

UCD to City Centre
(St. Stephen's Green) CBC

Quality information

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Glossary of Terms

- **DTTAS:** Department of Transport, Tourism and Sport
- **NTA:** National Transport Authority
- **DCC:** Dublin City Council
- **DLRCoCo:** Dún Laoghaire – Rathdown County Council
- **CBC:** Core Bus Corridor
- **BRT:** Bus Rapid Transit
- **EPO:** Emerging Preferred Option
- **GDA:** Greater Dublin Area
- **GIS:** Geographic Information Systems
- **ITS:** Intelligent Transport Systems
- **LAP:** Local Area Plan
- **MCA:** Multi-Criteria Analysis
- **OSi:** Ordnance Survey Ireland
- **RMP:** Record of Monuments and Places
- **ROA:** Route Options Assessment
- **RTPI:** Real Time Passenger Information
- **SAC:** Special Area of Conservation
- **SPA:** Special Protection Area

Definitions

- **Study Area:** The area along the UCD to City Centre (St. Stephen's Green) Core Bus Corridor (CBC) within which route options have been identified and assessed.
- **Route Section:** The road(s) along which the UCD to City Centre (St. Stephen's Green) Core Bus Corridor may be provided. A route section is generally confined to a single road / street.
- **Route Options:** Various adjacent route sections are combined to form 'end-to-end' route options.
- **Scheme Option:** This refers to the detailed development of a route option in terms of bus and cycle provisions and road configuration along the route.
- **Journey Time:** The time taken to make a journey between two distinct points including dwell times at stops and delays at junctions.
- **CBC Infrastructure:** All physical facilities required to support the CBC system – stops, CBC lanes, public lighting, etc.
- **Route Options Assessment Study:** The assessment process for potentially viable route options carried out in order to identify the nature and extent of the effects, both positive and negative, on the existing and planned transport infrastructure and receiving environment. The outcome of the route options assessment study is a recommendation for a preferred route for the proposed scheme.

Citations

- The background mapping used frequently in figures in the report is based on maps which AECOM holds a licence for. The source is ArcGIS Viewer for Silverlight (ESRI).
- Residential, employment destination and education destination figures in the report are based on the Census 2011 Small Area Population Statistics (SAPS).

1. Introduction

1.1 Preamble

This report presents the findings of the options assessment work undertaken for the UCD to City Centre (St. Stephen's Green) Core Bus Corridor (CBC) and a recommendation on the **emerging preferred option** is made.

The work presented in this report concentrates on the bus priority provision developed for the CBC, based on the assumption that a number of high frequency bus services will avail of the CBC infrastructure.

The assessment undertaken of potentially feasible route options, identified within the scheme Study Area, against established Multi-Criteria Analysis (MCA) criteria is discussed in this report. Where a number of design options were considered along the preferred route, these are also discussed and documented. A concept scheme design along the emerging preferred option identified is subsequently presented.

1.2 Report Structure

- **Section 2:** The strategic transport policy context which has led to the identification of a need for the delivery of a CBC on this corridor is discussed in this section.
- **Section 3:** The objectives of the CBC and the proposed scheme are presented in the section. Key constraints and opportunities within the Study Area are identified. Also assessed are the integration of the corridor with the wider public transport network and the compatibility with other road users.
- **Section 4:** The methodology for identifying and assessing the feasibility of the various route options potentially available within the Study Area is discussed in this section including:
 - the identification of a Study Area where practical route options have been considered and presentation of an initial network ("spider's web") of route sections examined;
 - the selection and determination of initial criteria for screening and assessing technically feasible route options, based on distinct, scheme-specific objectives; and
 - the definition of MCA criteria.
- **Sections 5 and 6:** Details the stages of the options assessment for each Study Area.
- **Section 7:** The Emerging Preferred Option is identified and described.
- **Section 8:** Presents a cost estimate for the concept design of the Emerging Preferred Scheme.
- **Section 9:** Discusses the Emerging Scheme Benefits.
- **Section 10:** Discusses the next steps.

2. Transport Context

2.1 Ireland 2040 – Our Plan

The ‘National Planning Framework: Ireland 2040 – Our Plan’ (Department of Housing Planning and Local Government, September 2017) sets the long-term context for Ireland’s physical development and associated progress in economic, social and environmental terms and in an island. The objectives of ‘National Planning Framework: Ireland 2040 – Our Plan’, in relation to public transport, include:

- *“Expand attractive public transport alternatives to car transport to reduce congestion and emissions and enable the transport sector to cater for the demands associated with longer term population and employment growth in a sustainable manner...”*
- *“The provision of a well-functioning, integrated public transport system, enhancing competitiveness, sustaining economic progress and enabling sustainable mobility choices.”*
- *“Deliver the key public transport objectives of the Transport Strategy for the Greater Dublin Area 2016-2035 by investing in projects such as New Metro North, DART Expansion Programme, BusConnects in Dublin and key bus based projects in the other cities and towns.”*

2.2 Greater Dublin Area Transport Strategy 2016 – 2035

The ‘Greater Dublin Area Transport Strategy 2016 – 2035’ (NTA, 2015) identifies a Core Bus Network for the GDA. This core network represents the most important bus routes in the GDA, which are generally characterised by a high frequency of bus services, high passenger volumes and with significant trip attractors located along the route. The ‘Greater Dublin Area Transport Strategy 2016 – 2035’ includes objectives to develop the Core Bus Network to achieve, as far as practicable, continuous priority for bus movements on the sections of the Core Bus Network within the Metropolitan Area, with the goal of making the overall bus system more efficient and attractive to users including the core principle, which states: *“Development in the GDA shall be directly related to investment in integrated high quality public transport services and focused on compact urban form.”*

Section 2.2.1 of the ‘Greater Dublin Area Transport Strategy 2016 – 2035’ also states, as a Primary Policy: *“The Strategy must therefore, promote, within its legislative remit, transport options which provide for unit reductions in carbon emissions. This can most effectively be done by promoting public transport, walking and cycling, and by actively seeking to reduce car use in circumstances where alternative options are available.”*

The identified core network comprises a number of radial, orbital and regional bus corridors.

2.3 BusConnects

‘BusConnects’ is a programme of priority investment for public transport in the 2018 budget, which plans to fundamentally transform Dublin’s bus system. The objective of ‘BusConnects’ is to develop the radial and orbital bus corridors as identified in the ‘Greater Dublin Area Transport Strategy 2016 – 2035’, so that each will have continuous bus priority; i.e., a continuous bus lane in each direction.

‘BusConnects’ seeks the development of a more attractive and convenient bus system with greater scope for interconnection between routes, where connecting passengers don’t necessarily have to travel to Dublin City Centre.

A section of the Blanchardstown to UCD corridor, which is identified as a continuous bus priority radial corridor, is proposed to be developed as a CBC between UCD and St. Stephen’s Green (Leeson Street Lower).

This Core Bus Corridor is shown in **Figure 2.1**.

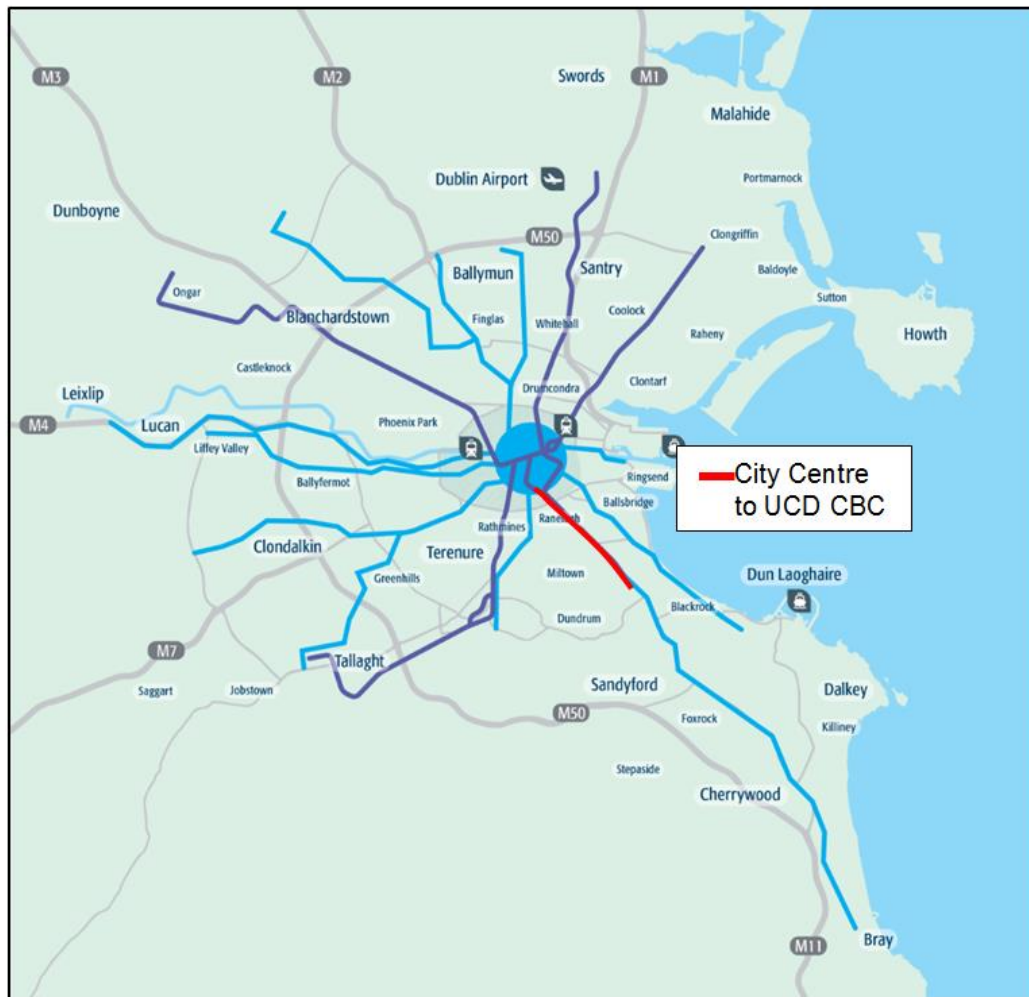


Figure 2.1: Radial Bus Corridors ('BusConnects' Next Generation Bus Corridors Fig. 1)

2.4 Integrated Implementation Plan 2013 – 2018

The NTA published the Integrated Implementation Plan 2013 – 2018 in February 2014. This report sets out the short term infrastructure investment programme for the GDA for a five year period up to 2018, including investment in existing bus services. The proposals in relation to bus investment are encompassed in four investment areas:

1. Bus Fleet Investment;
2. Bus Stop and Shelter Provision;
3. General Bus Network Improvements; and
4. Bus Rapid Transit Schemes.

Investment areas 2 & 3 are of most relevant to this scheme and will be addressed.

More specifically, the Integrated Implementation Plan proposes the following measures in relation to bus network improvements:

- Further development of a Quality Bus Corridor (QBC) appropriate to serve the needs of the GDA;
- Seeking to achieve, as far as practicable, continuous inbound priority and the maximum possible outbound priority on key bus routes into Dublin City Centre;
- Enhancing bus priority at other urban locations in the GDA;
- Improving the level of interchange facilities between services and with other transport modes;
- Seeking enhanced bus prioritisation at signalised traffic junctions in the GDA; and
- Creation of bus hubs or bus focal points in key urban locations in the GDA.

2.5 Greater Dublin Area Cycle Network Plan

The GDA Cycle Network Plan (NTA, 2013) sets out the strategy for the development of an integrated cycle network. It identifies that the UCD to City Centre corridor forms part of the primary, secondary and greenway cycle networks and thus form a key part of the strategic cycle network – see **Figure 2.2**. It is therefore important that any upgrade to bus priority infrastructure along the corridor should take cognisance of these objectives and, where practical, provide cycle infrastructure to the appropriate level and quality of service required for a primary and secondary cycle route.



Figure 2.2: GDA Cycle Network Plan (extracts)

2.6 DCC Development Plan (2016 –2022)

The DCC Development plan outlines the following objectives:

- To support improvements to the city’s bus network and related services to encourage greater usage of public transport in accordance with the objectives of the NTA’s strategy and the Government’s ‘Smarter Travel’ document.
- To facilitate and support measures proposed by transport agencies to enhance capacity on existing public transport lines and services, to provide / improve interchange facilities and provide new infrastructure.
- To review future strategic provision of bus depots / garages in the city in consultation with Dublin Bus and the NTA.

2.7 DLRCoCo Development Plan (2016 – 2022)

This Development Plan seeks to protect and nurture the future growth of Dún Laoghaire-Rathdown both by serving and leading the community through creation of conditions that will attract and sustain social and economic development. It contains some objectives in relation to bus travel which are of general relevance to the scheme such as:

- An increased travel mode share for walking and cycling; this increase will be mainly related to local trips to work, schools, retail and leisure within the larger urban areas.
- An increased travel mode share for public transport for work trips to the main employment zones of Sandyford, Cherrywood and Dublin City Centre and between the other larger urban centres; there may be scope to improve public transport mode share to larger urban centres along the main bus and rail corridors, particularly where this improves access and interchange between bicycle and rail.
- Enhanced safety for all modes – especially for vulnerable road users.
- The delivery of major strategic transportation projects and infrastructural improvements such as, the Council Cycle Network, an expanded Bus Network, Luas Line B2 from Brides Glen to Fassaroe and the package of interventions to realise the full potential of the Sandyford Business District.

The continued expansion of the Bus Network is of the utmost importance. In addition, the continuation and improvement of existing bus services along radial and orbital routes, subject to sufficient demand and availability of finance, is also considered a priority. As part of the continuing development of the Bus Network in the County, the Council will facilitate the provision of radial and orbital bus priority schemes to integrate with established high quality and frequency bus and rail routes. The provision of bus priority measures on a route may include some, but not all, of the following measures:

- The deployment of advanced traffic management techniques and ITS applications, i.e. the provision of an urban traffic signalling systems such as SCATS (Sydney Coordinated Adaptive Traffic System), changes to the traffic signalling configuration, public transport traffic signal priority, route optimisation through traffic signal co-ordination, junction redesign.
- Reallocation of existing road space with increased levels of segregation from other vehicular traffic.
- Enhancement of nearby pedestrian and cycle facilities.
- High quality running surfaces.
- Widening of the roadway where appropriate.
- Traffic Management measures to include turning movement bans or a restriction on some, or all, other road vehicles on a section of road etc.

3. Corridor Audit and Scheme Objectives

3.1 Physical Constraints and Opportunities

There are a number of constraints and opportunities, both natural (i.e. existing natural environment) and physical (the built environment), which constrain route options for the proposed scheme within the defined Study Area. These include:

- The developing Greater Dublin Area Cycle Network;
- Grand Canal and River Dodder (including protected structures);
- Existing and committed future development along the route, in particular in the city centre, much of which has heritage value, including particular Residential Conservation Areas;
- Existing protected monuments along the route;
- Significant street trees and other natural features along the route within the Study Area;
- Existing urban and sub-urban roads and street network;
- Availability of land in urban and suburban areas;
- Public parks including St. Stephen's Green;
- Donnybrook Stadium; and
- The need to maintain traffic flow for all modes during construction.

Further details on the engineering and construction issues are contained in the Route Audit Report, within **Appendix D**.

3.2 Interchange with Public Transport

As part of the scheme it is desirable to enhance interchange between the various modes of public transport operating in the city and wider metropolitan area, both existing and proposed. Route options have therefore been developed with this in mind and, in so far as possible seek to provide for improved interchange opportunities with other transport services, including:

- Luas Cross City and Green Luas Line at St Stephen's Green;
- DART services in proximity to southern section of the corridor;
- Other CBC routes; and
- Existing Dublin Bus services at numerous locations along the route.

The following report sections outline some of these opportunities in further detail.

3.2.1 Bus Network

The UCD to City Centre (St. Stephen's Green) will form an integral part of the reconfigured bus network. The introduction of the CBC, with the capacity that it provides, will allow for the rationalisation of existing bus services. This will provide for a more efficient network overall and improve the cost effectiveness of the scheme. No reduction in the overall level of public transport service will be made and capacity enhancements will be provided for by CBC along sections of the network.

Figure 3.1 illustrates the BRT Networks proposed within the GDA Transport Strategy. This identifies that the proposed scheme interfaces within the city centre with the following BRT Networks:

- Clongriffin to Tallaght; and
- Swords/Airport to City Centre.

This CBC replaces the BRT service proposed for the UCD to City Centre section of the Blanchardstown to UCD BRT route.

Figure 3.3 illustrates the Orbital Networks within the Core Bus Network. This identifies that the proposed scheme interfaces with the following Orbital Networks: Dundrum – Finglas, Dundrum / UCD – Tallaght, and Ranelagh – Drumcondra.

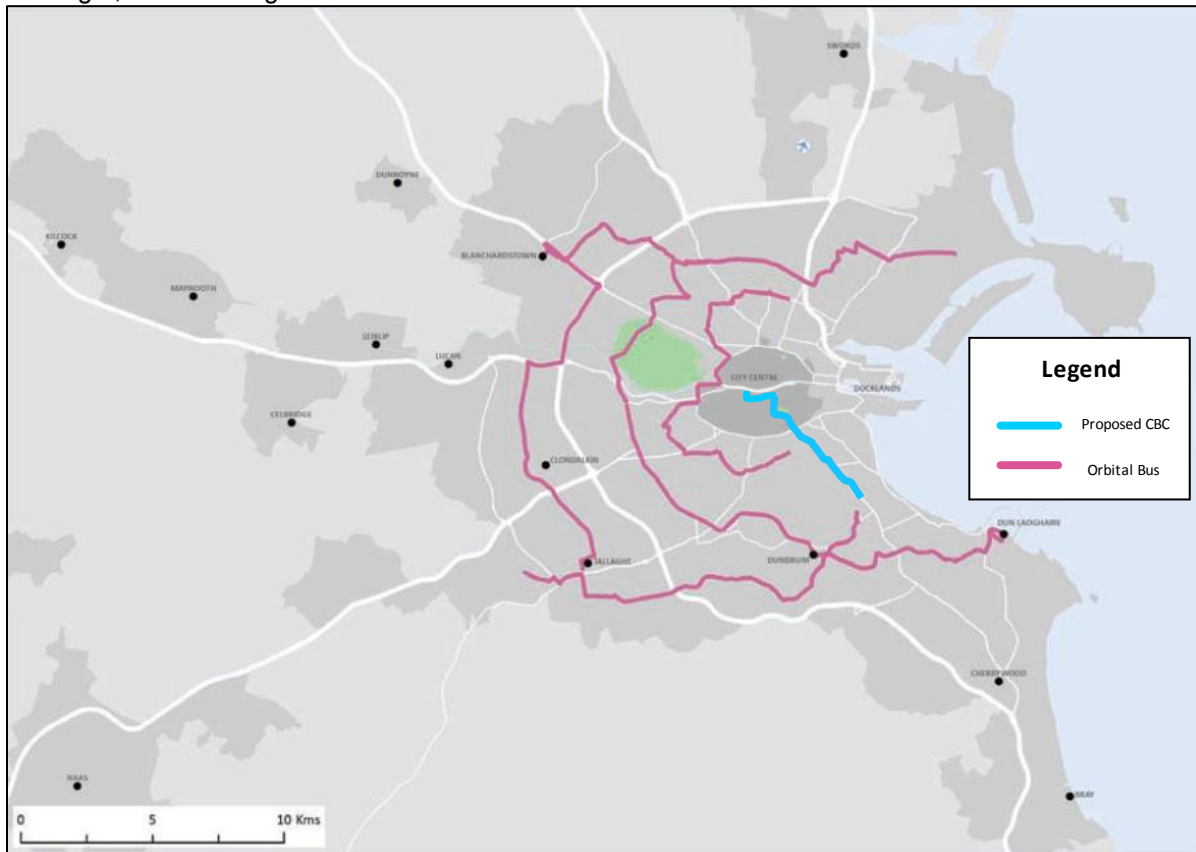


Figure 3.3: Orbital Corridors (Source: Figure 5.5 Transport Strategy 2016 – 2035)

3.2.2 Metropolitan Light Rail Network

Figure 3.4 illustrates the Light Rail network proposed within the GDA . This identifies that the proposed scheme interfaces with the Luas Cross City and Green Luas Line at St Stephen’s Green.

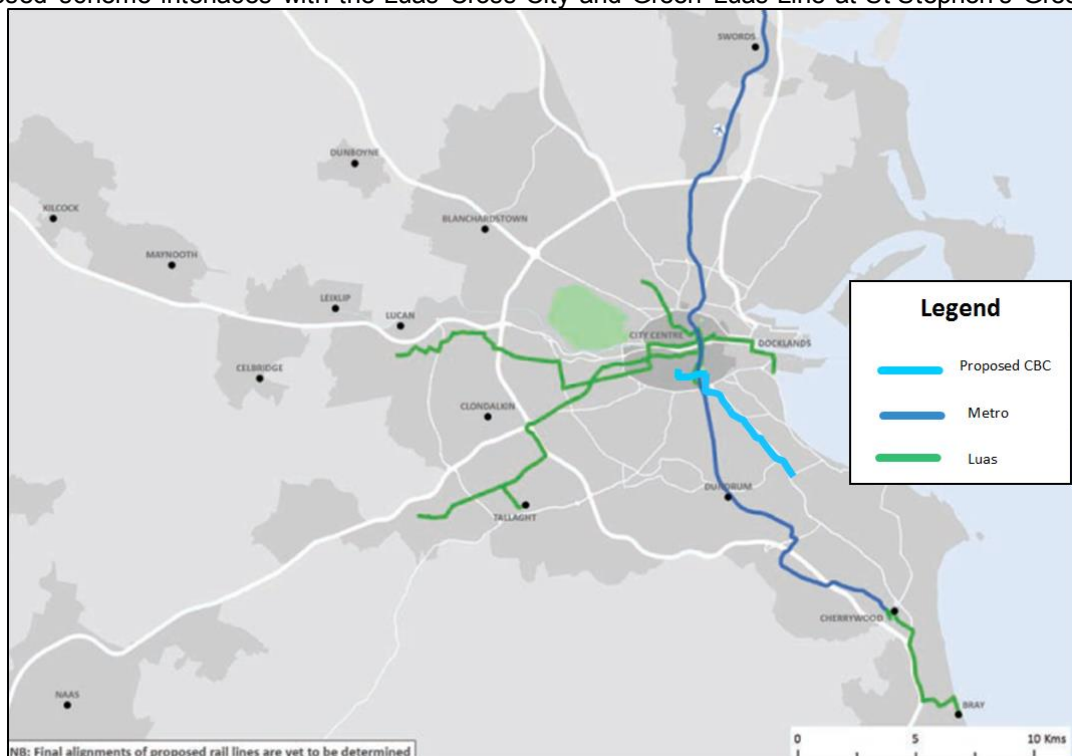


Figure 3.4: Light Rail Network (Source: Figure 5.5 Transport Strategy 2016 – 2035)

3.2.3 Metropolitan Heavy Rail Network

Figure 3.5 illustrates the DART and Commuter Rail proposed within the GDA Transport Strategy. This identifies that the proposed scheme interfaces with the DART services in proximity to southern section of the corridor.

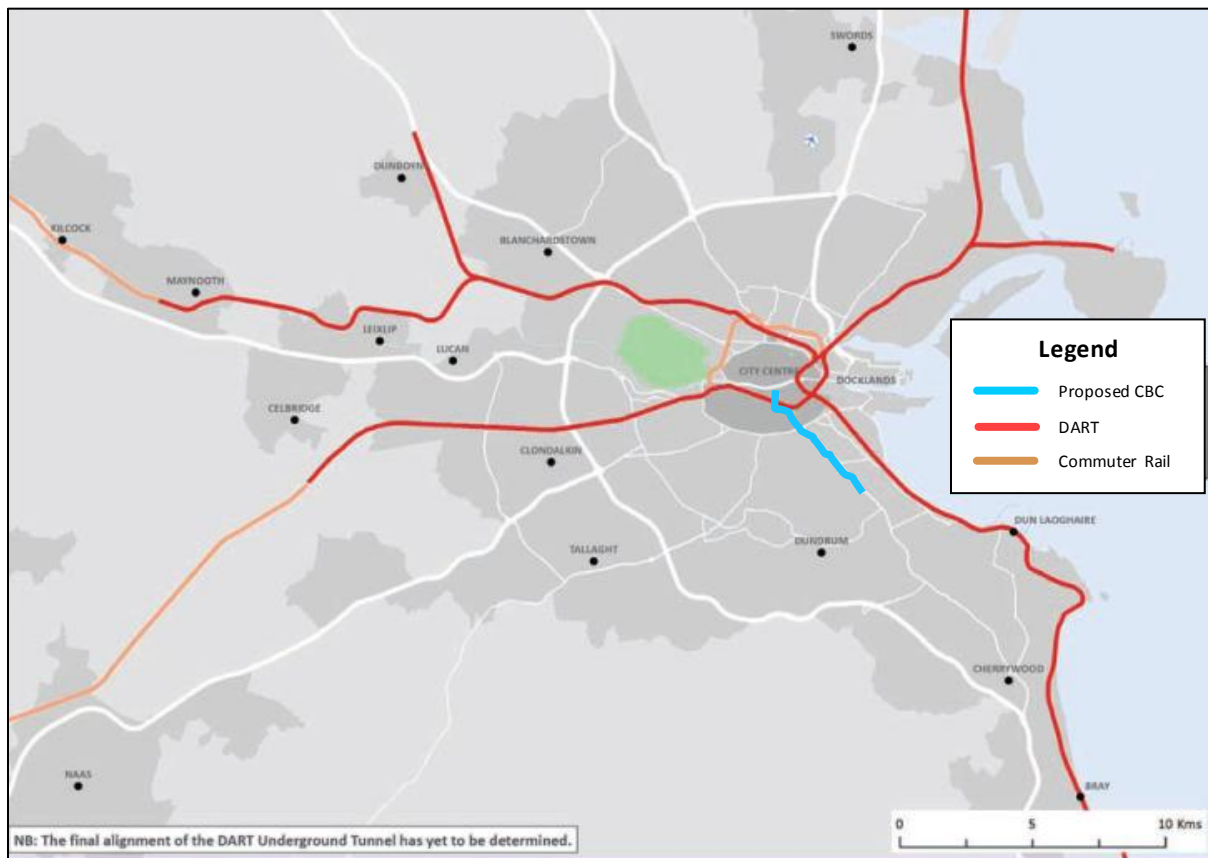


Figure 3.5: DART and Commuter Rail proposed within the GDA Transport Strategy

3.3 Compatibility with other users

A key objective of the proposed scheme is to improve pedestrian and cyclist facilities along the route (in line with the GDA cycle network). In general, suitable level of service should be proposed for these modes.

Where it is considered impractical to construct cycle facilities along a particular section of the CBC route, such facilities would need to be provided along suitable alternative routes and as required by the GDA Cycle Network Plan.

There may be locations where segregated cycle facilities cannot be provided along the CBC route and there is no suitable routing alternative. In this instance, it may be possible for cyclists to share with vehicles in the bus lane. However, such proposals need careful consideration and design to ensure the safety of cyclists, with additional mitigation measures, such as speed restrictions for vehicles in bus lanes being applied.

General traffic flow and local access will generally be maintained along the CBC corridor although it is inevitable that there will be impacts on traffic capacity along the route associated with the reallocation of road space to CBC priority and cycle lanes and the introduction of turning movement restrictions.

Reductions in traffic carrying capacity of the road network need, however, to be considered in the context of the overall significant increase in efficiency and reliability of the bus services that will be achieved.

3.4 Scheme Objectives

Having regard to the findings of the studies and plans set out in **Section 2** of the report, the following objectives were established for the UCD to City Centre (St. Stephen's Green) CBC:

- Deliver the on street infrastructure necessary to provide continuous priority for bus movements along this Core Bus Corridor. This will mean enhanced bus lane provision on the corridor, removing current delays in relevant locations and enabling the bus to provide a faster alternative to car traffic along the route, making bus transport a more attractive alternative for road users. It will also make the bus system more efficient, as faster bus journeys means that more people can be moved with the same level of vehicle and driver resources; and
- Provide any cycle facilities along the route that are required under the Greater Dublin Area Cycle Network Plan (published by the NTA, 2013) to the target Quality of Service(s) specified therein and to give consideration to further providing cycle facilities along sections of the route where they may be not expressly required under the Cycle Network Plan.

4. Assessment Methodology

4.1 Introduction

This section of the report presents the methodology used for the assessment of potentially viable route options identified within the Study Area.

A two-stage assessment process was adopted as follows:

- An initial **Stage 1** high-level route sections assessment or ‘sifting’ process which appraised potentially viable route sections 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.

4.2 Study Area

Arising from the transport policy context and scheme objectives set for the UCD to City Centre (St. Stephen’s Green) CBC, the broad Study Area identified for the proposed scheme is illustrated in red in **Figure 4.1**.

The Study Area is generally bounded to the north by St. Stephen’s Green (South East corner) and to the south by Booterstown and Goatstown.

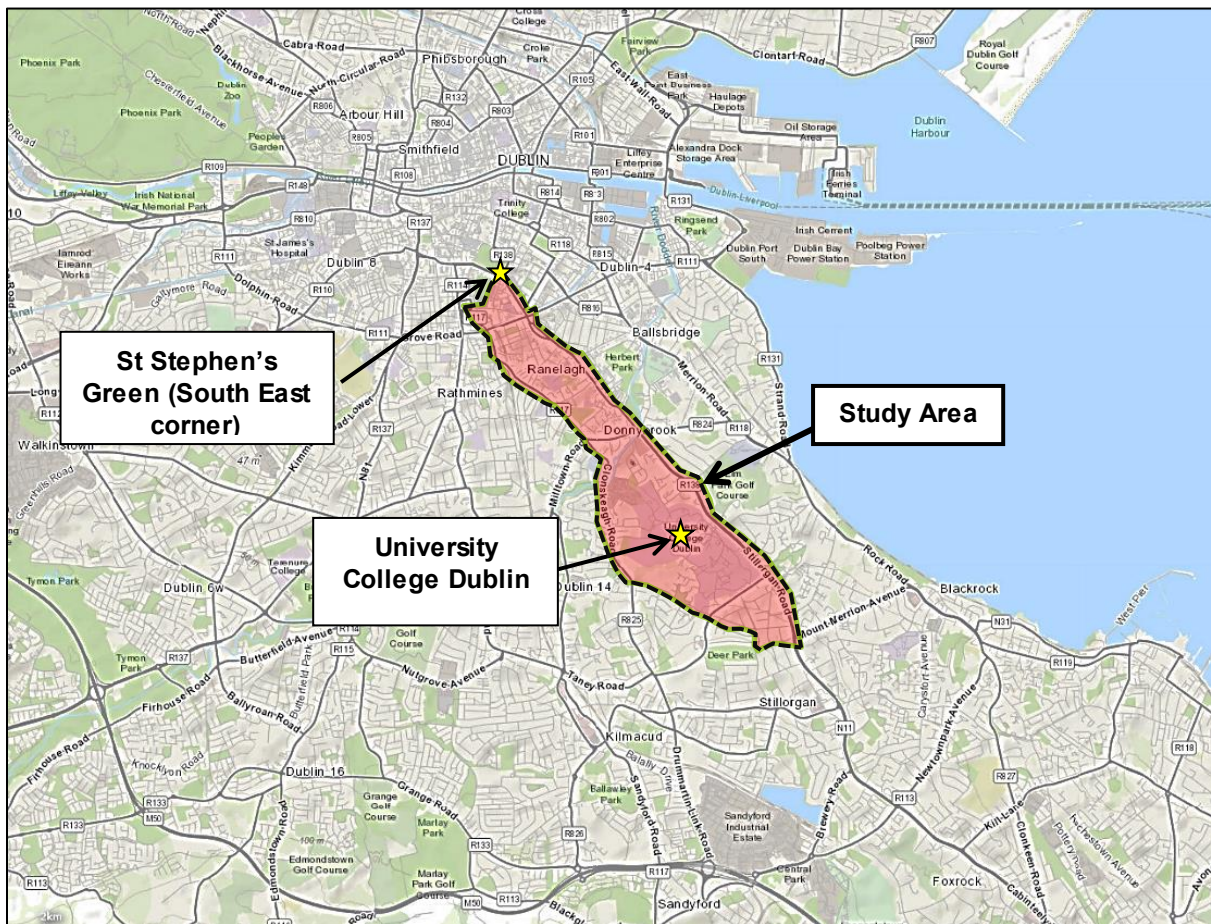


Figure 4.1: Study Area

4.3 Stage 1: Route Sections Assessment – Sifting Stage

4.3.1 “Spider’s Web”

An initial “spider’s web” of potential route sections that could possibly accommodate CBC service was identified for the Study Area.

This “spider’s web” of route sections was chosen with reference to the CBC characteristics and in order to meet the scheme objectives as set out in **Section 3.4** of this report.

Initial route sections identified also took cognisance of the physical constraints and opportunities present (**Section 3.1** of this report) and the ability to integrate with other public transport modes and routes (**Section 3.2** of this report).

Of particular relevance in developing the “spider’s web” was the potential for the road or route sections to facilitate fast and reliable journey times and thereby be able to practically accommodate CBC lane priority.

The resulting Study Area corridor “spider’s web” of route sections identified is presented in **Section 5** of this report.

4.3.2 Sifting Process

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).

4.4 Stage 2: Route Options Assessment – Detailed Assessment

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. This process involved the development of typically two scheme options for each route within the Study Area.

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 scheme options.

An appreciation of constraints and opportunities within the Study Area as well as the defined scheme objectives, led to the establishment of project-specific route options MCA criteria.

These were tailored to have commonality to the Common Appraisal Framework guidelines where practical.

Table 4.1 presents a summary of the MCA criteria and sub-criteria used as part of the Stage 2 detailed route options assessment process.

Table 4.1: MCA criteria

MCA 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 User 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 applying these criteria to the assessment process, it is clearly recognised that for different sections of the Study Area corridor, greater emphasis may need to be applied to some criterion over others in terms of their significance and influence on the route selection process.

4.4.1 Economy (Criterion 1)

4.4.1.1 Capital Cost (1.a.)

Capital cost estimates consist of both the indicative infrastructure cost estimate and land acquisition costs. This cost estimate was based on a range of per kilometre rates reflecting the extent of construction works required.

The following steps have been followed in order to derive cost estimates for each route option:

- Step 1: Define construction activity levels and assumptions for corridor sections.
- Step 2: Define construction activity levels and assumptions for junctions.
- Step 3: Estimation of cost rates in relation to construction activity levels for corridor sections.
- Step 4: Estimation of cost rates in relation to construction activity levels for junctions.
- Step 5: Estimation of cost rates in relation to construction activity levels for stops.
- Step 6: Apply appropriate cost rates to each route option to derive route option cost estimate.

Criterion 1.a.i. Indicative Infrastructure Cost Estimate

1.a.i.i. Route Sections

As part of the route optioneering process, constraints and associated mitigation measures, which provide improved / full bus lane provision, have been identified, grouped and ranked in levels.

Table 4.2: Construction Works for Corridor Sections

Construction Activity Level	Construction Works Assumption	€/km
Minor – Minor works locally	<ul style="list-style-type: none"> • Kerbs improvement locally (removal and replacement) • Footpaths improvement locally (breaking out/additional concrete) • Road resurfacing locally (milling/reinstatement or overlay) • Road markings (non-destructive removal of existing road markings, new road markings) • Signage (removal/relocation/replacement of existing and/or installation of new) 	€650,000
Moderate – Roadwaywidening (excluding private land acquisition)	<ul style="list-style-type: none"> • General site clearance (street furniture removal/relocation, etc.) • Safety barriers/guardrails (removal and new) • Services protection/relocation/diversion (power supply, communications) • Drainage works (removal of and installation of new drainage systems) • Limited earthworks • Pavement full depth reconstruction • Road markings (non-destructive removal of existing road markings, new road markings) • Kerbs footways and paved areas (removal and new) • Road lighting (relocation, cabling, ducting) • Signage (removal/relocation/replacement of existing and/or installation of new) • Street furniture removal/relocation • Landscaping works (top soiling, fence, trees relocation, hedges, road margins re-grading, etc.) 	€1,300,000

Construction Activity Level	Construction Works Assumption	€/km
Major – Roadway widening (including private land acquisition):	<ul style="list-style-type: none"> • General site clearance (street furniture removal/relocation, etc.) • Safety barriers/guardrails (removal and new) • Services protection/relocation/diversion (power supply, communications, water, gas) • Drainage works (removal of and installation of new drainage systems) • Earthworks (embankment treatments, retaining walls, slopes regrading, etc.) • Pavement full depth reconstruction • Kerbs footways and paved areas (removal and new) • Road markings (non-destructive removal of existing road markings, new road markings) • Signage (removal/relocation/replacement of existing and/or installation of new) • Road lighting (replacement, cabling, ducting) • Landscaping works (top soiling, fence, trees relocation, hedges, road margins, re-grading, etc.) • Property boundary reinstatement works (walls, gates, driveways landscaping etc.) 	€2,500,000

1.a.i.ii. Junctions

Table 4.3 presents the construction activity levels for junctions, the assumed level of works for each category and the per junction rate.

Table 4.3: Construction Works for Junctions

Construction Activity Level	Construction Works Assumption	€/junction
Minor – Modifications to existing signal controlled junctions to introduce bus priority (i.e. changing method of control, etc.), without significant alteration to their existing geometry and layout	<ul style="list-style-type: none"> • Road markings (non-destructive removal of existing road markings, new road markings) • Anti-skid surface • Signage (removal/relocation/replacement of existing and/or installation of new) • Dished kerbs and tactile paving • Guardrails/Bollards • Additional signal poles/heads • Additional traffic signals ducting, cabling and chambers • Modifications to the signal controller and associated traffic signal installation works (including electrical) • Additional loop detectors 	€70,000

Construction Activity Level	Construction Works Assumption	€/junction
Moderate – Upgrading existing minor/major junctions (including roundabouts) to signal control junctions, without significant alteration to their existing geometry and layout (excluding private land acquisition)	<ul style="list-style-type: none"> • Kerbs improvement locally (removal and new) • Footpaths improvement locally (breaking out and new) • Road markings (non-destructive removal of existing road markings, new road markings) • Signage (removal/relocation/replacement of existing and/or installation of new) • Anti-skid surface • Dished kerbs and tactile paving • Guardrails/Bollards • New signal poles/heads • New traffic signals ducting, cabling and chambers • New signal controller and associated traffic signal installation works (including electrical) • New loop detectors • Services protection/relocation/diversion (power supply, communications) • Limited earthworks • Pavement reconstruction • New road lighting (relocation, cabling, ducting) 	€230,000

Construction Activity Level	Construction Works Assumption	€/junction
Major – Significant modifications to existing signal controlled junctions (including private land acquisition)	<ul style="list-style-type: none"> • General site clearance (street furniture removal/relocation, etc.) • Safety barriers/guardrails (removal and new) • Services protection/relocation/diversion (power supply, communications, water, gas) • Drainage works (removal of and installation of new drainage systems) • Earthworks (embankment treatments, retaining walls, slopes re-grading, etc.) • Pavement full depth reconstruction • Kerbs footways and paved areas (removal and new) • Road markings (non-destructive removal of existing, new road markings) • Anti-skid surface • Signage (removal/relocation/replacement of existing and/or installation of new) • Dished kerbs and tactile paving • Guardrails/Bollards • Additional signal poles/heads • Additional traffic signals ducting, cabling and chambers • Modifications to the signal controller and installation works (including electrical) • Additional loop detectors • Road lighting (replacement, cabling, ducting) • Landscaping works (top soiling, fence, trees, hedges, margins re-grading, etc.) • Property boundary reinstatement works (walls, gates, driveways landscaping etc.) 	€1,000,000

1.a.i.iii. Bus Stops

For cost estimation purposes only, the bus stops have been assumed to comprise the following items:

- Raised Kerbs;
- Paving;
- Illuminated shelters;
- Identification posts;
- RTPI;
- Lighting;
- Associated ducting (communications and power); and
- Bus Stop Furniture (i.e. passenger guardrails, benches, bollards, etc.).

Based on the above assumptions, outline costs for the bus stops were estimated to be €20,000/stop. These costs exclude VAT, professional fees and re-routing of services.

It should be noted that the above listed bus stop cost estimates are subject to refinement, based on a more detailed analysis at detailed design stage.

Criterion 1.a.ii. Land Acquisition Cost Estimate

Land Acquisition Costs will be accounted for separately @ €1,500/m²

Exclusions from the cost estimation process at this stage are listed below:

- VAT;
- Fees for planning process;
- Statutory Undertakers;
- Professional Fees; and
- Escalation and inflation adjustments.

4.4.1.2 Transport Reliability and Quality of Service (1.b.)

This criterion assesses route options in terms of the degree to which transport reliability and quality of service is likely to be achieved.

The assessment considers the following.

Criterion 1.b.i. Journey Time

the extent to which journey time savings, and associated economic benefits, for public transport services, can be achieved on a route.

This would be practically achieved through the extent to which any or all of the following measures can be implemented;

- Enhancement of existing bus and / or provision of new bus lanes along road links;
- Provision of bus lanes through junctions (preferably through signal controlled junctions);
- Local upgrading of road sections to provide more carriageway space and therefore, additional capacity;
- Use of traffic signals to provide virtual priority e.g. queue relocation;
- Removal of 'pinch points' for bus services and traffic along the route; and
- Rationalisation of existing bus stops in terms of location, indentation (i.e. ability to provide laybys to avoid blockage of bus lanes) and spacing.

Journey times for each route option have been calculated by comparing the time required by a bus to travel between common start and end points on each route.

The following assumptions have been made in calculating the comparative journey times along route options:

- Top operational speed (free-flow) of 50 kph in suburban areas and 30 kph in City Centre areas;
- Dwell time of 15 seconds per stop on average (assumes cashless fares i.e. Leap card. Assumes that on average, buses stop at every second stop i.e. 30 second delay at every second stop); and
- Delay of 15 seconds per junction on average (assumes buses stop at every second junction i.e. 30 second delay at every second junction)

These assumptions assume dedicated bus priority infrastructure or free-flowing traffic conditions along a route section by direction of travel.

Where the indicative scheme determined for a route suggests that this is not practically achievable, modified speeds and delay assumption are applied as appropriate.

These additional delays are estimated based on available queue length information, automatic vehicle location information from Dublin Bus and estimates of the impact of traffic management measures (such as queue relocation).

Criterion 1.b.ii. Number of Major Junctions

The number of major junctions / signalised crossings along each route have been compared.

For the purposes of this assessment, major junctions are generally defined as signalised junctions and roundabouts i.e. any junction likely to cause delays to buses.

Regardless of the level of practical or feasible bus priority provided at major junctions, there will always be an element of delay to buses associated with signalised junctions, even with the most efficient signalling system being provided.

While it is impossible to completely avoid major junctions on any route option, this risk of potential delay has been considered when comparing route options.

This feeds into the overall journey time calculations as indicated above.

Criterion 1.b.iii. Level of Bus Priority Provision

The level of bus priority achievable along route options has been considered and compared.

The level of priority is predominantly concerned with the degree to which road space can practically be allocated to buses, the amount of protection afforded to this priority, i.e. segregation, and the provision for buses at junctions such as bus lanes at the stop line.

This feeds into the overall journey time calculations as indicated above.

4.4.2 Integration (2)

4.4.2.1 Land-Use Integration (2.a.)

This criterion identifies the extent to which a route would encourage or support planned development and provide for economic opportunities; whether particular route options offer synergies with other urban enhancement proposals and whether route options afford the potential to regenerate particular streets or quarters (of most relevance to the City Centre area).

The interaction of routes with Local Area Plans (LAPs), masterplans or specific objectives in the County Development Plans are also considered under this criterion.

4.4.2.2 Residential Population and Employment Catchments (2.b.);

Criterion 2.b.i. Residential Population Catchments

This criterion compares the existing residential populations within 5, 10 and 15 minute walk catchments from bus stops and is representative of the number of potential bus users for a particular route option.

The assessment does not include future populations of zoned, but yet undeveloped residential development lands along route options.

The analysis involved extracting 2011 population statistics from the Central Statistics Office (CSO) 'small areas' dataset.

GeoDirectory was used to assist in calculating the proportional figures for the population within the specific contour bands for each of the routes.

This information was subsequently used to calculate the population living within the contours.

Criterion 2.b.ii. Employment Population Catchments

This criterion compares the existing employment populations within a 10 minute walk catchments.

The analysis involved extracting information from the 2011 POWSCAR (Place of Work, School or College - Census of Anonymised Records) data, which contains data on employment and school goers within specific areas.

The areas used for the analysis were taken from the NTA's multi-modal transport model of the Greater Dublin Area and correspond to the zones defined in the model.

These zones are effectively modified Central Statistics Office (CSO) boundaries.

GeoDirectory was used to assist in calculating the proportional figures for the employment units within the specific contour bands for each of the routes.

This information was subsequently used to calculate the number of people working within the contours.

As with the residential population catchments, the assessment does not quantitatively assess the future populations of zoned, but yet undeveloped commercial development lands along route options.

4.4.2.3 Transport Network Integration (2.c.)

This criterion identifies the extent to which route options would maximise wider public transport usage and reach in terms of facilitating efficient interchange between other transport routes and modes (e.g. other core / feeder bus routes, BRT routes, Luas, DART, suburban rail, future Metro).

Linked to this, is the availability of space at potential interchange locations for facilities such as cycle parking areas, covered interchange areas, safe walking areas to and from stops etc.

4.4.2.4 Cycle Network Integration (2.d.)

This criterion considers whether a route option forms part of the GDA Cycle Network Plan, with routes which overlap with designated Cycle Routes given a higher designation in terms of benefits arising where cycle infrastructure can be provided as part of the proposed scheme.

In some instances however it may be more appropriate to modify an existing or proposed cycle route as part of the GDA Cycle Network so that bus and cycle network objectives can both be achieved within the broader corridor area.

Consideration is also given to cycle routes intersecting with the bus route.

The quality of cycle provision practically achievable on route options has been assessed as this is considered to be a proxy for encouraging physical activity along the route.

For comparison purposes, the highest level of practical cycle provision achievable on each route has been determined and compared between route options.

4.4.2.5 Traffic Network Integration (2.e.)

A comparative assessment of the expected traffic impact of each route option was undertaken based on professional judgement and understanding of traffic conditions in the Study Area.

This represents a high level assessment of the traffic impact of the route options considered in the Stage 2 MCA.

The anticipated traffic impact expected to be incurred by motorists using private vehicles as a result of the different route options will be assessed.

The disadvantages experienced by motorists in respect of reduced junction capacity and restricted movements will be considered.

4.4.3 Accessibility and Social Inclusion (3)

4.4.3.1 Key Trip Attractors (3.a.)

This assessment criterion identifies key trip attractors located within approximately 15 minute walk catchments which would generate significant demand for bus services but would not be otherwise picked up by either the employment or residential catchment analysis.

For the purposes of this assessment the following land-uses have been considered as key trip attractors:

- Education (schools and universities);
- Commercial centres (shopping centres, town centres etc.);
- Healthcare (hospitals);
- Leisure (sport stadiums, theatres, cinemas etc.); and
- Employment (business parks, large office developments etc.).

4.4.3.2 Deprived Geographic Areas (3.b.)

The possible impact of the route options on deprived geographic areas including RAPID (Revitalising Areas by Planning, Investment and Development) areas and the HP Deprivation Index was investigated.

4.4.4 Safety (4)

4.4.4.1 Road User Safety (4.a.)

Generally, the introduction of CBC will result in a reduction in road collisions due to people switching from private car to public transport. However, the reduction in collisions is unlikely to differ between various route options, particularly over the short sections being investigated as part of this assessment. Therefore, for the purposes of comparing route options, 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 bus 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. Road User Safety also refers to cyclist and pedestrian safety such as segregated cycle facilities and safer pedestrian crossing facilities, in line with the National Cycle Manual and the Design Manual for Urban Roads and Streets.

4.4.5 Environmental (5)

The scope and methodology for the environmental assessment was established by considering what environmental aspects are likely to be impacted and are therefore of importance in evaluating the route options.

A list of the environmental topics considered is outlined in **Table 4.5** and **Table 4.5**.

Table 4.4: Environmental Aspects Considered – Aspects Scoped out of Environmental Assessment

Aspects Scoped out of Environmental Assessment	Rationale
Agronomy	Given the urban / suburban nature of the proposed scheme and the assumption that the CBC will run on predominantly existing road infrastructure, this aspect is not considered to be relevant to the assessment.
Hydrogeology	Hydrogeology is not considered to be a determining factor in the selection of the preferred route option. Also at this stage of the design process it is not possible to determine the quality, type or duration of these impacts, particularly as the location and type of structures e.g. underpasses, bridges etc. are unknown.
Property / Land Acquisition	This aspect has been considered separately as part of the Economy criterion in the overall MCA commensurate with the information available at the route option assessment stage.
Socio-economics	Elements of socio-economics such as journey times, catchment analysis, transport integration, quality of service for cyclists etc. are assessed under other non-environmental criteria and will be considered as part of the MCA.

Table 4.5: Environmental Aspects Considered – Aspects Included in Environmental Assessment

Aspects Included in Environmental Assessment	Rationale
6.a./6.b. Archaeological, Architectural and Cultural Heritage	The provision of CBC infrastructure 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.
6.c. Flora and Fauna	The provision of CBC infrastructure has the potential to impact on flora and fauna.
6.d. Soils and Geology	The provision of CBC infrastructure has the potential to impact on soil and geology as a result of land-take and possible ground excavation (including potential to encounter ground contamination).
6.e. Hydrology	The provision of CBC infrastructure has the potential to impact on surface water bodies as a result of land-take (with particular emphasis on floodplains and flood zones).
6.f. Landscape and Visual	The provision of CBC infrastructure has the potential to impact the townscape/streetscape along the CBC route.
6.g. Air Quality	The provision of CBC infrastructure has the potential to impact the air quality along the CBC route.
6.h. Noise & Vibration	The provision of CBC infrastructure has the potential to impact the noise environment along the CBC route.
6.i. Land Use Character	The provision of CBC infrastructure has the potential to impact on land use character through land-take, severance or reduction of viability which prevents or reduces it from being used for its intended use.

When preparing an Environmental Impact Assessment Report (EIAR) for the preferred route and scheme design, if necessary, the environmental topics that have been scoped out (and others that are not considered relevant for the route options assessment), will have to be reviewed and incorporated into the EIAR as appropriate.

4.4.5.1 Archaeological, Architectural and Cultural Heritage

As discussed above, a conservative approach has initially been adopted in undertaking the route options assessment in relation to the archaeological, architectural and cultural heritage environment. The constraints comprise Recorded Monuments and Protected Structures (RMPs) within 50m of each scheme option, extending to 250 m in greenfield areas.

Sites of archaeological and cultural heritage merit and sites of architectural heritage merit which are directly intersected by the scheme option are also included within the scope of this assessment.

During the detailed design of the proposed scheme, the aim will be to avoid known constraints and/or minimise the number of constraints which may be directly or indirectly impacted by the proposed scheme.

Appropriate mitigation for construction will be included which will seek, where practicable, to ensure preservation in situ of archaeological remains and the avoidance of impacts on archaeological and cultural heritage constraints. A similar approach has been adopted in relation to the route options assessment for architectural heritage.

As a result, the assessment effectively evaluates the potential for impact on architectural heritage from façade to façade which provides for a comparative and qualitative evaluation of Protected Structures along route, in particular along heavily developed sections such as those identified within the City Centre.

However, it is important to note that the CBC route will primarily travel on existing established road networks.

Other than locations of potential significant widening of the existing road curtilage, it is currently not anticipated that adjacent structures and buildings will be impacted by the proposed scheme (while acknowledging that the designation of, and protection afforded to a Protected Structure is not restricted to the structure itself but to all elements within its curtilage, e.g. coal cellars and boundary elements).

Within the City Centre, the selection of a viable route options will involve the running of the CBC service in the vicinity of numerous Protected Structures irrespective of which route section is preferred (archaeological, architectural and cultural heritage is only one of the criteria being considered as part of the MCA analysis).

The detailed design of the proposed scheme will seek to avoid and minimise impacts on architectural heritage.

4.4.6 Scheme Options Summary Table

A scheme options summary table, in Project Appraisal Balance Sheet, (PABS) format has been prepared which collates and summarises the appraisal of scheme options under each of the assessment criterion.

The scheme options summary table is presented in **Appendix A**.

For each individual assessment criterion considered, routes have been relatively compared against each other based on a five point scale, ranging from having significant advantages to having significant disadvantages over other scheme options.

For illustrative purposes, this five point scale is colour coded as presented in Table 4.6 with advantageous routes graded to 'dark green' and disadvantaged routes graded to 'dark red'.

Table 4.6: Scheme Options Colour Coded Ranking Scale

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

At the end of the route options assessment, an overall MCA table is provided, bringing together each of the individual criterion assessments.

A qualitative appraisal of, and conclusions from, the route options assessment is then provided, highlighting the key issues considered in determining recommended scheme options ('preferred' and in some instances, where applicable, 'next preferred').

A balanced approach is taken when assessing the preferred routes.

All criteria are considered in undertaking the assessment and a lower ranking on one criterion, for example, will not necessarily mean that the route is not suitable.

The recommended scheme options are then collated to provide the emerging preferred end-to-end scheme option.

4.4.7 Conclusion

The outcome from the transport analysis and the findings of the MCA are then finally considered in a holistic manner to derive a preferred 'end-to-end' route.

5. Stage 1: Route Sections Assessment

5.1 Introduction

As outlined in **Section 4** of the report, the Study Area is generally bounded to the north by St. Stephen's Green (South East corner) and to the south by Booterstown and Goatstown.

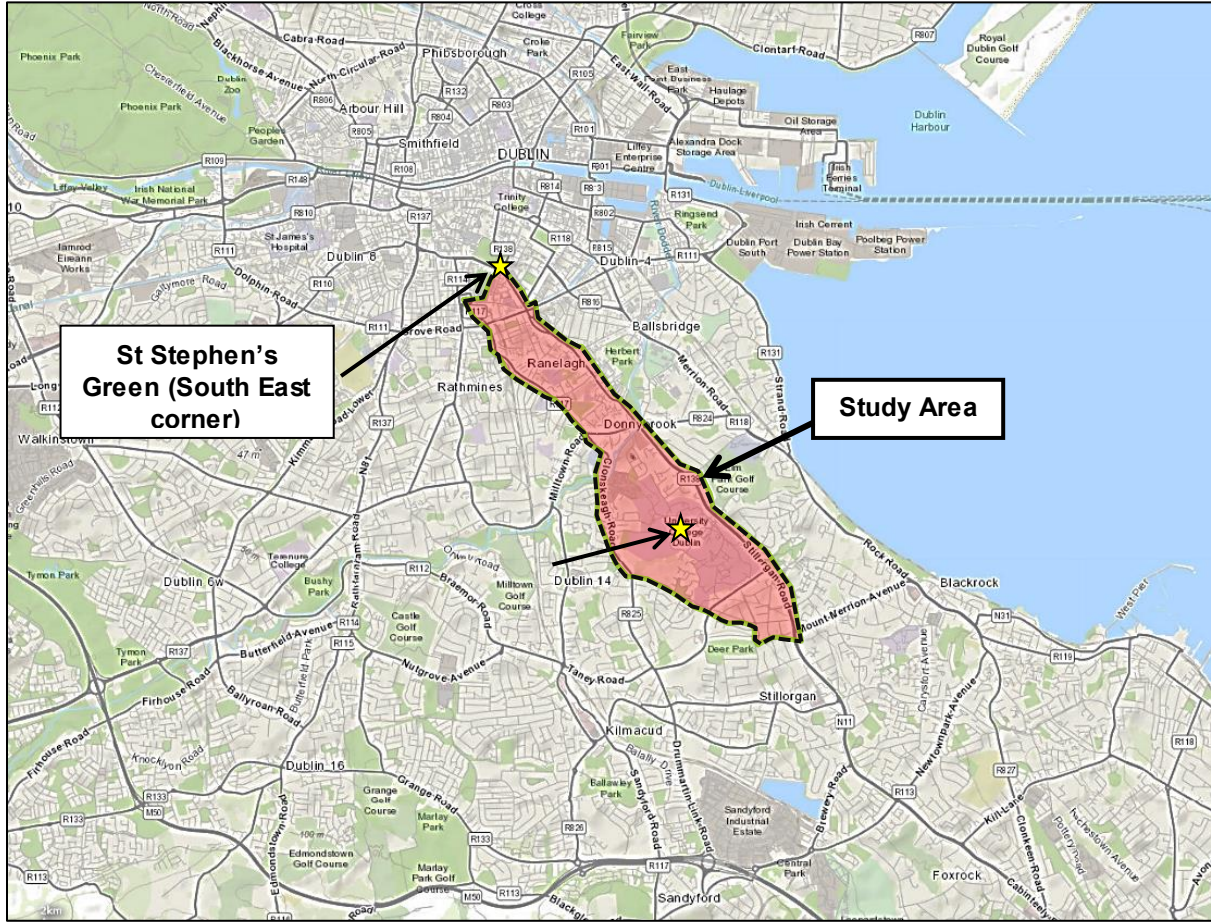


Figure 5.1: Study Area

5.2 UCD to St. Stephen's Green

There are a number of route sections which have been considered.

The roads available for CBC routing have been subdivided into shorter sections for the purposes of the Stage 1 route sections sifting process.

Following the route sifting process, remaining routes sections have been combined to form longer route options where possible.

Figure 5.2 presents the initial potential route sections identified.

A summary of the Stage 1 route sections sifting process is presented in **Table 5.1**.

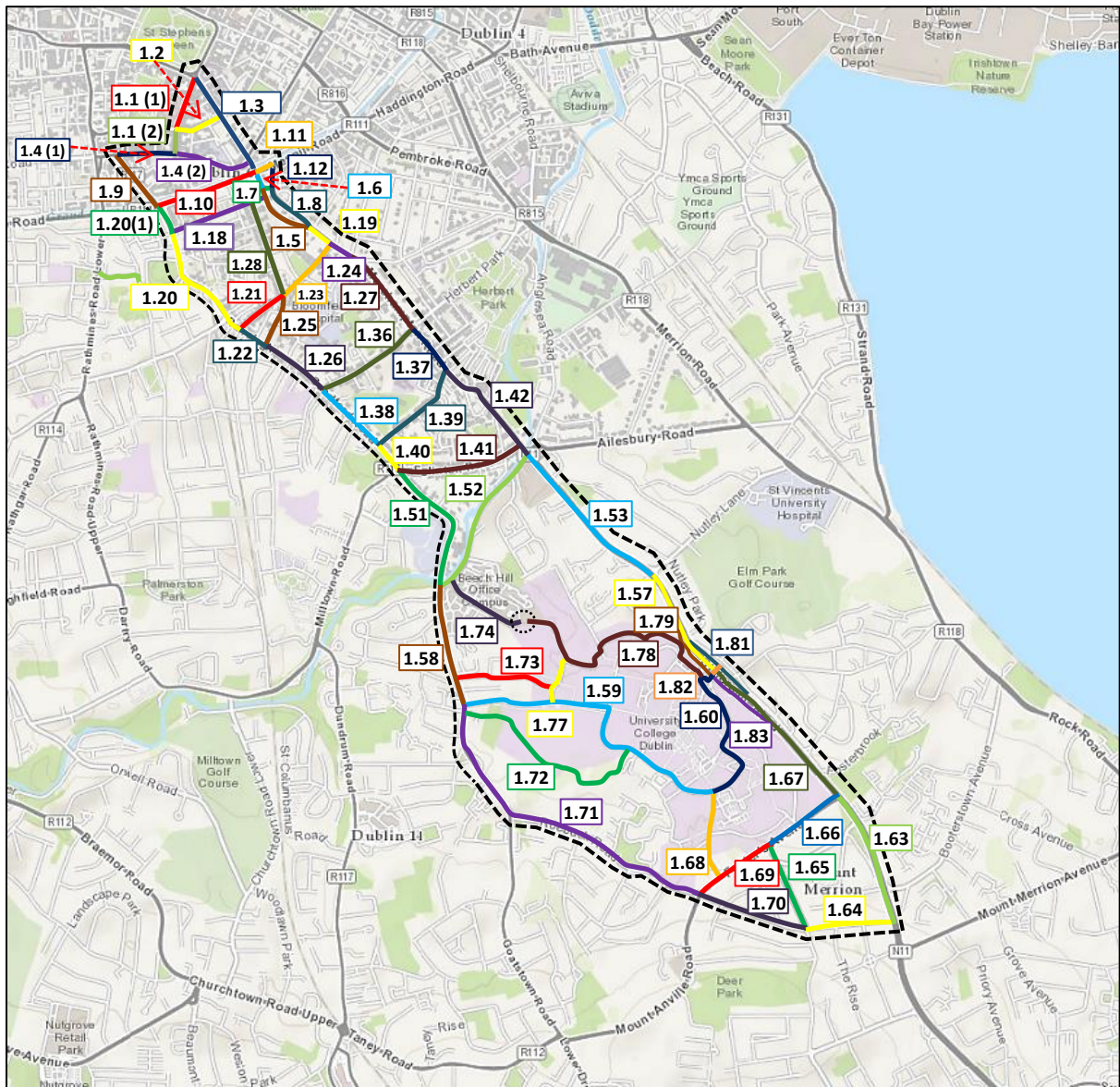


Figure 5.2: Route Sections – UCD to St. Stephen's Green

Table 5.1: Route Sections Sifting (Stage 1) Summary

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.1(1)	Earlsfort Terrace from St. Stephen's Green to Hatch Street (1.2)	Urban – Standard carriageway width. Wide footpaths and cyclist facilities on both sides of carriageway. Existing bus route in one direction. Existing on-street parking. Section bound on one side by Georgain Conservation Area.	Route has been identified as a Secondary route on the proposed GDA Cycle Network. There is sufficient width to accommodate full bus and cycle facilities. As a result this is a viable route.	Pass
1.1(2)	Earlsfort Terrace from Hatch Street (1.2) to Adelaide Road (1.4)	Urban – One-way wide carriageway width. Wide footpaths. Existing on-street parking. Section partially bound on one side by Georgain Conservation Area.	Route is not linked to the proposed GDA Cycle Network. There is sufficient width to accommodate full bus facilities. As a result this is a viable route.	Pass
1.2	Hatch Street Lower from Earlsfort Terrace (1.1) to Leeson St Lower (1.3)	Urban – two way standard carriageway width. Existing on-street parking on both sides. Section bound on both sides by Georgain Conservation Area.	Route is not linked to the proposed GDA Cycle Network. There is sufficient width to accommodate full bus facilities. As a result this is a viable route.	Pass
1.3	Leeson street Lower from St. Stephen's Green to Grand Canal Bridge (1.6)	Urban – Wide carriageway width. Wide footpaths and cyclist facilities on both sides of carriageway. Existing bus route.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Existing carriageway width sufficient to accommodate full bus and cycle facilities. Existing link from City Centre to UCD As a result this is a viable route.	Pass
1.4(1)	Adelaide Road (Harcourt Road) from Charlemont Street to Earlsfort Terrace (1.1)	Urban – One-way, two lane standard carriageway width. Two-way LUAS tracks. Wide footpaths. Section partially bound on both sides by Georgain Conservation Area and Residential Conservation Areas.	Route has been identified as a Secondary route on the proposed GDA Cycle Network. There is insufficient width for bus and cycle facilities within the available road space. This is also a significant traffic route and oneway system. As a result this is not a viable route.	Fail
1.4(2)	Adelaide Road from Earlsfort Terrace (1.1) to Leeson Street Lower (1.3)	Urban – Wide carriageway width. Wide footpath. On-street parking provided on both sides. Tree lined carriageway. Section partially bound on both sides by Georgain Conservation Area and Residential Conservation Areas.	Route has been identified as a Secondary route on the proposed GDA Cycle Network. A number of pinch point along the section prevent full provision for bus and cycle facilities. In addition, the area is zoned as Georgian Conservation Area and Residential Conservation Area which provides further limitations on the extent of carriageway widening due to potential impact upon the heritage streetscape and features. As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.5	Leeson Street Upper from the northern Junction of Sussex Road (1.7) to the southern Junction of Sussex Road (1.19)	Urban – Standard carriageway width. Wide footpaths and on-street parking provided on both sides of carriageway. Semi-Mature trees on each side of carriageway. Existing bus route. On street parking provided along northern carriageway.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Existing carriageway width sufficient to accommodate one way bus and cyclist facilities (to match existing one-way system). Link can be established from City Centre to UCD As a result this is a viable route.	Pass
1.6	Leeson street Upper from Grand Canal Bridge to Sussex Road Junction (1.7/1.8)	Urban – Wide carriageway width. Wide footpaths and cyclist facilities on both sides of carriageway. Existing bus route.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Existing carriageway width sufficient to accommodate full bus and cycle facilities. Existing link from City Centre to UCD. As a result this is a viable route.	Pass
1.7/1.8	Sussex Road from Sussex Terrace (1.12) to Leeson Street Upper (1.19)	Urban – Standard carriageway width. Footpaths provided on both sides of carriageway. Cyclist facilities and bus lane on northern carriageway. Semi mature trees on both sides of section.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Existing carriageway width sufficient to accommodate one way CBC width (to match existing one-way system). Existing link from City Centre to UCD As a result this is a viable route.	Pass
1.9	Charlemont Street from Grande Parade (1.10) to Adelaide Road (Harcourt Road) (1.4)	Urban – Wide carriageway. Footpaths and cyclist facilities on both sides of section. Existing bus route. On-street parking.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Provision of CBC would improve reliability and bus journey times and enhance the existing public transport network along the route. Provision of full bus and cycle facilities would require widening along the section which would necessitate some land take. While land take is required, a link may be established along this route linking Dublin City Centre and UCD. As a result this is a viable route.	Pass
1.10	Grand Parade from Ranelagh Road Junction (1.20[1]) to Leeson Street Upper Junction (1.6)	Urban – Standard Carriageway width. Wide footpaths both sides of carriageway. On road cycle facilities both sides of carriageway. Pinch point underneath bridge adjacent to Charlemont Luas station.	Route has been identified as a secondary route on the proposed GDA Cycle Network Plan. Limited scope to widen carriageway to provide full bus and cycle facilities due to pinch point identified under Luas line bridge and proximity of the Grand Canal to the north and buildings zoned in a Residential Conservation Area to the south. As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.11	Mespil Road from Sussex Terrace (1.12) to Grand Parade Junction (1.3)	Urban – Standard carriageway width. Footpaths and cyclist facilities provided on both sides of carriageway. Semi mature trees on both sides of section. On street provided on both carriageways at various locations.	Route has been identified as a secondary route on the proposed GDA Cycle Network Plan. Limited scope to widen carriageway due to land zoned for Waterway Protection (The Grand Canal) along the north of the carriageway and Georgian Conservation Area and Residential Conservation Area along the south of the carriageway. As a result this is not a viable route.	Fail
1.12	Sussex Terrace from Mespil Road (1.11) to Sussex Road (1.7/1.8)	Urban – Wide carriageway width. Footpaths and on-street parking provided on both sides of carriageway. Trees along eastern side of section.	Route is not linked to the proposed GDA Cycle Network. Provision of full bus and cyclist design road width would require land take and removal of existing trees and on-street parking activity. As a result this is not a viable route.	Fail
1.18	Dartmouth Road/Dartmouth Square from Leeson Street Upper (1.5) to Ranelagh Road (1.20)	Urban – Standard carriageway width. Wide footpaths and on-street parking provided on both sides of carriageway. Mature trees on each side of carriageway. Not existing bus route.	Widening required, with limited scope to widen carriageway to provide full bus and cycle facilities due to proximity of buildings in several locations and also location of protected trees at Dartmouth Square. As a result this is not a viable route.	Fail
1.19	Leeson Street Upper from Burlington Road Junction to Appian Way (1.23)	Urban – wide carriageway width. Two traffic lanes on both northern and southern carriageways. Also bus lane on northern carriageway. On road cycle lane on southern carriageway. Tree lined section with footpaths on both sides. No on-street parking.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Some removal of trees may be required along this section. Link can be established from City Centre to UCD Existing carriageway width sufficient to accommodate full bus and cycle facilities. As a result this is a viable route.	Pass
1.20	Ranelagh Road from Dartmouth Road Junction (1.18) to Chelmsford Road Junction (1.21)	Urban – Standard carriageway width. On-road cyclist facilities on both carriageways for the majority of the section. Pinch points at several locations in Ranelagh village. Existing bus route. On-street parking throughout Ranelagh village.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Link to City centre and UCD may be determined. Full bus and cyclist facilities cannot be provided in Ranelagh village due to close proximity of buildings (forming pinch points) and road width beneath railway bridge. As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.20(1)	Ranelagh Road from Dartmouth Road Junction (1.18) to Grand Parade (1.10)	Urban – Wide carriageway. Footpaths and Cyclist facilities on both sides of section. Mature trees in footpaths on both sides of carriageway. Some signage and street lighting. Residential accesses along section. Existing bus route.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Provision of CBC would improve reliability and bus journey times and enhance the existing public transport network along the route. Provision of full bus and cycle facilities would require widening along the section which would necessitate some land take. While landtake is required, a link may be established along this route linking Dublin City Centre and UCD As a result this is a viable route.	Pass
1.21	Chelmsford Road from Ranelagh Road (1.22) to Appian Way (1.23)	Urban – Narrow carriageway width. Due to pinch points, i.e. the close proximity of buildings along this section, bus and cyclist facilities cannot be provided.	Route has been identified as a secondary route on the proposed GDA Cycle Network. Limited scope to widen due to the close proximity of buildings and land take (negatively impacting private residential parking) in an area zoned Residential Conservation Area in the Dublin City Council Development Plan. As a result this is not a viable route.	Fail
1.22	Ranelagh Road from Chelmsford Road Junction (1.21) to Sallymount Avenue junction (1.25)	Urban - Narrow carriageway width. Pinch points at several locations in Ranelagh village. Existing bus route. On-street parking throughout Ranelagh village.	Route has been identified as a Primary route on the proposed GDA Cycle Network. Extensive land take required to provide bus and cyclist facilities. Bus and cyclist facilities cannot be provided at several locations due to pinch points. As a result this is not a viable route.	Fail
1.23	Appian Way from Leeson Street Upper (1.19) to Sallymount Avenue (1.25)	Urban - Narrow carriageway width. Existing bus route. On street parking at several locations along this section. Tree lined section with footpaths on both sides. No cyclist facilities.	Route has been identified as secondary route on the proposed GDA Cycle Network. Residential land take (negatively impacting private residential and commercial parking) required from a Residential Conservation Area to provide full bus and cyclist facilities. As a result this is not a viable route.	Fail
1.24	Leeson Street Upper from Appian Way (1.23) to Wellington Place (1.28)	Urban - Wide carriageway width. Two traffic lanes southern carriageway. Existing bus lane on northern carriageway. On road cycle lane on southern and northern carriageways Footpaths on both sides. No on-street parking.	Route has been identified as a Primary route on the proposed GDA National Cycle Plan Network. Existing link from Dublin City Centre to UCD Existing carriageway width sufficient to accommodate full bus and cycle facilities. As a result this is a viable route.	Pass

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.25	Sallymount Avenue from Ranelagh Road/Sandford Road (1.26) to Appian Way (1.23)	Suburban – Standard Carriagewaywidth. On street parking provided at several locations along this section. No cycle facilities. Due to pinch points, i.e. the close proximity of buildings along this section e.g. between the Bank of Ireland and No.6 Sallymount Avenue, bus and cyclist facilities cannot be provided.	Route has been identified as secondaryroute on the proposed GDA Cycle Network. Limited scope to widen due to land take (negatively impacting private residential parking) in an area zoned Residential Conservation Area in the Dublin City Council Development Plan and close proximity of buildings to each other. As a result this is not a viable route.	Fail
1.26	Ranelagh Road/Sandford Road from Sallymount Avenue Junction (1.25) to Marlborough Road Junction (1.36)	Urban – Standard Carriagewaywidth. Cyclist facilities provided on both carriageways.	Route has been identified as a Primary route on the proposed GDA National Cycle Plan Network. Limited scope to widen due to close proximity of buildings (pinch points) at various locations along the route. As a result this is not a viable route.	Fail
1.27	Morehampton Road from Wellington Place Junction (1.28) to Marlborough Road Junction (1.36)	Suburban – Wide carriagewaywidth. Bus lanes and on-road cycle facilities provided on both carriageways along the majority of the section. Wide footpaths with mature trees lining both carriageways.	Route has been identified as a Primary route on the proposed GDA National Cycle Plan Network. Some removal of trees may be required although for the majority of the route the existing infrastructure would be sufficient to accommodate full bus and cycle facilities. Existing link from Dublin City Centre to UCD As a result this is a viable route.	Pass
1.28	Leeson Park from Dartmouth Road Junction (1.18) to Sallymount Avenue Junction (1.25)	Suburban – Wide carriageway. On-street parking. Footpaths on both sides. Lined with trees in sections (mature trees present). No cycle or bus facilities.	This route has been identified as a secondaryroute on the GDA Cycle Network. Widening required, with limited scope to widen carriagewayto provide full bus and cycle facilities due to proximity of properties zoned in a Residential Conservation Area and from the Embassies of India and Nigeria located at the southern end of the route. As a result this is not a viable route.	Fail
1.36	Marlborough Road from Herbert Park Junction (1.35) to Sandford Road (1.38)	Suburban – Narrow Carriagewaywidth. Traffic calming measures in place. Pinch point on approach to Sandford Road junction due to close proximity of residential buildings. On street parking on southern carriageway. No cyclist facilities. Not an existing bus route.	Route is not linked to the proposed GDA Cycle Network Plan. Provision of full bus and cycle facilities dependant on residential land take (negatively impacting private residential parking) in an area zoned as Residential Neighbourhood Conservation Area in the Dublin City Council Development Plan. Full facilities would not be provided throughout due to close proximity of buildings at the Sandford road junction (pinch point). As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.37	Morehampton Road/Donnybrook Road from the Herbert Park Junction (1.35) to the Belmont Avenue Junction (1.39)	Urban – Wide carriageway width. Traffic Islands in place at junctions within the section. Existing Bus Route. On-road cyclist facilities provided on both carriageways for the entirety of the section. Inbound and outbound bus lanes provided along the majority of the section. Wide footpaths with street furniture at several locations. Mature trees at several locations.	Route has been identified as a Primary route on the proposed GDA National Cycle Plan Network. Direct link may be established from Dublin City Centre and UCD. Some removal of trees and street furniture, may be required. Full bus and cyclist facilities can be provided without any land take. As a result this is a viable route.	Pass
1.38	Sandford Road from Marlborough Road Junction (1.36) to Belmont Avenue Junction (1.39)	Suburban – Standard carriageway width. On-road cycle lanes in both directions. Existing bus route. Semi mature trees at several locations along the section.	Route has been identified as a Primary route on the proposed GDA National Cycle Plan Network. Provision of full bus and cyclist facilities dependant on land take (negatively impacting private residential and commercial parking) along the majority of section in an area of mixed zonal objectives (Residential Neighbourhood Conservation Area, Amenity/Open Space/Green Network, Sustainable residential Neighbourhood). Landtake from Residential Conservation Area would be required. As a result this is not a viable route.	Fail
1.39	Belmont Avenue from Sandford Road (1.38) to Donnybrook Road (1.42)	Suburban – Narrow carriageway width. Narrow access to St. Mary's N.S. leads onto Belmont Avenue. Traffic calming measures and pedestrian crossings at several locations. Pinch points at several locations. Not existing bus route.	Route is not linked to the proposed GDA National Cycle Network Plan. Narrow carriageway, with limited scope to widen due to pinch points at several locations (e.g. between Tesco's and residential buildings and Donnybrook Hall and residential buildings). Some on-street parking activity. As a result this is not a viable route.	Fail
1.40	Sandford Road from Sandford Road Junction (1.38) to Street James's Junction (1.51)	Suburban – Three lane carriageway, two lanes heading south and one north. On-road cycle lanes in both directions. Footpaths on both sides. Existing bus stop in the direction of south. No bus lanes.	Route has been identified as primary route on the GDA Cycle Network. Capacity to widen on the west side of route but would require land take from land zoned for community and institutional. Land on east zoned as Residential Conservation Area. As a result this is a viable route.	Pass
1.41	Eglinton Road from Street James's Terrace/Clonskeagh Road (1.51) to Donnybrook Road (1.42)	Suburban – On-road cycle lanes in both directions. On-street parking and footpaths on both sides. Mature trees line the whole route. No existing bus stops or lanes.	This route has been identified as a feeder route on the GDA Cycle Network. There is limited scope to widen along the majority of the route. Land take, (which would impact on private residential parking) in an area zoned as Residential Neighbourhood Conservation Area in the Dublin City Council Development Plan, would be required order to provide full bus and cycle facilities. As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.42	Donnybrook Road from Stillorgan Road Junction (1.53) to Morehampton Road Junction (1.37)	Suburban – Existing bus stops in both directions. Dedicated bus lane heading north. Off-road cycle lanes in both directions. Route passes through a district centre.	Route has been identified as primary route on the GDA Cycle Network. This route provides a direct link with the City Centre and UCD While there is a pinch point within this route section, an allowance has been made as it is a localised pinch point and a normal part of a village structure. Villages typically forming key catchment areas and arteries within an effective bus network. As a result this is a viable route.	Pass
1.51	Clonskeagh Road from Eglinton Junction (1.41) to Beech Hill Road junction (1.52)	Suburb – Standard carriageway. On-road cycle lanes. Footpaths on both sides. Bus stops in both directions. On-street parking. River Dodder to the southern end of route.	Route has been identified as a Primary route on the GDA Cycle Network. Widening required for the provision of bus and cycle facilities along the majority of this route. Land take required (private residential and commercial parking), with some landtake in area zoned as Residential Neighbourhood Conservation Area in the Dublin City Council Development Plan. In addition bridge widening required. As a result this is not a viable route.	Fail
1.52	Beech Hill Road/Beaver Row from Clonskeagh Road Junction (1.58) to Anglesea Road Junction (1.43)	Suburban - Standard carriageway. No footpaths in parts. No cycle lanes or bus facilities. Traffic calming measures in place. On-street parking. River Dodder runs along the west of road. Donnybrook bus depot located at Stillorgan Road junction. Central hatching in parts.	Southern half of route has been identified as a primary route on the GDA Cycle Network. Pinch points due to the river. No capacity to widen due to the adverse impacts that would occur to the River Dodder to the west and residential properties fronting onto the road to the east. As a result this is not a viable route.	Fail
1.53	Stillorgan Road from Donnybrook Road Junction (1.42) to Stillorgan Road Junction (1.57)	Suburban – Dual carriageway separated by a narrow grass verge lined with trees in parts. Three lanes in each direction. Dedicated bus lanes and stops in both directions. Off-road cycle lanes on both sides. Donnybrook bus depot is at the north west end of the route.	Route has been identified as a primary route on the GDA Cycle Network. Full bus and cyclist facilities can be provided without any land take. Direct link from City Centre to UCD. As a result this is a viable route.	Pass
1.57	Stillorgan Road from Nutley Lane Junction (1.54) to Woodbine Road/Trimleston Avenue Junction	Suburban – Seven lane carriageway. Four lanes heading north, three lanes heading south, with an existing bus lane and stops in both directions. Separated by a grass verge in the centre. On-road cycle lane heading south while north there is a slightly raised off-road cycle lane. Footpaths on both sides.	Route has been identified as a primary route on the GDA Cycle Network. This route provides a direct link with the City Centre and UCD Bus and cycle facilities are already present along the route. No widening or land take is required to provide full bus and cyclist facilities. As a result this is a viable route.	Pass

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.58	Clonskeagh Road from Beech Hill Road Junction (1.52) to Wynnsward Drive Junction (1.59)	Suburban – Standard carriageway. Footpath, cycle lanes and bus stops provided on both sides. Grass verges (wide in sections) along parts of route.	Route has been identified as a primary route on the GDA Cycle Network. There is scope to widen along the majority of the route. Minimal land take (minimal impact on private residential parking) would be required in some locations in order to provide full bus and cycle facilities. Capacity to widen in land zoned "to provide for economic development and employment". As result, this is a viable route.	Pass
1.59	Wynnsward Drive from Clonskeagh Road Junction (1.58) to Owenstown Park Junction (1.68)	Suburban – Route goes through UCD Campus. Existing bus route but no bus stops. Standard carriageway no cycle lanes. Footpaths along a majority of the route. Wide grass verge along majority of route.	The west section until the first roundabout has been identified as a primary route on the GDA Cycle Network. There is scope to widen along the majority of the route although this would require land take from the grounds of UCD Land take would be justifiable under the land zoning objective as outlined in the DLR Development Plan 2016-2022 i.e. "to facilitate and enhance the development of third level education institutions." As a result this is a viable route.	Pass
1.60	UCD Main Entrance from Stillorgan Road Junction (1.82) to Wynnsward Drive (1.59)	Suburban – Main entrance to UCD Campus. Standard carriageway. No cycle lanes. Footpaths on both sides. Existing bus lay-by. Bus & Coach Terminal providing a possible interchange.	Small section of the main entrance into UCD has been identified as a primary route on the GDA Cycle Network. There is scope to widen along the majority of the route although this would require land take from the grounds of UCD Land take would be justifiable under the land zoning objective as outlined in the DLR Development Plan 2016-2022 i.e. "to facilitate and enhance the development of third level education institutions." As a result this is a viable route.	Pass
1.63	Stillorgan Road from Greenfield Road (1.64) to Stillorgan Road Junction (1.67)	Suburban – Six lane carriageway. Three lanes in each direction separated by a grass verge down the middle. Dedicated bus lane in each direction. Existing bus stops. Off-road cycle lanes and footpaths on both sides.	Route has been identified as a primary route on the GDA Cycle Network. This route provides a direct link with the City Centre and UCD Existing bus and cycle facilities mean that widening is not needed. As a result this is a viable route.	Pass
1.64	Greenfield Road from Stillorgan Road (1.63) to Callary Road (1.70)	Suburban – Wide local access road. No road markings. On-street parking and footpaths on both sides.	Route has not been identified on the GDA Cycle Network. A link would have to be created where Greenfield Road meets Stillorgan Road to make this a viable option. Narrow existing carriageway, requiring significant land take. Land take would impact upon private residential parking; as a result this is not a viable route section.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.65	North Avenue from Foster's Avenue Junction (1.69) to Greenfield Road Junction (1.64)	Suburban – Wide single carriageway separated by a grass verge lined with trees. On-street parking. Footpaths on both sides separated by a wide grass verge. Existing bus stops. No cycle lanes.	Route has been identified as a feeder route on the GDA Cycle Network. Wide carriageway, with tree lined median. Full bus and cyclist facilities can be provided with some land take. Land take would maintain private parking provision, but remove on-street parking. As a result this is a viable route.	Pass
1.66	Foster's Avenue from Stillorgan Road Junction (1.63) to North Avenue Junction (1.65)	Suburban – Standard width carriageway. Two lanes that converge to three. Footpaths on both sides. UCD campus to the north of route. Grass verges on one side with a number of mature trees. Central hatching at west end of route. Existing bus stops. No cycle lanes. Scope for widening.	Route has been identified as a primary route on the GDA Cycle Network. Full bus and cyclist facilities can be provided without any land take. Direct link from City Centre to UCD. As a result this is a viable route.	Pass
1.67	Stillorgan Road from Woodbine Road/Trimleston Avenue to Foster's Avenue (1.66)	Suburban - Carriageway with three lanes in each direction. Dedicated bus lane in each direction. Existing bus stops. Off-road cycle tracks on both sides.	Route has been identified as a primary route on the GDA Cycle Network. This route provides a direct link from the City Centre to UCD Full bus and cyclist facilities can be provided without any land take. As a result this is a viable route.	Pass
1.68	Owenstown Park from Wynnsward Drive (1.59) to Foster's Avenue (1.69)	Suburban – Standard carriageway. Footpaths on both sides. No bus or cycle facilities. On-street parking. Traffic calming measures in place. Provides a connection to the route that passes through the UCD campus.	Route is not linked to the GDA Cycle Network. Residential properties are within close proximity to the carriageway. Limited capacity as widening would require land take at this part. Narrow existing carriageway, requiring significant land take. Land take would impact upon private residential parking; as a result this is not a viable route section.	Fail
1.69	Foster's Avenue from Roebuck Road Junction (1.71) to North Avenue Junction (1.65)	Suburban – Standard width carriageway. Footpaths on both sides. UCD campus to the north of route. Grass verges on both sides with a number of semi-mature trees. Central hatching at west end of route. Existing bus stops. No cycle lanes. Scope for widening. Existing bus stops.	Route has been identified as a primary route on the GDA Cycle Network. Minimal land take (minimal impact on private residential parking) would be required in some locations in order to provide full bus and cycle facilities. May provide link from City Centre to UCD. As a result this is a viable route.	Pass
1.70	Callary Road from Foster's Avenue Junction (1.69) to Greenfield Road (1.64)	Suburban – Standard carriageway, wide in parts. Traffic calming measures in place. Footpaths and narrow grass verges lined with trees on both sides. Residential estate. No cycle facilities.	Route has not been identified on the GDA Cycle Network. Narrow existing carriageway, requiring significant land take. Land take would impact upon private residential parking; as a result this is not a viable route section.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.71	Roebuck Road/Clonskeagh Road from Wynnsward Drive (1.59) to Foster's Avenue (1.69)	Suburban – Existing bus stops. Community infrastructure located along the route; Mosque, St Kilian's German School a small local centre. Central hatching in parts. Off and on-road cycle facilities along whole route. Wide footpaths and verges in parts. Carriageway is lined with trees in sections.	Route has been identified as a secondary route until the Roebuck Road junction then it becomes a primary route on the GDA Cycle Network. Narrow carriageway, with widening requiring land take. Pinch point formed by building facades. As a result this is not a viable route.	Fail
1.72	Roebuck Road from Clonskeagh Road (1.71) to Wynnsward Drive (1.59)	Suburban/UCD Campus – Very narrow carriageway adequate width for a single vehicle. Route is used for grounds keeping and access to a car park at the eastern end. No existing bus or cycle facilities. Footpath in parts. Tree lined route.	This route is not linked to the GDA Cycle Network. Very narrow carriageway. Widening would require the removal of trees and land take from playing pitches and at the west end would require land take from residential property and widening at the entrance through residential area. As a result this is not a viable route.	Fail
1.73	UCD Clonskeagh Entrance from Clonskeagh Road Junction (1.58) to UCD Local (1.77)	Suburban/UCD Campus – Standard carriageway used for access to the UCD educational facilities. Traffic calming measures in place. Tree lined on both sides in parts. Route passes through a car park at the eastern end. Footpath in parts. No existing bus or cycle facilities.	The route has not been identified on the GDA Cycle Network. Widening would require land take at the western end. Land take would be needed from Longwood Apartments. This part of the route becomes a pinch point due to the large UCD building. Limited scope to provide two-way bus and cycle facilities. As a result this is not a viable route.	Fail
1.74	Beech Hill Road from Beech Hill Road/Beaver Row (1.52) to UCD Campus	UCD Campus/Beech Hill Office Campus – Standard carriageway. Off-road cycle lanes for half of the route. Traffic calming measures in place. On-street parking. Pedestrian crossing. No bus facilities.	This route is not linked to the GDA Cycle Network Plan. Limited capacity to widen on both sides as this would require land take from the car parks located on both sides of the carriageway. A link would need to be created to connect with the UCD Campus at the eastern end of the route. As a result this is not a viable route.	Fail
1.77	UCD Local from UCD Campus Buildings (1.78) to Wynnsward Drive (1.59)	UCD Campus – Standard carriageway. No bus or cycle facilities. Footpath on one side. Traffic calming measures in place. Narrow grass verge on the west side. Verge with trees on the east side. Footpath only on the west side. Sports pitches on both sides of carriageway at the northern end. Wide grass verge towards the southern end. Existing bus stop. No cycle facilities. No bus lanes.	This route has not been identified on the GDA Cycle Network Plan for the GDA. This route would require the creation of a link to UCD Campus (1.78) in order to make this a viable option. There is limited scope to widen, due to proximity of 5-a side pitches and hockey pitches. As a result this is not a viable route.	Fail

Section No.	Description	Area Characteristics	Summary	Pass/Fail
1.78	UCD Campus (North Side) from UCD Main Entrance (1.60)	UCD Campus – Narrow carriageway. Restricted access at eastern end of the route. Traffic calming measures in place. Access for permitted vehicles and maintenance only.	This route has not been identified on the GDA Cycle Network Plan. This route would have to be widened considerably. Pinch points in areas due to the proximity of buildings. This route would also require a connection to be formed at the very western end to Beech Hill Road (1.74). As a result this is not a viable route.	Fail
1.79	Stillorgan Slip Road (towards City Centre) to Stillorgan Road (1.57) to UCD Main Entrance (1.60)	Suburban – One-way carriageway Existing bus stop and dedicated bus lane. Off-road cycle lane. Footpath only on the west side of the route.	This route has been identified as a primary route on the GDA Cycle Network. Land take would not be required as the necessary bus and cycle facilities are already in place. This route provides a direct link from UCD to Dublin City Centre. As a result this is a viable route.	Pass
1.81	Stillorgan Slip Road (towards UCD) from Stillorgan Road (1.57) to Stillorgan Road	Suburban – Standard carriageway, one-way system heading east. Route provides access from Stillorgan Road to UCD and to merge back to Stillorgan Road. Off-road cycle lane. Existing bus stop and bus lane. Tree lined route. Wide grass verge on both sides. Footpath only on the north side of the route.	This route has not been identified on the GDA Cycle Network Plan. Full bus and cyclist facilities can be provided within the existing carriageway. This route provides a link from Dublin City Centre to UCD. As a result this is a viable route.	Pass
1.82	UCD Overpass from Stillorgan Slip Road (1.81) to UCD Main Entrance (1.60)	Suburban – Dual carriageway. Divided by a narrow island. Two lanes in both directions. On-road cycle lanes. Footpaths on both sides. No bus stops or lanes.	This route has been identified as a Primary route on the GDA Cycle Network Plan. Full bus and cyclist facilities can be provided within the existing carriageway. This route Provides direct access to the UCD Main Entrance and also a link to Dublin City Centre. As a result this is a viable route	Pass
1.83	Stillorgan Slip Road (towards City Centre) to Stillorgan Road (1.57) to UCD Main Entrance (1.60)	Suburban – One-way carriageway. Existing bus lane. Off-road cycle lane. Footpath only on the west side of the route. Route provides access to UCD Main Entrance.	This route has not been identified on the GDA Cycle Network Plan. Provision of full bus and cyclist facilities would depend on widening of existing carriageway although this would not require any third party land take. As a result this is a viable route.	Pass

Following the Stage 1 sift, 34 of the 57 route sections assessed passed the initial sifting stage and were progressed to the next assessment stage.

These route sections are presented in **Figure 5.3**.

Passing route sections are shown in green and those which failed the Stage 1 sift are shown in red.

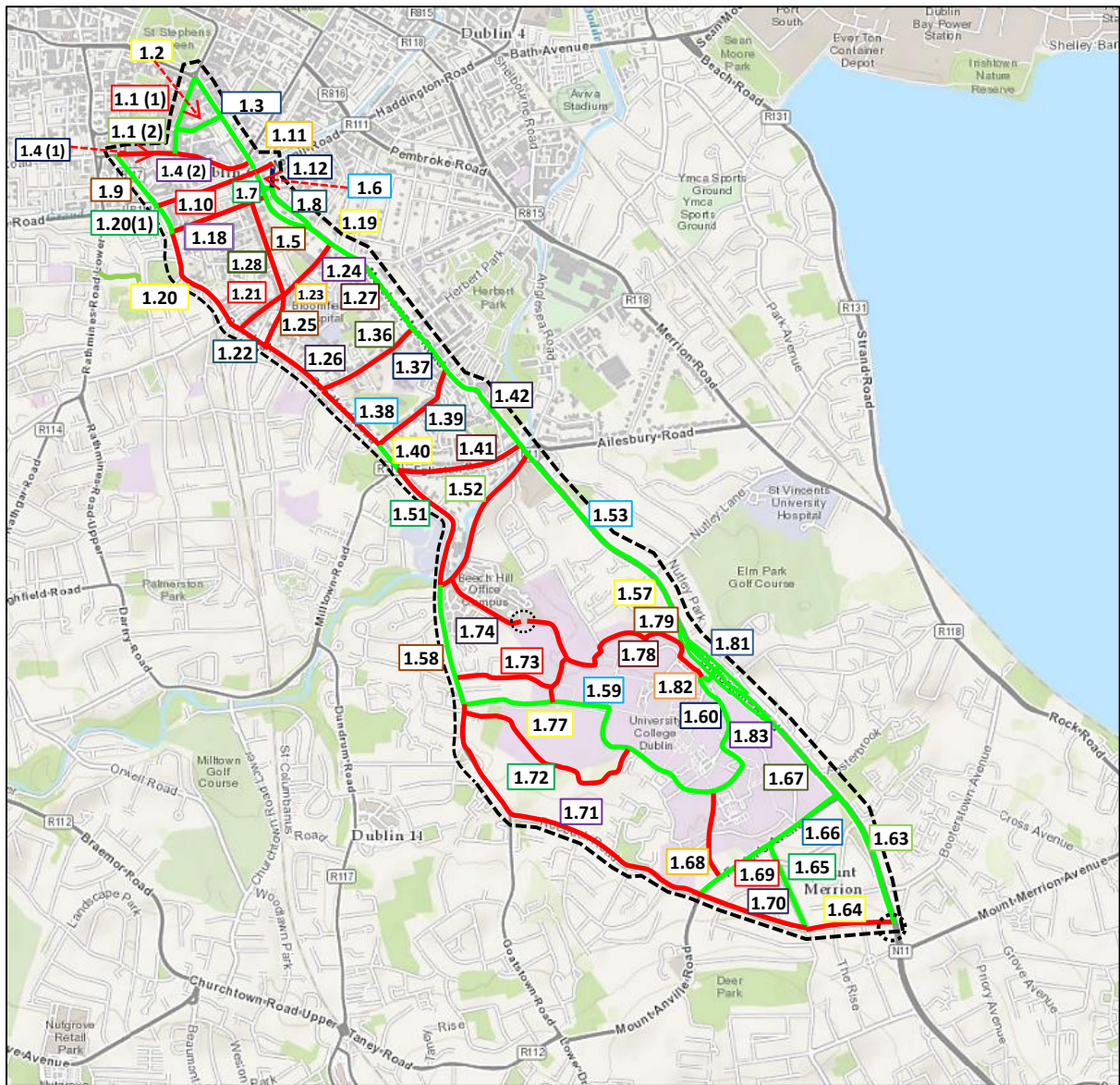


Figure 5.3: Route Sections passing Stage 1 Sift

6. Stage 2: Scheme Options Assessment

6.1 Introduction

The first step in the Stage 2 assessment involves combining shorter route sections which passed the Stage 1 assessment, to form longer end-to-end potential route.

6.2 UCD to Grand Canal

6.2.1 Route Description

Following the Stage 1 sift, the remaining 34 route sections were combined to form one cohesive route option (Route 1) as shown in

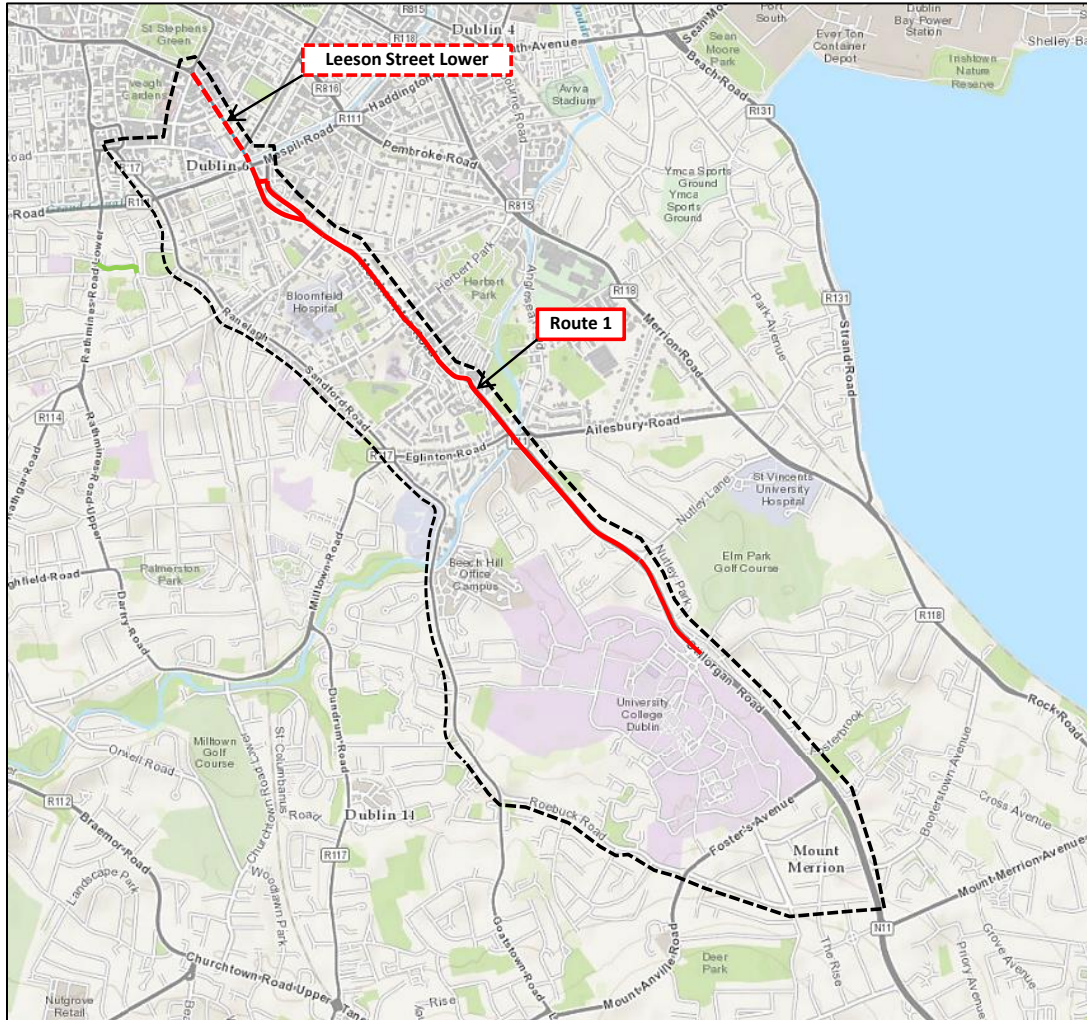


Figure 6.1 below.

Only a single reasonably direct route can be established between the Grand Canal and St. Stephen's Green, i.e. along Leeson Street Lower. After examining the local road network and taking cognisance of proposals to implement bus corridors along Dun laoghaire and Rathfarnham that originate from Stephen's Green (i.e. via Leeson Street Lower), it was decided not to include Leeson Street Lower in the route options development for the UCD to City Centre corridor.

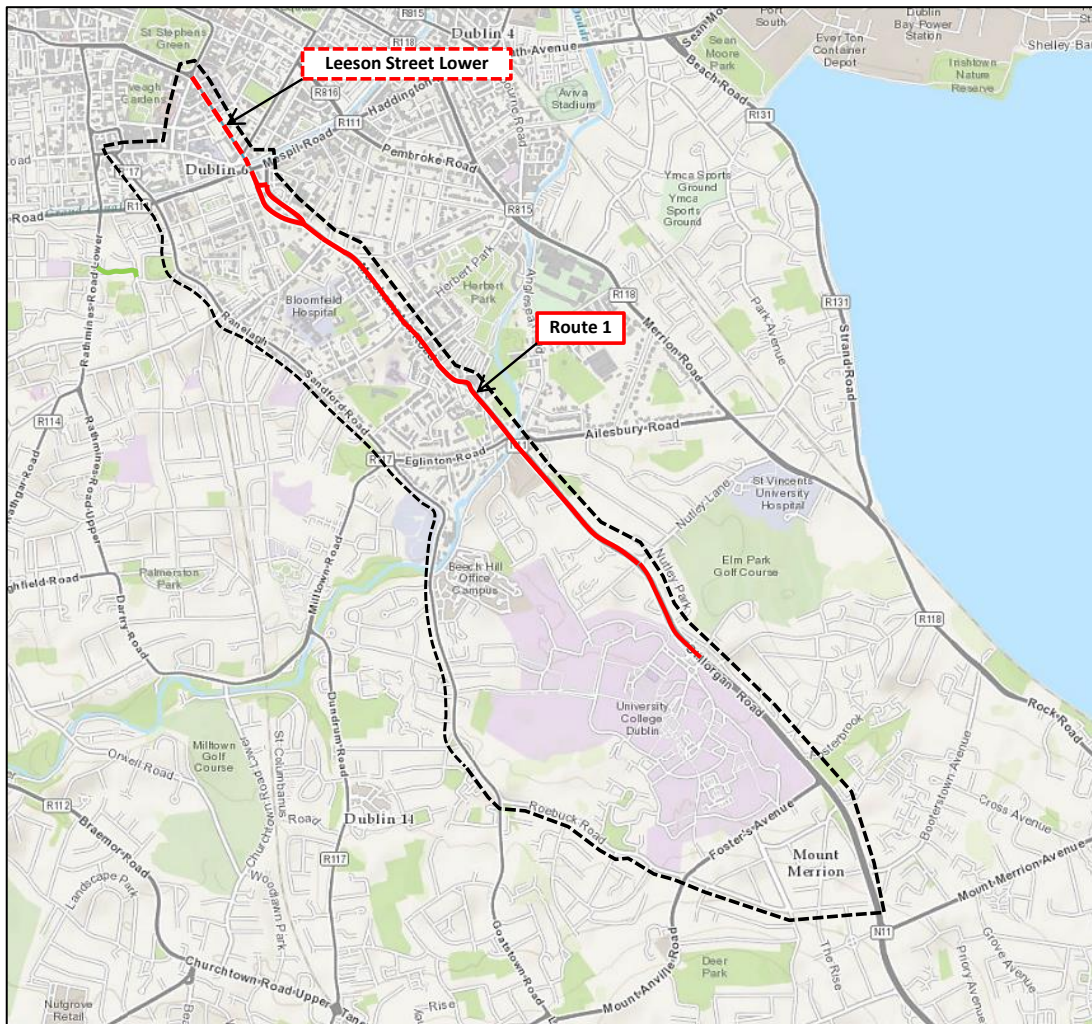


Figure 6.1: Route Options

6.2.1.1 Inbound and Outbound

Route 1 would connect UCD to Grand Canal via Donnybrook Road, Morehampton Road, Leeson Street Upper and Sussex Road.

The route is approximately 3.5km in each direction.

6.2.1.2 Stops

10 bus stops would be provided in each direction along this route – see Figure 6.2.

Bus stop locations closely align with the existing bus stops along the route and where appropriate, have been reconfigured to facilitate the route geometry.

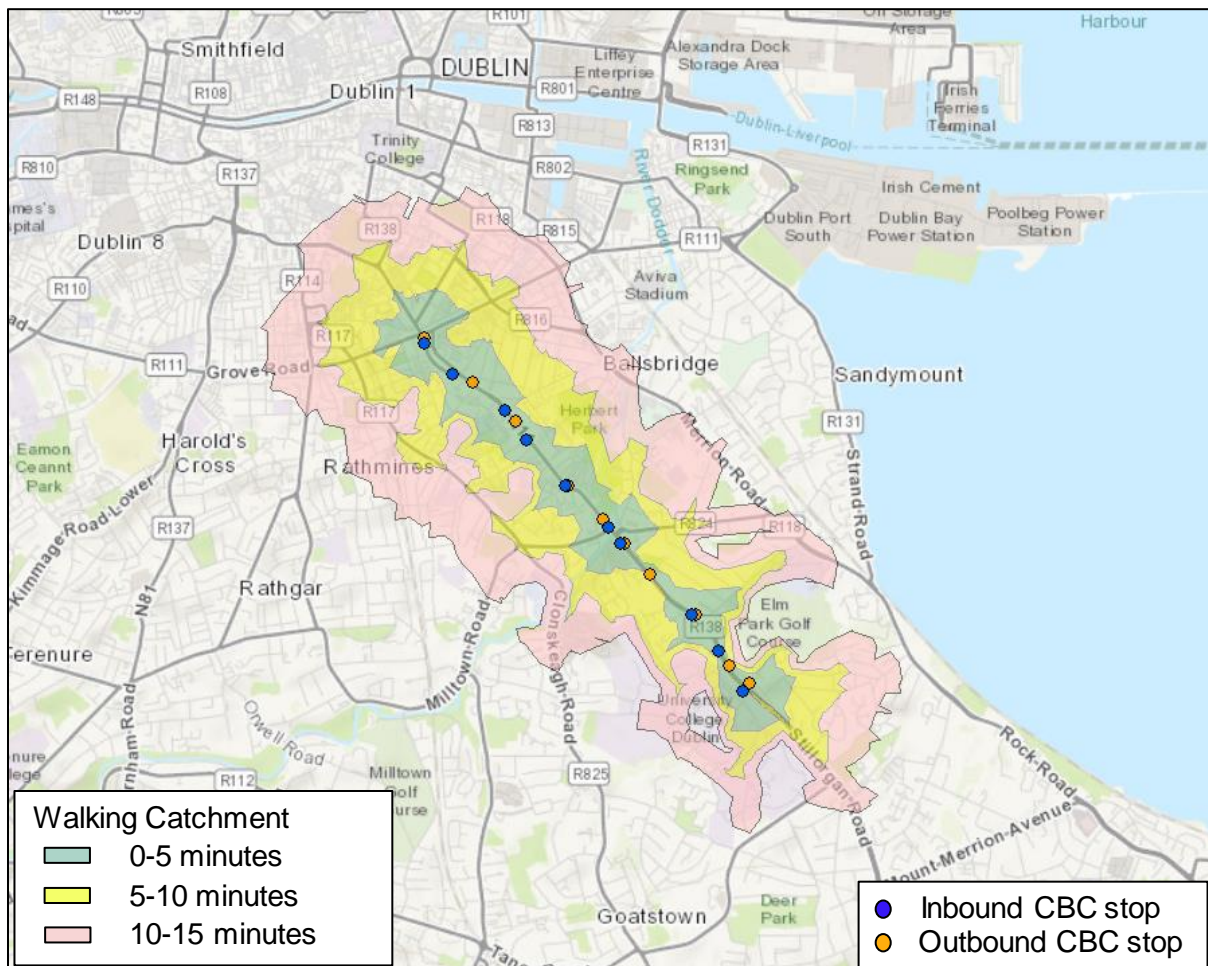


Figure 6.2: Walking distance catchment zones for Route 1A bus stops

6.2.2 Catchment

Figure 6.2 illustrates the population residing within the 5, 10 and 15 minute catchment zones of the existing and proposed bus stops along Route 1.

The outermost isochrone contour defines the perimeter within which the Route 1 nearest bus stop can be reached by pedestrians in 15 minutes or less at a typical walking pace.

The population residing within each of the isochrone contour areas is summarised below (to the nearest 1,000 residents):

- 5 minutes walking distance – 6,000 residents
- 5-10 minutes walking distance – 10,000 residents
- 10-15 minutes walking distance – 20,000 residents
- Total catchment within 15 minutes walking distance – 36,000 residents

These figures are based on the Census 2011 Small Area Population Statistics (SAPS).

6.2.2.1 Junctions

There are a total of 11 signalised junctions and 2 pedestrian crossings along Route 1 in each direction.

Though there are existing bus facilities both inbound and outbound along the majority of the Route 1 from the UCD to Grand Canal, ITS measures may be required to deliver the level of bus priority required for additional bus services.

6.2.2.2 Constraints

The following constraints would need to be considered if Route 1 is progressed:

- The presence of numerous entrances to existing residential properties and commercial establishments along the route option;
- The replacement of parallel parking along Leeson Street Upper, Sussex Road, Morehampton Road and Donnybrook Road;
- The presence of trees along Leeson Street Upper, Sussex Road, Morehampton Road and Donnybrook Road;
- Bridge crossing of River Dodder; and
- Bridge crossing of Grand Canal (Leeson Street Bridge).

6.2.2.3 Environmental Impact

The impacts are summarised in the MCA table in **Appendix A**.

6.3 Route 1 Scheme Options

Scheme options have been developed along various Segments of Route 1, as shown in **Figure 6.3**.

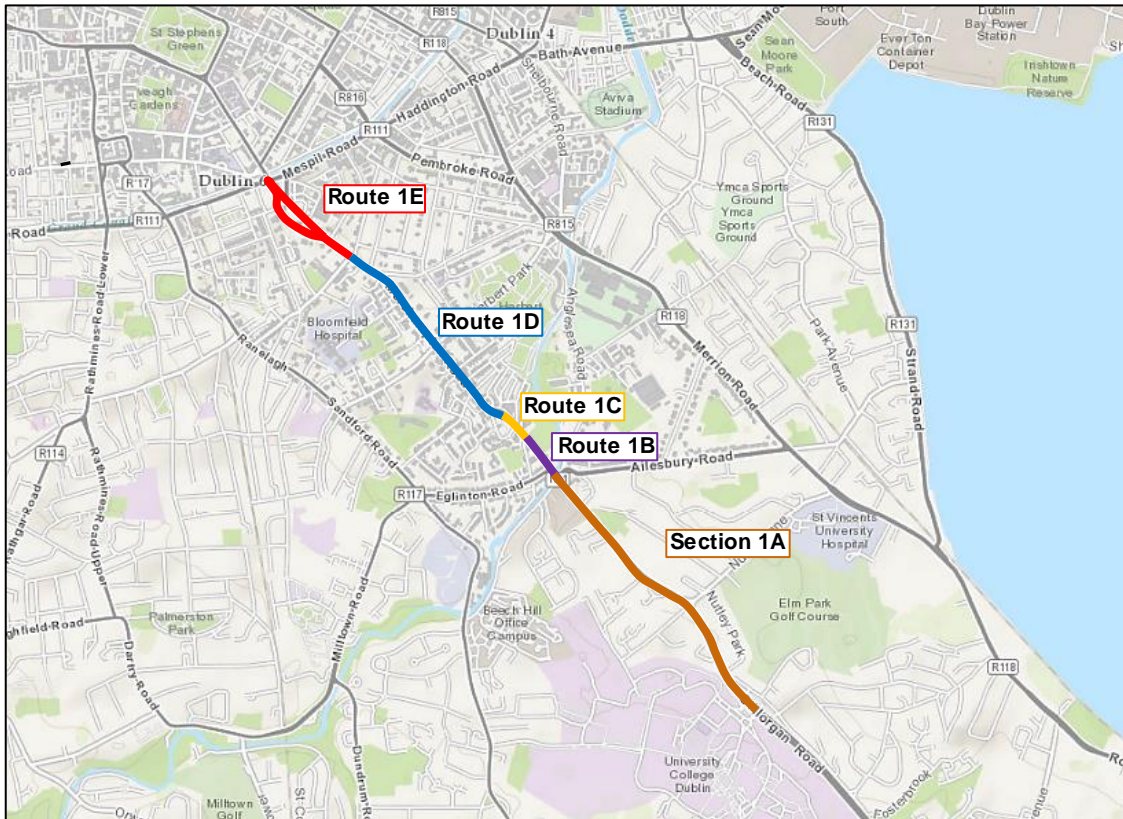


Figure 6.3: Route 1 sections

The scheme options considered in each Segment of Route 1 are listed in **Table 6.1** and described in full detail in the following Sections.

Table 6.1: Scheme Options Summary Table

Route Option	Route Segments	Scheme Options
Route 1	Route 1A	1A1
		1A2
	Route 1B	1B2
		1B2
		1B3
	Route 1C	1C1
		1C2
	Route 1D	1D1
		1D2
	Route 1E	1E1
1E2		
1E3		

6.3.1 Section 1A – Stillorgan Road / UCD to Anglesea Bridge

6.3.1.1 Existing facilities

Inbound and outbound bus and dedicated cyclist facilities are provided throughout this section, with no parking spaces.

6.3.1.2 Scheme Option 1A1

This scheme option would consolidate the existing facilities as shown in **Figure 6.4** and **Figure 6.5**. Resurfacing would be required along with the provision of segregated cycle lanes both inbound and outbound. There are no parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

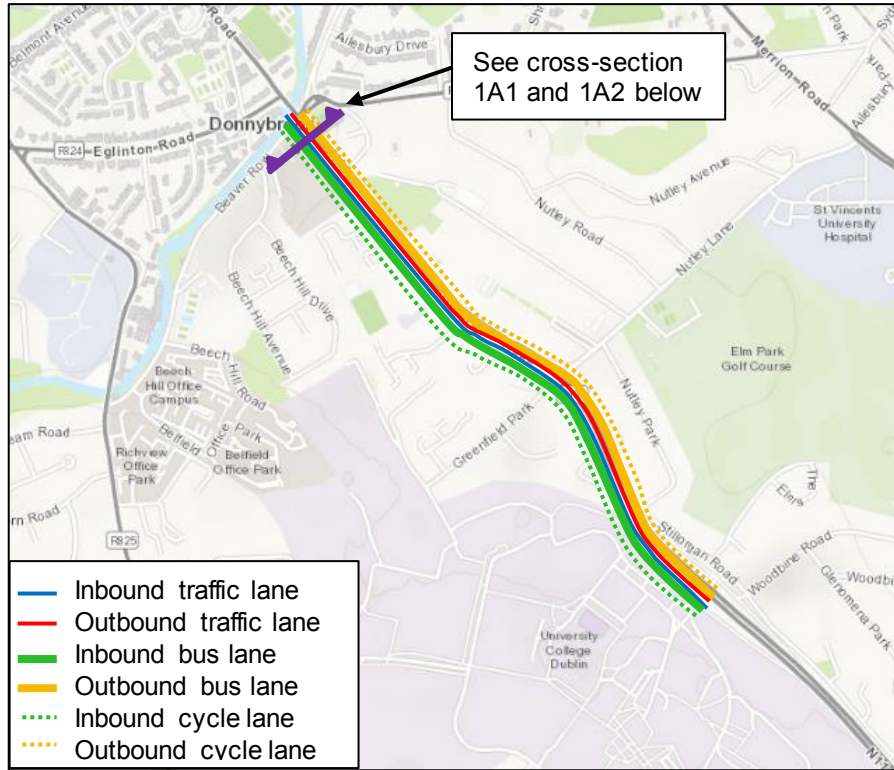


Figure 6.4: Scheme Option 1A1 and 1A2 bus and cycle facilities

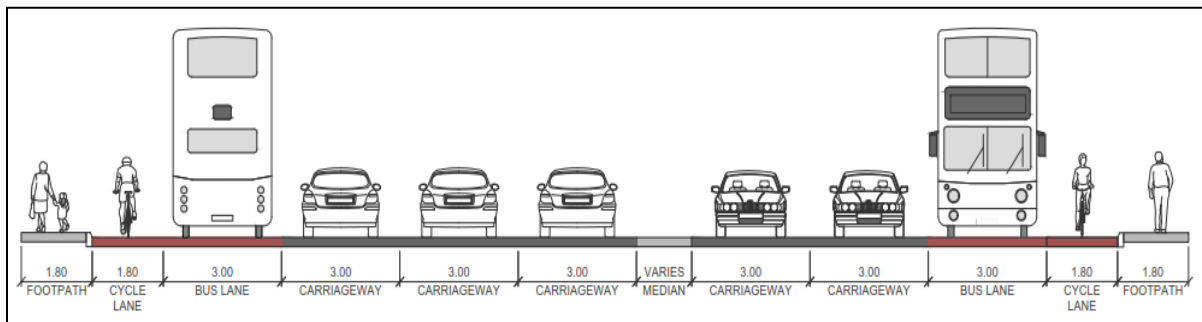


Figure 6.5: Scheme Option 1A1 – Cross-section at Donnybrook Church

6.3.1.3 Scheme Option 1A2

This scheme option would provide a new streetscape which would increase pedestrian facilities by widening the northern footpath in front of Donnybrook Parish Church, whilst maintaining full bus and cyclist facilities. Refer to **Appendix H** for drawings.

This would be achieved by extending the outbound one lane configuration by approximately 110m past the Stillorgan Road/Beaver Row/Anglesea Road junction before widening to two lanes. There are no parking spaces identified in this section which would be affected by the proposed works.

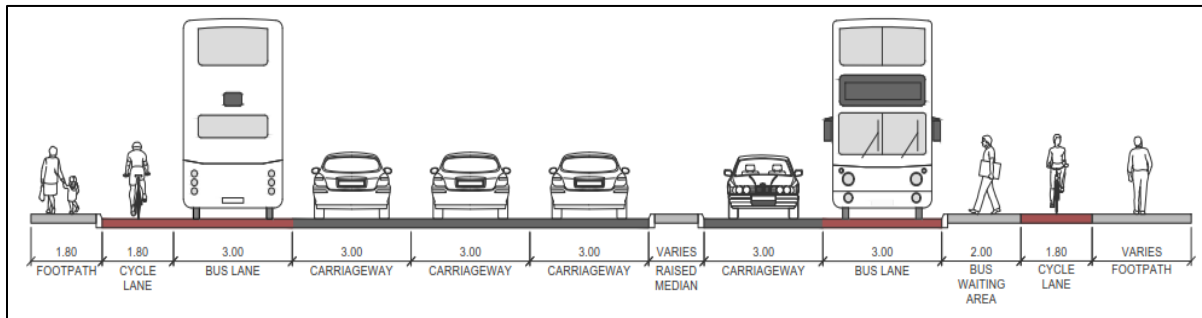


Figure 6.6: Scheme Option 1A2 – Cross-section at Donnybrook Church

6.3.1.4 Summary

Scheme Option 1A1 and 1A2 were brought forward to MCA to identify the most appropriate design for Route Segment 1A. A summary of the MCA results is presented in **Table 6.2**.

Neutral scoring sub-criteria are omitted from the summary table i.e. where scheme options score neutrally to other options.

The full MCA table including a justification for the sub-criteria scoring awarded to each scheme option is presented in **Appendix A**.

Scheme Option 1A2 would increase the northern footpath width, providing safer facilities for pedestrians and those accessing public transport.

Hence, 1A2 scores higher under Road Safety.

Additionally, 1A2 scores higher under Landscape and Visual due the wider pedestrian facility which would improve the streetscape in front of Donnybrook Parish Church.

Scheme Option 1A2 however, would reduce traffic lanes and hence scores lower under Traffic Network Integration.

Overall, Scheme Option 1A2 scores highest and hence will form part of Route 1.

Table 6.2: Route Segment 1A MCA Summary

MCA criteria	Assessment Sub-Criteria	Scheme Option 1A1	Scheme Option 1A2
Integration	2.e. Traffic Network Integration		
Safety	4.a. Road Safety		
Environment	6.f. Landscape and Visual		

6.3.2 Section 1B – Donnybrook Road / Anglesea Bridge to Rampart Lane

6.3.2.1 Existing Facilities

Inbound bus facilities are provided between the Eglinton Road junction and The Crescent junction.

On-road cyclist facilities are provided between Anglesea Bridge and Brookvale Road travelling on the inbound carriageway.

Cyclists then share the bus lane for the remainder of the section.

There are no exclusive bus lanes on the outbound carriageway between Rampart Lane and Anglesea Bridge. Continuous on-road cyclist facilities are provided along the outbound carriageway. There are numerous trees located adjacent to both carriageways along this section.

There are no on-street parking spaces on either carriageway in this section, with one on-street loading bay located near Brookevale Road junction. Refer to **Appendix H** for drawings.

6.3.2.2 Scheme Option 1B1

Scheme Option 1B1 would include cyclists and buses sharing exclusive lanes on both the inbound and outbound carriageways throughout the section. The provision of the exclusive lanes would require reducing the number of outbound traffic lanes from two to one. There are no parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

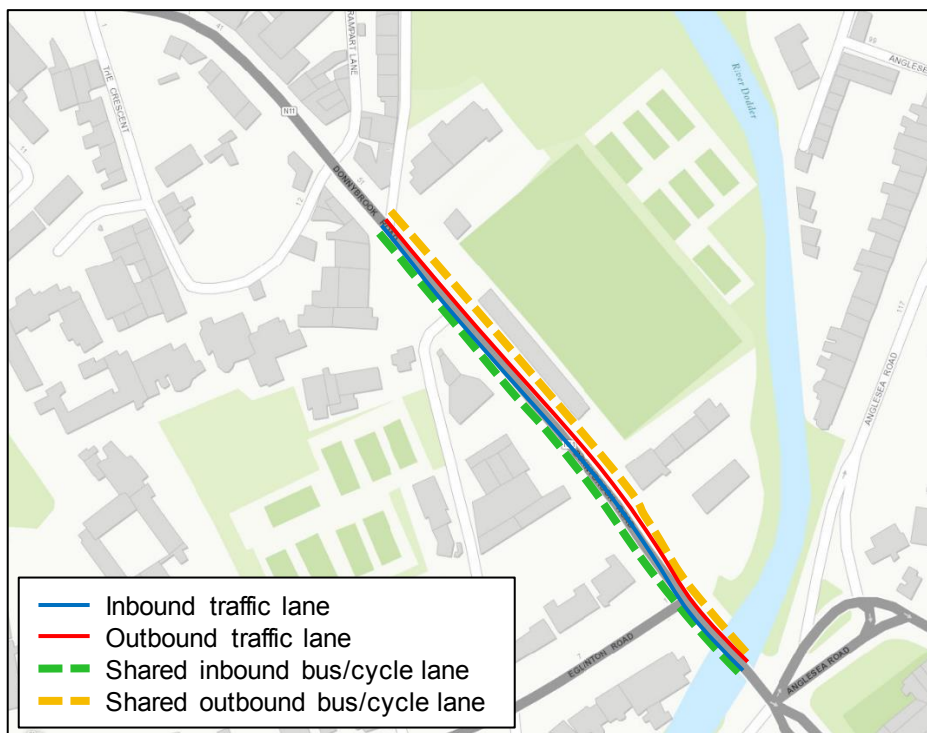


Figure 6.7: Scheme Option 1B1 bus and cycle facilities

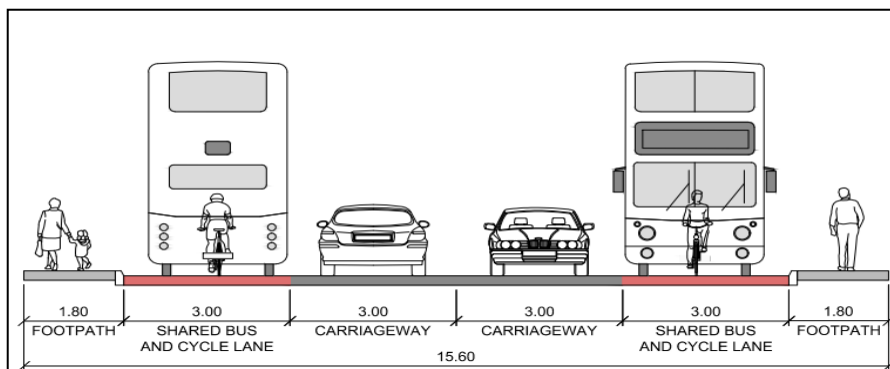


Figure 6.8: Scheme Option 1B1 – Typical Cross-section

6.3.2.3 Scheme Option 1B2

Scheme Option 1B2 would include segregated cyclist facilities and an exclusive bus lane on the inbound carriageway.

On the outbound carriageway cyclists and buses share an exclusive lane.

The provision of the exclusive lanes would require reducing the number of outbound traffic lanes from two to one and also require land take.

There are no on-street parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

One on-street loading bay would require relocation and some loss of adjacent parking.

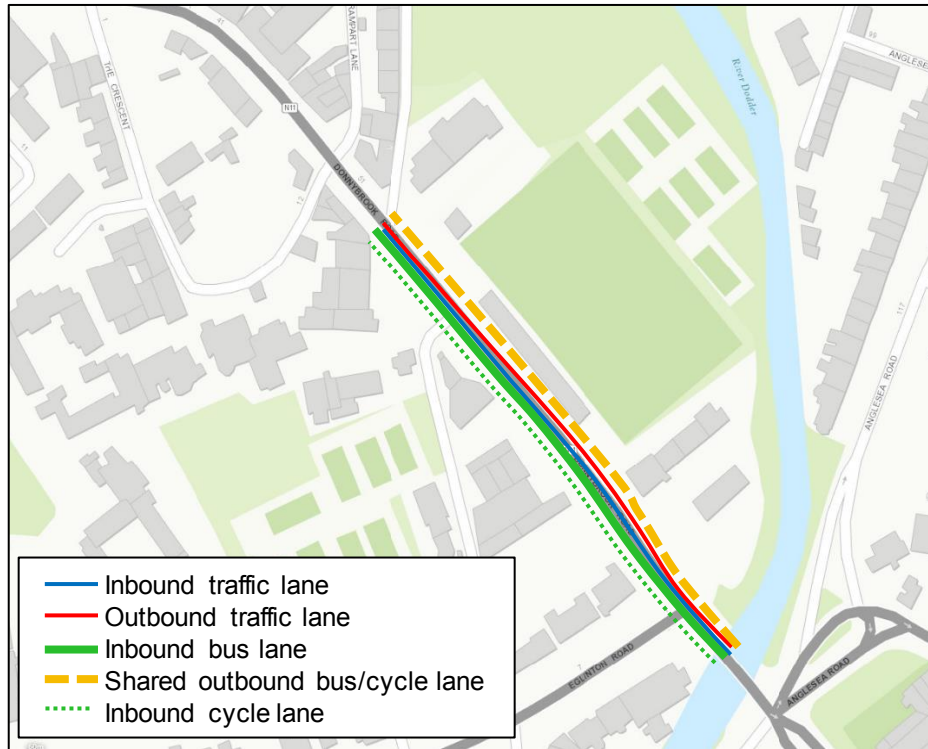


Figure 6.9: Scheme Option 1B2 bus and cycle facilities

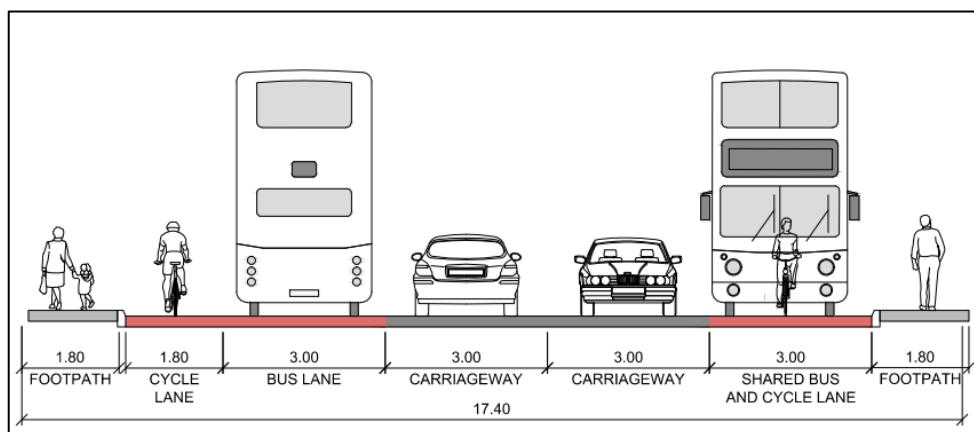


Figure 6.10: Scheme Option 1B2 – Typical Cross-section

6.3.2.4 Scheme Option 1B3

Scheme Option 1B3 would include segregated cyclist and bus facilities inbound and outbound.

The provision of the exclusive lanes would require reducing the number of outbound traffic lanes from two to one and also require land take.

There are no on-street parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

One on-street loading bay would require relocation and some loss of adjacent parking.

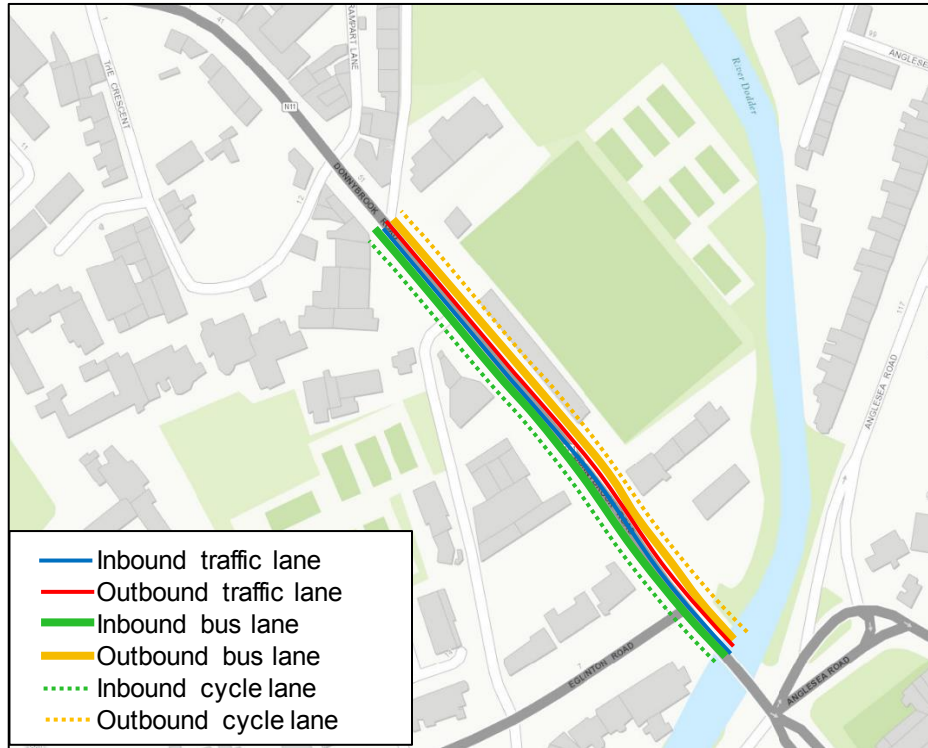


Figure 6.11: Scheme Option 1B3 bus and cycle facilities

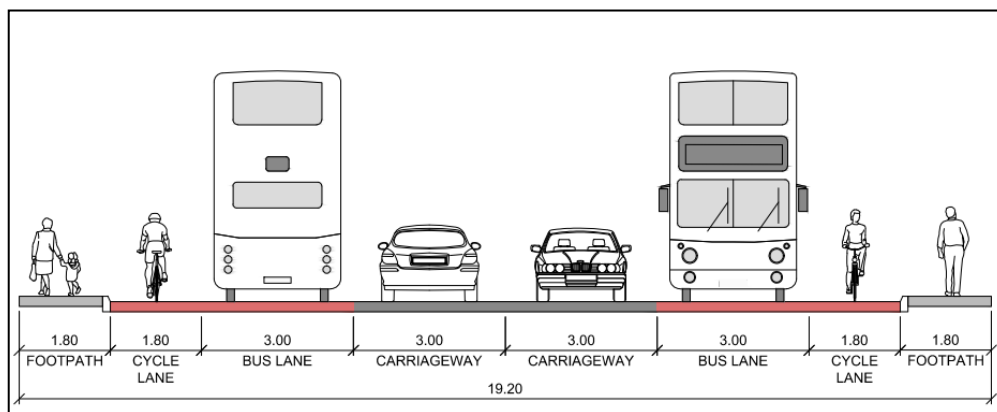


Figure 6.12: Scheme Option 1B3 – Typical Cross-section

6.3.2.5 Summary

All scheme options were brought forward to MCA to identify the most appropriate design for Route Segment 1B.

A summary of the MCA results is presented in **Table 6.3**.

Neutral scoring sub-criteria are omitted from the summary table, i.e. where scheme options score neutrally to other options.

The full MCA table including a justification for the sub-criteria scoring awarded to each scheme option is presented in Table 2 in **Appendix A**.

The three scheme options scores neutrally for some of the sub-criteria assessed.

In terms of Economy, Scheme Option 1B3 would be the most expensive due to the quantity of land take required to provide inbound and outbound cycle provision.

However, due to the segregation of buses and cyclists inbound and outbound provided by Scheme Option 1B3, this option scores higher under Transport Reliability and Quality, Cycle Network Integration and Road Safety. Scheme 1B1 scores highest under Flora and Fauna, Landscape and Visual and Land Use Character as it would have a lesser impact on existing trees, footpaths and parking.

Overall, Scheme Option 1B3 scores highest and hence will form part of Route 1.

Table 6.3: Route Segment 1B MCA Summary

MCA criteria	Assessment Sub-Criteria	Scheme Option 1B1	Scheme Option 1B2	Scheme Option 1B3
Economy	1.a. Capital Cost	Green	Yellow	Red
	1.b. Transport Reliability and Quality (Journey Time)	Red	Green	Green
Integration	2.d. Cycle Network Integration	Red	Green	Green
Safety	4.a. Road Safety	Red	Green	Green
Environment	6.c. Flora and Fauna	Green	Yellow	Yellow
	6.f. Landscape and Visual	Green	Yellow	Yellow
	6.i. Land Use Character	Green	Yellow	Yellow

6.3.3 Section 1C – Donnybrook Road / Rampart lane to Pembroke Cottages

6.3.3.1 Existing Facilities

Inbound exclusive bus facilities are provided between the Rampart Lane and past Pembroke Cottage junctions. There are no designated cyclist facilities at present. On the outbound carriageway buses and other vehicles share two traffic lanes. An on-road cycle lane is provided, although this lane is at a reduced width. There are no parking spaces on either carriageway in this section.

6.3.3.2 Scheme Option 1C1

To preserve the existing village streetscape, Scheme Option 1C1 would provide adequate bus and cycle facilities albeit within a reduced carriageway design width.

This scheme option would avoid the demolition of existing buildings and footpaths along with the ancillary works associated with demolition (i.e. the relocation of services etc.) by providing one traffic lane and one exclusive shared bus and cycle lane on both the inbound and outbound carriageways.

There are no parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

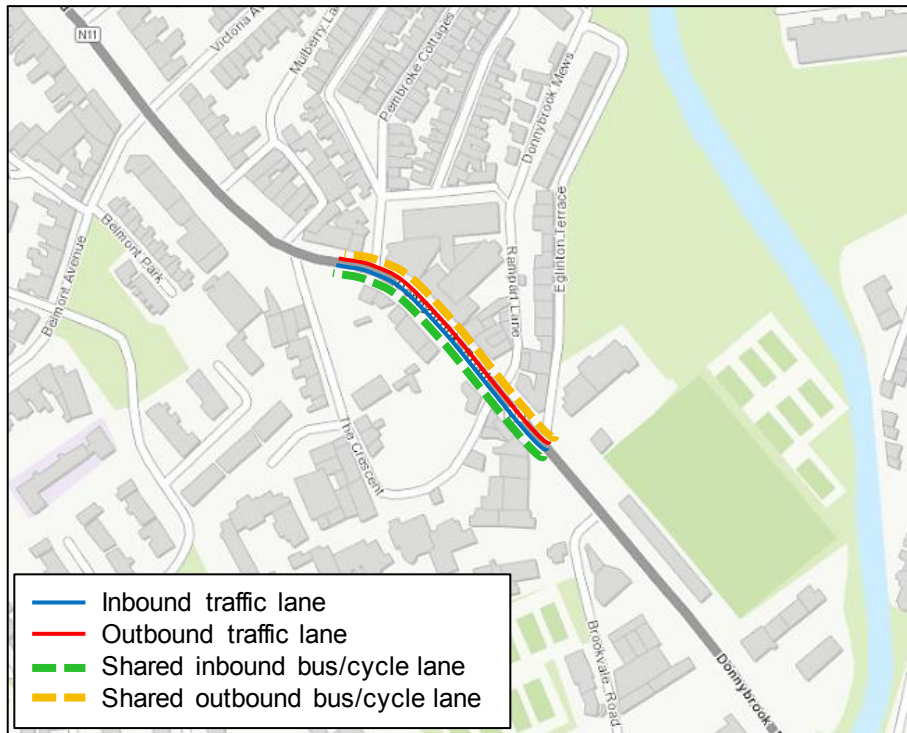


Figure 6.13: Scheme Option 1C1 bus and cycle facilities

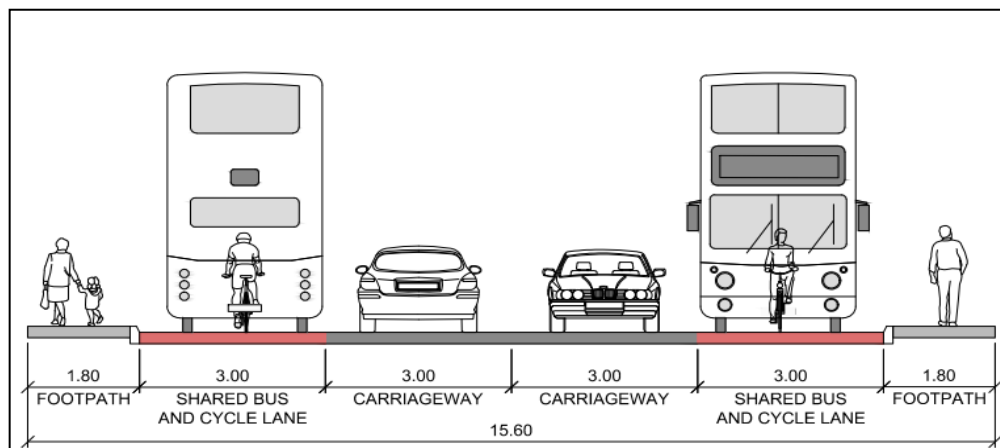


Figure 6.14: Scheme Option 1C1 – Typical Cross-section

6.3.3.3 Scheme Option 1C2

Provision of the design features within Scheme Option 1C2 involves the demolition of existing buildings on the northeast of carriageway to provide full bus and cycle facilities in both directions.

There are no parking spaces identified in this section which would be affected by the proposed works. Refer to **Appendix H** for drawings.

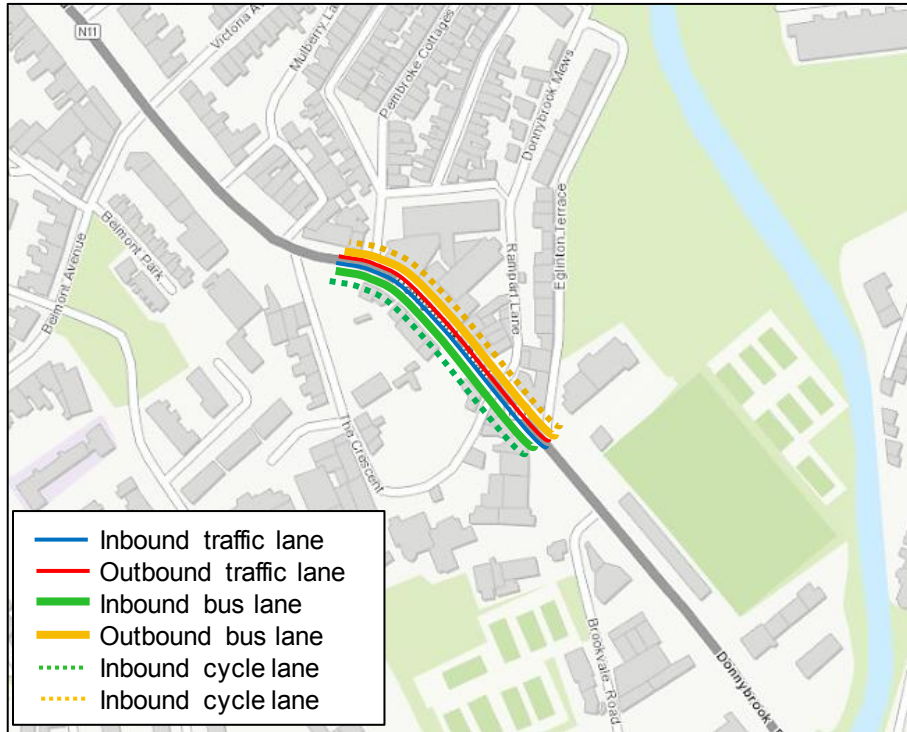


Figure 6.15: Scheme Option 1C2 bus and cycle facilities

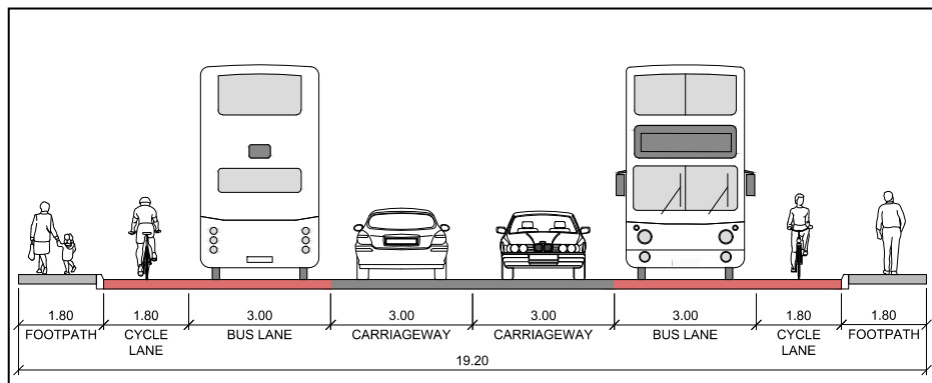


Figure 6.16: Scheme Option 1C2 - Typical Cross-section

6.3.3.4 Summary

Both scheme options were brought forward to MCA to identify the most appropriate design for Route Segment 1C.

A summary of the MCA results is presented in **Table 6.4**: Route Segment 1C MCA.

Neutral scoring sub-criteria are omitted from the summary table i.e. where scheme options score neutrally to other options.

The full MCA table including a justification for the sub-criteria scoring awarded to each scheme option is presented in Table 3 in **Appendix A**.

The two scheme options scores neutrally for some of the sub-criteria assessed.

Scheme Option 1C2 would require the demolition of a number of existing buildings and hence, scores lower under Capital Cost and Land Use Integration.

However, the segregated bus and cycle lanes proposed by Scheme Option 1C2 would facilitate a shorter and more reliable bus journey time than Scheme Option 1C1.

Additionally, Scheme Option 1C2 scores higher under Cycle Network Integration and Road Safety due to the proposed segregated cycle lane in each direction, which would align with primary route 12 as identified in the GDA Cycle Network Plan; see **Section 2.5** of the report, **Figure 2.2**.

Overall, Scheme Option 1C1 scores highest and hence will form part of Route 1.

Table 6.4: Route Segment 1C MCA Summary

MCA criteria	Assessment Sub-Criteria	Scheme Option 1C1	Scheme Option 1C2
Economy	1.a. Capital Cost	Green	Red
	1.b. Transport Reliability and Quality (Journey Time)	Yellow	Light Green
Integration	2.a. Land Use Integration	Light Green	Yellow
	2.d. Cycle Network Integration	Yellow	Light Green
Safety	4.a. Road Safety	Yellow	Light Green
Environment	6.f. Landscape and Visual	Green	Red

6.3.4 Section 1D – Morehampton Road / Pembroke Cottages to Appian Way

6.3.4.1 Existing facilities

For significant length of this section, along the inbound carriageway, an exclusive bus lane is in operation along with an on-road cycle lane. For approximately 160 metres on approach to Morehampton Terrace and from the Wellington Place junction to the Appian Way, buses share with traffic. On the outbound carriageway an exclusive bus lane operates between Waterloo Lane and Auburn Avenue. A continuous on road cycle lane is also provided outbound along this section. Car parking has been found along this section. The breakdown of the car parking facilities along Section 1D is as follows:

- On-street Formal Parking – Approximately 90 Spaces (7 are Loading Bays between 07:00 and 10:00, Monday – Friday and 1 disabled parking) .
- On-Street Informal Parking – Approximately 4 Spaces.
- Adjacent Parking (at The Crescent) – 15 Spaces.

6.3.4.2 Scheme Option 1D1

Scheme Option 1D1 would provide full bus and cycle facilities on both the inbound and outbound carriageways. This scheme option would provide a more direct route for cyclists, in comparison to Scheme Option 1D2 (see **Appendix H** for scheme option design), with cycle lanes running adjacent to the carriageway. This would have a greater impact on the existing trees that line the carriageway along Route Segment 1D. Most of the on-street formal and informal car parking spaces would be removed to facilitate the proposed works. The adjacent spaces in the car park located at the Crescent would not be affected by the proposed works.

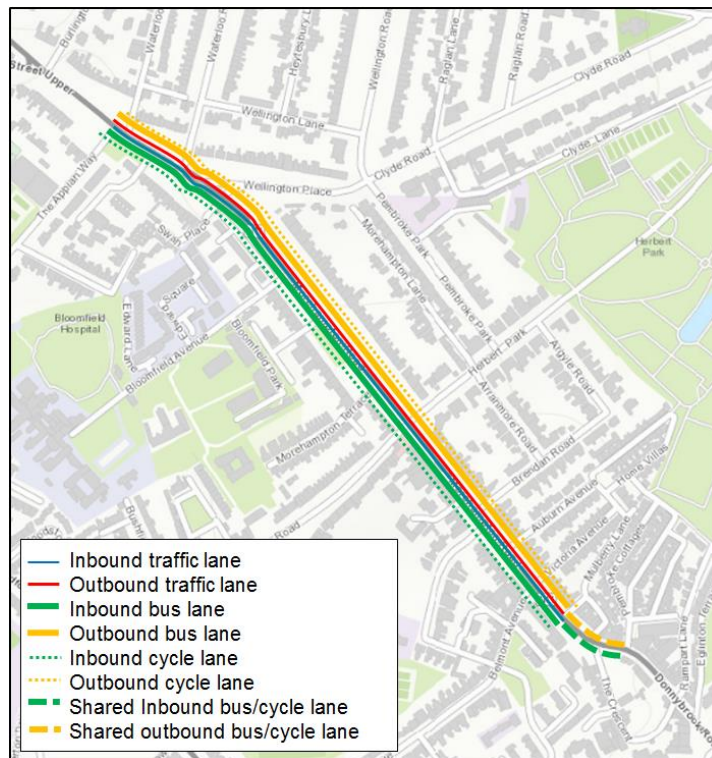


Figure 6.17: Scheme Option 1D1 bus and cycle facilities

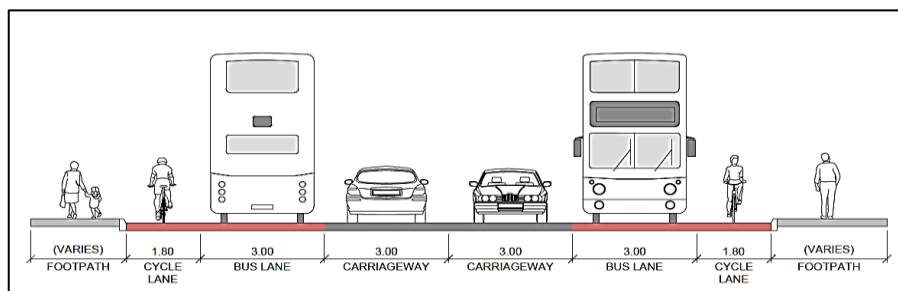


Figure 6.18: Scheme Option 1D1 – Typical Cross-section

6.3.4.3 Scheme Option 1D2

Scheme Option 1D2 would provide full bus and cycle facilities on both the inbound and outbound carriageways (see **Appendix H** for scheme option design).

This scheme option would preserve more trees and thus more of the existing streetscape along the route by altering the alignment of cycle lanes and configuration of bus stops.

Most of the on-street formal and informal car parking spaces would be removed to facilitate the proposed works.

The adjacent spaces in the car park located at the Crescent would not be affected by the proposed works.

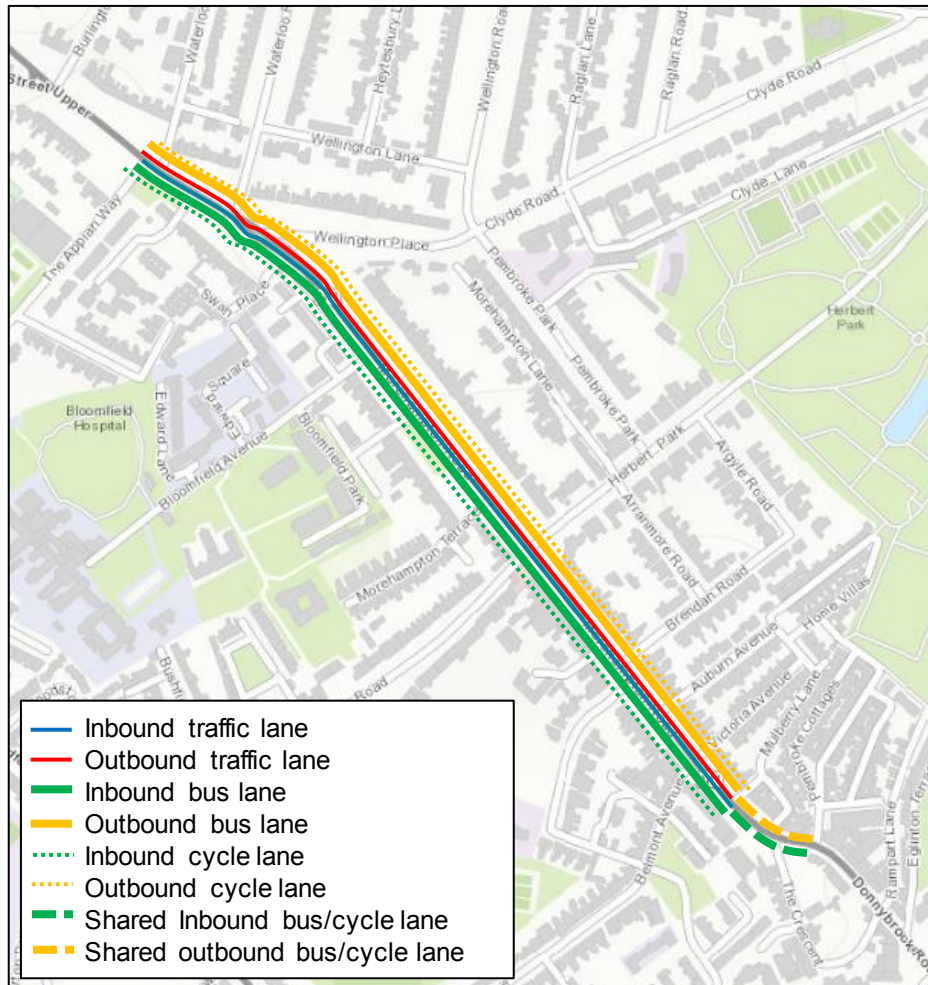


Figure 6.19: Scheme Option 1D2 bus and cycle facilities

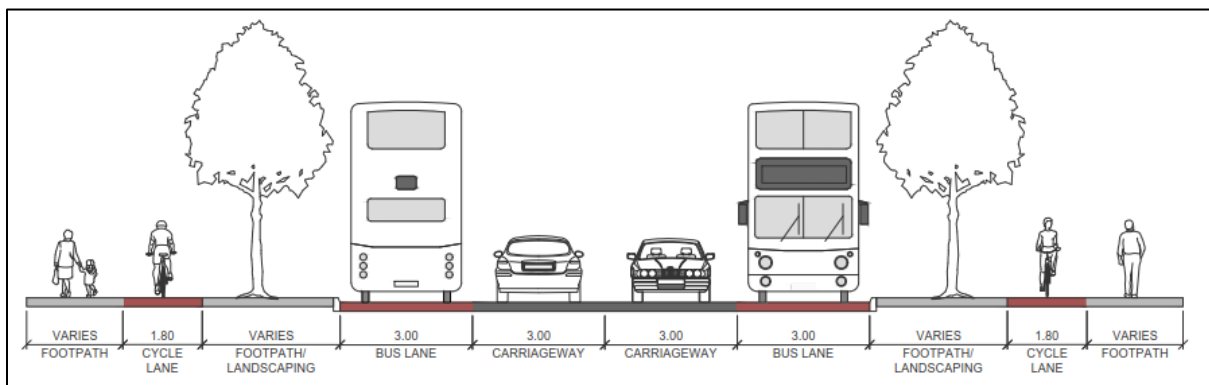


Figure 6.20: Scheme Option 1D2 – Typical Cross-section (when possible to maintain trees)

6.3.4.4 Summary

Both scheme options were brought forward to MCA to identify the most appropriate design for Route Segment 1D.

A summary of the MCA results is presented in **Table 6.5**.

Neutral scoring sub-criteria are omitted from the summary table i.e. where scheme options score neutrally to other options.

The full MCA table including a justification for the sub-criteria scoring awarded to each scheme option is presented in Table 4 in **Appendix A**.

The two scheme options scores neutrally for the majority of the sub-criteria assessed.

Scheme Option 1D2 scores higher under Flora and Fauna and Landscape and Visual as would preserve more of the existing trees and thus streetscape.

Similarly, Scheme Option 1D2 design takes consideration of the areas zoning as a Residential Neighbourhood (Conservation Area) by the Dublin City Development Plan 2016-2022, and as a result scores higher in Land Use Integration.

Overall, Scheme Option 1D2 scores highest and will form part of Route 1.

Table 6.5: Route Segment 1D MCA Summary

MCA criteria	Assessment Sub-Criteria	Scheme Option 1D1	Scheme Option 1D2
Integration	2.a. Land Use Integration		
Environment	6.c. Flora and Fauna		
	6.f. Landscape and Visual		

6.3.5 Section 1E – Leeson Street Upper / Appian Way to Grand Canal

6.3.5.1 Existing facilities

On the inbound carriageway from the Appian Way to the Leeson Street Upper junction at present buses share the carriageway with other traffic. Along Leeson Street Upper a one-way inbound system is in operation with a continuous exclusive bus lane which returns to shared traffic lanes at a distance of approximately 60m on approach to the Grand Parade junction to allow vehicles to turn left along Grand Parade.

A continuous on-road cycle lane is provided along the entirety of the section, along the inbound carriageway. Travelling outbound from the Grand Canal/Mespil Road/Leeson Street Upper junction a one-way system is in operation.

Outbound traffic travels along Sussex Road where an exclusive bus lane is in operation. An on-road cycle lane is also provided along the entirety of the section. The breakdown of the car parking facilities along Section 1E is as follows:

- Formal Parking – 77 (Of which there is 1 Disabled Parking) Spaces.
- Informal Parking – 9 Spaces.
- Adjacent Parking – 0 Spaces.
- Taxi Rank – Approximately 17 Spaces.

6.3.5.2 Scheme Option 1E1

This scheme option would consolidate the existing facilities.

Resurfacing would be required along with the provision of segregated bus and cycle lanes both inbound and outbound.

Some existing car parking spaces would be affected by the proposed works (see **Appendix H** for scheme option designs).

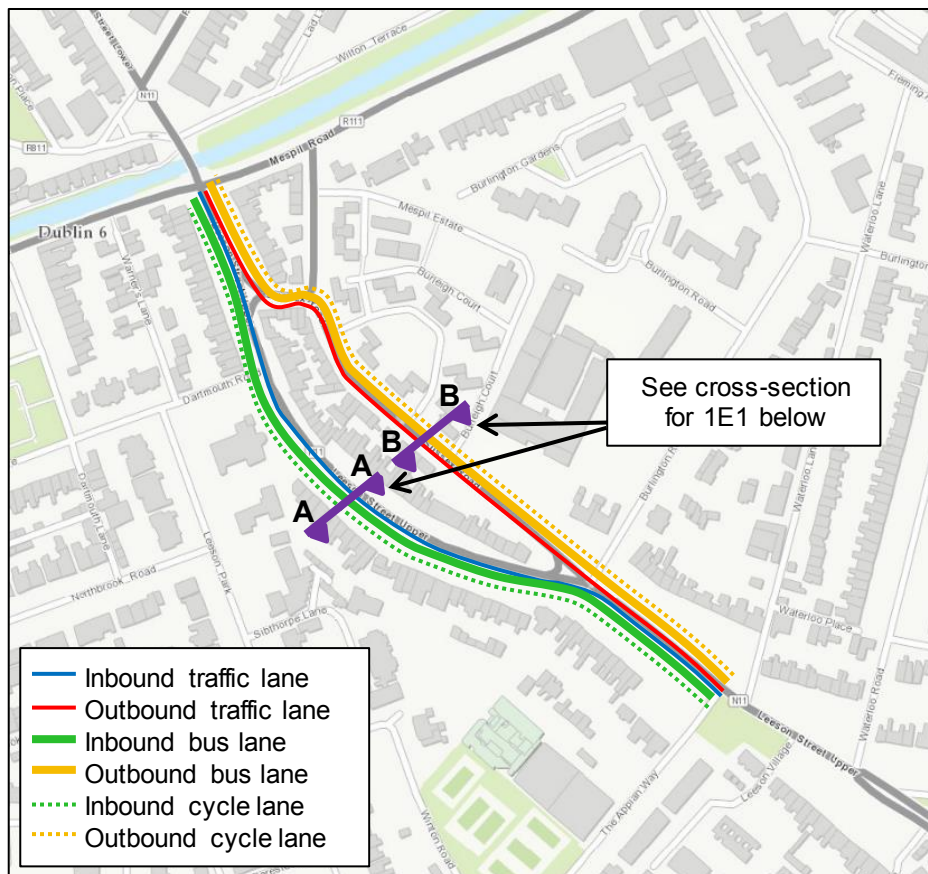


Figure 6.21: Scheme Option 1E1 bus and cycle facilities

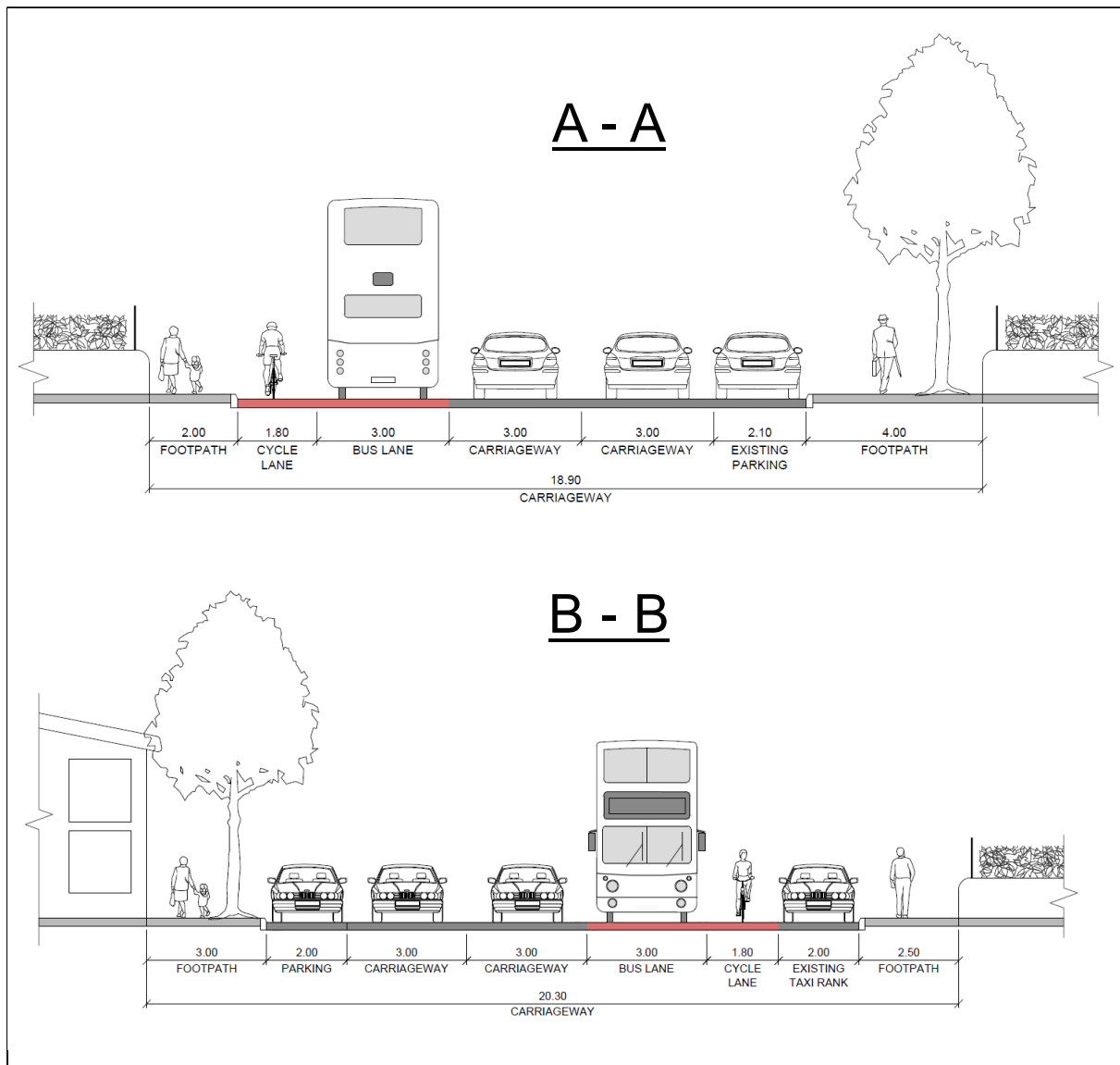


Figure 6.22: Scheme Option 1E1 Cross-Section

6.3.5.3 Scheme Option 1E2

This scheme option would use bus gates at both ends of Sussex Road to separate buses, cyclists and other forms of traffic along either Sussex Road or Leeson Street Upper i.e. to convert either of these streets into an exclusively bus and cyclist only section.

As the buses approach the bus gates, traffic signals stop traffic in both directions which allows buses and cyclists priority access through the junction.

This arrangement would involve either outbound or inbound (depending on whether Leeson Street Upper or Sussex Road is used for bus and cyclist exclusively) buses and cyclists to cross into/out of the exclusive section.

This priority movement (buses and cyclists) would require traffic in both directions to be stop to facilitate the cross-over at either end of Sussex Road, causing a significant impact on traffic.

Some existing car parking spaces would be affected by the proposed works (see **Appendix H** for scheme option designs).

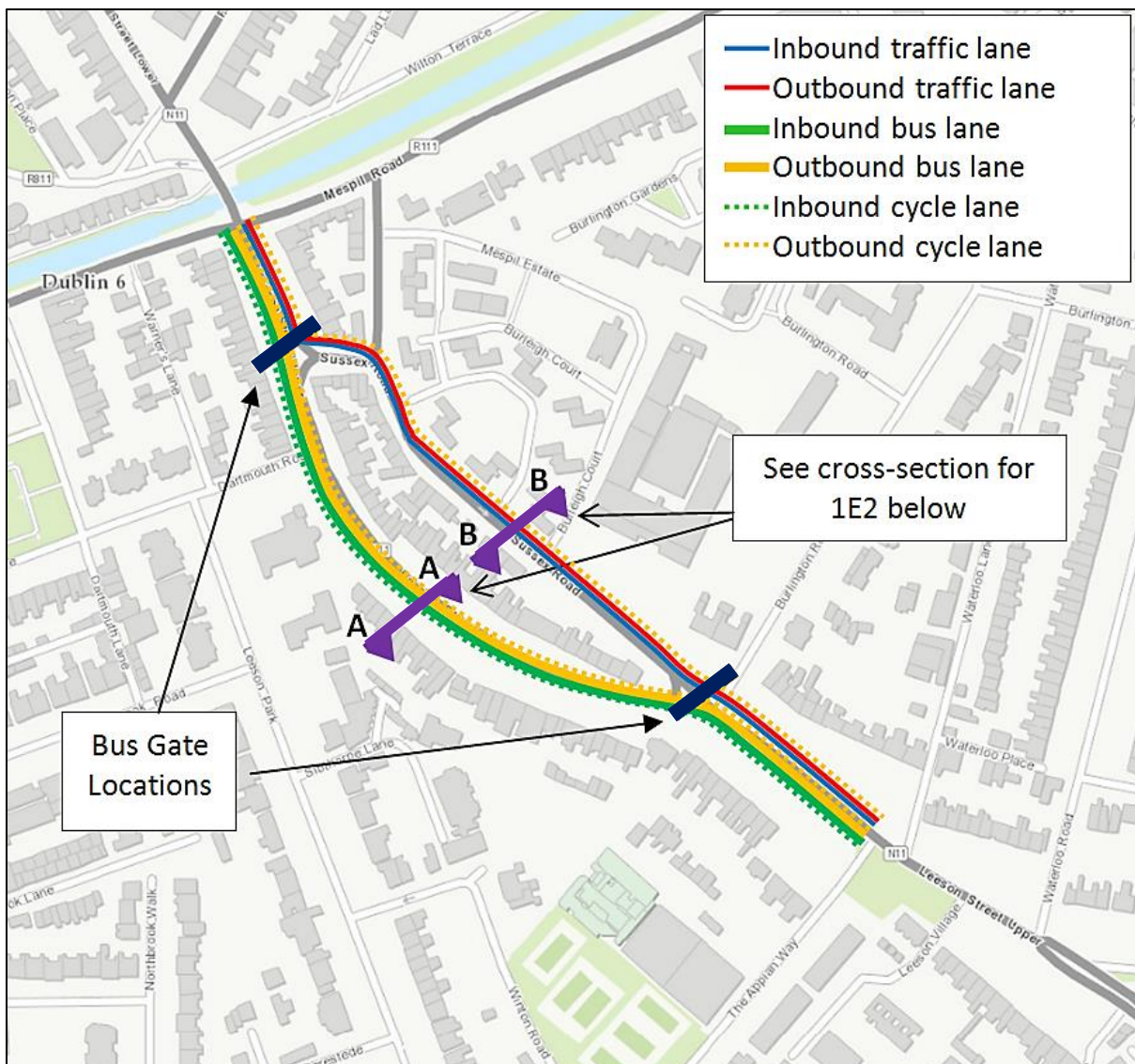


Figure 6.23: Scheme Option 1E2 bus and cycle facilities

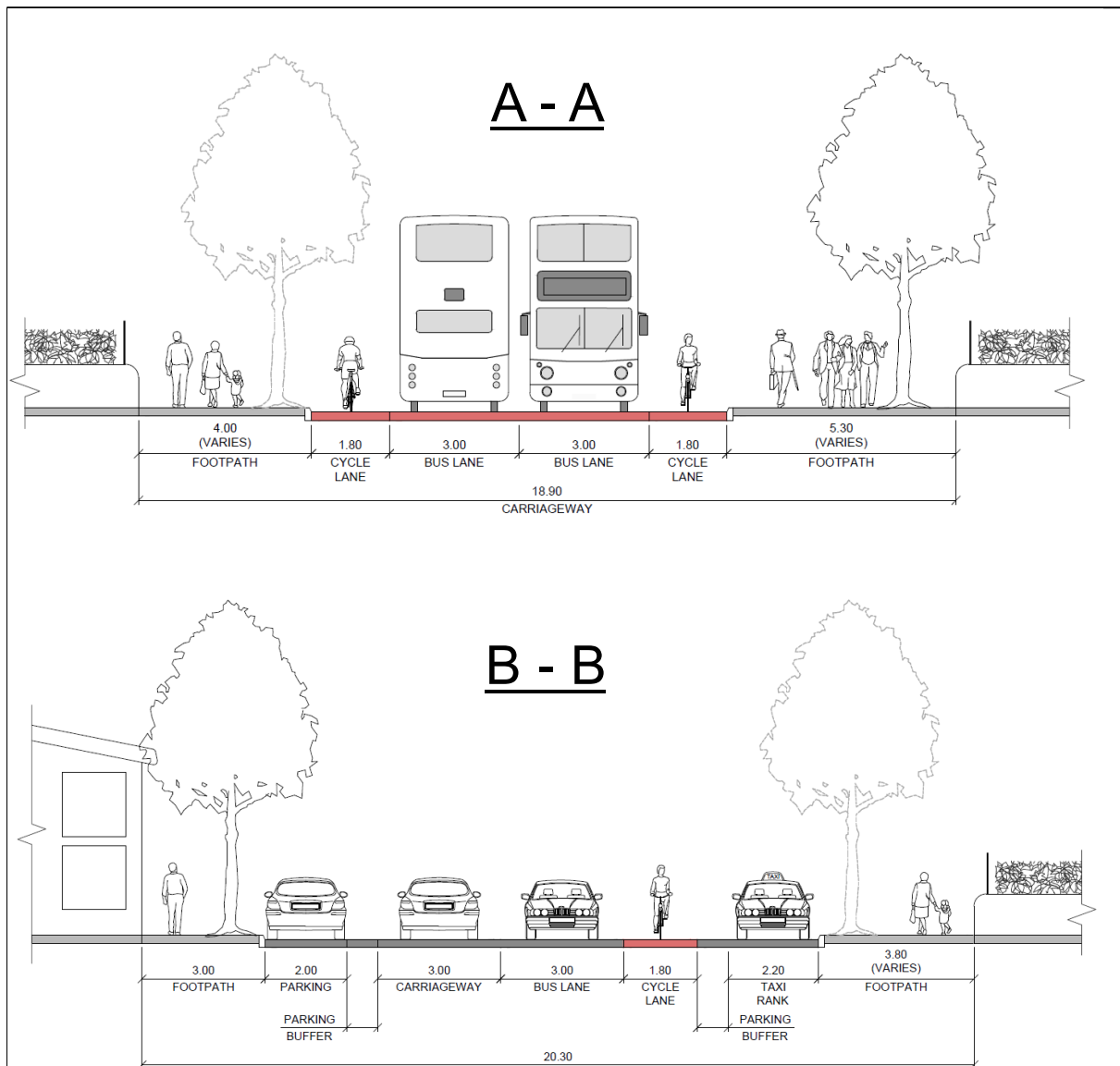


Figure 6.24: Scheme Option 1E2 Cross-Section

6.3.5.4 Scheme Option 1E3

This scheme option would extend the one way traffic lane further on both the inbound and outbound sections before widening to two lanes.

As a result, this option would have some impact upon the existing traffic flows.

Resurfacing would be required along with the provision of segregated bus and cycle lanes both inbound and outbound.

Existing car parking spaces would be least affected by this scheme option (see **Appendix H** for scheme option designs).

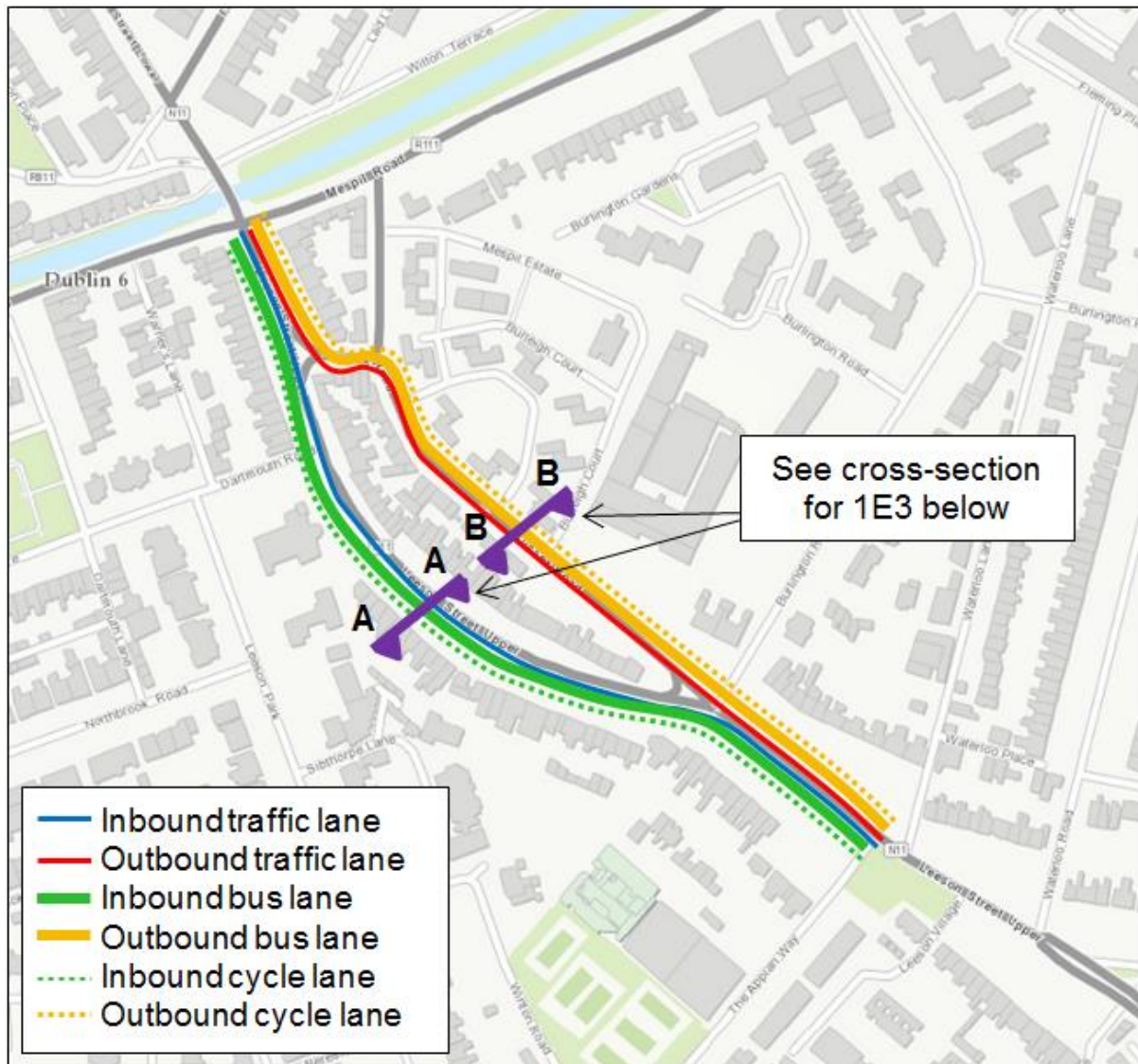


Figure 6.25: Scheme Option 1E3 bus and cycle facilities

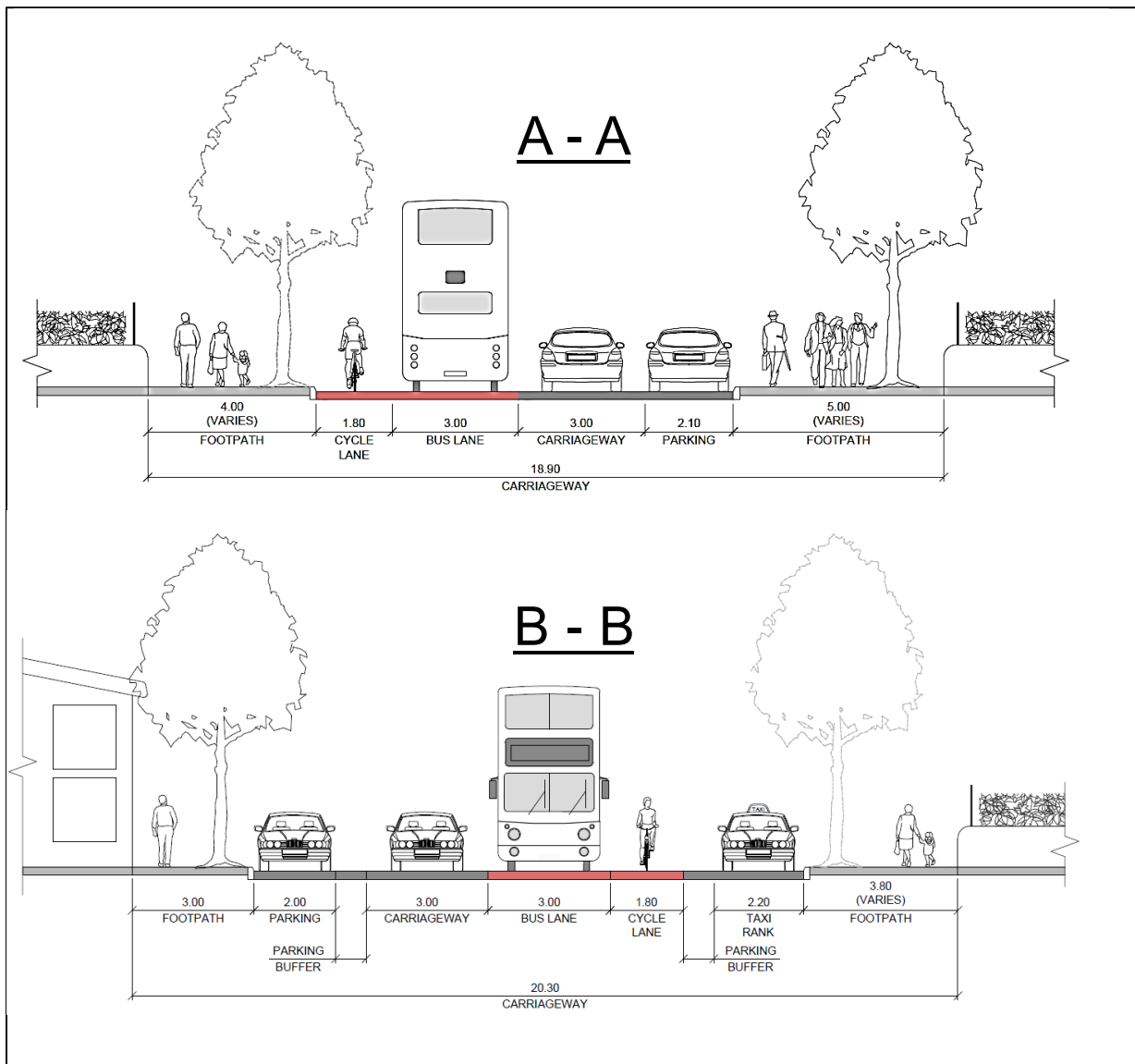


Figure 6.26: Scheme Option 1E3 Cross-Section

6.3.5.5 Summary

Scheme Option 1E1, 1E2 and 1E3 were brought forward to MCA to identify the most appropriate design for Route Segment 1E.

A summary of the MCA results is presented in **Table 6.6**.

Neutral scoring sub-criteria are omitted from the summary table i.e. where scheme options score neutrally to other options.

The full MCA table including a justification for the sub-criteria scoring awarded to each scheme option is presented in Table 5 in **Appendix A**.

The three scheme options scores neutrally for the majority of the sub-criteria assessed.

In terms of Economy, Scheme Option 1E2 would be the most expensive as it would require reconfiguring one road to exclusive use for buses and cyclists as well as introduction of cross-over junctions i.e. bus gates.

Scheme Option 1E1 would better integrate with the existing traffic network as it proposes to use existing bus lanes and maintain a similar number of traffic lanes.

Due to the segregation of buses and vehicular traffic along different routes, Scheme Option 1E2 would offer the greatest safety benefits, with Scheme Option 1E3 also offering safety benefits inferred from the reduction in traffic lanes.

Scheme Option 1E3 scores higher under Flora and Fauna and Landscape and Visual as it would preserve more of the existing trees and thus streetscape.

Similarly, Scheme Option 1E3 design takes consideration of the of the routes zoning as a Residential Neighbourhood (Conservation Area) by the Dublin City Development Plan 2016-2022, and as a result scores higher in Land Use Integration.

Scheme Option 1E2 scores lowest on Land Use Character as it would have the greatest negative impact on the existing car parking.

Overall, Scheme Option 1E3 scores highest and will form part of Route 1.

Table 6.6: Route Segment 1E MCA Summary

MCA criteria	Assessment Sub-Criteria	Scheme Option 1E1	Scheme Option 1E2	Scheme Option 1E3
Economy	1.a. Capital Cost	Green	Red	Green
Integration	2.a. Land Use Integration	Yellow	Yellow	Light Green
	2.e. Traffic Network Integration	Green	Red	Yellow
Safety	4.a. Road Safety	Red	Green	Light Green
Environment	6.c. Flora and Fauna	Yellow	Yellow	Light Green
	6.f. Landscape and Visual	Yellow	Yellow	Light Green
	6.i. Land Use Character	Green	Red	Green

7. Emerging Preferred Route

7.2 Introduction

This section of the report presents:

- the final conclusions from the assessment process, for the end-to-end route / scheme options considered; and
- recommends an emerging preferred scheme option, including a description of the scheme proposals, which include ancillary measures on other streets, if required.

7.3 Route Options Assessment Conclusions

Where potential route options were considered to be available, they have been assessed in accordance with the methodology set out in **Section 4** of the report including a 'Multi-Criteria Analysis' under the headings of Economy, Integration, Accessibility and Social Inclusion, Safety, Physical Activity and Environment.

7.4 Scheme Description

Based on the conclusions from the route options assessment process, the recommended emerging preferred scheme option comprises the route segments described below.

Refer to **Appendix H** for concept drawings.

7.4.1 Route Segment 1A2

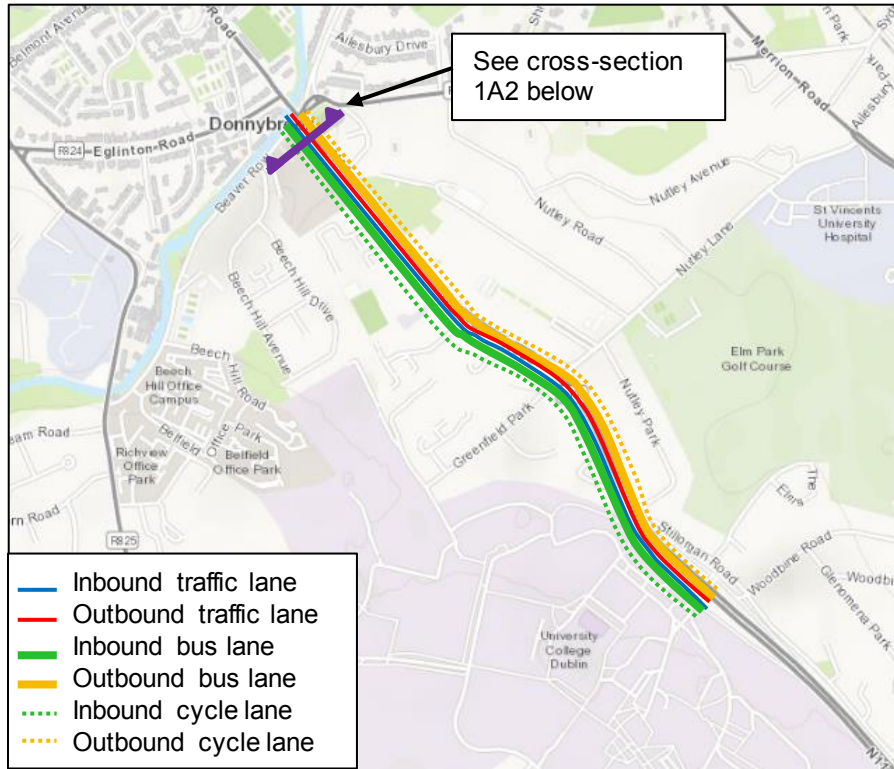


Figure 7.1: Scheme Option 1A2 bus and cycle facilities

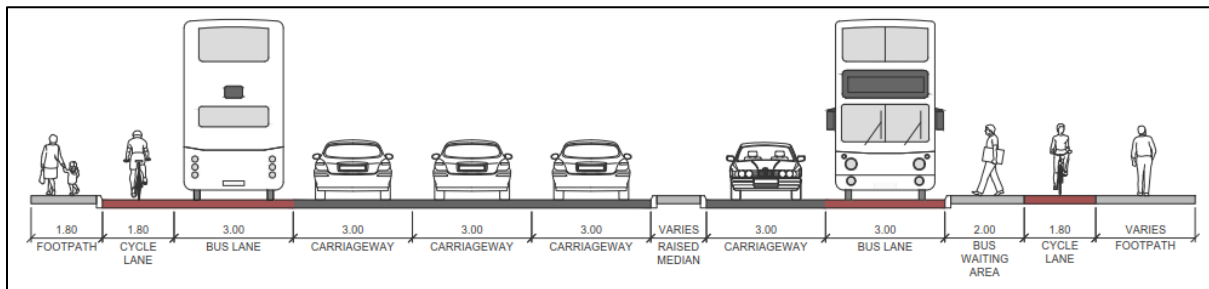


Figure 7.2: Scheme Option 1A2 – Cross-section at Donnybrook Church

This scheme option will provide a new streetscape which will increase pedestrian facilities by widening the northern footpath in front of Donnybrook Parish Church, whilst maintaining full bus and cyclist facilities.

This will be achieved by extending the outbound one lane configuration by approximately 110m past the Stillorgan Road/Beaver Row/Anglesea Road junction before widening to two lanes.

There are no parking spaces identified in this section which will be affected by the proposed works.

7.4.2 Route Segment 1B3

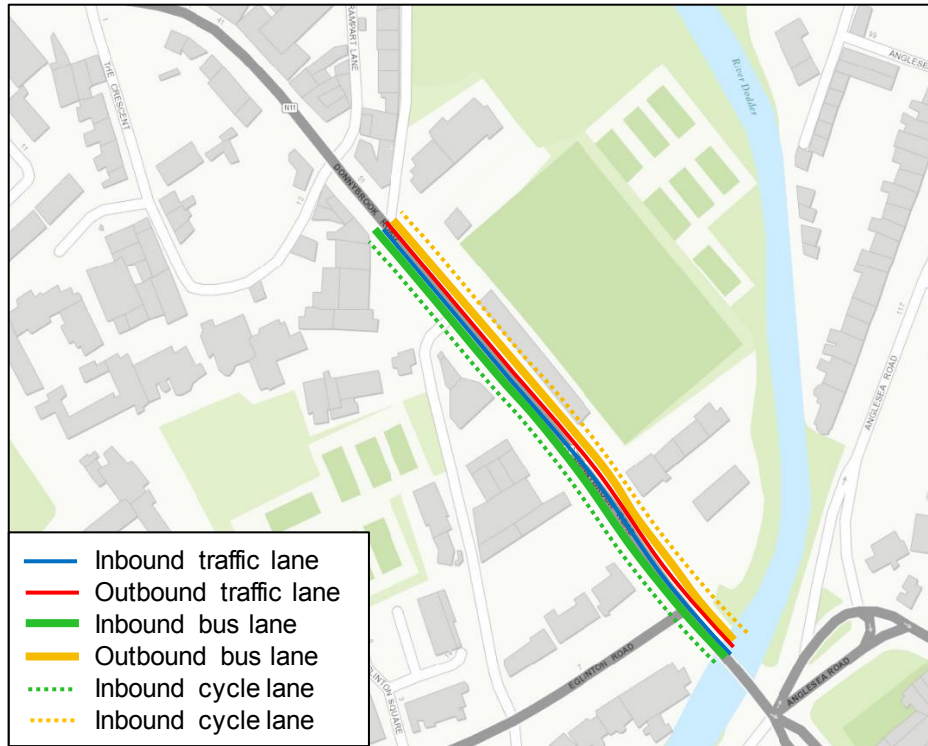


Figure 7.3: Scheme Option 1B3 bus and cycle facilities

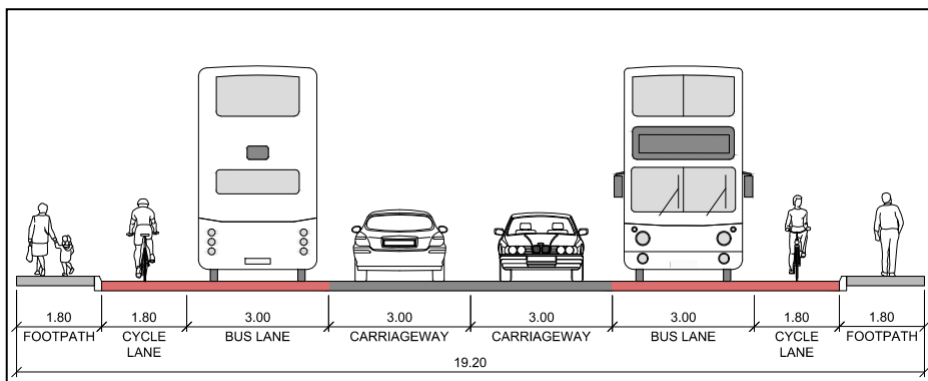


Figure 7.4: Scheme Option 1B3 – Typical Cross-section

Scheme Option 1B3 will include segregated cyclist and bus facilities inbound and outbound.

The provision of the exclusive lanes will require land-take and a reduction in the number of outbound traffic lanes from two to one.

There are no on-street parking spaces identified in this section which will be affected by the proposed works.

One on-street loading bay will require relocation and some loss of adjacent parking.

7.4.3 Route Segment 1C1

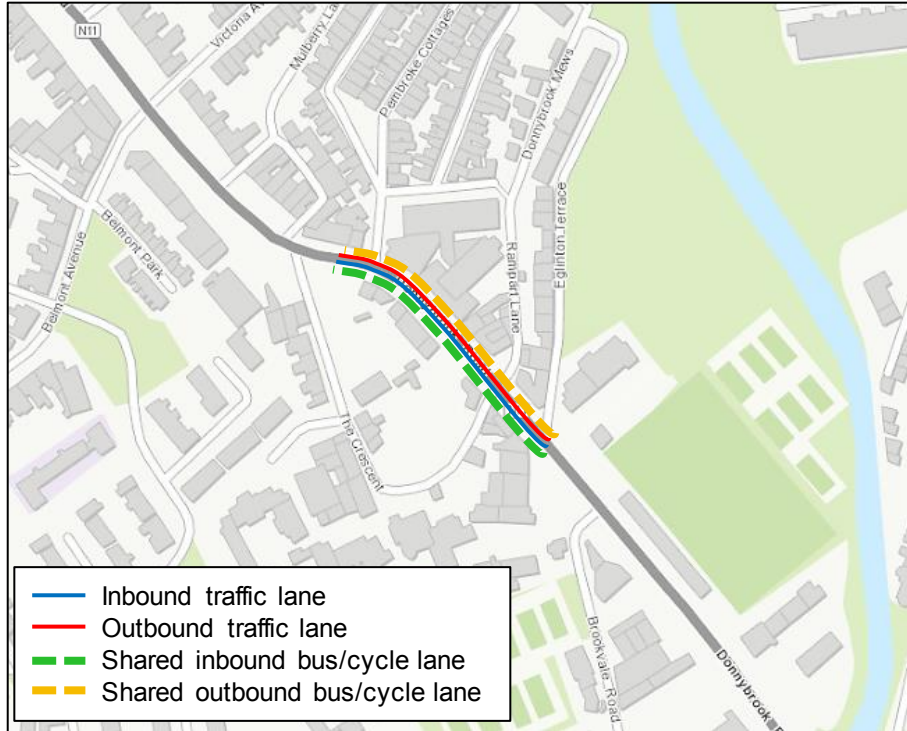


Figure 7.5: Scheme Option 1C1 bus and cycle facilities

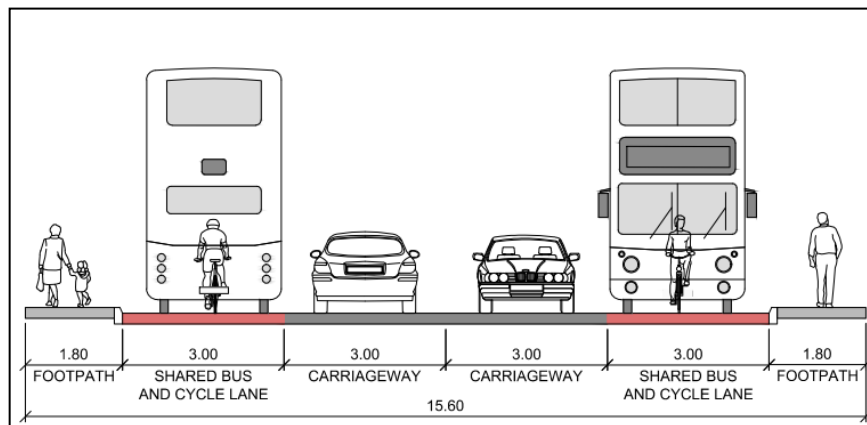


Figure 7.6: Scheme Option 1C1 – Typical Cross-section

To preserve the existing village streetscape, Scheme Option 1C1 will provide adequate bus and cycle facilities albeit within a reduced carriageway design width.

This scheme option will avoid the demolition of existing buildings and footpaths along with the ancillary works associated with demolition (i.e. the relocation of services etc.) by providing one traffic lane and one exclusive shared bus and cycle lane on both the inbound and outbound carriageways.

There are no parking spaces identified in this section will be affected by the proposed works.

7.4.4 Route Segment 1D2

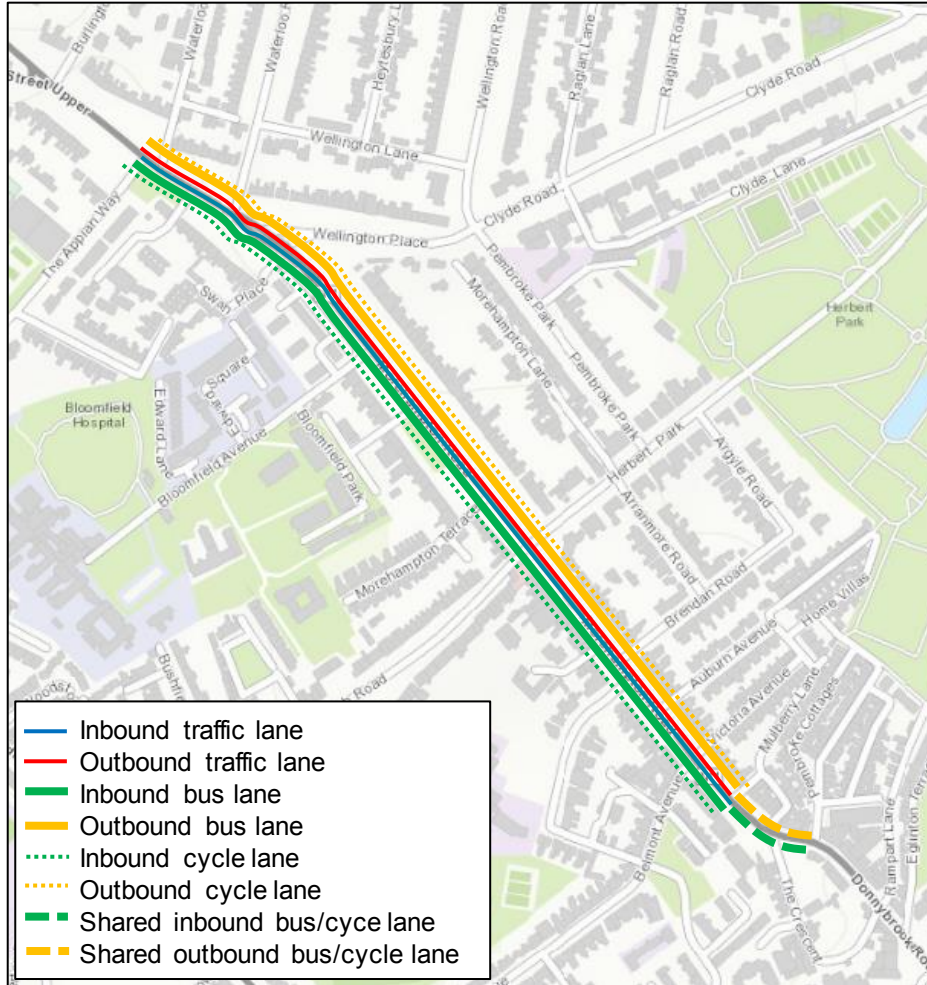


Figure 7.7: Scheme Option 1D2 bus and cycle facilities

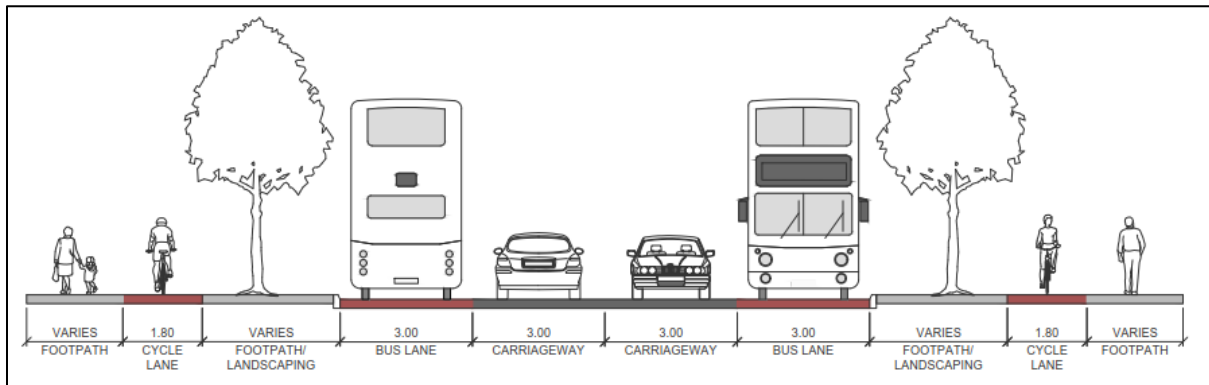


Figure 7.8: Scheme Option 1D2 – Typical Cross-section (when possible to maintain trees)

Scheme Option 1D2 will provide full bus and cycle facilities on both the inbound and outbound carriageways.

This scheme option will preserve trees (where possible), and thus most of the existing streetscape along the route, by altering the alignment of cycle lanes and configuration of bus stops.

Most of the on-street formal and informal car parking spaces will be removed to facilitate the proposed works.

The adjacent spaces in the car park located at the Crescent will not be affected by the proposed works.

7.4.5 Route Segment 1E3

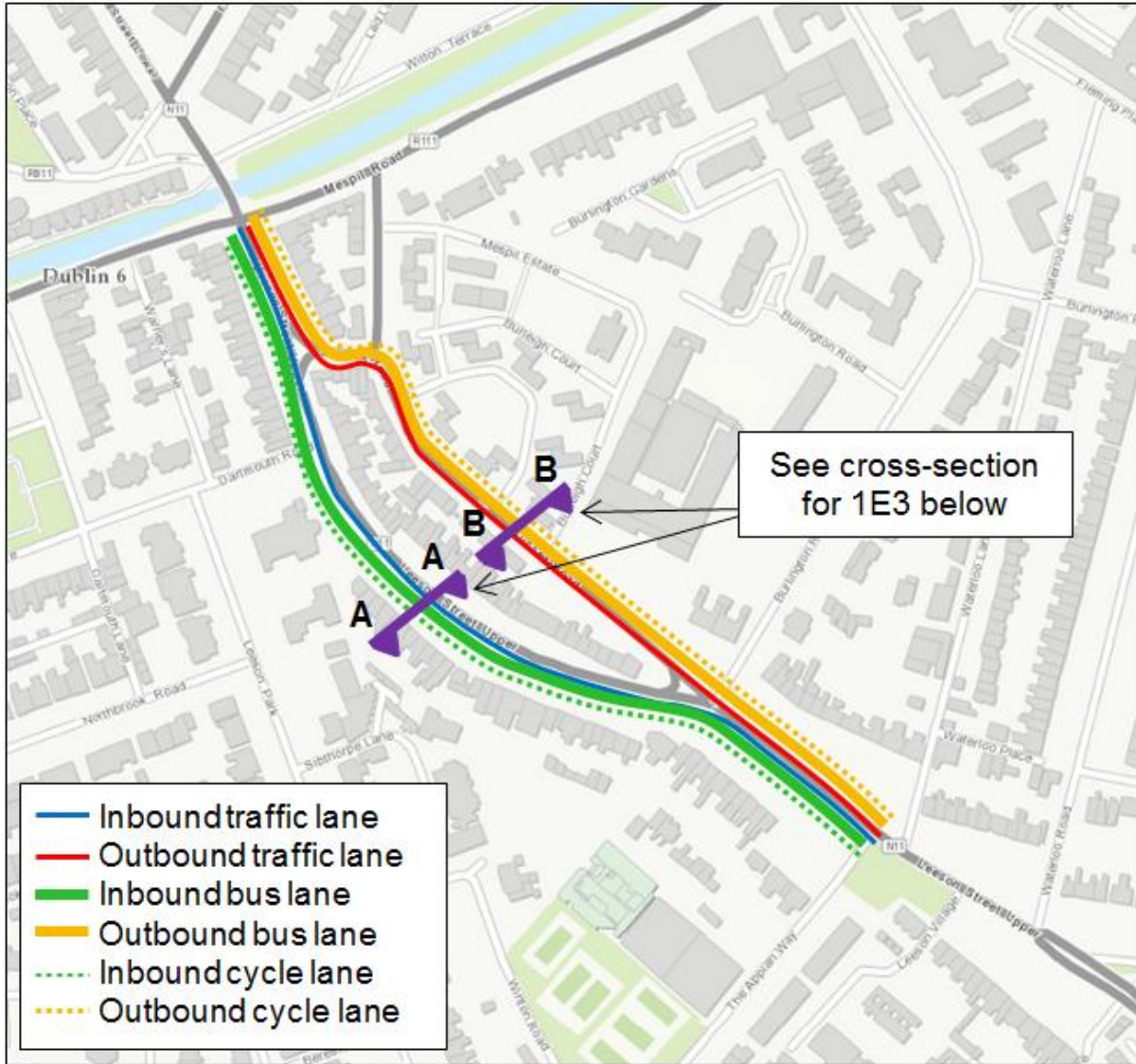


Figure 7.9: Scheme Option 1E3 bus and cycle facilities

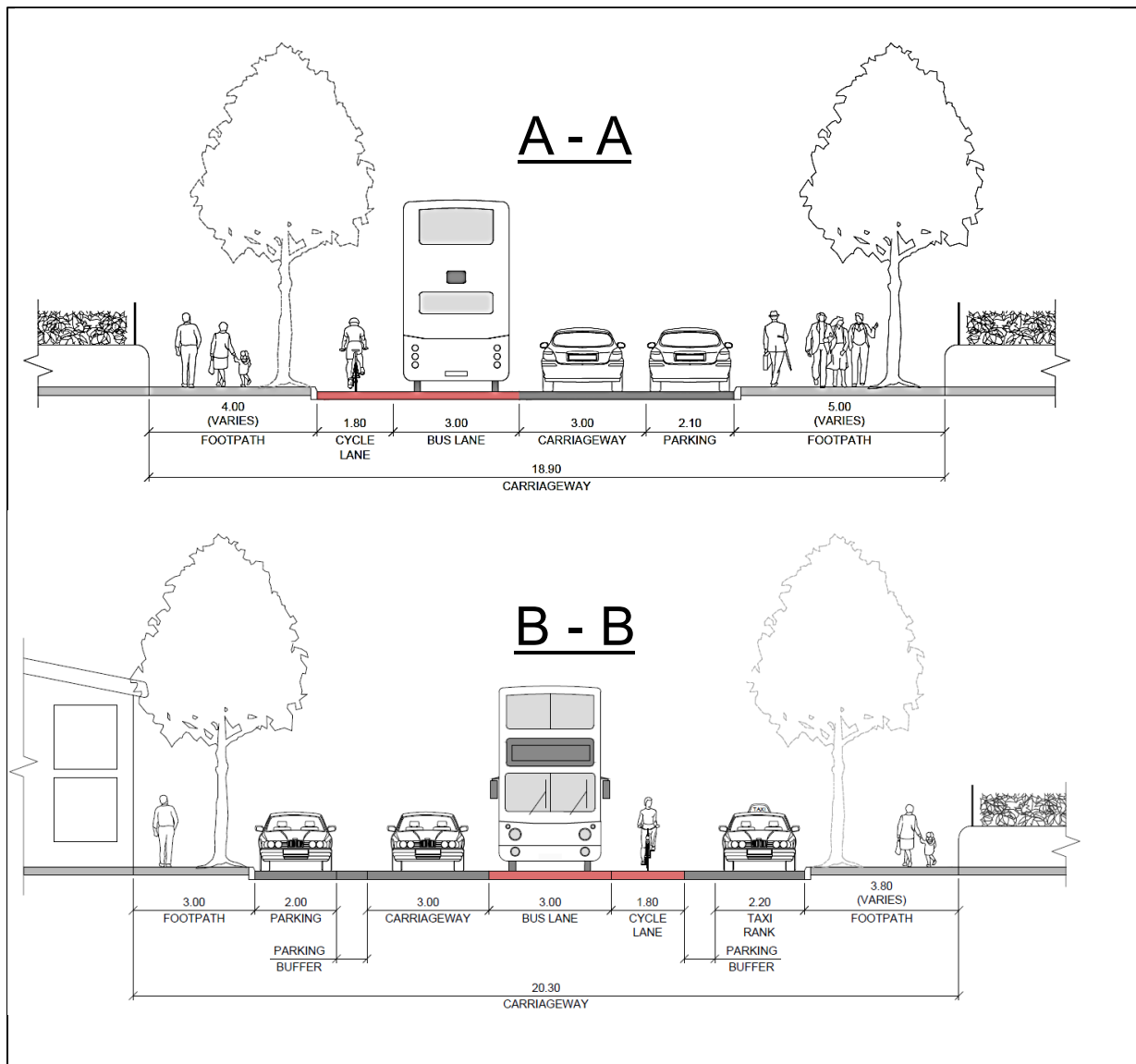


Figure 7.10: Scheme Option 1E3 –Cross-section

This scheme option will extend the one way traffic lane further on both the inbound and outbound sections before widening to two lanes (see **Appendix H** for scheme option design).

As a result, this option will have some impact upon the existing traffic flows.

Resurfacing will be required along with the provision of segregated bus and cycle lanes both inbound and outbound.

7.4.6 Traffic Staging

The junctions along the scheme route will be designed to prioritise bus movements. Proposals for the five main junctions along the route are illustrated in the figures below.

Figure 7.11 illustrates the proposed design for the Leeson Street Upper / Mespil Road junction. Buses travelling to UCD will be prioritised through a dedicated bus lane and a separate traffic signal stage. Buses travelling to City Centre will be prioritised through a dedicated bus lane and bus gate at the junction. Buses will be provide a separate traffic signal stage to other traffic movements, allowing them to cross the Grand Canal and rejoin a dedicated bus lane on Leeson Street Lower.

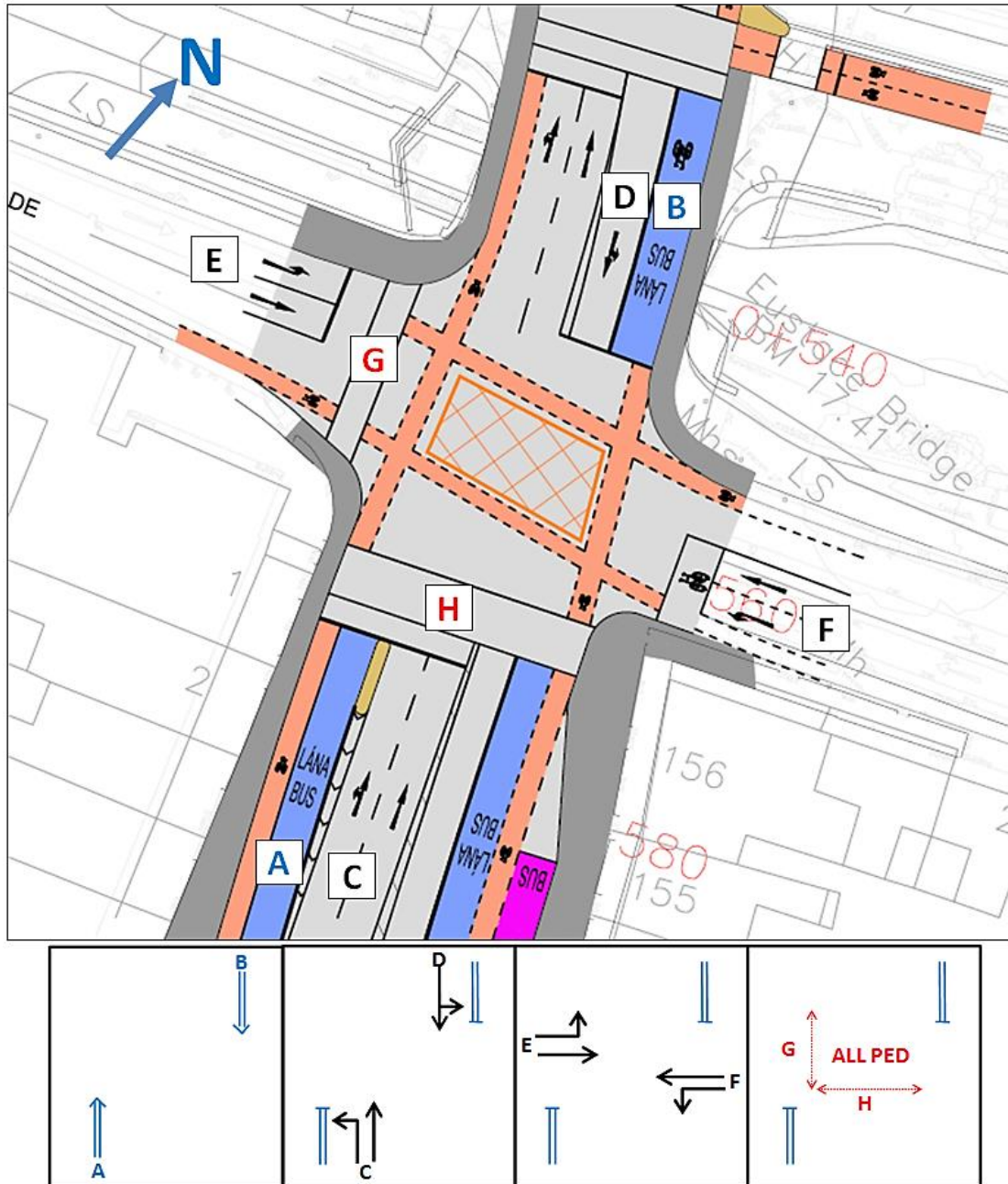


Figure 7.11: Leeson Street Upper / Mespil Road Junction Staging Diagram

Figure 7.12 illustrates the proposed design for the Donnybrook Road / Eglinton junction. Buses travelling to UCD will be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements, together with a second stage with traffic. Buses travelling to City Centre will be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements.

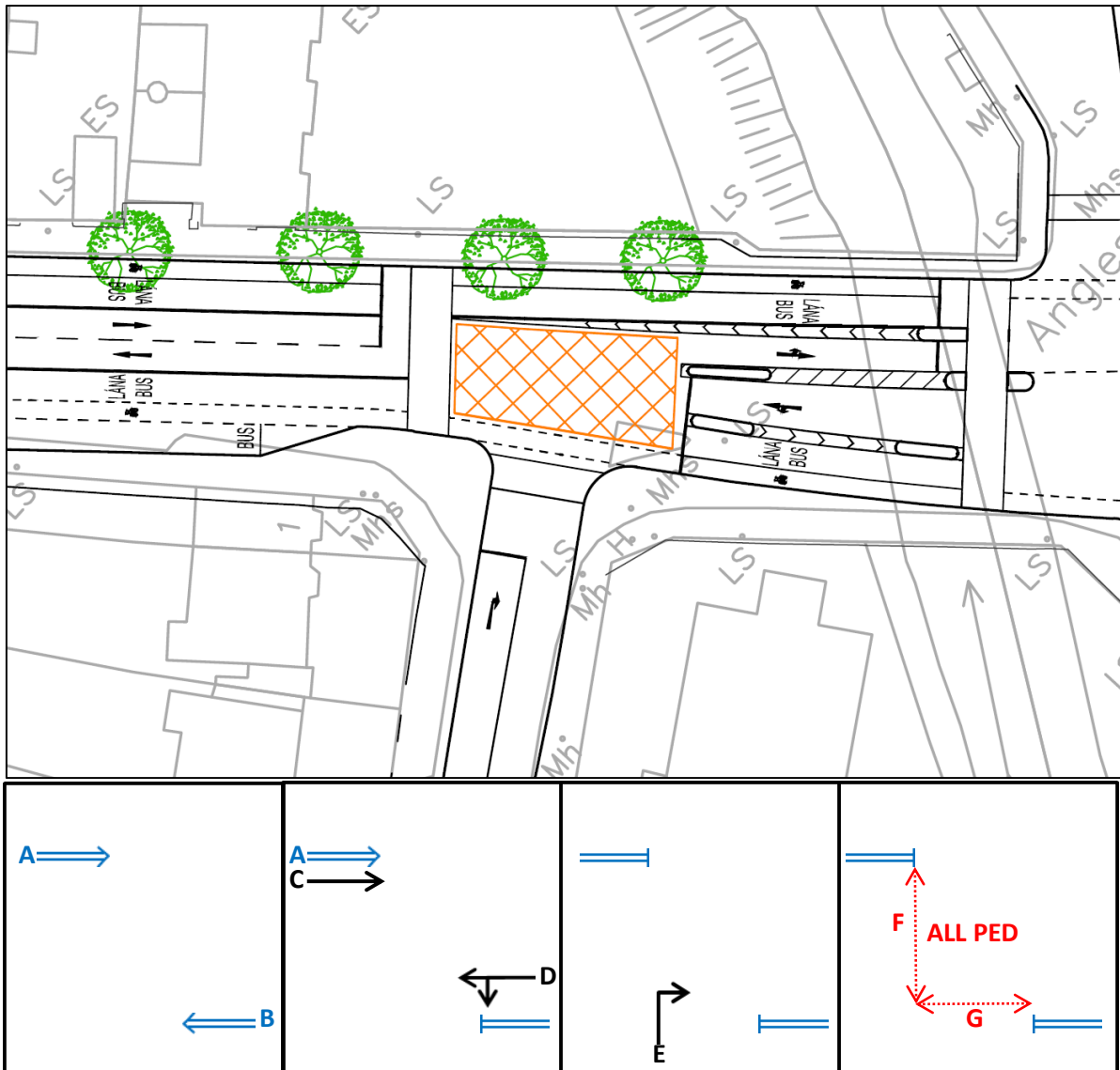


Figure 7.12: Donnybrook Road / Eglinton Junction Staging Diagram

Figure 7.13 illustrates the proposed design for the Stillorgan Road / Donnybrook Road junction. Buses travelling to UCD will be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements. Buses travelling to City Centre will also be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements.

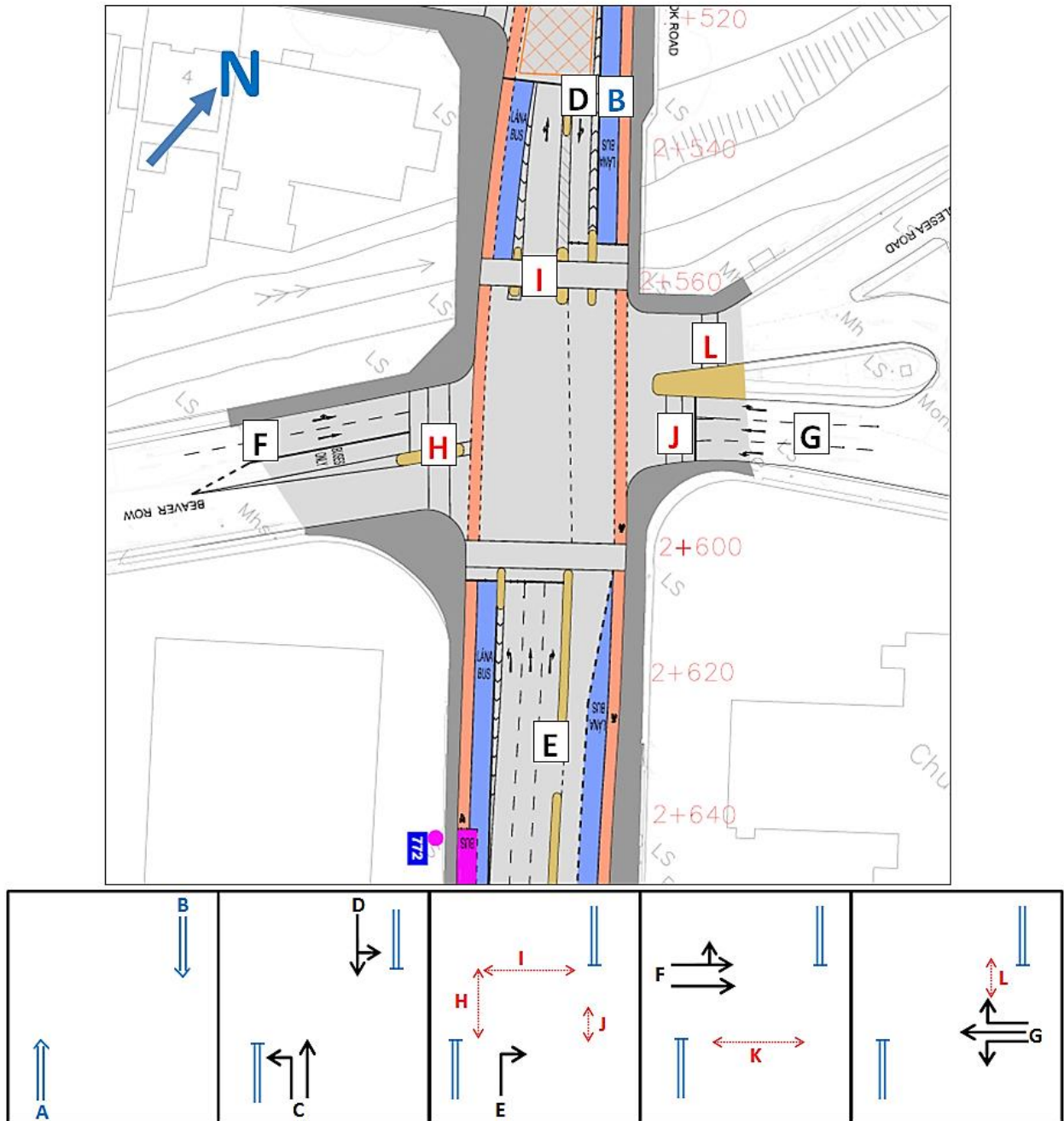


Figure 7.13: Stillorgan Road / Donnybrook Road Junction Staging Diagram

Figure 7.14 illustrates the proposed design for the Nutley Lane / Stillorgnan Road junction. Buses travelling to UCD will be prioritised through a dedicated bus lane. Buses travelling to City Centre will be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements.

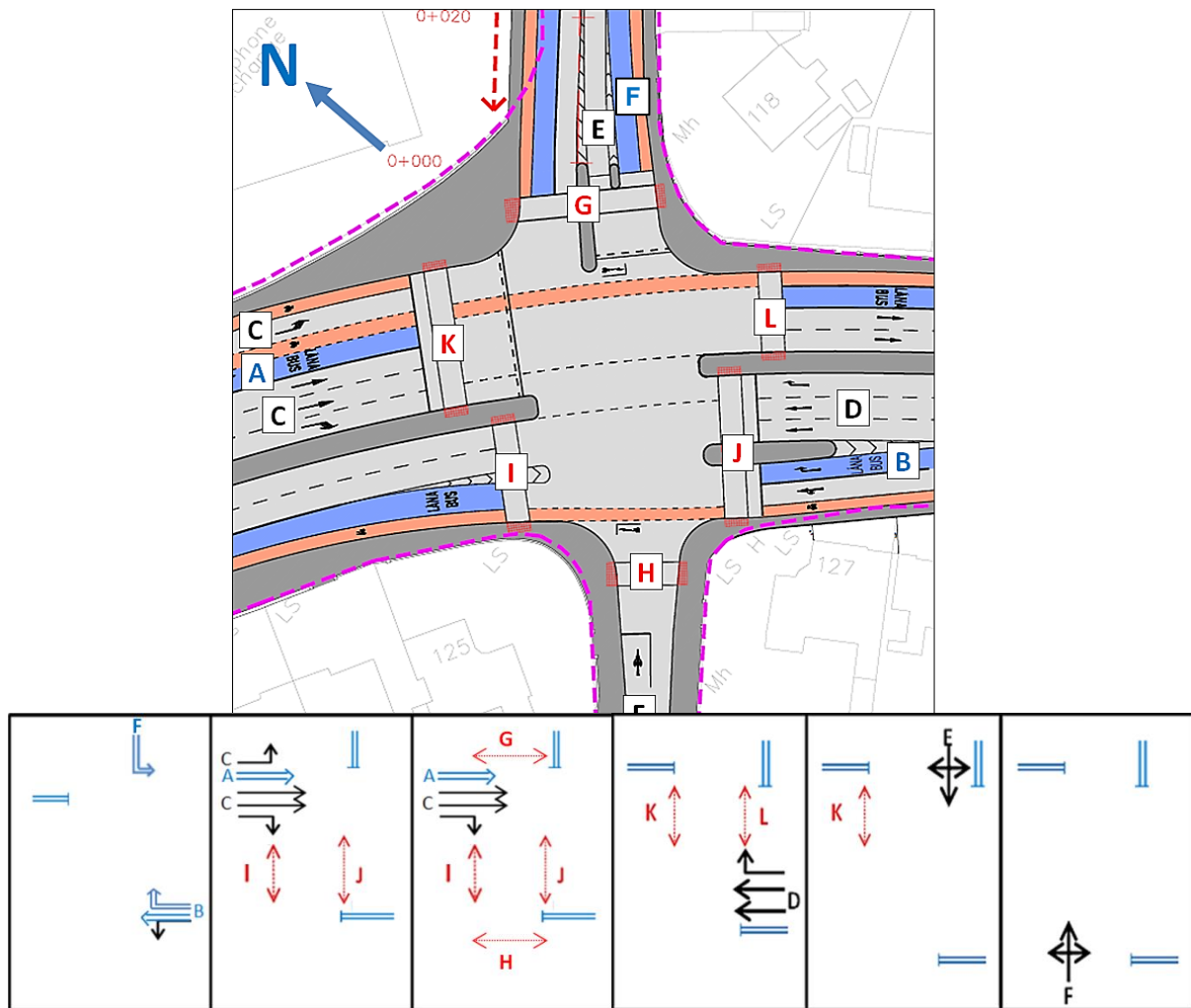


Figure 7.14: Nutley Lane / Stillorgnan Road Junction Staging Diagram

Figure 7.15 illustrates the proposed design for the UCD / Stillorgan Road junction. Buses exiting UCD travelling to City Centre will be prioritised through a dedicated bus lane and bus gate, which will provide a separate stage for buses to other traffic movements.

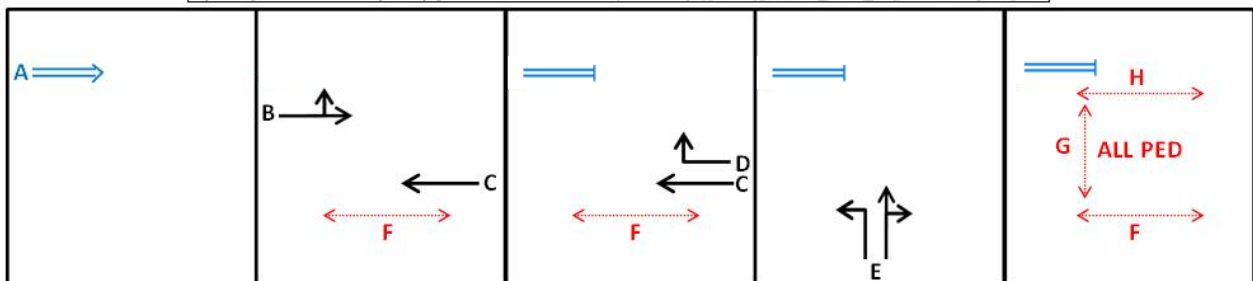
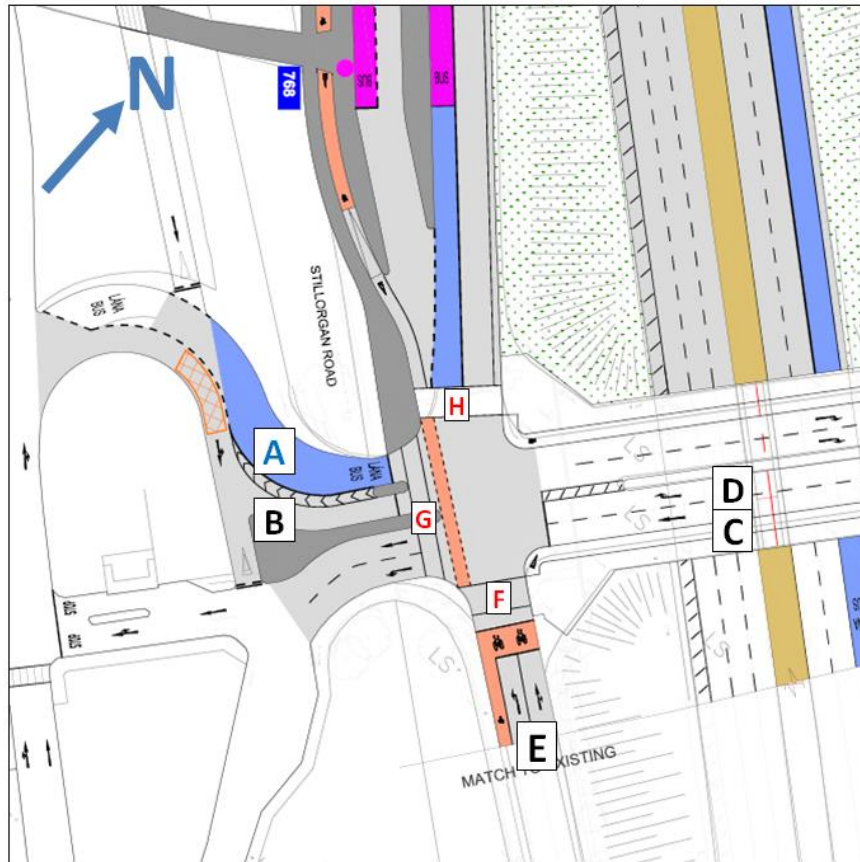


Figure 7.15: UCD / Stillorgan Road Junction Staging Diagram

7.4.7 Scheme Summary

The five Route Segments combine to form the overall emerging preferred scheme, illustrated in **Figure 7.16**.

With the exception of an approximately 155m section outbound and 175m section inbound, where buses mix with cyclists, segregated bus and cycle lanes are proposed in each direction along the entire route.

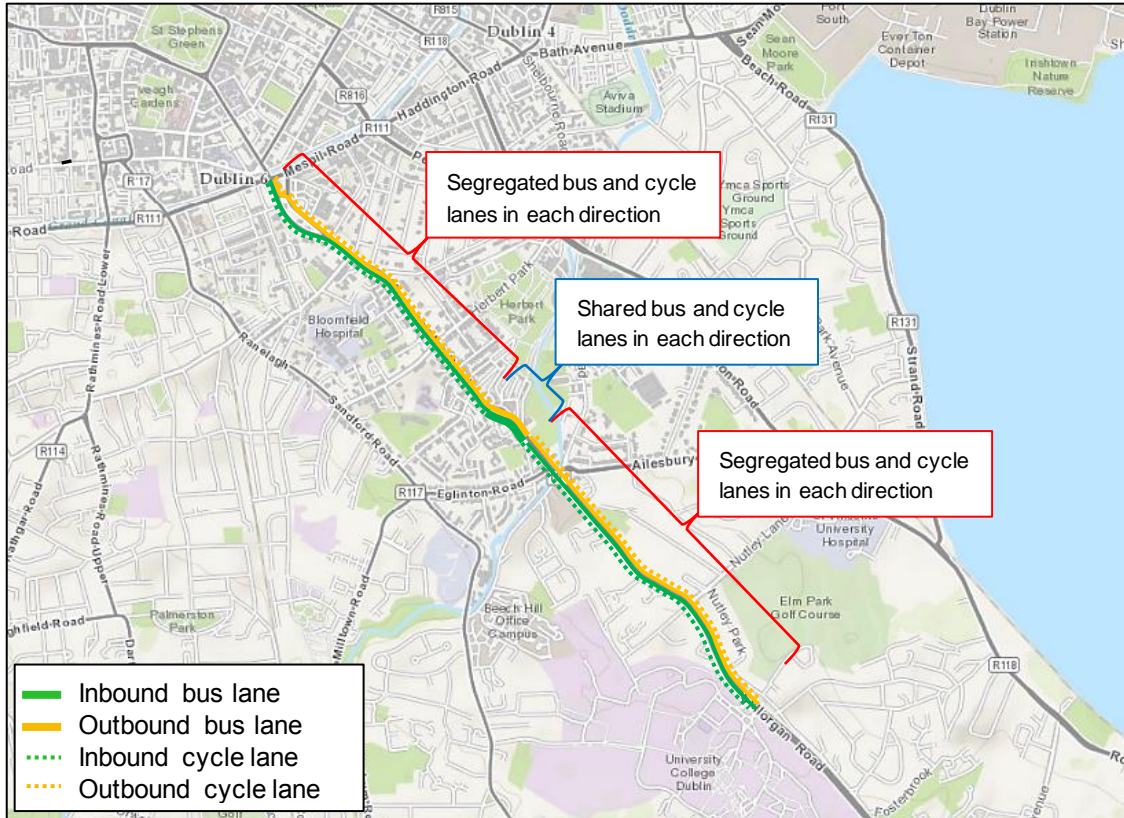


Figure 7.16: Overall Emerging Preferred Scheme

8. Feasibility Working Cost Estimate

8.1 High Level Cost Estimate

A cost estimate for the Emerging Preferred Option has been developed for the scheme and is indicated in **Table 8.1** below.

It was developed primarily based on standard rates that AECOM-ROD have available from similar types of projects in Dublin and includes high level information on the typical urban streetscape construction including:

- Preliminaries;
- Site Clearance;
- Earthworks;
- Pavement;
- Kerbs and Footways;
- Traffic Signs and Markings;
- Other Items (Ramps, Traffic Signals, Pedestrian Crossings, Street Lights, Landscaping, Boundary); and
- High Level Land Acquisition Costs.

A detailed cost estimate and significant further work would be required to provide a more accurate cost at the subsequent stage of development.

This detailed estimate would need to allow for Risk, Contingencies and future inflation etc.

Table 8.1: Feasibility Working Cost Estimate for Emerging Preferred Scheme Option

Cost Type	Total Capital Cost Estimate
Infrastructural	€4.106M
Land Acquisition	€0.756M
Total	€4.862M

8.2 Exclusions

The high-level cost estimate for the emerging preferred route option does not consider:

- Land acquisition costs from parks and green spaces, including Waterville Park and Tolka Valley Park, have not been included;
- Professional Fees;
- Planning Costs;
- Marketing;
- Capital Contributions;
- Inflation;
- VAT;
- Costs associated with neighbouring proposed projects (e.g. Dun Laoghaire CBC);
- Potential city centre cellar works and acquisition of private landings;
- Administration and management costs; and
- Maintenance costs.

9. Emerging Preferred Scheme Benefits

The emerging preferred scheme option will deliver on-street infrastructure necessary to achieve practical continuous bus priority along the majority of the UCD to City Centre (St. Stephen's Green) CBC, though the provision of enhanced bus lanes.

This way, delays that currently occur along specific sections and at constrained locations will be removed/minimised enabling the bus to become a faster and more attractive alternative to car traffic along the route.

The bus system is envisaged to become more efficient and faster bus journeys mean that more people will be moved with the same level of vehicle and driver resources.

The emerging preferred scheme option will provide significantly enhanced cycle facilities with high Quality of Service along the route, as also required under the Greater Dublin Area Cycle Network Plan.

The emerging preferred scheme option design integrates with existing and future planned development and transport infrastructure schemes in the vicinity of the Study Area.

The emerging preferred scheme design incorporates traffic management techniques to maximise level of services for all road users, following the principles included in the Design Manual of Urban Streets and Roads and taking into account issues such as permeability, personal security, traffic conditions, mobility impaired access, and safe crossing of roads.

In summary, the emerging preferred scheme option will have the following benefits:

- Increased reliability and faster journey times due to bus priority in the vast majority of locations;
- Reduction of commuting time for public transport;
- Reduction of car congestion and enhancement of attractiveness of urban centres;
- Provision of safe cycling facilities and the opportunity for more people to cycle along the UCD to City Centre (St. Stephen's Green) CBC;
- Reconfiguration of existing junctions, which will provide considerable benefits for pedestrian accessibility and bus priority, making the bus routes more attractive;
- Interchange with neighbouring CBC routes i.e. Dun Laoghaire to City Centre Corridor via Ballsbridge to UCD bus connection;
- Ability to extend bus services southwards; and
- Serving important trip attractors.

10. Next Steps

This report has identified an emerging preferred scheme option for the bus infrastructure along this UCD to City Centre CBC (St. Stephen's Green) which a concept design has been developed.

The next project stage (The development of a Preliminary Design) will further refine and update the initial concept design along the route.

Further account will be taken of likely public transport service levels, particularly the bus service patterns and any changes to the overall bus network which may arise from the BusConnects Plan proposals.

The proposal will be amended, if and as required, to integrate any resultant changes.

The Preliminary Design will define the final practically achievable scheme for the bus corridor, taking into account more detailed studies of constraints, impacts and environmental assessment required at a local level.

Prior to finalisation of the UCD to City Centre (St. Stephen's Green) CBC scheme design, a public consultation process will be undertaken, with inputs and feedback received incorporated where practical and appropriate to do so.

The Preliminary Design will form the basis of the planning consent process for the scheme, which will require a development consent application to be made directly to An Bord Pleanála, due to the nature and extent of the proposed works.

