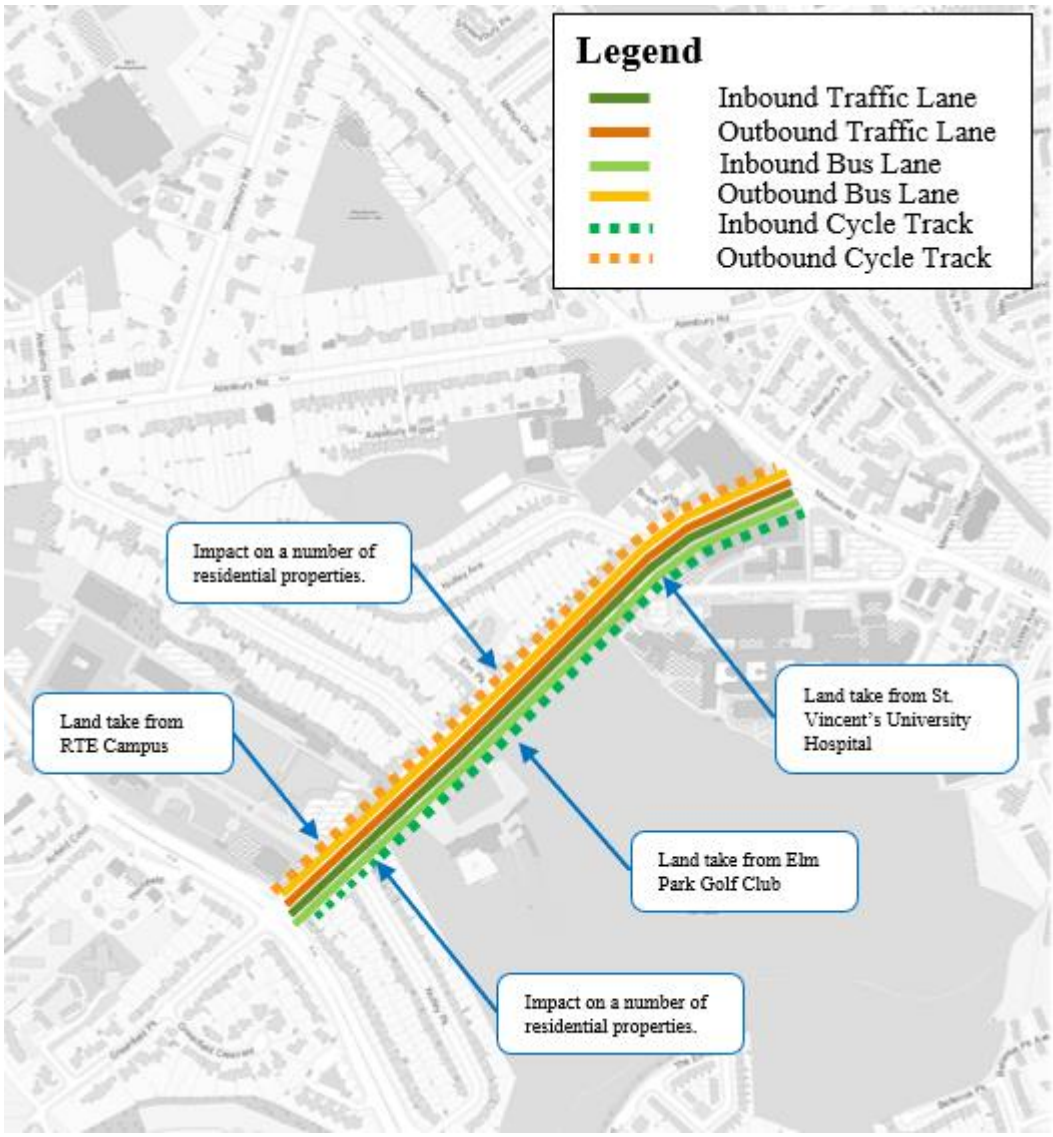

Figure 3.9: Section 2 EPR Option
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The previous MCA undertaken determined that a route along Nutley Lane was the EPR Option.

It is considered that the options assessment presented in the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists, and buses.

However, upon review of the topographical survey and public consultation submissions, a number of issues were identified that could potentially be addressed through the consideration of alternative options along this route section.

These are summarised in the following sub-chapter.

3.3.4.2 Areas Identified for Re-examination

3.3.4.2.1 Provision of Cycle Facilities

The EPR Option along Nutley Lane included a single cycle track on both sides of the road along its entire length.

Numerous submissions from the public highlighted the perceived safety concerns over the multiple conflict points for residents exiting/entering homes by car due to the potential requirement for drivers to cross a footpath, a cycle path, a bus lane, and either enter a car lane or cross one to enter another. A number of submissions questioned the need for both cycle and bus provision on Nutley Lane, with alternative suggestions for cycle facilities being Woodbine Road or Booterstown Avenue.

As such, prior to the assessment of the principal route options for this section of the route, the options for cyclist facilities associated with this route were explored in this area in determining the PRO.

3.3.4.2.2 Nutley Lane – between St. Vincent's University Hospital and Elm Park Golf Club entrances

The EPR Option on Nutley Lane consisted of the 'optimum BusConnects cross-section', i.e. two general traffic lanes, two bus lanes, two cycle tracks and two footpaths, from the R138 Stillorgan Road junction to the R118 Merrion Road junction. In order to achieve this, the EPR Option design indicated a loss of existing trees and parking along the length of Nutley Lane, as well as potential land take on both sides of the road (largely front gardens on the north-west side and largely the western edge of the golf club on the south-east side).

From a review of submissions received as part of the public consultation for this route, as well as a review of the topographical survey carried out subsequent to the route's publication, a number of issues have been identified with the delivery of this section of the EPR Option as previously proposed. The proposed removal of on-street trees and those in front gardens was a significant cause for concern amongst residents. A number of submissions were based around the increase in the cross-section of what is currently perceived as a residential road with through traffic. In addition, based on a review of the topographical survey file, there is now a clearer indication of the potential impact to adjacent properties and the nature of the potential land take.

These issues primarily relate to the section of Nutley Lane between the St. Vincent's University Hospital entrance and the Elm Park Golf Club entrance due to the number of residential properties fronting onto the north-western side of the road and the number of on-street trees.

Alternative design solutions have therefore been explored in this area in determining the PRO. Further details are presented in Chapter 3.4.2

3.3.4.2.3 Requirement for footpath on the full length of the eastern side of the road

As part of an overall design review, it was determined that no footpath is to be proposed on the south-eastern (Elm Park Golf Club) side of Nutley Lane over this section from just south of the St. Vincent's University Hospital entrance junction to just north of the Elm Park Golf Club entrance junction, with a pedestrian crossing provided at both ends. This is due primarily to the removal of parking along this section and presence of no private entrances along this section which would require footpath access, as well as the subsequent reduction in potential land take.

The existing footpath on the north-western side of the road is proposed to be retained, permitting the trees on this side of the road to also be retained.

This design change has been applied to all options within the MCA, as described in Chapter 3.4.2, with the exception of the EPR Option, which is also included in the MCA.

3.3.5 Summary

A summary of the EPR Option review areas discussed in this chapter and taken forward for detailed options assessment is presented below:

- Route options assessment for Fitzwilliam Street Lower between Mount Street Upper and Baggot Street Lower;
- Alternative design options along Pembroke Road between Baggot Street Upper and Northumberland Road;
- Alternative design options along Merrion Road between Sandymount Avenue and Nutley Lane;
- Alternative options for cycle facilities on Nutley Lane; and
- Alternative design options along Nutley Lane.

Details of the options assessment completed is presented in Chapter 3.4.

3.3.6 Carbon Considerations for this Preferred Route Option Section

Carbon for the UCD Ballsbridge to City Centre Section will arise from three potential sources namely user carbon, capital carbon and operational carbon. These sources are further discussed as follows:

- The majority is the road **USER CARBON** from cars, light and heavy goods vehicles and buses, whilst the majority of the fleet is combustion engine based in the short term.

The 'Climate Action Plan 2021' outlines a range of targets for the electrification of private and public service vehicles in the medium term.

- In comparison, road construction **CAPITAL CARBON** has been assessed as having a smaller footprint. On the basis that the Proposed Scheme is designed and executed appropriately, it will facilitate and enable a long-term user carbon reduction.
- The **OPERATIONAL CARBON** once construction is complete includes the carbon associated with the operations of the UCD Ballsbridge to City Centre Section, such as maintenance.

The UCD Ballsbridge to City Centre Section will start with an increase in carbon (capital carbon) from the construction activities: a necessary investment to achieve the long-term decarbonisation outcomes by facilitating the following Proposed Scheme objectives:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements; and
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets.

Following publication of the 'Climate Action Plan 2021' by the Department of the Environment, Climate and Communication, consideration was given to the inclusion of a new criterion assessing the construction capital carbon of route options. As noted above, the capital carbon elements of the UCD Ballsbridge to City Centre Section will be less than that of the user carbon footprint and as such it was not considered to be a reasonable differentiator for the purposes of route options assessment. Although carbon was not directly assessed for the route options, each route option was assessed using a range of environmental factors, including noise and air quality which reflect similar contributory elements (i.e. construction and operational stage impacts) to that for carbon emissions.

Furthermore, all route options support enhanced bus capacity and public transport potential in line with the objectives of the Proposed Scheme, which would contribute to reductions in user carbon and contribute towards the 500,000 additional trips by public transport by 2030 outlined as a target in the Climate Action Plan 2021.

In developing the PRO for the UCD Ballsbridge to City Centre Section, consideration has been given to the carbon generated by the UCD Ballsbridge to City Centre Section during construction and operation. Many of the changes made to the design since the EPR Option proposal have resulted in minor changes in the construction capital carbon generated by the UCD Ballsbridge to City Centre Section, such as altering junction layouts and cycle track / footpath widths. Additionally, significant design iterations have been undertaken to mitigate against traffic re-distribution impacts and consequent impacts on greenhouse gas emissions.

3.4 Options Assessment for the UCD Ballsbridge to City Centre Section

3.4.1 Section 1 Option Assessment: Fitzwilliam Street Lower to Nutley Lane – Fitzwilliam Street Lower, Baggot Street Lower, Baggot Street Upper, Pembroke Road, Merrion Road

3.4.1.1 Section 1a: Fitzwilliam Street Lower

3.4.1.1.1 Introduction

As the EPR Option did not include this section, which is now forming part of the Proposed Scheme, a Route Options Assessment has been carried out to examine potential options.

3.4.1.1.2 Options Considered

A number of options for Fitzwilliam Street Lower have been developed with the objective of identifying the PRO. As Fitzwilliam Street Lower had not been previously examined, no Emerging Preferred Route was available to compare these options against. These options are outlined in more detail below:

- *Option FS1:* Full Bus Connects Cross-Section with removal of existing on-street parking, as an extension of the EPR Option (4 lane cross-section + cycle tracks).
- *Option FS2*: Two-lane cross-section with a Bus Gate provided at the Mount Street Upper end with retention of parking on the northern side of the road (2-lane cross-section + cycle tracks + parking on one side).
- *Option FS3:* Four-lane cross-section with retention of parking on the northern side of the road and cyclists cycling in the bus lanes (4 lane cross-section + parking on one side).
- *Option FS4:* Bus Lanes along with signal-controlled bus priority to enable a three-lane cross-section of two general traffic lanes and single bus lane with retention of some parking on both sides of the street (3-lane cross-section + cycle tracks + parking).

3.4.1.1.2.1 Alternative Options Considered

No alternative options were considered for this scheme section, additional to those run through the MCA.

3.4.1.1.2.2 Route Option FS1

Route Description

The location of Route Option FS1 is presented in **Figure 3.10**.

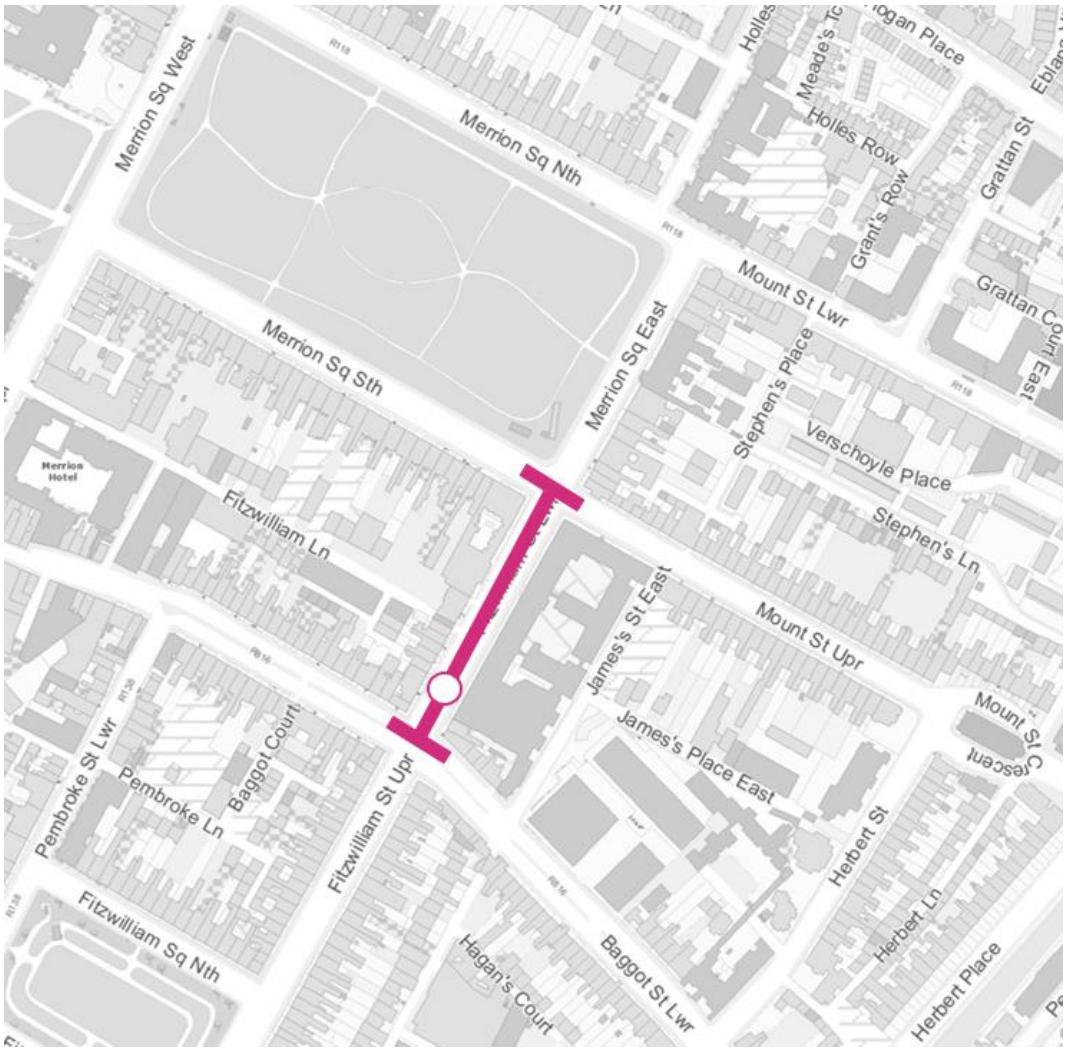

Figure 3.10: Route Option FS1
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Inbound: This section of the route would begin at the junction of Baggot Street Lower and Fitzwilliam Street Lower and proceed along Fitzwilliam Street Lower for approximately 160m, ending at the junction of Fitzwilliam Street Lower and Mount Street Upper, at Merrion Square.

Outbound: The outbound route follows the same route as the inbound route.

Stops: One stop would likely be provided in the inbound direction along this route option section (location illustrated indicatively by a circle on **Figure 3.10**).

Indicative Scheme Design

Figure 3.11 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

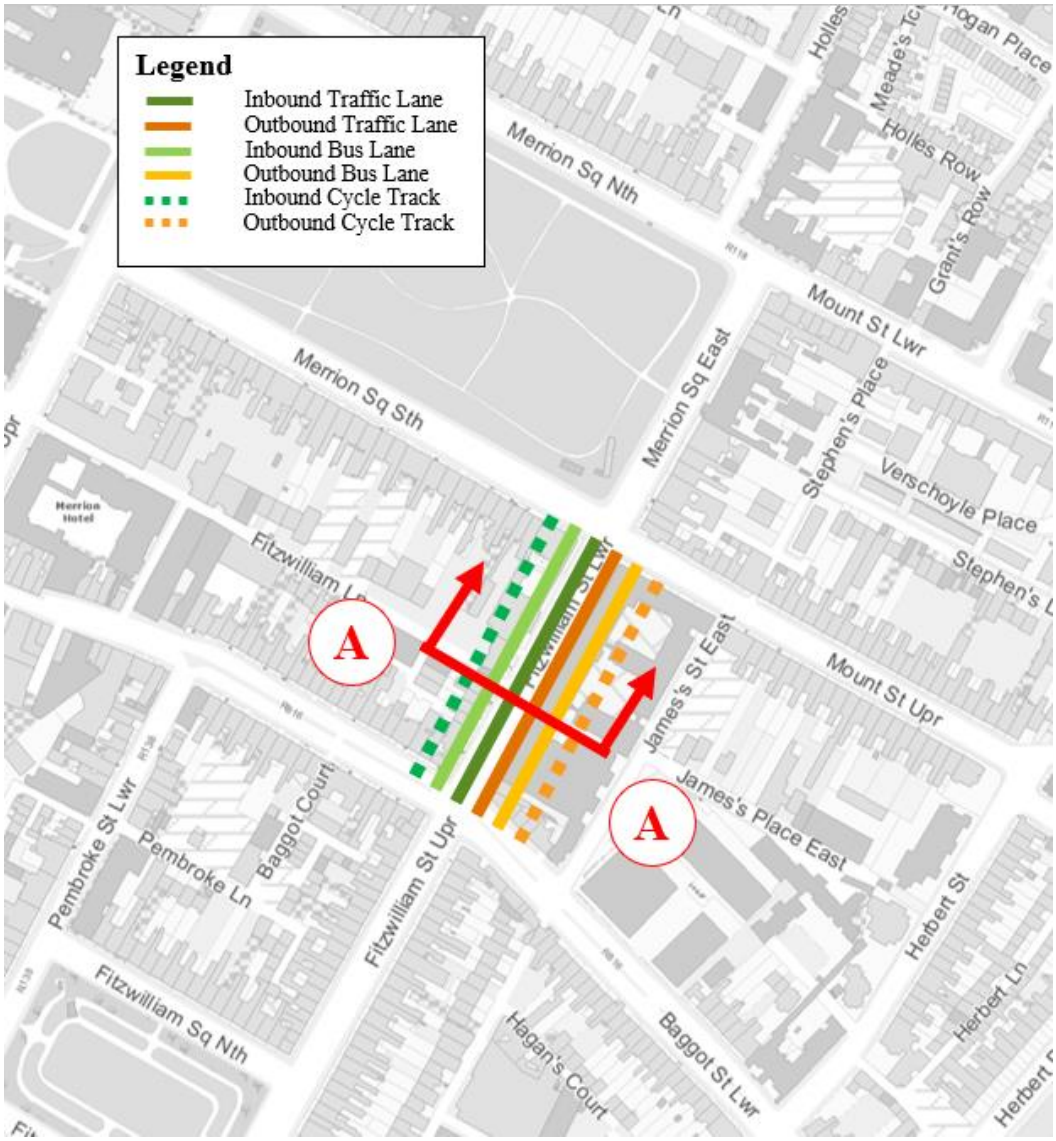

Figure 3.11: Route Option FS1 Indicative Scheme Design
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This section of the route commences on Fitzwilliam Street Lower at the junction with Mount Street Upper. Along the length of this route option section, two bus lanes, two general traffic lanes and two segregated cycle tracks are proposed. Existing footpaths would be retained or marginally widened along the majority of the route. All existing parking and loading bays would be removed. The proposed cross-section along this section of Fitzwilliam Street Lower is presented in **Figure 3.12**.

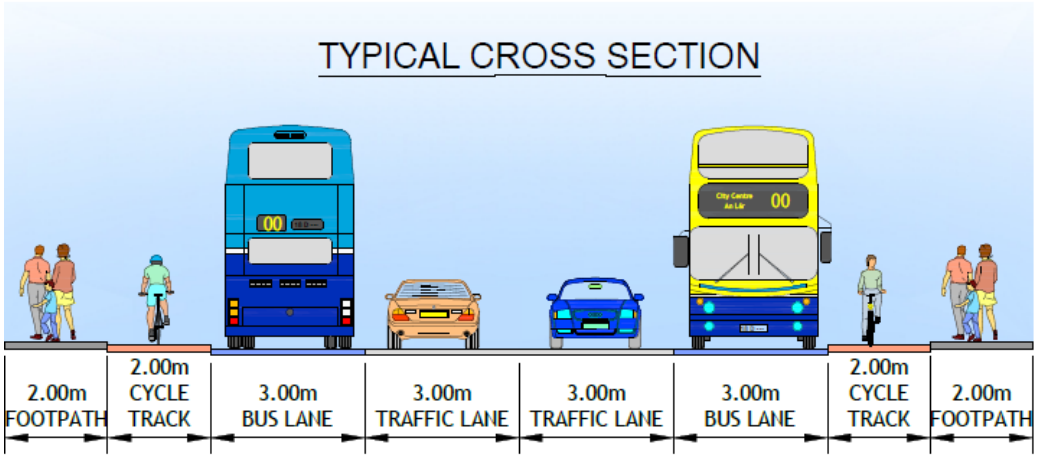

Figure 3.12: Route Option FS1 Cross-Section A-A

In summary, this route option would have the following characteristics:

- Bus lanes in each direction between Baggot Street Lower and Mount Street Upper;
- General traffic lanes in both directions between Baggot Street Lower and Mount Street Upper;
- Segregated cycle tracks in both directions between Baggot Street Lower and Mount Street Upper;
- Retention of existing footway width along the majority of this route option section; and
- Removal of all parking and loading bays along Fitzwilliam Street Lower.

Junctions:

There are no major junctions along Fitzwilliam Street Lower. There is one priority-controlled junction with a minor road known as Fitzwilliam Lane. Currently Fitzwilliam Lane in one-way only from its junction with Little Fitzwilliam Place to Fitzwilliam Street Lower and this route option proposal would not alter this arrangement. At the junction of Fitzwilliam Lane and Fitzwilliam Street Lower it is proposed to provide a raised entry treatment to facilitate continued pedestrian and cycle priority along the street.

3.4.1.1.2.3 Route Option FS2

Route Description

Route Option FS2 is presented in **Figure 3.13**.

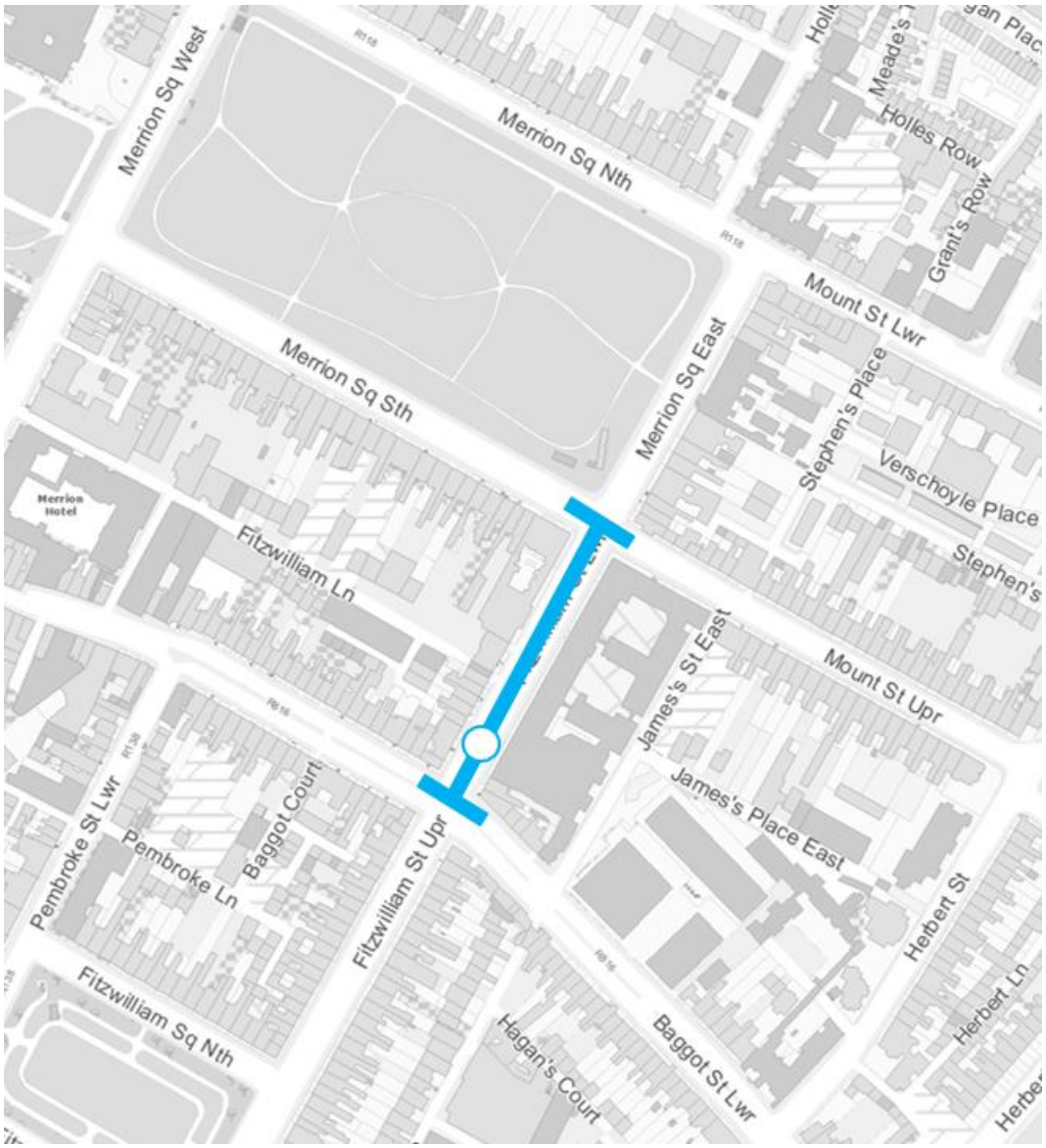

Figure 3.13: Route Option FS2

Inbound: This section of the route would begin at the junction of Baggot Street Lower and Fitzwilliam Street Lower and proceed along Fitzwilliam Street Lower for approximately 160m, ending at the junction of Fitzwilliam Street Lower and Mount Street Upper, at Merrion Square.

Outbound: The outbound route follows the same route as the inbound route.

Stops: One stop would likely be provided in the inbound direction along this route option section (location illustrated indicatively by a circle on **Figure 3.13**.

Indicative Scheme Design

Figure 3.14 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

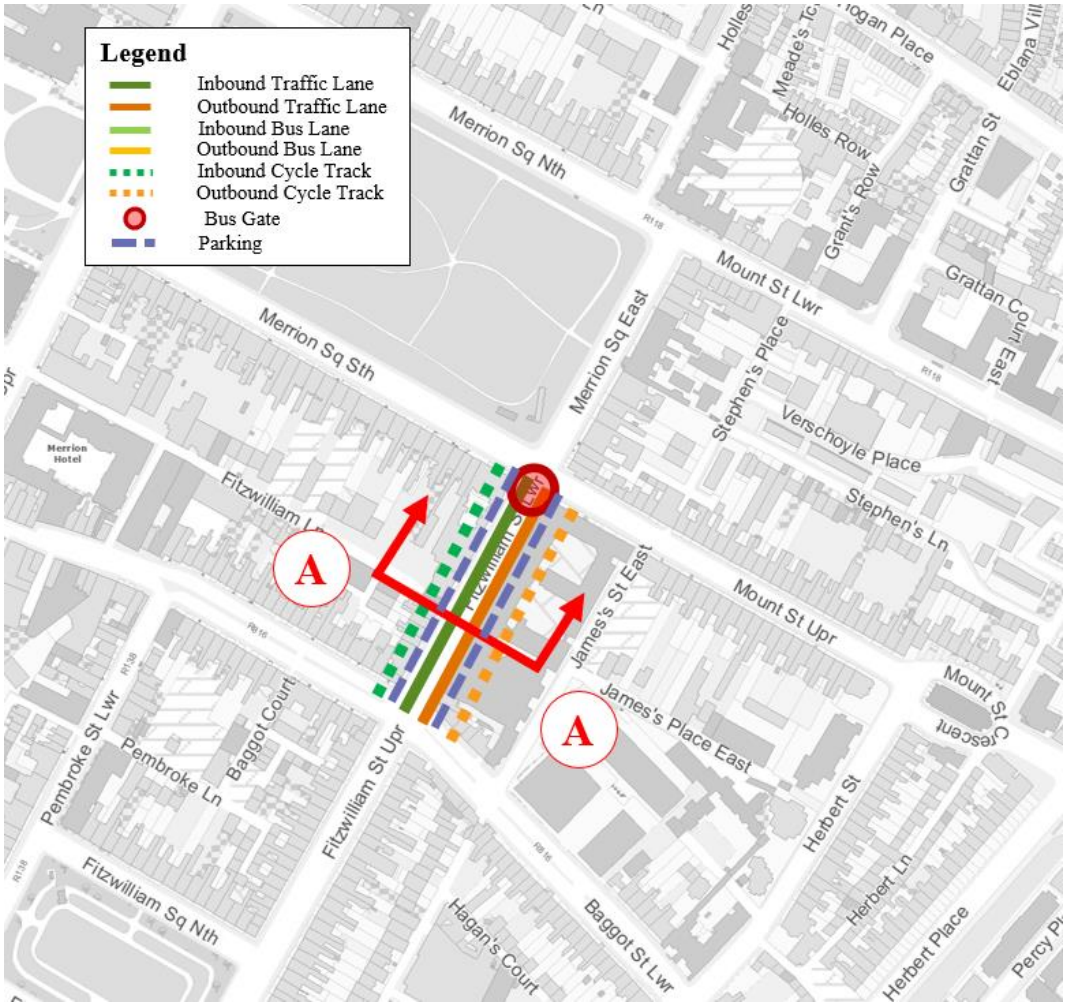

Figure 3.14: Route Option FS2 Indicative Scheme Design
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This section of the route commences on Fitzwilliam Street Lower at the junction with Mount Street Upper. A bus gate is proposed at the Mount Street Upper end of Fitzwilliam Street Lower. Fitzwilliam Street Lower would become a local access only street, with all vehicles required to enter and exit the street via the Baggot Street Lower junction. Along the length of this route option section, two general traffic lanes and two segregated cycle lanes are proposed. Existing footpaths would be retained or marginally widened along the majority of the route. Some parking / loading /set-down and bicycle parking would be provided on both sides of the street. The proposed cross-section along this section of Fitzwilliam Street Lower is presented in **Figure 3.15**.

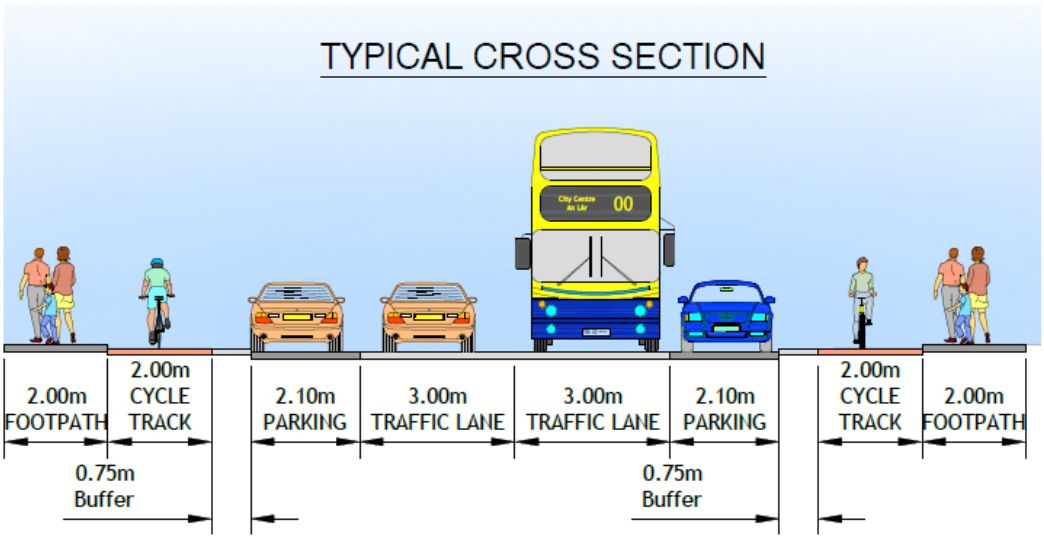

Figure 3.15: Route Option FS2 Cross-Section A-A

In summary, this route option would have the following characteristics:

- The installation of a bus gate at the northern end of Fitzwilliam Street Lower at Mount Street Upper;
- General traffic lanes in both directions along the length of this route option section;
- Segregated cycle tracks in both directions along the length of this route option section;
- Retention of existing footpaths along the majority of the road and increased footpath width over some short sections; and
- Retention of a reduced quantum of on-street parking / loading / set-down and bicycle parking in each direction.

Junctions:

There is no major junction along Fitzwilliam Street Lower. There is one priority-controlled junction with a minor road known as Fitzwilliam Lane. Currently Fitzwilliam Lane is one-way only from its junction with Little Fitzwilliam Place to Fitzwilliam Street Lower and this route option proposal would not alter this arrangement. At the junction of Fitzwilliam Lane and Fitzwilliam Street Lower it is proposed to provide a raised entry treatment to facilitate continued pedestrian and cycle priority along the street.

3.4.1.1.2.4 Route Option FS3

Route Description

Route Option FS3 is presented in **Figure 3.16**.

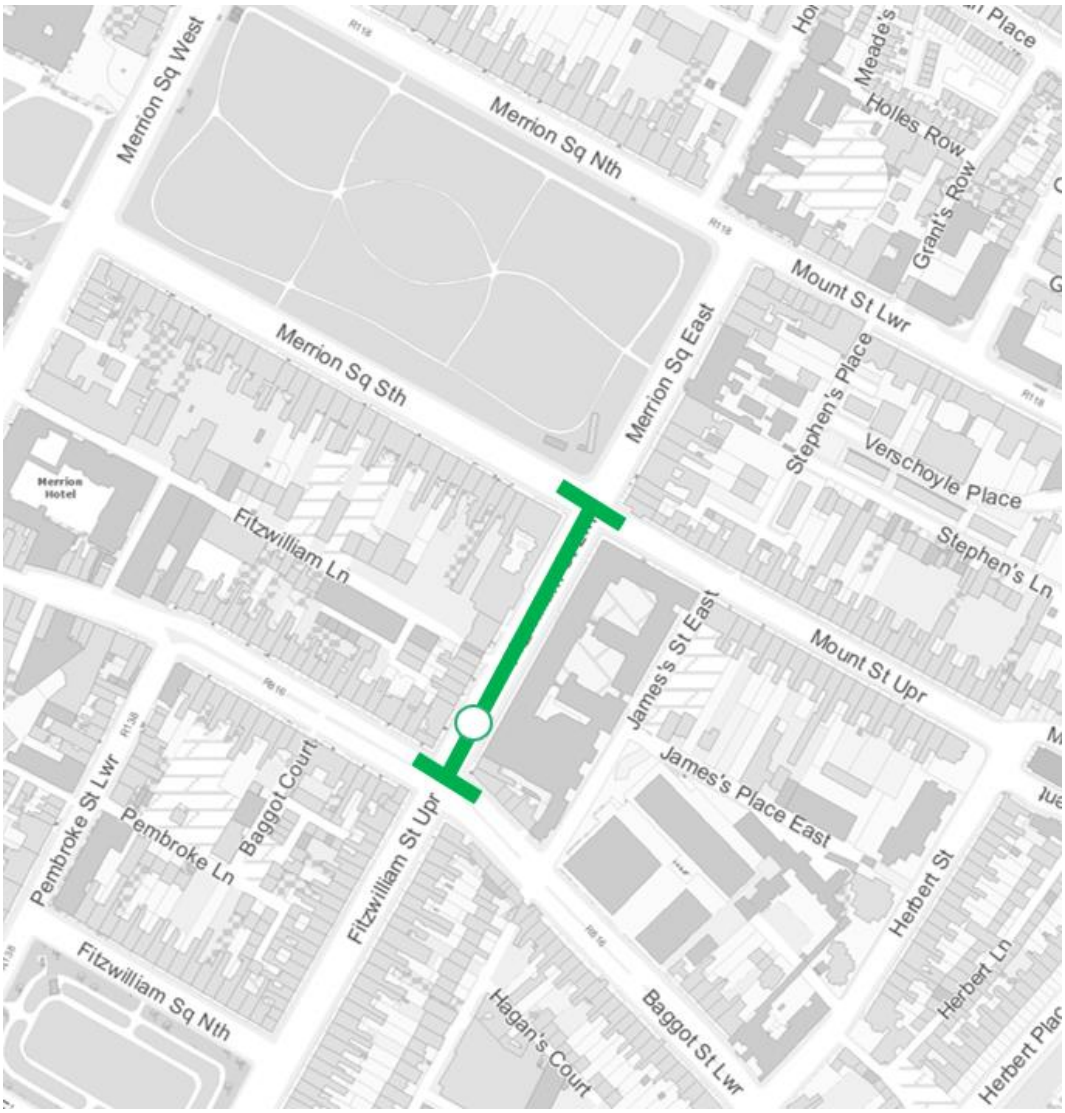

Figure 3.16: Route Option FS3

Inbound: This section of the route would begin at the junction of Baggot Street Lower and Fitzwilliam Street Lower and proceed along Fitzwilliam Street Lower for approximately 160m, ending at the junction of Fitzwilliam Street Lower and Mount Street Upper, at Merrion Square.

Outbound: The outbound route follows the same route as the inbound route.

Stops: One stop would likely be provided in the inbound direction along this route option section (location illustrated indicatively by a circle on **Figure 3.16**).

Indicative Scheme Design

Figure 3.17 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

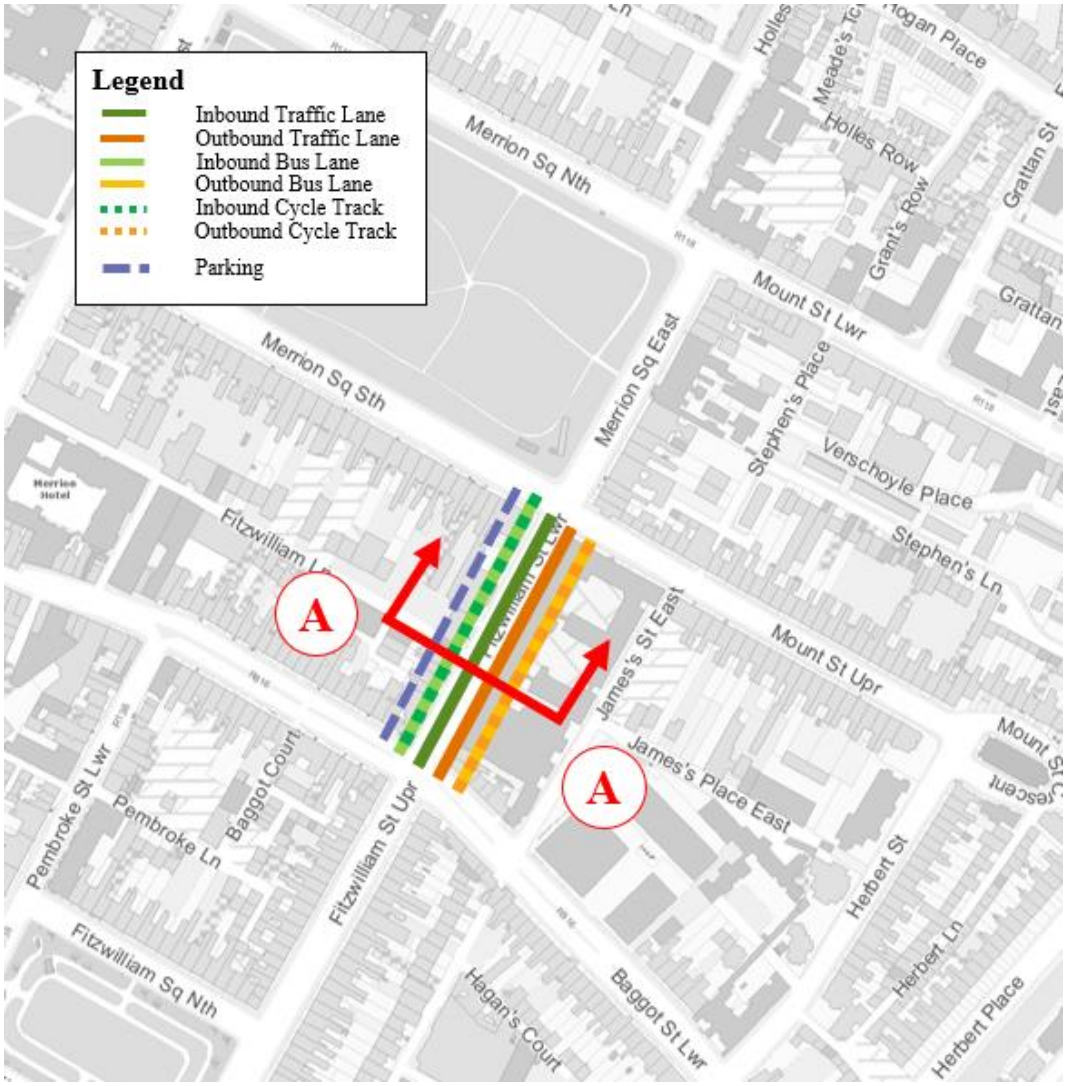

Figure 3.17: Route Option FS3 Indicative Scheme Design

This section of the route commences on Fitzwilliam Street Lower at the junction with Mount Street Upper. Along the length of this route option section, two bus lanes, two general traffic lanes are proposed. No cycle tracks are proposed, with cyclists sharing the bus lane. Existing footpaths would be retained along the majority of the route. Some existing parking/loading/set-down would be retained.

The proposed cross-section along this section of Fitzwilliam Street Lower is presented in **Figure 3.18**.

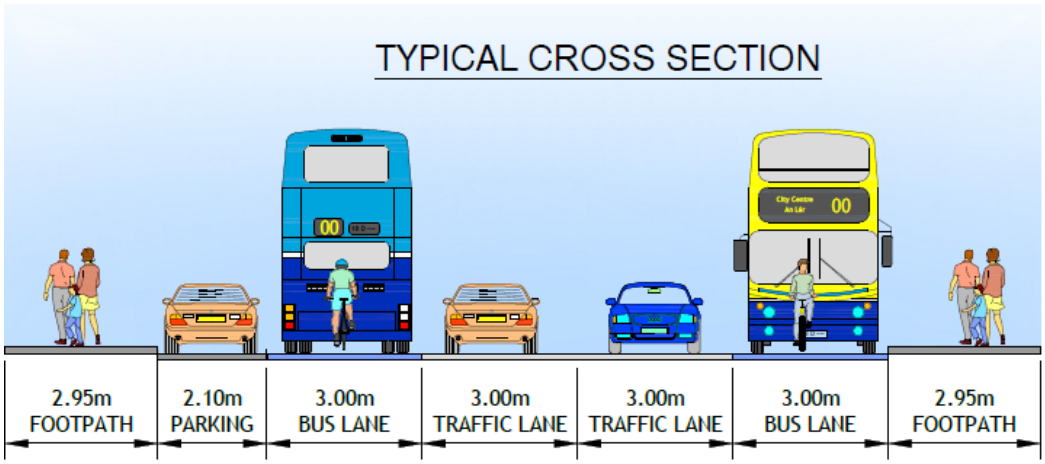

Figure 3.18: Route Option FS3 Cross-Section A-A

In summary, this route option would have the following characteristics:

- Bus lanes in each direction between Baggot Street Lower and Mount Street Upper to be shared with cyclists;
- General traffic lane in both directions between Baggot Street Lower and Mount Street Upper;
- Retention of existing footway width along this route option section; and
- Retention of some parking and loading bays along Fitzwilliam Street Lower.

Junctions:

There is no major junction along Fitzwilliam Street Lower. There is one priority-controlled junction with a minor road known as Fitzwilliam Lane. Currently Fitzwilliam Lane is one-way only from its junction with Little Fitzwilliam Place to Fitzwilliam Street Lower and this route option proposal would not alter this arrangement. At the junction of Fitzwilliam Lane and Fitzwilliam Street Lower it is proposed to provide a raised entry treatment to facilitate continued pedestrian and cycle priority along the street.

3.4.1.1.2.5 Route Option FS4

Route Description

Route Option FS4 is presented in **Figure 3.19**.

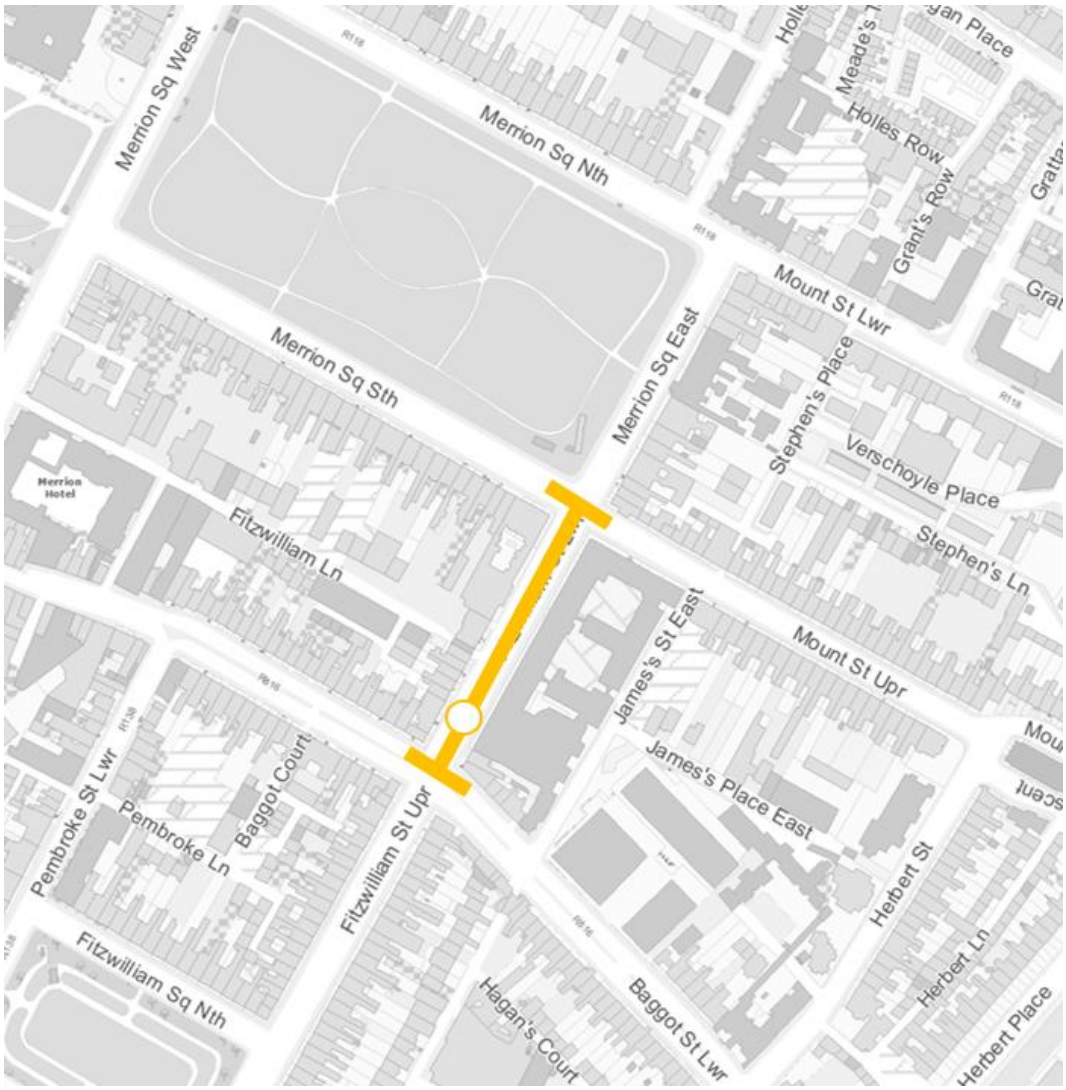

Figure 3.19: Route Option FS4

Inbound: This section of the route would begin at the junction of Baggot Street Lower and Fitzwilliam Street Lower and proceed along Fitzwilliam Street Lower for approximately 160m, ending at the junction of Fitzwilliam Street Lower and Mount Street Upper, at Merrion Square.

Outbound: The outbound route follows the same route as the inbound route.

Stops: One stop would likely be provided in the inbound direction along this route option section (location illustrated indicatively by a circle on **Figure 3.19**).

Indicative Scheme Design

Figure 3.20 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

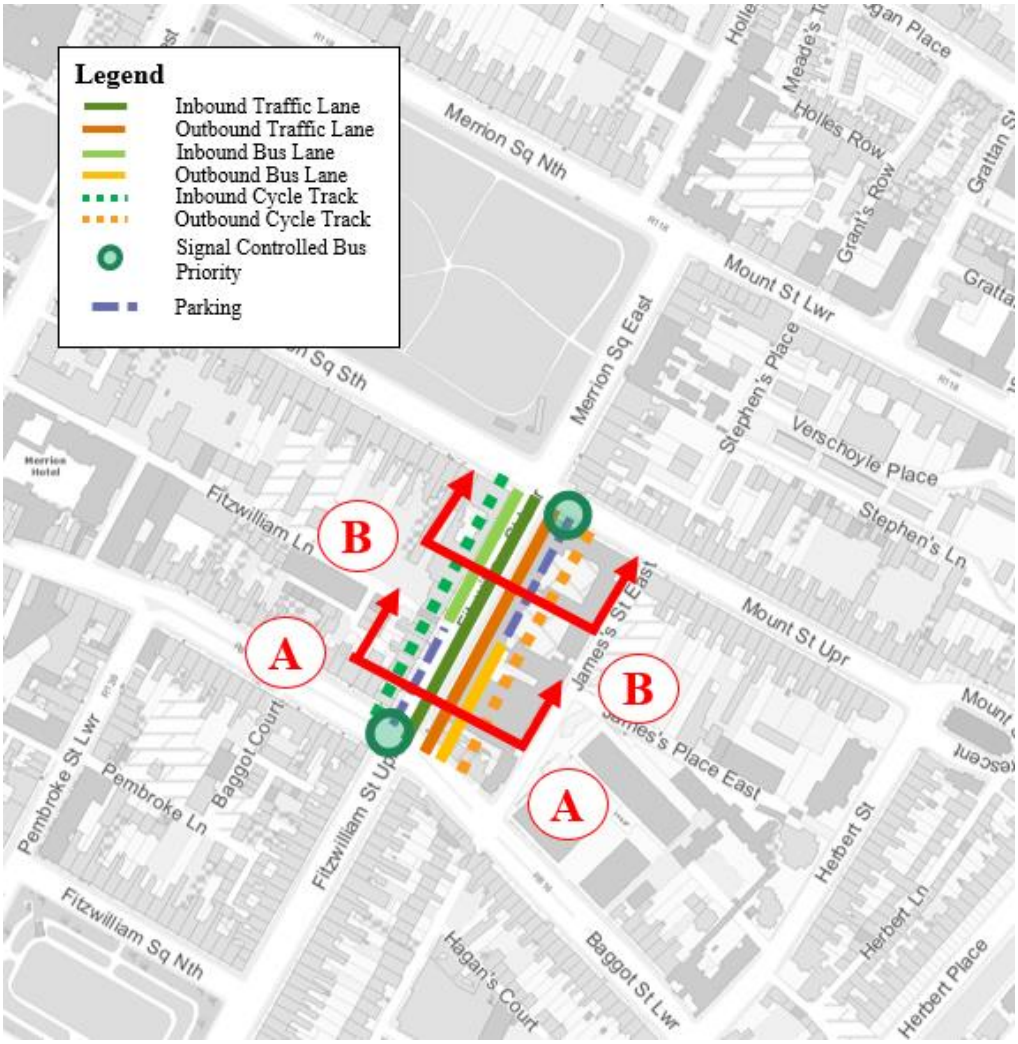

Figure 3.20: Route Option FS4 Indicative Scheme Design
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This section of the route commences on Fitzwilliam Street Lower at the junction with Mount Street Upper. Along the length of this route option section, three lanes are proposed with partial bus lanes provided in each direction with signal controlled priority. This would comprise a southbound bus lane from Fitzwilliam Lane to Baggot Street Lower and a northbound bus lane from Fitzwilliam Lane to Mount Street Upper. Signal Controlled Bus Priority would be necessary at the Mount Street Upper and Baggot Street Lower junctions in order to control the flow of vehicles into this section and ensure buses can reach the bus lanes unhindered.

Two general traffic lanes and two segregated cycle lanes are proposed. Existing footpaths would be retained or marginally widened along the section while some parking and loading bays would be retained.

The proposed cross-sections along this section of Fitzwilliam Street Lower are presented in **Figure 3.21** and **Figure 3.22**.

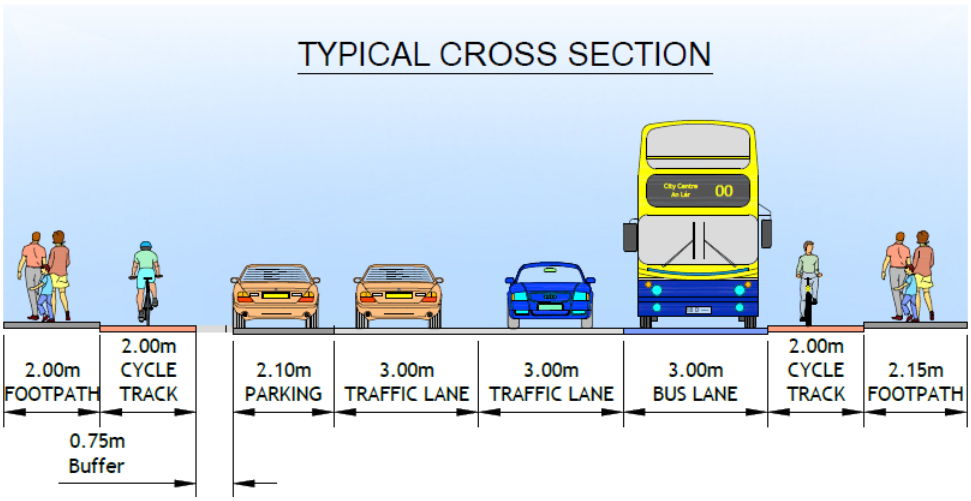

Figure 3.21: Route Option FS4 Cross-Section A-A

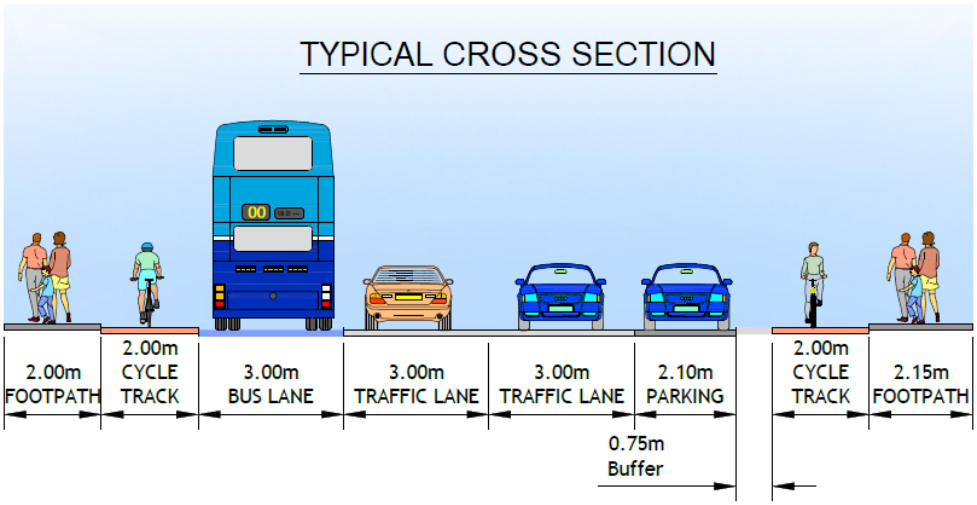

Figure 3.22: Route Option FS4 Cross-Section B-B

In summary, this route option would have the following characteristics:

- Partial bus lanes with signal controlled priority on Fitzwilliam Street Lower with a northbound (inbound) bus lane from Fitzwilliam Lane to Mount Street Upper and a southbound (outbound) bus lane from Fitzwilliam Lane to Baggot Street Lower;
- General traffic lanes in both directions between Baggot Street Lower and Mount Street Upper;
- Retention of existing footway width along this route option section; and
- Retention of some parking and loading bays along Fitzwilliam Street Lower.

Junctions:

There is no major junction along Fitzwilliam Street Lower. There is one priority-controlled junction with a minor road known as Fitzwilliam Lane.

Currently Fitzwilliam Lane is one-way only from its junction with Little Fitzwilliam Place to Fitzwilliam Street Lower and this route option proposal would not alter this arrangement. At the junction of Fitzwilliam Lane and Fitzwilliam Street Lower it is proposed to provide a raised entry treatment to facilitate continued pedestrian and cycle priority along the street.

3.4.1.1.3 Section 1a Route Option Assessment

Details of the route options assessment undertaken for the Fitzwilliam Street Lower section are presented in Appendix D. The relative ranking of route options against the scheme assessment sub-criteria is summarised in **Table 3.3**.

Table 3.3: Section 1a Route Options Assessment Summary (Sub-Criteria)

Appraisal Criteria	Sub-Criteria	Option FS1	Option FS2	Option FS3	Option FS4
1 Economy	1A Capital Cost				
	1B Transport Quality & Reliability				
2 Integration	2A Land Use Policy				
	2B Residential Population and Employment Catchments				
	2C Transport Network Integration				
	2D Cycle Network Integration				
	2E Traffic Network Integration				
3 Accessibility & Social Inclusion	3A Key Trip Attractors				
	3B Deprived Geographic Areas				
4 Safety	4A Road Safety				
	4B Pedestrian Safety				
5 Environment	5A Archaeology & Cultural Heritage				
	5B Architectural Heritage				
	5C Flora & Fauna				
	5D Soils, Geology & Hydrogeology				

Appraisal Criteria	Sub-Criteria	Option FS1	Option FS2	Option FS3	Option FS4
	5E Landscape & Visual				
	5F Air Quality				
	5G Noise & Vibration				
	5H Land Use Character				

In terms of Capital Cost, all options require similar levels of infrastructure upgrades and as such are ranked equally under this sub-criterion as each involves moderate road modifications with no land acquisition costs. In terms of Transport Quality & Reliability, Option FS1 performs highest for this criterion as full segregated bus lanes are proposed in this option while Options FS2 and FS4 provide only virtual bus priority as buses are required to share road space with general traffic over sections. In Option FS3, buses would share road space with cyclists and are likely to be delayed as a result.

All options serve the same catchments and as such are ranked equally in relation to Land Use Policy and Residential Population Catchments and Employment Catchments. Similarly, in terms of Transport Network Integration, as all options follow the same route, the opportunity for interchange with other routes is equal.

In terms of Cycle Network Integration, Options FS1, FS2 and FS4 all propose high quality segregated cycle facilities along the length of this route option section and are ranked as significantly better that Option FS3 in which cyclists would be required to share the bus lane with buses.

Option FS1 performs marginally better than Option FS4 under the criterion of Traffic Network Integration, as all inbound traffic movements on Fitzwilliam Street Lower are retained, however some delay is anticipated in Option FS4 relative to FS1 and FS3. Option FS2, however, scores poorly in this criterion due to the restrictions on traffic as a result of the bus gate. Option FS3 scores higher than FS1, as FS1 includes the removal of all existing parking, which would result in impacts to local vehicular access.

All options rank equally under both sub-criteria under Accessibility & Social Inclusion as they all follow the same route.

In terms of Safety, all options perform the same with respect to Road Safety and Pedestrian Safety as the route is the same for each, the number of junctions and turning movements is equal and all options provide for pedestrian footpaths and crossings.

In terms of Environment, Option FS2 performs marginally better in terms of Air Quality and Noise & Vibration due to the removal of through traffic along Fitzwilliam Street Lower. With respect to Land Use Character, Options FS2, FS3 and FS4 perform marginally better that Option FS1 as all three options retain some level of on-street parking. The options perform equally in the remaining sub-criteria under Environment.

A summary of the assessment and relative ranking of route options against the five main assessment criteria is presented in **Table 3.4**.

Table 3.4: Section 1a Criteria MCA Summary

Appraisal Criteria	Option FS1	Option FS2	Option FS3	Option FS4
1 Economy				
2 Integration				
3 Accessibility & Social Inclusion				
4 Safety				
5 Environment				

3.4.1.1.4 Section 1a Conclusion and Preferred Option

Based on the assessment undertaken, Route Option FS1 offers more benefits over other options. It performs highest or joint highest on all criteria with the exception of Environment, under which it scores lower than other options primarily due to the removal of parking and the retention of through traffic.

Option FS1 is the preferred option for the Fitzwilliam Street Lower area for the following reasons:

- It provides segregated bus priority lanes along the length of Fitzwilliam Street Lower;
- It provides on high-quality cycle facilities on a secondary route from the GDA Cycle Network Plan; and
- It delivers the desirable BusConnects cross-section.

3.4.1.2 Section 1b: Pembroke Road (Baggot Street Upper to Northumberland Road)

3.4.1.2.1 Introduction

From a review of submissions received as part of the non-statutory public consultation process, as well as a review of the topographical survey carried out since the EPR Option's publication, a number of issues were identified which had the potential to be overcome through the implementation of alternative design solutions.

3.4.1.2.2 Options Considered

Four options have been developed in order to address the concerns identified in Chapter 3.3.3.2.2 relating to Pembroke Road and are outlined below:

- *Option PR1:* EPR Option with the road realigned to remove impact on existing access steps to properties on the northern side and reapportion all land acquisition to the southern side of the road (4 lane cross-section + cycle tracks + parking).
- *Option PR2:* Removal of land acquisition on the northern side as per PR1, however, with removal of all parking along the section, including removal of space between parking bays for tree planting (4 lane cross-section + cycle tracks).
- *Option PR3:* Removal of land acquisition on the northern side as per PR1, however, with only a one-way outbound traffic lane and with Bus Lanes and cycle tracks in each direction (3-lane cross-section + cycle tracks + parking).
- *Option PR4:* Introduction of a single bus gate between Waterloo Road and Eastmoreland Place with two general traffic lanes from there to the Northumberland Road junction, with retention of all trees and no impact to property boundaries (2-lane cross-section + cycle tracks + parking).

3.4.1.2.2.1 Alternative Options Considered

Other options were also considered in the area but were not carried forward for the reasons briefly outlined below:

- **Option of reversing the direction of the proposed one-way general traffic in Route Option PR3**. This option was examined and sifted out as the outbound direction was considered to be the better option for a one-way road. This is primarily due to Pembroke Road's proximity to the city centre, which would have a higher probability of becoming congested more often if there are a higher quantity of inbound general traffic streets in comparison to outbound general traffic streets. This could, in turn, impact on bus operations within the city centre core.
- **Option of removing cycle tracks on Pembroke Road and providing an off-line cycle route**. This option was examined but not considered a viable solution due to a number of factors.
  Firstly, Pembroke Road is defined as a primary cycle corridor in the GDA Cycle Network Plan. In addition, alternative routes were examined in order to determine if suitable cycle routes could be facilitated on a number of adjacent streets and lanes, but each of these routes were found to not meet the criteria of a primary cycle track under criteria including directness, safety and attractiveness and comfort.
- **Option of providing one-way general traffic outbound (as in Route Option PR3) yet with the removal of all on-street parking (as in Route Option PR2)**. This option was examined and sifted out, as such an option was not expected to offer the same benefits arising from a bus gate arrangement, in terms of Environmental criteria, while sharing negatives arising from both the one-way arrangement being assessed (regarding Traffic Integration) and the removal of parking being assessed (regarding loss of parking under Land Use Character).

3.4.1.2.2.2 Route Option PR1

Route Description

The location of Route Option PR1 is presented in **Figure 3.23**.

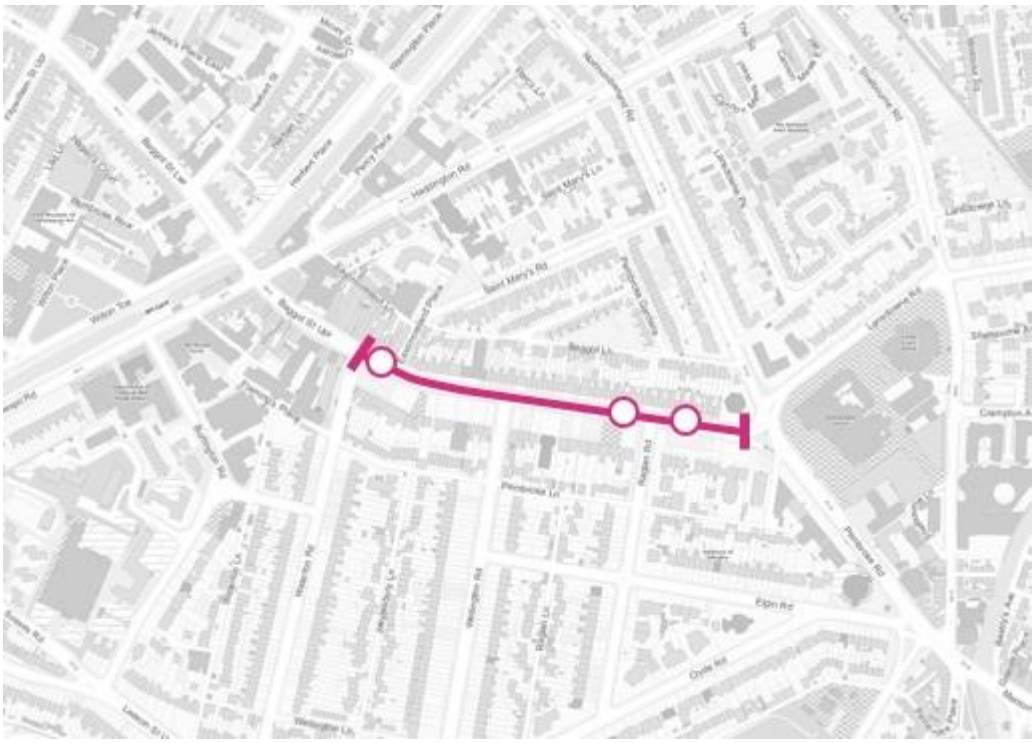

Figure 3.23: Route Option PR1

Inbound: This section of the route would commence at the junction of Pembroke Road and Northumberland Road and continue along Pembroke Road. This section of the route ends at Baggot Street Upper at the junction of Pembroke Road and Waterloo Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of three stops would likely be provided along this route option section, two stops in the outbound direction and one inbound (locations illustrated indicatively by a circle on **Figure 3.23**).

Indicative Scheme Design

Figure 3.24 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

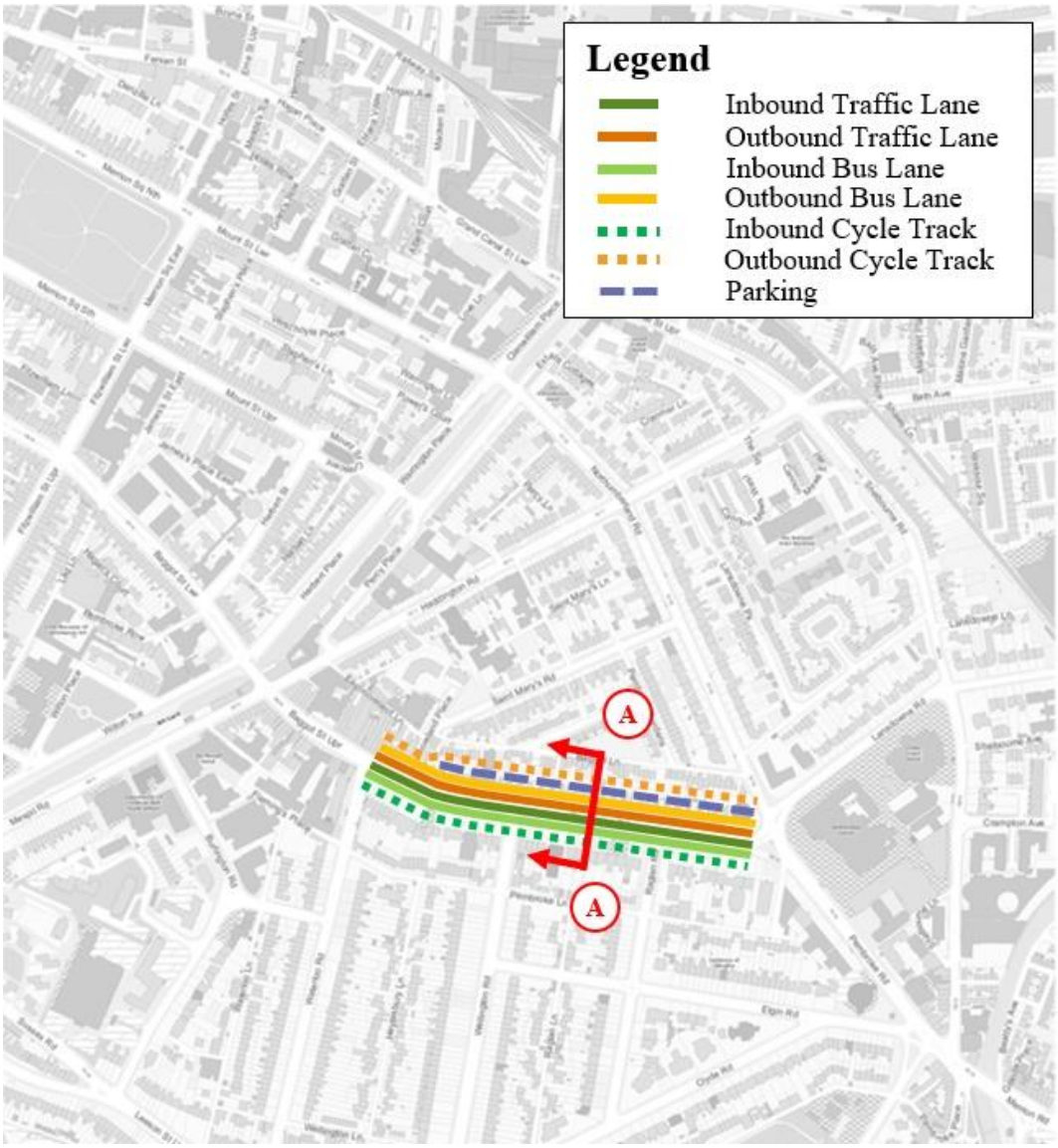

Figure 3.24: Route Option PR1 Indicative Scheme Design

This section of the route commences on Pembroke Road at the junction of Northumberland Road. Along Pembroke Road, two bus lanes and two general traffic lanes are proposed.

On the northern side of the road, the existing footpath would be reduced to 2.0m in width, in between existing trees. At existing tree locations, the footpath would widen locally in order to retain the tree.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route option section as part of this option. On the northern side of Pembroke Road, the cycle track would weave around existing trees maintaining its proposed 2.0m width.

Parking along the northern side of Pembroke Road is proposed in this option. This current length of parallel parking would, however, be broken up into 8 separate sections as the footpath and cycle track conflict with parking in the vicinity of existing trees. All existing parking on the southern side of Pembroke Road is proposed to be removed.

In order to provide this route option, land acquisition from approximately 33 properties would be necessary. This would include the removal of a number of existing trees currently on private property.

A cross-section of this option on Pembroke Road is presented in **Figure 3.25**.

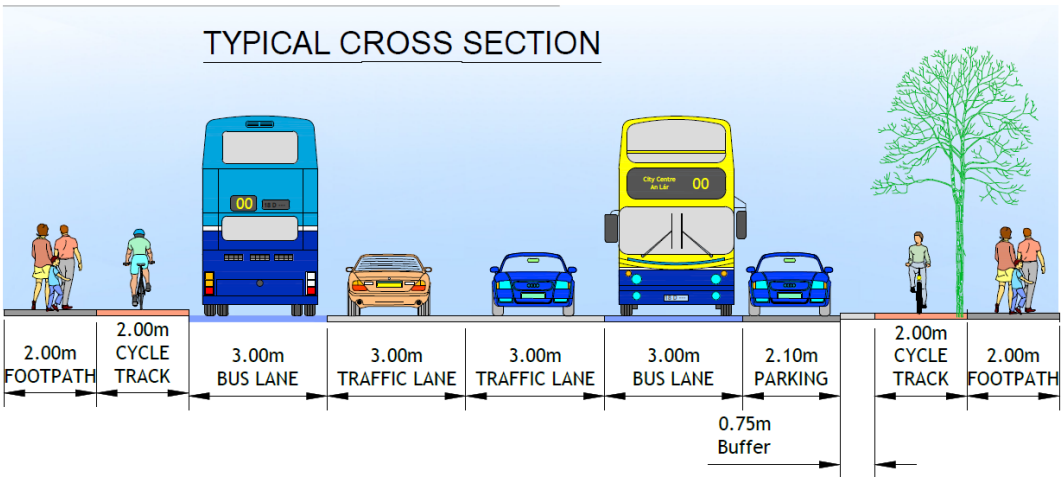

Figure 3.25: Route Option PR1 Cross-Section A-A

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions along the length of this route option section;
- An inbound and an outbound general traffic lane in both directions along the length of this route option section;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;
- Reduction in width of the existing footpath on both sides of the road;
- Retention of a significantly reduced quantum of on-street parking on the northern side of Pembroke Road and the removal of all existing parking on the southern side of the road;
- Retention of the majority of existing on-street trees but the removal of a large number of trees currently on private property; and
- Land acquisition from approximately 33 properties.

Junctions:

There are currently no signalised junctions along this route option section and this proposal does not intend to signalise any additional junctions. There are three priority-controlled junctions along this route option section, namely the junctions of Pembroke Road with Raglan Road, Wellington Road and Eastmoreland Place.

This route option proposes to adjust these junctions to reduce junction widths and radii and to provide junction entry treatment in order to improve these junctions for pedestrian use.

3.4.1.2.2.3 Route Option PR2

Route Description

The location of Route Option PR2 is presented in **Figure 3.26**.

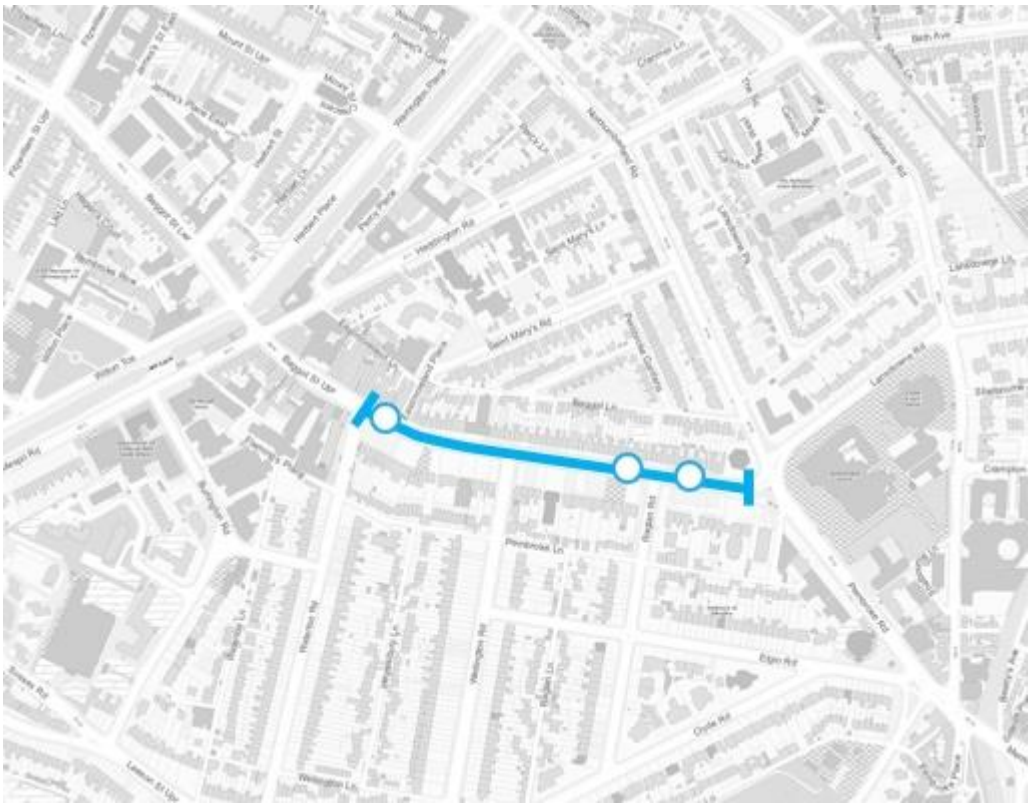

Figure 3.26: Route Option PR2
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Inbound: This section of the route would commence at the junction of Pembroke Road and Northumberland Road and continue along Pembroke Road.

This section of the route ends at Baggot Street Upper at the junction of Pembroke Road and Waterloo Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of three stops would likely be provided along this route option section, two stops in the outbound direction and one inbound (locations illustrated indicatively by a circle on **Figure 3.26**).

Indicative Scheme Design

Figure 3.27 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

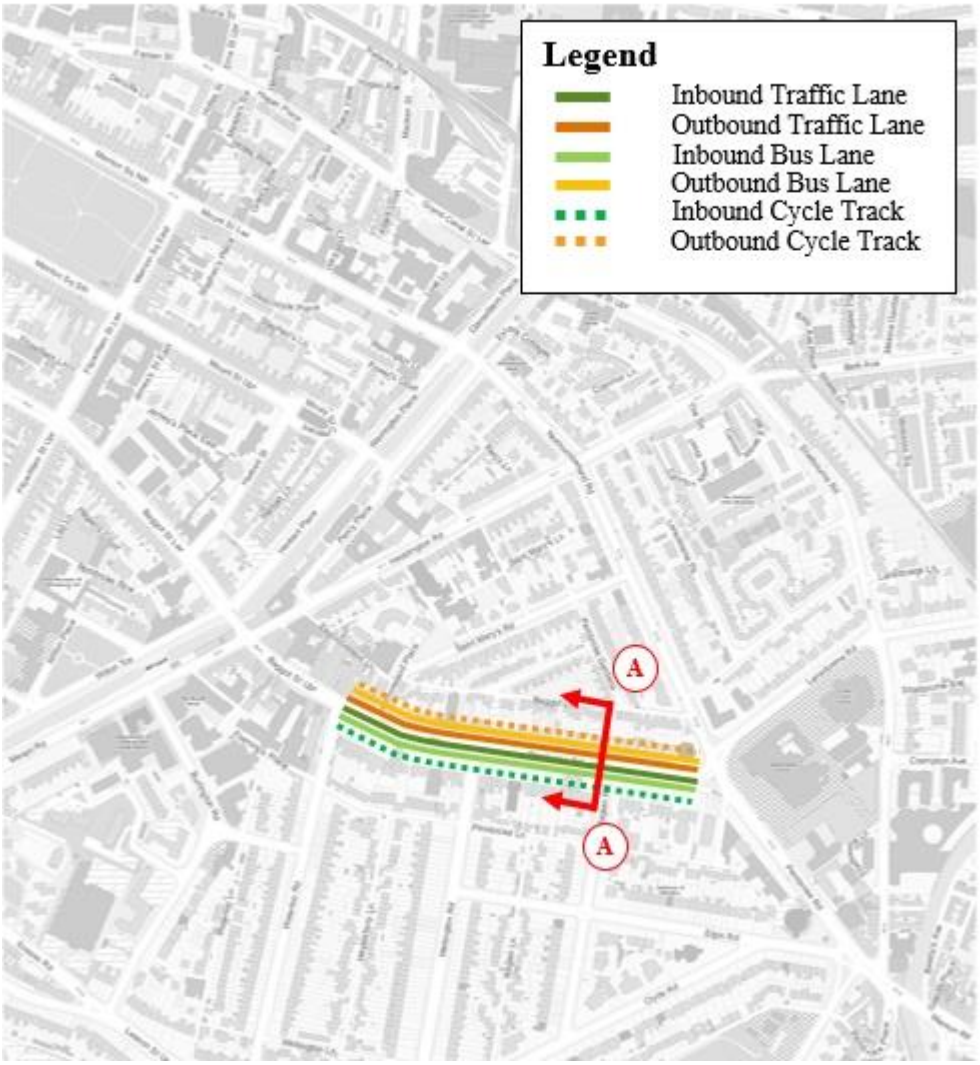

Figure 3.27: Route Option PR2 Indicative Scheme Design

This section of the route option section commences on Pembroke Road at the junction of Northumberland Road. Along Pembroke Road two bus lanes and two general traffic lanes are proposed.

On the northern side of the road, the existing footpath would be reduced to 2.0m in width and existing trees removed.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route as part of this option.

All existing parking along Pembroke Road is proposed to be removed.

In order to provide this route option, land acquisition from approximately 8 properties would be necessary.

A cross-section of this option on Pembroke Road is presented in **Figure 3.28**.

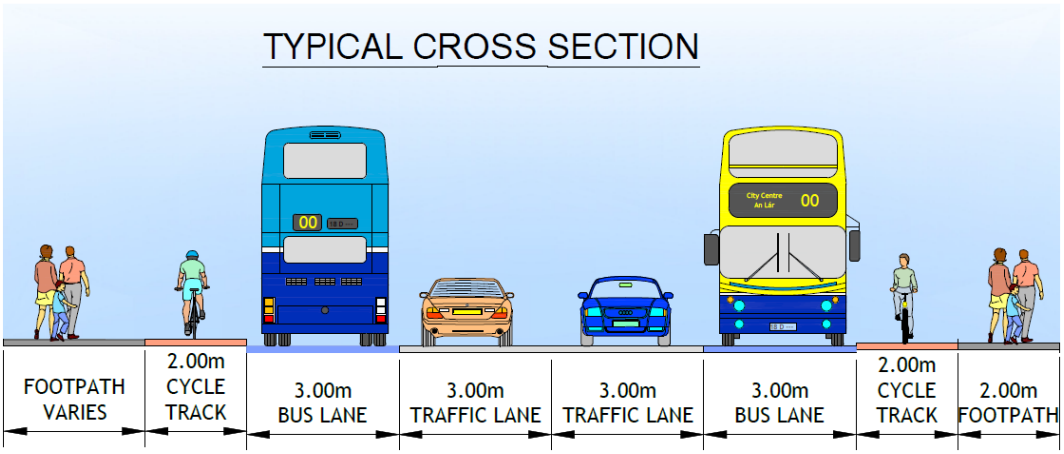

Figure 3.28: Route Option PR2 Cross-Section A-A

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions along the length of this route option section;
- An inbound and an outbound general traffic lane in both directions along the length of this route option section;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;
- Reduction in footpath width on both sides of the road;
- Removal of all on-street parking along this route option section;
- Removal of all existing on-street trees and a small number of trees currently located on private property; and
- Land acquisition from approximately 8 properties.

Junctions:

There are currently no signalised junctions along this route option section and this proposal does not intend to signalise any additional junctions.

There are three priority-controlled junctions along this route option section, namely the junctions of Pembroke Road with Raglan Road, Wellington Road and Eastmoreland Place.

This route option proposes to adjust these junctions to reduce junction widths and radii and to provide junction entry treatment in order to improve these junctions for pedestrian use.

3.4.1.2.2.4 Route Option PR3

Route Description

The location of Route Option PR3 is presented in **Figure 3.29**.

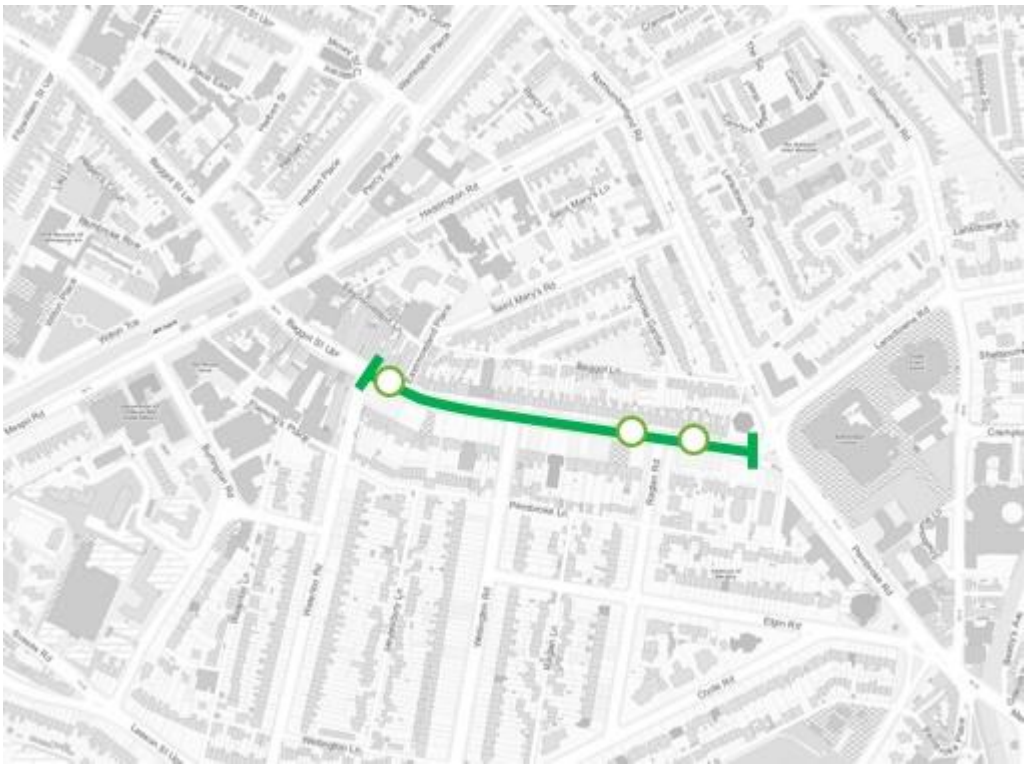

Figure 3.29: Route Option PR3
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Inbound: This section of the route would commence at the junction of Pembroke Road and Northumberland Road and continue along Pembroke Road. This section of the route ends at Baggot Street Upper at the junction of Pembroke Road and Waterloo Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of three stops would likely be provided along this route option section, two stops in the outbound direction and one inbound (locations illustrated indicatively by a circle on **Figure 3.29**).

Indicative Scheme Design

Figure 3.30 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

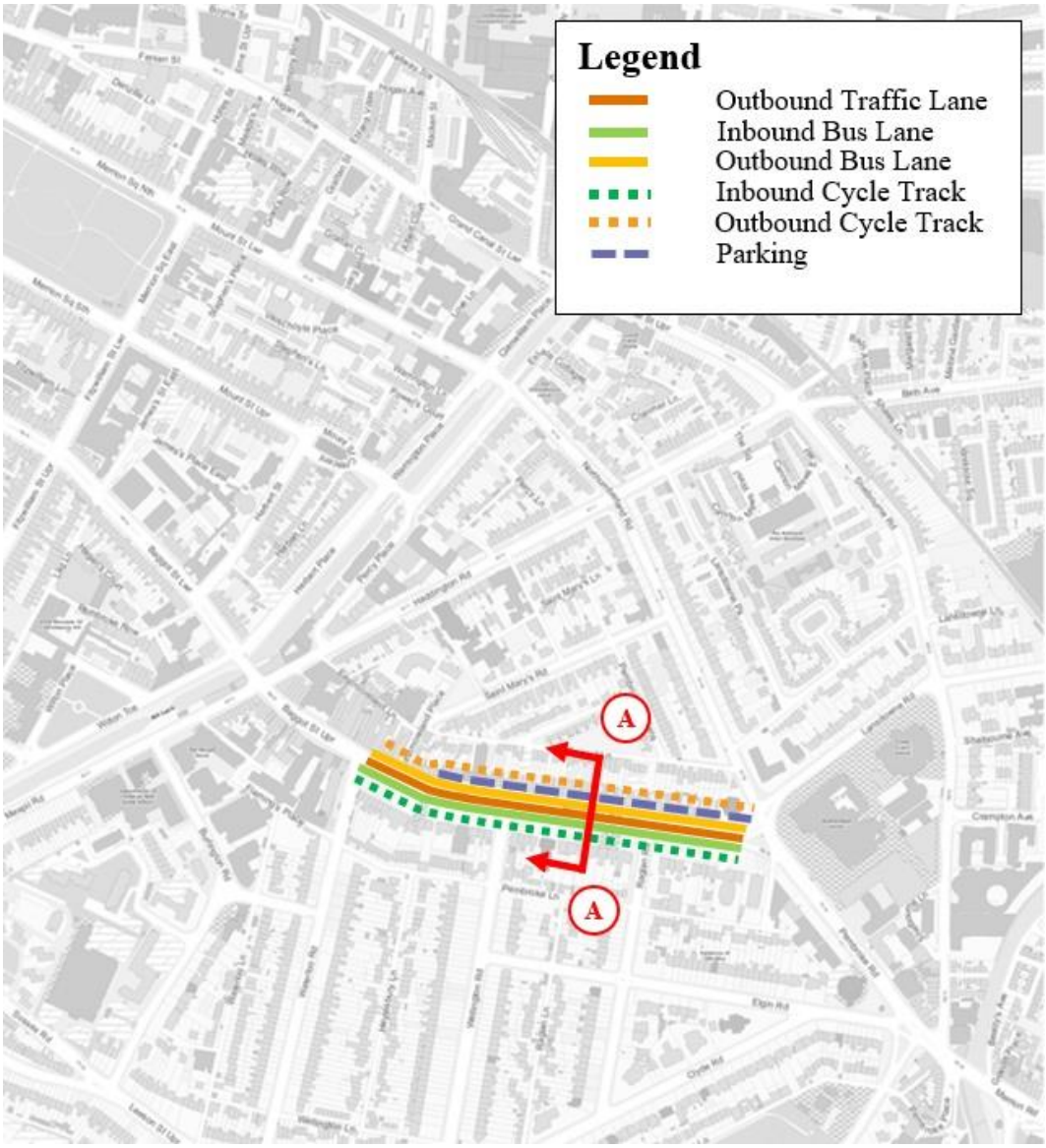

Figure 3.30: Route Option PR3 Indicative Scheme Design

This section of the route commences on Pembroke Road at the junction of Northumberland Road. Along Pembroke Road, two bus lanes and one general traffic lane travelling in an outbound direction from Baggot Street Upper to Northumberland Street is proposed.

On the northern side of the road, the existing footpath would be reduced to 2.0m in width, in between existing trees. At existing tree locations, the footpath would widen locally in order to retain the tree.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route option section as part of this option. On the northern side of Pembroke Road, the cycle track would weave around existing trees maintaining its proposed 2.0m width.

Parking along the northern side of Pembroke Road is proposed in this option. The current length of parallel parking would, however, be broken up into eight separate sections as the footpath and cycle track conflict with parking in the vicinity of existing trees. All existing parking on the southern side of Pembroke Road is proposed to be removed.

In order to provide this route option, land acquisition from approximately 13 properties would be necessary. This would include the removal of a small number of existing trees currently on private property.

A cross-section of this option on Pembroke Road is presented in **Figure 3.31**.

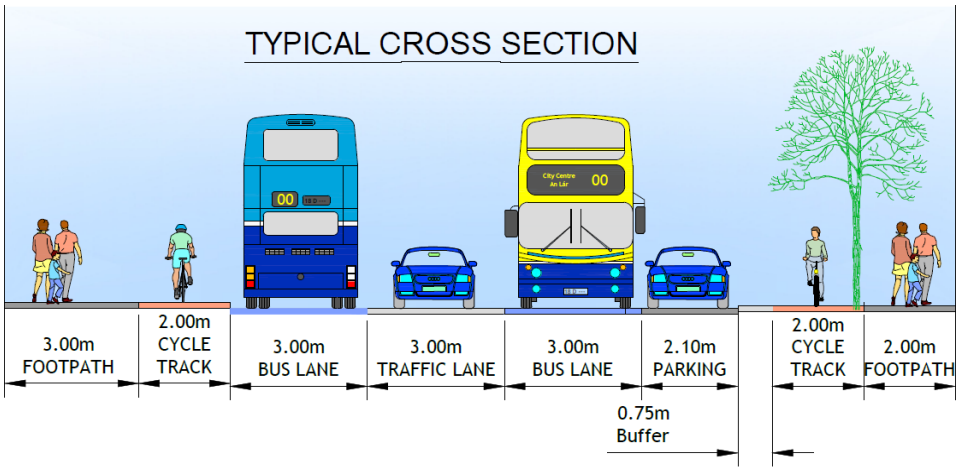

Figure 3.31: Route Option PR3 Cross-Section A-A

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions along the length of this route option section;
- An outbound general traffic lane only from Baggot Street Upper to the junction with Northumberland Road;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;
- Reduced width of footpath on both sides of the road;
- Retention of a significantly reduced quantum of on-street parking on the northern side of Pembroke Road and the removal of all existing on-street parking on the southern side of the road;
- Retention of the majority of existing on-street trees but the removal of a small number of trees currently on private property; and
- Land acquisition from approximately 13 properties.

Junctions:

There are currently no signalised junctions along this route option section and this proposal does not intend to signalise any additional junctions. There are three priority-controlled junctions along this route option section, namely the junctions of Pembroke Road with Raglan Road, Wellington Road and Eastmoreland Place.

This route option proposes to adjust these junctions to reduce junction widths and radii and to provide junction entry treatment in order to improve these junctions for pedestrian use.

3.4.1.2.2.5 Route Option PR4

Route Description

The location of Route Option PR4 is presented in **Figure 3.32**.

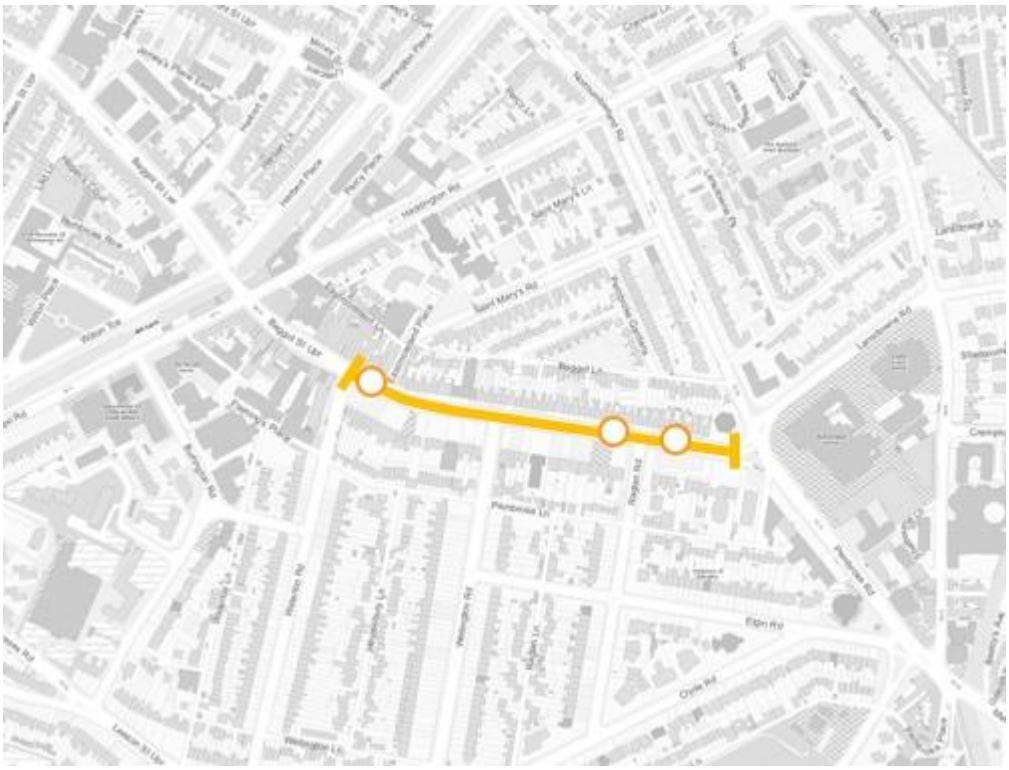

Figure 3.32: Route Option PR4
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Inbound: This section of the route would commence at the junction of Pembroke Road and Northumberland Road and continue along Pembroke Road.

This section of the route ends at Baggot Street Upper at the junction of Pembroke Road and Waterloo Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of three stops would likely be provided along this route option section, two stops in the outbound direction and one inbound (locations illustrated indicatively by a circle on **Figure 3.32**).

Indicative Scheme Design

Figure 3.33 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

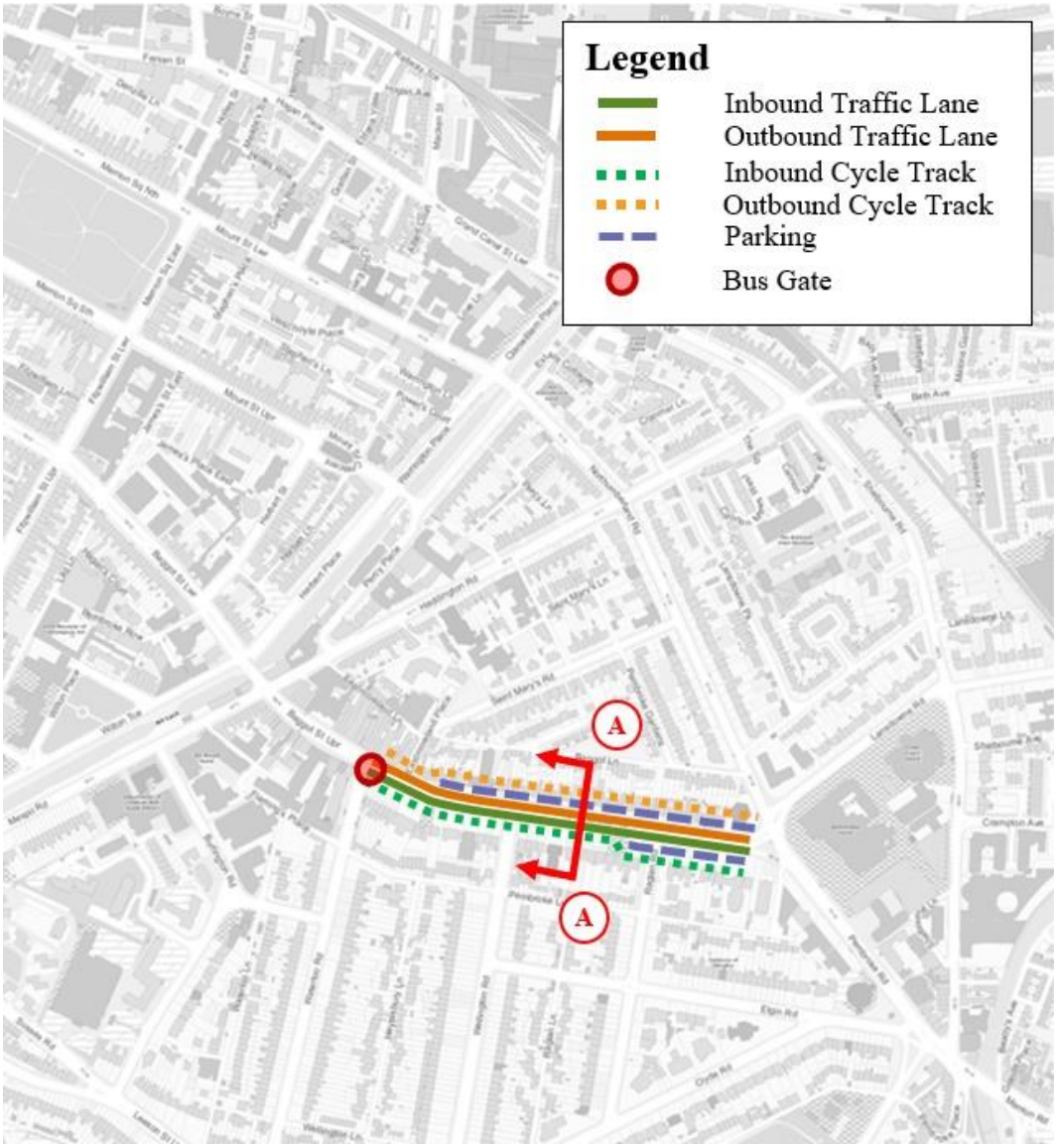

Figure 3.33: Route Option PR4 Indicative Scheme Design
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This section of the route commences on Pembroke Road at the junction of Northumberland Road. Along Pembroke Road, two general traffic lanes in both directions are proposed.

At the western end of Pembroke Road, between Eastmoreland Place and Waterloo Road, a bus gate is proposed. This bus gate would remove all through traffic in both directions from Pembroke Road. Local traffic and residents could still access and egress Pembroke Road via the Northumberland Road junction.

Local access and egress via Wellington Road, Raglan Road and Eastmoreland Place would remain. Inbound vehicles wishing to get to Baggot Street Upper and beyond would travel along alternative routes, e.g. Northumberland Road, Haddington Road, Waterloo Road. Outbound vehicles wishing to get to Northumberland Road, Ballsbridge and beyond would travel along alternative routes, e.g. Haddington Road, Waterloo Road. Buses would share the general traffic lane but would not experience notable delays due to the removal of through traffic from Pembroke Road.

On the northern side of the road, the existing footpath would be retained together with the existing trees along this footpath. On the southern side of the road the existing footpath would be retained for the most part and widened over some sections.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route option section as part of this option.

Parking along the northern side of Pembroke Road is proposed in this option. The current length of parallel parking would, however, be broken up into 10 separate sections. A small quantum of parking on the southern side of Pembroke Road is proposed to be retained.

In order to provide this route option, no land acquisition would be necessary.

A cross-section of this option on Pembroke Road is presented in **Figure 3.34**.

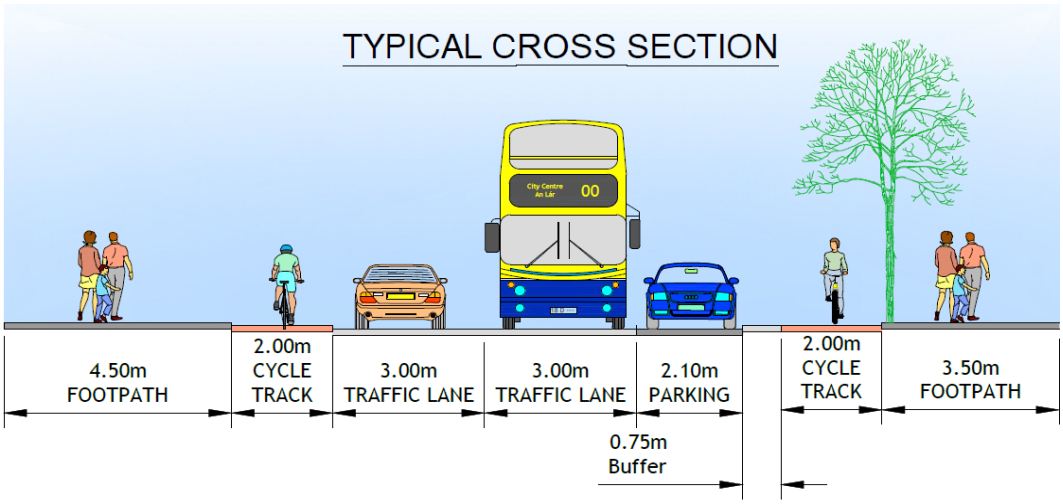

Figure 3.34: Route Option PR4 Cross-Section A-A

In summary, this route option would have the following characteristics:

- The installation of a bus gate at the western end of Pembroke Road between Eastmoreland Place and Waterloo Road;
- An inbound and an outbound general traffic lane in both directions along the length of this route option section;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;

- Retention of existing footpaths along the majority of the road and increased footpath width over some short sections;
- Retention of a reduced amount of on-street parking on the northern side of Pembroke Road and the retention of a significantly reduced amount of parking on the southern side of the road;
- Retention of all existing on-street tress; and
- No land acquisition required.

Junctions:

There are currently no signalised junctions along this route option section and this proposal does not intend to signalise any additional junctions. There are three priority-controlled junctions along this route option section, namely the junctions of Pembroke Road with Raglan Road, Wellington Road and Eastmoreland Place. This route option proposes to adjust these junctions to reduce junction widths and radii and to provide junction entry treatment in order to improve these junctions for pedestrian use.

3.4.1.2.3 Section 1b Route Option Assessment

Details of the route options assessment undertaken for the Pembroke Road study area section are presented in Appendix E. The relative ranking of route options against the scheme assessment sub-criteria is summarised in **Table 3.5**.

Table 3.5: Section 1b Route Options Assessment Summary (Sub-Criteria)

Appraisal Criteria	Sub-Criteria	Option PR1	Option PR2	Option PR3	Option PR4
1 Economy	1A Capital Cost				
	1B Transport Quality & Reliability				
2 Integration	2A Land Use Policy				
	2B Residential Population and Employment Catchments				
	2C Transport Network Integration				
	2D Cycle Network integration				
	2E Traffic Network Integration				
3 Accessibility & Social Inclusion	3A Key Trip Attractors				
	3B Deprived Geographic Areas				
4 Safety	4A Road Safety				
	4B Pedestrian Safety				
5 Environment	5A Archaeology & Cultural Heritage				

Appraisal Criteria	Sub-Criteria	Option PR1	Option PR2	Option PR3	Option PR4
	5B Architectural Heritage				
	5C Flora & Fauna				
	5D Soils, Geology & Hydrogeology				
	5E Landscape & Visual				
	5F Air Quality				
	5G Noise & Vibration				
	5H Land Use Character				

In terms of Capital Cost, Option PR1 is by far the most expensive option due to the significant land acquisition and infrastructure costs associated with the largest cross-section. Option PR4 is the least expensive option as no land acquisition is necessary, while Options PR2 and PR3 are ranked equally and are slightly negative relative to Option PR4. In terms of Transport Quality & Reliability, Options PR1, PR2 and PR3 are all ranked as slightly better than Option PR4, as Option PR4 relies on a bus gate to achieve priority while the other options all have segregated bus lanes.

All options serve the same catchments and as such are ranked equally in relation to Land Use Policy and Residential Population Catchments and Employment Catchments.

In terms of Cycle Network Integration, all options propose high quality cycle facilities along the route and are therefore all ranked equal.

In terms of Traffic Network Integration, all traffic movements are retained in Options PR2, so this ranked more positive relative to Option PR3 which restricts traffic to one-way along Pembroke Road. Option PR4 is ranked as being significantly negative due to the restrictions on traffic as a result of the bus gate. Option PR2 scores lower than PR1, which scores the highest, due to the removal of all existing parking, which would result in impacts to local vehicular access.

All options rank equally under the sub-criteria of Accessibility & Social Inclusion as they all follow the same route.

In terms of Safety, all options perform the same with respect to Road Safety and Pedestrian Safety as the route is the same for each, the number of junctions and turning movements is equal and all options provide for pedestrian footpaths and crossings.

Option PR4 performs significantly better than the other options in relation to Flora & Fauna as it does not require the removal of any trees, whereas Option PR1 may require the removal of a significant number of trees while Options PR2 and PR3 require the removal of a lesser, but still significant, number of trees.

In terms of Air Quality and Noise & Vibration, Option PR4 again performs the best as it removes significant volumes of traffic from the road and reduces the carriageway width. Option PR3 also reduces the volume of traffic while Options PR1 and PR2 would not reduce traffic volumes and may move some traffic closer to receptors.

In terms of Architectural Heritage, Landscape & Visual and Land Use Character, Option PR4 would not require tree removal nor land acquisition and is ranked the highest under these categories. This option also retains the highest amount of parking. Each of the other options require land acquisition from properties that are on the record of protected structures and tree removal along the street. In these options existing parking volumes are also significantly reduced.

The options perform equally in the remaining sub-criteria under Environment.

A summary of the assessment and relative ranking of route options against the five main assessment criteria is presented in **Table 3.6**.

Table 3.6: Section 1b Criteria MCA Summary

Appraisal Criteria	Option PR1	Option PR2	Option PR3	Option PR4
1 Economy				
2 Integration				
3 Accessibility & Social Inclusion				
4 Safety				
5 Environment				

3.4.1.2.4 Section 1b Conclusion and Preferred Option

Based on the assessment undertaken, Route Option PR4 would offer more benefits over other options.

It performs well under all criteria, with the exception of Integration due to the diversion of traffic onto other routes as a result of the bus gate. However, the distances required to divert through traffic are relatively small, with the additional distance to travel from Baggot Street Bridge to Lansdowne Road by car being approximately 300m. Option PR4 is the preferred option for the Pembroke Road area for the following reasons:

- It does not require any land acquisition, in particular from properties that are on the Record of Protected Structures;
- It does not require any tree removal, which was identified as a particularly strong concern of residents and non-residents alike during the non-statutory public consultation process for the EPR Option;
- Existing footpaths along Pembroke Road can be retained and widened in some locations;

- Diversion routes for general traffic as a result of the bus gate are relatively short for those travelling by car;
- This option retains the highest amount of parking on the street, which was also noted as a concern for a large number of residents and traders in the area; and
- It has the lowest environmental impacts of any of the options.

3.4.1.3 Section 1c: Merrion Road (Sandymount Avenue to Nutley Lane)

3.4.1.4 Introduction

It was determined through a review of the topographical survey information, that land take would likely be required from a significant number of properties which were not previously identified in the EPR Option (with the information available at the time of production) to progress the EPR Option as published. It was also determined, unlike other areas along Merrion Road, that the issues identified could not be addressed through minor design refinements without amendments to the proposed cross-section.

3.4.1.5 Options Considered

A number of alternative options have been developed with the objective of addressing the issues noted in Chapter 3.3.3.2.3 relating to Merrion Road. These options are outlined below:

- *Option MR1*: EPR Option with road alignment adjustments to retain a number of trees and reduce land take where practicable (4 lane cross-section + cycle tracks).
- *Option MR2:* As per MR1 from Nutley Lane to Ailesbury Road and Shrewsbury Road to Sandymount Avenue, with the introduction of partial bus lanes in each direction together with signal-controlled bus priority between Ailesbury Road and Shrewsbury Road to enable a three-lane cross-section consisting of two general traffic lanes and a single bus lane (3-lane cross-section + cycle tracks).
- *Option MR3:* Introduction of a bus gate at each end of the route option section with two general traffic lanes between them, with retention of all trees and no impact to property boundaries (2-lane cross-section + cycle tracks).
- *Option MR4:* A three-lane cross-section of two bus lane and one-way outbound general traffic only (3-lane cross-section + cycle tracks).

3.4.1.5.1 Alternative Options Considered

No further alternative options were considered for this route option section, additional to those run through the MCA.

3.4.1.5.2 Route Option MR1

Route Description

The location of Route Option MR1 is presented in **Figure 3.35**.

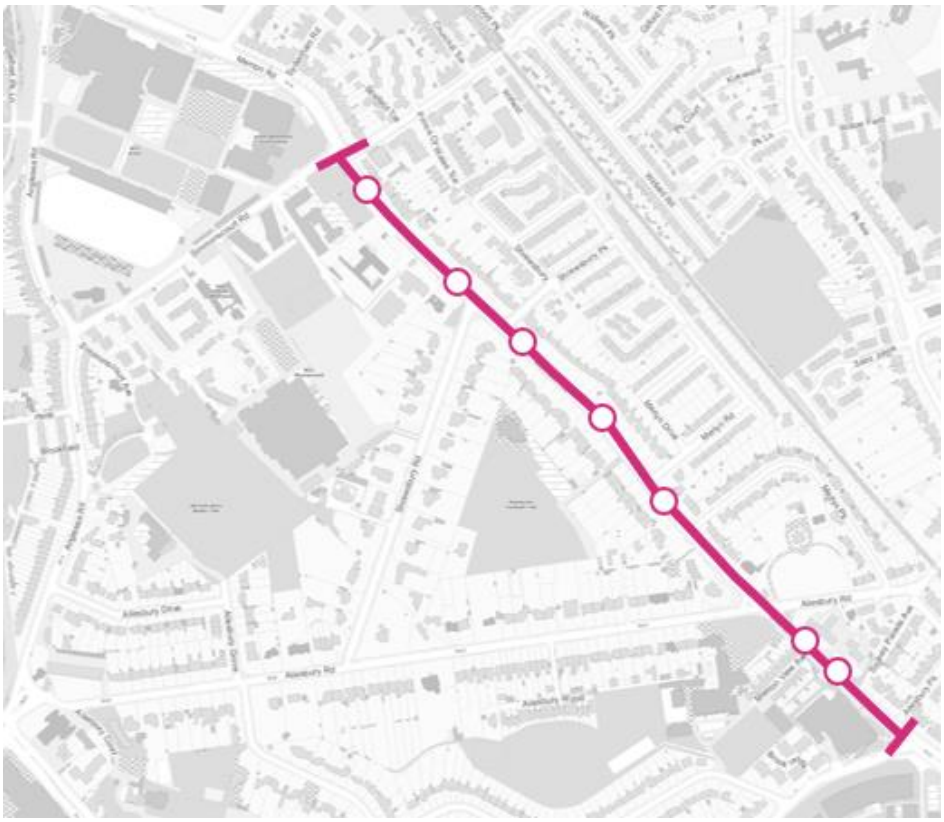

Figure 3.35: Route Option MR1

Inbound: This section of the route would commence on the Merrion Road at its junction with Nutley Lane and continue north west along Merrion Road, passing through its junctions with Ailesbury Road and Shrewsbury Road. This section terminates at the junction of Merrion Road and Sandymount Avenue.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of seven stops would likely be provided in this section, three in the inbound direction and four in the outbound direction (locations illustrated indicatively by a circle on **Figure 3.35**).

Indicative Scheme Design

Figure 3.36 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, are also presented in this figure.

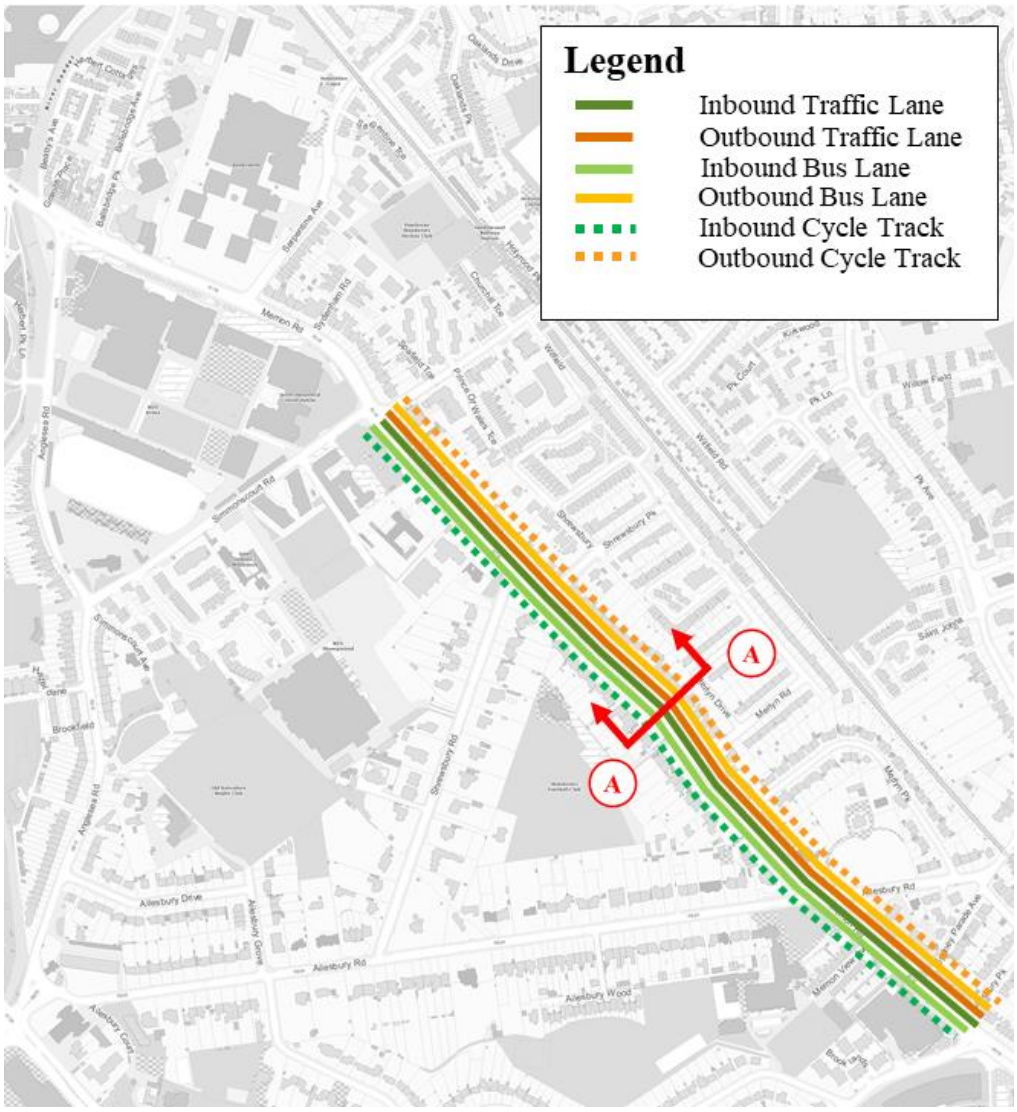

Figure 3.36: Route Option MR1 Indicative Scheme Design

This section of the route commences at the junction of the R118 Merrion Road and Nutley Lane, in front of the Merrion Shopping Centre, where the route meets the Blackrock to Merrion section. From its commencement, two bus lanes and two general traffic lanes are proposed along the entire length of this section.

This route would include the adjustment of three existing signal-controlled pedestrian crossings located in the proximity of Merrion Shopping Centre, Wanderers Rugby Club and Shrewsbury Road. Adjustments to the currently signalised junction with Ailesbury Road would also be necessary.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route option section as part of this option.

In order to provide this route option, land acquisition would be necessary from approximately 29 properties along Merrion Road.

The proposed cross-section along this section of Merrion Road is presented in **Figure 3.37**.

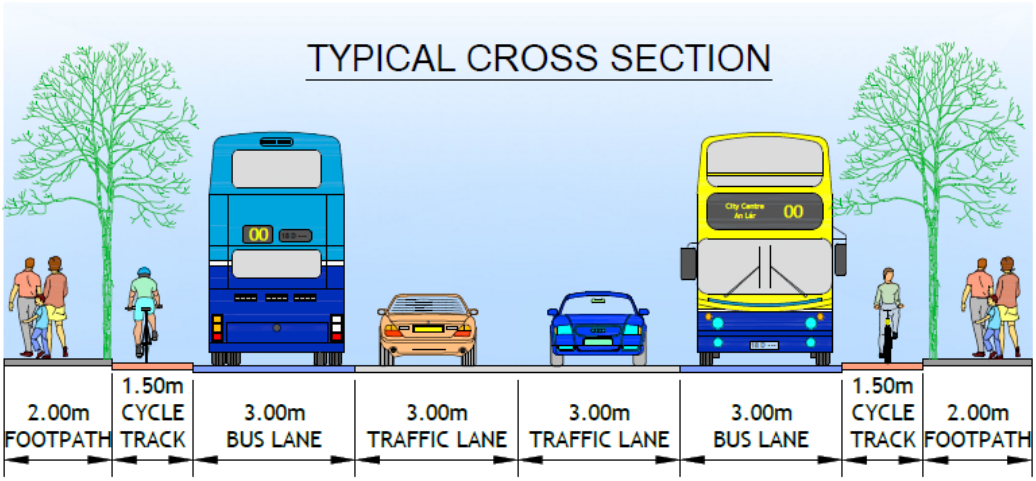

Figure 3.37: Route Option MR1 Cross-Section A-A

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions along the length of this route option section;
- An inbound and an outbound general traffic lane in both directions along the length of this route option section;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;
- Reduction in width of the existing footpath on both sides of the road;
- Adjustments to the existing signalised junction of Merrion Road and Ailesbury Road;
- Adjustments to three existing signal-controlled pedestrian crossings;
- Removal of approximately 67 existing trees; and
- Land acquisition from approximately 29 properties.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and upgraded cycle facilities. This junction is the intersection of Merrion Road and Ailesbury Road.

Adjustments to the junction would include the provision of pedestrian crossings on all four arms of the junction. There would also be a potential requirement to relocate/provide new traffic signal equipment.

The removal of the left-turn slips from both sides of Ailesbury Road is proposed along with the installation of a Protected Junction.

As part of this proposal the existing priority-controlled junction along this section, including the junction with Shrewsbury Road would remain and minor adjustments to provide continuous cycle facilities and entry treatment are proposed.

3.4.1.5.3 Route Option MR2

Route Description

The location of Route Option MR2 is presented in **Figure 3.38**.

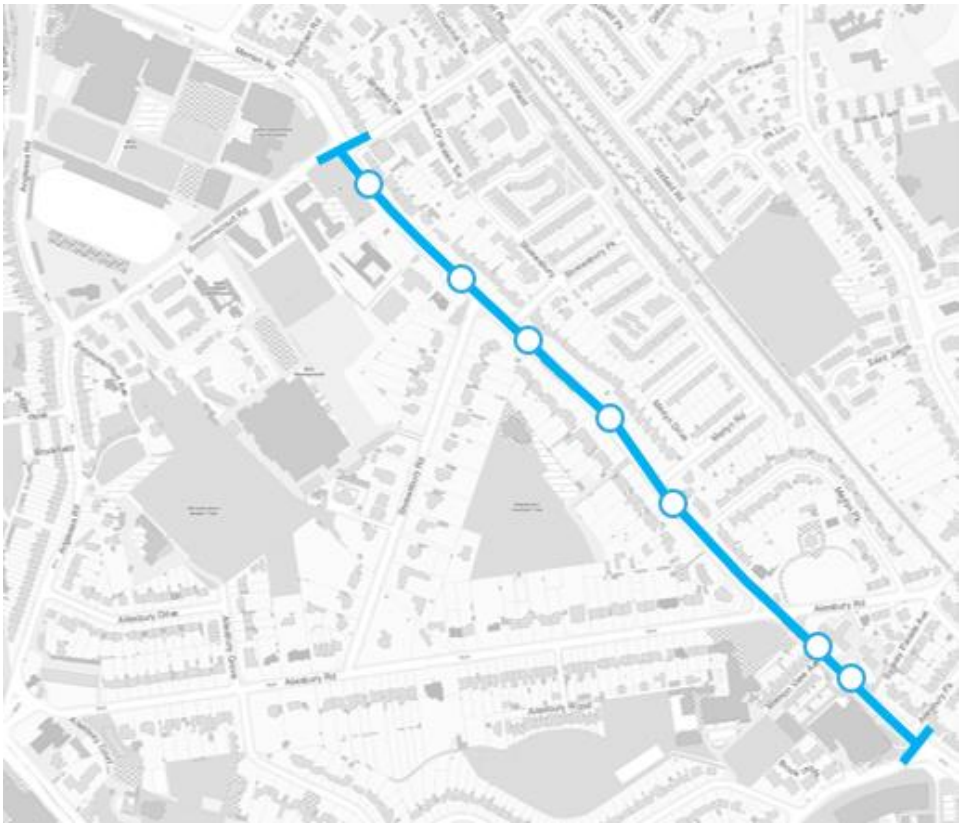

Figure 3.38: Route Option MR2
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Inbound: This section of the route would commence on the Merrion Road at its junction with Nutley Lane and continue north west along Merrion Road, passing through its junctions with Ailesbury Road and Shrewsbury Road. This section terminates at the junction of Merrion Road and Sandymount Avenue.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of seven stops would likely be provided in this section, three in the inbound direction and four in the outbound direction (locations illustrated indicatively by a circle on **Figure 3.38**).

Indicative Scheme Design

Figure 3.39 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

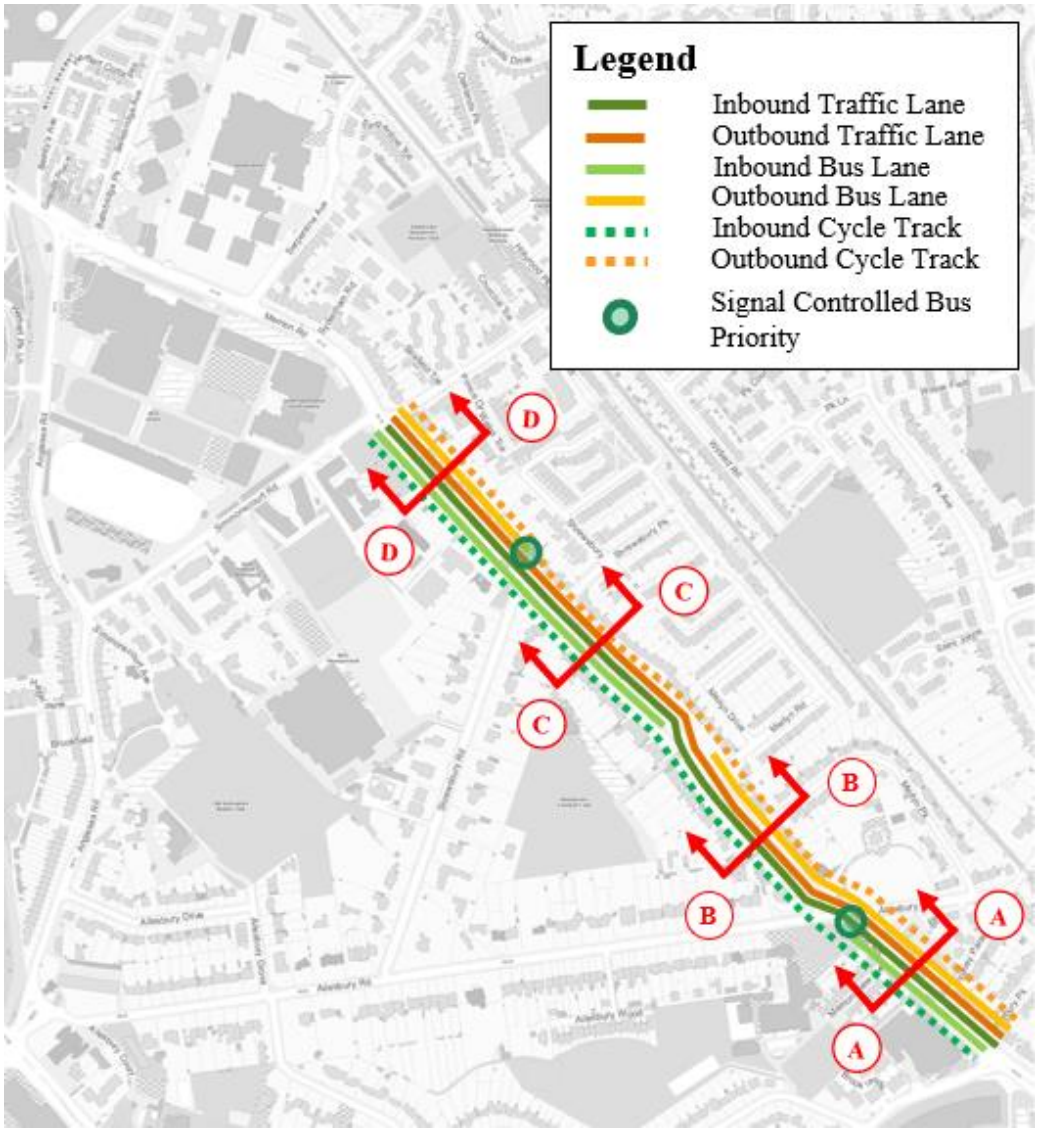

Figure 3.39: Route Option MR2 Indicative Scheme Design
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This section of the route commences at the junction of the R118 Merrion Road and Nutley Lane, in front of the Merrion Shopping Centre, where the route meets the Blackrock to Merrion section. From its commencement, two bus lanes and two general traffic lanes are proposed between Nutley Lane and Ailesbury Road, similar to Route Option MR1.

Between Ailesbury Road and Shrewsbury Road, a 3-lane cross-section is proposed with partial bus lanes and signal controlled priority provided.

This would provide for an outbound bus lane from Wanderers Rugby Club to Ailesbury Road junction and an inbound bus lane from Wanderers Rugby Club to Shrewsbury Road junction. Signal-controlled Bus Priority would be necessary at the Ailesbury Road and Shrewsbury Road junctions in order to control the flow of vehicles into this section and ensure buses can reach the bus lanes unhindered.

From Shrewsbury Road junction to Sandymount Avenue junction the proposed cross-section would revert to 2 bus lanes and 2 general traffic lanes, similar to Route Option MR1.

This route option would require the signalisation of the junction of Merrion Road and Shrewsbury Road including controlled pedestrian crossings on all arms. Accordingly, the existing pedestrian crossing adjacent to the Shrewsbury Road junction would be removed. The existing signal-controlled pedestrian crossings located in the proximity of Merrion Shopping Centre and Wanderers Rugby Club would be adjusted. Adjustments to the currently signalised junction with Ailesbury Road would also be necessary.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route as part of this option.

A significant number of existing trees along Merrion Road can be retained under this route option.

In order to provide this route option, land acquisition would be necessary from approximately 4 properties along Merrion Road.

The proposed cross-sections between Ailesbury Road and Shrewsbury Road, B-B and C-C, are presented in **Figure 3.41 and Figure 3.42**. The proposed cross-section outside of this central area, A-A and D-D, are as per Route Option MR1 and are presented in **Figure 3.40** and **Figure 3.43**.

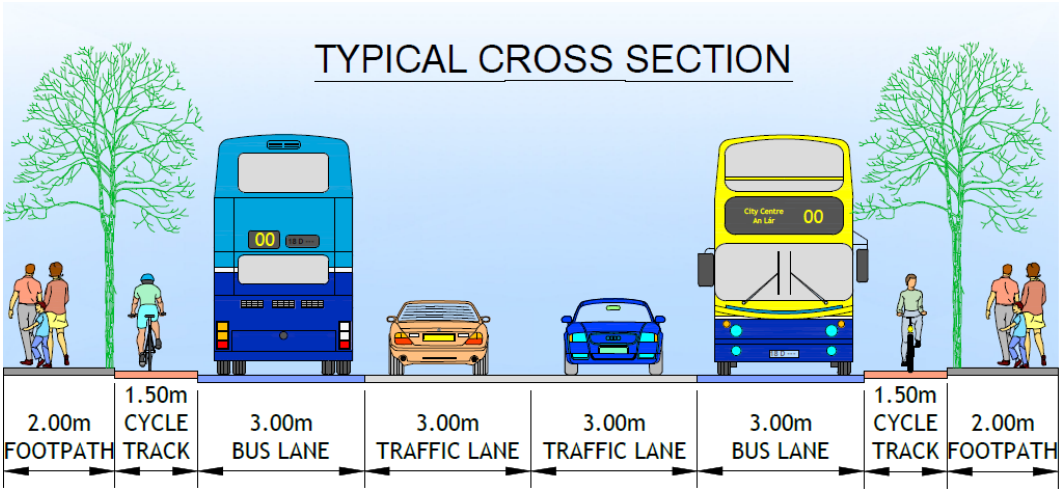

Figure 3.40: Route Option MR2 Cross-Section A-A

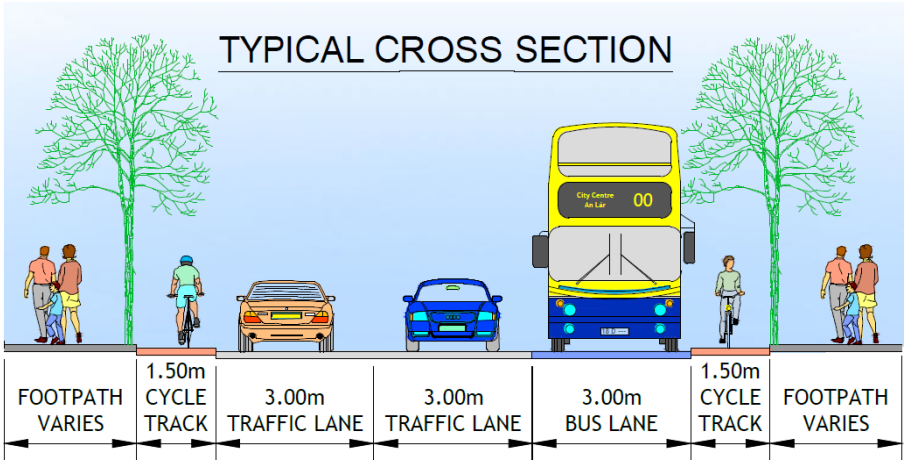

Figure 3.41: Route Option MR2 Cross-Section B-B

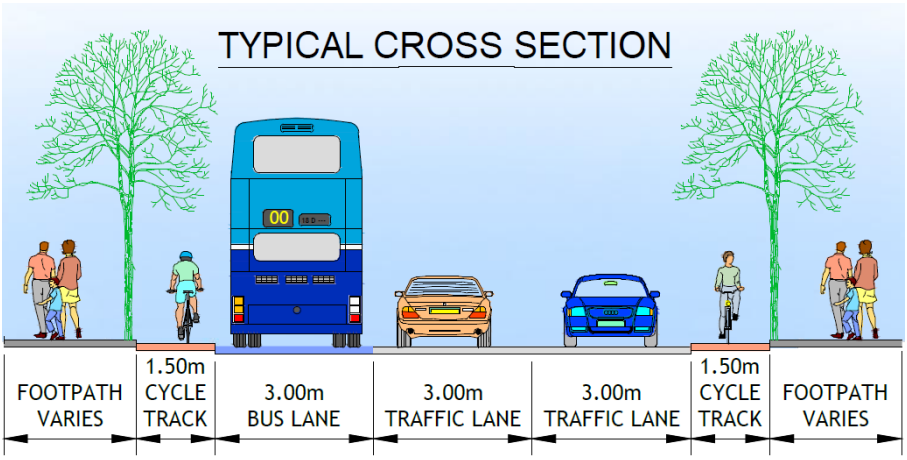

Figure 3.42: Route Option MR2 Cross-Section C-C

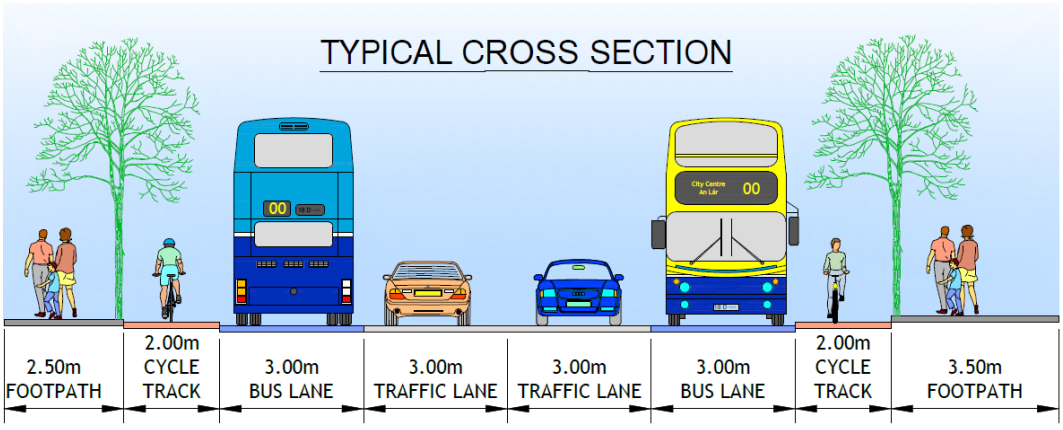

Figure 3.43: Route Option MR2 Cross-Section D-D

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions between Nutley Lane and Ailesbury Road and also between Shrewsbury Road and Sandymount Avenue;
- Partial bus lanes in each direction between Ailesbury Road and Shrewsbury Road with signal-controlled bus priority at both junctions;

- An inbound and an outbound segregated cycle track in both directions along the full length of this route option section;
- Adjustments to the existing signalised junction of Merrion Road and Ailesbury Road;
- Signalisation of the existing priority junction of Merrion Road and Shrewsbury Road;
- Adjustments to two existing signal-controlled pedestrian crossings and the removal of the existing signal-controlled pedestrian crossing adjacent to Shrewsbury Road;
- Removal of approximately 37 existing trees; and
- Land acquisition from approximately 4 properties.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and upgraded cycle facilities. This junction is the intersection of Merrion Road and Ailesbury Road. Adjustments to the junction would include the provision of pedestrian crossings on all four arms of the junction. There would also be a potential requirement to relocate/provide new traffic signal equipment. The removal of the left-turn slips from both sides of Ailesbury Road is proposed along with the installation of a Protected Junction.

As part of this proposal the existing priority-controlled junction of Merrion Road and Shrewsbury Road would be upgraded to a signal-controlled junction incorporating controlled pedestrian crossings on all three arms of the junction along with the installation of a Protected Junction.

The other existing priority-controlled junctions would remain and minor adjustments to provide continuous cycle facilities and entry treatment are proposed.

3.4.1.5.4 Route Option MR3

Route Description

The location of Route Option MR3 is presented in **Figure 3.44**.

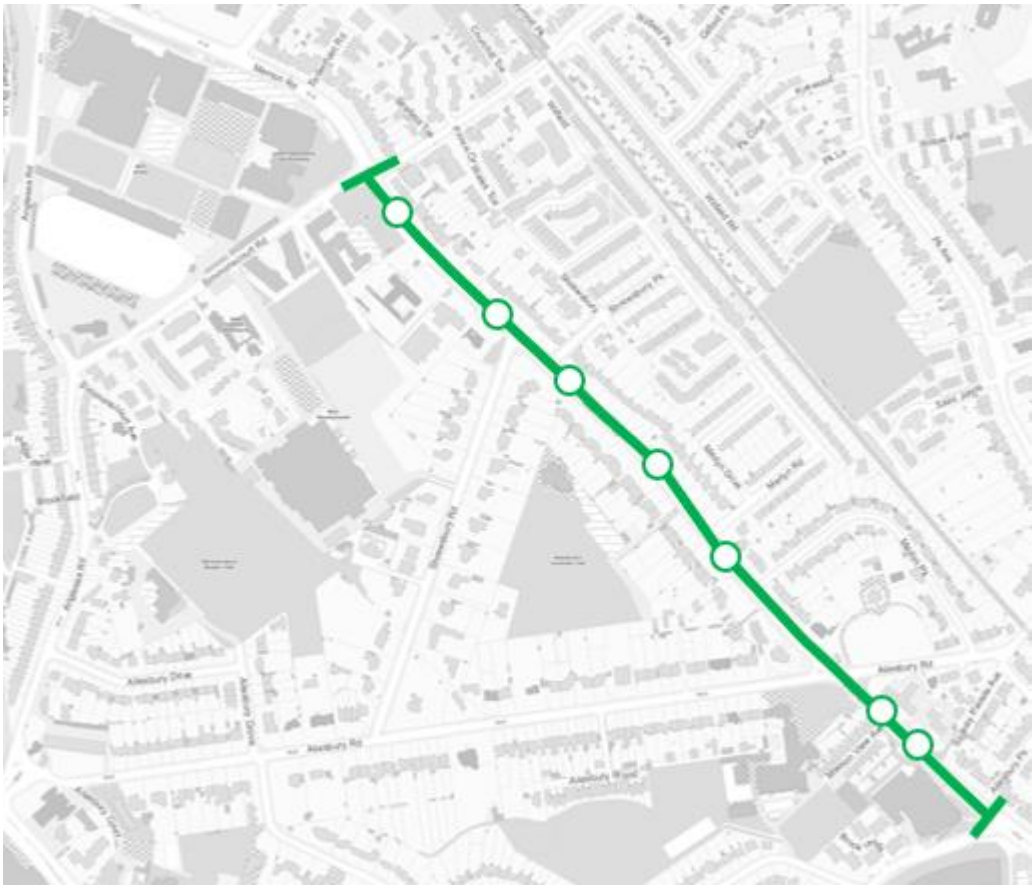

Figure 3.44: Route Option MR3
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Inbound: This section of the route would commence on the Merrion Road at its junction with Nutley Lane and continue north west along Merrion Road, passing through its junctions with Ailesbury Road and Shrewsbury Road. This section terminates at the junction of Merrion Road and Sandymount Avenue.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of seven stops would likely be provided in this section, three in the inbound direction and four in the outbound direction (locations illustrated indicatively by a circle on **Figure 3.44**.

Indicative Scheme Design

Figure 3.45 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

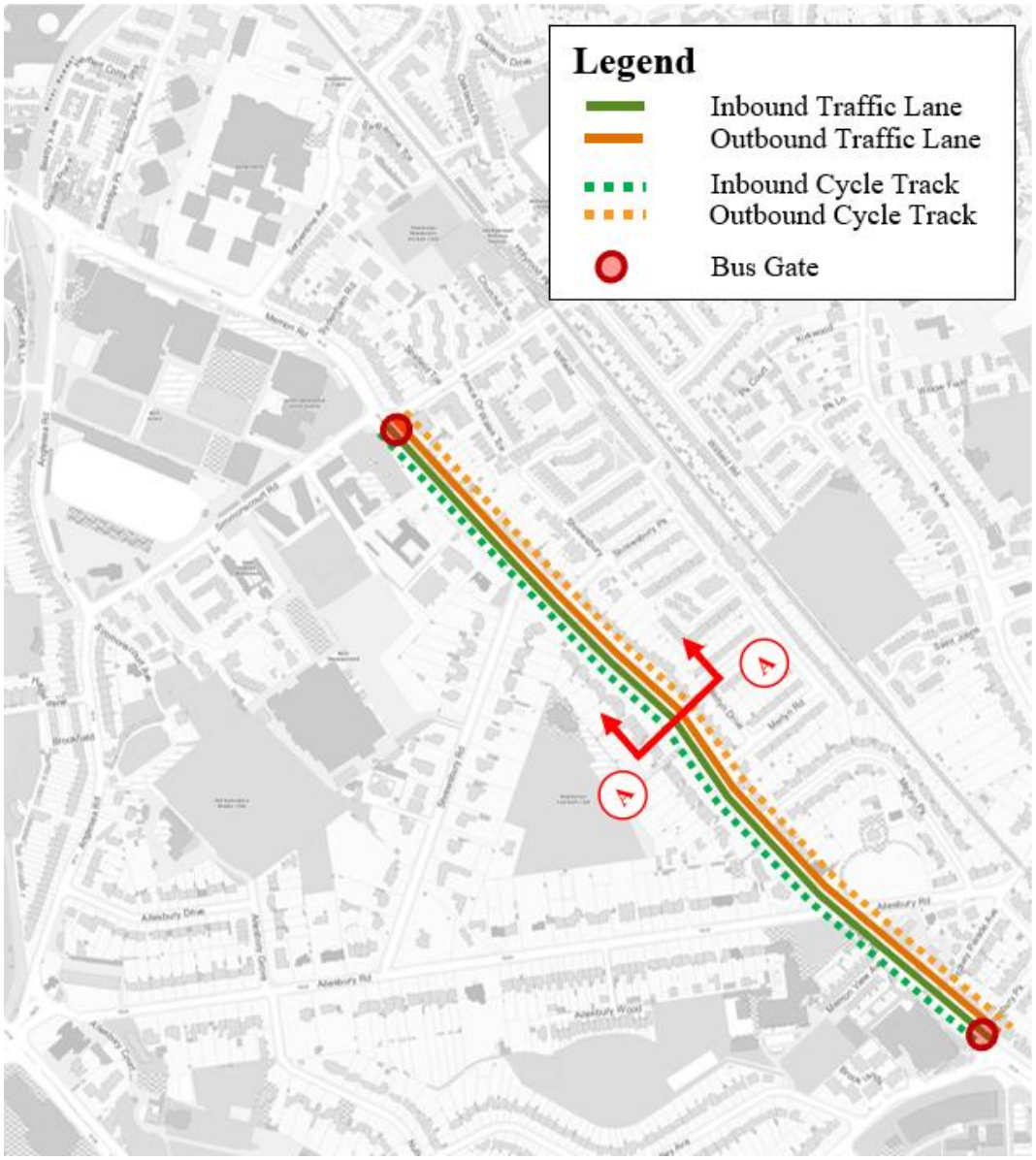

Figure 3.45: Route Option MR3 Indicative Scheme Design
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The route option requires the installation of two bus gates at either end of the route option section.

The first bus gate would be located on the section of Merrion Road between Nutley Lane and Ailesbury Road while the second bus gate would be located on the section of Merrion Road between Shrewsbury Road and Sandymount Avenue.

These bus gates could be positioned at any location along these sections and would be subject to further consultation with residents and stakeholders, however, for the purpose of this assessment it is assumed that they are located at the junction with Nutley Lane on the Ailesbury Road side and at the junction of Sandymount Avenue on the Shrewsbury Road side respectively.

The installation of bus gates at either end of this route option section provides bus priority by virtue of the removal of all through traffic from this section of Merrion Road. Only vehicles with a destination along this section of Merrion Road would be present and would share the road space with buses travelling through. This results in a two-vehicle lane cross-section along the length of this route option section.

This bus gate would remove all through traffic from Merrion Road in both directions. Local access and egress via Ailesbury Road and Shrewsbury Road would remain. Inbound vehicles wishing to get to Ballsbridge and beyond would travel on alternative routes, e.g. Nutley Lane, the R138 Stillorgan Road, Anglesea Road, Strand Road. Outbound vehicles wishing to get to Blackrock and beyond would follow a similar reversed diversion route. Along with these diversion routes there would be a potential for rat-running on adjacent residential streets such as Ailesbury Drive and Nutley Road. Buses would share the general traffic lane but would not experience notable delays due to the removal of traffic from Merrion Road.

Existing footpaths would be retained, and segregated cycle tracks are proposed on both sides of the road along the entire length of the route as part of this route option.

All existing trees along Merrion Road can be retained under this route option and no land acquisition would be necessary.

The proposed cross-section along this section of Merrion Road is presented in **Figure 3.46**.

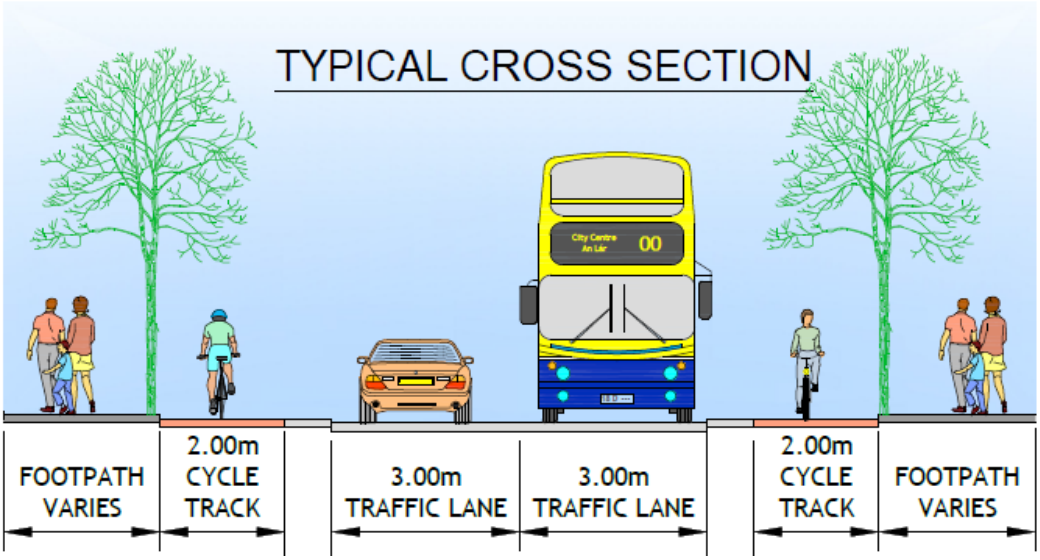

Figure 3.46: Route Option MR3 Cross-Section A-A

In summary, this route option would have the following characteristics:

- Installation of a bus gate at both ends of this route option section;
- Bus priority achieved through removal of all through traffic along Merrion Road;

- An inbound and an outbound segregated cycle track in both directions along the full length of this route option section;
- Adjustments to the existing signalised junction of Merrion Road and Ailesbury Road;
- Retention of three existing signal-controlled pedestrian crossings;
- Retention of existing footpaths;
- Retention of all existing trees; and
- No land acquisition necessary.

Junctions:

There is currently one existing signalised junction along this route option, which would require upgrading to facilitate upgraded pedestrian and cycle facilities and remove additional vehicle lanes. This junction is at the intersection of Merrion Road and Ailesbury Road. Adjustments to the junction would include the removal of a traffic lane on both approaches from Merrion Road and the provision of pedestrian crossings on all four arms of the junction. The removal of the left-turn slips from both sides of Ailesbury Road is proposed along with the installation of a Protected Junction.

As part of this proposal the existing priority-controlled junction along this section, including the junction with Shrewsbury Road would remain and minor adjustments to provide continuous cycle facilities and entry treatment are proposed.

3.4.1.5.5 Route Option MR4

Route Description

The location of Route Option MR4 is presented in **Figure 3.47**.

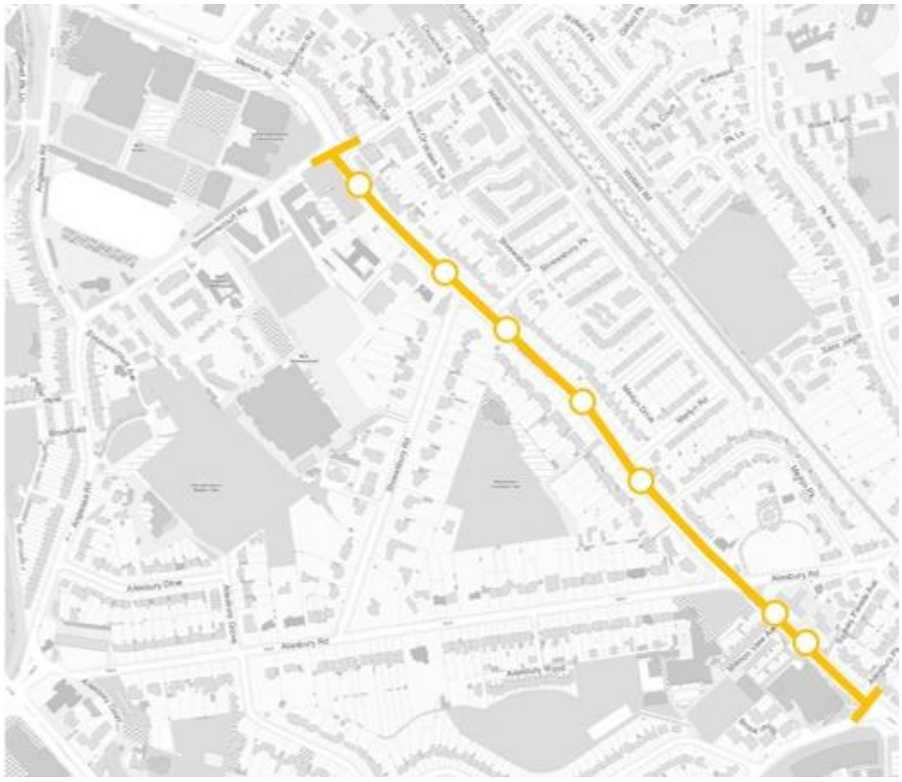

Figure 3.47: Route Option MR4
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Inbound: This section of the route would commence on the Merrion Road at its junction with Nutley Lane and continue north west along Merrion Road, passing through its junctions with Ailesbury Road and Shrewsbury Road. This section terminates at the junction of Merrion Road and Sandymount Avenue.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of seven stops would likely be provided in this section, three in the inbound direction and four in the outbound direction (locations illustrated indicatively by a circle on **Figure 3.47**).

Indicative Scheme Design

Figure 3.48 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections describing this route option is also presented in this figure.

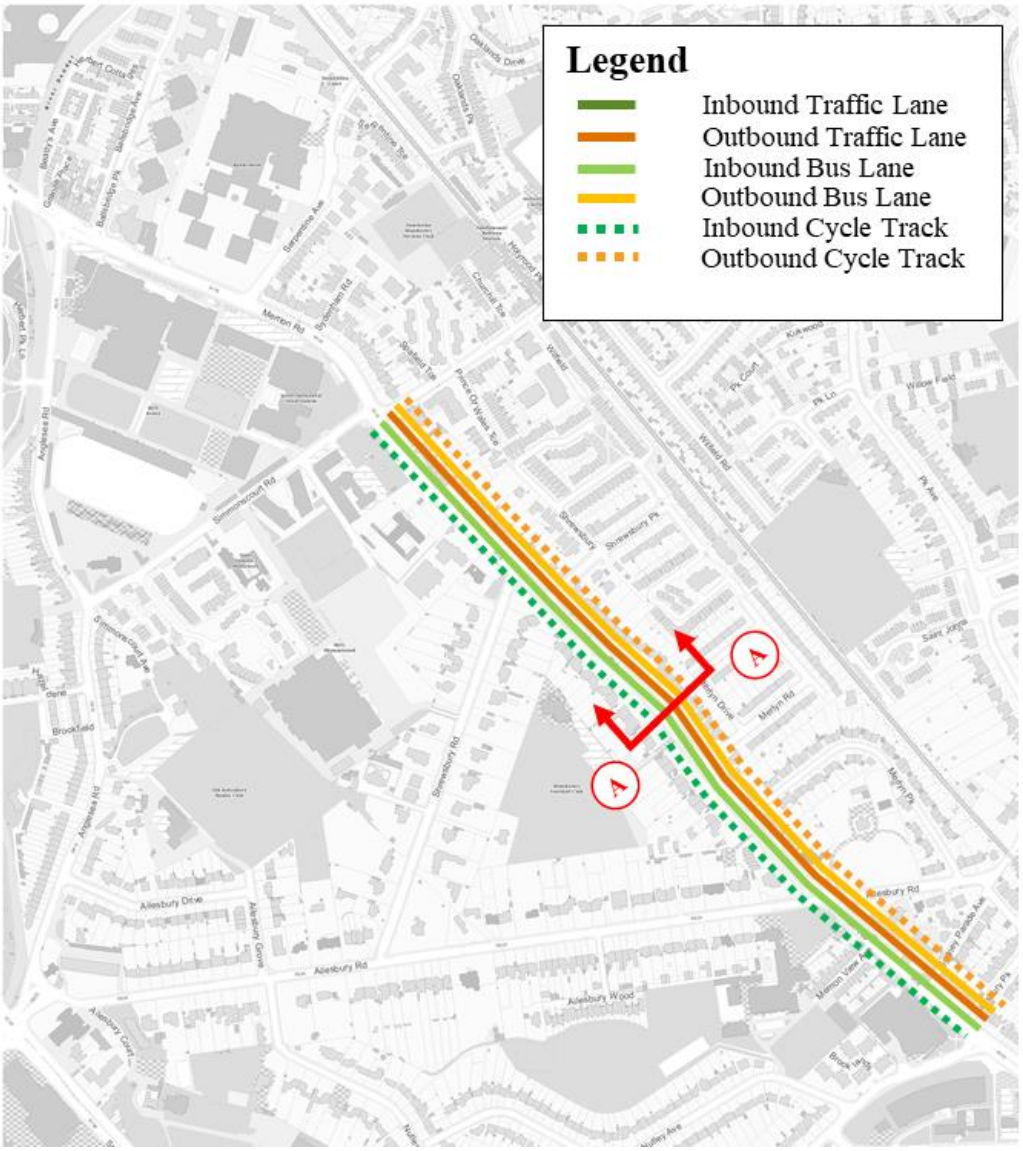

Figure 3.48: Route Option MR4 Indicative Scheme Design
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This section of the route commences at the junction of the R118 Merrion Road and Nutley Lane, in front of the Merrion Shopping Centre, where the route meets the Blackrock to Merrion section. From its commencement, two bus lanes are proposed along the entire length of this route option section. This section of Merrion Road would become one-way for general traffic in the outbound direction, resulting in a three-lane cross-section along the length of this route option.

This route option would include the adjustment of three existing signal controlled pedestrian crossings located in the proximity of Merrion Shopping Centre, Wanderers Rugby Club and Shrewsbury Road. Adjustments to the currently signalised junction with Ailesbury Road would also be necessary.

Segregated cycle tracks are proposed on both sides of the road along the entire length of the route option section as part of this option.

In order to provide this route option no land acquisition would be necessary.

The proposed cross-section along this section of Merrion Road is presented in **Figure 3.49**.

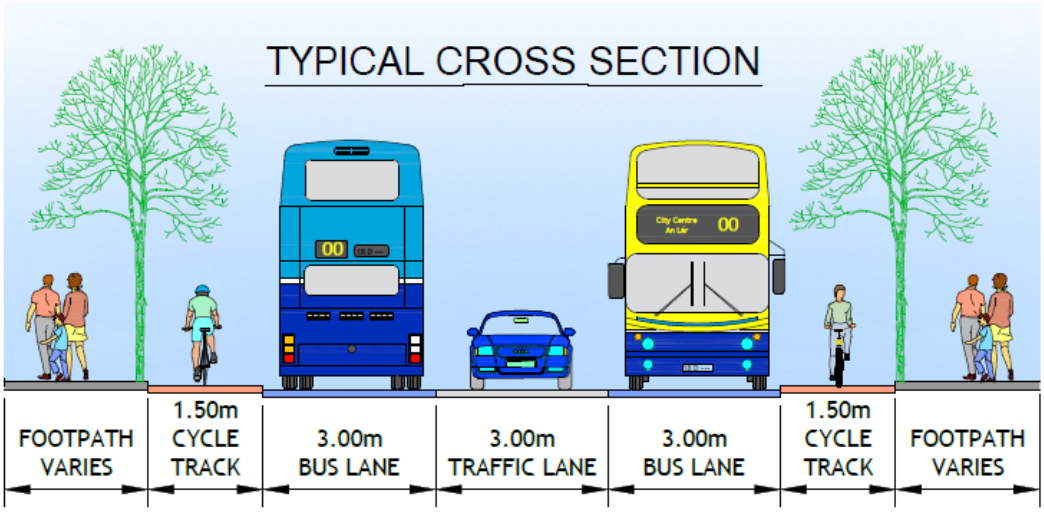

Figure 3.49: Route Option MR4 Cross-Section A-A

In summary, this route option would have the following characteristics:

- An inbound and an outbound bus lane in both directions along the length of this route option section;
- One-way only for general traffic in an outbound direction from Sandymount Avenue to Nutley Lane;
- An inbound and an outbound segregated cycle track in both directions along the length of this route option section;
- Adjustments to the existing signalised junction of Merrion Road and Ailesbury Road;
- Retention of three existing signal-controlled pedestrian crossings;
- Removal of approximately 21 existing trees; and
- No land acquisition necessary.

Junctions:

There is currently one existing signalised junction along this route option, which would require upgrading to facilitate upgraded pedestrian and cycle facilities and remove additional vehicle lanes. This junction is the intersection of Merrion Road and Ailesbury Road.

Adjustments to the junction would include the removal of a traffic lane on both approaches from Merrion Road, the provision of pedestrian crossings on all four arms of the junction. The removal of the left-turn slips from both sides of Ailesbury Road is proposed along with the installation of a Protected Junction.

As part of this proposal the existing priority-controlled junction along this section, including the junction with Shrewsbury Road would remain and minor adjustments to provide continuous cycle facilities and entry treatment are proposed together with adjustments necessary to reflect the one-way system proposed.

3.4.1.6 Section 1c Route Options Assessment

Details of the route options assessment undertaken for the Merrion Road study area section are presented in Appendix F. The relative ranking of route options against the scheme assessment sub-criteria is summarised in **Table 3.7**.

Table 3.7: Section 1c Route Options Assessment Summary (Sub-Criteria)

Appraisal Criteria	Sub-Criteria	Option MR1	Option MR2	Option MR3	Option MR4
1 Economy	1A Capital Cost				
	1B Transport Quality & Reliability				
2 Integration	2A Land Use Policy				
	2B Residential Population and Employment Catchments				
	2C Transport Network Integration				
	2D Cycle Network integration				
	2E Traffic Network Integration				
3 Accessibility & Social Inclusion	3A Key Trip Attractors				
	3B Deprived Geographic Areas				
4 Safety	4A Road Safety				
	4B Pedestrian Safety				
5 Environment	5A Archaeology & Cultural Heritage				
	5B Architectural Heritage				
	5C Flora & Fauna				
	5D Soils, Geology & Hydrogeology				
	5E Landscape & Visual				
	5F Air Quality				
	5G Noise & Vibration				
	5H Land Use Character				

Option MR1 is the most expensive option in terms of Capital Cost due to the significant land acquisition costs associated with it and having the largest area of construction.

Option MR3's capital costs are less due to no land acquisition being required and existing footpaths being retained. Options MR2 and MR4 also perform well under this sub-criterion when compared with Option MR1.

In terms of Transport Quality & Reliability, Options MR1 and MR4 perform well as full physical bus priority is provided throughout. Options MR2 and MR3 perform slightly worse due to buses being required to share the general traffic lane for sections of Merrion Road.

All options serve the same catchments and as such are ranked equally in relation to Land Use Policy, and Residential Population and Employment Catchments. Similarly, in terms of transport network integration, as all options follow the same route, the opportunity for interchange with other routes is equal.

In terms of cycle network integration, all options are also ranked equal as they all provide segregated cycle facilities along the full route.

In relation to Traffic Network Integration, Option MR1 is ranked as the highest performing option as it is free from any additional restrictions being applied to the traffic network. Option MR2 also performs well under this criterion as no restrictions are applied, however additional delay to traffic would occur due to the bus priority system required. Options MR3 and MR4 both perform poorly under this criterion as both rely on significant traffic restrictions along the corridor, with MR3 performing the worst as it impedes both inbound and outbound traffic whereas MR4 only impedes inbound traffic.

All options rank equally under Accessibility and Social Inclusion as they all follow the same route.

All options rank equally under Safety as they all require the same number of turning movements at junctions and all options provide for pedestrian footpaths and crossings.

All options rank equally in relation to Archaeology & Cultural Heritage, Architectural Heritage and Soils, Geology and Hydrogeology.

Option MR1 ranks the worst in relation to Flora and Fauna as it requires the removal of the largest number of trees. Option MR3 ranks as the best under this criterion as no trees would be lost in this option.

Similarly, MR1 ranks the worst regarding Landscape and Visual due to the removal of all trees along this section and some trees within private property and the removal of existing boundaries. Option MR3 does not require the removal of trees or boundaries and, therefore, was ranked the highest. Options MR2 and MR4 were ranked poorly under this criterion relative to Option MR3, primarily due to tree removal.

Under the Air Quality sub-criterion, Options MR3 and MR4 have a positive impact along Merrion Road as both would result in reduced volumes of traffic along Merrion Road while Options MR1 and MR2 would both retain the existing traffic volumes in this section.

Similarly, under Noise & Vibration, due to the anticipated traffic volumes, Option MR3 is ranked as the highest followed by Option MR4, while relatively, Options MR1 and MR2 do not perform well.

With respect to Land Use Character, Option MR1 is ranked the lowest due to the removal of the highest number of trees and the necessary land acquisition. Option MR3 is ranked highest under this category

A summary of the assessment and relative ranking of route options against the five main assessment criteria is presented in **Table 3.8**.

Table 3.8: Section 1c Criteria MCA Summary

Appraisal Criteria	Option MR1	Option MR2	Option MR3	Option MR4
1 Economy				
2 Integration				
3 Accessibility & Social Inclusion				
4 Safety				
5 Environment				

3.4.1.7 Section 1c Conclusion and Preferred Option

Based on the assessment undertaken, Route Option MR2 offers more benefits over the other options. It performs well under all criteria, with the exception of Environment due to the fact that some trees would require removal and traffic volumes along the route would not be reduced relative to Option MR3. While Option MR3 did perform well under many criteria, the impacts in relation to traffic network integration are so severe and in particular the likely associated impacts on adjacent residential streets due to rat-running (e.g. Nutley Road and Ailesbury Drive), that this option is not being selected. Option MR2 is the preferred option for the Merrion Road (Nutley Lane to Sandymount Avenue) route option section for the following reasons:

- It provides physical bus priority along the majority of the section, with the exception of a short section of Merrion Road between Ailesbury Road and Wanderers Rugby Club inbound and between Shrewsbury Road and Wanderers Rugby Club outbound where it is proposed to manage bus priority through this short section using signal-controlled priority;
- It provides a continuous high-quality cycle facility along its length;
- It significantly reduces the number of trees required to be removed relative to the EPR Option;
- It significantly reduces the amount of land acquisition necessary relative to the EPR Option; and
- All local access and through movements for all modes are retained.

3.4.2 Section 2 Option Assessment: Nutley Lane

3.4.2.1 Introduction

Numerous submissions from the public highlighted the perceived safety concerns relating to multiple conflict points for residents exiting/entering homes by car due to the potential requirement for drivers to cross a footpath, a cycle path, a bus lane, and either enter a car lane or cross one to enter another. A number of submissions questioned the need for both cycle and bus provision on Nutley Lane, with alternative suggestion for cycle facilities being Woodbine Road/Trimleston Avenue or Booterstown Avenue.

Nutley Lane is particularly constrained in terms of the available width and the removal of or amendment to cycle facilities on this section would result in a reduced cross-section to that required. As such, this section of the route has been separately brought through an initial assessment to determine the optimum alternative cycle route for this section. The preferred alternative cycle route was then progressed for inclusion in an assessment of all alternative bus infrastructure options for the UCD Ballsbridge to City Centre Section route through this route option section.

3.4.2.2 Initial Assessment of Alternative Cycle Routes

3.4.2.2.1 Introduction

Prior to the assessment of principal route options for Section 2, a separate assessment of alternative cycle routes was carried out to determine the optimum arrangement for cycle facilities associated with Nutley Lane. This route option section has certain characteristics which were considered in determining the appropriateness of the cycle facilities, in that:

- it is identified as a Secondary Cycle Route on the GDA Cycle Network Plan;
- the cycle demand on this route is largely for connecting key local nodes such as UCD, RTÉ and St. Vincent's University Hospital; and
- the built form is such that the majority of accesses are consolidated on one side of the road.

Both Nutley Lane and Woodbine Road/Trimleston Avenue are designated as a Secondary Cycle Routes in the GDA Cycle Network Plan connecting the No. 13 and No. 12 Primary Cycle Routes and neither currently has any dedicated cycle facilities. Therefore, the routes are being assessed in isolation from the connecting Primary Routes.

3.4.2.2.2 Options Considered

Two potential alternative cycle facility options have been identified and are presented within this section, as illustrated in **Figure 3.50**. For completeness the EPR Option has been included in this assessment.

Figure 3.50: Section 2 Cycle Route Options
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- **Option CF1** ***(EPR Option)*** – Two single cycle tracks along the length of Nutley Lane;
- **Option CF2** – Providing a two-way cycle facility connecting from the R138 on the eastern side of Nutley Lane as far as the St. Vincent's University Hospital entrance, then reverting to the EPR Option of two single cycle tracks on both sides to Merrion Road; and
- **Option CF3 -** Parallel cycle route via Woodbine Road and Trimleston Avenue to connect UCD to Merrion Road.

These three cycle facility options have been comparatively assessed in order to determine the preferred option for a cycle route. The assessment is based on a methodology that assesses options using the 'Five Needs of a Cyclist' outlined in the National Cycle Manual Guidelines together with Capital Cost and Environmental Impacts. The cycle route options were assessed using the criteria and rationale presented in **Table 3.9**.

Table 3.9: Alternative Cycle Route Assessment Criteria

Appraisal Criteria	Rationale
1 Capital Cost	Capital cost estimates consist of both the indicative infrastructure cost estimate and land acquisition costs The cycle route infrastructure cost examines the practicality and extent of works required to accommodate cycle route infrastructure along route options. This criterion evaluates the likely costs associated with land acquisition and associated boundary/accommodation works for each route option. The assessment takes consideration of: • The number of adjacent public/commercial/ residential/industrial properties, from which land acquisition would be required as well as the extent (area) of land acquisition likely to be necessary; and • The costs associated with boundary/accommodation works.
2 Road Safety	For the purposes of comparing route options, the extent of segregation and the number of junctions along the route has been used as a proxy for road safety. The number of junctions is effectively a measure of the number of potential conflicts on the route and therefore a measure of the potential for a collision. The type of movement required by the cyclist at junctions on the route is also considered with routes where turning movements (either left or right) are required being assigned a lower ranking in terms of safety. The quality of cycle provision practically achievable on route options has been assessed. For comparison purposes, the highest level of practical cycle provision achievable on each route has been determined and compared between route options.
3 Coherence	This criterion considers whether a route option forms part of the GDA Cycle Network Plan, with routes where CBC and designated Cycle Routes overlap given a higher designation in terms of benefits arising where cycle infrastructure can be provided as part of a proposed CBC scheme. In some instances, however it may be more appropriate to provide a parallel cycle track off the CBC route. Consideration is also given to cycle routes intersecting with the CBC route. The cycle route should also link the main origin and destination zones along the CBC route.
4 Directness	For the purposes of comparing route options, the number of junctions, length of the route and the number of detours & gaps from the CBC has been used as a proxy for directness.
5 Attractiveness	The cycling environment along the route should be pleasant and interesting. Monotony and lack of points of interest along the cycle route are unattractive to cyclists. Cycle routes should also be adequately lit so as not to deter evening and night-time use.
6 Comfort	The quality of cycle provision practically achievable on route options has been assessed. For comparison purposes, the highest level of practical cycle provision achievable on each route has been determined and compared between route options.

Appraisal Criteria	Rationale
7 Environmental	The provision of segregated cycle tracks has the potential to impact on the archaeological, architectural and cultural heritage environment. At this stage of the assessment process, a conservative approach has been adopted in assessing the potential for impact and this is further described below. The provision of segregated cycle tracks has the potential to impact on flora and fauna, the townscape/streetscape along the route and on the land use character through land-take, severance or reduction of viability which prevents or reduces it from being used for its intended use.

Each of the alternative cycle routes are described in further detail in the next sub-chapter of the report.

3.4.2.2.2.1 Cycle Route Option CF1

The location of the Cycle Route Option CF1 is presented in **Figure 3.51**.

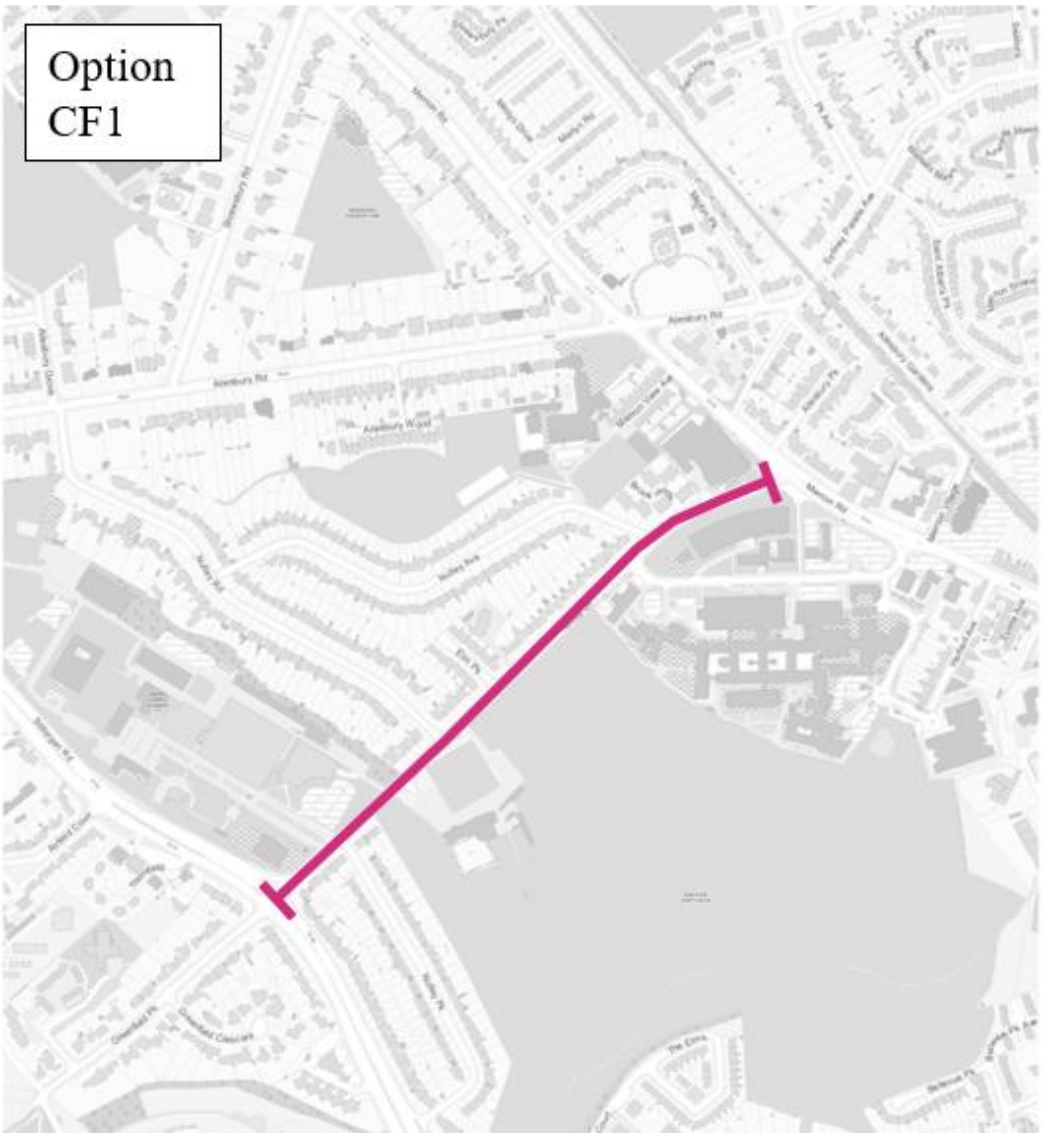

Figure 3.51: Cycle Route Option CF1

Inbound (Northbound): The single-direction cycle track would proceed down the west side of Nutley Lane from the R138.

The cycle track would then connect to the junction on Merrion Road.

Outbound (Southbound): The single-direction cycle track would proceed up the east side of Nutley Lane from Merrion Road.

The cycle track would then connect to the junction on the R138.

There is one signal-controlled junction along this route option section at the junction with St. Vincent's University Hospital. There is one proposed signal-controlled crossing along this route option section.

This segregated cycle route aligns with the GDA Cycle Network Plan proposal for the Secondary Cycle Route on Nutley Lane and the CBC.

Cycle Route CF1 scheme proposals are presented in **Figure 3.52** while sample cross-sections are illustrated in **Figure 3.53** and **Figure 3.54**.

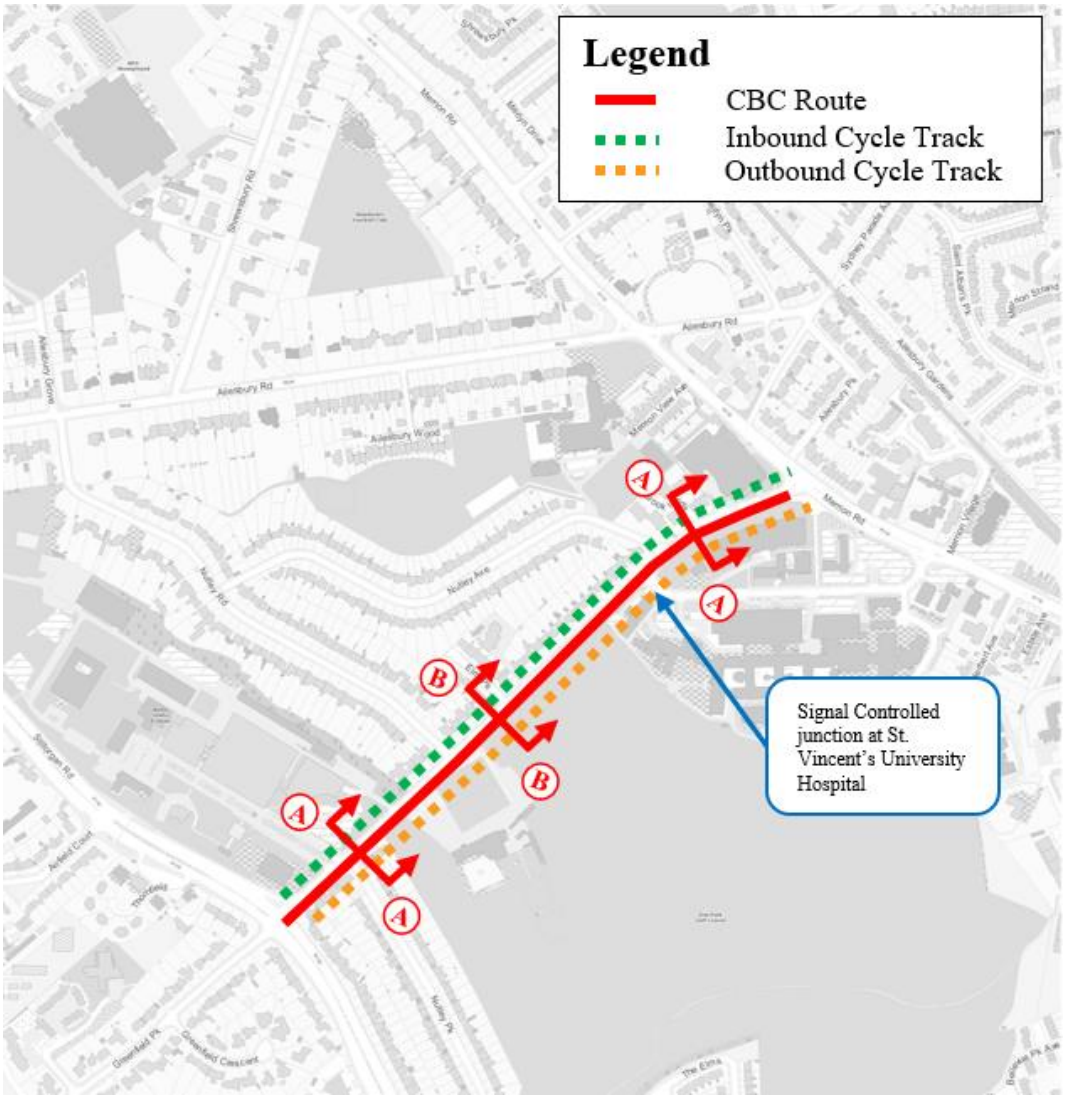

Figure 3.52: Cycle Route Option CF1 Indicative Scheme Design
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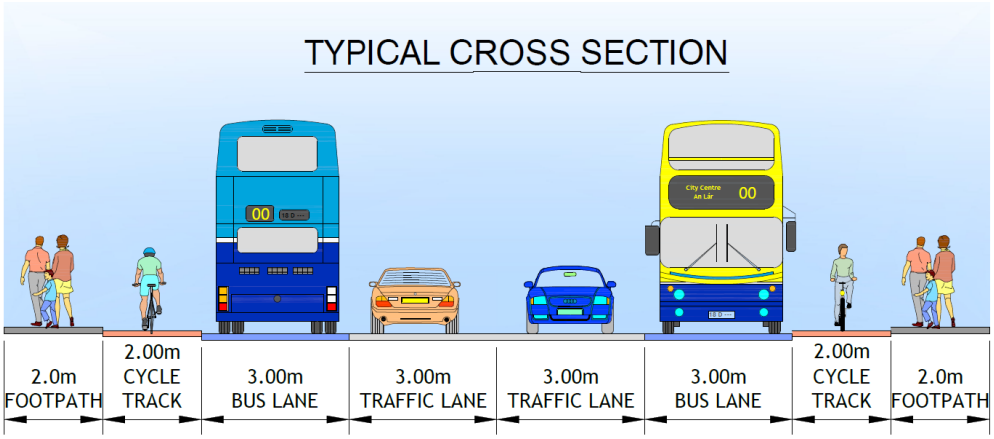

Figure 3.53: Cycle Route Option CF1 Cross-Section A-A

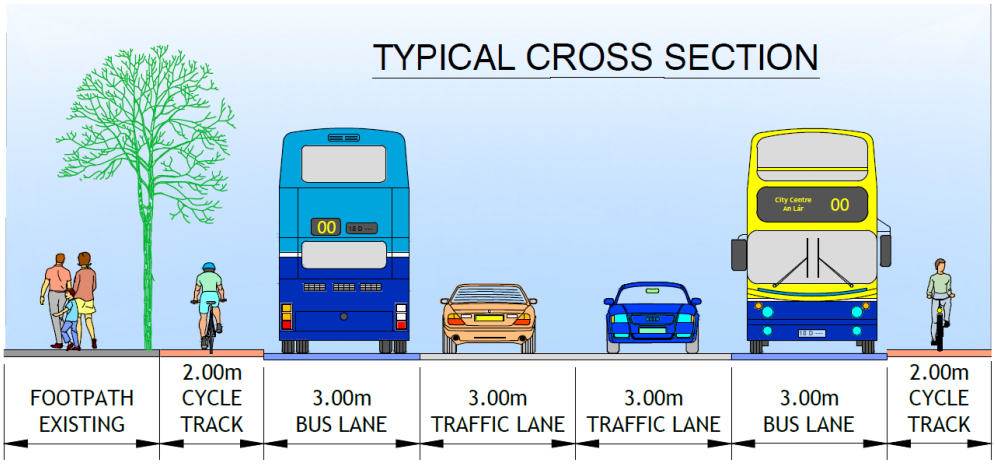

Figure 3.54: Cycle Route Option CF1 Cross-Section B-B

Cycle Route Option CF1 represents the cycle facilities presented in the EPR Option along with the design refinements such as the removal of the footpath over a portion of the route option section, i.e. adjacent to Elm Park Golf Club. This route option would provide dedicated cycle facilities in each direction on each side of Nutley Lane.

3.4.2.2.2.2 Cycle Route Option CF2

The location of Cycle Route Option CF2 is presented in **Figure 3.55**.

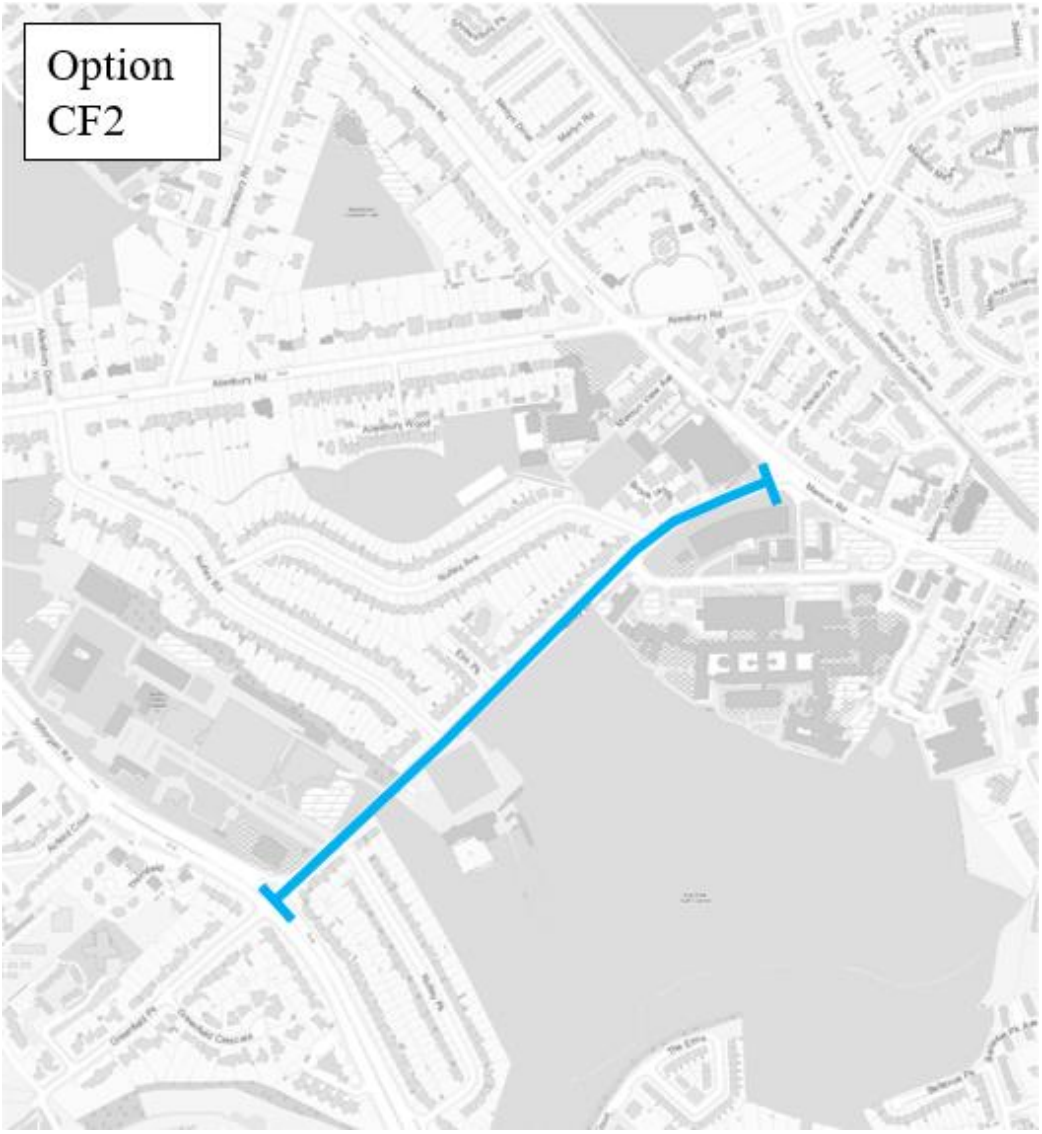

Figure 3.55: Cycle Route Option CF2

Inbound (Northbound): Northbound, the two-way cycle track would connect from the R138 Stillorgan Road where is joins the existing cycle facilities, and proceed along the eastern side of Nutley Lane. Cyclists would cross to the west side of the road via a toucan crossing at the junction with St. Vincent's University Hospital.

A single-direction cycle track would then connect from the St. Vincent's University Hospital junction to the junction on Merrion Road.

Outbound (Southbound): A single cycle track would proceed up the east side of Nutley Lane from Merrion Road.

At the signalised junction of the St. Vincent's University Hospital entrance the single cycle track would join with a proposed two-way cycle track, staying on the east side of the road.

The two-way cycle track would then continue along Nutley Lane on the eastern side adjacent to Elm Park Golf and Sports Club, connecting to the existing junction with the R138.

There is one signal-controlled junction along this route option section at the junction with St. Vincent's University Hospital. There is one proposed signal-controlled crossing along this route option section.

This segregated cycle route aligns with the GDA Cycle Network Plan proposal for the Secondary Cycle Route on Nutley Lane and the CBC.

The Cycle Route CF2 route option proposals are presented in **Figure 3.56** while sample cross-sections are presented in **Figure 3.57**, **Figure 3.58**, and **Figure 3.59**.

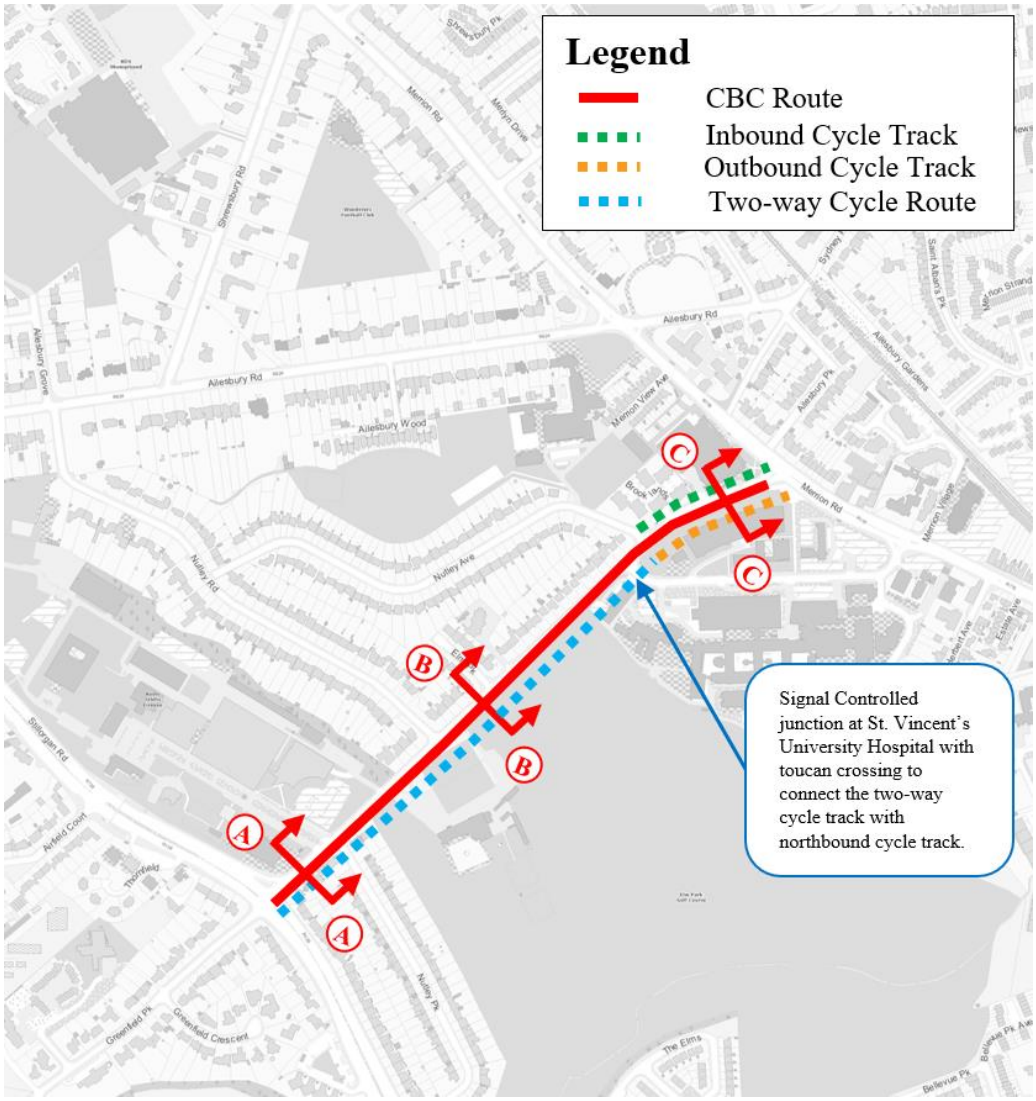

Figure 3.56: Cycle Route Option CF2 Indicative Scheme Design
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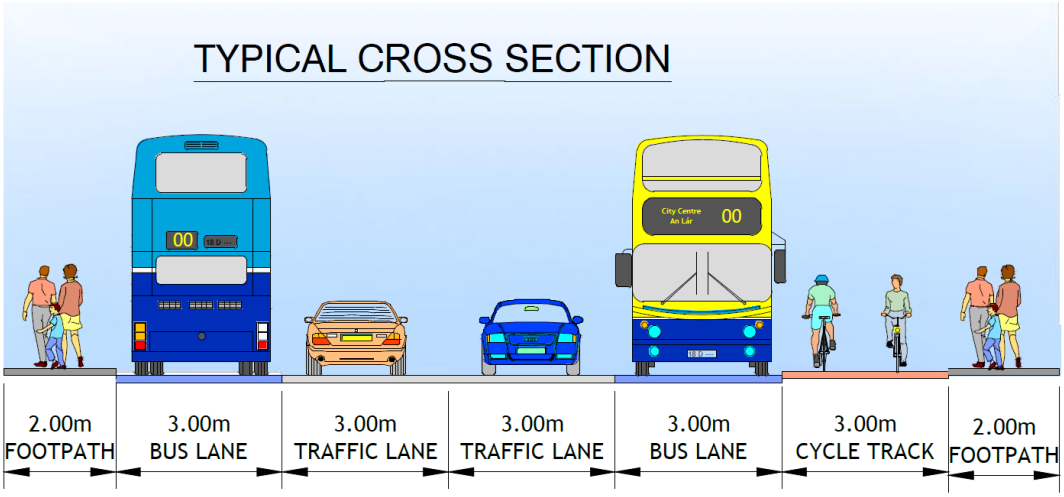

Figure 3.57: Cycle Route Option CF2 Cross-Section A-A

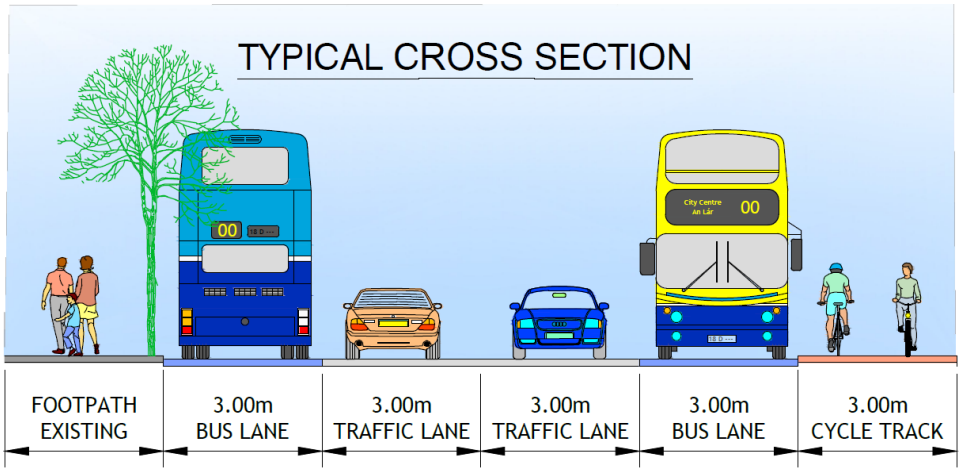

Figure 3.58: Cycle Route Option CF2 Cross-Section B-B

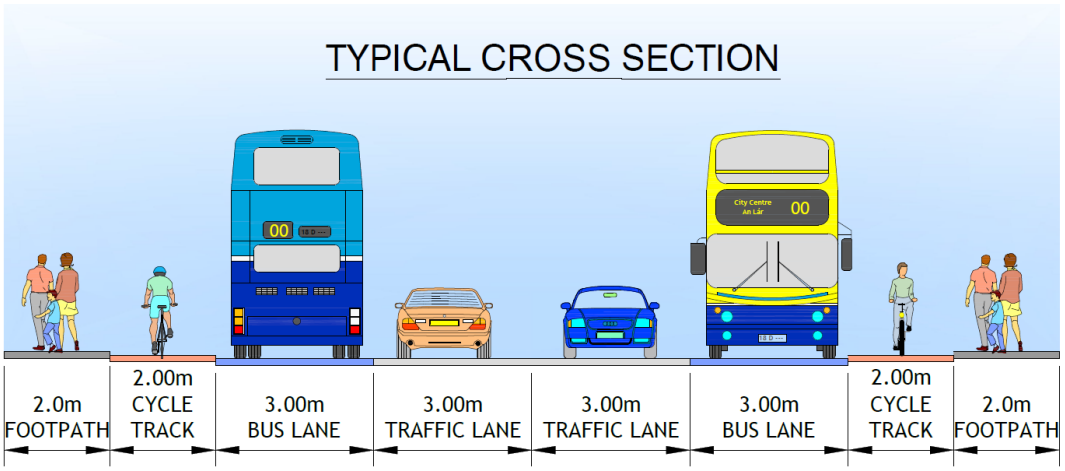

Figure 3.59: Cycle Route Option CF2 Cross-Section C-C

3.4.2.2.2.3 Cycle Route Option CF3

The location of parallel Cycle Route Option CF3 is presented in **Figure 3.60**. It is noted that this route option follows the Route Section No. 5.56 in the 'Ballsbridge to UCD Bus Corridor – Route Options Assessment'. This route section failed the Stage 1 Assessment therein due to the narrow existing carriageway, with limited scope to widen to provide both bus lanes and cycle facilities.

However, the cycle route option assessed herein would retain bus lanes on Nutley Lane and only provide cycle facilities on the parallel route, and as such, has been reassessed in this regard.

Figure 3.60: Cycle Route Option CF3
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Inbound (Northbound): The cycle route option commences on Woodbine Road at the west and east bound cycle facilities on the northern side of the R138 Stillorgan Road Interchange, then proceeds towards the Rock Road, via Woodbine Park and Trimleston Avenue. The cycle route option would continue on Woodbine Road before connecting to both the west and east bound cycle facilities on the northern side of.

Outbound (Southbound): The southbound route option follows the same route as the northbound route option.

There are no existing or proposed signal-controlled junctions nor pedestrian/toucan crossings along this route option section. This route aligns with the GDA Cycle Network Plan proposals for the Secondary Cycle Route on Woodbine Road/Trimleston Avenue but does not align with the CBC route being assessed.

Cycle Route Option CF3 proposals are presented in **Figure 3.61** while a sample cross-section is illustrated in **Figure 3.62**.

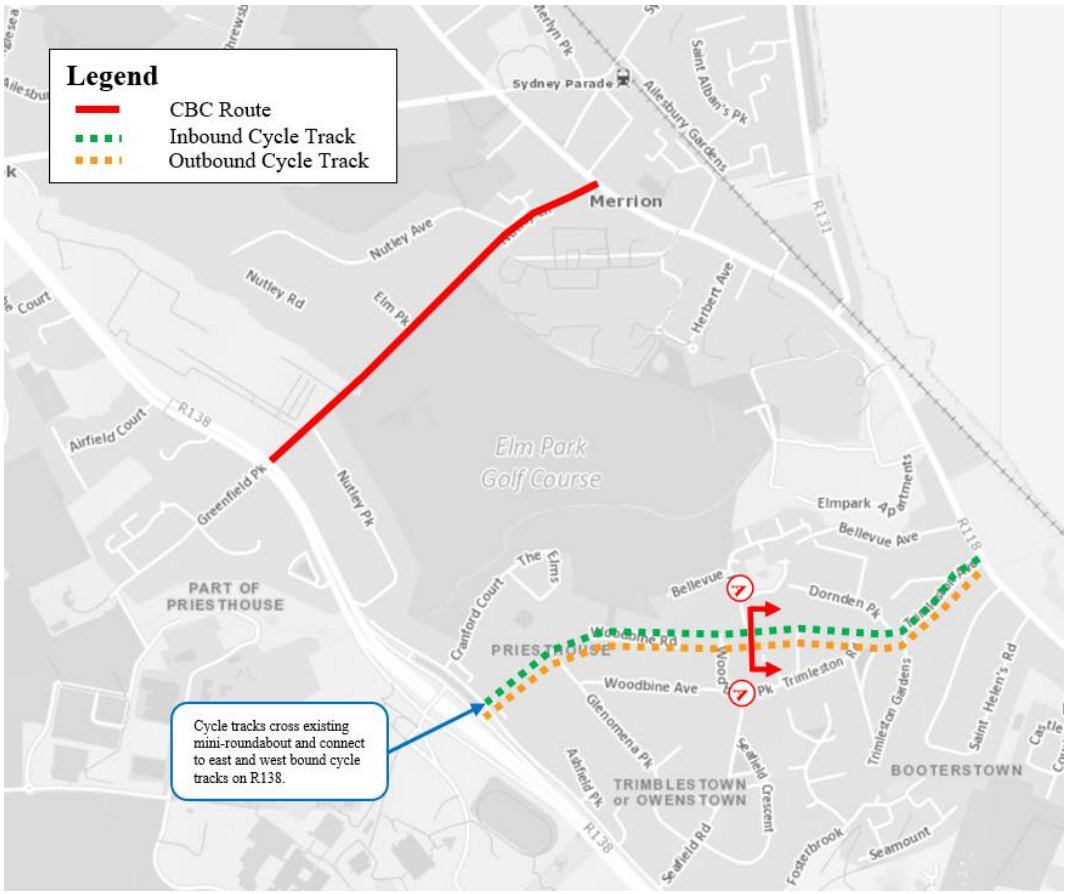

Figure 3.61: Cycle Route Option CF3 Indicative Scheme Design
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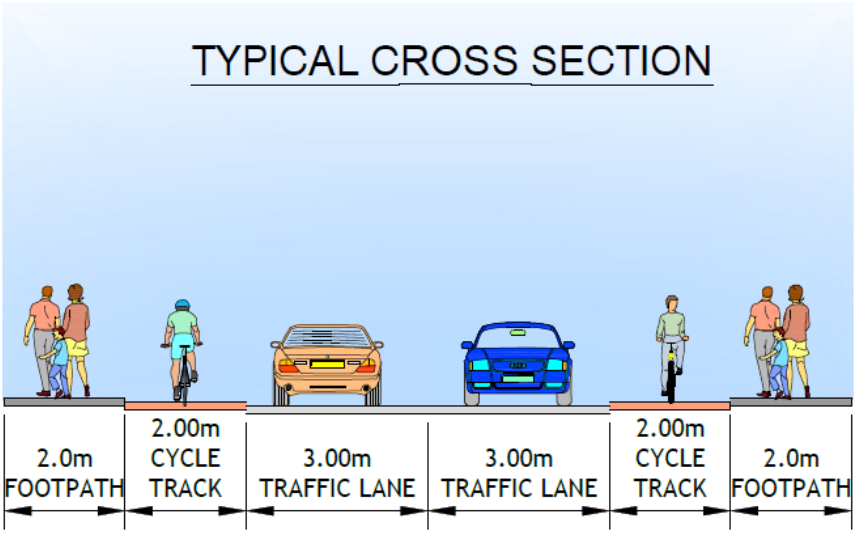

Figure 3.62: Cycle Route Option CF3 Cross-Section A-A

Cycle Route Option CF3 would provide dedicated cycle facilities in each direction on each side of Woodbine Road, Woodbine Park, Trimleston Park, and Trimleston Avenue between the R138 and Rock Road.

It is important to note that provision of this arrangement would be provided in conjunction with the required bus infrastructure related works on Nutley Lane.

Therefore, in terms of provision of infrastructure it would involve all relevant works including road widening and land acquisition on both Nutley Lane and along the length of Woodbine Road, Woodbine Park, Trimleston Park and Trimleston Avenue. Due to the width of the existing roadway along the CF3 route option section, this would require significant land acquisition generally along the south/south-eastern side of the road both in terms of number of properties impacted and in terms of encroachment into gardens.

The following constraints would need to be considered should this route option be progressed:

- Existing residential parking which would need to be removed to facilitate the works along significant sections of the route; and
- Existing boundaries which may be impacted in order to facilitate the works – boundary to boundary cross-section c. 12m in places.

3.4.2.2.3 Section 2 Cycle Route Options Assessment

Details of the cycle route options assessment undertaken for the Nutley Lane study area section are presented in Appendix G. The relative ranking of route options against the scheme assessment criteria is summarised in **Table 3.10**.

Table 3.10: Section 2 Cycle Route Options Summary MCA

Appraisal Criteria	Option CF1 (EPR)	Option CF2 (Two-way)	Option CF3 (Woodbine)
1 Capital Cost			
2 Road Safety			
3 Coherence			
4 Directness			
5 Attractiveness			
6 Comfort			
7 Environmental			

In terms of Capital Cost, Option CF2 is the cheapest option due to lower infrastructure costs and lower land acquisition costs than other options. Option CF3 is the most expensive option, due to significant land acquisition costs. Option CF1 has slightly higher infrastructure and land acquisition costs compared to CF2 due to the wider cross-section required.

In terms of Road Safety, Option CF2 performs the best overall, as it includes a significantly lower number of driveway/access crossings and conflict points compared to the other two options. An advantage that Options CF1 and CF3 have over Option CF2 is that the cycle tracks run consistently along each side of the road, whereas northbound cyclists on Option CF2 have to cross at two toucan crossings.

Options CF1 and CF2, which align with the CBC, perform well under the criterion of Coherence, since each option runs along the Secondary Cycle Network from the GDA Cycle Network Plan. As such, Options CF1 and CF2 perform marginally better than Option CF3, which does not align with the CBC, under this criterion.

In terms of directness, options which align with the CBC perform well under this criterion, as the CBC follows the most direct route. As such, Options CF1 and CF2 perform significantly better than Option CF3 under this criterion. When compared to the alignment of the CBC, Option CF3 requires a significant detour (totalling c. 3.1 km versus the c. 860m length of Nutley Lane) and includes a higher number of junctions than both other options.

In terms of Attractiveness, it is considered that all options perform comparably as they are all segregated routes, in areas of similar character with sufficient public lighting provision.

In terms of Comfort, Option CF2 provides the most segregation for cyclists in terms of crossing a minimal number driveways, access, and side roads compared to the other two options and, therefore, performs the best under this criterion.

Finally, in terms of Environment, Option CF2 performs the best under this criterion as it has the lowest impact on property and trees. Option CF1 has a larger impact on properties and trees than CF2 due to the wider cross-section required, and so performs marginally worse under this criterion. Option CF3 would have a significantly larger impact on properties and trees due to the required road widening required along the majority of the route option section than other options and so performs worst under this criterion.

3.4.2.2.4 Section 2 Alternative Cycle Route Options Conclusion and Draft Preferred Option

Based on the assessment undertaken, Cycle Route Option CF2 offers more benefits over the other two options. Other than being comparable with both other options on Attractiveness and comparable with Option CF1 on Directness and Coherence, it performs significantly better than other options in terms of key criteria, namely Capital Cost, Road Safety and Environment, as well as being favourable in terms of Comfort. Option CF2 is therefore the preferred cycle route option for the Nutley Lane route option section for the following reasons:

- It is the most cost effective due to the narrower cross-section required and the resultant reduced infrastructure and land acquisition costs;
- It provides a safe and comfortable facility for cyclists along the UCD Ballsbridge to City Centre Section, avoiding conflict with a significant quantity of driveways and accesses;
- It forms part of a direct linkage between UCD and St. Vincent's University Hospital; and
- Due to the narrower cross-section relative to Option CF1 and the available road space relative to Option CF3, it results in the lowest Environmental impact in terms of properties and trees.

Cycle Route Option CF2 will be brought forward to the principal route options assessment for Section 2.

3.4.2.3 Nutley Lane – Principal Route Options

3.4.2.3.1 Introduction

From a review of submissions received as part of the public consultation for this route, as well as a review of the topographical survey carried out subsequent to the publication of the EPR Option for the UCD Ballsbridge to City Centre Section, a number of issues have been identified with the delivery of this section of the EPR Option as previously proposed. The proposed removal of on-street trees and those in front gardens was a significant cause for concern amongst residents. A number of submissions were based around the increase in the cross-section of what is currently perceived as a residential road with through traffic. In addition, based on a review of the topographical survey file, there is now a clearer indication of the potential impact to adjacent properties and the nature of the potential land take.

These issues primarily relate to the section of Nutley Lane between the St. Vincent's University Hospital entrance and the Elm Park Golf Club entrance due to the number of residential properties fronting onto the north-western side of the road and the number of on-street trees affected.

3.4.2.3.2 Options Considered

Following the initial assessment of cycle route options, seven options for the delivery of the UCD Ballsbridge to City Centre Section from the R138 Stillorgan Road to the R118 Merrion Road have been developed:

- *Option NL1:* EPR Option of a single traffic lane, bus lane and cycle lane in each direction along the entire section, and some general design refinements identified upon review of the topographical survey.
- *Option NL2:* This route option reflects the EPR Option in terms of traffic and bus lane arrangements, however, includes the two-way cycle track as identified during the initial assessment of alternative cycle route options for the route selection process. This option also removes the footpath between Elm Park Golf Club and St. Vincent's University Hospital entrances on the south-east side of the road as described in Chapter 3.3.4.2.3.
- *Option NL3:* As per NL2 from the R138 Stillorgan Road to Nutley Road and from St. Vincent's University Hospital entrance to the R118 Merrion Road, however, reduced to only two general traffic lanes between Nutley Road and St. Vincent's University Hospital entrance.

  This arrangement would be facilitated through the introduction of a bus gate on the northern side the Nutley Road junction.
- *Option NL4:* As per NL2 from the R138 Stillorgan Road to Elm Park Golf Club entrance and from St. Vincent's University Hospital entrance to the R118 Merrion Road, however, reduced to a single one-way northbound general traffic lane between Nutley Road and St. Vincent's University Hospital entrance – with potential for offline traffic management measures. A continuous bus lane is proposed in either direction.
- *Option NL5:* As per NL2 from the R138 Stillorgan Road to Nutley Road and from St. Vincent's University Hospital entrance to the R118 Merrion Road, however, reduced to a three-lane cross-section of two general traffic lanes and partial bus lanes in each direction with the introduction of signal-controlled bus priority at the junctions of Nutley Road and St. Vincent's University Hospital.
- *Option NL6:* As per NL2 from the R138 Stillorgan Road to Nutley Road and from St. Vincent's University Hospital entrance to the R118 Merrion Road, however, reduced to only two general traffic lanes (to be shared with buses) between Nutley Road and St. Vincent's University Hospital entrance

  This arrangement would be facilitated through the introduction of a bus priority signal at both the Nutley Road junction and the St. Vincent's University Hospital entrance. Signal controlled priority would be utilised through the two-lane shared section.

- *Option NL7:* As per NL2 from the R138 Stillorgan Road to Nutley Road and from St. Vincent's University Hospital entrance to the R118 Merrion Road, however, reduced to only a northbound bus lane along with two general traffic lanes (southbound to be shared with buses) between St. Vincent's University Hospital entrance and Nutley Road.

  This arrangement would be facilitated through the introduction of a bus priority signal at the St. Vincent's University Hospital entrance. Signal controlled priority would be utilised through the southbound shared section.

3.4.2.3.2.1 Alternative Options Considered

Two other options were also considered in the area but were not carried forward for the reasons briefly outlined below:

- **Option of reversing the direction of the proposed one-way general traffic in Route Option NL4**. This option was examined and sifted out due to the presence of St. Vincent's University Hospital at the northern end of Nutley Lane. As a destination for a potentially large catchment, it was considered that a direct route to the hospital was more important that a direct route away from the hospital.
- **Option of a one-way route along the entire length of Nutley Lane**. This option was not considered feasible due to the presence of St. Vincent's University Hospital at the northern end of Nutley Lane which would therefore not have two-way access to the entrance on Nutley Lane. As well as this, there is a large number of residents along Nutley Lane and in the vicinity of Nutley Lane that may be significantly negatively impacted by this proposal through limited local access, potential for rat-running on the residential streets, and need for additional traffic management interventions.

3.4.2.3.2.2 Route Option NL1

Route Description

The location of Route Option NL1 is presented in **Figure 3.63**.

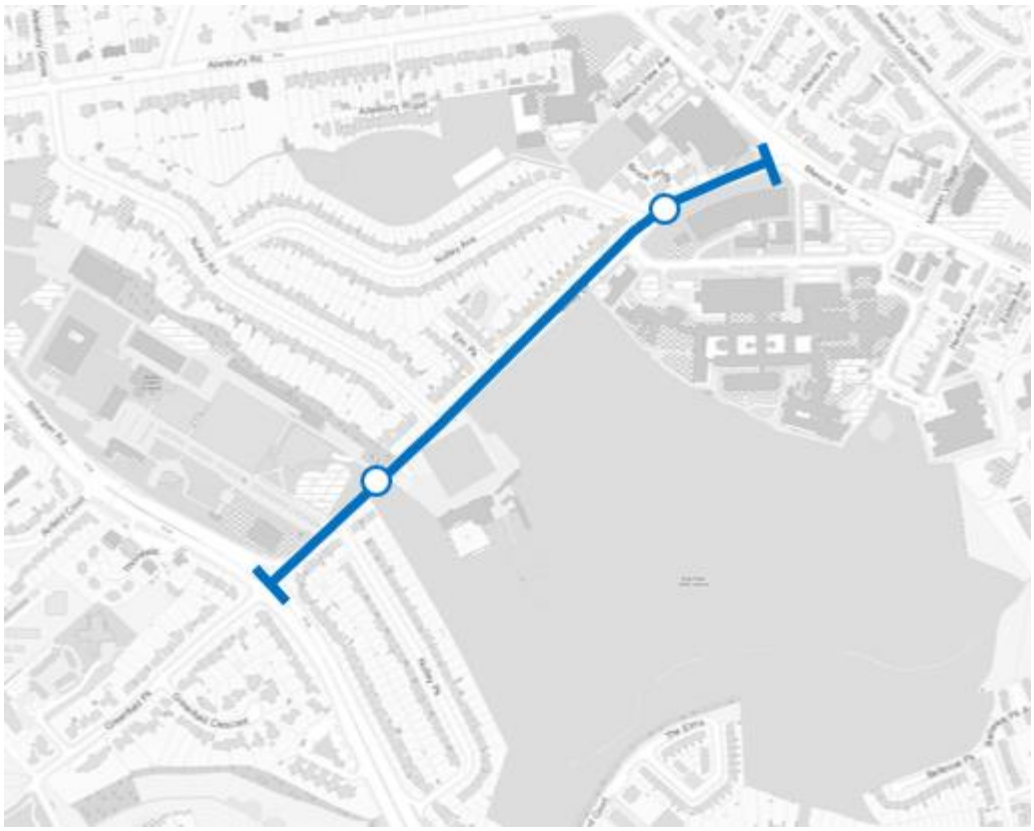

Figure 3.63: Route Option NL1
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Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.63**).

Indicative Scheme Design

Figure 3.64 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also illustrated in this figure.

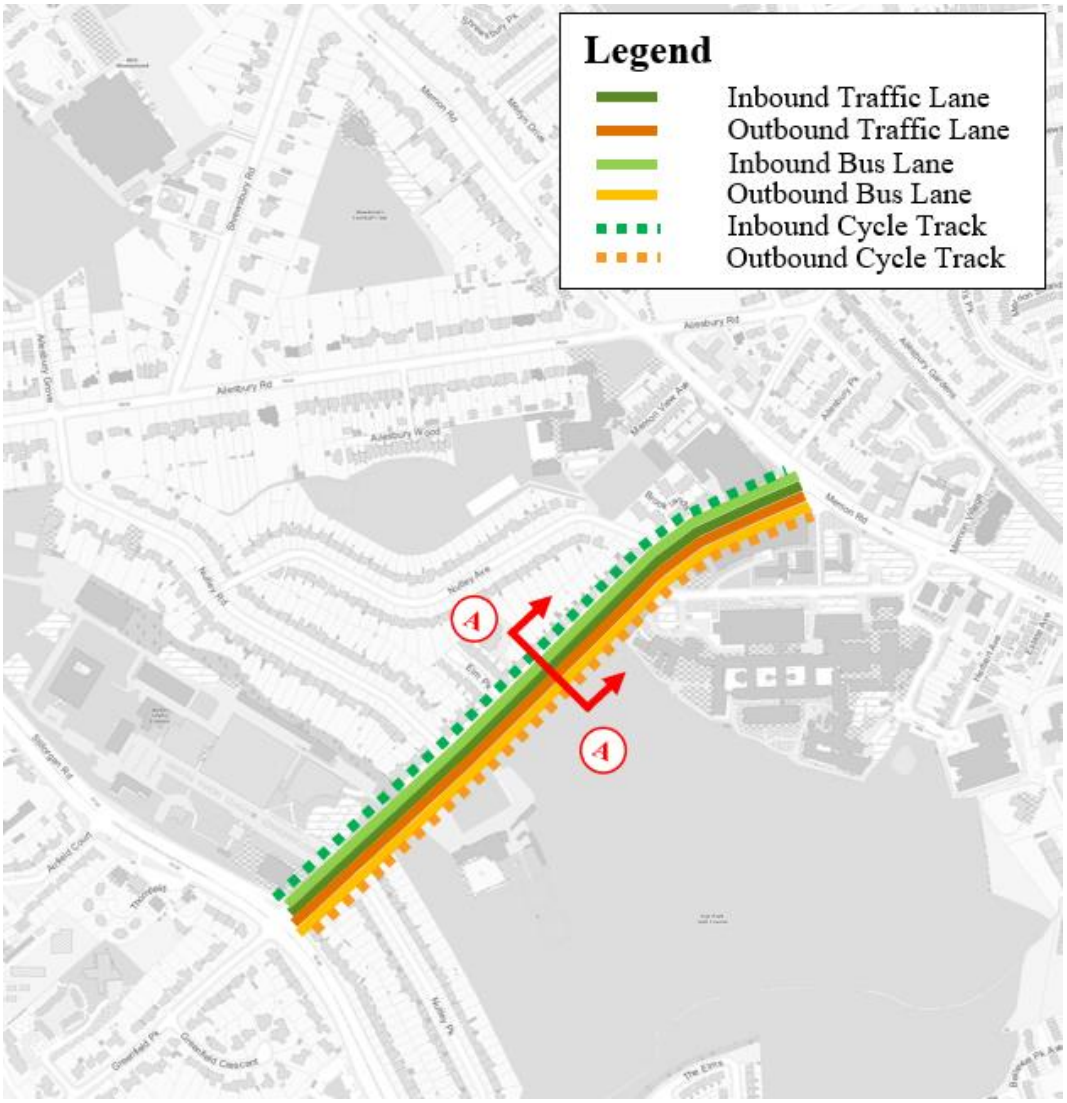

Figure 3.64: Route Option NL1 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes, two cycle tracks and two general traffic lanes are proposed on both sides of the road in opposite directions along the entire length of the route.

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park Golf Club, RTÉ and Eir, as well as seven residential properties also.

The proposed cross-section A-A as shown in the indicative scheme design above, is presented in **Figure 3.65**.

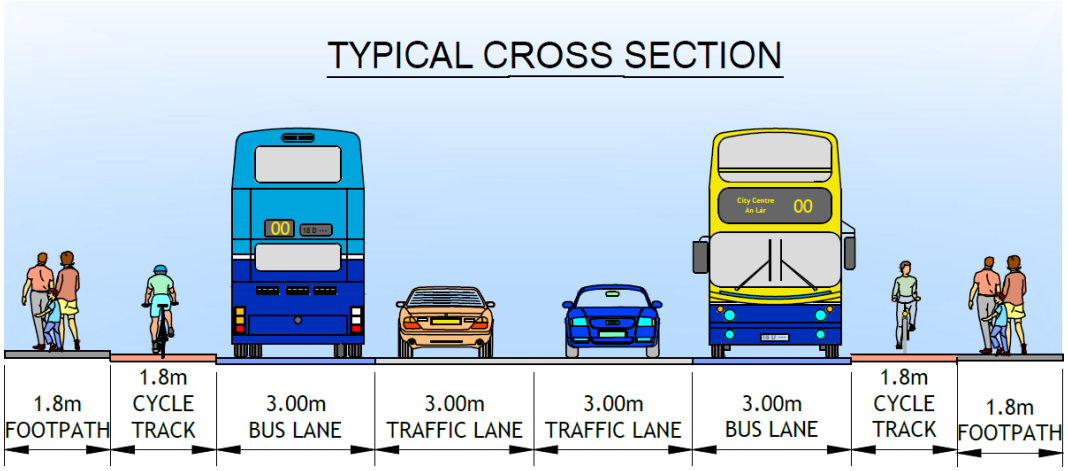

Figure 3.65: Route Option NL1 Cross-Section A-A

In summary, this route option would have the following characteristics:

- Bus lanes in each direction along the full length of this route option section;
- General traffic lanes in both directions along the full length of this route option section;
- Segregated cycle tracks in both directions along the full length of this route option section, albeit 1.8m wide;
- Narrowing of existing footpaths to 1.8m wide on both sides of the road;
- Removal of all on-street parking;
- Removal of the majority of existing trees on both sides of the road; and
- Land acquisition along the entirety of the St. Vincent's University Hospital, Elm Park Golf Club, Eir and RTÉ frontages with associated tree removal as well as some land acquisition from Merrion Shopping Centre, and from seven residential properties adjacent to the Nutley Avenue junction.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include the widening of the junction to accommodate the additional lanes, with a pedestrian crossing provided on the southern and eastern arms. There would also be a potential requirement to relocate/provide new signal equipment at this junction.

3.4.2.3.2.3 Route Option NL2

Route Description

The Location of Route Option NL2 is presented in **Figure 3.66**.

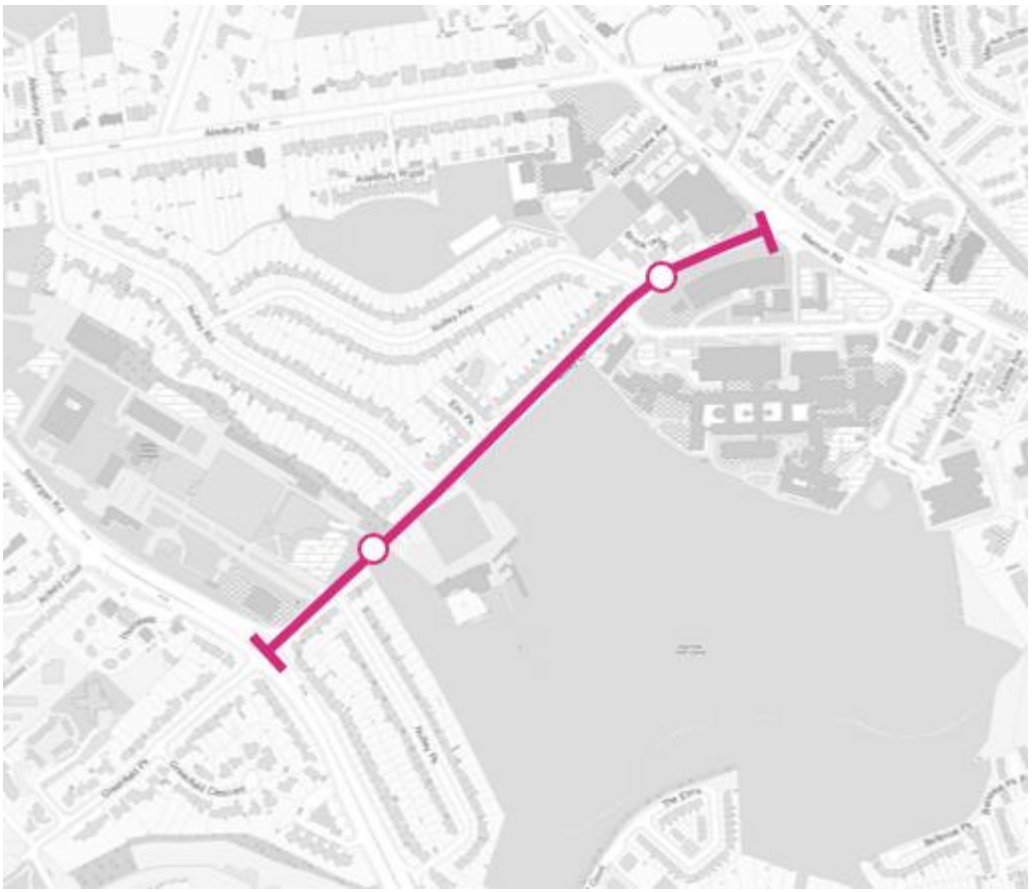

Figure 3.66: Route Option NL2

Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.66**).

Indicative Scheme Design

Figure 3.67 illustrates the indicative scheme design for this route option. The location of the cross-sections referenced in subsequent sections, describing this route option, are also illustrated in this figure.

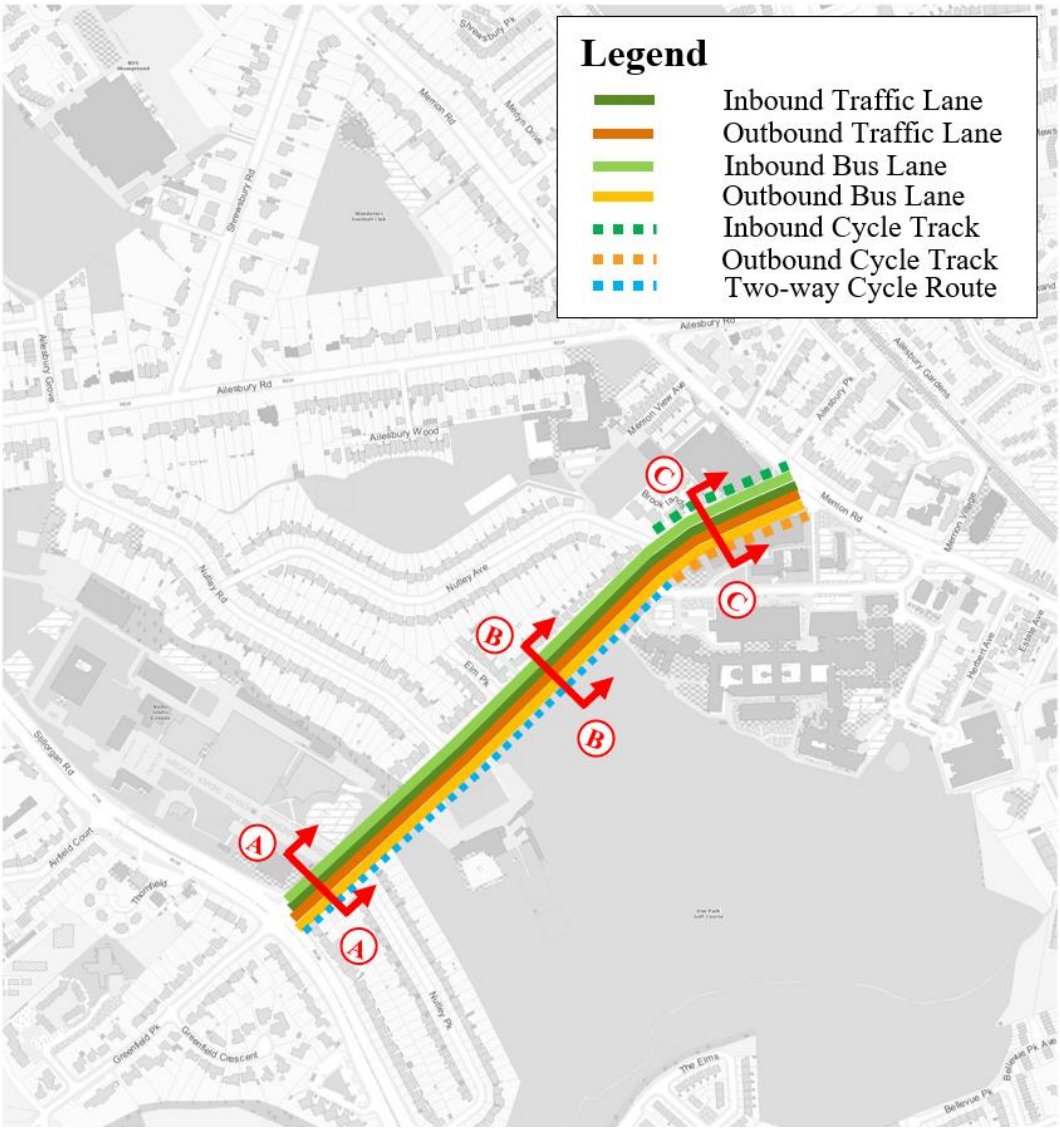

Figure 3.67: Route Option NL2 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed along the entire length of the route on both sides of the road in opposite directions. This route would include the provision of a new pedestrian crossing in the vicinity of Elm Park Golf Club and adjustments to the existing signalised access junction to St. Vincent's University Hospital.

No footpath is proposed between the entrance to Elm Park Golf Club and the entrance to St. Vincent's University Hospital, with controlled pedestrian crossings provided at both locations.

The proposed cycle facilities are as selected in Chapter 3.4.2.2.4 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park Golf Club, RTÉ and Eir.

The proposed cross-sections A-A, B-B, and C-C as shown in the indicative scheme design above, are presented in **Figure 3.68, Figure 3.69,** and **Figure 3.70**.

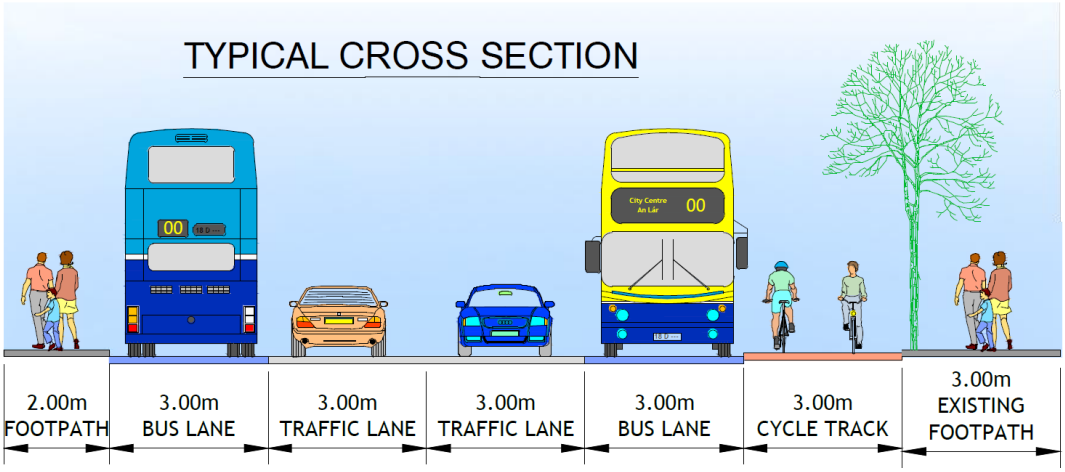

Figure 3.68: Route Option NL2 Cross-Section A-A (referenced in NL3, NL4, NL5, NL6, & NL7)

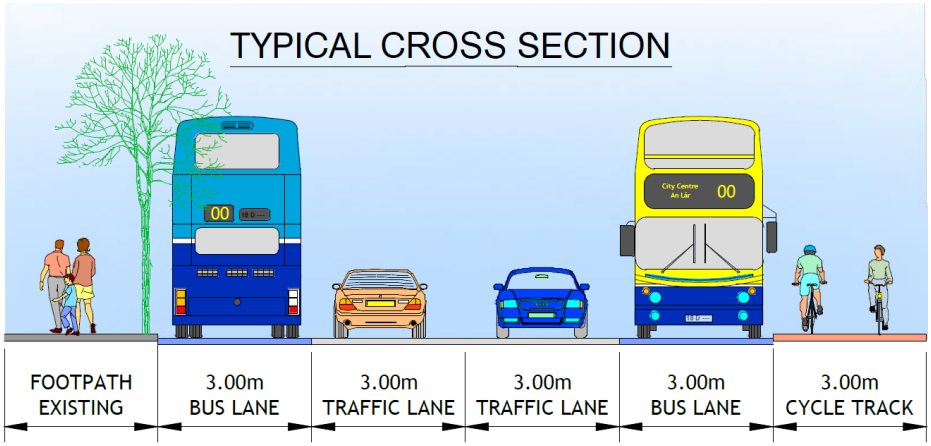

Figure 3.69: Route Option NL2 Cross-Section B-B (referenced in NL3, NL4, NL5, NL6, & NL7)

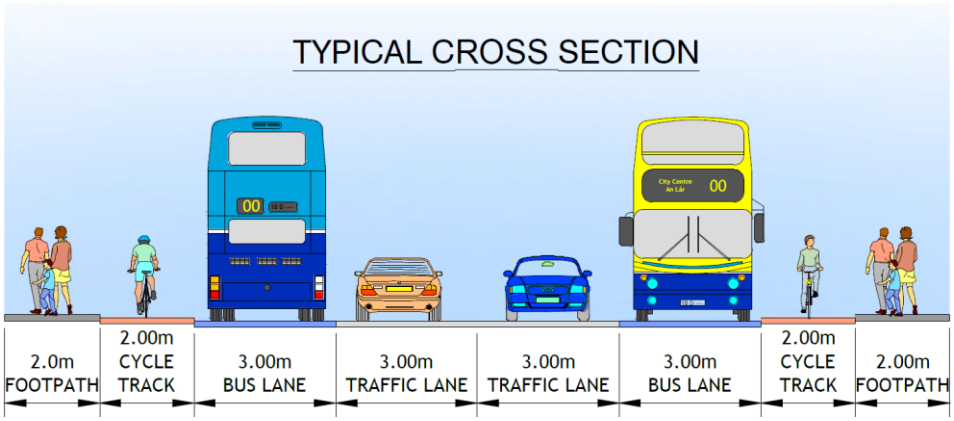

Figure 3.70: Route Option NL2 Cross-Section C-C (referenced in NL3, NL4, NL5 & NL6, & NL7)

In summary, this route option would have the following characteristics:

- Bus lanes in each direction along the full length of this route option section;
- General traffic lanes in both directions along the full length of this route option section;
- Segregated cycle tracks in both directions along the full length of this route option section including two-way facilities between the R138 Stillorgan Road and St. Vincent's University Hospital;
- Retention of the existing footpath and trees on the residential side of the road between Nutley Road and Nutley Avenue;
- New pedestrian crossing at Elm Park Golf Club;
- New Toucan crossings at the St. Vincent's University Hospital junction;
- Removal of all on-street parking;
- Removal of existing trees on the Elm Park Golf Club side of the road, north of the Elm Park Golf Club main entrance; and
- Land acquisition along the entirety of the St. Vincent's University Hospital, Elm Park Golf Club, Eir and RTÉ frontages with associated tree removal, as well as some land acquisition from Merrion Shopping Centre.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include the provision of an island on the approach from Merrion Road to enable signal-controlled priority, the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new signal equipment at this junction.

3.4.2.3.2.4 Route Option NL3

Route Description

The location of Route Option NL3 is presented in **Figure 3.71**.

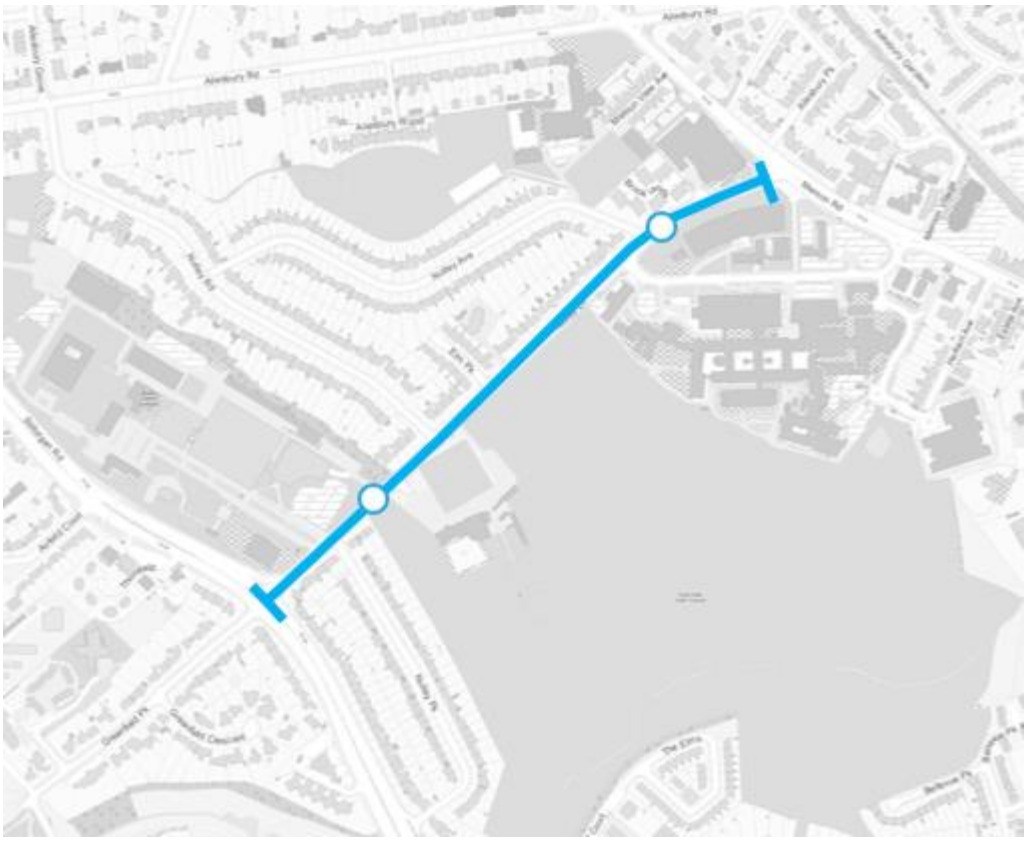

Figure 3.71: Route Option NL3

Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.71**).

Indicative Scheme Design

Figure 3.72 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

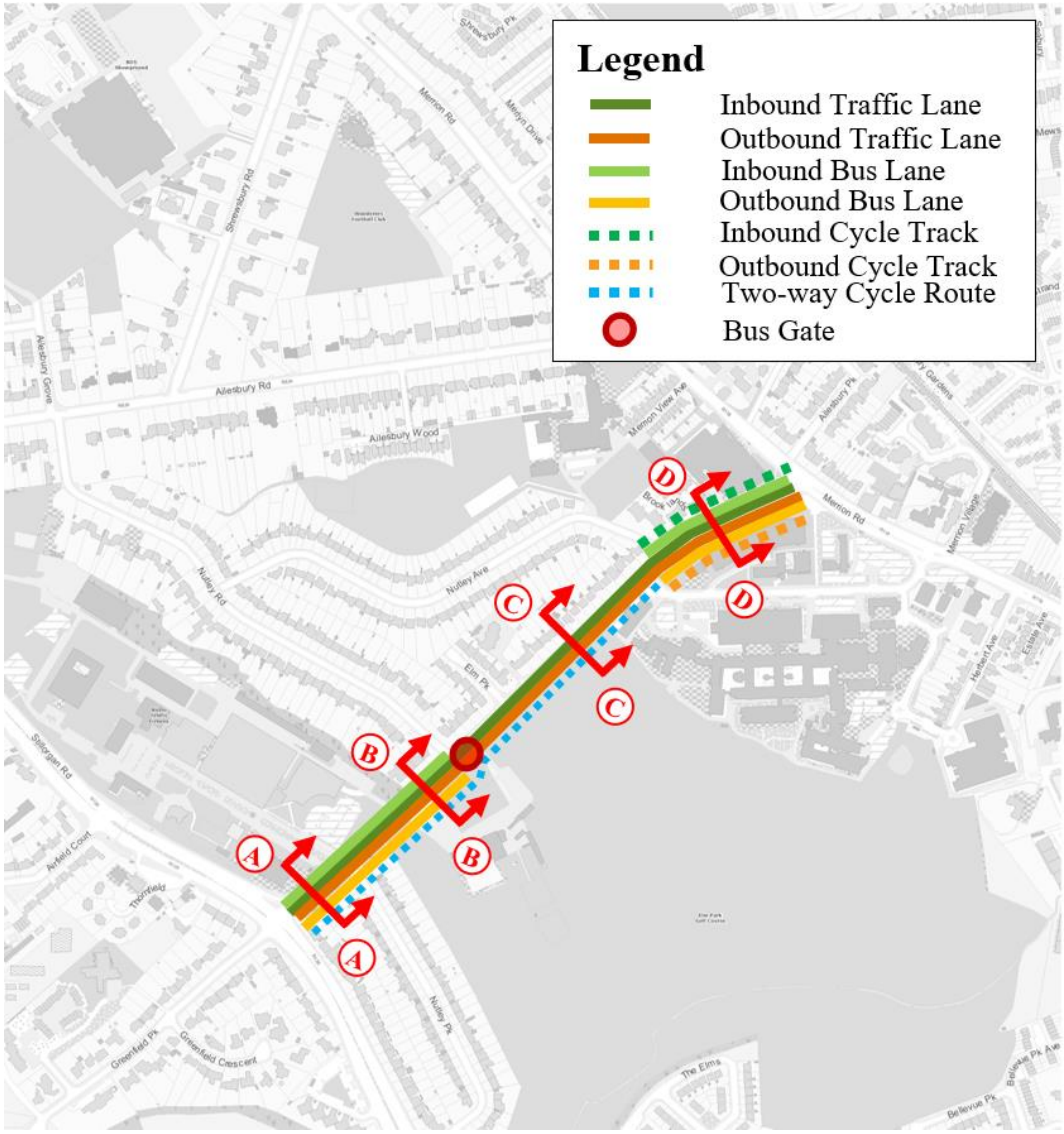

Figure 3.72: Route Option NL3 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed on both sides of Nutley Lane in opposite directions as far as its junction with Nutley Road.

At its junction with Nutley Road, it is proposed that the northern Nutley Lane arm of this junction would act as a bus gate and only authorised vehicles, such as official buses and emergency vehicles, would be permitted to use this arm of the junction and travel through the bus gate.

From this junction, two general traffic lanes are proposed from Nutley Road to the junction of St. Vincent's University Hospital. From the junction of St. Vincent's University Hospital to the R118 Merrion Road, Route Option NL3 is identical to Route Option NL2 described above.

This route option would include the incorporation of pedestrian crossing facilities into the signalisation of the Nutley Road junction and adjustments to the existing signalised access junction to St. Vincent's University Hospital.

The existing footpath is proposed to be retained on both sides along the majority of the route between the entrance to Elm Park Golf Club and the entrance to St. Vincent's University Hospital.

The proposed cycle facilities are as selected in Chapter 3.4.2.2 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park Golf Club, RTÉ and Eir.

The proposed cross-sections A-A, B-B and D-D for Route Option NL3 are as per the cross-sections described for Option NL2 in **Figure 3.68**, **Figure 3.69** and **Figure 3.70** respectively. The proposed cross-section C-C as shown in the indicative scheme design above is presented in **Figure 3.73**.

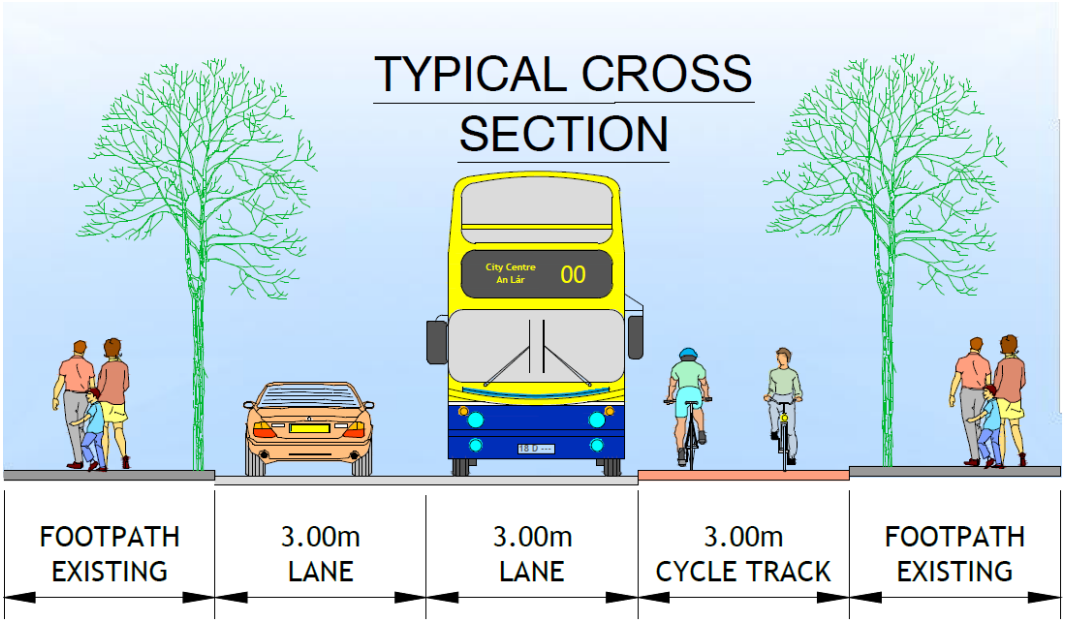

Figure 3.73: Route Option NL3 Cross-Section C-C (referenced in NL6)

In summary, this route option would have the following characteristics:

- Bus lanes in each direction between the R138 Stillorgan Road and Nutley Road and also between St. Vincent's University Hospital and the R118 Merrion Road;
- The provision of bus priority along the section of the route option section between Nutley Road and St. Vincent's University Hospital through the removal of through traffic as a result of the installation of a bus gate on Nutley Lane just north of its junction with Nutley Road;
- Retention of the existing footpath and trees on both sides of the road between Nutley Road and St. Vincent's University Hospital;

- Signalisation of the junction of Nutley Lane and Nutley Road;
- Removal of all on-street parking; and
- Land acquisition along St. Vincent's University Hospital, Elm Park, RTÉ, Merrion Shopping Centre and Eir frontages with associated tree removal, albeit significantly less land acquisition required from Elm Park Golf Club relative to NL1 and NL2.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include the provision of an island on the approach from Merrion Road to enable signal-controlled priority, the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new traffic signal equipment.

In addition, option NL3 would require the signalisation of the junction of Nutley Lane and Nutley Road in order to facilitate the proposed bus gate. This junction layout would require a realignment of the entrance road into Elm Park Golf Club, facilitating a traffic island on the approach to the Nutley Road junction from the R138 Stillorgan Road to enable signal controlled priority. A signalised pedestrian crossing on each arm would be necessary and also a cycle crossing from Nutley Road to the Elm Park Golf Club side of Nutley Lane.

3.4.2.3.2.5 Route Option NL4

Route Description

The location of Route Option NL4 is presented in **Figure 3.74**.

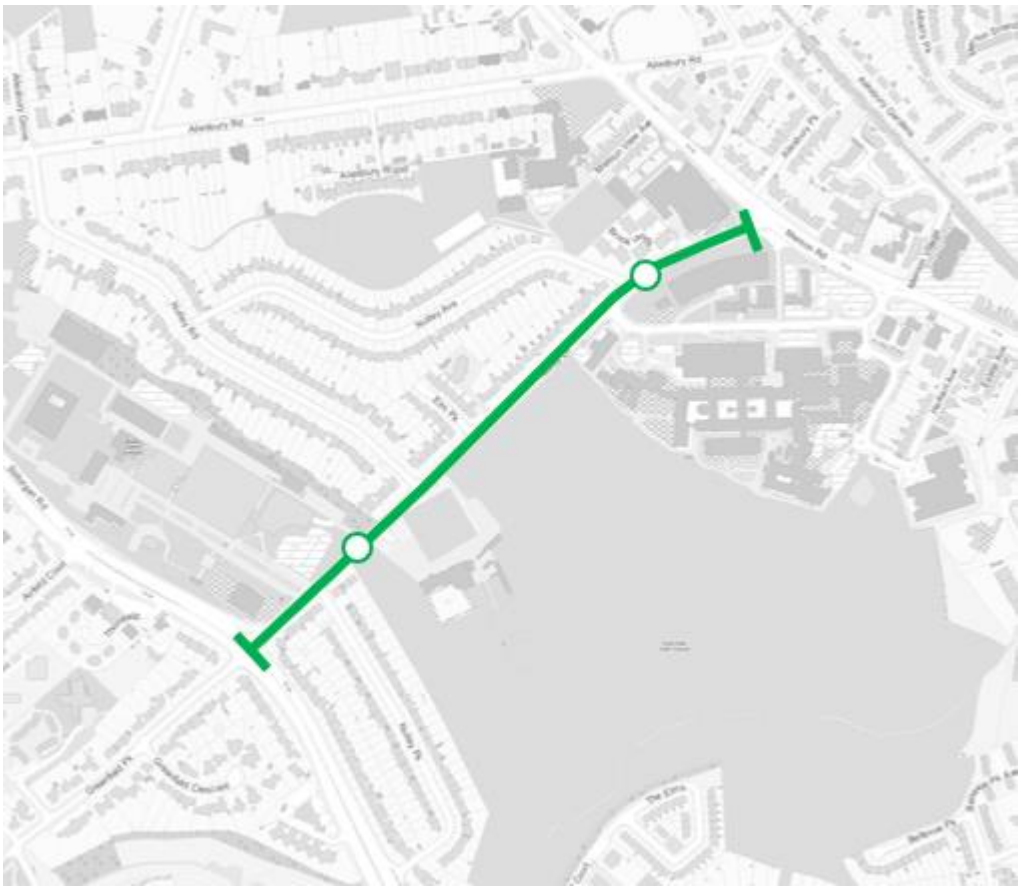

Figure 3.74: Route Option NL4

Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.74**).

Indicative Scheme Design

Figure 3.75 illustrates the indicative scheme design for this route option. The location of the cross-section referenced in subsequent sections, describing this route option, is also presented in this figure.

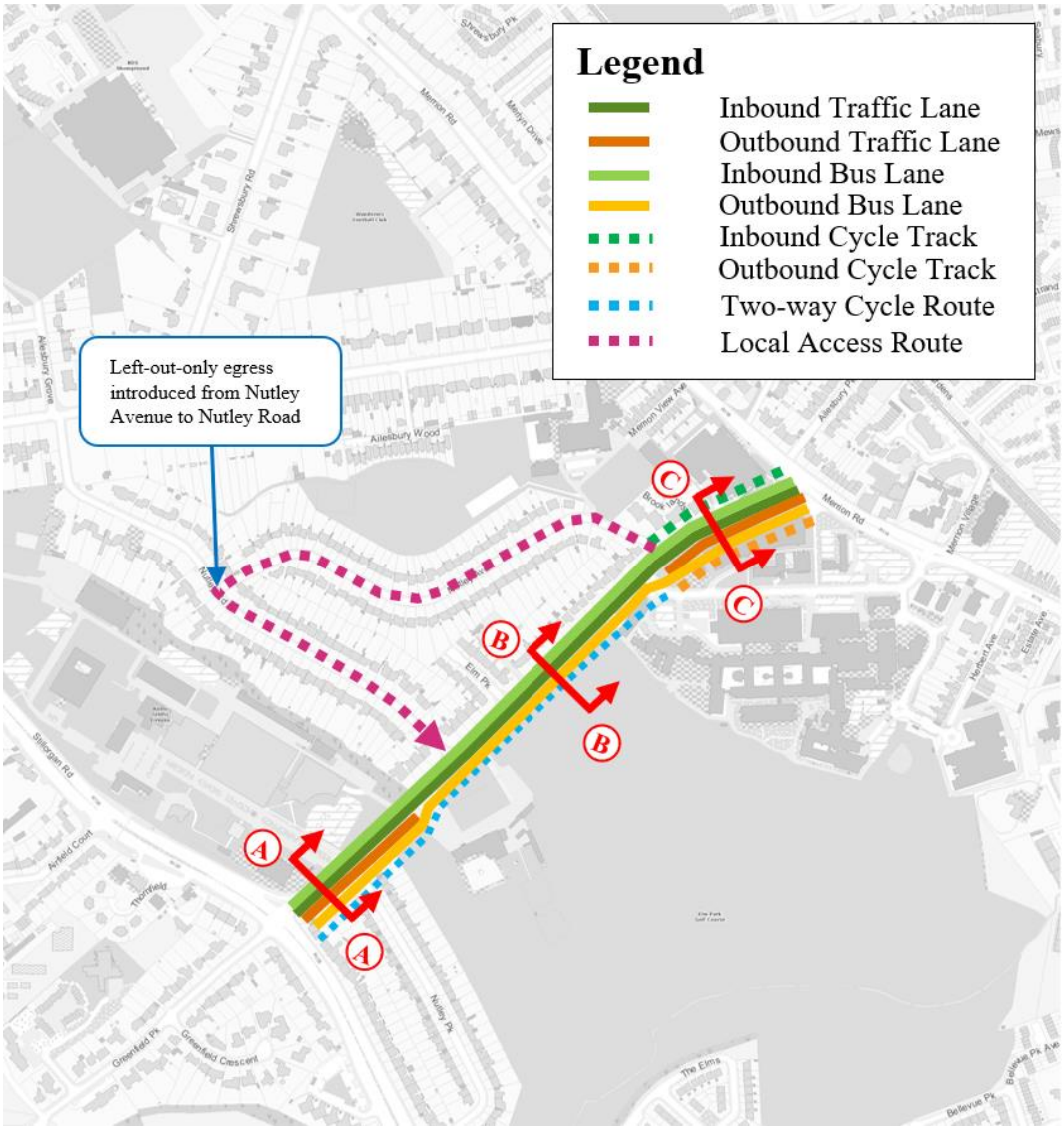

Figure 3.75: Route Option NL4 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed as far as the Entrance to Elm Park Golf Club.

At the entrance to Elm Park Golf Club, it is proposed that the cross-section of Nutley Lane would be reduced to three lanes, with a bus lane provided in both directions and Nutley Lane becoming one-way only for general traffic. This proposed one-way system would be in a northbound direction from Elm Park Golf Club towards St. Vincent's University Hospital.

From the junction of St. Vincent's University Hospital to the R118 Merrion Road, Route Option NL4 is identical to Route Option NL2 described above.

This route option would include the provision of a new pedestrian crossing in the vicinity of Elm Park Golf Club and adjustments to the existing signalised access junction to St. Vincent's University Hospital.

No footpath is proposed between the entrance to Elm Park Golf Club and the entrance to St. Vincent's University Hospital, with controlled pedestrian crossings provided at both locations.

The proposed cycle facilities are as selected in Chapter 3.4.2.2 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park Golf Club, RTÉ and Eir.

This arrangement would result in restricted access to the residential properties from No. 35 to No. 85 Nutley Lane and to the Elm Park residential cul-de-sac if approaching from the R118 Merrion Road. In this instance, a detour of circa 2km would be required via Ailesbury Road and Nutley Road (if approaching Nutley Lane on the R118 Merrion Road from the south / Blackrock). It is noted that, for this route option, such restrictions to local access to these properties on Nutley Lane would benefit somewhat from an additional vehicular connection via Nutley Avenue and Nutley Road, which would involve opening the existing cul-de-sac at Nutley Avenue as a left-out only egress onto Nutley Road. This would result in a reduced detour of circa 1.4km via Nutley Avenue, which is approximately two-thirds of the larger length of the detour via Ailesbury Road.

Along with a right-turn ban from Nutley Avenue, the geometrical design of the proposed egress would be such that it catered for a left-out movement only to mitigate against the route being used as a potential rat-run from the R118 Merrion Road to Ailesbury Road via Nutley Avenue.

The proposed cross-sections A-A and C-C are as per the cross-sections described in Route Option NL2 in **Figure 3.68** and **Figure 3.70** respectively. The proposed cross-section B-B as shown in the indicative scheme design above, is presented in **Figure 3.76**.

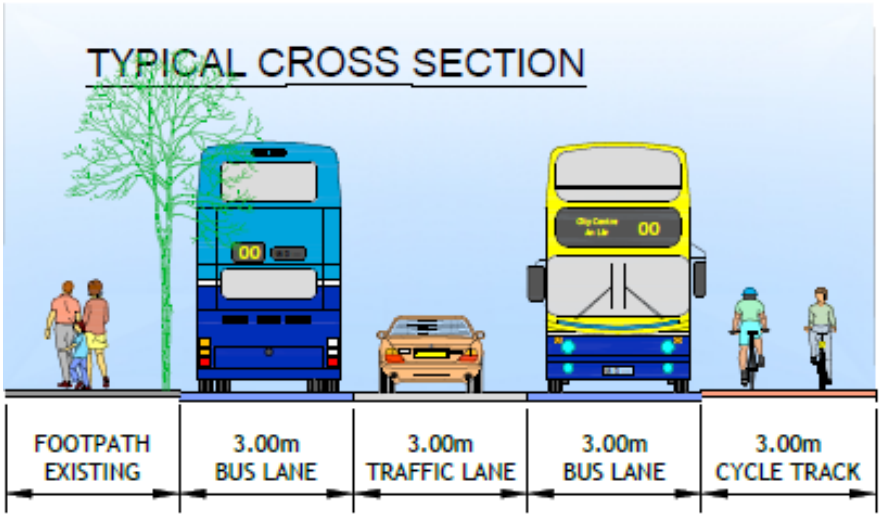

Figure 3.76: Route Option NL4 Cross-Section B-B

In summary, this route option would have the following characteristics:

- Bus lanes in each direction along the entire route option section;
- Retention of the existing footpath and trees on the residential side of the road between Nutley Road and Nutley Avenue;
- New Toucan crossing at Elm Park Golf Club;
- Removal of all on-street parking; and
- Land acquisition along St. Vincent's University Hospital, Elm Park Golf Club, Eir and RTÉ frontages with associated tree removal, as well as some land acquisition from Merrion Shopping Centre, albeit significantly less land acquisition required from Elm Park Golf Club relative to Route Options NL1 and NL2.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include an arrangement whereby left-turning cars into St. Vincent's University Hospital are diverted into dedicated left-turn lane (noting no southbound receiving lane), the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new traffic signal equipment.

3.4.2.3.2.6 Route Option NL5

Route Description

The location of Route Option NL5 is presented in **Figure 3.77**.

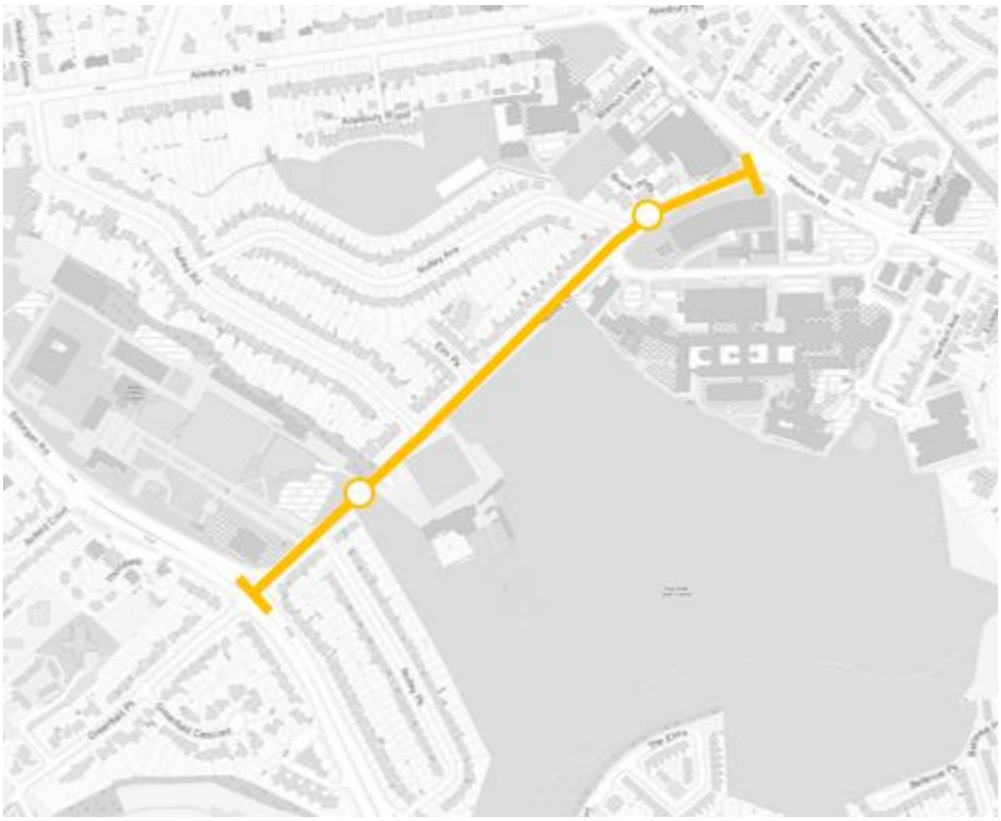

Figure 3.77: Route Option NL5
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Outbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Inbound: The inbound route follows the same route as the outbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.77**).

Indicative Scheme Design

Figure 3.78 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

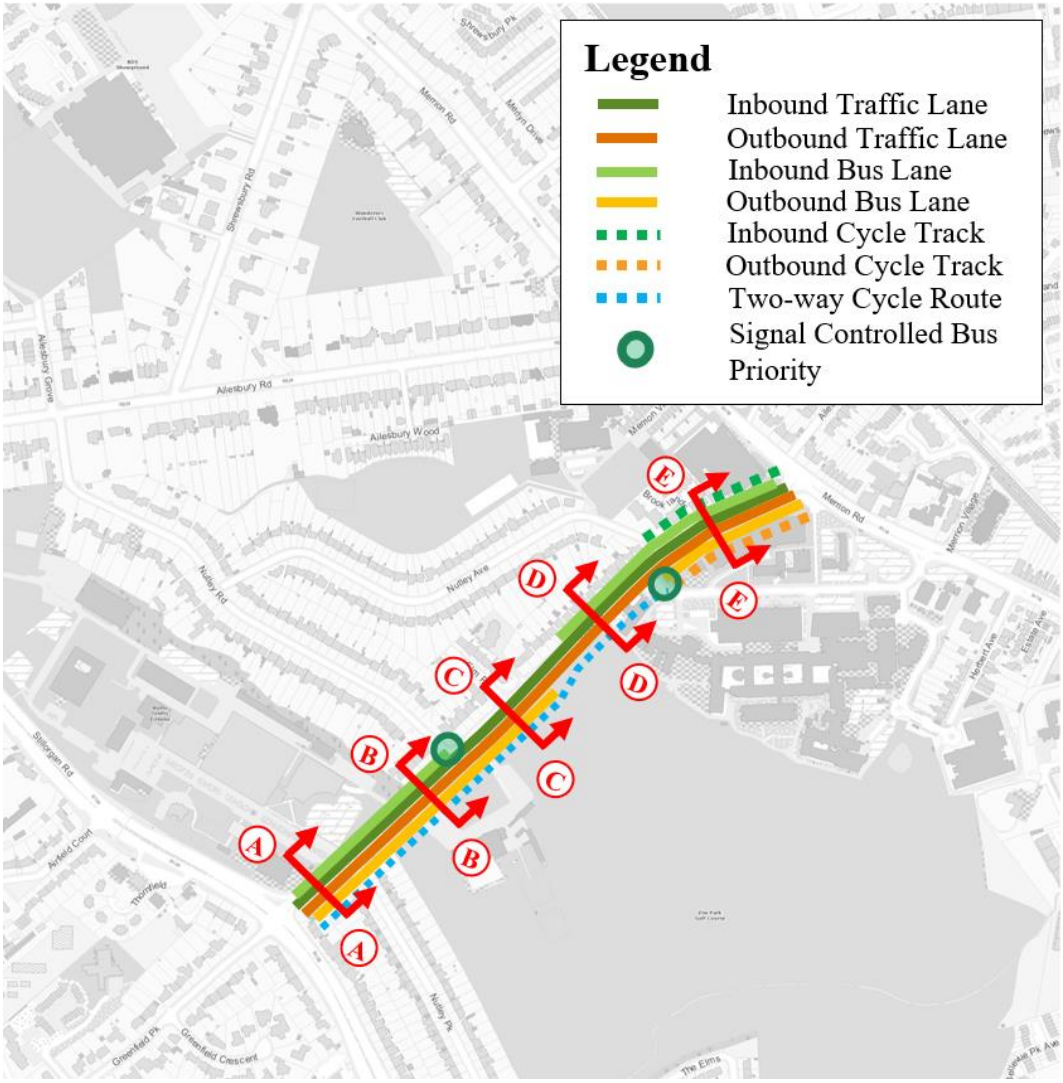

Figure 3.78: Route Option NL5 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed as far as the junction with Nutley Road.

At the junction with Nutley Road, it is proposed that the cross-section of Nutley Lane would be reduced to three lanes, with a general traffic lane and partial bus lane provided in each direction.

This bus lane arrangement would result in an inbound bus lane approaching the Nutley Road junction and an outbound bus lane approaching the St. Vincent's University Hospital junction, with the direction of the bus lane changing over in the middle of this section. This proposal requires the signalisation of the Nutley Road junction in order to provide signal-controlled bus priority for outbound (northbound) buses.

From the junction of St. Vincent's University Hospital to the R118 Merrion Road, Route Option NL5 is identical to Route Option NL2 described above.

This route option would include the incorporation of pedestrian crossing facilities into the signalisation of the Nutley Road junction and adjustments to the existing signalised access junction to St. Vincent's University Hospital.

No footpath is proposed between the Nutley Road junction and the entrance to St. Vincent's University Hospital.

The proposed cycle facilities are as selected in Chapter 3.4.2.2 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park Golf Club, RTÉ and Eir.

The proposed cross-sections A-A, B-B and E-E are as per the cross-sections described in Route Option NL2 in **Figure 3.68**, **Figure 3.69** and **Figure 3.70** respectively. The proposed cross-sections C-C and D-D as shown in the indicative scheme design above, are presented in **Figure 3.79** and **Figure 3.80**.

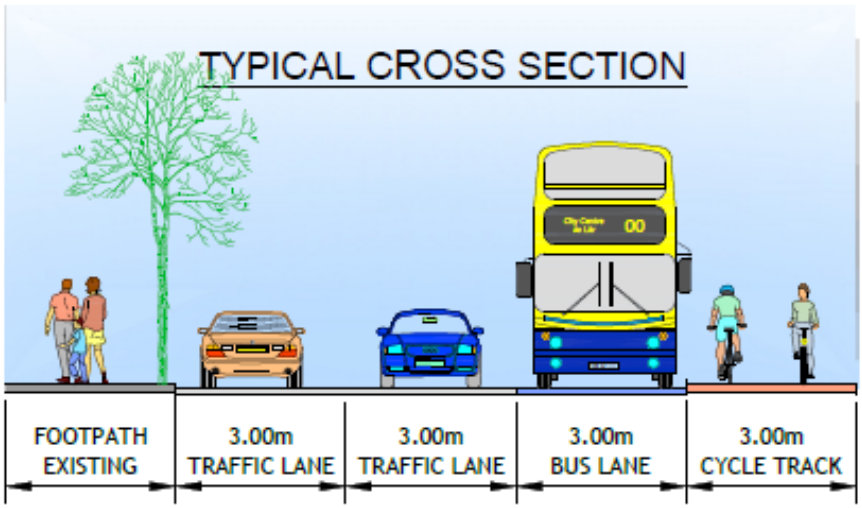

Figure 3.79: Route Option NL5 Cross-Section C-C

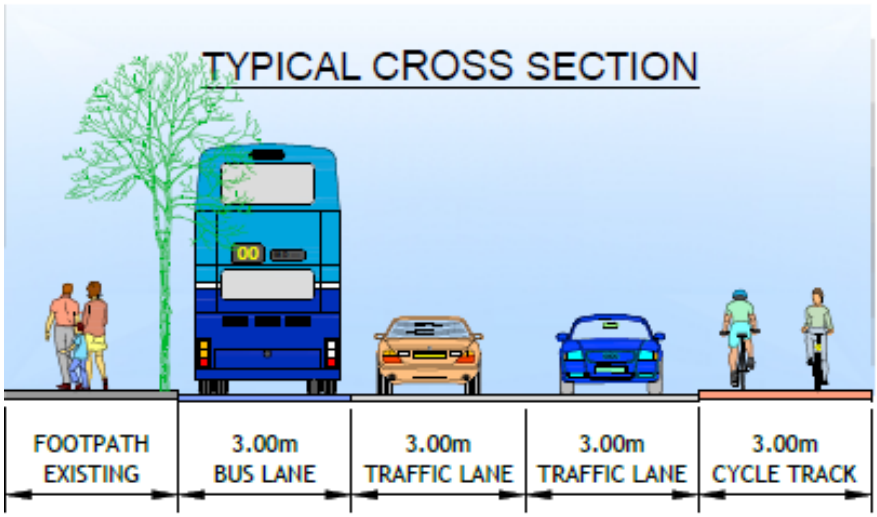

Figure 3.80: Route Option NL5 Cross-Section D-D

In summary, this route option would have the following characteristics:

- Bus lanes in each direction provided between the R138 Stillorgan Road and Nutley Road and also between St. Vincent's University Hospital and the R118 Merrion Road;
- The provision of bus priority along the section of the route between Nutley Road and St. Vincent's University Hospital through the provision of partial bus lanes and signal-controlled bus priority to control the flow of downstream traffic;
- Signalisation of the Nutley Road junction;
- Retention of the existing footpath and trees on the residential side of the road between Nutley Road and Nutley Avenue;
- New Toucan crossings at Nutley Park;
- Removal of all on-street parking; and
- Land acquisition along St. Vincent's University Hospital, Elm Park Golf Club, RTÉ, Merrion Shopping Centre, and Eir frontages with associated tree removal, albeit significantly less land acquisition required from Elm Park Golf Club relative to Route Options NL1 and NL2.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include the provision of an island on the approach from Merrion Road to enable signal-controlled priority, the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new traffic signal equipment.

In addition, Route Option NL5 would require the signalisation of the junction of Nutley Lane and Nutley Road in order to facilitate the signal-controlled bus priority necessary to ensure bus priority is maintained along the section of road without an outbound (northbound) bus lane.

This junction layout would require a realignment of the entrance road into Elm Park Golf Club, facilitating a traffic island on the approach to the junction from the R138 Stillorgan Road to enable signal-controlled bus priority at Nutley Road. A Toucan crossing from Nutley Road to the Elm Park side of Nutley Lane would also be necessary.

3.4.2.3.2.7 Route Option NL6

Route Description

The location of Route Option NL6 is presented in **Figure 3.81**.

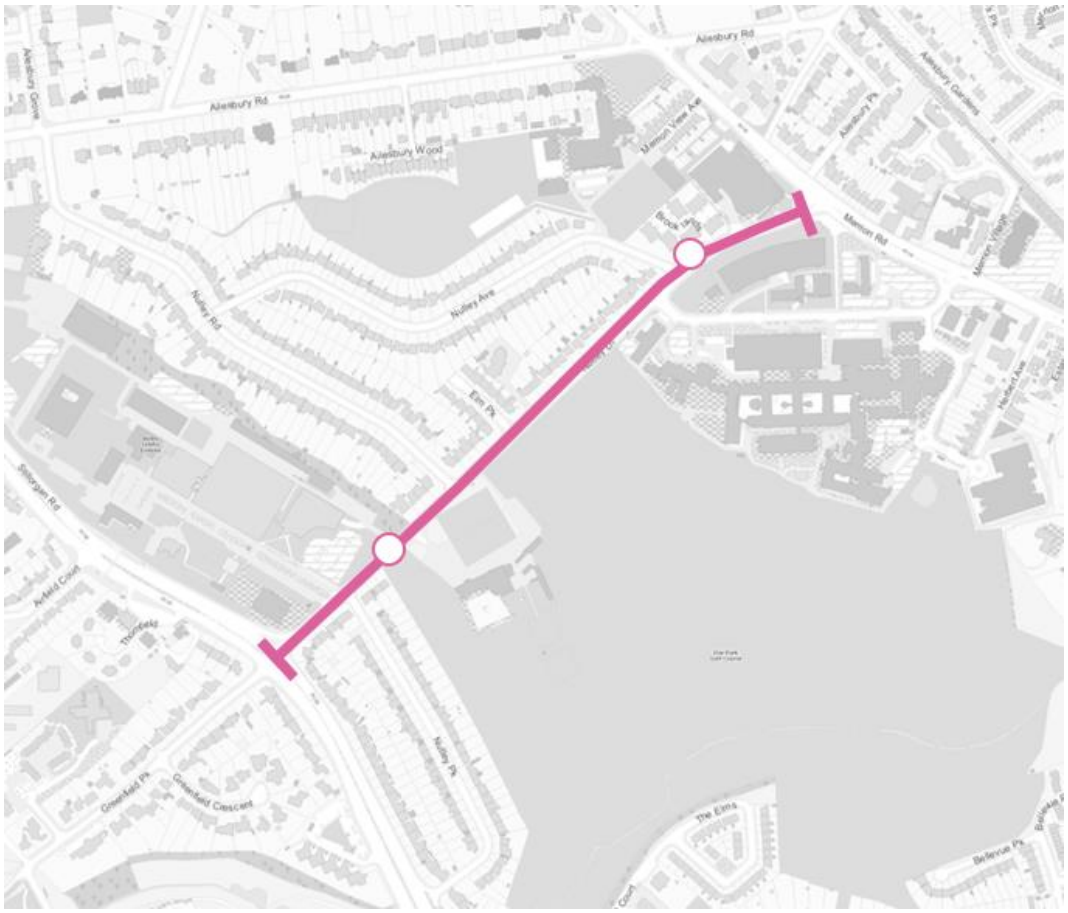

Figure 3.81: Route Option NL6
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Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option section continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.81**).

Indicative Scheme Design

Figure 3.82 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

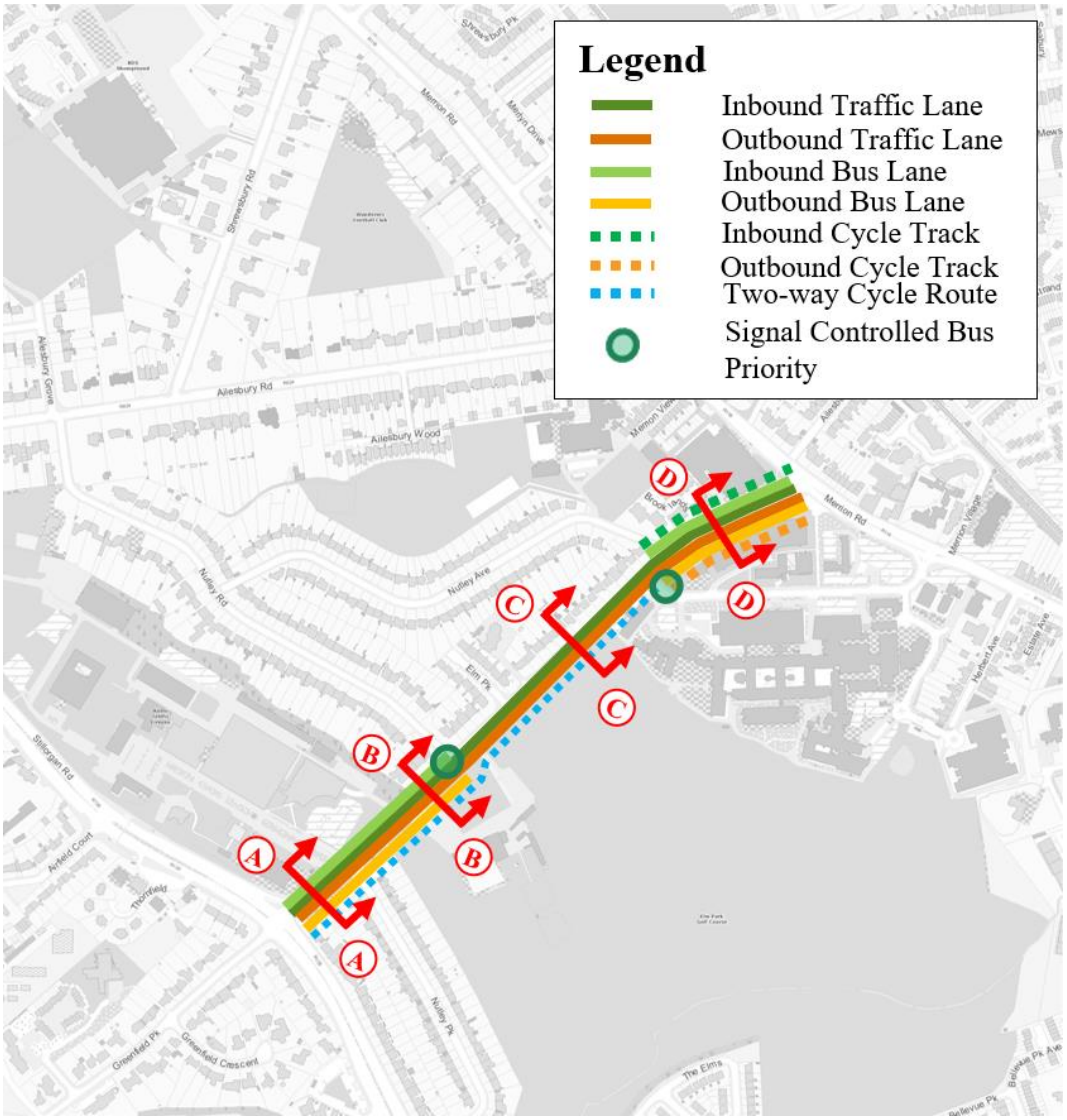

Figure 3.82: Route Option NL6 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed as far as its junction with Nutley Road.

At its junction with Nutley Road, it is proposed that a bus priority traffic signal would be provided. This proposal requires the signalisation of the Nutley Road junction in order to provide signal-controlled bus priority for northbound buses. pedestrian crossings on all arms of this junction would be included.

From this junction, two general traffic lanes are proposed from Nutley Road to the junction of St. Vincent's University Hospital. A bus priority traffic signal for southbound buses would be provided at this junction.

From the junction of St. Vincent's University Hospital to the R118 Merrion Road, Route Option NL6 is identical to Route Option NL2 described above.

The existing footpath on both sides of the road would be retained along the majority of the route option section between Nutley Road and St. Vincent's University Hospital.

The proposed cycle facilities are as selected in Chapter 3.4.2.2 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park, RTÉ and Eir.

The proposed cross-sections A-A, B-B and D-D are as per the cross-sections described in Route Option NL2 in **Figure 3.68**, **Figure 3.69** and **Figure 3.70** respectively. The proposed cross-section C-C is as per the cross-section described in Route Option NL3 in **Figure 3.73**.

In summary, this route option would have the following characteristics:

- Bus lanes in each direction between the R138 Stillorgan Road and Nutley Road and also between St. Vincent's University Hospital and the R118 Merrion Road;
- The provision of bus priority along the section of the route between Nutley Road and St. Vincent's University Hospital through signal-controlled bus priority to control the flow of downstream traffic;
- Signalisation of the junction of Nutley Lane and Nutley Road;
- Retention of the existing footpath and trees both sides of the road between Nutley Road and St. Vincent's University Hospital;
- Removal of all on-street parking; and
- Land acquisition along St. Vincent's University Hospital, Elm Park, RTÉ, Merrion Shopping Centre and Eir frontages with associated tree removal, albeit significantly less land acquisition required from Elm Park relative to Route Options NL1 and NL2.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital. Adjustments to the junction would include the provision of an island on the approach from Merrion Road to enable signal-controlled bus priority, the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new traffic signal equipment.

In addition, Route Option NL6 would require the signalisation of the junction of Nutley Lane and Nutley Road in order to facilitate the signal controlled priority.

This junction layout would require a realignment of the entrance road into Elm Park Golf Club, facilitating a traffic island on the approach to the junction from the R138 Stillorgan Road to enable signal-controlled priority. A signalised pedestrian crossing on each arm would be necessary and also a cycle crossing from Nutley Road to the Elm Park Golf Club side of Nutley Lane.

3.4.2.3.2.8 Route Option NL7

Route Description

The location of Route Option NL6 is presented in **Figure 3.83**.

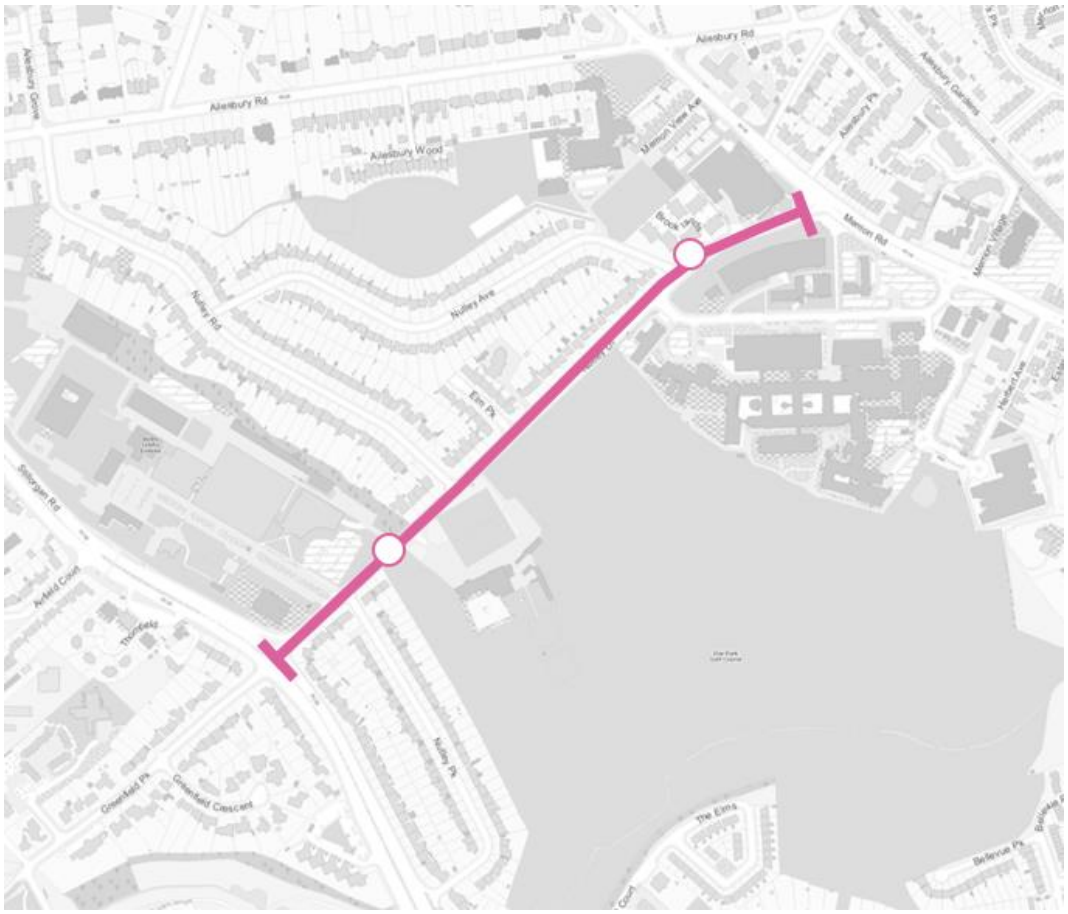

Figure 3.83: Route Option NL7
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Inbound: This route option section commences at the junction of the R138 Stillorgan Road and Nutley Lane. The route option continues along Nutley Lane passing its junctions with Nutley Park, Nutley Road, St. Vincent's University Hospital and Nutley Avenue and finishes at the junction of Nutley Lane and the R118 Merrion Road.

Outbound: The outbound route follows the same route as the inbound route.

Stops: A total of two stops would likely be provided in each direction along this route option section (locations illustrated indicatively by a circle on **Figure 3.83**).

Indicative Scheme Design

Figure 3.84 illustrates the indicative scheme design for this route option. The location of cross-sections referenced in subsequent sections, describing this route option, are also presented in this figure.

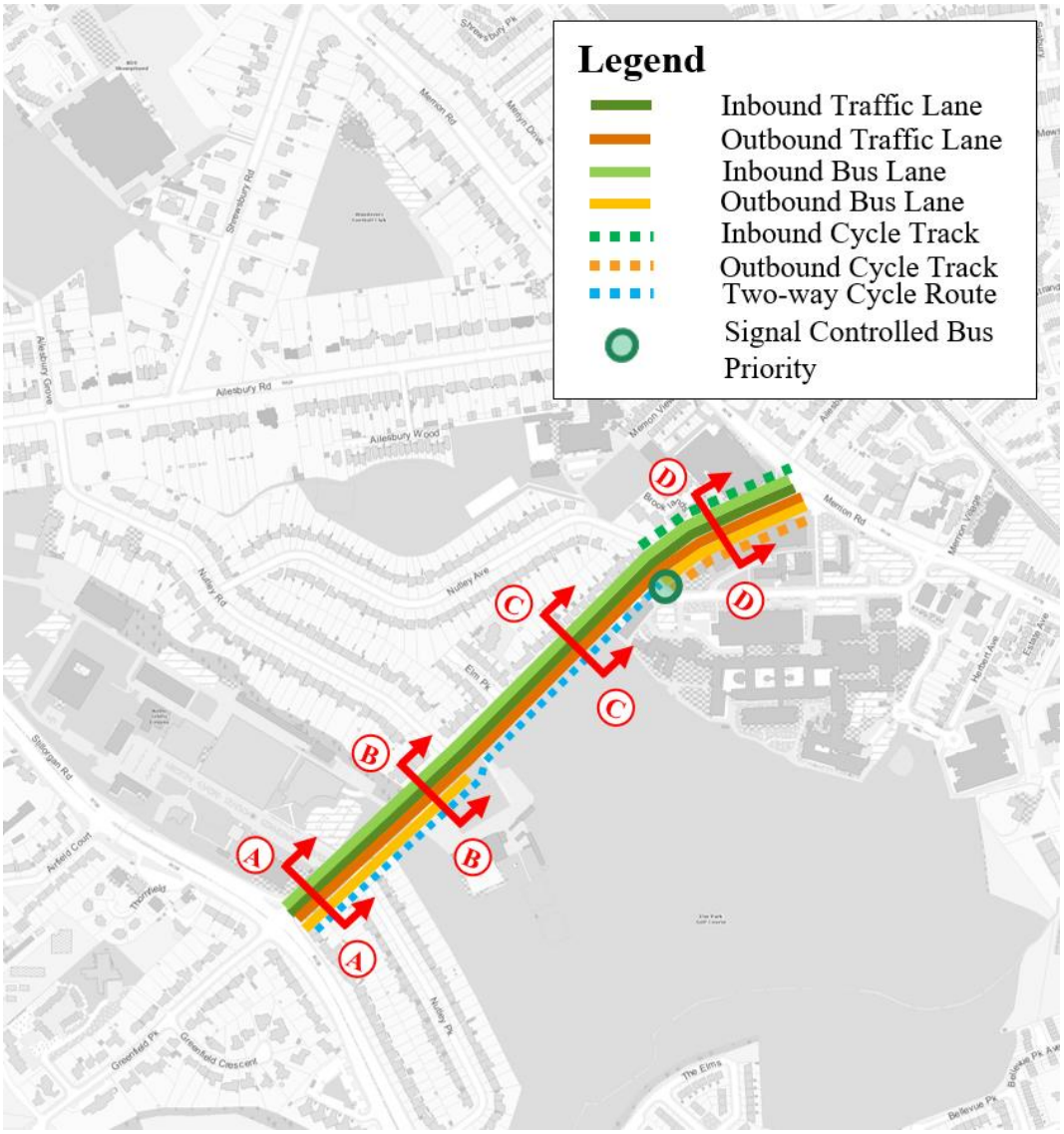

Figure 3.84: Route Option NL7 Indicative Scheme Design
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This section of the route commences at the junction of the R138 Stillorgan Road and Nutley Lane. From its commencement, two bus lanes and two general traffic lanes are proposed as far as its junction with Nutley Road.

At its junction with Nutley Road, it is proposed that the inbound bus lane and general traffic lane would continue, however it is proposed that there would be no outbound bus lane on approach to Nutley Road.

From this junction, two general traffic lanes and a northbound bus lane are proposed from Nutley Road to the junction of St. Vincent's University Hospital.

A bus priority traffic signal for southbound buses would be provided at this junction.

This route option would include the incorporation of pedestrian crossing facilities into the signalisation of the Nutley Road junction and adjustments to the existing signalised access junction to St. Vincent's University Hospital.

No footpath is proposed between the entrance to Elm Park Golf Club and the entrance to St. Vincent's University Hospital.

From the junction of St. Vincent's University Hospital to the R118 Merrion Road, Route Option NL7 is identical to Route Option NL2 described above.

The proposed cycle facilities are as selected in Chapter 3.4.2.2 of this report and are consistent for all options assessed, with the exception of Option NL1 (the EPR Option).

In order to provide this route option, land acquisition would be necessary from Merrion Shopping Centre, St. Vincent's University Hospital, Elm Park, RTÉ and Eir.

The proposed cross-sections A-A, B-B and D-D are as per the cross-sections described in Route Option NL2 in **Figure 3.68**, **Figure 3.69** and **Figure 3.70** respectively. The proposed cross-section C-C is as per the cross-section described in Route Option NL5 in **Figure 3.80**.

In summary, this route option would have the following characteristics:

- Bus lanes provided northbound continuously between the R138 Stillorgan Road and Merrion Road;
- Bus lanes provided southbound only between R138 Stillorgan Road and Nutley Road, and between St. Vincent's University Hospital and the R118 Merrion Road;
- The provision of bus priority along the section of the route between Nutley Road and St. Vincent's University Hospital through signal-controlled bus priority to control the flow of downstream traffic in the southbound direction;
- Retention of the existing footpath and trees on the residential side of the road between Nutley Road and Nutley Avenue;
- Removal of all on-street parking; and
- Land acquisition along St. Vincent's University Hospital, Elm Park, RTÉ, Merrion Shopping Centre and Eir frontages with associated tree removal, albeit significantly less land acquisition required from Elm Park relative to Route Options NL1 and NL2.

Junctions:

There is currently one existing signalised junction along this route option section, which would require upgrading to facilitate bus priority and cycle facilities. This junction is located at the entrance to St. Vincent's University Hospital.

Adjustments to the junction would include the provision of an island on the approach from Merrion Road to enable signal controlled bus priority, the provision of Toucan crossings to cater for cyclist movements, the provision of a dedicated right turn lane into St. Vincent's University Hospital, and the widening of the junction to accommodate the additional lanes. There would also be a potential requirement to relocate/provide new traffic signal equipment.

3.4.2.3.3 Section 2 Route Option Assessment

Details of the route options assessment undertaken for the Nutley Lane study area section are presented in Appendix G. The relative ranking of route options against the scheme assessment sub-criteria is summarised in **Table 3.11**.

Table 3.11: Section 2 Route Options Assessment Summary (Sub-Criteria)

Appraisal Criteria	Sub-Criteria	Option NL1	Option NL2	Option NL3	Option NL4	Option NL5	Option NL6	Option NL7
1 Economy	1A Capital Cost							
	1B Transport Quality & Reliability							
2 Integration	2A Land Use Policy							
	2B Residential Population and Employment Catchments							
	2C Transport Network Integration							
	2D Cycle Network integration							
	2E Traffic Network Integration							
3 Accessibility & Social Inclusion	3A Key Trip Attractors							
	3B Deprived Geographic Areas							
4 Safety	4A Road Safety							
	4B Pedestrian Safety							
5 Environment	5A Archaeology & Cultural Heritage							
	5B Architectural Heritage							
	5C Flora & Fauna							
	5D Soils, Geology & Hydrogeology							
	5E Landscape & Visual							

Appraisal Criteria	Sub-Criteria	Option NL1	Option NL2	Option NL3	Option NL4	Option NL5	Option NL6	Option NL7
	5F Air Quality							
	5G Noise & Vibration							
	5H Land Use Character							

In terms of Capital Cost, Option NL1 is the most expensive option due to it being the widest cross-section of the five options coupled with land acquisition costs. Option NL4 performs better than the other options due to the retention of the majority of existing kerb lines and the lower land acquisition costs. Despite NL3 and NL6 retaining the existing kerb line on the eastern side over the two-lane section, the three-lane section within NL4 extends further and as such cumulatively the infrastructure and land take costs are lower in NL4.

In terms of Transport Quality & Reliability, Option NL1 performs the best under this sub-criterion as full physical bus priority is provided throughout, with NL2 and NL4 performing slightly worse due to the additional signalised crossings which could impede journey time – despite full physical bus priority throughout. Options NL3, NL5, NL6 and NL7 perform badly under this criterion due to higher journey times due to a lack of physical bus priority and sharing road space with private traffic, with Options NL6 performing the worst as the northbound buses would be expected to experience significant delays at Nutley Road due to the timings required to keep the queuing in the shared lanes to a minimum in addition to the extent of shared lane.

All options serve the same catchments and as such are ranked equally in relation to Land Use Policy and Residential Population and Employment Catchments. Similarly, in terms of Transport Network Integration, as all options follow the same route, the opportunity for interchange with other routes is equal.

In terms of Cycle Network Integration, as set out in Chapter 3.4.2.2, an assessment of cycle route options was carried out independently to identify the preferred cycle route option and this option was applied to all route options with the exception of Option NL1, the EPR Option. It is deemed that the two-way cycle track offers benefits over the two single cycle tracks in terms of comfort and safety when comparing the number of driveways and accesses which need to be crossed. Hence Option NL1 performed slightly worse than all other options.

Options NL1 and NL2 perform the best under Traffic Network Integration as all movements would be permitted along Nutley Lane. Options NL3, NL4, and NL6 perform worse than other options under the Traffic Network Integration criterion, due to the detours required for through traffic as a result of a bus gate in NL3 and a one-way system in NL4, and the potential significant queuing and delays as a result of the signal-controlled priority measures in both directions in NL6. In addition, NL5 and NL7 also perform poorly under this criterion due to the expected queuing and delays as a result of the signal-controlled priority measures – albeit to a lesser extent than NL6.

All options rank equally under Accessibility & Social Inclusion as they all follow the same route.

Options NL1 and NL2 performed best under Road Safety due to no turning movements of buses being necessary and only one signalised junction for buses to manoeuvre. The remaining options all require either an additional signalised junction and associated turning movements, or involve merging of bus lanes and general traffic lanes.

All options rank equally under Pedestrian Safety as each provides footpaths throughout with dedicated signalised crossing points to connect footpaths as appropriate.

All options rank equally under Archaeology & Cultural Heritage, Architectural Heritage, and Soils, Geology & Hydrogeology as they all have no appreciable impacts.

Option NL1 performs the worst under Flora & Fauna due to this option requiring the largest number of trees to be removed as on-street trees are removed on both sides of the road as opposed to options NL2, NL4, NL5 and NL7 which retain the majority of trees on the residential side of the road – however NL2 also requires the removal of the existing hedgerow on the eastern boundary and as such performs worse. Options NL3 and NL6 both require the least number of trees to be removed, as they both also retain much of the existing trees on the eastern side of the road, and as such perform the best.

Similarly, with Landscape & Visual, Options NL3 and NL6 perform the best with the retention of much of the existing trees on both sides of the road. Each of Options NL2, NL4, NL5 and NL7 remove the trees on the eastern side of the road, but Option NL2 performs the worst of the three, due to the impact upon the property boundary along Elm Park Golf Club. Option NL1 performs the worst due to the removal of the majority of on-street trees along with the impact to properties on both sides of the road.

Option NL3 is ranked highest under Air Quality as this option removes all through traffic from a large section of Nutley Lane, followed by NL4 which removes southbound traffic over a portion. Options NL1, NL2, NL5, NL6 and NL7 could continue to facilitate through traffic and are ranked worst accordingly.

Similarly, Option NL3 is ranked the best under Noise & Vibration due to the anticipated traffic volumes on Nutley Lane. Aside from Option NL1, proximity of road edge to residential properties is equivalent across all options, and as such it performs the worst in this sub-criterion.

Option NL1 is ranked lower than the other options under Land Use Character primarily due to this option requiring the removal of the largest number of trees and having the most significant impact on adjacent property boundaries.

A summary of the assessment and relative ranking of route options against the five main assessment criteria is presented in **Table 3.12**.

Table 3.12: Section 2 MCA Criteria Summary

Appraisal Criteria	Option NL1	Option NL2	Option NL3	Option NL4	Option NL5	Option NL6	Option NL7
1 Economy							
2 Integration							
3 Accessibility & Social Inclusion							
4 Safety							
5 Environment							

3.4.2.3.4 Section 2 Conclusion and Preferred Option

Based on the above assessment, with consideration for all information currently available, Route Option NL2 offers more benefits over the other options. It retains two-way traffic and performs well under all criteria, with the exception of Environment due to the removal of trees and hedgerow. While other options did perform well under many criteria, the expected impacts in relation to Transport Quality & Reliability and Traffic Network Integration are considerably more than Option NL2. In particular is the likely associated reduction of bus journey time reliability and potential impacts on surrounding residential streets due to local and through traffic detouring onto other streets such as Ailesbury Road and Nutley Road, and beyond. Option NL2 is therefore the preferred option for the Nutley Lane route option section, for the following reasons:

- It best meets the objectives of the scheme to provide bus-priority, in this case through the provision of physical bus lanes along the entire section;
- It provides a continuous high-quality cycle facility along its length;
- It significantly reduces the number of trees required to be removed relative to the EPR Option;
- It significantly reduces the amount of land acquisition necessary relative to the EPR Option; and
- All local access and through movements for all modes in both directions are retained.

3.5 Preferred Route Option for the UCD Ballsbridge to City Centre Section

3.5.1 Introduction

Chapter 3.4 of this report presents an appraisal of all route options considered for the UCD Ballsbridge to City Centre Section. Following this appraisal, the preferred options have been incorporated into the full proposed route of the UCD Ballsbridge to City Centre Section to form an end-to-end PRO.

This chapter of the report presents and describes the PRO identified and the PRO scheme design. The PRO scheme design drawings are included in Appendix A of this report.

3.5.2 Preferred Route Description

The Preferred Route for the UCD Ballsbridge to City Centre Section is presented in **Figure 3.85**.

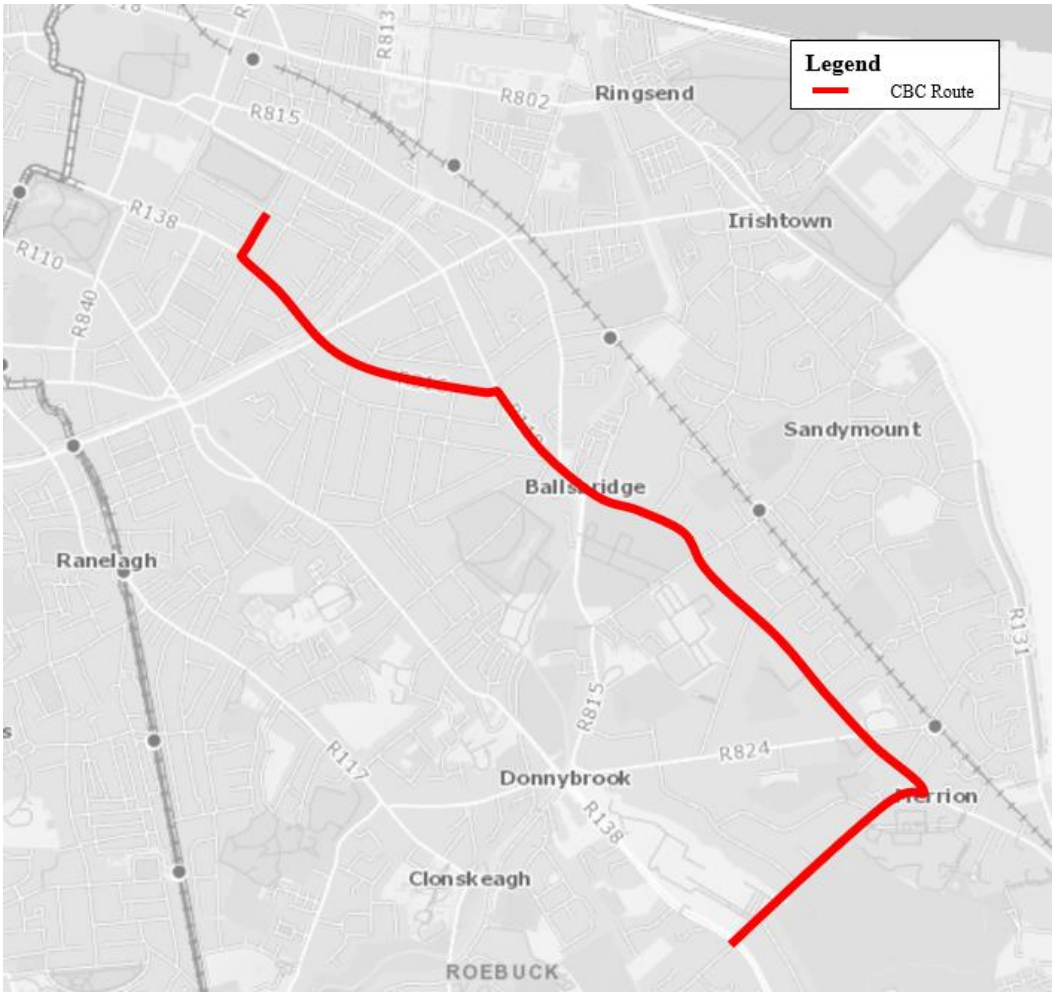

Figure 3.85: UCD Ballsbridge to City Centre Section Preferred Route Option
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The UCD Ballsbridge to City Centre Section commences on Fitzwilliam Street Lower at the junction with Mount Street Upper / Merrion Square South / Merrion Square East. It routes along Fitzwilliam Street Lower, turning onto the R816 Baggot Street Lower at its junction with Fitzwilliam Street Lower and is then routed along the R816 Baggot Street Lower, Baggot Street Upper, Pembroke Road, through its junction with Lansdowne Road, the R118 Pembroke Road, through Ballsbridge Village and the R118 Merrion Road to its junction with Nutley Lane, where it connects to the route of the Blackrock to Merrion Section. It travels along Nutley Lane from the R118 Merrion Road to the junction with the R138 Stillorgan Road.

3.5.3 Preferred Route Option Scheme Design Description

3.5.3.1 Section 1: Fitzwilliam Street Lower to Nutley Lane – Fitzwilliam Street Lower, Baggot Street Lower, Baggot Street Upper, Pembroke Road, Merrion Road

Fitzwilliam Street Lower

The UCD Ballsbridge to City Centre Section commences at the junction of Fitzwilliam Street Lower with Mount Street Upper/ Merrion Square South/Merrion Square East before turning onto Baggot Street Lower.

Along Fitzwilliam Street Lower the proposed cross-section would provide two bus lanes and two general traffic lanes, together with the introduction of cycle tracks in both directions. No land acquisition would be required to provide this; however, it would be necessary to remove all parking along this section.

Baggot Street Lower

Along Baggot Street Lower, it is proposed to provide a bus lane in each direction, a general traffic lane in each direction, a cycle track in each direction and a footpath on both sides of the road. In order to maintain the majority of existing trees located in the median, it is proposed to adjust the previously-developed cross-section from the EPR Option in order to retain the existing median along Baggot Street Lower. Some recessed parking bays are proposed on both sides of the road where space permits. As part of the design development, a new signalised Toucan crossing has been included on Baggot Street Lower.

At the MacCartney Bridge (Baggot Street Bridge), where Baggot Street Lower meets Baggot Street Upper, it is proposed to widen the existing footpaths on both sides of the bridge and introduce cycle tracks on both sides of the carriageway on the bridge. It is also proposed to reduce the number of lanes to one general traffic lane in each direction crossing the bridge which allows for the provision of improved minimum standard widths for pedestrians and cyclists crossing the canal. A previously proposed cycle crossing on the northern arm of the Herbert Place junction has been replaced by a dedicated pedestrian crossing, to match the existing provision.

Baggot Street Upper

At Baggot Street Upper on the inbound approach to the Mespil Road junction, it is proposed to reduce the number of lanes at the junction from four to two. Signal-controlled priority would be provided approaching the Mespil Road junction, where inbound (northbound) buses would be allowed to cross the bridge ahead of other traffic.

A similar facility would be provided for buses travelling outbound from Baggot Street Lower to Upper. In order to optimise the operation of this arrangement, left and right-turn bans are proposed from Herbert Place and Wilton Terrace respectively onto Baggot Street Bridge, and from Mespil Road onto Baggot Street Upper.

Along Baggot Street Upper, it is proposed to reduce the width of the existing carriageway. This can be facilitated through the proposed installation of a Bus Gate at the western end of Pembroke Road with a short section of bus lane between the Waterloo Road and Eastmoreland Place junctions.

Eastbound general traffic on Baggot Street Upper would not be permitted to access Pembroke Road and vice versa for westbound traffic on Pembroke Road. Consequently, the general traffic movement of right-turning vehicles from Baggot Street Upper to Waterloo Road would be accommodated in a single right-turn lane, permitting the removal of the existing straight-ahead lane towards Pembroke Road. The proposal includes providing dedicated cycle tracks through the village while improving the Urban Realm. Some loading and parking would be retained in the Baggot Street Upper village centre.

Pembroke Road

A single Bus Gate is proposed on Pembroke Road, between the Waterloo Road and Eastmoreland Place junctions. This Bus Gate would ensure that the only traffic utilising Pembroke Road would be local traffic with a destination on or close to Pembroke Road, as well as buses travelling through and authorised vehicles. This removes the need for four traffic lanes including dedicated bus lanes along this section of Pembroke Road, i.e. inbound and outbound buses would use the two general traffic lanes. The introduction of the bus gate would reduce traffic volumes on Pembroke Road as through traffic in both directions would be diverted in advance of Pembroke Road, therefore buses would not be delayed. The additional space means that existing trees along Pembroke Road would be retained, while new cycle tracks are proposed on both sides, with some on-street parking retained. The existing footpath width along this section of the route would also be retained and/or widened where the space allows. Land acquisition along this section of the route would no longer be required based on the revised proposals compared to the EPR Option.

Access to Pembroke Road, between Waterloo Road and Northumberland Road would be maintained via the Lansdowne Road Junction. Local access would also be maintained via Eastmoreland Place, Wellington Road and Raglan Road. Traffic management measures such as turning restrictions at junctions or road closures would also be considered on adjoining residential streets at suitable locations to prevent through traffic diverting inappropriately.

On Pembroke Road, from Northumberland Road to Elgin Road, 2m wide cycle tracks are proposed where practicable. It is proposed to reduce the width of the proposed cycle tracks to 1.5m in places and to reduce the length of the proposed right-turn lane from Pembroke Road onto Lansdowne Road (when compared to the EPR Option). This would facilitate the retention of a number of existing trees along this section of Pembroke Road which were initially proposed to be removed in the EPR Option. The splitter island on Pembroke Road approaching the Northumberland Road junction from the south, as per the EPR Option is now proposed to be omitted due to the lack of space identified by the topographical survey. The splitter islands previously proposed on the western and northern arms are also proposed to be omitted to ensure all relevant vehicles types can make the required manoeuvres.

Ballsbridge Village

At the Ballsbridge Village junction of Shelbourne Road, Herbert Park Road and Elgin Road, it is proposed to introduce a left-turn only entry into Elgin Road from Ballsbridge, which is a change from the EPR Option which proposed to convert Elgin Road into a cul-de-sac with no access from Ballsbridge. At this junction, the Herbert Park arm has also been realigned compared to the EPR Option alignment, in order to minimise the impact on adjacent properties and to retain a number of existing trees to the east of the junction.

On the eastern side of the Dodder River, it is proposed to provide a two-way cycle track from Anglesea Road to Beatty's Avenue connected by a Toucan Crossing on the R118 in Ballsbridge Village. This would form part of the Dodder Greenway which is being progressed as a separate project.

Entry to Ballsbridge Avenue is proposed to be located at the current exit, while a new exit to the north is proposed, taking cognisance of the extent to which Ballsbridge Park is a private road. This would remove the requirement for vehicles to turn right onto Beatty's Avenue from the R118 in Ballsbridge Village. The left slip road from the R118 Merrion Road to Anglesea Road is proposed to be removed, with the relocation of vehicular access to the City of Dublin Educational and Training Board (CDETB) premises onto Anglesea Road. The proposed access into the CDETB premises has been positioned to minimise the impact on historic railings. The proposed road layout between Anglesea Road and Sandymount Avenue would remain largely unchanged from the EPR Option aside from the removal of the traffic islands on Merrion Road at Serpentine Avenue and associated widening of the proposed footpath.

R118 Merrion Road

The R118 Merrion Road from Sandymount Avenue to Nutley Lane is sub-divided into three sections by its main junctions with Shrewsbury Road and Ailesbury Road. The section between Sandymount Avenue and Shrewsbury Road is proposed as a 4-lane carriageway with a bus lane and general traffic lane in both directions. There are a number of mature trees located along the footway on this section of road and the proposed layout attempts to maximise the number of trees to be retained.

In order to retain as many trees as practicable, a small area of land acquisition is proposed within the grounds of the Clayton Hotel Ballsbridge, Merrion Road, whereby a new footpath and cycle lane is proposed to run behind the existing trees. This would require land acquisition of a portion of the grass frontage and the relocation of the railing of this property which was not previously identified in the EPR Option.

Also, along this section of the R118 Merrion Road, it is proposed to reduce the footpath and cycle track widths locally in certain locations in order to retain more trees. This would locally reduce footpaths to a minimum width of 1.2m and cycle tracks to a minimum width of 1.4m over the short length of each pinch point.

Between Shrewsbury Road and Ailesbury Road, it is proposed to provide a three-lane carriageway along its length with a footpath and cycle track in each direction and partial bus lanes in each direction. The carriageway cross-section would comprise of two general traffic lanes and one bus lane. Signal-Controlled Bus Priority would be used to give buses priority along the stretch of road that buses share with general traffic. The direction in which the bus lanes travel would swap in the vicinity of Wanderers Rugby Football Club (WFC). From WFC to Shrewsbury Road, only an inbound bus lane would be provided, while from WRC to Ailesbury Road, only an outbound bus lane is proposed. This would permit the retention of a number of existing trees and avoids the requirement for land acquisition from the properties adjacent to the Dutch Embassy.

The proposed cross-section reverts to a four-lane proposal between Ailesbury Road and Nutley Lane. This would require land acquisition, as previously identified in the EPR Option, with the exception of St. Michael's College where land acquisition would no longer be required. At Merrion View Avenue, the existing gate accessing a residential laneway has been retained in its existing location, which was proposed to be relocated in the draft PRO published in March 2020.

On the outbound approach to Nutley Lane, it is proposed to remove the splitter island between the bus lane and the straight-ahead general traffic lane and provide Signal-controlled Bus Priority at the pedestrian crossing between Ailesbury Road and Nutley Lane. This would permit buses accessing Nutley Lane to move into the right-turn general traffic lane and complete their manoeuvre from this lane. This in turn facilitates continuous bus and cycle lanes along the R118 Merrion Road southbound through the junction.

3.5.3.2 Section 2: Nutley Lane (Merrion Road to R138)

From its junction with the R118 Merrion Road to the access junction to St. Vincent's University Hospital, the proposed layout is largely in keeping with the previous proposal in the EPR Option.

From the St. Vincent's University Hospital access junction to the Nutley Park junction, it is proposed that four lanes, two bus lanes and two general traffic lanes would be provided on the carriageway. A two-way, 3.0m wide cycle track is proposed on the Elm Park Golf Club side of the road, from St. Vincent's University Hospital. A Toucan Crossing is proposed at the St. Vincent's University Hospital junction to connect the two-way cycle track to the single cycle tracks to the north. No footpath is proposed on the Elm Park Golf Club side of road over this section from just south of the St. Vincent's University Hospital junction to just north of Elm Park Golf Club, with a dedicated crossing provided at these locations. The existing footpath on the north-western side of the road is proposed to be retained, which in turn would allow the trees on this side of the road to also be retained.

From Nutley Road to the R138 Stillorgan Road it is proposed to retain this overall cross-section, aside from the reintroduction of the footpath on the south-east side of the road, just north of the Elm Park Golf Club entrance where a pedestrian crossing would be provided.

It is proposed that the two-way cycle track would continue past the entrance to Elm Park Golf Club and then would tie in with the R138 Stillorgan Road junction where the UCD Ballsbridge to City Centre Section ends.

This proposal retains the requirement for land acquisition from the properties currently occupied by RTÉ and Eir. In relation to the EPR Option, this layout reduces the extent of land acquisition required from St. Vincent's University Hospital and the Elm Park Golf Club and avoids the need for land acquisition from the residential properties along this road.

3.5.4 Summary

3.5.4.1 Infrastructure Provision

The Preferred Route is approximately 4.22km long from end to end. The updated concept scheme design drawings show the extent of the infrastructure proposed to deliver the UCD Ballsbridge to City Centre Section. The bullet points below present the length of existing and proposed bus and cycle priority as a percentage of the overall route length.

- *16*% Existing bus priority (outbound) *(16% physical)*
- *33*% Existing bus priority (citybound) *(33% physical)*
- *100*% Proposed bus priority (outbound) *(78% physical – 22% virtual)*
- *100*% Proposed bus priority (citybound) *(81% physical – 19% virtual)*
- *36*% Existing cycle priority (outbound) (*16% mandatory cycle lane – 20% advisory cycle lane*)
- *14*% Existing cycle priority (citybound) (*14% advisory cycle lane*)
- *100*% Proposed cycle priority (outbound)
- *100*% Proposed cycle priority (citybound)

Virtual bus priority measures are proposed at the following locations:

1. Signal controlled priority at Baggot Street Bridge and Baggot Street Upper between Herbert Place and Baggot Village (inbound and outbound) – Approximately 90m length inbound and Approximately 145m length outbound;
2. Bus gate on Pembroke Road allowing virtual priority between Eastmoreland Place and Northumberland Road (inbound and outbound) – Approximately 480m length;
3. Signal controlled priority at R118 Merrion Road between Ailesbury Road and Wanderers Rugby Football Club (inbound) – Approximately 250m length; and
4. Signal controlled priority at R118 Merrion Road between Wanderers Rugby Football Club and Shrewsbury Road (outbound) – Approximately 305m length.

3.5.4.2 Main Scheme Changes

The following list highlights the main scheme changes between the published EPR Option and the PRO:

- The Proposed Scheme has been extended to include Fitzwilliam Street Lower from Baggot Street Lower to Mount Street Upper / Merrion Square;
- The existing median along Baggot Street Lower is proposed to be retained and a new signalised Toucan crossing is proposed south of James Street East;
- The cross-section of Baggot Street Upper is proposed to be adjusted to reduce the carriageway width and improve the urban realm;
- A bus gate is proposed on Pembroke Road at the Baggot Street Upper end, permitting the removal of bus lanes along Pembroke Road. Land acquisition along Pembroke Road would no longer be required;
- Offline traffic management measures are proposed as follows: to make the westernmost c. 70m of Clyde Lane one-way north/westbound on approach to Clyde Road, and to introduce a No Right turn onto Herbert Park from Pembroke Park;
- A large proportion of trees are to be retained between Northumberland Road and Ballsbridge by revising the alignment of the road and by reducing the length of the right turn lane being proposed onto Lansdowne Road;
- A left-turn entry only to Elgin Road from Ballsbridge is proposed;
- At the Ballsbridge Junction, the Herbert Park arm has been realigned in order to minimise the impact on adjacent properties and to retain a number of existing trees to the south-east of the junction;
- At the Anglesea Road / Merrion Road junction, the vehicular access into the City of Dublin Educational and Training Board (CDETB) premises has been relocated with the removal of the left-turn slip, and had be positioned to minimise the impact on historic railings;
- At the Anglesea Road / Merrion Road junction, the proposed right turn lane, which previously reflected the approximate length of the existing provision, is proposed to be reduced in length which associated reallocation of space to the adjacent footpaths;
- A revised access to Ballsbridge Avenue with an entry and exit to/from Ballsbridge Park is proposed;
- Land acquisition from the Clayton Hotel Ballsbridge, Merrion Road is proposed to ensure that three large mature trees in the public footpath can be retained;
- Revisions to the road layout on Merrion Road between Shrewsbury Road and Sandymount Avenue are proposed to reduce the impacts on trees;
- A three-lane option with partial bus lanes and signal-controlled bus priority is proposed on Merrion Road between Shrewsbury Road and Ailesbury Road to reduce the impacts on trees;

- A right turn lane from Nutley Lane into St. Vincent's University Hospital (SVUH) has been introduced into the design, with consideration for planning permission for the development of the National Maternity Hospital (NMH) at SVUH (granted by An Bord Pleanála) – which included provision of right-turn lane;
- A two-way cycle track and removal of footpath is proposed along Nutley Lane in front of Elm Park Golf Club. The two-way cycle track continues on Nutley Lane between St. Vincent's University Hospital and the R138 Stillorgan Road, which was previously proposed to cross over to the RTÉ side of the road via a toucan crossing at Nutley Park; and
- Bus stop locations have been modified in this revised proposal, with some bus stops relocated or removed to achieve a better spacing between stops to ensure a more efficient bus network operation, while also ensuring that each stop is sited in the optimum location to serve surrounding neighbourhoods.

3.5.5 Scheme Benefits

3.5.5.1 Bus Journey Times

Through the provision of increased bus priority infrastructure, the Proposed Scheme would improve both the overall journey times for buses along the route and their journey time reliability. This can help to realise the objectives of the Proposed Scheme as set out in Chapter 2.4 of this report. The facilitation of bus priority along the UCD Ballsbridge to City Centre Section, through the delivery of dedicated bus lanes, bus gates and signal-controlled bus priority, is envisaged to reduce bus journey times along the UCD Ballsbridge to City Centre Section. In addition to this, journey reliability is envisaged to be improved, by largely removing interaction between bus traffic and general traffic.

3.5.5.2 Walking & Cycling

In addition to the improvements to bus journey time and journey time reliability, the Proposed Scheme would provide benefits for cyclists and pedestrians. The provision of dedicated cycling infrastructure along the UCD Ballsbridge to City Centre Section would improve the level of service provided for cyclists along the route, making cycling trips safer and more attractive.

The Proposed Scheme would deliver substantial elements of the GDA Cycle Network Plan as outlined in Chapter 3.2.5, as well as linking with other proposed cycling schemes, contributing towards the development of a comprehensive cycling network for Dublin.

The Proposed Scheme would also provide improved facilities for pedestrians along the route. Improved crossing facilities would be provided both at junctions and in mid-block locations.

A number of public realm upgrades, including widened footpaths, high quality hard and soft landscaping as well as street furniture improvements would be provided in areas of high activity to contribute towards a sense of place and a safer, more attractive environment for pedestrians.

4. Blackrock to Merrion Section

4.1 Background and Non-Statutory Public Consultation for the Blackrock to Merrion Section

4.1.1 Dún Laoghaire to City Centre Core Bus Corridor Options Study Feasibility and Options Assessment Report and Emerging Preferred Route

In early 2016, the NTA initiated plans to develop the network of CBCs identified in the GDA Transport Strategy. As part of this body of work, the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' was prepared, which identified feasible options along the corridor, assessed these options and arrived at an EPR Option. These proposals formed the basis for the first Non-Statutory Public Consultation on the Blackrock to Merrion Section.

4.1.2 First Non-Statutory Public Consultation – Emerging Preferred Route Option

The first non-statutory public consultation on the BusConnects CBCs took place on a phased basis. The first phase of consultation occurred from the 14th of November 2018 to the 29th of March 2019. The second phase ran from the 23rd of January 2019 to the 30th of April 2019 and the final phase ran from the 26th of February 2019 until the 31st of May 2019. The Blackrock to Merrion Section EPR Option formed part of the final phase of consultation, which closed on the 31st of May 2019. The Information Brochure published as part of this consultation is included in Appendix I2.

There were 84 submissions received for the Blackrock to Merrion Section. These submissions ranged from personal submissions sent in by residents, landowners and local representatives, to detailed proposals from various associations and private sector businesses. A number of community forums, meetings with resident groups, and one-to-one meetings were also held as part of the process.

A brief summary of the feedback received on the Blackrock to Merrion Section during the EPR Option public consultation is presented in this chapter of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Loss of Parking;
2. Inadequacies in Consultation Process;
3. Traffic Issues Associated with Proposed Traffic Management Measures;
4. Removal of Trees;

5. The Potential Impact on Protected Structures;
6. Pedestrian Safety;
7. Rationalisation of Bus Service;
8. Vehicular Access to Property;
9. Devaluation of Property;
10. Cyclist Safety / Inadequate Provision for Cyclists;
11. Cyclist Segregation;
12. Loss of Access to Local Amenities;
13. Increased Air and Noise Pollution;
14. Proposed Land Acquisition;
15. Integration with Sutton to Sandycove Promenade Scheme;
16. Duration of Bus-lane Operation;
17. Project Splitting.

Further details on these issues can be found in the Public Consultation Submissions Report – 1st Non-Statutory Public Consultation in Appendix B2.

4.1.3 Development of Draft Preferred Route Option

Following the first non-statutory public consultation, a review was undertaken of the scheme proposals along the Blackrock to Merrion Section route based on the following new information which was available for consideration:

- Detailed topographical survey along the route corridor;
- Submissions received during the first non-statutory public consultation; and
- Issues raised during meetings with community forums, resident groups and one-to-one meetings with directly impacted landowners.

As part of this review, a methodology was developed to facilitate new options for consideration in specific areas if issues were identified. These new options would then be subject to further options assessment to identify the draft PRO. The selected draft PRO that was subsequently identified formed the basis for the second non-statutory public consultation in March / April 2020.

4.1.4 Second Non-Statutory Public Consultation Draft Preferred Route Option

The draft PRO was published in March 2020 and a second round of non-statutory public consultation commenced on the 4th of March 2020 until the 17th of April 2020. The Information Brochure published as part of this consultation is included in Appendix J2.

Due to COVID-19 restrictions being imposed by Government in mid-March 2020, the planned Public Information Events were impacted. Consequently, there were 31 submissions received for the Blackrock to Merrion Section (compared to 84 submissions following the first non-statutory public consultation). These submissions ranged from personal submissions sent in by residents, commuters, landowners and local representatives, to detailed proposals from public bodies, various associations and private sector businesses. A number of community forums, meetings with resident groups, and one-to-one meetings were also held as part of the process prior to the COVID-19 restrictions being imposed.

A brief summary of the feedback received on the Blackrock to Merrion Section during the second non-statutory public consultation is presented in this chapter of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Cyclist Safety;
2. Pedestrian Safety;
3. Supportive of the Scheme;
4. Vehicular Access to Properties;
5. Removal of Trees;
6. Increased Air & Noise Pollution;
7. Devaluation of Property;
8. Protected Structures;
9. Loss of Parking; and
10. Traffic Issues.

The issues raised during the second non-statutory public consultation were considered in the further development of the draft PRO. Further detail on these issues can be found in the Public Consultation Submissions Report – 2nd and 3rd Non-Statutory Public Consultation in Appendix C2.

Subsequently, it was determined by the NTA that a third non-statutory public consultation would be conducted prior to finalising the PRO.

4.1.5 Development of the Updated Draft Preferred Route Option

Following the second non-statutory public consultation, a review was undertaken of the scheme proposals along the Blackrock to Merrion Section route based on the following new information which was available for consideration:

- Updated topographical survey along the route corridor;
- Submissions received during the second non-statutory public consultation; and

- Issues raised during meetings with community fora, resident groups and one-to-one meetings with directly impacted landowners.

As part of this review, options were reviewed further, and new options were developed for consideration in specific areas where issues were identified. These new options would be subject to further options assessment to identify the updated draft PRO. The updated draft PRO that was subsequently identified formed the basis for the third non-statutory public consultation in November / December 2020.

4.1.6 Third Non – Statutory Public Consultation – Updated Draft Preferred Route Option

The third round of non-statutory public consultation for the Blackrock to Merrion Section took place from the 4th of November 2020 until 16th of December 2020 on the updated draft PRO. The Information Brochure published as part of this consultation is included in Appendix K2.

With the continuing effect of the COVID-19 pandemic and associated Government restrictions, the third non-statutory public consultation was held virtually. Virtual consultation rooms for each CBC were developed and published. Along with offering a call back facility, these rooms provided a description of each Preferred Route from start to finish with supporting maps and included information of all revisions made, if any, since the previous rounds of non-statutory public consultation as well as other supporting documents.

The consultation period remained open until the 16th of December 2020 and submissions were accepted by email, through the virtual consultation rooms or by post. All relevant information including the updated Information Brochures and the Emerging Preferred Route public consultation reports were made available on the BusConnects website (https://busconnects.ie) to view and download. A number of community forums, meetings with resident groups, and one-to-one meetings were also held online as part of the process.

A total of 201 submissions were received relating to the Blackrock to Merrion Section as part of the third consultation. These submissions ranged from individual submissions by residents, commuters and local representatives, to detailed proposals from various associations and private sector businesses.

A brief summary of the feedback received on the Blackrock to Merrion Section during the third non-statutory public consultation is presented in this section of the report.

While a variety of matters were raised in the submissions, the key issues identified during the consultation were as follows:

1. Cyclist Safety;
2. Pedestrian Safety;
3. Supportive of the Scheme;
4. Vehicular Access to Properties;

5. Removal of Trees;
6. Increased Air & Noise Pollution;
7. Devaluation of Property;
8. Protected Structures;
9. Loss of Parking;
10. Traffic Issues; and
11. Location of Bus Stops

The issues raised during the third non-statutory public consultation have been considered in the further development of the PRO. Further detail on these issues can be found in the Public Consultation Submissions Report – 2nd and 3rd Non-Statutory Public Consultation in Appendix C2.

4.2 The Study Area for the Blackrock to Merrion Section

4.2.1 Introduction

The overall study area within this assessment is shown in **Figure 4.1**. It is noted that the Blackrock to Merrion Section forms part of a longer corridor which was assessed in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' and as such the study area herein is a reduction on the previous study area reflective of the Blackrock to Merrion Section extents.

Two sections of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' remain within the study area of the Blackrock to Merrion Section, with the extents of each amended in a similar manner to reflect the Blackrock to Merrion Section extents.

Section 1 reflects Study Area Section (SAS) 1 of the previous report, but has been curtailed, however, at Nutley Lane to match the western extents of the Blackrock to Merrion Section.

Section 2 reflects Study Area Section (SAS) 2 of the previous report, but has been extended at Monkstown Road to match the eastern extents of the Blackrock to Merrion Section.

Figure 4.1: Study Area and Section Breakdown

(Section 1 herein is an extract of SAS 1 described within the previous report while Section 2 refers to SAS 2 with an additional area included to capture the eastern extents of the route, both combined and updated.).

Arising from the transport policy context and scheme objectives set out for the Dún Laoghaire to City Centre CBC, the study area includes the road network in the vicinity of the existing bus routes and extends to include additional, potentially-feasible route options.

The Study Area is generally bounded to the north by Ailesbury Road / Sydney Parade Avenue and to the south by Newtownpark Avenue.

4.2.2 Study Area Sections

4.2.2.1 Section 1

Section 1 is a narrow corridor along the R118 between Booterstown Avenue and Strand Road. At Strand Road the study area splits to incorporate both Merrion Road and Strand Road. While the Blackrock to Merrion Section ends at the junction of Merrion Road and Nutley Lane, for the purpose of this report, the study area has been extended to Ailesbury Road / Sydney Parade Avenue in order to include Strand Road as a potential route as per the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report'.

The Blackrock to Merrion Section extends along Merrion Road, ceasing on the approach to the junction of Merrion Road and Nutley Lane. This is so as to tie-in with the UCD Ballsbridge to City Centre Section, along with which the Blackrock to Merrion Section forms the Proposed Scheme.

4.2.2.2 Section 2

Section 2 of the Study Area is located between Booterstown and Blackrock and includes the R113, R119, R825, N31, R118. This section also includes local roads including Cross Avenue and Booterstown Avenue as well as the village of Blackrock.

The Blackrock to Merrion Section extends south of Blackrock Village along Temple Hill, ceasing to the south of the junction with Monkstown Road, at approximately the entrance to Montpelier Place. This extent was determined initially as part of the EPR Option development. Based on the catchment analysis and the information available for the areas assessed to the south of the study area, it was apparent that the Blackrock to Merrion Section should stop at the chosen location because bus services beyond that point would need to diverge to serve two different catchment areas; ultimately achieving two dissimilar purposes. For reference, **Figure 4.2** shows an extract from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', illustrating the 'spider's web' of potential routes considered in the Stage 1 assessment of the study area to south of the Blackrock to Merrion Section extents (Study Area SAS3 therein).

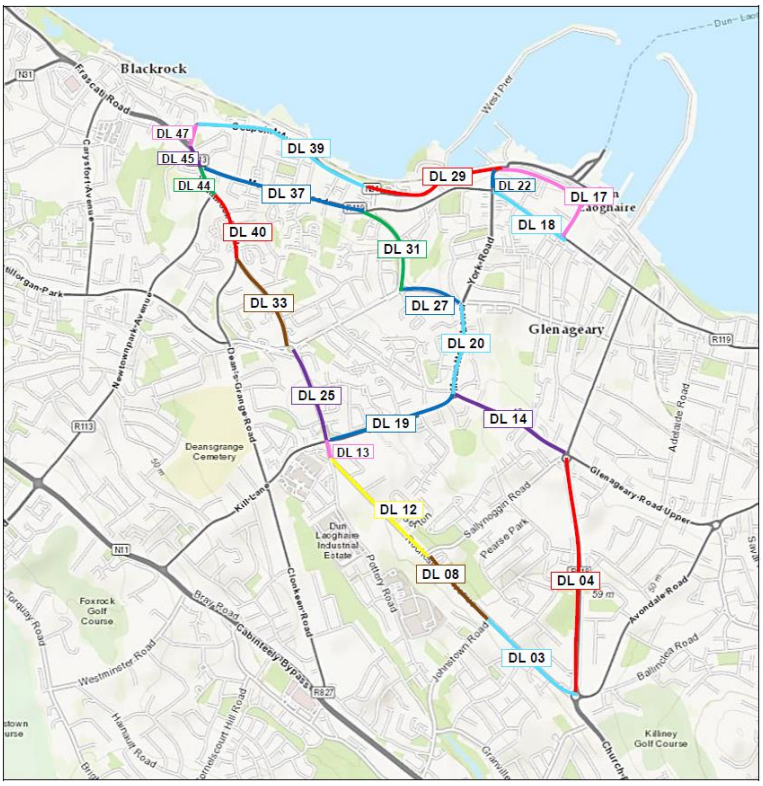

Figure 4.2: Spider's Web of Route Options extracted from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' [SAS3 therein]

4.2.3 Physical Constraints and Opportunities

There are a number of potential constraints, both natural (i.e. the existing natural environment) and physical (the built environment), which could constrain route options for the Blackrock to Merrion Section within the defined study area including:

- Street trees and other natural features along the route;
- The existing urban and sub-urban roads and street network;
- The existing railway line along the eastern coast;
- The available width along Merrion Road between Strand Road and St. Vincent's University Hospital;
- Availability of land in urban and suburban areas;
- Booterstown Marsh and Blackrock Park; and
- The ongoing works within Blackrock Village including the expansion of the existing built form and public realm interventions.

There are also a number of potential opportunities, which could enhance the Blackrock to Merrion Section within the defined study area including:

- The opportunity to enhance connectivity to, from, and between two major hospitals – namely St. Vincent's University Hospital and the Blackrock Clinic – through sustainable transport modes;
- The opportunity to enhance connectivity to two major newly developed shopping centres – namely Frascati Shopping Centre and Blackrock Shopping Centre – through sustainable transport modes;
- The opportunity to enhance connectivity to educational centres such as Willow Park and Blackrock College through sustainable transport modes;
- The natural amenity of Blackrock Park, and the opportunity for integration with the cycle routes therein;
- The opportunity for integration with the East Coast Trail (Sutton to Sandycove Greenway);
- The opportunity for the provision of enhanced public realm within the various villages and suburban centres within the study area including Merrion Village and Blackrock Village.

4.2.4 Integration with Existing and Proposed Public Transport Network

One of the key objectives of the CBC Infrastructure Works is to enhance interchange between the various modes of public transport operating in the city and wider metropolitan area, both now and in the future. Route options within the study area have therefore been developed with this in mind and, in so far as practicable, seek to provide for improved existing or new interchange opportunities with existing transport services, including:

- Potential for interchange with existing 46e and 84 bus routes on the Rock Road at Blackrock;
- Potential for interchange with existing 17 bus route at Mount Merrion Avenue and Carysfort Avenue;
- Potential for interchange with existing 114 bus route at Carysfort Avenue;
- Potential for interchange with existing 4, 7, and 7a bus routes along Merrion Road;
- Potential for interchange with existing 47 bus route at Nutley Lane; and
- Potential for interchange with the DART rail service at the Blackrock, Booterstown and Sydney Parade DART Stations.

Figure 4.3 highlights the potential for interchange with existing public transport services along the Blackrock to Merrion Section.

Figure 4.3: Existing Public Transport Services

(Blackrock to Merrion Section highlighted in yellow)

The route options also seek to provide for interchange opportunities with new transport services proposed within the New Dublin Area Bus Network, including:

- Potential for interchange with the proposed B1 and B2 spine routes at Nutley Lane;

- Potential for interchange with the proposed S6 orbital route at Mount Merrion Avenue;
- Potential for interchange with the proposed S8 orbital route at Monkstown Road;
- Potential for interchange with the proposed L26 local route at Carysfort Avenue and the L13 local route at Nutley Lane.

Figure 4.4, extracted from the New Dublin Area Bus Network Maps, highlights the potential for interchange with other proposed bus routes along the Blackrock to Merrion Section.

Figure 4.4: Extract from New Dublin Area Bus Network Maps

(Blackrock to Merrion Section highlighted in yellow)

4.2.5 Compatibility with Other Road Users

A key objective of the Proposed Scheme is to improve pedestrian and cyclist facilities along the route. For cyclists, segregated facilities should be provided where practicable to do so. The GDA Cycle Network Plan proposes a network of cycle links throughout the GDA, categorised as follows:

- **Primary Routes:** Main cycle arteries that cross the urban area and carry most cycle traffic.
- **Secondary Routes:** Link between principal cycle routes and local zones.
- **Feeder Routes:** Cycle routes within local zones and/or connections from zones to the network levels above.
- **Inter Urban Routes:** Links the towns and city across rural areas and includes the elements of the National Cycle Network within the GDA.
- **Green Route Network:** Cycle routes developed predominately for tourist, recreational and leisure purposes but may also carry elements of the utility cycle route network above. Many National Cycle Routes will be of this type.

Specifically, Primary Cycle Route 13 and Secondary Routes S04 and 13D from the GDA Cycle Network Plan run along or are intercepted by the Blackrock to Merrion Section, with their provision considered at all stages of the options assessment process.

The interaction of the Blackrock to Merrion Section with other schemes progressing through the planning and design process has also been considered, specifically the ongoing development of the East Coast Trail (Sutton to Sandycove Greenway). This proposed greenway, also contained in the GDA Cycle Network Plan runs roughly parallel to the Blackrock to Merrion Section along part of its route.

An extract from the GDA Cycle Network Plan is presented in **Figure 4.5**, which highlights the Blackrock to Merrion Section in the context of the planned cycle network.

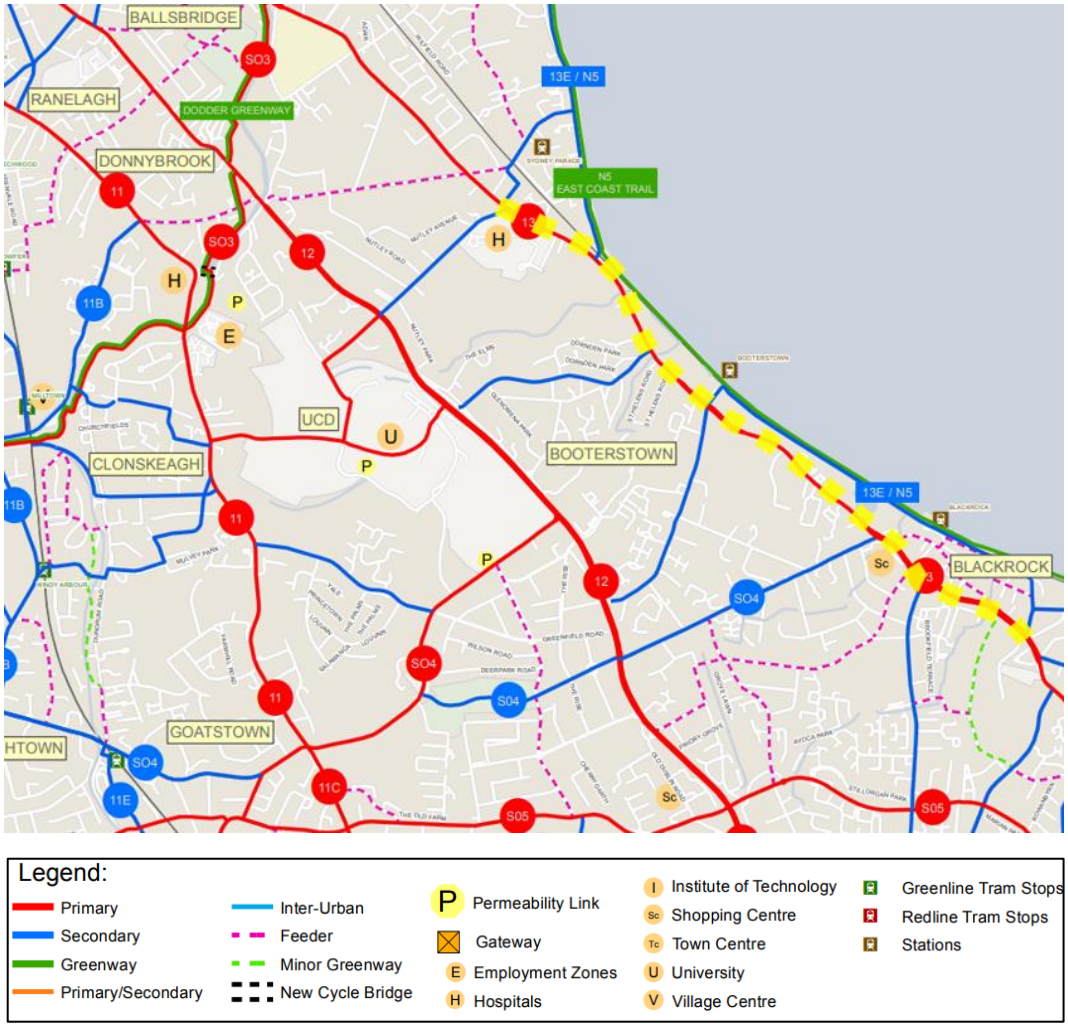

Figure 4.5: Extract from GDA Cycle Network Plan

(Blackrock to Merrion Section highlighted in yellow)

4.3 Review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment'

4.3.1 Introduction

From a review of submissions received as part of the public consultation process, as well as a review of the topographical survey carried out since the EPR Option's publication, a review of potential options which had the potential to overcome concerns through the implementation of alternative design solutions was undertaken. These issues are described in the following chapters.

4.3.2 Assessment Methodology

4.3.2.1 Route Option Assessment Methodology

The first step in the assessment process was to review the EPR Feasibility Study and Options Assessment Report.

The 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' utilised a two-stage assessment process to determine the EPR Option, comprising:

- An initial 'Stage 1' high-level route options assessment or 'sifting' process which appraised routes in terms of ability to achieve scheme objectives and whether they could be practically delivered; and
- Routes which passed this initial stage were taken forward to a more detailed Stage 2 assessment.

At the start of the Stage 1 assessment, an initial 'spider's web' of potential route options that could accommodate a CBC was identified for each study area section.

Figure 4.6 and **Figure 4.7** are extracts from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', illustrating the 'spider's web' of potential routes considered in the Stage 1 assessment of each section.

Figure 4.6: Spider's Web of Route Options extracted from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' [Section 1 herein]

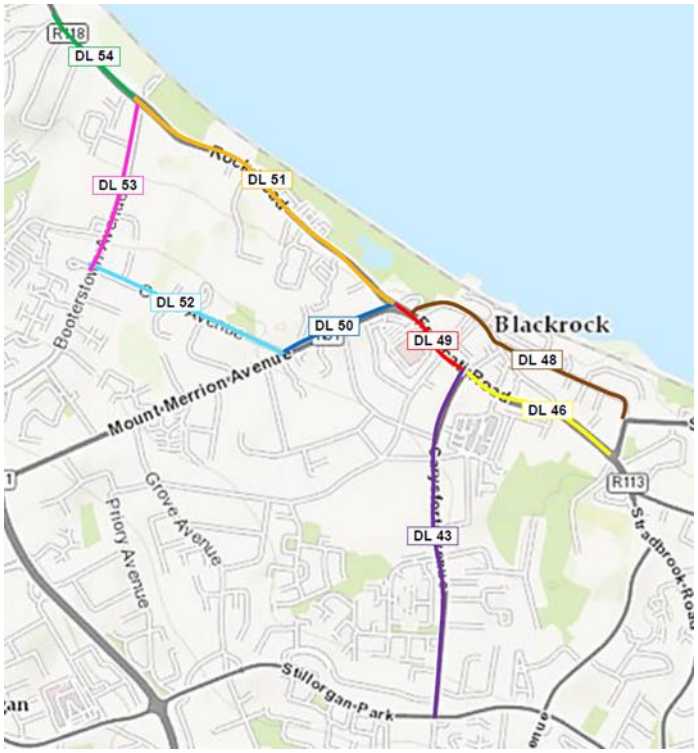

Figure 4.7: Spider's Web of Route Options extracted from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' [Section 2 herein]

The following extract from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' describes the two-stage process used to determine the EPR Option:

"*At the Stage 1, i.e. sifting stage, the initial "spider's web" of route sections was narrowed down using a high level qualitative method based on professional judgement and a general appreciation for existing physical conditions / constraints within the Study Area from available survey information and site visits.*

This exercise identified route sections that would either not achieve the scheme objectives or would be subject to significant cost and/or impact to achieve these objectives (e.g. excessive land-take)." ….

…. "*Following completion of the 'Stage 1' assessment, the remaining potentially feasible route sections were progressed to Stage 2 of the assessment process. This stage comprised a more detailed qualitative and quantitative assessment of scheme options identified along each potential route, using criteria established to compare scheme options.*

The first step in the Stage 2 assessment was to combine shorter route sections which passed the Stage 1 assessment, to form longer end-to-end potential routes within the Study Area.

After developing routes options, each was explored using different design concepts to identify the degree of facility provision and necessary infrastructure requirements." .....

…. "The scheme options for each route were then progressed to a multi-criteria analysis.

The 'Common Appraisal Framework for Transport Projects and Programmes' published by the Department of Transport, Tourism and Sport (DTTAS), March 2016, requires schemes to undergo a 'Multi-Criteria Analysis' (MCA) under the following criteria;

- *Economy;*
- *Integration;*
- *Accessibility and Social Inclusion;*
- *Safety;*
- *Environment; and*
- *Physical Activity.*

Physical Activity has been scoped out of the multi-criteria analysis at this stage. This is because all route options are considered to promote physical activity equally and as such it is not considered to be a key differentiator between route options."

A proposed methodology for considering alternative options was developed. This methodology set out that the proposals be reviewed to identify locations along the EPR Option where there was potential to revisit scheme proposals, to address issues raised in the public consultation or identified through a review of additional information. If any areas were identified, additional options were to be developed and if considered feasible, would be assessed through an MCA in a similar manner to Stage 2 of the EPR Option assessment process.

In addition to the new options considered, any alternative options previously considered within the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' were considered to determine whether they could potentially address the issues being encountered now. No options were brought forward in this regard. All new options would be assessed against the EPR Option, in some cases refined to reflect issues identified upon review of the topographical survey and subsequent design refinement.

Any additional assessments were not intended to supersede work undertaken during earlier stages but to complement it and respond to issues raised by the public during the non-statutory public consultation process or issues identified by additional information available to the Design Team.

This proposed methodology for the assessment of any new potential options explored at this stage is the same as outlined in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report'. A summary of the main criteria and sub criteria to be used in the options assessment process, if required, is presented in **Table 4.1**.

Table 4.1: Assessment Criteria

Assessment Criteria	Assessment Sub-Criteria
1. Economy	1.a. Capital Cost
	1.b. Transport Reliability and Quality (Journey Time)
2. Integration	2.a. Land Use Integration
	2.b. Residential Population and Employment Catchments
	2.c. Transport Network Integration
	2.d. Cycle Network Integration
	2.e. Traffic Network Integration
3. Accessibility & Social Inclusion	3.a. Key Trip Attractors (Education/Health/Commercial/Employment)
	3.b. Deprived Geographic Areas
4. Safety	4.a. Road Safety
	4.b. Pedestrian Safety
5. Environment	5.a. Archaeology and Cultural Heritage
	5.b. Architectural Heritage
	5.c. Flora & Fauna
	5.d. Soils and Geology
	5.e. Hydrology
	5.f. Landscape and Visual
	5.g Air Quality
	5.h. Noise & Vibration
	5.i. Land Use Character

In keeping with the assessment undertaken in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment', Physical Activity has been scoped out of the MCA at this stage as all options are considered to promote physical activity equally and it is, therefore, not considered to be a key differentiator between options.

Again, in keeping with the assessment undertaken in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', route options were compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other route options. **Table 3.2** shows the colour coding of the five-point scale, with advantageous routes graded "dark green" and disadvantageous routes graded "red".

Table 4.2: Route Options Colour Coded Ranking Scale

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.

Where the design has undergone a change in respect of infrastructure provision or route choice, this would be recorded and explained. An MCA would be undertaken which would assess the newly developed and designed solutions against the EPR Option from the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment'.

Where the design has undergone more general updates and enhancements, as expected during design development, these have not been subject to a new MCA.

4.3.3 Section 1: Nutley Lane to Booterstown Avenue

4.3.3.1 Section 1 Emerging Preferred Route Option

The EPR Option previously identified within this study area section of the Blackrock to Merrion Section is presented in **Figure 4.8**. As noted, Section 1 formed part of an extended corridor within the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' and as such has been highlighted in the figure for clarity.

Figure 4.8: Section 1 EPR Option

The previous MCA undertaken determined that a route along the R118 Merrion Road and Rock Road was the EPR Option.

The public consultation submissions received have been considered against a thorough review of the EPR Options together with an assessment of subsequent topographical survey. This review identified no further alternative options which could meet the objectives of the CBC Infrastructure Works.

It is considered that the options assessment presented in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists, and buses, and as such is considered to be the PRO.

4.3.3.2 Areas Identified for Re-examination

Following a thorough review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', Public Consultation Submissions and topographical survey, no alternative options were identified for re-examination.

4.3.4 Section 2: Booterstown Avenue to Stradbrook Road

4.3.4.1 Section 2 Emerging Preferred Route Option

The EPR Option previously identified within this study area section of the Blackrock to Merrion Section is presented in **Figure 4.9**. As noted, Section 2 formed part of an extended corridor within the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' and as such has been highlighted in the figure for clarity.

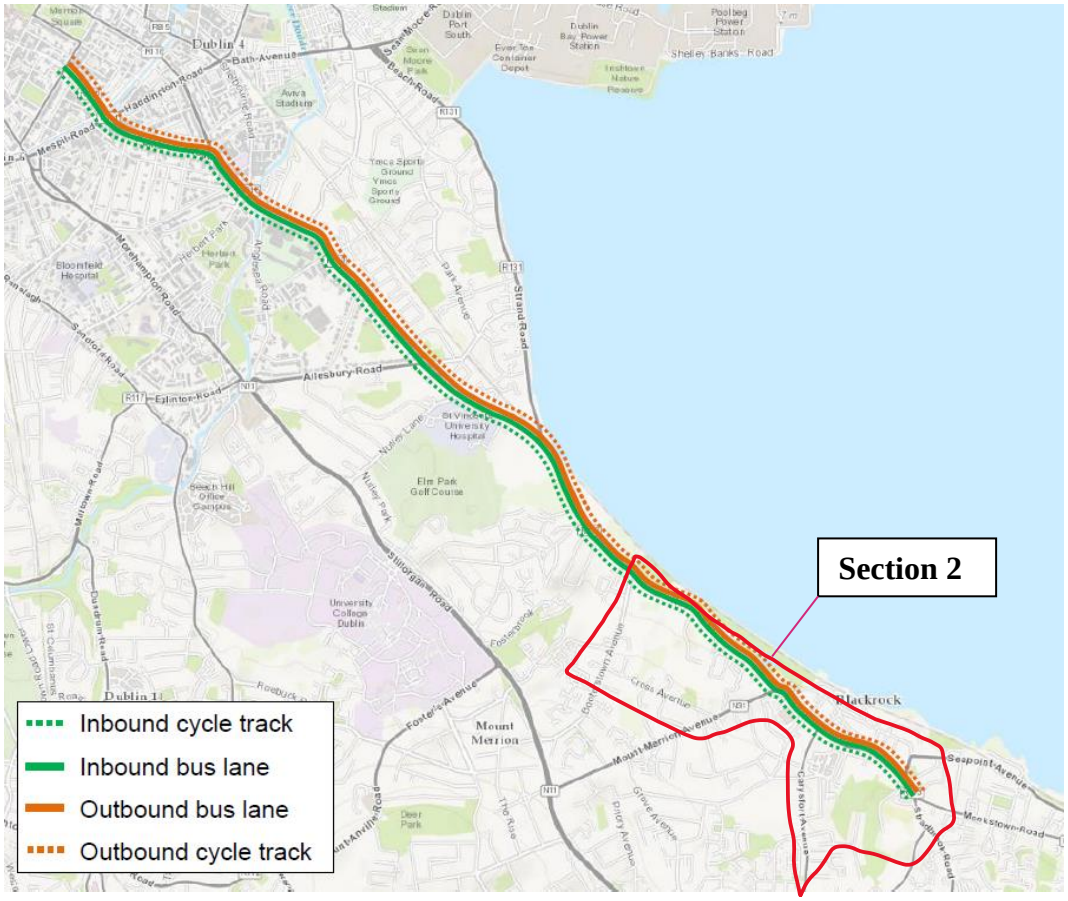

Figure 4.9: Section 2 EPR Option

The previous MCA undertaken determined that a route along the R118 Rock Road, N31 Frascati Road and R113, was the EPR Option.

The public consultation submissions received have been considered against a thorough review of the EPR Options together with an assessment of subsequent topographical survey. This review identified no further alternative options which could meet the objectives of the CBC Infrastructure Works.

It is considered that the options assessment presented in the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report' has appropriately assessed route options and that the selected corridor offers the most benefits for pedestrians, cyclists, and buses, and as such is considered to be the PRO.

4.3.4.2 Areas Identified for Re-examination

Following a thorough review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', Public Consultation Submissions and topographical survey, no alternative options were identified for re-examination.

4.3.5 Summary

Following a thorough review of the 'Dún Laoghaire to City Centre Core Bus Corridor Options Study – Feasibility and Options Assessment Report', all submissions received as part of the non-statutory Public Consultation process and examination of the topographical survey, it is considered that the selected corridor offers the most benefits for the Blackrock to Merrion Section and therefore no alternative options have been taken forward for further assessment. The EPR Option is therefore being accepted as the PRO.

4.3.6 Carbon Considerations for this Preferred Route Option Section

Carbon for the Blackrock to Merrion Section will arise from three potential sources namely user carbon, capital carbon and operational carbon. These sources are further discussed as follows:

- The majority is the road **USER CARBON** from cars, light and heavy goods vehicles and buses, whilst the majority of the fleet is combustion engine based in the short term. The 'Climate Action Plan 2021' outlines a range of targets for the electrification of private and public service vehicles in the medium term.
- In comparison, road construction **CAPITAL CARBON** has been assessed as having a smaller footprint. On the basis that the Proposed Scheme is designed and executed appropriately, it will facilitate and enable a long-term user carbon reduction.
- The **OPERATIONAL CARBON** once construction is complete includes the carbon associated with the operations of the Blackrock to Merrion Section, such as maintenance.

The Blackrock to Merrion Section will start with an increase in carbon (capital carbon) from the construction activities: a necessary investment to achieve the long-term decarbonisation outcomes by facilitating the following Proposed Scheme objectives:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements; and
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets.

Following publication of the 'Climate Action Plan 2021' by the Department of the Environment, Climate and Communication, consideration was given to the inclusion of a new criterion assessing the construction capital carbon of route options. As noted above, the capital carbon elements of the Blackrock to Merrion Section will be less than that of the user carbon footprint and as such it was not considered to be a reasonable differentiator for the purposes of route options assessment. Although carbon was not directly assessed for the route options, each route option was assessed using a range of environmental factors, including noise and air quality which reflect similar contributory elements (i.e. construction and operational stage impacts) to that for carbon emissions.

Furthermore, all route options support enhanced bus capacity and public transport potential in line with the objectives of the Proposed Scheme, which would contribute to reductions in user carbon and contribute towards the 500,000 additional trips by public transport by 2030 outlined as a target in the Climate Action Plan 2021.

In developing the PRO for the Blackrock to Merrion Section, consideration has been given to the carbon generated by the Blackrock to Merrion Section during construction and operation. Many of the changes made to the design since the EPR Option proposal have resulted in minor changes in the construction capital carbon generated by the Blackrock to Merrion Section, such as altering junction layouts and cycle track / footpath widths. Additionally, significant design iterations have been undertaken to mitigate against traffic re-distribution impacts and consequent impacts on greenhouse gas emissions.

4.4 Preferred Route Option for the Blackrock to Merrion Section

4.4.1 Introduction

Chapter 4.3 of this report outlines that it is considered that the selected corridor in the EPR Option offers the most benefits for the Blackrock to Merrion Section and therefore no alternative options have been taken forward for further assessment. This chapter of the report presents and describes the PRO identified and the PRO scheme design. The PRO scheme design drawings are included in Appendix A of this report.

4.4.2 Preferred Route Option Description

The Preferred Route for the Blackrock to Merrion Section is presented in **Figure 4.10**.

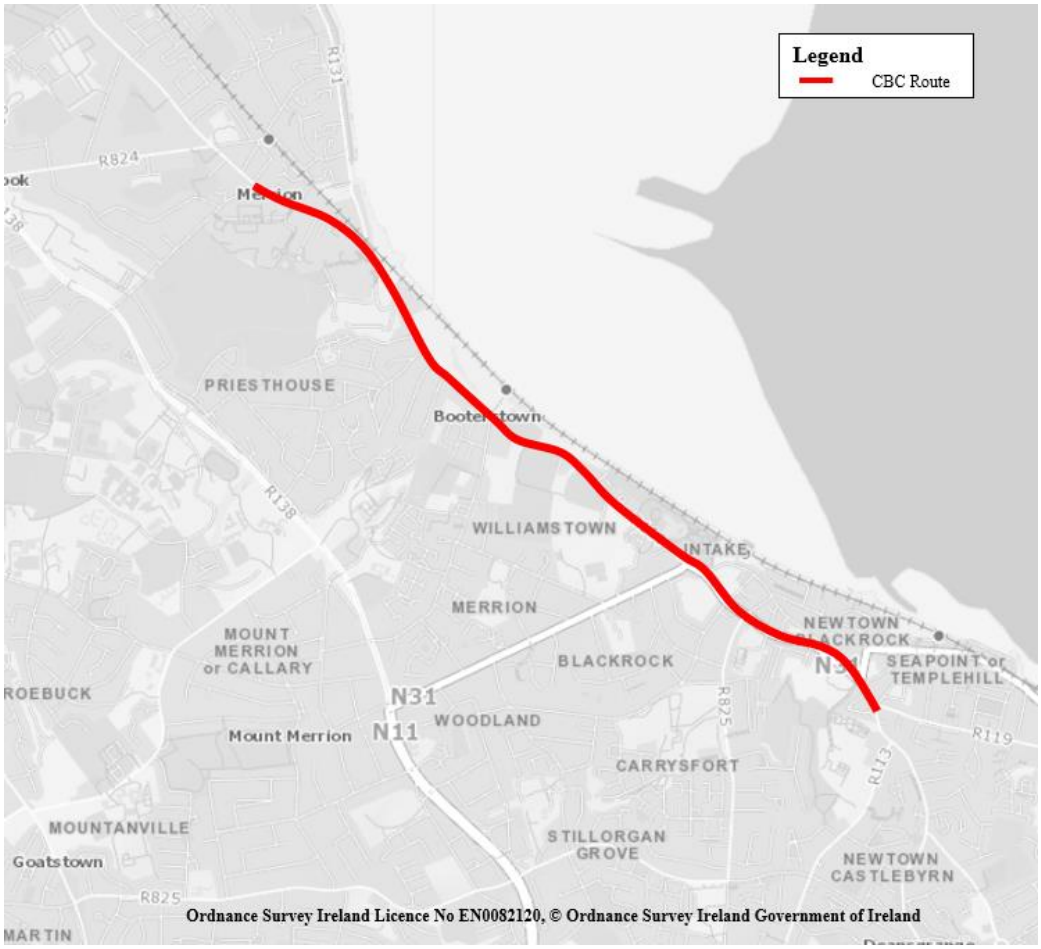

Figure 4.10: Blackrock to Merrion Section Preferred Route Option

The Blackrock to Merrion Section commences on the R118 Merrion Road at its junction with Nutley Lane. Buses are proposed to be routed along Rock Road joining the N31 at the Mount Merrion Avenue junction. The Proposed Scheme terminates at the junction of Temple Hill/ Monkstown Road and Stradbrook Road. Priority for buses and cyclists is proposed along the entire route, consisting primarily of dedicated bus lanes in each direction, and continuous segregated cycle tracks in both directions also. The Blackrock to Merrion Section connects to the route of the UCD Ballsbridge to City Centre Section at the junction of Merrion Road and Nutley Lane, providing a continuous route from Blackrock to the City Centre.

4.4.3 Preferred Route Option Scheme Design Description

4.4.3.1 Section 1: Nutley Lame to Booterstown Avenue – Merrion Road, Rock Road

Between the Merrion Road / Nutley Lane junction and the Rock Road / Booterstown Avenue junction, it is proposed to provide a single bus lane, a single general traffic lane and a segregated cycle track arrangement in each direction along the majority of the route.

At the access junction to St. Vincent's University Hospital from Merrion Road, it is proposed to remove the left-turn lane into St. Vincent's University Hospital and dedicated right-turn lane into Merrion Avenue in order to improve cyclist safety and reduce the necessary land acquisition.

An adjustment to the cross-section is proposed between St. Vincent's University Hospital and Estate Avenue, when compared to the EPR Option, in order to reduce the extent of potential land acquisition.

Between Elm Court and the Strand Road junction, it is proposed to provide a 3-lane carriageway along this section with a footpath and cycle track in both directions. The carriageway would comprise 2 no. general traffic lanes and one outbound bus lane. Priority for inbound buses would be provided via signal controlled priority at the Strand Road junction. A strip of parallel parking spaces is proposed to be provided on the outbound side of the Merrion Road, in the vicinity of No. 264 to No. 270.

It is intended to undertake some safety improvement works at the Merrion Gates junction (junction of Merrion Road and Strand Road), including the provision of segregated cycle facilities, the removal of the slip lane from Strand Road to Merrion Road and the control of traffic exiting Strand Road utilising traffic signals. On the southern arm of the junction, a strip of parallel parking spaces is proposed on the outbound side.

Between Strand Road and Booterstown Avenue (Booterstown DART Station), a two-way cycle track is proposed on the outbound/eastern side of the route. This two-way cycle track can form part of the proposed East Coast Trail (Sutton to Sandycove Greenway).

At the junction of the Elm Park Development on Merrion Road, the arrangement has been revised to remove the proposed traffic island on the inbound arm, which has removed the need for land take onto Landaff Terrace to the south.

Adjustments to the Rock Road cross-section and layout are proposed between the junctions of Trimleston Avenue and Booterstown Avenue in order to reduce the necessary land acquisition and to provide an improved access to the nearby school.

4.4.3.2 Section 2: Booterstown Avenue to Stradbrook Road

Between the Booterstown Avenue and Stradbrook Road junctions, it is proposed to provide a single bus lane, a single general traffic lane and a segregated cycle track arrangement in each direction.

The right-turn lane from Rock Road to Booterstown DART station, previously proposed in the EPR Option February 2019, is no longer being proposed in order to maintain current pedestrian facilities at the junction.

An adjustment to the proposed cross-section is proposed between Booterstown Avenue and Blackrock Clinic to reduce the potential need for land acquisition along Willow Park School and in order to reduce the extent of necessary land acquisition along Blackrock College and adjacent properties.

The gates, railings, and piers forming the existing entrance to Blackrock College are to be rotated on the westernmost pier to accommodate the realigning of the adjacent boundary while preserving the symmetry of the protected entrance.

Alterations to junctions along this section are proposed to improve cyclist safety including the removal of the left-turn slip lane from Rock Road to Rock Hill and the provision of protected cycle tracks at other junctions.

The access and egress arrangements to the Frascati Centre have been amended in the design to reflect the existing, newly constructed, arrangement.

The design includes a controlled exit, for permitted vehicles only, provided from George's Avenue (South) onto Frascati Road. The proposed exit will be controlled by a traffic control measure in the carriageway of the left turn from George's Avenue (South) to Frascati Road, which will be positioned so that cars will not be able to pass through, making it a cul-de-sac north of Frascati Park, however, cyclists and pedestrians will be able to pass through.

The new layby bus stop, which was proposed on Temple Hill within the EPR Option, encroaching past the existing wall at St. Vincent's Park, has been relocated to just north of the Temple Hill / Monkstown Road Junction and the requirement for widening at St. Vincent's Park has been removed from the design. Along with the relocation of the bus stop, a new pedestrian crossing has been introduced on the northern arm of the Temple Hill / Monkstown Road Junction.

4.4.4 Summary

4.4.4.1 Infrastructure Provision

The Preferred Route is approximately 4 km long from end to end. The updated concept scheme design drawings show the extent of the infrastructure proposed to deliver the Blackrock to Merrion Section. The bullet points below present the length of existing and proposed bus and cycle priority as a percentage of the overall route length.

- *55%* Existing bus priority (outbound)
- *45%* Existing bus priority (citybound)
- *99%* Proposed bus priority (outbound)
- *97%* Proposed bus priority (citybound) *(2% virtual)*
- *71%* Existing cycle priority (outbound) *(37% advisory, 27% mandatory, 7% segregated)*
- *71%* Existing cycle priority (citybound) *(37% advisory, 23% mandatory, 11% segregated)*
- *100%* Proposed cycle priority (outbound)
- *100%* Proposed cycle priority (citybound)

Virtual bus priority in the form of signal controlled priority is proposed on the Merrion Road, in the inbound direction between the Merrion Gates junction and Elm Court Apartments.

Over this section, a 3-lane cross-section lane is proposed with a bus lane and a general traffic lane outbound but only a general traffic lane inbound. Signal controlled priority is proposed at the Merrion Gates junction in an inbound direction. This junction will control the volume of traffic along Merrion Road inbound to manage the queue of traffic in order to provide bus priority at this location.

4.4.4.2 Main Scheme Changes

The following list highlights some of the main scheme changes between the published EPR Option and the PRO:

- At the access junction to St. Vincent's University Hospital from Merrion Road, the left-turn lane into St. Vincent's University Hospital and dedicated right-turn lane into Merrion Avenue have been removed in order to improve cyclist safety and reduce the necessary land acquisition;
- The cross-section in front of St. Vincent's University Hospital and Estate Avenue has been reduced generally with a reduction in land take;
- The cross-section from Elm Court to the Merrion Gates junction (junction of Merrion Road and Strand Road) has been reduced to a 3-lane arrangement with 2 no. general traffic lanes and an outbound only bus lane;
- The Merrion Gates junction has been significantly altered to a consolidated T-junction with improved cycle facilities;
- At the junction of the Elm Park Development on Merrion Road, the arrangement has been revised to remove the proposed traffic island on the inbound arm, which has removed the need for land take onto Landaff Terrace to the south;
- The new right-turn lane from Rock Road to Booterstown DART station has been removed from the proposals;
- Land acquisition from residential properties and Blackrock College has been reduced along the Rock Road;
- The rotation of the gates, railings, and piers forming the existing entrance to Blackrock College on the westernmost pier has been included in the design to accommodate the realigning of the adjacent boundary while preserving the symmetry of the protected entrance;
- The new right-turn lanes from Rock Road to Blackrock Clinic and Seafort Parade are no longer being proposed;
- The access and egress arrangements to the Frascati Centre have been amended in the design to reflect the existing, recently constructed, arrangement;

- The slip lane from Rock Road to Rock Hill has been removed and the two lane exit from Rock Hill has been reduced to one lane approaching the junction, to provide better facilities for cyclists and improvements to the public realm;
- The junction of the Rock Road and Mount Merrion Avenue has been reconfigured with the removal of the left-turn slip lanes and improved public realm and cycle facilities;

  A controlled exit, for authorised vehicles only, provided from George's Avenue (South) onto Frascati Road. The proposed exit will include restrictions to general traffic in the carriageway of the left turn from George's Avenue (South) to Frascati Road, making it a cul-de-sac north of Frascati Park, however, cyclists and pedestrians will be able to pass through;
- The cycle crossing infrastructure on Frascati Road at George's Avenue has been introduced into the design to reflect the existing, recently constructed, arrangement;
- The previously proposed layby bus stop on Temple Hill, encroaching past the existing wall at St. Vincent's Park, has been relocated to the north and the requirement for widening at St. Vincent's Park has been removed from the design. Along with the relocation of the bus stop, a new pedestrian crossing has been introduced on the northern arm of the Temple Hill / Monkstown Road Junction;
- A number of bus stops along the route have been redesigned as island bus stops where space allows; and
- Bus stop locations have been modified in this revised proposal – some bus stops have been relocated or removed to achieve a better spacing between stops, while also ensuring that each stop is sited in the best location to serve surrounding neighbourhoods. These proposals will also ensure a more efficient bus network operation. In a number of locations, separate bus stop laybys have been provided which are envisaged to accommodate private coaches.

4.4.5 Scheme Benefits

4.4.5.1 Bus Journey Times

Through the provision of increased bus priority infrastructure, the Proposed Scheme would improve both the overall journey times for buses along the route and their journey time reliability. This can help to realise the objectives of the Proposed Scheme as set out in Chapter 2.4 of this report. The facilitation of bus priority along the Blackrock to Merrion Section, through the delivery of dedicated bus lanes and signal controlled priority, is forecast to reduce bus journey times along the Blackrock to Merrion Section. In addition to this, journey reliability is forecast to be improved, by largely removing interaction between bus traffic and general traffic.

4.4.5.2 Walking & Cycling

In addition to the improvements to bus journey time and journey time reliability, the Proposed Scheme would provide benefits for cyclists and pedestrians. The provision of dedicated cycling infrastructure along the Blackrock to Merrion Section, would improve the level of service provided for cyclists along the route, making cycling trips safer and more attractive.

The Proposed Scheme would deliver substantial elements of the GDA Cycle Network Plan as outlined in Chapter 4.2.5, as well as linking with other proposed cycling schemes, contributing towards the development of a comprehensive cycling network for Dublin. Specifically, the Proposed Scheme would implement a significant section of the East Coast Trail (Sutton to Sandycove Greenway) two-way cycle route – in this case the section from the Merrion Gates junction to Booterstown DART Station.

The Proposed Scheme would also provide improved facilities for pedestrians along the route. Improved crossing facilities would be provided both at junctions and in mid-block locations.

A number of public realm upgrades, including widened footpaths, high quality hard and soft landscaping and street furniture would be provided in areas of high activity to contribute towards a safer, more attractive environment for pedestrians.