National Transport Authority

Bus Connects Infrastructure Cork – Project C

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Table of Contents
Volume 1: Route Selection Report

Executive Summary

General

Barry Transportation were appointed by the National Transport Authority to undertake the Feasibility and Options Report for four Sustainable Transport Corridors in Cork City as part of the Bus Connects Infrastructure Cork Project. This report details the route selection process for Sustainable Transport Corridor (STC) 10 – Maryborough Hill to City Centre, which is designed to full Sustainable Transport Corridor standards.

This route is presented as STC I in the public consultation drawings. The infrastructure corridors were renamed from numbers to letters to avoid confusion with the bus routing naming (the routes that the individual buses follow are labelled using numbers and the infrastructure corridors are labelled using letters).

Scheme Objectives

To provide enhanced walking, cycling and bus infrastructure on key access corridors in the Cork Metropolitan Area, which will enable and deliver efficient, safe and integrated sustainable transport movement along these corridors.

Sub Objectives

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

The Study Area

The Study Area runs from Maryborough Hill to Cork City Centre. The study area was generally developed to include the main trip generators and existing roads between Maryborough Hill and the City Centre and encompassing the areas around Belmont, Douglas, South Douglas Road, Douglas Road and Greenmount. The study area lies within the administrative area of Cork City Council.

Route Options Assessment Process

A two-stage options assessment process was adopted.

At Stage 1 all feasible route options or links underwent a high-level assessment or 'sifting' process to assess their suitability and ability to provide for an STC. This qualitative assessment evaluated each potentially viable route option in terms of ability to achieve the previously identified scheme objectives and was based on professional judgement and a general appreciation of the existing physical conditions and constraints within the study area.

This assessment stage focused on high-level engineering and environmental constraints, comprising a desk study supplemented with site visits. The purpose of this assessment stage was to determine which route options were the most viable and should be considered for further detailed assessment. Following this any links which were disconnected or could not clearly form part of an STC route were removed.

Following the Stage 1 'sifting' assessment, shorter route options that passed the sifting process were assembled into coherent route options which connected the common nodes at extremities of each section of the study area. Initial indicative schemes for each route option were developed based on the specific constraints along a particular route, with a number of scheme options considered for particulalry constrained routes, where required.

The indicative scheme for each route option was then progressed to 'Stage 2' of the assessment process Multi-Criteria Analysis (MCA) in accordance with the Department of Transport "Guidelines on a Common Appraisal Framework for Transport Projects published by the Department of Transport (DTTAS), March 2016.

The MCA considered Economy, Integration, Accessibility and Social Inclusion, Safety and Environment for each scheme indicative option. Each route option was comparatively assessed against sub-criteria under each of these main criteria and also in terms of performance against the study objectives. The scheme options were then ranked accordingly in order to identify the Emerging Preferred Route Option. . A multi-disciplinary team worked on the development of the STCs and the options were assessed by experts in their fields for each of the criteria.

The Emerging Preferred Route

Based on the results of the analysis carried out as described in this report, an Emerging Preferred Route has been identified, as illustrated in Figure 1-1**Error! Reference source not found.** This is described in the following paragraphs and in Chapter 10.

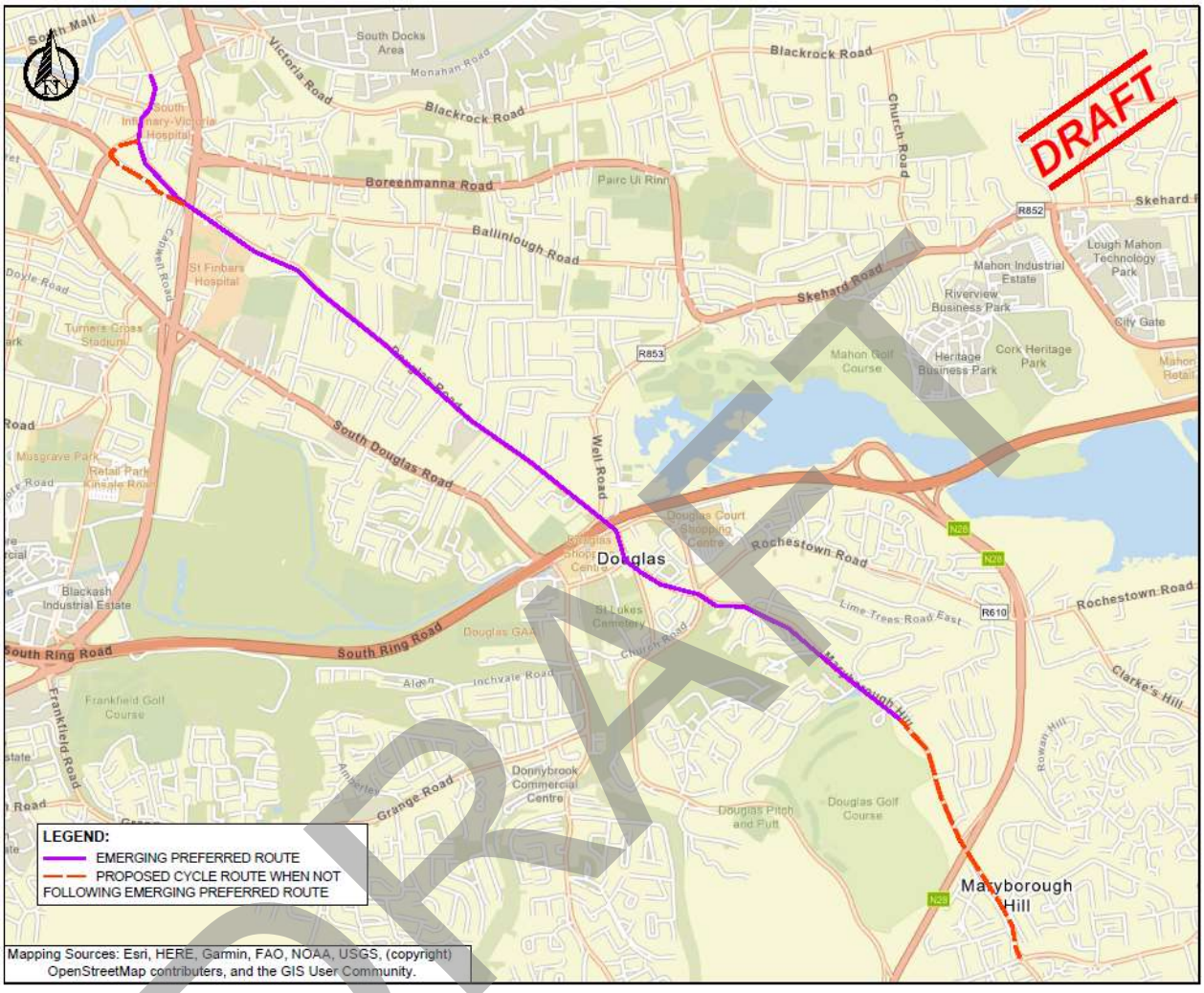


Figure 1-1 Emerging Preferred Route

Maryborough to City Overview

The Maryborough to City Sustainable Transport Corridor (STC I) starts near the top of Maryborough Hill at the existing roundabout that links to the Monegurney/Garryduff Road. Segregated cycle lanes are proposed in both directions from this roundabout to the Fingerpost Roundabout, which is proposed to be converted to a signalised junction. An inbound (towards the city) bus lane is proposed to start from close to the junction of Maryborough Hill with Elden Estate and continue northwards as far as the proposed signalised Fingerpost Junction. The proposed bus and cycle facilities proceed through Douglas Village via East Douglas Street. It is proposed to restrict traffic to local access only on East Douglas Street with the introduction of two bus gates. This would reduce delays for buses and provide a safe route for cyclists without the need for road widening.

The bus and cycle route continues on Douglas Road (R610) where bus priority and segregated cycle lanes are proposed in both directions. To facilitate this, a series of bus gates would be used to restrict inbound traffic on the road to local access, bus and cyclists only. At the junction of Douglas Road and Southern Road the bus route continues on Southern Road, and cyclists will travel on a quiet street route on High Street and Langford Row before merging with the proposed bus route again at the northern end of Southern Road.

Southern Road is proposed to be made one-way outbound for general traffic in order to provide bus priority in both directions.

The bus and cycle routes continue on Infirmary Road and Anglesea Street. At the junction with Old Station Road the proposed bus route turns east on Old Station Road and joins with the adjacent Sustainable Transport Corridor 9 (Airport to City). The proposed cycle route ties into the existing infrastructure on Anglesea Street.

The following paragraphs will describe each section of STC I in more detail, identifying the measures proposed so that sustainable transport is prioritised.

Maryborough Hill Roundabout to Fingerpost Roundabout Junction

Segregated cycle lanes are proposed in both directions along the length of Maryborough Hill to the Fingerpost Roundabout junction. An inbound (towards the city) bus lane is to start close to the junction with Elden Estate and continue to the proposed Fingerpost Junction. This will allow the bus to have priority over queueing traffic. No outbound (from the city) bus lane is provided along this section as no significant delays are expected for buses as they travel south on Maryborough Hill. Road widening is required in some locations along Maryborough Hill with some private gardens likely to be affected. The Fingerpost Roundabout is to be converted to a signalised junction to provide bus priority and enhanced pedestrian and cycling crossing facilities.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Maryborough Hill	Two new bus stops provided. Two new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
Maryborough Hill	Continuous segregated cycle lanes on both sides of the road.
Fingerpost Roundabout	Converted to a signalised junction to provide bus priority and to prioritise pedestrian and cycle friendly design. Signalised crossings for pedestrians provided on all arms of the junciton.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on Maryborough Hill.

Douglas Village

It is proposed that East Douglas Street is restricted to local access only for general traffic. To do this the southern end of East Douglas Street (where it meets the Fingerpost Junction) would become bus and cycle only, as would the eastern end of Church St where it meets East Douglas Street. General traffic can still access the village using Carrigaline Road (which would be made two-way) or via Douglas Relief Road and East Village. Northbound through traffic would use Douglas Relief Road instead. This allows for East Douglas Street to be used as a quiet route by pedestrians, cyclists and buses without the need for road widening. Village improvement works such as placemaking, landscaping and mobility improvements will be done as part of the construction of the Sustainable Transport Corridor I (STC I). The signalised junction at

the northern end of East Douglas Street is to be upgraded to provide priority for pedestrians, cyclists and buses.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
East Douglas Street	Village improvement works such as placemaking, landscaping, and mobility improvements. A traffic calmed environment will provide a safer and more attractive environment for pedestrians and cyclists. One new bus stop and one new zebra crossing to facilitate easy access to bus stops and generally improved permeability for pedestrians. Wider footpaths on both sides that are continuous across entrances and accesses.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on East Douglas Street.

Douglas Road

It is proposed that bus prioirty and segregated cycle lanes will be provided for the full length of Douglas Road. In the inbound (towards the city) direction it is proposed that traffic on Douglas Road is restricted to local access only by the introduction of bus gates. Inbound movements are still permitted for some sections of the road but general traffic would not be allowed to pass through the bus gates, and so the road could not be used as a through route. City bound traffic coming from the Douglas/Maryborough area could use a detour route on the N40 and N27 instead. This reduces delays for inbound buses without the need for a dedicated bus lane.

Bus gates (short section of bus/cycle-only roadway) for city bound traffic are proposed on Douglas Road at the following locations:

- Junction with Well Road;
- Junction with Bellair Estate;
- Junction with Ballinlough Road.

Whilst this reduces the impact of widening along the route, land take is still required from private gardens along Douglas Road. In sections where buildings are located close to the road and it is not possible to provide bus lanes, it is proposed that outbound (towards Maryborough Hill) bus priority will be provided using traffic lights that will hold back general traffic during times of congestion. To improve pedestrian connectivity conitnuous footpaths with a mimimum width of 1.8m are provided on both sides of Douglas Road along with several new toucancrossings.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Douglas Road	Bus stop and pedestrian crossing locations rationalised to facilitate easy access to bus stops and generally improved permeability for pedestrians. Continuous, minimum 1.8m wide footpaths provided on both sides of the road. Including the provision of 400m of footpath from Wrightville Dental Clinic to Woolhara Park on the southern side of the road where there is no existing footpath. Continuous segregated cycle lanes on both sides of the road.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on Douglas Road.

Southern Road to City via Infirmary Road and Anglesea Street

Southern Road is physically constrained with buildings close to the road and it is not possible to provide bus priority while maintaining through traffic in both directions. Along with the proposal to remove through traffic from Douglas Road it is proposed to make Southern Road one-way outbound (towards Maryborough Hill) for general traffic. A continuous inbound (towards the city) bus lane is proposed on Southern Road and an outbound bus lane is also proposed for a portion of the road. Traffic lights will provide priority through the sections where no dedicated bus lane is provided.

Cyclists take an alternative route to buses from the junction of Douglas Road and Capwell Road. Connectivity to the existing cycling facilities on Langford Row is proposed via High Street and Capwell Road. It is proposed that High Street and Capwell Road are closed to through traffic at the junction with Douglas Road. This will create a low volume/low speed environment on these streets that will provide a quiet route for cyclists. It will also allow for a new small landscaped urban park area to be created for the area.

It is proposed that one lane of outbound (towards Maryborough Hill) traffic is removed on both Infirmary Road and Anglesea Street to provide bus and cycle lanes in both directions. The cycle route joins with the existing facilities along Anglesea Street that continue into the city centre. On Old Station Road it is proposed that two lanes of general traffic would be reallocated to bus lanes allowing buses to continue onto Old Station Road and Eglinton Street where the route connects to Sustainable Transport Corridor (STC) 9 – Airport to City.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Capwell Road/High Street	Quiet street will provide a safer and more attractive environment for pedestrians and cyclists. New landscaped urban park area created on what was previously roadway.

Southern Road/Langford Row Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.
Southern Road	New pedestrian crossing provided on Southern Road.
High Street/Langford Row Junction	Junction upgraded to prioritise pedestrian and cycle friendly design.
Infirmary Row/Anglesea Street Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.
Anglesea Street/Old Station Road Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.

Journey Time Benefits

Current journey times for the Cork Bus 220 route, for the section which follows the emerging preferred route from Maryborough to City Centre, can be seen to vary by over 100% when comparing average peak and off-peak journey times.

The daytime journey times outside of peak hours, when traffic volumes are lower, are likely to be reflective of the journey times which could be achieved by a combination of improved bus priority as a result of Bis Connects Infrastructure, better enforcement of said bus priority measures and cashless fares. The current daytime off-peak journey times average between 13 and 16 minutes.

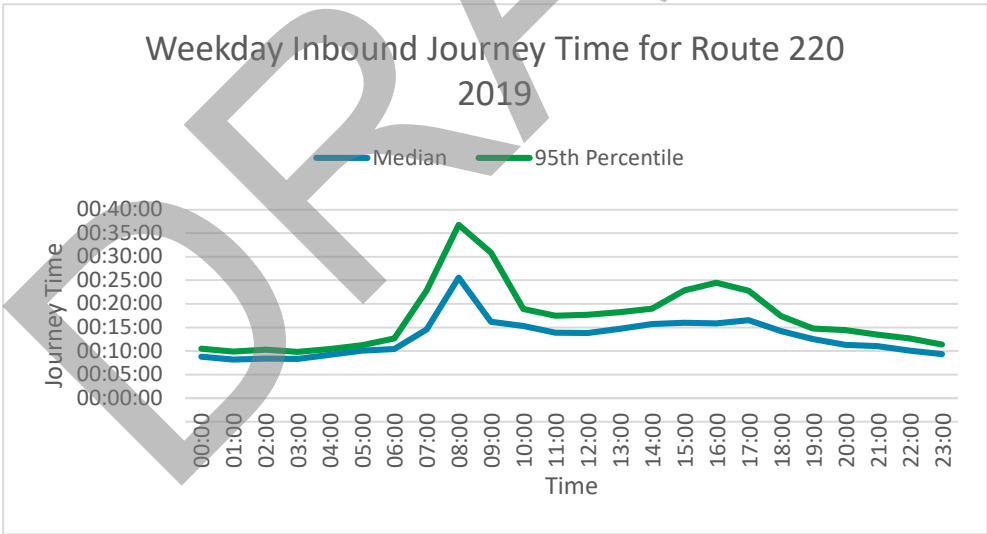


Figure 1-2

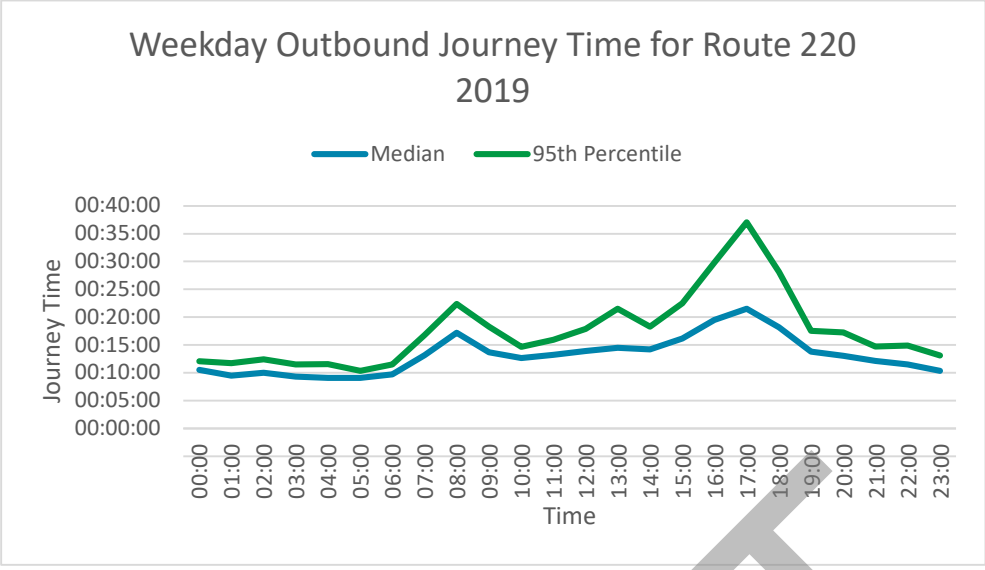


Figure 1-3

Based on the above, a conclusion can be drawn that by improving the provision of bus lanes along the route the risk of turbulence to buses would be significantly reduced, allowing the buses to move along the route quicker and with more consistent journey times. The extent of these benefits will be confirmed and quantified at the next design stage.

Next Steps

This report has identified an emerging preferred route for the bus infrastructure and pedestrian and cycle facilities along this Sustainable Transport Corridor, and a concept design has been developed. This option will be put forward as part of a non-statutory public consultation and the inputs and feedback received will be incorporated where practical and appropriate to do so.

The emerging preferred route is presented as STC I in the public consultation drawings. The infrastructure corridors were renamed from numbers to letters to avoid confusion with the bus routing naming (the routes that the individual buses follow are labelled using numbers and the infrastructure corridors are labelled using letters).

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 separate bus network review process. The proposals will be amended, if and as required, to integrate any resultant changes. The Preliminary Design will define the final practically achievable scheme for the STC, considering more detailed studies of constraints, impacts and environmental assessment required at a local level.

Prior to finalisation of the STC scheme design, a second public consultation process will be undertaken, with inputs and feedback received again incorporated where practical and appropriate to do so.

This 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.

1. Introduction and Background

1.1 Preamble

The purpose of this Route Selection Report is to identify an Emerging Preferred Route for a Maryborough Hill to Cork City Centre STC. This is will serve parts of the off the Ballyvolane – Donnybrook and Rochestown – Apple STC's as well as the supporting radial bus services that connect to Ringaskiddy, as identified in CMATS (NTA, 2020). The STC network represents the most important bus routes in the region and are generally characterised by a high frequency of bus services, high passenger volumes and with significant trip attractors located along the route. High quality bus corridors will reduce journey times and encourage modal shift away from private car including for work commuting trips and promote economic development.

An objective of CMATS is to develop the Core Bus network to achieve, as far as practicable, continuous priority for bus movement on the portions of the Core Bus Network within the Metropolitan Area. This will mean enhanced bus lane provision on these corridors, removing current delays on the bus network in the relevant locations and enabling the bus to provide a faster alternative to car traffic along these routes, making bus transport a more attractive alternative. It will also make the overall bus system more efficient, as faster bus journeys means that more people can be moved with the same level of vehicle and driver resources. Currently 14km of bus lanes are provided in Cork City and the proposed bus priority measures include approximately 100km of new bus lanes in total (CMATS, NTA 2040).

The Maryborough Hill to Cork City Center Study Area STC runs from the Maryborough Hill / Garyduff Road roundabout to the junction between Old Station Road and Anglesea Street. The corridor is within the administrative area of Cork City Council. The Core Bus Network as identified in CMATS is illustrated in Figure 1-1, with Maryborough Hill to City Centre STC highlighted. This report presents the results of the various studies and surveys undertaken, details all feasible scheme options, reports on the option assessment process, and proposes an Emerging Preferred Route.

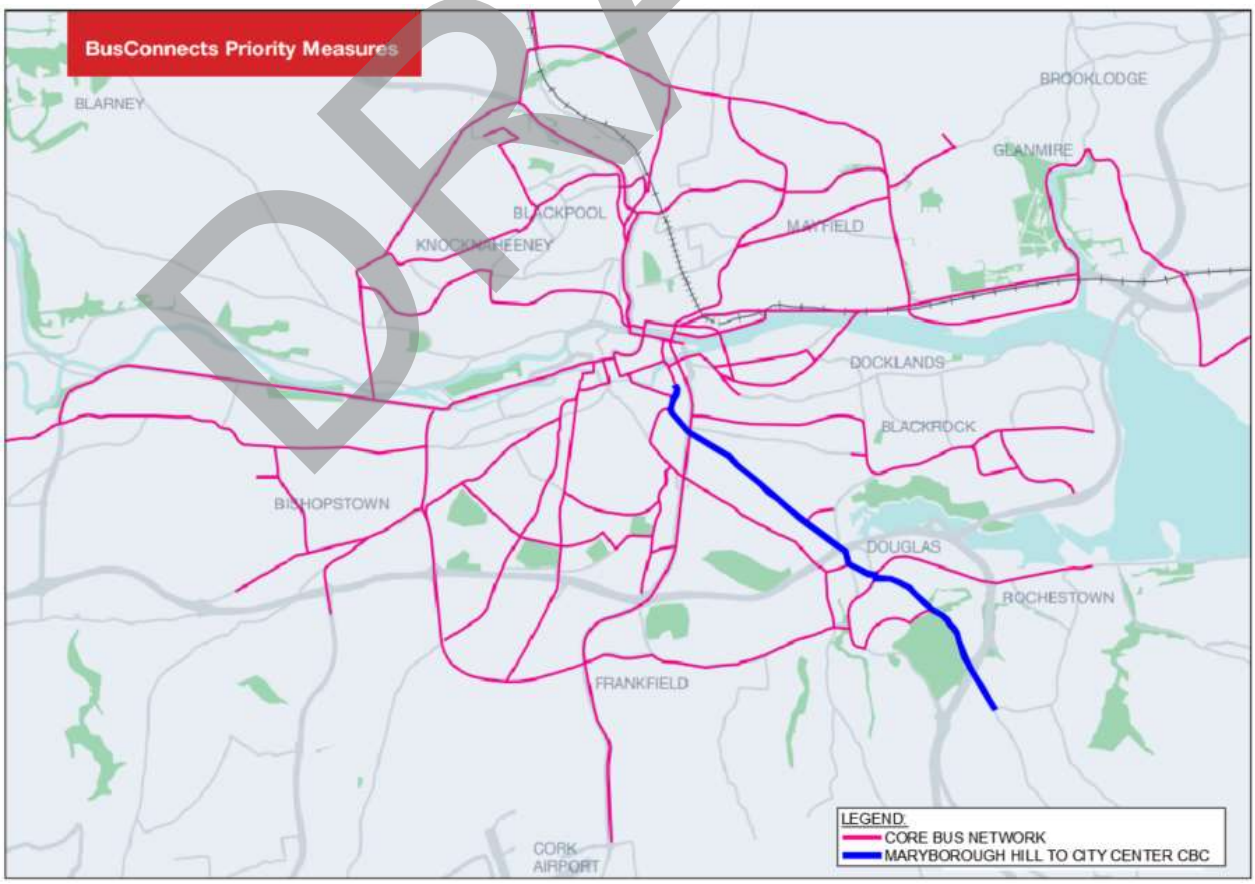


Figure 1-4 Indicative Sustainable Transport Corridors (CMATS 2020)

1.2 Report Structure

This report is structured as follows:

- **Chapter 2** – This chapter outlines the general background information to the project and the proposed STC network. It also outlines the policy context in which the STC was developed and presents the concept of the STC network as outlined in CMATS 2040 (NTA 2020). The objectives for the STC scheme are also set out. In addition, any other transport policies relevant to the STC network are presented.

- **Chapter 3** – In this chapter, the study area for the Maryborough to City Centre STC is detailed and divided into three distinct sections. Scheme specific constraints and opportunities are discussed. The integration of the scheme with existing and planned transport networks is considered, along with considerations of the scheme for other road users.

- **Chapter 4** – The assessment methodology for identifying the Emerging Preferred Route is outlined in this chapter. This includes:

  - Stage 1 Options Assessment Sifting Stage: development of the "spider's web" for each of the two study area sections and the criteria for selecting or deselecting plausible link options, based on previously defined project objectives (Sifting Process)
  - Stage 2 Options Assessment Detailed Assessment: Development of schemes for each study area section (comprising of coherent links which passed through the Stage 1 analysis). Each of these schemes are then subjected to a Multi-Criteria Analysis (Detailed Assessment)

- **Chapter 5** – This chapter details the Stage 1 (Sifting) assessment for the route.

- **Chapters 6, 7, 8 & 9** – These chapters detail the Emerging Preferred Route selection process, for Sections 1, 2, 3 and for the entire route length respectively, through Options Assessment Stage 2 analysis.

- **Chapter 10** – This chapter gives the overall conclusions of the scheme options assessment process and identifies and describes the Emerging Preferred Route.

- **Chapter 11** – This chapter details the "next steps" in the delivery of the project.

2. Transport Context & Scheme Objectives

2.1 Introduction

This chapter sets out the transport planning and policy framework within which the Maryborough Hill to City Centre STC is being developed. It also details the relevant planned developments within the core study area which have been considered as part of the feasibility and options identification stage.

2.2 Cork Metropolitan Area Transport Strategy (CMATS) 2040

Published by the NTA, CMATS 2040 lays out a strategy for planning and delivery of transport infrastructure in Cork Metropolitan Area over the next twenty years. The main relevant chapters of this report relate to the development of a bus connects scheme and cycling. A core bus network is identified consisting of an indicative nine core radial bus routes, four orbital services and seven supporting radial bus services.

Of these identified bus corridors, the ones relevant to this Maryborough Hill to City Centre STC are:

- Ballyvolane – Donnybrook (Sustainable Transport Corridor)
- Rochestown – Apple (Sustainable Transport Corridor)
- Ringaskiddy – Passage West - City Centre (supporting bus corridor)
- Ringaskiddy – Carrigaline - City Centre (supporting bus corridor)

2.3 Cork Metropolitan Area Cycle Network Plan

The National Transport Authority adopted and published the Cork Metropolitan Area Cycle Network Plan (CMA CNP) in 2017. The purpose of the plan was to establish the extent of the existing cycle infrastructure and facilities in the Cork Area and to set out a strategy to develop an integrated cycle network for the future.

Within the CMA CMP, primary, secondary and greenway cycle routes were identified. A number of these routes lie within the core study area of the Maryborough Hill to City Centre STC. In accordance with the CMA CMP, any upgrade to bus infrastructure which runs along any of the cycle routes should provide cycle infrastructure to the appropriate level (described in the NTA National Cycle Manual). If appropriate cycle infrastructure cannot be provided along the STC route, alternative routes for cyclists, to the appropriate standard provided on parallel / alternative streets should be identified.

2.4 National Investment Framework for Transportation Projects

The National Investment Framework for Transport in Ireland (NIFTI) is the Department for Transports contribution to Project Ireland 2040. This document provides the framework to prioritise future investment in the land transport network to support the delivery of the National Strategic Outcomes identified in the NPF. The following four priorities are noted in terms of investment:

Figure 2-1: NIFTI Investment Priorities

NIFTI states that the use of the most sustainable travel modes should be utilised to facilitate Mobility of People and Goods in Urban Areas. It states that measures must be designed with the needs of a diverse range of users in mind so that sustainable mobility alternatives are accessible to all residents of urban areas

According to NIFTI, investment in sustainable modes so that transport users have safe, accessible, reliable and efficient alternatives to the private car will result in decarbonisation of the transport sector whilst also catering for growing populations.

NIFTI acknowledges that Protection and Renewal of assets includes both steady state maintenance of existing infrastructure as well as improvements to ensure safety or increase accessibility.

The BusConnects Scheme would support the objectives of the NIFTI providing access to critical services such as education, healthcare and employment within the Cork City area. As well as providing dedicated bus routes, accompanying cycling infrastructure would encourage walking and cycling within the area is also.

Under the NIFTI Modal Hierarchy, sustainable modes, starting with active travel (walking, wheeling and cycling) and then public transport, should be considered first before less sustainable modes such as the private car. The modal hierarchy is illustrated in Figure 2-2 following:

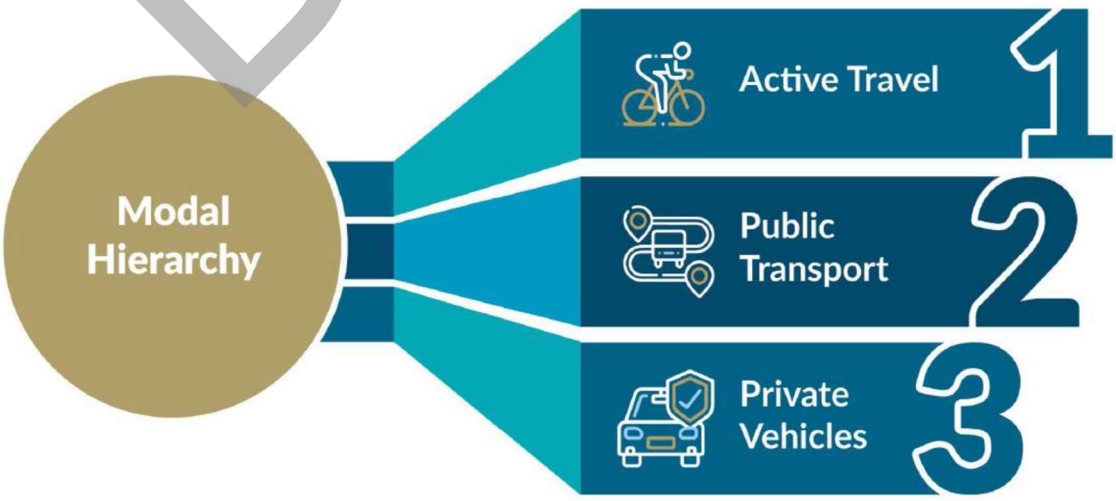


Figure 2-2: NIFTI Modal Hierarchy

BusConnects would support the modal hierarchy of the NIFTI. The provision of active travel and dedicated bus facilities which would ensure that more sustainable travel modes are available and dependable and would provide a viable alternatives to private vehicles.

Under the NIFTI Intervention Hierarchy, illustrated in Figure 2-3 following, protecting and renewing the existing transport network through maintenance should, where possible, be the first solution considered when assessing potential project options, followed by maximising the value of the network through optimising its use. Interventions to improve existing infrastructure will then be considered after these two categories have been assessed as inappropriate given the identified project objectives, and before the final possibility of outright new infrastructure.

Figure 2-3: NIFTI Intervention Hierarchy

It is anticipated that various sections of Bus Connects will align with different levels of the intervention hierarchy of the NIFTI.

2.5 National Development Plan – 2021 – 2030

The National Development Plan 2021 - 2030 was published in 2021 as an early update to the 2018 National Development Plan. The 2018 National Development Plan was published along with the National Planning Framework as part of Project Ireland 2040. The 2018 National Development Plan was developed to drive Irelands long term economic, environmental, and social progress across all parts of the country over the next two decades and underpins the successful implementation of the new National Planning Framework. The updated National Development Plan 2021 – 2030 extends the funding available to support all sectors and regions in Ireland. It will guide national, regional and local planning investment decisions over the coming decade. It also illustrates the commitment to reforming how public investment is planned and delivered. This will be done through a decisive shift to integrated regional investment plans and stronger co-ordination of sectoral strategies.

The National Development Plan provides €156 billion, which will underpin the National Planning Framework and drive its implementation over the next ten years. This will ensure accessibility between key urban centres of population and their regions which will include the Northern and Western Regions. It will also ensure rural areas are strengthened and rural contribution is harnessed as a major part of Ireland's strategic development.

In terms of active travel, €360 million is being committed to the development of walking and cycling infrastructure all over Ireland over the next 10 years.

2.6 Climate Action Plan 2021

The Climate Action Plan 2021 sets out a major programme for change in response to reducing Ireland's greenhouse gas emissions. The plan aims to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and to reach net-zero emissions by no later 2050. It is envisaged that these proposals will also have associated positive economic and societal benefits, including cleaner air, warmer homes and a more sustainable economy in the longer term.

The Climate Action Plan makes a commitment to delivering an additional 500,000 public transport and active travel journeys daily by 2035. Bus Connects will support the objective by making public transport and active travel more attractive as an option and therefore increasing the number of bus and active travel journeys.

2.7 National Planning Framework - Project Ireland 2040

The National Planning Framework (NPF) was published in 2018 and provides a framework to guide public and private investment, and to create and promote opportunities, while protecting and enhancing the environment. The NPF sets out the Government's high-level strategic plan for shaping the future growth and development of Ireland out to the year 2040. Its overarching visions are to:

- Develop a new region-focused strategy for managing growth;
- Linking this to a new 10-year investment plan, the Project Ireland 2040 National Development Plan 2018 - 2027;
- Using state lands for certain strategic purposes;
- Supporting this with strengthened, more environmentally focused planning at local level; and
- Backing the framework up in law with an Independent Office of the Planning Regulator.

The purpose of the NPF is to enable all parts of Ireland, whether rural or urban, to successfully accommodate growth and change, by facilitating a shift towards Ireland's regions and cities other than Dublin, while also recognising Dublin's ongoing key role. The NPF identifies 10 National Strategic Outcomes, as illustrated in Figure 4-1, which are the shared goals and benefits for every community across the country.

Figure 2-4: National Strategic Outcomes

Providing improved bus infrastructure and improved active travel facilities will support the National Strategic Outcomes as follows:

Compact Growth – NS01

This involves managing the sustainable growth of cities, towns and villages to create more attractive places in which people can live and work. Bus Connects will enhance the attractiveness, viability and vibrancy of settlements as a means of achieving more sustainable patterns and forms of development.

Sustainable Mobility – NS04

This is the provision of safe facilities which will encourage public transport use and walking and cycling within the area. It will improve the infrastructure for leisure, recreational and commuter users by providing a safe and comfortable route. As well as meet climate action objectives by providing viable alternatives to using motorised modes and particularly reducing private car travel.

A Strong Economy, supported by Enterprise, Innovation and Skills – NS05

This involves creating places that can foster innovation and enterprise, thereby attracting talent and investment. It also calls for high quality digital connectivity. The construction of bus and active travel facilities enables increased connectivity which can attract and retain talent and investment.

Enhanced Amenity and Heritage – NS07

This will ensure the city can offer a good quality of life through a well-designed public realm which includes public spaces, parks and streets, as well as recreational infrastructure. Bus Connects will enhance the public realm where possible to do so which will improve quality of life in Cork.

2.8 National Sustainable Mobility Policy

The policy sets out a strategic framework to 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions by the end of this decade.

The policy sets a target to deliver at least 500,000 additional daily active travel trips which will be supported though expanding walking and cycling options across the country. Bus Connects will support this objective by providing cohesive bus, pedestrian and cycling infrastructure.

2.9 Connecting Ireland

This policy is a major public transport initiative developed by the National Transport Authority (NTA) with the aim of increasing connectivity, particularly for people living outside our major cities and towns. The plan aims to improve mobility in rural areas, and it will do this by providing better connections between villages and towns by linking these areas with an enhanced regional network connecting cities and regional centres nationwide.

Bus Connects will improve the accessibility of Cork from nearby rural areas by improving the journey time and reliability of the local and regional bus network, and by doing so aligns with this policy

2.10 Development Plans, Local Area Plans and Strategic Development Zones

The Development Plans state that the Emerging Preferred Option design for the scheme shall fully integrate with or have consideration for planned development in the environs of the core study area. These are identified as:

- General Plans

- CMATS
- Cork City Development Plan (2015 – 2021)
- Cork City Development Plan 2015 -2021
- National Development Plan 2018-2027
- North Docks local Area Plan 2005
- Proposed Cork City Development Plan (2022-2028) Currently under consultation.
- South Docks Local Area Plan 2008

- Transport Schemes
  - City Quays - Cork Docklands to City Centre Junctions Scheme
  - Douglas Land Use Transport Strategy
  - Dunkettle Interchange Upgrade Scheme
  - MacCurtain Street Public Transport Improvement Scheme
  - Monahan Existing Road Extension Scheme
  - N22 Northern Ring Road Scheme
  - N28 Cork to Ringaskiddy Project

- Cycling
  - Cork Metropolitan Area Cycle Network Plan
  - Dunkettle Interchange Improvement Scheme, Proposed Cycle and Pedestrian Facilities Overview Plan.

2.11 STC Concept

An indicative Core Bus Network is identified in the CMATS 2040 report by the National Transport Authority. This network represents the most critical bus routes in the Cork City Area. Critical in this sense is defined as bus routes with high frequency of services, coupled with high passenger volumes and significant trip attractors along the route. The core bus network identified in CMATS consists of nine core radial bus routes, four orbital services and seven supporting radial bus services.

One of the main purposes of the Core Bus Network is to serve certain destinations and trip attractors/generators in the Cork Metropolitan Area, with convenient interchange with other transport modes, such as rail and park and ride facilities. The main focus of the Core Bus Network will be to “achieve, as far as practicable, continuous priority for bus movement on the portions of the Core Bus Network within the Metropolitan Area”. This will be achieved by the removal of current delays on the bus network and the enabling of bus services to provide a more attractive service than car travel.

2.12 Objectives of STCs

Objective

To provide enhanced walking, cycling and bus infrastructure on key access corridors in the Cork Metropolitan Area, which will enable and deliver efficient, safe and integrated sustainable transport movement along these corridors.

Sub Objectives

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;

- Improve the pedestrian facilities by providing suitable widths of footpaths, constructing new footpaths where there are currently gaps in the provision, upgrading and providing new crossings at desire lines and by providing a higher level of priority for pedestrians wherever practicable.
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in the Cork Metropolitan Area, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

2.13 Design Principles

2.13.1 Cross Sections

The following widths for the various components of the route cross section are assumed, dependent upon available width:

- 3.0m to 3.25m STC lane
- 2.0m Footpath
- 1.75m to 2.5m Cycle Track
- 3.0m to 3.25m traffic lane
- 2.8m minimum for turning lanes

The cross-sections used for individual route options are detailed within the scheme descriptions discussed in Chapters 5 & 6.

2.13.2 Bus Stops

In general, the locations of existing bus stops will be retained. However, each bus stop location has been reviewed and where appropriate bus stops will be relocated to reduce conflict between bus passengers and cyclists and/or to increase the population and employment catchments. In cases where two or more existing bus stops are provided in close proximity their locations will be rationalised to reduce delays to buses. The type of bus stop used is suited to the individual conditions at each bus stop location.

3. Study Area

3.1 Introduction

In this chapter, the study area for the Maryborough Hill to City Centre STC is detailed. Scheme specific constraints and opportunities within the Study Area are discussed, and the potential for integration of the scheme with existing and planned transport networks is considered, along with considerations of the scheme for other road users.

3.2 Study Area

The Maryborough Hill to City Centre Sustainable Transport Corridor Study Area runs from Maryborough Hill to Cork City Centre. The study area was generally developed to include the main trip generators and existing roads between Maryborough Hill and the City Centre and encompassing the areas around Belmont, Douglas, South Douglas Road, Douglas Road and Greenmount. The study area lies within the administrative area of Cork City Council.

This route is located between the proposed STC Routes 9 & 11 and there is some overlap on each side with the study areas for those routes.

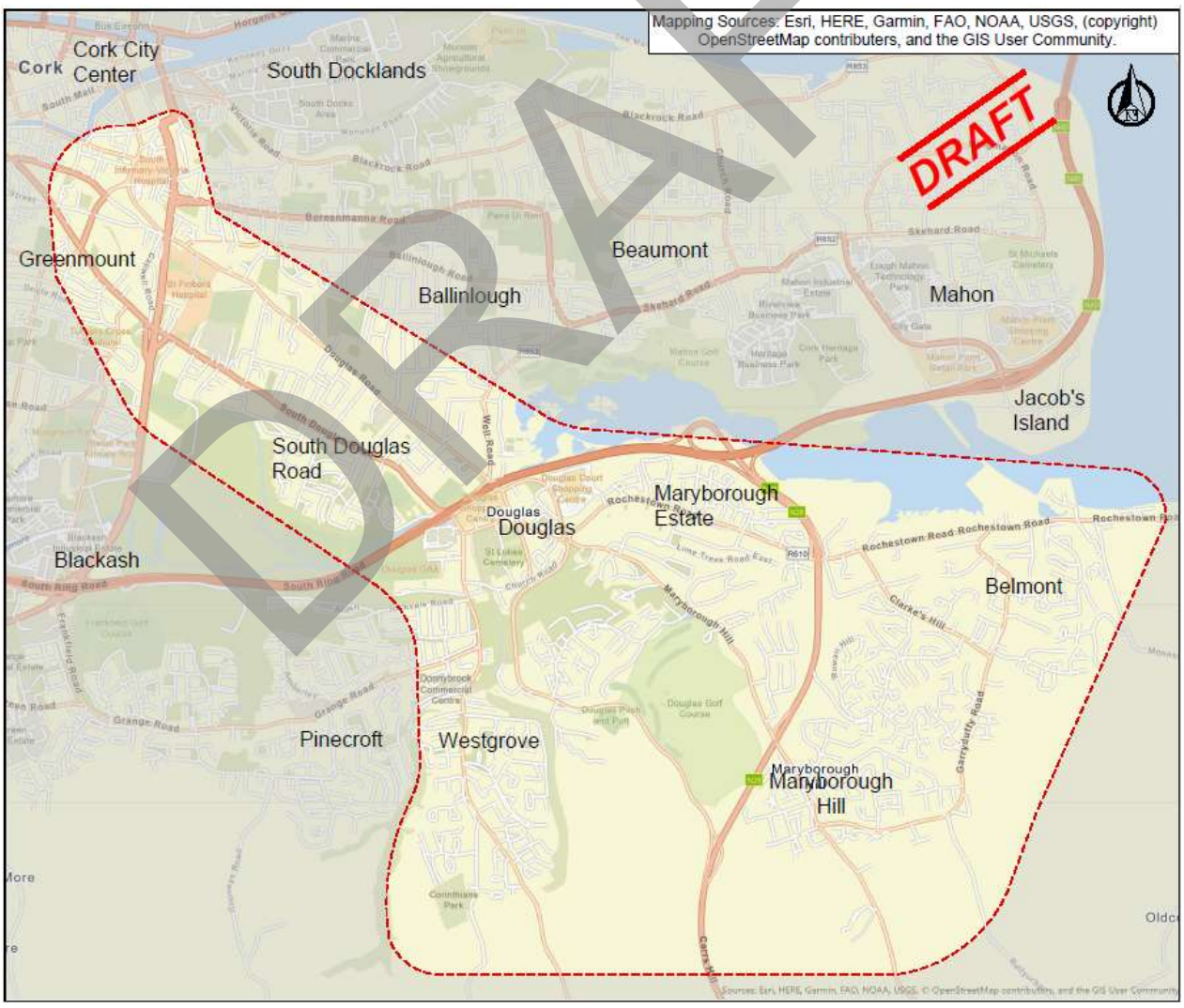


Figure 3-1 Study Area

The Study Area was split into three smaller sections, as shown by **Figure 3-2Error! Reference source not found.** below:

Figure 3-2 Study Area Sections

The northwest terminus for the STC is identified as Old Station Road, as this is where the route ties in with STC H, and the infrastructure proposed as part of that scheme will continue the STC into Cork City Centre.

3.3 Physical Constraints & Opportunities

There are a number of features in the natural and built environment within the study area which constrain scheme options or provide opportunities for enhanced integration. These are considered within the scheme assessment process and include the following:

- Douglas River
- Public transport infrastructure including Cork City Bus Services
- Planned and committed developments including the N28 Upgrade, Maryborough Ridge housing developments, Ballybrack Greenway, Douglas Land Use and Transport Strategy, Douglas East Planning Masterplan, South Douglas Road Junction Upgrade and Half Moon Lane upgrades.
- Trees and other natural and ecological features including rivers and streams
- Architectural, archaeological and heritage sites and features
- Protected structures adjacent to the route
- Existing urban and sub-urban roads and street networks
- Limited availability of land in urban and suburban areas.

3.4 Integration with Existing and Proposed Public Transport Network

An objective of the Maryborough Hill to Cork City Centre STC is to improve interchange between different modes of transport within the study area, including current transport infrastructure and future transport plans. Route options within the study area have been developed, in as far as is practical, to enhance interchange with these existing and future transport services which include:

- Existing Cork City Bus services at numerous locations along the route.
- Kent Station
- Cork Bus Station
- Cork Metropolitan Area Cycle Network Plan (CMA CNP).
- Future public transport proposals such as Cork Light Rail

3.5 Compatibility with Other Road Users

Consideration of other road users is a key component of the STC scheme and the scheme objectives refer specifically to cyclists and pedestrians.

It is proposed to provide on-street cycle facilities as required under the CMA CNP, published 2017, to the target Quality of Service(s) specified therein.

In addition, pedestrian connectivity and permeability to high trip generating locations shall be considered in the assessment of route options.

Where practical, segregated facilities shall be provided for pedestrians and cyclists. In cases where it is deemed impractical to achieve this, these facilities will be provided along a suitable alternative route.

Traffic flow and access routes will be maintained along the route where practical. However, inevitably, there will be a negative impact on traffic capacity along the STC route (this is as a result of reallocation of sections of road to bus and cycle lanes, enhanced priority for buses, improved pedestrian and cycle infrastructure at junctions and the implementation of turning restrictions). However, this reduction in the carrying capacity of the roads along the STC route is offset by the positive impacts of the scheme such as increased quality of bus service and increased total trip capacity.

4. Assessment Methodology

4.1 Introduction

This chapter of the report details the methodology that was used as part of the Maryborough to City Centre STC Route Options Assessment. This methodology seeks to determine the optimum route and scheme design for this STC. It assessed and compared alternative options under various criteria including a comparison of the environmental effects.

4.2 Assessment Process

The assessment methodology for identifying the Emerging Preferred Route is outlined in this chapter. A two-stage assessment process is utilised which comprised:

- Stage 1 Route Options Assessment ('sifting') which includes development of a "spider's web" for each of the two study area sections of potential route options and appraisal of these potential route options at a high level in terms of their ability to achieve the project objectives;
- Stage 2 Scheme Options Assessment: Comparison of each viable scheme option for each of the study area sections using a Multi-Criteria Analysis to determine the Emerging Preferred Route.

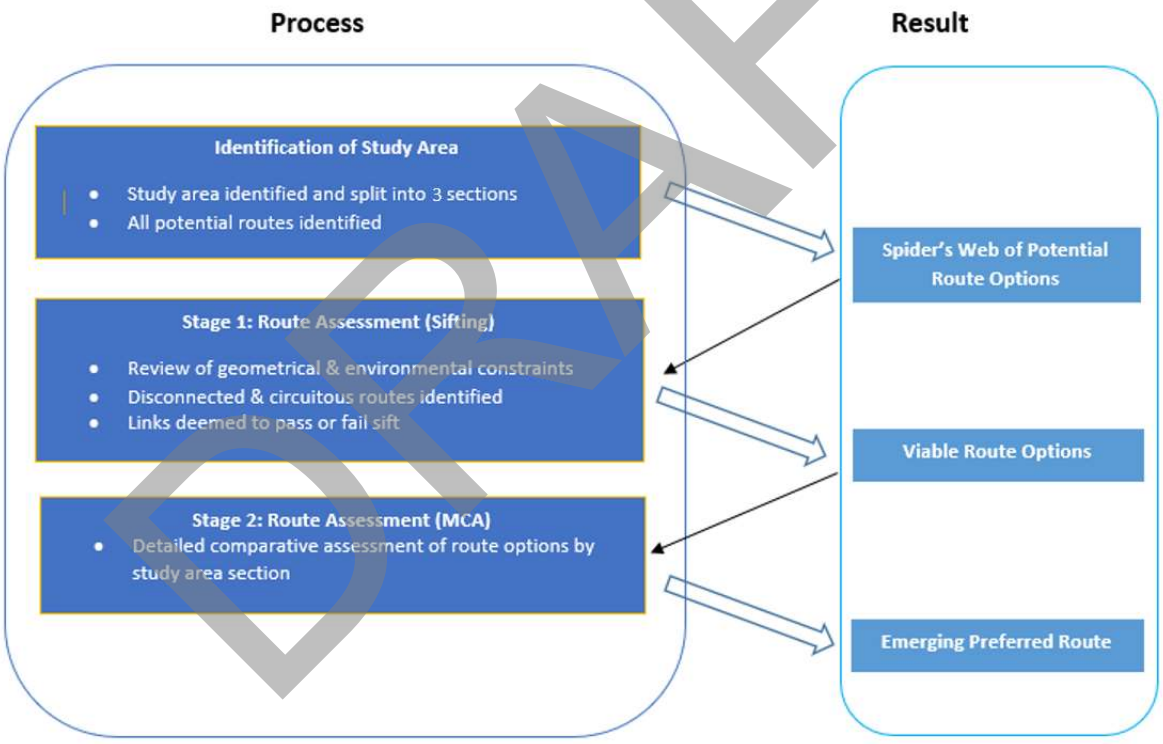


Figure 4-1 Assessment Process

4.3 Stage 1: Route Options Assessment

4.3.1 Spiders Web Development

An initial 'spiders-web' of potential route options that could possibly accommodate a STC service was identified for each study area section. This 'spider's-web' of route options was chosen with reference to the STC system characteristics and in order to meet the scheme objectives.

Initial route options identified also took cognisance of the physical constraints and opportunities present and the ability to integrate with other public transport modes. 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 for busses and thereby be able to practically accommodate STC lane priority.

Any road carrying an existing Cork City Bus service as well as any other plausible routes were included in the spider's web. Cul-de-sacs and narrow residential roads were discounted at this stage. This was an iterative process and after completing each stage it was often necessary to revisit the previous stages to ensure the logic and decision-making process remained consistent, and it was also necessary to occasionally look forward to ensure that no viable route options were discounted.

4.3.2 Sifting Process

All links identified as part of the spider's web underwent a high-level qualitative assessment based on professional judgement and general appreciation for existing physical conditions/ constraints within the study area. This was based on a desktop study, using data collected in the data collection process and site visits. This exercise identified links 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).

This assessment stage focused on engineering constraints together with a desktop study, identifying geometrical constraints, high level environmental constraints and population/employment densities.

Assessment indicators used were as follows:

- land take assessment, in particular impacts on residential front gardens or properties,
- pinch points along the link,
- presence of existing bus lanes and cycle facilities,
- gradients and level differences,
- junctions and their ability to accommodate measures to enhance bus priority,
- functionality of the street – impact on-street parking and loading, availability,
- high level environmental constraints,
- high level population and employment catchment analysis,
- high level integration with the land use and transport plans

Links that did not address the scheme objectives or were considered "un-deliverable" were deemed to fail the first sifting stage and were not progressed. Links that did meet the objectives and could be delivered were brought forward to the next stage.

Following is the list of data collected and considered for the Sift Assessment:

- Background Mapping OS Tiles
- Central Statistics Office (CSO) Data
- Geographic Deprivation Index (Source: https://www.pobal.ie.)
- Environmental information (Source: http://map.geohive.ie)
- Small Area Population Statistics (2016/2017, CSO Ireland)
- MacCurtain Street Public Transport Improvement Scheme Drawings
- Cork City Planning Applications and Enforcement Register (Source: https://corkcity.maps.arcgis.com/apps/webappviewer/index.html?id=e4af482c8da547de9f1689eba346a1ed)
- Land Use Zones & SDZs part of Development Plans & Local Area Plans
- AVL Data for relevant bus routes
- AVL Journey Time Variance Data
- City Quays - Cork Docklands to City Centre Junctions Scheme Planning Drawings
- Cork Metropolitan Area Cycle Network Plan
- Dunkettle Interchange Improvement Scheme, Proposed Cycle and Pedestrian Facilities Overview Plan.
- South Docks Local Area Plan 2008
- North Docks local Area Plan 2005
- Cork City Development Plan 2015 -2021

4.3.3 Removal of Disconnected Links

In this step, links that were disconnected or could clearly not form part of a Maryborough to City Centre STC route were discounted.

4.3.4 Preliminary Route Assessment

Following the Sift the remaining links were assembled into longer route options that span each study area section. Route options were assessed against the study objectives under the following criteria:

- Route length & directness
- Number of junctions
- Number of turning movements
- Level of bus priority practically achievable
- Potential negative impacts (requirement for land take, removal of on-street parking, etc)
- Requirement for split running (route options where inbound and outbound bus routes are separated by a large distance are not desirable)
- Walking distance to major trip attractors and areas of high residential/employment density

Based on these criteria, if a route option is shown to be considerably less favourable than an adjacent viable route option then it is discounted at this stage.

4.4 Stage 2: Multi Criteria Analysis

Route options that progressed to this stage were assessed against one another using a detailed multi criteria analysis in accordance with the Department of Transports 'Common Appraisal Framework for Transport Projects and Programmes'.

The multi-criteria analysis considered Economy; Integration; Accessibility and Social Inclusion; Safety and Environment. The 'Physical Activity' criterion has not been assessed as it is considered that all route options will promote physical activity equally and as such this criterion is not considered to be a differentiator between route options.

The assessment criteria are detailed below in the table following:

Table 4-1 Assessment Criteria

Criteria	Sub Criteria
Economy	Cost (infrastructure costs & land acquisition cost) (1.a)
	Average Bus Journey Time (1.b)
	Bus Journey Time Reliability (1.c)
Integration	Land Use Integration (2.a)
	Population and Employment Catchments (2.b)
	Transport Network Integration (2.c)
	Cycle Network Integration (2.d)
	Ped Network (2.e)
Accessibility and Social Inclusion	Key Trip Attractors (3.a)
	Deprived Geographic Areas (3.b)
Safety	Road Safety (4.a)
Environment	Archaeology Architectural and Cultural Heritage (5.a)
	Biodiversity (5.b)
	Soils and Geology (5.c)
	Water Resources (5.d)

	Landscape and Visual (5.e)
	Air Quality, Noise and Vibration (5.f)
	Land Use and Built Environment (5.g)

4.4.1 Economy

Capital Cost (1.a.)

The capital cost of a scheme is comprised of the estimated infrastructure costs and the required land acquisition costs. These costs are normalised to per-kilometre rates for the purpose of comparison of one scheme with another.

1.a.i Indicative Infrastructure Cost Estimate

The infrastructure cost estimate determines the likely capital infrastructure cost of a particular scheme, taking into account the extent of works required in order to construct that scheme and achieve the route objectives. The infrastructure costs include the following:

- Road re-alignment / new road construction
- Junction upgrades
- Drainage
- Services and utilities protection and relocation work
- Lighting
- Modification to existing structures or any new structures required
- Bus priority infrastructure (upgrading of existing infrastructure or provision of new infrastructure)
- Construction traffic management
- Pedestrian and Cycle route infrastructure

Corridor sections (between junctions)

Construction cost estimates for corridor sections (between junctions) have been categorised as minor, or major. Minor works have been assumed where significant road widening is not anticipated, for example along sections of a route where bus and cycle infrastructure is already provided, or along sections where significant widening is geometrically constrained. For all other sections requiring significant road widening major works have been assumed.

A further detailed assessment has been carried out for all the roads falling under major works and specific units cost rates have been worked out for the majority of the roads, which is detailed in Table 4-2.

For each route option, the length of the route requiring either the minor or major works category has been calculated and multiplied by the relevant cost rate to derive the cost estimate for the route.

Table 4-2 Cost Per Km Assumptions

Category	Construction Works	Cost Rate per km

Minor	• Local improvements to bus lanes. • New sections of paths where necessary. • New sections of cycle paths where necessary. • New or upgraded bus stops where necessary, including provision of Real Time Passenger Information (RTPI) and bus shelters. • Kerb improvement locally (removal and replacement). • Footpath improvement locally (breaking out/additional concrete) including tactile paving and dished kerbs. • Road resurfacing locally (milling/reinstatement or overlay). • Road markings (removal of existing road markings). • Signage (removal/relocation/replacement of existing and/or installation of new).	€800,000
Moderate (Widening excluding boundary walls)	• General site clearance (street furniture removal/relocation, etc). • Services protect in place predominately. • Drainage works (removal of and installation of new drainage systems). • New or upgraded bus stops where necessary, including provision of Real Time Passenger Information (RTPI) and bus shelters. • Earthworks (embankment treatments, retaining walls, slopes regrading, etc). • Pavement (milling/reinstatement or overlay). • 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).	€1,500,000
Major (Widening including boundary walls)	• General site clearance • Services relocation/ diversion. • Drainage works (installation of new drainage systems). • New bus stops where necessary, including provision of Real Time Passenger Information (RTPI) and bus shelters. • Earthworks (embankment treatments, retaining walls, slopes regrading, etc). • Pavement full depth construction. • Kerbs footways and paved areas. • Road markings. • Signage. • Road lighting. • Accommodation Works. • Landscaping works (top soiling, fence, trees, hedges etc);	€3,000,000

Table 4-3 Cost Per Km Assumptions for Cycle route

Description	Cost per km
Offline Cycle route	€800,000

The likely scale of construction works required at junctions have been identified for each route and categorised as minor, moderate, major or extensively major as per Table 4-4 below.

Table 4-4 Junction Cost Assumptions

Category	Construction Works	Cost Rate per km
Minor	• Road markings. • Road resurfacing locally (milling/reinstatement or overlay). • Additional signal heads, poles and loops. • Dished kerbs and tactile paving. • New signal controllers and associated traffic signal works.	€300,000
Moderate Works (Upgrade existing junctions to signal control junctions, without significant alteration to their existing geometry and layout. Excludes significant accommodation works)	• Works outlined above in minor works – road marking, traffic signals, kerbs and tactile paving). • Services protection predominately. • Limited earthworks. • Localised pavement reconstruction. • Localised public lighting improvements (relocation, cabling, and ducting). • Localised kerb and footpath improvement.	€800,000
Major Works (to existing signal-controlled junctions including upgrading of roundabouts to signal controlled junctions. Includes accommodation works)	• Works outlined above in moderates works. • Services relocation/diversion (power supply, communications cables, 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. • Property boundary reinstatement works (walls, gates, driveways landscaping etc).	€1,400,000

4.4.2 Land Acquisition Cost Estimate (1.a.ii)

The land acquisition costs concern the cost of acquiring lands necessary for the scheme and the costs of boundary / accommodation work associated with each scheme. It considers the likely number of properties required (commercial, public, residential, and industrial) and the extent of land required.

In this assessment, land is defined as either public or private. Public land is the space between road boundaries and any also any public open space. For this analysis, it is assumed that there is no cost associated with the acquisition of public land. The identification of land acquisition is based on available Ordnance Survey mapping only and as such is approximate.

For the purposes of this high-level cost assessment, private land is assumed to have a standardised cost of €1,500 per square metre, which is applied to each option.

4.4.3 Average Bus Journey Time (1.b)

Typically, shorter bus journey times supports higher patronage as people can get to their destination in shorter time. Bus journey times for each route option have been compared by calculating the estimated journey time between common start and end points. Bus journey times have been calculated usually the following assumptions:

- Buses travel at 30kph unless they are delayed.
- Dwell time of 10-60 sec per stop depending on usage.
- Delay of 15 – 120 secs per junction depending on level of priority achievable.

4.4.4 Bus Journey Time Reliability (1.c)

Reliable bus journey times provides certainty around departure and arrival time for passengers. The level of bus priority proposed in each route option determines the reliability of journey time for this criterion. Dedicated bus lane provision provides the best conditions, followed by traffic management measures, with no bus priority measures providing the least favourable conditions for reliability.

4.4.5 Integration (2)

Land Use Integration (2.a.)

This criterion assesses how a scheme would integrate with any planned developments in the catchment area and also how it might enhance the economic opportunities of an area. This criterion includes how a scheme fits into local area plans or any other objectives in area / county policies.

Population and Employment Catchments (2.b.)

The current residential and employment population within a particular walking route distance of each of the STC stops is calculated in order to determine the number of potential users for each scheme option. To assess the potential population and employment catchments the walking distance from bus stop locations along each route was analysed using the network analyst module of ArcGIS to create walk time isochrones from each stop. The distances to the stops correlate to walk times of five, ten and 15min intervals and were estimated based on an average walking speed of 5kph. The population and employment within the isochrones was then calculated based on planning data received from the NTA at CSO small area and work zone level. Where just a portion of a small area fell within the walking catchments the portion of the population/employment within walking distance was estimated proportionally based on area. See sample catchment map Figure 4-2 below.

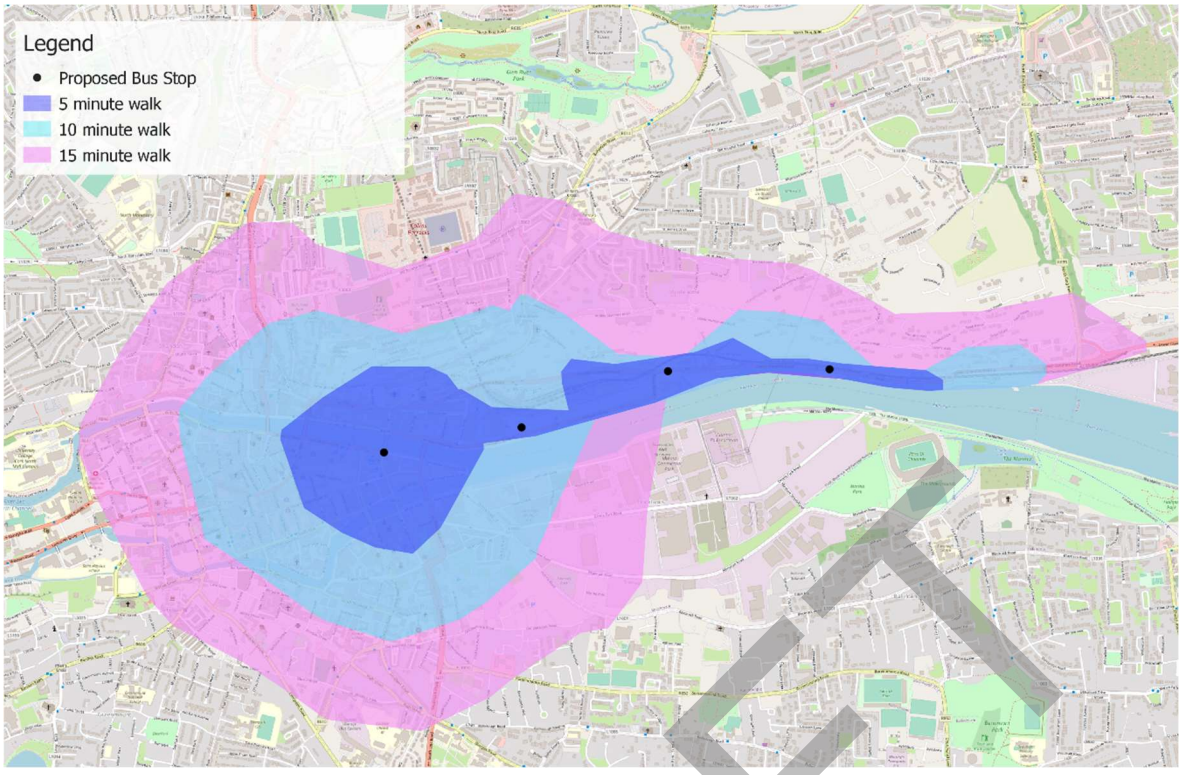


Figure 4-2 Sample bus stop catchment map with walking isochrones shown at 5/10/15 minute intervals

Transport Network Integration (2.c.)

Under this criterion, integration with the wider transport network is assessed and compared for each scheme. This includes transport modes such as railway, coaches, public bike schemes (e.g. Cola bikes), and public and private bus operators. The potential for interchange facilities such as safe walking areas, cycle parking areas, etc. are also assessed under this criterion. Where a potential STC route shares a route with another public transport route over a significant distance this was seen as a negative under this criterion.

The anticipated traffic impact expected to be incurred by motorists using private vehicles as a result of the different route options will also be factored in. The disadvantages experienced by motorists in respect of reduced junction capacity and restricted movements will be considered.

Cycle Network Integration (2.d.)

The compatibility of a scheme with the Cork City Cycle Network Plan and subsequently CMATS is examined and the level of service of practically achievable cycle facilities is assessed. In some cases, it is necessary to provide an alternative cycle route on alternative streets to the STC and this is considered under this criterion.

Pedestrian Network (2.e)

Similar to the cycle network, the compatibility of a scheme with the proposals in CMATS is examined and the level of service is assessed. Unlike the cycle network integration where routes can be on alternative streets, pedestrian facilities will be provided along the bus corridor. The quality of infrastructure for pedestrians that is practically achievable is compared for each scheme option.

4.4.6 Accessibility & Social Inclusion (3)

Key trip attractors (3.a.)

Trip attractors within a 15-minute walk from stops along a scheme are compared in order to determine schemes which would generate demand for buses along the STC (in addition to residential and employment populations). Key trip attractors such as schools, universities, retail and commercial centres, hospitals and employment centres are considered in this analysis.

Deprived Geographic Areas (3.b.)

The potential of each scheme to impact on any deprived areas is assessed and compared under this criterion. The Geographic Deprivation Index of areas alongside a given route was used as a measure for this criterion.

4.4.7 Safety (4)

Under this criterion, the number of junctions along each scheme, as an approximate measure for the potential for collisions, are compared. In addition, the number of turning movements are compared, as these can also potentially lead to lower safety conditions along the scheme. Differentials in traffic speeds along a route are also assessed under this criterion as a high relative speed difference between transport modes may result in an increased road safety risk.

4.4.8 Environment (5)

Archaeological, Architectural and Cultural Heritage (5.a)

Effects on cultural heritage can be considered in terms of impacts on below ground archaeological remains, historic buildings (individual and areas), and historic landscapes and parks. The construction, presence and operation of transport infrastructure can impact directly on such cultural heritage resources through physical impacts resulting from direct loss or damage, or indirectly through changes in setting, noise and vibration levels, air quality, and water levels.

Provision of a STC has the potential for impacts on archaeological, architectural and cultural heritage. Potential impacts of each scheme on Recorded Monuments and Protected Structures (RMPs) within 50m of the corridor are assessed and compared. Potential impacts on Sites of Archaeological or Cultural Heritage and on buildings listed on the National Inventory of Architectural Heritage are also assessed and compared under this criterion.

The impacts on all of the above are comparatively assessed for each route option under this criterion.

Biodiversity (5.b.)

The provision of the STC may have negative impacts on biodiversity, for example, through construction of new infrastructure through green field sites or removal of trees/hedges. These impacts are compared for each scheme under this criterion.

Soils and Geology (5.c.)

Construction of infrastructure necessary for the provision of the STC has the potential to negatively impact on soils and geology. For example, through land acquisition and ground excavation. There is also the potential to encounter ground contamination from historical industries. These considerations are compared for each scheme under this criterion.

Water Resources (5.d.)

The provision of STC infrastructure may include aspects (for example structures) with the potential to impact on hydrology or water resources. Any such structures and potential impacts are considered for each scheme under this criterion.

Landscape and visual (5.e.)

Provision of STC infrastructure has the potential to negatively impact on the landscape and visual aspects of the area, for example, by the removal of front gardens or green spaces or the altering of streetscapes, character and features. Different schemes are compared, and any negative effects considered under this criterion.

The landscape (and visual) assessment of the route corridor options has had regard to:

- land use zonings (amenity, open space, recreation, sport)
- protected views and prospects
- Recreation Access Routes / Designated Walk Ways
- Tree Preservation Orders (TPO) and tree preservation/protection objectives
- the location of Protected Structures
- the location of sites on the Record of Monuments and Places (including Areas of Archaeological Potential)
- the designation of Architectural and candidate Architectural Conservation Areas (ACA)

Air Quality, Noise and Vibration (5.f)

Provision of STC infrastructure has the potential to negatively impact on air quality along a scheme. This could be as a result of construction or rerouting traffic. These effects were compared for each scheme under this criterion. The impact is quantified on whether the source of pollution (traffic) is moving closer to sensitive receptors, for example rerouting traffic to a street that previously had less traffic.

Similarly, provision of STC infrastructure has the potential to negatively impact on noise and vibration along a scheme. For example, through construction works. These effects are compared for each scheme option under this criterion. The impact was quantified on whether the source of noise (road) is moving closer to sensitive receptors, for example road widening or new alignment.

Land Use and the Built Environment (5.g.)

This criterion assesses the impact of each scheme option on land use character, and measures impacts which prevent land from achieving its intended use, for example through land acquisition, removal of parking spaces or severance of land

4.4.9 Scheme Options Summary Table

Scheme options were assessed for each assessment criterion and compared relative to each other on a five-point scale, from having significant advantages, some advantages, some disadvantages to significant disadvantages over other route options. Schemes could also be considered neutral when no apparent advantages or disadvantages were identified across all scheme options.

Each route is given a comparative score (advantage/disadvantage) on a 5-point scale for each of the criteria listed in Table 4-5 below.

Table 4-5 MCA comparative advantage/disadvantage colour ranking table

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

NOTE: Where all options assessed are considered comparatively equal in terms of advantage/disadvantage they all ranked as neutral

In applying the assessment criteria to the Route Selection process, it is 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. In drawing a conclusion as to which route represents the best option considering all of the criteria put together, judgement was applied to arrive at the preferred option.

The outcome and findings of the multi-criteria analysis are then finally considered in a holistic manner to derive a preferred end-to-end route for the proposed end-to-end STC scheme.

5. Stage 1 Route Assessment – Sifting

5.1 Section 1 Sifting

This chapter outlines the options development process for Section 1 of the Study Area.

All roads within Section 1 of the study area are assessed on a high level for their ability to form part of the STC route. Route options are ruled out at this stage if they can clearly not form part of a STC. The 'spider's web' of potential route options remaining after this initial phase was then progressed to Stage 1 Route Options Assessment ('sifting stage') for further analysis. The links which are subject to sifting are shown in Figure 5-1.

Figure 5-1 Section 1 Route Options

A summary of the Stage 1 route options assessment ('sifting') process for Section 1 is presented below.

Table 5-1 Section 1 Route Option Assessment Stage 1

Link No.	Road Characteristics	Comments	Pass / Fail
L 1.01	Urban, Regional and Residential	Rochestown Road (R610) from its junction with Coach Hill (L2472) to its junction with St. Gerard's Terrace (L6708). This has a single carriageway lane in each direction with an additional turning lane at its junction with Monastery Road (L2474). It has some unregulated roadside parking and intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 9.0m between boundary walls at a pinch point. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries and private land take. This is considered a viable route option for this STC.	Pass
L 1.02	Urban, Local and Residential	Coach Hill (L2472) from its junction with Rochestown Road (R610) to its junction with Clarke's Hill (L2471). This has a single carriageway lane in each direction. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 6.0m between boundary walls at a pinch point. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible. This is considered a viable route option for this STC.	Pass
L 1.03	Urban, Regional and Residential	Rochestown Road (R610) from its junction with Coach Hill (L2472) to its junction with Clarke's Hill (L2471). This has a single carriageway lane in each direction. It has intermittent grass verges on both sides. It is bounded by residential properties. It's available width varies with a minimum of 8.7m between boundary walls. It has no bus or cycle lanes.	Pass

		There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible This is considered a viable route option for this STC.	
L 1.04	Urban, Local and Residential	Clarke's Hill (L2471) from its junction with Coach Hill (L2472) to its junction with Clarke's Wood housing estate. This has a single carriageway lane in each direction. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 8.5m between boundary walls at a pinch point. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible This is considered a viable route option for this STC.	Pass
L 1.05	Urban, Local and Residential	Garryduff Road (L2472) from its junction with Clarke's Hill (L2471) to its junction with Foxwood housing estate. This has a single carriageway lane in each direction with an additional turning lane at its junction with Foxwood. It has intermittent grass verges on both sides. It is bounded by residential properties, open green spaces and sport pitch belonging to Garryduff Sports Centre. It's available width varies with a minimum of 9.0m between boundaries It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. This is considered a viable route option for this STC.	Pass
L 1.06	Urban, Local and Residential	Garryduff Road (L2472) from its junction with Foxwood housing estate its roundabout with Maryborough Hill (L2470). This has a single carriageway lane in each direction with intermittent central ghost islands which facilitate turning at various junctions. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 10.3m between boundaries It has no bus or cycle lanes.	Pass

		There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. This is considered a viable route option for this STC.	
L 1.07	Urban, Local and Residential	Maryborough Hill (L2470) from its roundabout with Garryduff Road (L2472) to its overpass over Sli Charraid Dhonn (N28). This has a single carriageway lane in each direction with intermittent central reserve to facilitate turning at various junctions. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 9.0m between boundaries at and including the overpass with the N28. It has no bus lanes. It has an east (out) bound cycle lane which was installed in 2019 as part of a road improvement scheme. There is no west (city) bound cycle lane. There is potential to widen this link to provide for two bus lanes without any private land take. This would require a bridge widening or a bus priority at the overpass. This is considered a viable route option for this STC.	Pass
L 1.08	Urban, Estate and Residential	Foxwood, Kilbrody, Clonlea and Clarke's Wood estate roads. from its junction with Garryduff Road (L2472) to its junction with Clarke's Hill. These are estate roads with a single carriageway lane in each direction. It has grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 13.0m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes without any private land take. This would require removing grass verges, trees and reducing green spaces. A new link would need to be constructed between Foxwood and Kilbrody. This is considered a viable route option for this STC.	Pass
L 1.09	Urban, Local and Residential	Clarke's Hill (L2471) from its junction with Clarke's Wood housing estate to its junction with Rochestown Road (R610). This has a single carriageway with one lane in each direction. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 6.8m between boundaries.	Pass

		It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible This is considered a viable route option for this STC.	
L 1.10	Urban, Regional and Residential	Rochestown Road (R610) from its junction with Clarke's Hill (L2471) and Maryborough Estate. This has a single carriageway lane in each direction with intermittent ghost island which facilitates turn at various junctions. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 7.8m between boundary walls at a pinch point. It has a width constraint of 18.0m at the N28 bridge. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures where widening is not feasible. This is considered a viable route option for this STC.	Pass
L 1.11	Urban, Local and Residential	Maryborough Hill (L2470) from its overpass over Sli Charraid Dhonn (N28) to its junction with Maryborough Woods housing estate. This has a single carriageway lane in each direction with intermittent central reserve to facilitate turning at various junctions. It has intermittent grass verges on both sides. It is bounded by residential properties on its eastern side and Douglas Golf Course on its western side. It's available width varies with a minimum of 9.0m between boundaries at and including the overpass with the N28. It has no bus lanes. It has an east (out) bound cycle lane. There is no west (city) bound style lane. There is potential to widen this link to provide for two bus lanes with some private land take. Level differences would require deep embankments and/or high retaining walls. This is considered a viable route option for this STC.	Pass

L 1.12	National, Green Space	New Link Road from the future new N28 interchange on the Carrigaline Road (R609) to Maryborough Hill (L2470). This is a new link road proposed as part of the M28 Improvement Scheme which will run parallel with the N28 along its western side. There is potential to widen this link to provide for two bus lanes with additional private land take. This is considered a viable route option for this STC.	Pass
L 1.13	Rural, Regional and Residential	Carrigaline Road (R609) from its grade separated junction with N28 (Carr's Hill Interchange) to its junction with Maryborough Woods housing estate. This has a single carriageway lane in each direction. It is bounded by residential properties, agricultural land and by Douglas Golf Course for the majority of its eastern side. It has a typical available width of 8.0m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes, this would require setting back boundaries for the majority of its length, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible. This is considered a viable route option for this STC.	Pass
L 1.14	Urban, Estate and Residential	Maryborough Woods Road from its junction with Carrigaline Road (R609) to its junction with Maryborough Hill (L2470). This is an estate road with a single carriageway lane in each direction. It has driveways and grass verges on both sides. It is bounded by residential properties, open green spaces and Douglas Golf course. It's available width varies with a minimum of 16.0m between boundary walls. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes without any private land take. This would require removing grass verges, trees and reducing green spaces This is considered a viable route option for this STC.	Pass
L 1.15	Urban, Local and Residential	Maryborough Hill (L2470) from its junction with Maryborough Woods housing estate to its junction with Maryborough Estate. This has a single carriageway lane in each direction with an additional turning lane at its junction with	Pass

		Maryborough Woods. It has intermittent grass verges on both sides. It is bounded by residential properties . It's available width varies with a minimum of 11.5m between boundary walls. It has no bus lanes. It has an east (out) bound cycle lane. There is 80.0m of west (city) bound cycle lane at its western end. There is potential to widen this link to provide for two bus lanes with private land take and/or bus priority measures. This is considered a viable route option for this STC.	
L 1.16	Urban, Estate and Residential with roadside parking	Liselee Road and Perrier Drive (estate roads) from its junction with Newenham Drive (estate road) to its junction with Rochestown Road (R610). These are estate roads with a single carriageway lane in each direction. It has driveways and roadside parking with no grass verges. It is bounded by residential properties and an open green space. It has a typical available width of 9.8m between boundary walls. It has no bus or cycle lanes. Widening this link to provide for two bus lanes would require substantial private land take and removal of the roadside parking. This is not considered a viable route option for this STC.	Fail
L 1.17	Urban, Regional and Residential	Rochestown Road (R610) from its junction with Maryborough Estate to its junction with Newenham Drive (estate road). This has a single carriageway lane in each direction with an additional turning lane at junctions. It has intermittent grass verges on both sides. It is bounded by residential properties and open green spaces. It's available width varies with a minimum of 13.0m between boundary walls. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back some boundaries, private land take and the removal of trees. It would also require some bus priority measures where widening is not feasible. This is considered a viable route option for this STC.	Pass

L 1.18	Urban, Estate and Residential with roadside parking	Newenham Drive (estate road) from its junction with Rochestown Road (R610) from its junction with Liselee Road (estate road). This estate road has a single carriageway lane in each direction. It has driveways and roadside parking with intermittent grass verges on both sides. It is bounded by residential properties. It's available width varies with a minimum of 11.8m between boundary walls. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes but this would require setting back boundaries, private land take and the removal of trees. This is considered a viable route option for this STC.	Pass
L 1.19	Urban, Estate and Residential with roadside parking	Lime Trees Road and Newenham Drive (estate roads) from the junction with Liselee Road (estate road) to the junction with Maryborough Hill (L2470). This is an estate road with a single carriageway lane in each direction. It has driveway access and has regulated roadside parking on both sides with intermittent grass verges on its eastern/northern side. It is bounded by residential properties and an open space. It has a typical available width of 14.5m between boundary walls. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes, this would require setting back boundaries with some private land take and removal of the roadside parking. This is considered a viable route option for this STC.	Pass
L 1.20	Urban, Regional and Residential	Rochestown Road (R610) from its junction with Newenham Drive (estate road) to the Fingerpost Roundabout. This has a single carriageway lane in each direction with an additional turning lane at junctions. It has no grass verges. It is bounded by residential properties. It's available width varies with a minimum of 8.0m between boundary walls. It has no bus or cycle lanes. Widening this link to provide for two bus lanes would require setting back boundaries, private land take and the removal of trees. It would also require some bus priority measures at locations where widening is not feasible. This is considered a viable route option for this STC.	Pass

L 1.21	Urban, Local and Residential	Maryborough Hill (L2470) from its junction with Maryborough Estate housing estate to the Fingerpost Roundabout. This has a single carriageway lane in each direction with additional turning lanes at the Fingerpost Roundabout. It has intermittent grass verges on its southern side. It is bounded by residential properties and open green space. It's available width varies with a minimum of 13.6m between boundaries at a pinch point. It has a 200m long section of west (city) bound bus lane as it approaches the Fingerpost Roundabout. It has cycle lanes on both sides but citybound cyclists have to merge and share the bus lane. There is potential to widen this link to provide for two bus lanes by setting back boundaries and private land take. A bus priority measure will be required at the pinch point. This is considered a viable route option for this STC.	Pass
L 1.22	Urban and Regional	Carrigaline Road (R609) from its junction with Old Carrigaline Road as far as Ballybrack Woods 300.0m to the south. This has a single carriageway with one lane in each direction with an additional turning lane at its junction with Old Carrigaline Road. It has intermittent grass verges on both sides. It is bounded by residential properties and woodland. It has a minimum available width of 8.2m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes by widening into the wooded area. This is considered a viable route option for this STC.	Pass
L 1.23	Urban and Regional	A future new link road linking Grange Road / Donnybrook Hill (R851) with the Carrigaline Road (R609). This is a 170.0m long new link road proposed under the Douglas Land Use & Transport Strategy (DLUTS 2013) as a key proposal. This new link road will create the opportunity to provide a new route linking strategic areas of Cork Coty and is to include public transport. There is potential to include two bus lanes on this future link. This is considered a viable route option for this STC.	Pass

L 1.24	Urban and Regional	Donnybrook Hill (R851) from its junction with Grange Road (R851) to its junction with Church Road. This has a single carriageway lane in each direction with an additional turning lane at its junctions. It is bounded by residential properties, open green space and woodland. It has a minimum available width of 13.6m between a house and boundary wall at a pinch point close to its junction with Church Road. It has a north (Douglas) bound bus lane shared with cyclists which terminates 100m ahead of its signalised junction with Church Road. There is potential to widen this link to provide for two bus lanes by encroaching into the green spaces and wooded area. A bus priory measure would be required at its junction with Church Road. This is considered a viable route option for this STC.	Pass
L 1.25	Urban and Regional	Carrigaline Road (R609) from its junction with Maryborough Woods Road as far Ballybrack Woods 400.0m to the north. This has a single carriageway lane in each direction with an additional turning lane at its junction with Ardarrig Park housing estate. It is bounded by residential properties and woodland. It has a minimum available width of 8.6m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes, this would require setting back boundaries and private land take. This is considered a viable route option for this STC.	Pass
L 1.26	Urban and Regional	Donnybrook Road (L2464) and Scairt Hill (L2464) from its junction with Grange Road (R851) to its junction with Bracken Court housing estate. This has a single carriageway lane in each direction with an additional turning lane at various junctions. It is bounded by residential properties and open green spaces. It has a minimum available width of 7.8m between boundary walls at a pinch point close to Donnybrook Cottages. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes by encroaching into the green spaces, setting back some boundaries and private land take. A bus priority measure would be required at the pinch point. This is considered a viable route option for this STC.	Pass

5.1.1 Sifting Outcome

The outcome of the sift for all links can be seen in figure below. Links shown in red failed the sift and those in blue passed. All links shown in red have been discounted from any further study.

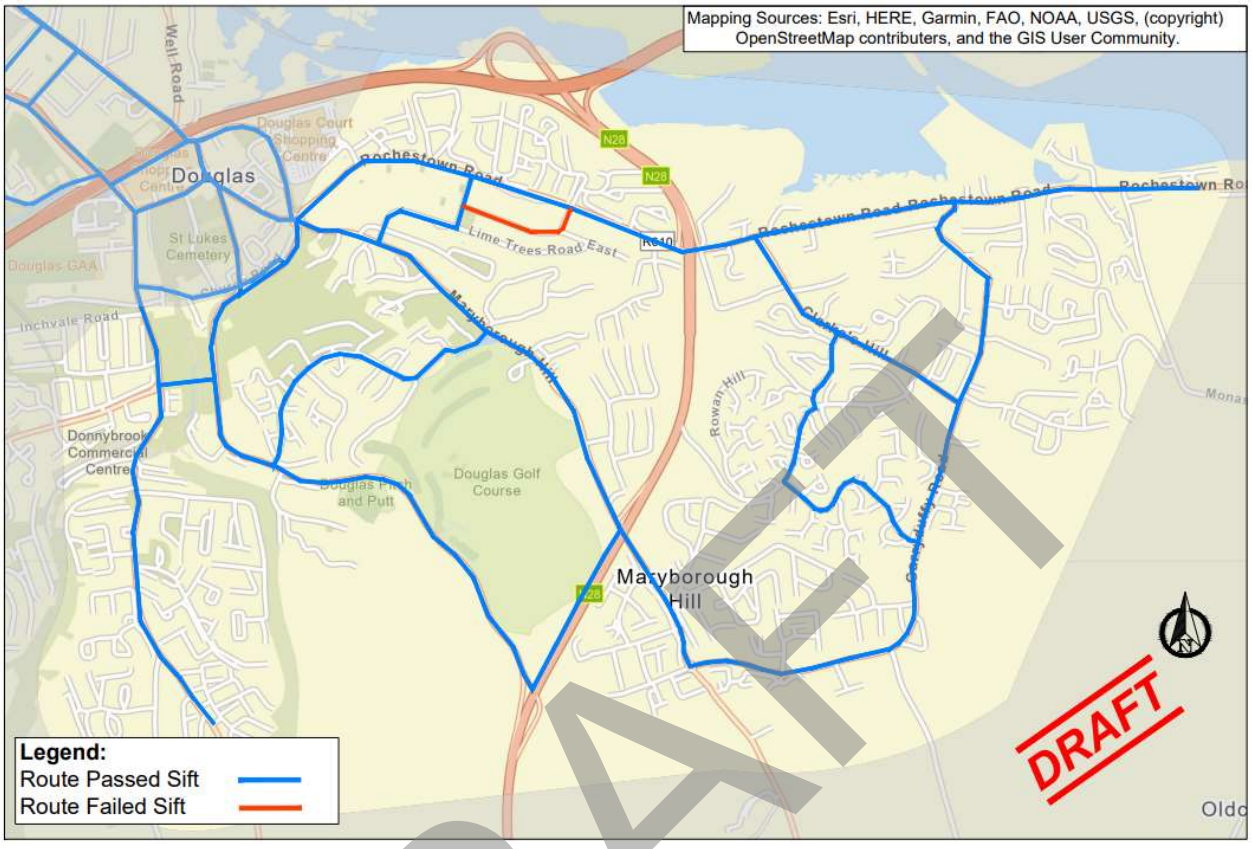


Figure 5-2 Section 1 Sifting Process Step 1

5.1.2 Removal of Disconnected Links

Based on this figure, it was now possible to remove routes that were isolated or dead ends. Resulting in the following where the routes highlighted in red were removed.

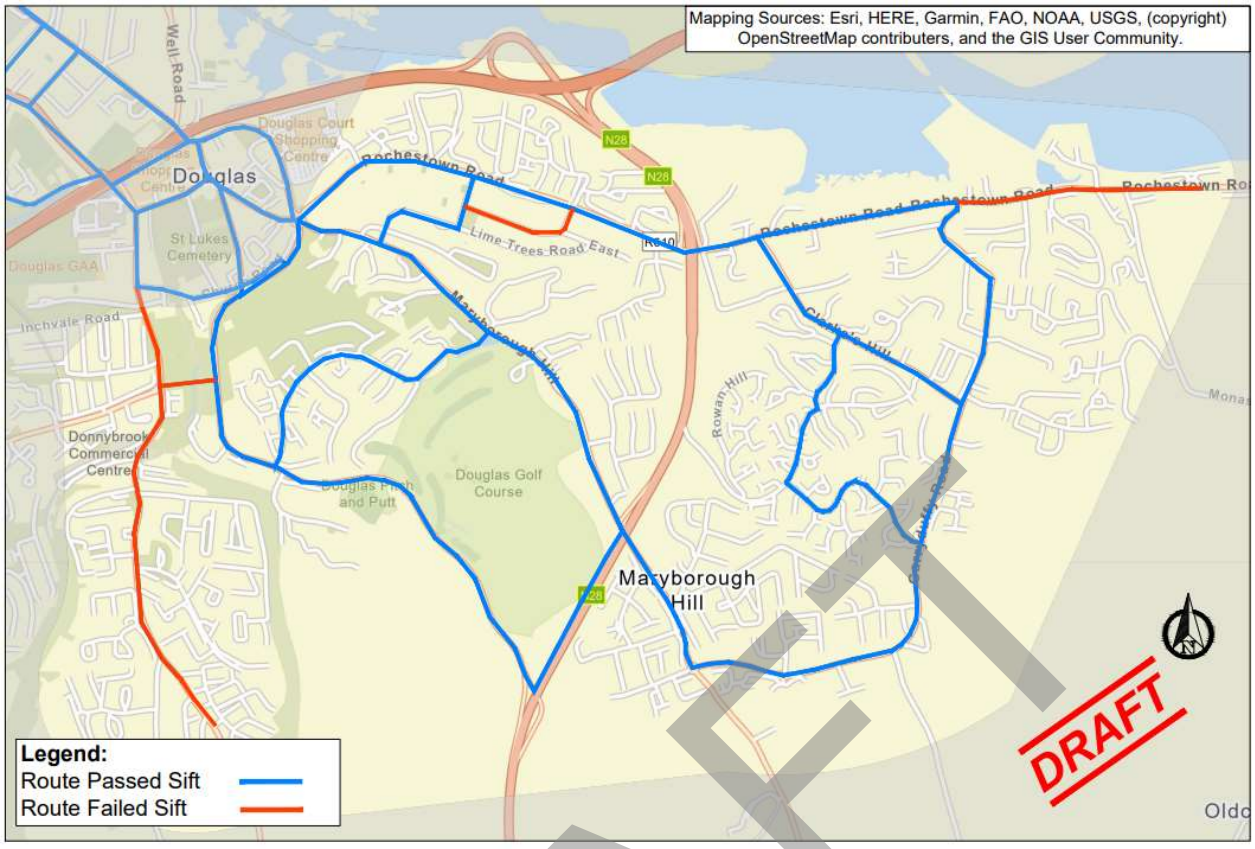


Figure 5-3

5.1.3 Preliminary Route Assessment

A Preliminary Route Assessment process was then performed to identify routes that were circuitous in nature or clearly would perform worse than adjacent routes in an MCA analysis. Routes that were identified as such could then be removed.

A summary of the Preliminary Route Assessment process is presented in Table 5-2 below.

Table 5-2

Road Names	Comments	Map
Newenham Drive and Lime Trees Road.	These links are tightly constrained by private property, including driveways. The road is also used for on street parking by residents. For this reason, it would be more impactful to widen the cross section to include bus lanes and general traffic lanes in both directions when compared to using adjacent routes on Rochestown Road or Maryborough Hill. Using the route would also add additional junctions and turning movements to any possible route options. The adjacent Rochestown Road and Maryborough Hill both have the widths to include dedicated bus lanes and traffic lanes in both directions. They are also more direct, therefore they would be preferable route options. For this reason, Newenham Drive and Lime Trees Road are not considered further.	

The outcome of the Preliminary Route Assessment can be seen in the figure below. The links shown in red have failed those shown in blue have passed.

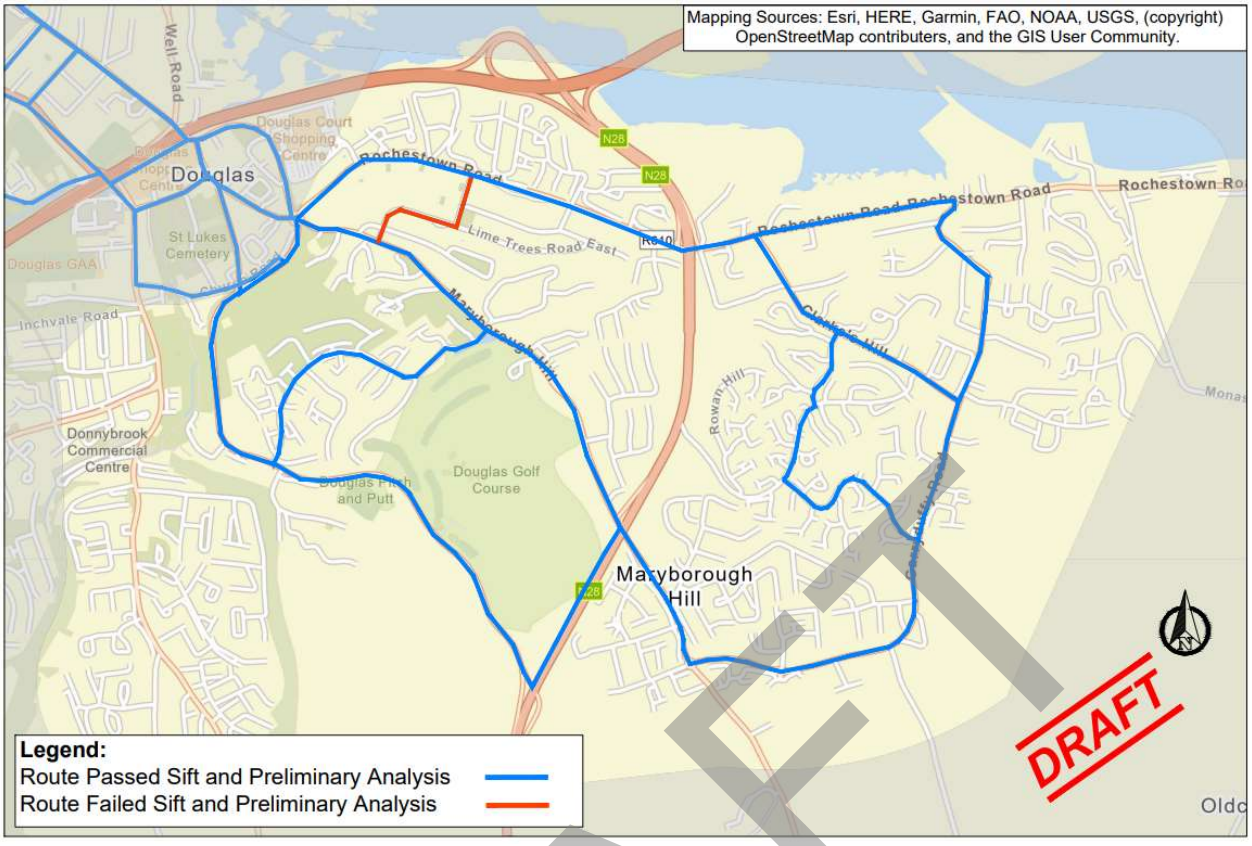


Figure 5-4

5.1.4 Sifting Conclusion – Section 1

The figure below shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

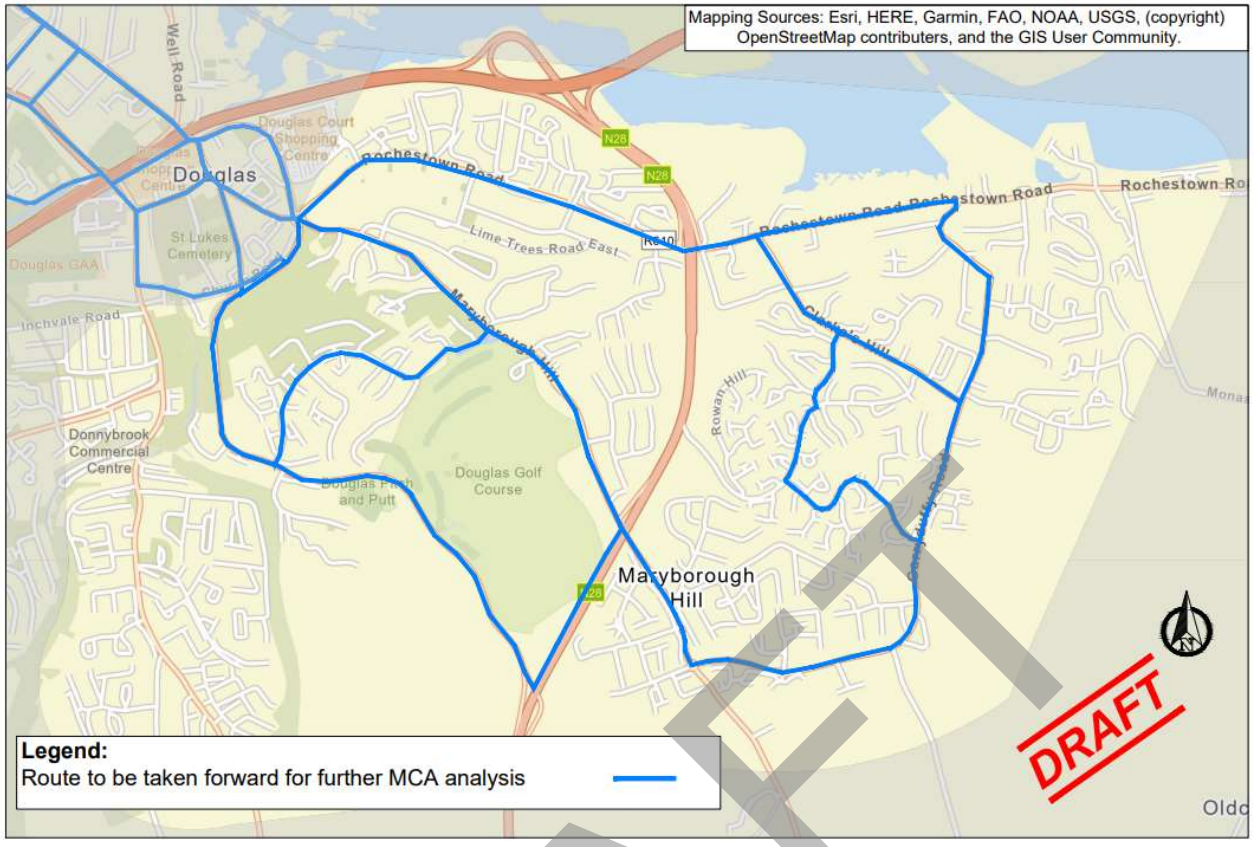


Figure 5-5 Section 1 Route Options Remaining After Stage 1 Assessment

5.2 Section 2 Sifting

This chapter outlines the options development process for Section 2 of the Study Area. All roads within Section 2 of the study area are assessed on a high level for their ability to form part of the STC route. Route options are ruled out at this stage if they can clearly not form part of a STC. The 'spider's web' of potential route options remaining after this initial phase was then progressed to Stage 1 Route Options Assessment ('sifting stage') for further analysis. The links which are subject to sifting are shown in Figure 5-6.

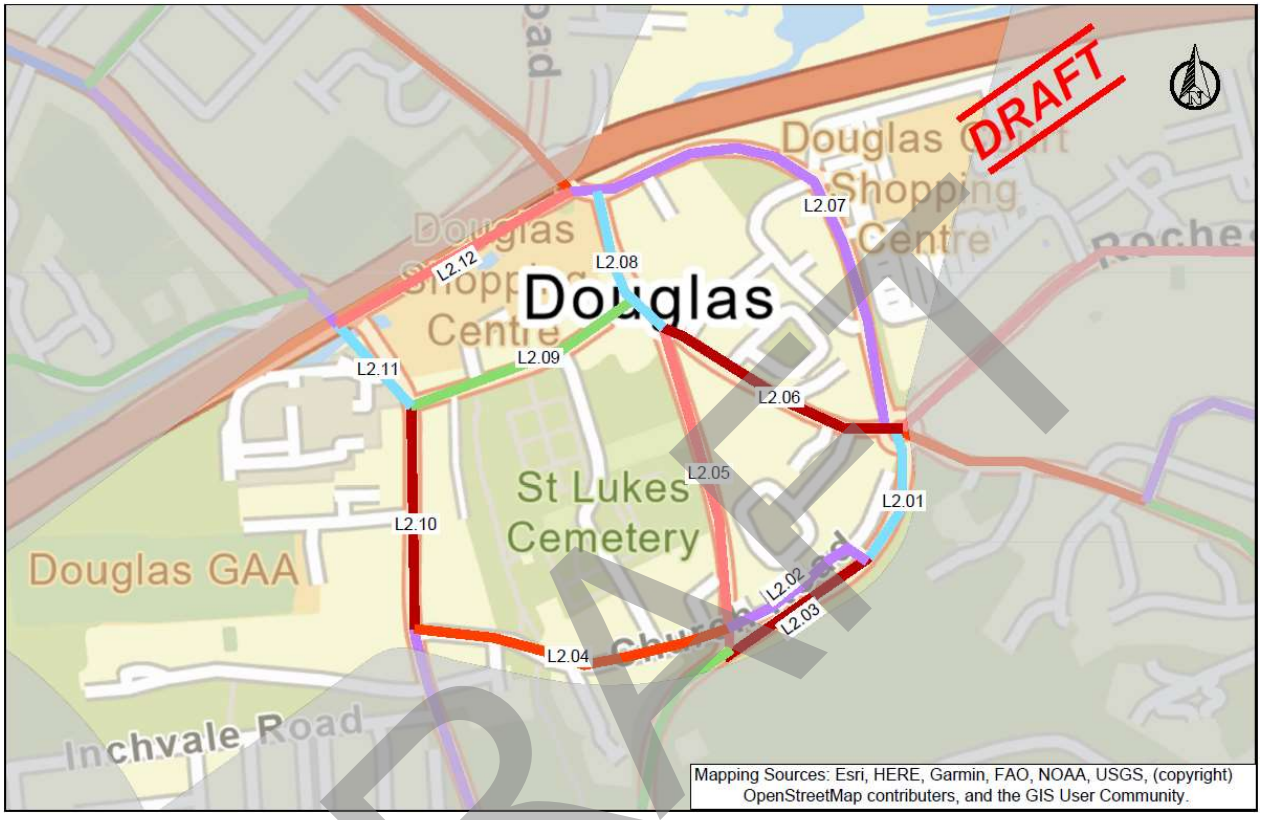


Figure 5-6 Section 2 Route Options

A summary of the Stage 1 route options assessment ('sifting') process for Section 2 is presented below.

Table 5-3 Section 2 Route Option Assessment Stage 1

Link No.	Road Characteristics	Comments	Pass / Fail
L 2.01	Urban and Regional	Carrigaline Road (R609) from the Fingerpost Roundabout to its junction with Church Road. This has a single carriageway lane in each direction with an additional turning lanes at junctions. It is tree lined and bounded by open green space with Independence Park along its eastern boundary. It has a typical available width of circa 30.0m between boundaries. It has no bus or cycle lanes.	Pass

		There is potential to widen this link to provide for two bus lanes without any private land take. This would require removal of trees. This is considered a viable route option for this STC.	
L 2.02	Urban and Residential	Church Road from its junction with Carrigaline Road to the Old Carrigaline Road bridge. This is a single carriageway link road with one lane in each direction. It is bounded to the north by residential properties with driveways and to the south by a retaining wall which retains the green space between it and the higher Carrigaline Road. It has a typical available width of 6.0m between boundaries reduced to 5.4m at the bridge. It has no bus or cycle lanes. There is limited potential to widen this link due to width constraints between boundaries, level differences and the narrow bridge. This is not considered a viable route option for this STC.	Fail
L 2.03	Urban and Regional	Carrigaline Road (R609) from its junction with Church Road to its junction with Old Carrigaline Road. This has a single carriageway with one lane in each direction with an additional turning lane at junctions. It is tree lined and bounded by open green and wooded spaces. It has a typical available width of circa 15.0m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes without any private land take. This would require removal of trees. This is considered a viable route option for this STC.	Pass
L 2.04	Urban and Residential with roadside parking	Church Road from its junction with Donnybrook Hill (R851) to the Old Carrigaline Road bridge. This is a single carriageway link road with one lane in each direction with a flared turning lane at its junction with Donnybrook Hill. It has roadside parking with some driveway access. It is bounded by residential, community, commercial/retail properties and an amenity park. It has a typical available width of 10.5m between boundaries reduced to 5.4m at the bridge. It has no bus or cycle lanes. There is limited potential to widen this link due to width constraints between boundaries, roadside properties, level differences and the narrow bridge.	Fail

		This is not considered a viable route option for this STC.	
L 2.05	Urban with roadside parking	Old Carrigaline Road from its junction with Carrigaline Road (R609) to its junction with East Douglas Street. This is a one-way street carrying north-bound traffic towards Douglas Village. It has regulated staggered roadside parking bays on both sides with a taxi rank at its northern end. It is bounded by residential, office, commercial/retail properties, green space and a graveyard. It has a typical available width of 8.5m between boundaries. It has no bus or cycle lanes. Cycle road marking symbols indicate a shared surface with motorists. Road widening to provide bus lanes is not possible without the removal of all on-street parking, taxi rank and setting back boundaries. The existing graveyard and the level different at the bridge are additional constraints. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 2.06	Urban with roadside parking	East Douglas Street from the Fingerpost Roundabout (R610) to its junction with Old Carrigaline Road. This is a one-way street carrying south-bound traffic away from Douglas Village. It has regulated street parking bays on both sides with car park and driveway access. It is bounded by residential and commercial/retail properties. It has a minimum available width of 10.0m between boundaries. It has no bus or cycle lanes. Road widening to provide bus lanes is not possible without the removal of all on-street parking and setting back boundaries and substantial private land take. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass

L 2.07	Urban and Regional	Douglas Relief Road (R610) from the Fingerpost Roundabout to its junction with East Douglas Street. This road has generally three traffic lanes with a 2+1 split. It is bounded by grass verges with trees, open green spaces and private/commercial car parks. It has a minimum available width of circa 14.0m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for two bus lanes with some setting back of boundaries required and removal of trees. This is considered a viable route option for this STC.	Pass
L 2.08	Urban with roadside parking	East Douglas Street from Douglas Road (R610) to its junction with Old Carrigaline Road. This is a two-way main street with Douglas Village with a lane in each direction. It has regulated street parking bays on both sides. It is bounded by commercial and retail properties with shop fronts. It has a minimum available width of 18.0m between boundaries. It has no bus or cycle lanes. Providing bus lanes is possible within the available width between boundaries and with the removal of all on-street parking. Douglas Land Use and Transport steer has designated this street as a raised shared surface between pedestrians, cyclists, limited and regulated traffic with public transport links. This is considered a viable route option for this STC.	Pass
L 2.09	Urban, Residential with roadside parking	Church Street from its junction with West Douglas Street (R851) to its junction with East Douglas Street. This is a single carriageway link road with one lane in each direction. It has regulated roadside parking bays with driveway access along its northern side. It is bounded by residential, commercial/retail properties one both sides with a green space and a graveyard on its southern side. It has a typical available width of 9.5m between boundaries with a 8.8m wide pinch point at its eastern end. It has no bus or cycle lanes. There is no potential to widen this link to provide for bus lanes due to width constraints between boundaries and the built-up street environment. The existing graveyard is an additional constraint. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass

		As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L 2.10	Urban, Regional, Residential with roadside parking	West Douglas Street (R851) from its junction with Church Road to its junction with Church Street. This is a single carriageway road with one lane in each direction. It has 30m of parallel street parking at its southern end. It is a built-up street bounded by terrace housing on both sides, some converted into small business. It has a minimum available width of 8.5m between boundary walls of building. It has no bus or cycle lanes. There is no potential to widen this link to provide for bus lanes due to width constraints between boundaries and the built street environment. This is not considered a viable route option for this STC.	Fail
L 2.11	Urban, Regional, Retail	West Douglas Street (R851) from its junction with Church Street to its junction with River Walk. This is a 110m long single carriageway road with one lane in each direction. It has a central reserve facilitating turning at junctions. It is a built-up street bounded by shop fronts. It has a minimum available width of 10.3m between boundary walls. It has no bus or cycle lanes. There is no potential to widen this link to provide for bus lanes due to width constraints between boundaries and the built street environment. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 2.12	Urban, Residential with roadside parking	River Walk from its junction with West Douglas Street (R851) to its junction with Douglas Road (R610). This has two lanes of traffic in each direction. It is bounded by along its northern side by a channelled river and the South Ring Road (N40) and along its southern side by the Tesco Shopping Centre. It has a typical available width of 17.5m between river channel wall and the side of the shopping centre building. It has no bus or cycle lanes.	Pass

		There is no potential to widen this link to provide for additional lanes due to the width constraint. It may be possible reduce the number of traffic lanes to provide for one or two bus lanes and/or some bus priority at the junctions. This is considered a viable route option for this STC.	

The outcome of this sifting assessment is shown in Figure 5-7 below.

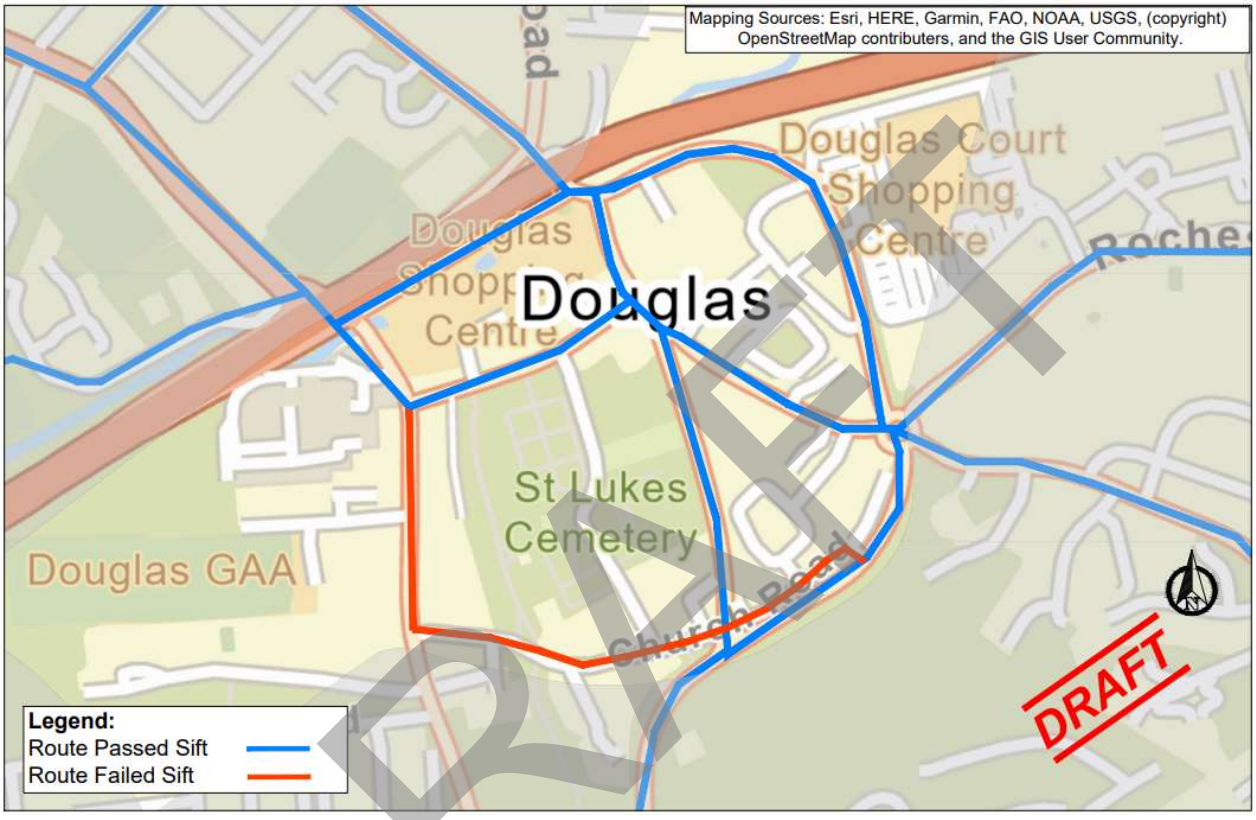


Figure 5-7

5.2.1 Removal of Disconnected Links

There were no dead ends or disconnected links to remove from this post sift spiders web.

5.2.2 Preliminary Route Assessment

A Preliminary Route Assessment process was then performed to identify routes that were circuitous in nature or clearly would perform worse than adjacent routes in an MCA analysis. Routes that were identified as such could then be removed.

No such routes were present in this section of the study area, and for this reason no links were removed in this part of the analysis.

5.2.3 Sifting Conclusion – Section 2

The figure below shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

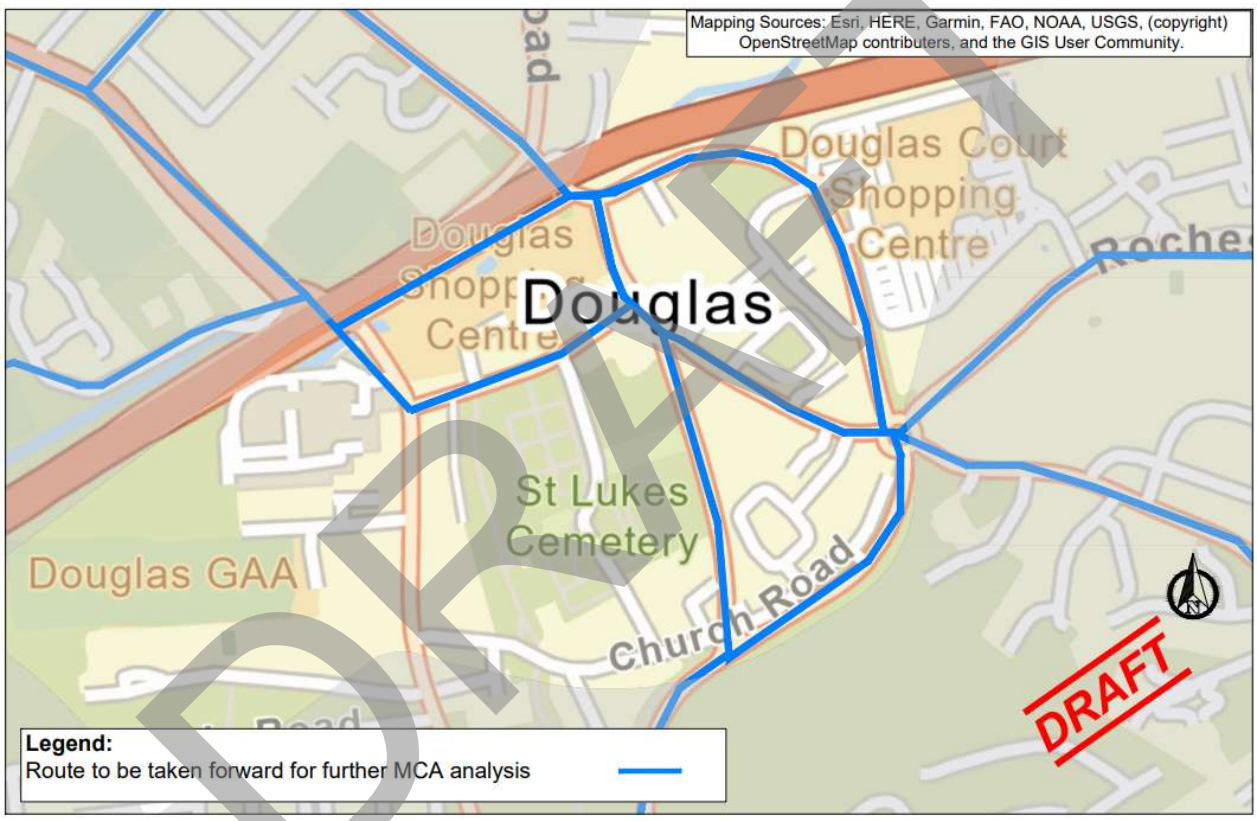


Figure 5-8

5.3 Section 3 Sifting

This chapter outlines the options development process for Section 3 of the Study Area. All roads within Section 3 of the study area are assessed on a high level for their ability to form part of the STC route. Route options are ruled out at this stage if they can clearly not form part of a STC. The 'spider's web' of potential route options remaining after this initial phase was then progressed to Stage 1 Route Options Assessment ('sifting stage') for further analysis. The links which are subject to sifting are shown in Figure 5-9.

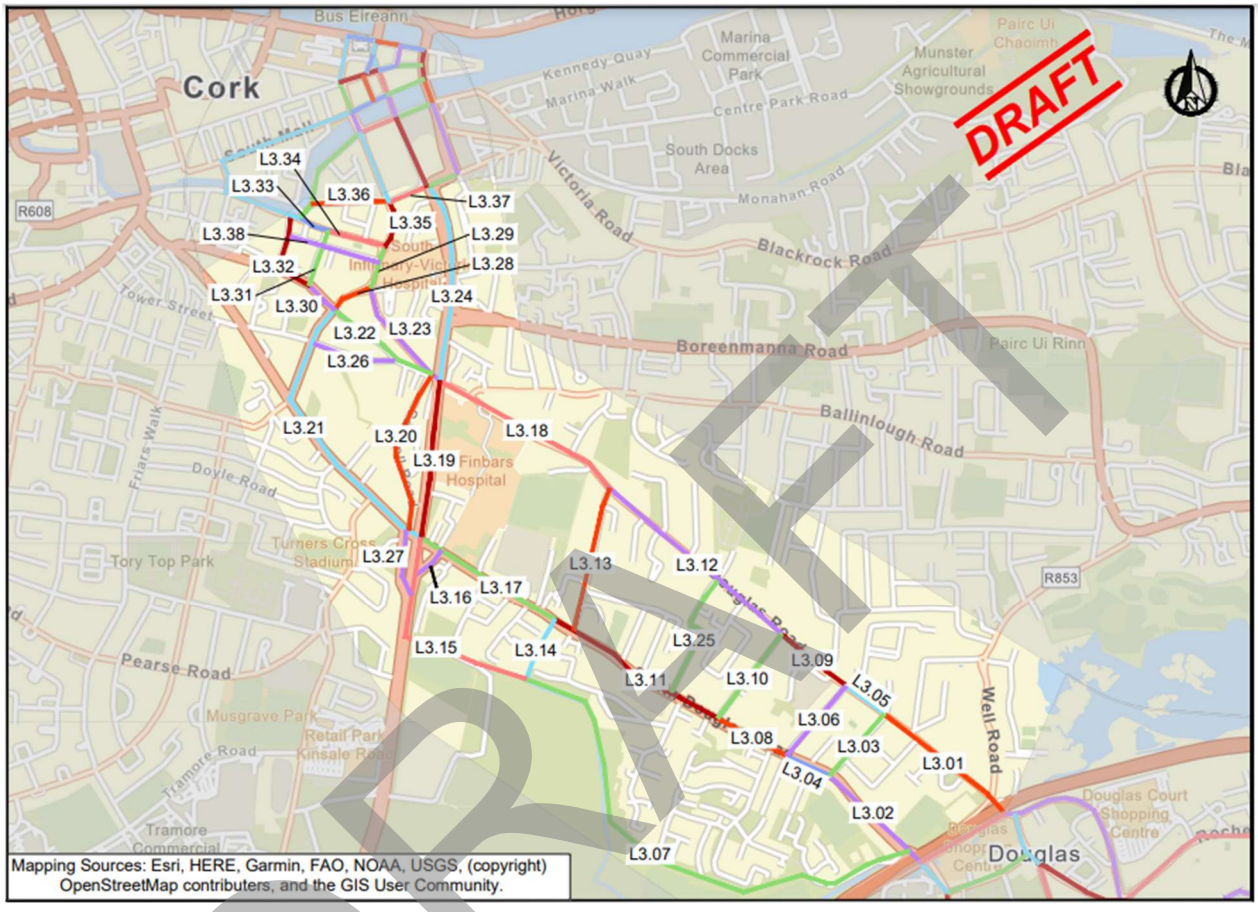


Figure 5-9

A summary of the Stage 1 route options assessment ('sifting') process for Section 3 is presented below.

Table 5-4

Link No.	Road Characteristics	Comments	Pass / Fail
L3.01	Urban, Regional, Residential with street parking	Douglas Road (R610) from the junction with River Walk to its junction with Belvedere Lawn. This road has a single carriageway with one lane in each direction and an additional turning lane at its junction with River Walk. It has driveway access and some on-street parking. It is bounded predominantly by dwellings with some commercial businesses and open green space. It has a minimum available width of circa 10.0m between front garden walls. It has no bus lanes. It has an east (out) bound cycle lane which changes to an advisory cycle lanes along a narrow section. There is no west (city) bound lane. There is potential to widen this link to provide for two bus lanes, this would require setting back of boundaries and private land take. This is considered a viable route option for this STC.	Pass
L3.02	Urban, Regional, Residential with street parking	South Douglas Road (R851) from the junction with River Walk to its junction with Belvedere Lawn. This road has a single carriageway with one lane in each direction. If has driveway access and some on-street parking. It is bounded predominantly by dwellings with some commercial businesses and green space. It has a minimum available width of circa 9.3m between boundary walls. The carriageway width under the South Ring Road (N40) bridge is constrained at 10.0m between columns. It has no bus lanes. It has a west (city) bound cycle lane and no east (out) bound lane. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.03	Urban, Residential with roadside parking	Belvedere Lawn from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has unregulated roadside parking and driveway access with speed ramps. It is bounded by	Pass

		residential front gardens on both sides. It has a typical available width of 8.6m between front garden walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L 3.04	Urban, Regional, Residential	South Douglas Road (R851) from the junction with Tramore Lawn to its junction with Belvedere Lawn. This road has a single carriageway with one lane in each direction. If has driveway access. It is bounded by residential gardens and some green space. It has a typical available width of circa 9.0m between boundary walls. It has no bus lanes. It has an west (city) bound cycle lane and no east (out) bound lane. There is potential to widen this link to provide bus lanes but this would require setting back of boundaries and private land take. Some traffic restrictions may also be required. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.05	Urban, Regional, Residential	Douglas Road (R610) from the junction with Tramore Lawn to its junction with Belvedere Lawn. This road has a single carriageway with one lane in each direction. If has driveway access. It is bounded by dwellings, a Maxol service station and some green space. It has a typical available width of circa 13.0m between boundary walls with a 11.6m wide pinch point at its western end. It has no bus lanes. It has an east (out) bound cycle lane and no west (city) bound lane. There is potential to widen this link to provide bus lanes but this would require setting back of boundaries and private land take. This is considered a viable route option for this STC.	Pass

L 3.06	Urban, Residential with roadside parking	Tramore Lawn from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has unregulated roadside parking and driveway access with speed ramps. It is bounded by residential front gardens on both sides. It has a typical available width of 9.7m between front garden walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.07	Amenity Area	Willow Park, along the northern boundary of Nemo Rangers GAA Club, the northern boundary of Tramore Valley Park from the junction South Douglas Road (R851) at the N40 bridge to the south-eastern corner of Trabeg ESB Substation. This link would require widening Willow Park estate road and the construction of a new bus corridor within green areas and along a river along the northern boundary of Nemo Rangers and Tramore Valley Park. This route would require considerable land take, cause severe disruption to existing walkways and bog land and have a negative impact environmentally and require the removal of trees. This is not considered a viable route option for this STC.	Fail
L 3.08	Urban, Regional, Residential with roadside parking	South Douglas Road (R851) from the junction with Tramore Lawn to its junction with Rathmore Lawn. This road has a single carriageway with one lane in each direction. If has roadside parking and driveway access. It has a wide hard should along most of its northern side. It is bounded by residential gardens and a large field. It has a typical available width of circa 21.0m between boundary walls with a 10.5m wide pinch point at its eastern end. It has no bus lanes. It has an west (city) bound cycle lane and no east (out) bound lane. There is potential to widen this link to provide bus lanes but this would require setting back of a boundary at its eastern end. This is considered a viable route option for this STC.	Pass

L 3.09	Urban, Regional, Residential	Douglas Road (R610) from the junction with Tramore Lawn to its junction with Rathmore Lawn. This road has a single carriageway with one lane in each direction with additional turning lane at its junction with Eglantine Park. If has driveway access. It is bounded by dwellings and by Johnson & Perrott car dealership. It has a typical available width of circa 12.5m between boundary walls with a 9.2m wide pinch point at its eastern end. It has no bus lanes. It has an east (out) bound cycle lane and no west (city) bound lane. There is potential to widen this link to provide bus lanes but this would require setting back of boundaries and private land take. This is considered a viable route option for this STC.	Pass
L 3.10	Urban, Residential with roadside parking	Rathmore Lawn from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has unregulated roadside parking and driveway access with speed ramps. It is bounded by residential front gardens on both sides. It has a typical available width of 9.6m between front garden walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.11	Urban, Regional, Residential with roadside parking	South Douglas Road (R851) from the junction with Rathmore Lawn to a bus stop (Stop No. 240861) located 63.0m west of the junction with Cross Douglas Road This road has a single carriageway with one lane in each direction. If has some unregulated roadside parking and driveway access. It is bounded by residential gardens and a Centra Retail Park. It has a typical available width of circa 10.6m between boundary walls with a 7.3m wide pinch point at its eastern end. It has no bus lanes. It has an intermittent west (city) bound cycle lane changing to a shared surface with motorists along two narrow sections. There is no east (out) bound lane.	Pass

		There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L 3.12	Urban, Regional, Residential with roadside parking	Douglas Road (R610) from the junction with Cross Douglas Road to its junction with Rathmore Lawn. This road has a single carriageway with one lane in each direction. If has some unregulated roadside parking and driveway access. It is bounded by residential gardens and a Centra Retail Park. It has a typical available width of circa 10.6m between boundary walls with a 7.3m wide pinch point at its eastern end. It has no bus lanes. It has an intermittent west (city) bound cycle lane changing to a shared surface with motorists along two narrow sections. There is no east (out) bound lane. There is potential to widen this link to provide bus lanes but this would require setting back of a boundary and may also require some bus priority measures. This is considered a viable route option for this STC.	Pass
L 3.13	Urban, Residential with roadside parking	Cross Douglas Road from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has unregulated roadside parking and driveway access. It is bounded by residential front gardens on both sides. It has a typical available width of 7.2m between front garden walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass

L 3.14	Green Space	New bus corridor from the south-eastern corner of Trabeg ESB Substation to South Douglas Road (R851). This link would require the construction of a new 200.0m long bus corridor within private green space and a site / garden. Creating a new junction with South Douglas Road, 63.0m west of the junction with Cross Douglas Road. This route would require land take and the relocation of a ESB pylon. This is considered a viable route option for this STC.	Pass
L 3.15	Amenity Site	New bus corridor from the south-eastern corner of Trabeg ESB Substation to South City Link Road (N27). This link would require the construction of a new 380.0m long bus corridor within a 145.0m long section of green space of Tramore Valley Park and the along and access road to Cork BMX Track and along the boundary between the ESB Pitch and Putt Club and a Cork City Council storage yard and a junction with the N27. This route would require private land take and a new left-turn only junction or a new grade separated interchange with the N27. This is considered a viable route option for this STC.	Pass
L 3.16	Urban, National Slip Road	South City Link Road (N27) southbound slip road for Turners Cross from the southbound lane of the South Link Road (N27) to its junction with South Douglas Road (R851). This is a single carriageway slip road with one lane in each direction. It allows left turn movements only to/from the N27. It has grass verges on both side and a wide hedgerow along its eastern side. It is bounded by a single dwelling to the west and by Lios Na Gréinne estate road to the east. It has a typical available width of 28.6m between front garden walls. It has no bus or cycle lanes. There is potential to widen this link to provide for bus lanes without any private and take on its own would provide access to / from the N27. It could need to be paired with the eastbound slip road to cater for all movements. This is considered a viable route option for this STC.	Pass
L 3.17	Urban, Regional, Residential with roadside parking	South Douglas Road (R851) from its junction with Cross Douglas Road to the South City Link Road (N27) bridge. This road has a single carriageway with one lane in each direction with additional turning lanes at its junction with the N27 south-bound slip road. If has some roadside parking and driveway access. It is bounded by residential	Pass

		properties and a carpark with green space. It has a minimum available width of 8.8m. It has a shorth 100.0m long west (city) bound bus lane at the junction with the N27 slip road which changes to a cycle lane on its approach to the N27 bridge. It has no other bus or cycle lanes. There is potential to widen this link to provide bus lanes, this would require setting back of a boundary and may also require some bus priority measures. The available width at the N27 bridge is circa 11.7m. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L 3.18	Urban, Regional, Residential with roadside parking	Douglas Road (R610) from the junction with Cross Douglas Road to the South City Link Road (N27) bridge. This road has a single carriageway with one lane in each direction with additional turning lanes at its junction with Bellair Estate. If has some roadside parking and driveway access. It is bounded by residential properties and some green spaces. It has a typical available width of circa 10.0m between boundary walls and 8.0m wide at certain pinch points. It has no bus lanes. It has an intermittent west (city) bound cycle lane changing to a shared surface with motorists along two narrow sections. There is no east (out) bound lane. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.19	Urban, National	South City Link Road (N27) from its bridge with Douglas Road (R610) to its bridge with South Douglas Road (R851). This road has a dual carriageway with two lanes in each direction with additional turning lanes at its junction with Bellair Estate. It has narrow 1.0m wide verges and raised	Pass

		median with no hard shoulders. It is bounded by residential properties and St Finbarr's Hospital along its eastern boundary. some green spaces. It has a typical available width of circa 17.0m between boundary walls. It has no bus or cycle lanes. There is no potential to widen this link to provide bus lanes due to the width constraints. It may be possible to reallocate two of the four traffic lanes as bus lanes. This is considered a viable route option for this STC.	
L 3.20	Urban, Residential with roadside parking	Capwell Road from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has regulated roadside parking and driveway access with speed ramps. It is bounded by residential front gardens on both sides. It has a typical available width of 8.8m between front garden walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.21	Urban, Regional, Residential with roadside parking	South Douglas Road (R851), Evergreen Road (R851) and Summerhill South from the South City Link Road (N27) bridge to the junction with High Street. This road has a single carriageway with one lane in each direction with additional turning lanes at junctions. Evergreen Road has roadside parking and some driveway access. The entire link is bounded by residential properties. Bus Éireann has a bus depot and its Cork headquarters on Summerhill South. It has a typical available width of 14.0m. There is a south (out) bound bus lane on Summerhill South shared with cyclists which ends at the bus depot. There are no other bus lanes. There is a 100.0m long section of north (city) bound cycle lane on South Douglas Road and a north (city) bound cycle lane on Summerhill South. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route	Pass

		options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L 3.22	Urban, Residential with street parking	High Street from the junction Douglas Road (R610) to its junction with Langford Row. This road has a single carriageway with one lane in each direction. It has street parking. It is bounded by terrace housing. It has a typical available width of circa 9.0m to 9.5m between front house walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between houses. This is not considered a viable route option for this STC.	Fail
L 3.23	Urban, Regional, Residential with street parking	Southern Road (R610) from the junction Douglas Road (R610) to its junction with Langford Row. This road has a single carriageway with one lane in each direction. It is bounded by front gardens, many of which are raised higher than the road surface. It has a typical available width of circa 11.3m between boundary walls. It has no bus lanes. It has a south (out) bound cycle lane and a 35.0m long north (city) bound cycle lane on its approach to the junction with Langford Row. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L 3.24	Urban, National	South City Link Road (N27) from its bridge with Douglas Road (R610) to its junction with Albert Street (N27). This road has a dual carriageway with two lanes in each direction with additional turning lane at its junction with Albert Street. It has narrow 1.0m wide verges and raised median with no hard shoulders. It is bounded by residential properties south of Pld Blackrock Road and commercial properties with carpark north of Old Black Rock Road. It has a typical available width of circa 17.0m between boundary walls. It has no bus or cycle lanes.	Pass

		There is limited potential to widen this link to provide bus lanes due to the width constraints. It may be possible to allocate two of the four traffic as bus lanes. This is considered a viable route option for this STC.	
L 3.25	Urban, Residential with roadside parking	Rosebank from its junction with Douglas Road (R610) to its junction with South Douglas Road (R851). This is a single carriageway estate link road with one lane in each direction. It has unregulated roadside parking and driveway access with speed ramps. It is bounded by residential front gardens on both sides. It has a typical available width of 9.1m between front garden walls. There are 2 tight 90 degree turns close to each other in the middle of the link. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between boundaries, and the tight turns are not suitable for a bus corridor. This is not considered a viable route option for this STC.	Fail
L 3.26	Urban, Residential with street parking	Windmill Road from the junction with High Street to its junction with Summerhill Street. This road has a single carriageway with one lane for traffic in one direction only. It has street parking. It is bounded by terrace housing. It has a typical available width of circa 7m between front house walls. It has no bus or cycle lanes. There is limited potential to widen this link to provide for bus lanes due to width constraints between houses. This is not considered a viable route option for this STC.	Fail
L 3.27	Urban, National Slip Road	South City Link Road (N27) northbound slip road for Turners Cross from the northbound lane of the South Link Road (N27) to its junction with South Douglas Road (R851). This is a single carriageway slip road with one lane in each direction. It allows right turn movements only to/from the N27. It has grass verges on both side and a wide. It is bounded by private gardens / land on either side. It has a typical available width of 8 - 14m between boundaries. It has no bus or cycle lanes. There is potential to widen this link to provide for bus lanes with max 3m of private land take to provide access to / from the N27. It could need to be paired with the westbound slip road to cater for all movements. This is considered a viable route option for this STC.	Pass

L3.28	Urban, Regional, Residential with roadside parking	Langford Row from the junction with High Street to the junction with Southern Road (R610). This road has a single carriageway with one lane in each direction with additional turning lanes at junctions. It has a typical available width of 17.0m. There is a south (out) bound bus lane shared with cyclists. There are no other bus lanes. There is potential to reallocate road space to provide bus lanes on this link to provide bus lanes, this could also require setting back some boundary walls and/or some traffic restrictions. This is considered a viable route option for this STC.	Pass
L3.29	Urban, Regional and Residential	Infirmary Road (R610) from its junction with Langford Row to the junction with South Terrace (R610). This section has one city-bound and two out-bound lanes for general traffic. It is bound by the South Infirmary Hospital along its eastern side and walls to a private lot along its western side. It has 40m length of perpendicular road-side parking, no verges and has a typical available width of 24.0m. There are no bus lanes. It a cycle lanes in both directions. There is potential to install bus lanes by reallocating road space and/or removing on-street parking. This is considered a viable route option for this STC.	Pass
L3.30	Urban, Residential and Commercial with street parking	Douglas Street from its junction with Langford Row to the junction with Rutland Street. This is a single carriageway street with traffic in both directions with roadside parking. It is bounded by houses and a small car park. It has a minimum available width of 10.3m between properties. There are no bus or cycle lanes. There is limited potential to provide bus lanes along this link due to lack of space between buildings and on-street residential parking. This is not considered a viable route option for this STC.	Fail
L3.31	Urban	Rutland Street from its junction with South Terrace to the junction with Douglas Street. This is a two-way street with one lane in each direction. It is bounded by buildings for most of its length. It has a typical available width between boundary walls of 7.0m. It has no bus or cycle lanes.	Fail

		There is limited potential to provide bus lanes along this link due to lack of space between buildings. This is considered a viable route option for this STC.	
L3.32	Urban, Residential and Commercial with street parking	Douglas Street and White Street from its junction with George's Quay to the junction with Rutland Street. Both are two-way streets with one lane in each direction. This link is bounded by buildings for most of its length. It has a typical available width between building walls of 7.0m on Douglas Street and 7.5m on White street. Both streets contain parking. It has no bus or cycle lanes. There is limited potential to provide bus lanes along this link due to lack of space between buildings and on-street residential parking. This is not considered a viable route option for this STC.	Fail
L3.33	Urban & Commercial with street parking	South Terrace and Georges Quay from its junction with White Street to the junction with Rutland Street. Both streets are one-way streets with two westbound traffic lanes. This section of South Terrace is aligned with trees along its northern side and street parking along its southern side. George's Quay is bounded by the River Lee along its northern side. It has a minimum available width of 12.0m at a pinch point. This link has no bus lane. There is a westbound cycle lane and no eastbound. There is potential to install one or two bus lanes along this link without setting back boundaries. This would require reducing the number of traffic lanes from two to one and/or removing parking or trees. This is considered a viable route option for this STC.	Pass
L3.34	Urban & Commercial	South Terrace from its junction with Anglesea Street to the junction with Rutland Street. This is a one-way street with two westbound traffic lanes. It is aligned on both side with trees. It has a typical available width between boundaries of 17.0m. It has an westbound bus lane shared with cyclists. There is no eastbound cycle lane. There is potential to install a second bus lane along this link without setting back boundaries. This would require reducing the number of traffic lanes from two to one or removing trees. This is considered a viable route option for this STC.	Pass

L3.35	Urban & Commercial with street parking	Anglesea Street from its junction with South Terrace to the junction with Copley Street. This is a one-way street with two southbound lanes and addition left turn lane at its junction with South Terrace. It has street parking with no verges. It has a typical available width between boundaries of 21.0m. There are no bus lanes. It has a two-way cycle track along its western side. There is potential to install two bus lanes along this link without setting back boundaries and any private land take. This would require removing on-street parking. This is considered a viable route option for this STC.	Pass
L3.36	Urban & Commercial with street parking	Copley Street from its junction with Anglesea Street to its junction with Union Quay. This is a 2-way street which varies between having 1 and 2 lanes of traffic in either direction. There are footpaths the length of the street and there is on-street parking along the north side and 50% of the south side of the carriageway. At its narrowest there is 13m between boundaries, with the boundaries being private land and private property. There are no bus lanes or cycle lanes along this route. There is potential to widen the carriageway to install 2-way bus lanes with significant private land take along this link. No properties would need to be directly affected. This is considered a viable route option for this STC.	Pass
L3.37		See Route One City Centre Section L2.67	
L3.38	Urban	Sawmill Street from its junction with Anglesea Street to the junction with White Street. This is a two-way street with one lane in each direction. It is used for unregulated on street parking along its length. It is bounded by buildings for most of its length. It has a typical available width between boundary walls of 6.5m. It has no bus or cycle lanes. There is limited potential to provide bus lanes along this link due to lack of space between buildings. This is not considered a viable route option for this STC.	Fail

The outcome of this sifting assessment is shown in the figure below.

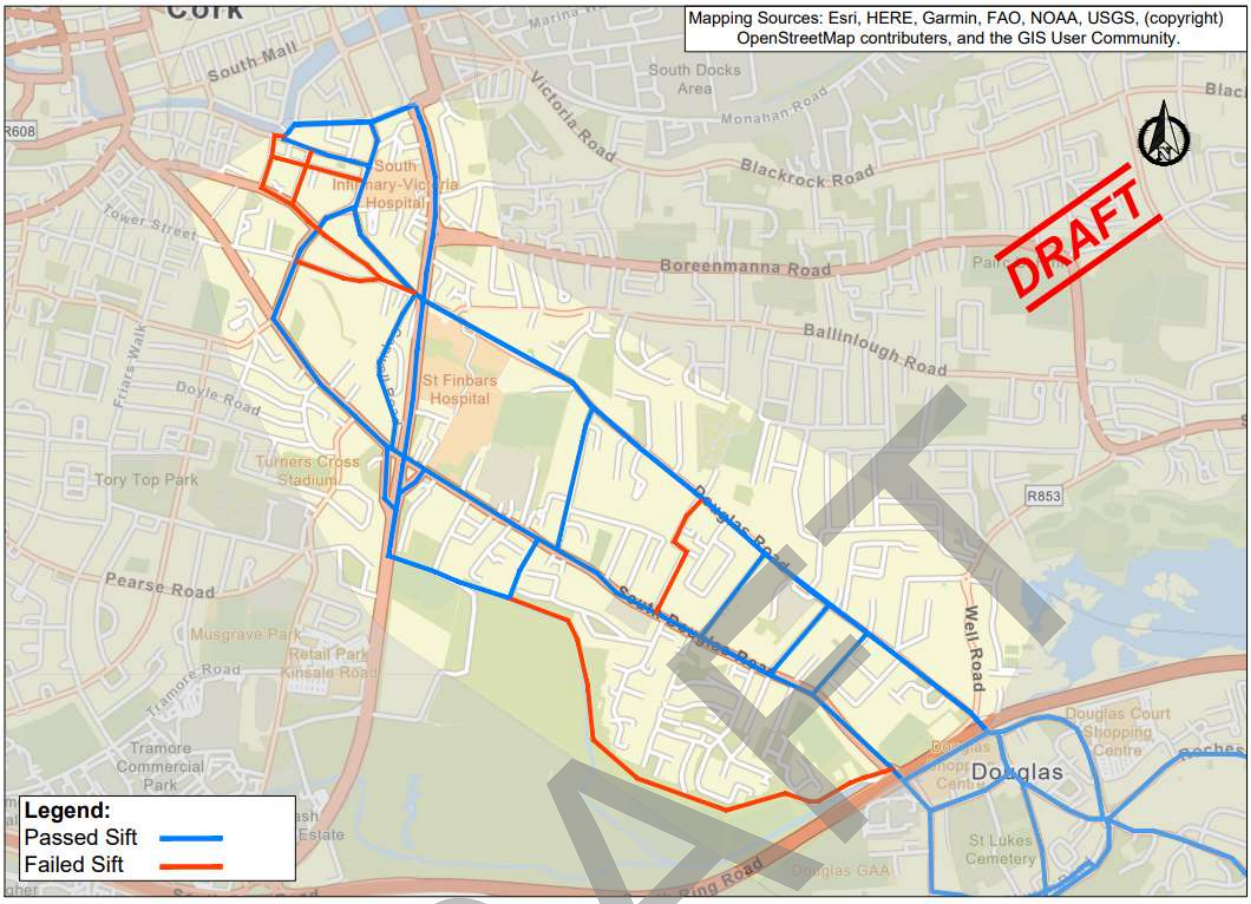


Figure 5-10

5.3.1 Removal of Disconnected Links

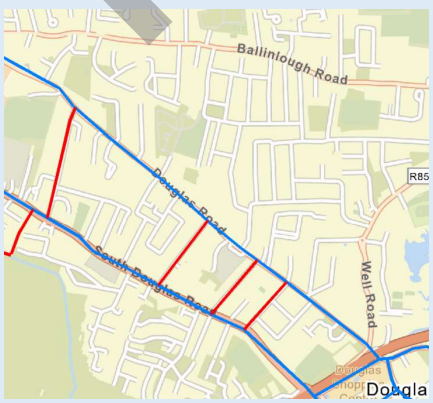
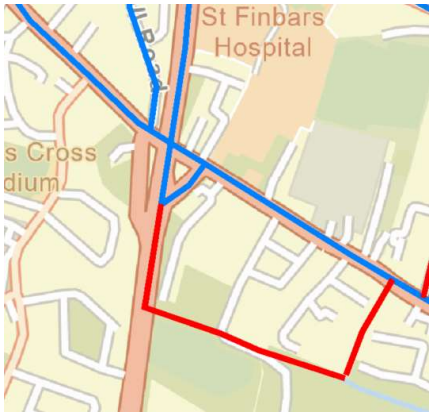
Based on this figure, it was now possible to identify any routes that were isolated or dead ends. No such routes were identified in this section so no changes were made to the spiders web.

5.3.2 Preliminary Route Assessment

A Preliminary Route Assessment process was then performed to identify routes that were circuitous in nature or clearly would perform worse than adjacent routes in an MCA analysis. Routes that were identified as such could then be removed.

A summary of the Preliminary Route Assessment process is presented in the table below

Table 5-5 Preliminary Route Assessment Section 3

Road Names	Comments	Map
Cross Douglas Road, Rhodaville Estate, Tramore Lawn, Belvedere Lawn	These 4 routes link between Douglas Road and South Douglas Road. They are all tightly constrained by private property, used for on street parking by residents and it would not be possible to achieve the widths on them to provide 2 way traffic lanes and 2 way bus lanes. This means traffic management would have to be used or the bus route split with different inbound and outbound bus routes. Any route that would use one of these links instead of either continuing straight down Douglas Road or South Douglas Road would be have more junctions and turning movements as a result. Furthermore, it would mean that the negative impacts of the bus route would be felt on both South Douglas Road and Douglas Road, whereas if the route was to not use these links the impacts would be isolated to Douglas Road or South Douglas Road. For these reasons, these links are not considered further.	
New Link between South Douglas Road and South Link Road	This link uses a road which is circuitous in nature and would lead to longer journey times when compared to the more direct adjacent option South Douglas Road. This route would also require buses to pass through a higher number of junctions and make more turning movements. For these reasons, this route option is not considered further.	

South Terrace, Union Quay, Copley Street,	All route options using these roads have routes which are circuitous in nature and would lead to longer journey times when compared to the more direct adjacent options of Anglesea Street, Eglington Street and South Link Road. These routes would also require buses to pass through a higher number of junctions and make more turning movements. For these reasons, these route options are not considered further.	

The outcome of the Preliminary Route Assessment can be seen in Figure 5-11 below. The links shown in red have failed those shown in blue have passed.

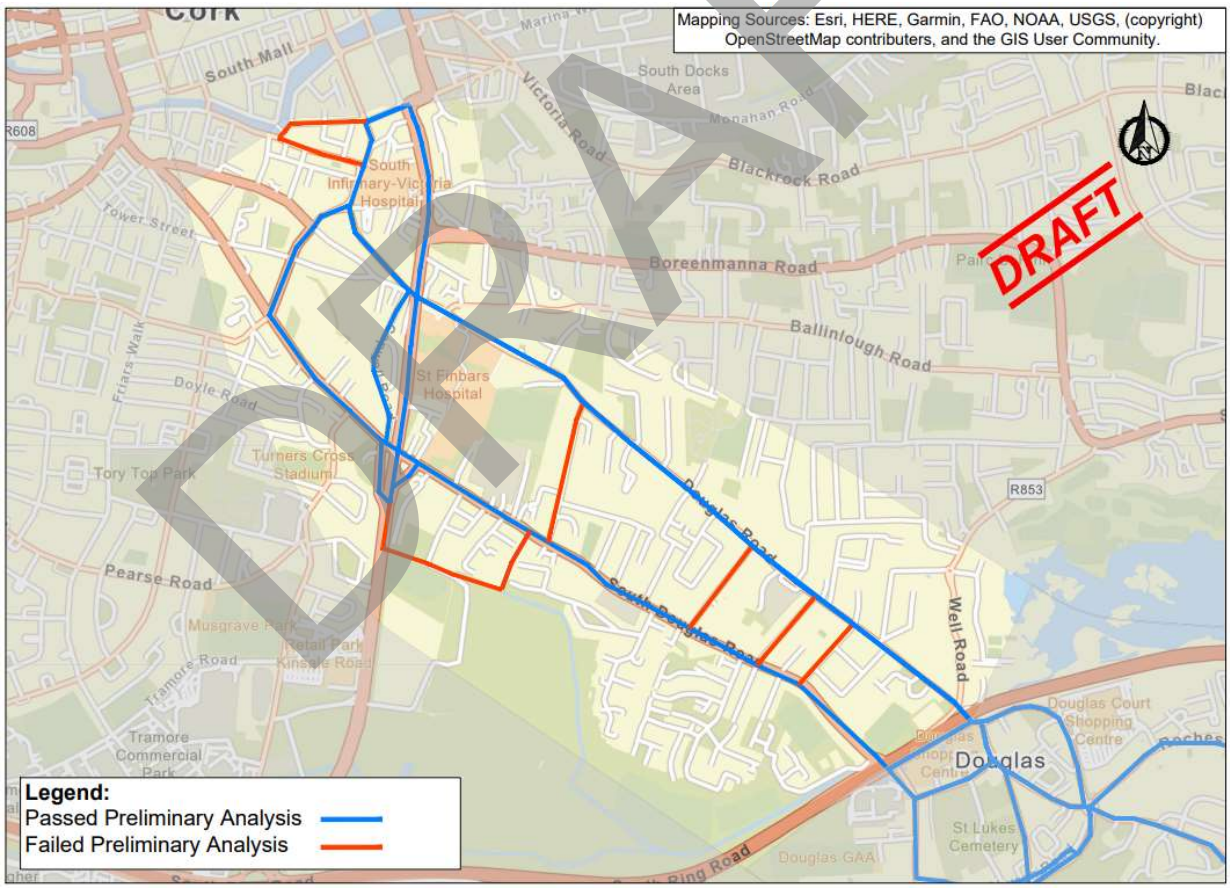


Figure 5-11

5.3.3 Sifting Conclusion – Section 3

The figure below shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

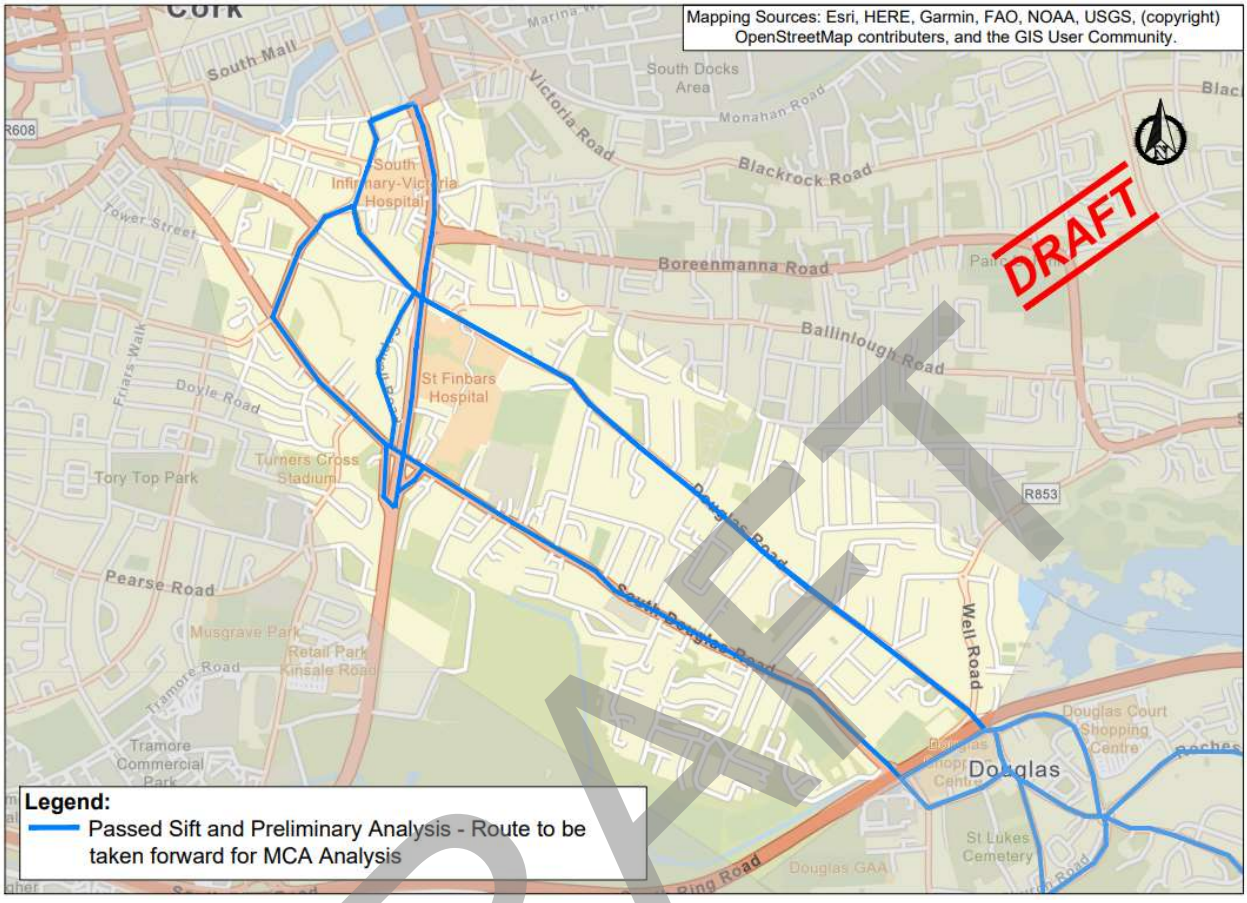


Figure 5-12

5.4 Overall Sifting Outcome for Sections 1 – 3

Figure 5-13 below shows the "spiders web" of all route options considered.

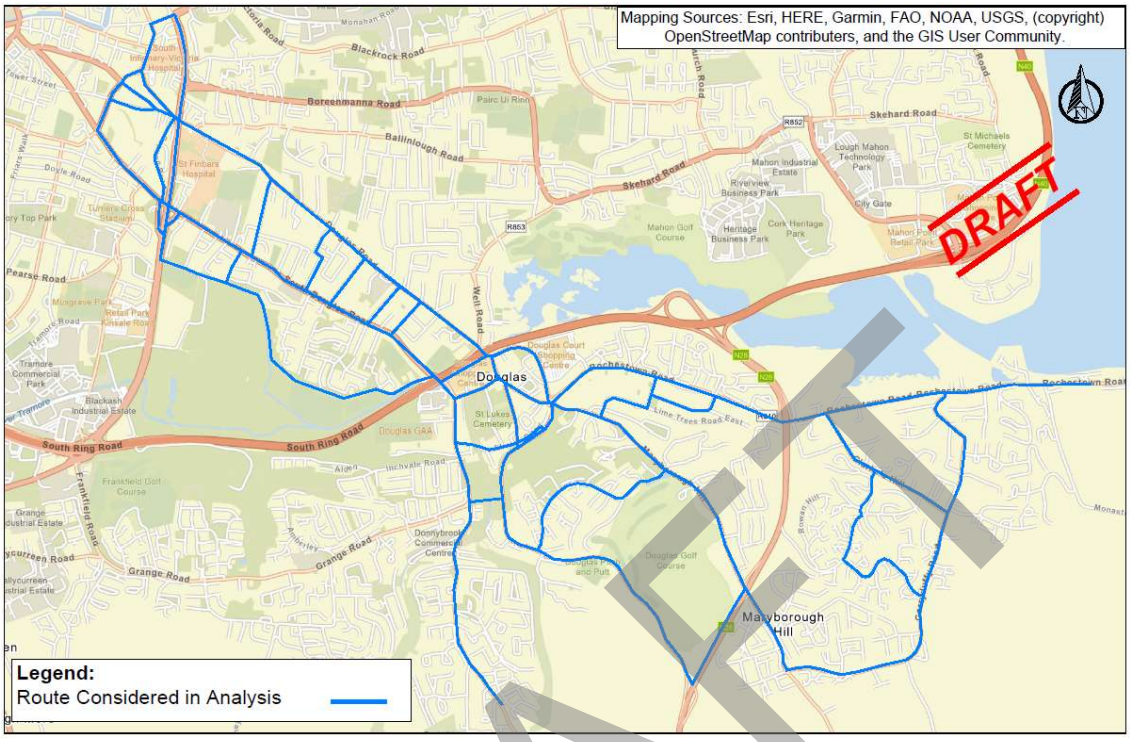


Figure 5-13

Figure 5-14 below shows the overall spiders web of options for the full study area post sifting.

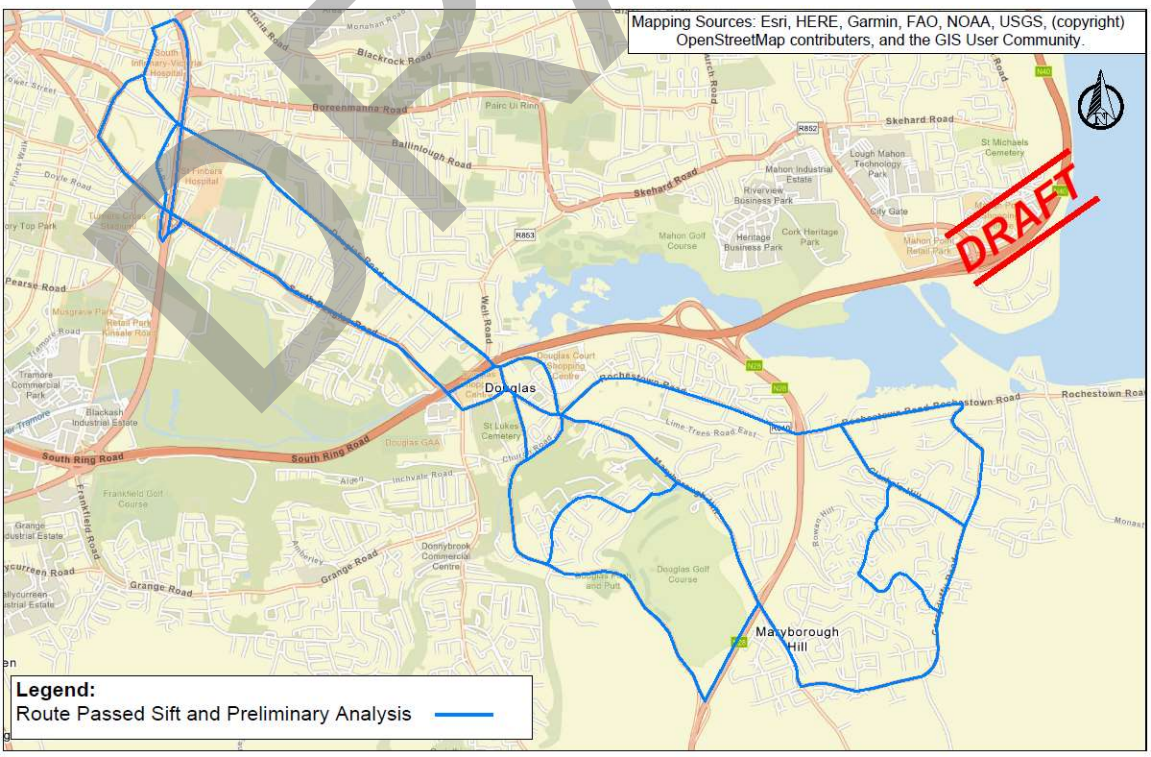


Figure 5-14

6. Stage 2 MCA Assessment – Section 1

6.1 Section 1 - Maryborough to Fingerpost Roundabout

6.1.1 Introduction and Route Description

Following the Stage 1 sifting process the remaining links in Section 1 are assembled to form six viable route options for Section 1, as follows:

- Route Option 1: Uses Maryborough Hill to cross the N28, then takes a new link south-west parallel to the N28 until joining Carrigaline Road, takes Carrigaline Road to The Fingerpost Roundabout.
- Route Option 2: Uses Maryborough Hill, then Maryborough Woods Road, then Carrigaline Road to The Fingerpost Roundabout.
- Route Option 3: Uses Maryborough Hill the whole way to The Fingerpost Roundabout.
- Route Option 4: Uses Garryduff Road, then Foxwood, a new link connecting Foxwood and Kilbrody, Kilbrody, Mount Oval, Clarkes Wood, Clarkes Hill, then Rochestown Road until The Fingerpost Roundabout.
- Route Option 5: Uses Garryduff Road, Clarkes Hill, then Rochestown Road until The Fingerpost Roundabout.
- Route Option 6: Uses Garryduff Road, then Rochestown Road until The Fingerpost Roundabout.

All of these routes start at the roundabout on Maryborough Hill and finish at The Fingerpost Roundabout to the east of Douglas.

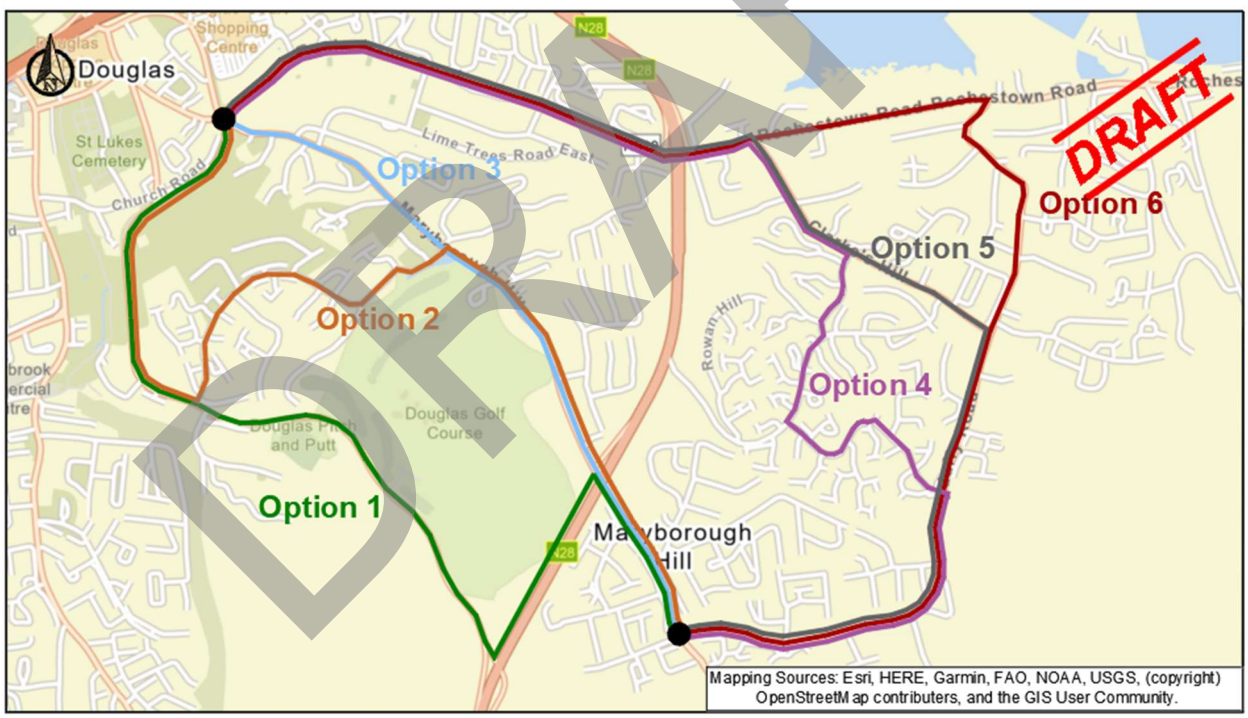


Figure 6-1 Section 1 (Lower Glanmire Road / Tivoli Docks) Route Options

6.1.2 Route Option 1:

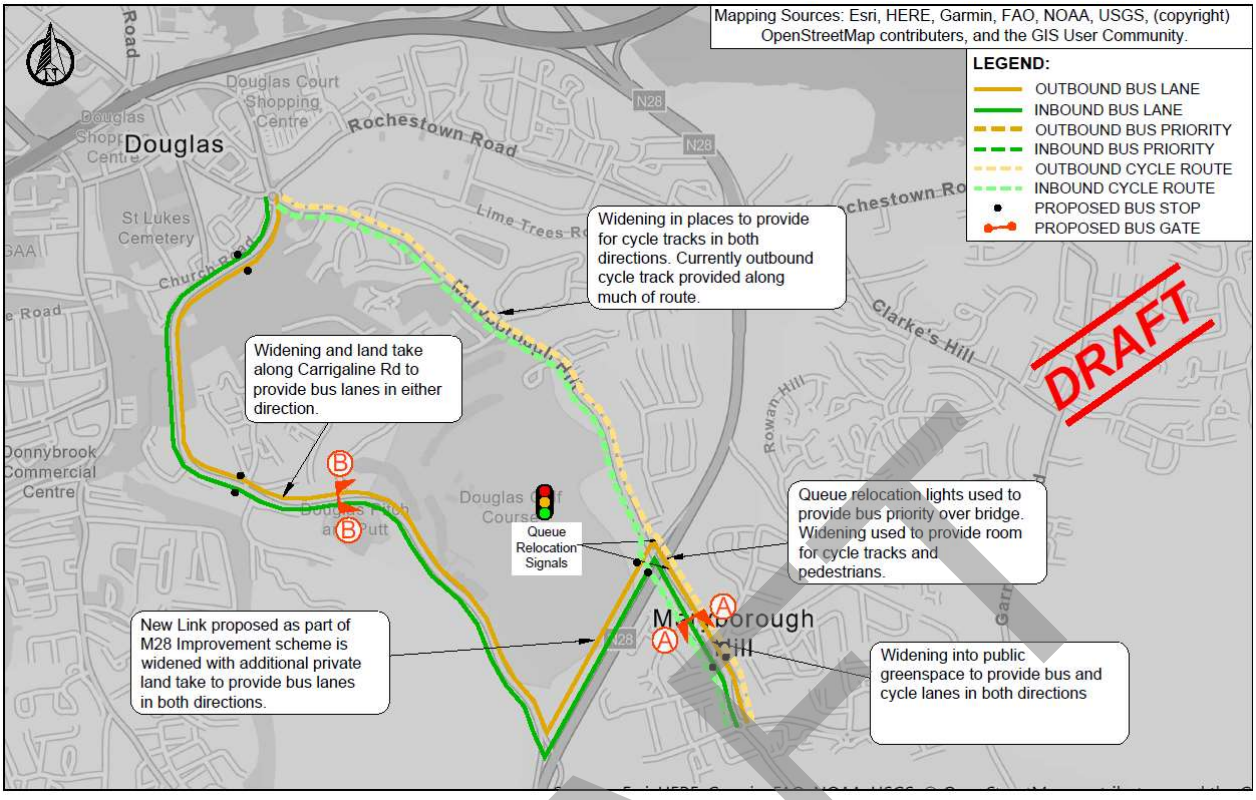


Figure 6-2

Route for Busses:

This route would follow Maryborough Hill until just after the N28 crossing, this would involve widening the cross section from the existing 2 traffic lanes and one cycle lane to a traffic lane, bus lane and cycle lane in both directions. To achieve the width for this significant widening (approx. 5m) would be needed across the boundary wall and into the public greenspace to the east.

There is a pinch point at the bridge over the N28, queue relocation signals would be used to give bus priority over this, and widening would be used to give room for pedestrian and cycle paths.

The route would then follow the new link proposed in the N28 improvement scheme, turning off Maryborough Hill just after the bridge, and running parallel to the N28 until reaching Carrigaline Road. The new link would be widened from a route with 2 traffic lanes and no pedestrian paths to having a traffic lane, bus lane and pedestrian footpath in both directions. Significant private land take (10m) would likely be required for this, as well as earthworks into the embankment on the east. The junctions at either end of the new link would be upgraded to signalised junctions to give bus priority.

The route follows Carrigaline Road north, with the existing 2 lanes cross section widened approx.5 - 10m into a mix of public and private greenspace to provide bus lanes and footpaths in both directions, as well as maintaining the existing traffic lanes. Trees and vegetation along the route would be impacted. CPO of segments of private gardens would be necessary by Maryborough Woods.

Where the carriageway is wider, close to The Fingerpost Roundabout, 2 way busses and traffic would be achieved by removing traffic lanes and repainting them as bus lanes where possible.

Route for Cyclists:

Cyclists would start using the route as described above with cycle lanes provided in both directions down Maryborough Hill and across the widened N28 bridge. Currently cycle provision is provided in the

southbound direction only along here. They would then continue following Maryborough Hill, until reaching The Fingerpost Roundabout, with cycle lanes provided on both sides of the road. In places minor widening would be needed to achieve the required widths to build the outbound cycle path.

Bus Stops

There would be bus stops in both directions on: Maryborough Hill, the new link adjacent to Maryborough Hill, and in 2 locations on Carrigaline Road.

Cross Sections

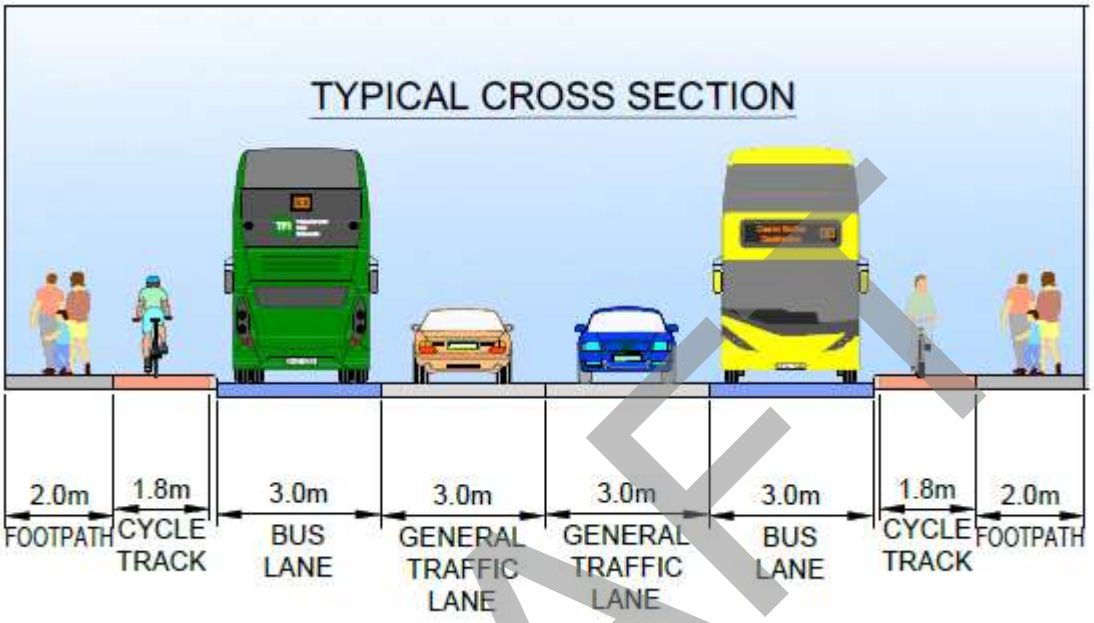


Figure 6-3 A-A

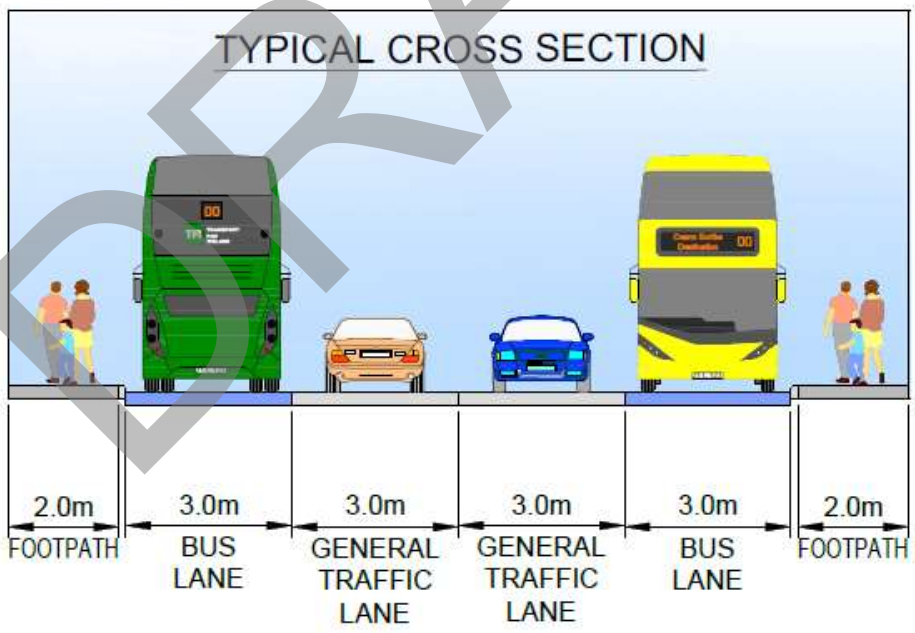


Figure 6-4 B-B

6.1.3 Route Option 2A:

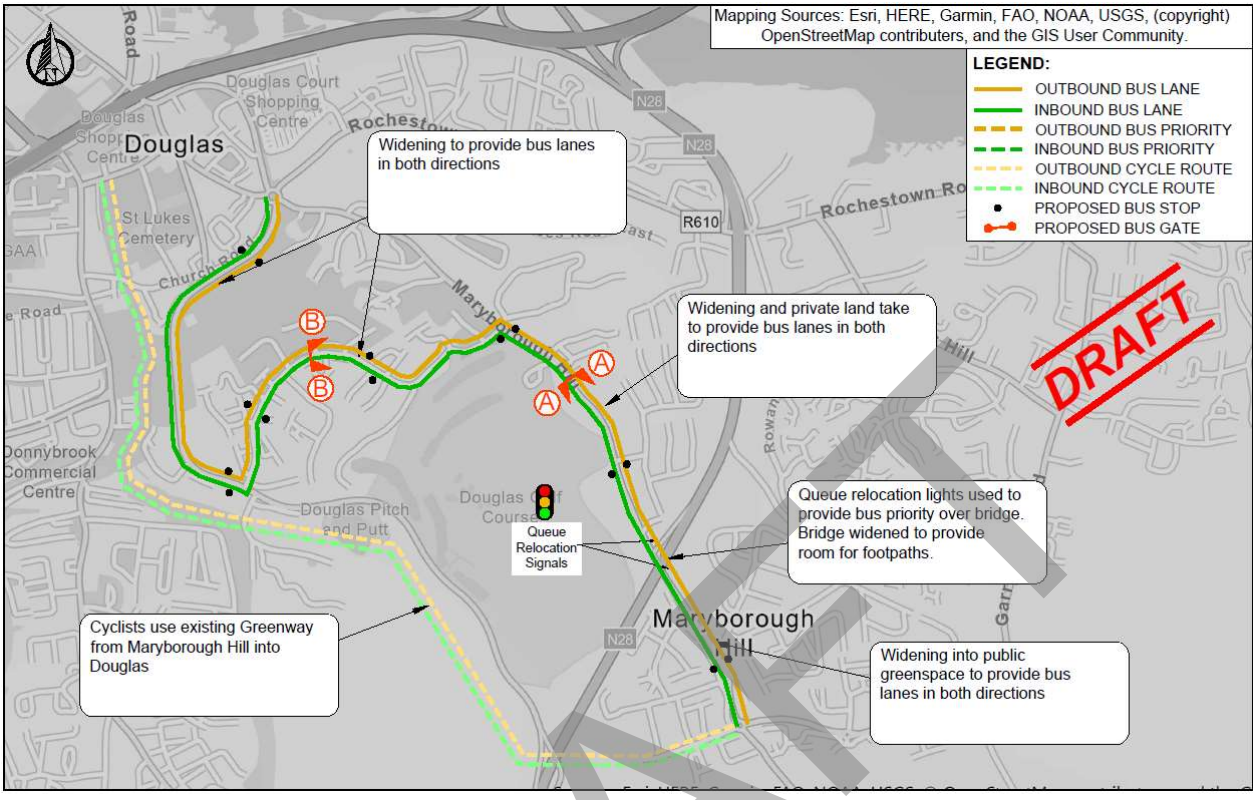


Figure 6-5

Route for Busses

This route would follow Maryborough Hill until reaching Maryborough Woods Road, this would involve widening the cross section from the existing 2 traffic lanes and one cycle lane to 2 traffic lanes, two bus lanes and one cycle lane. Before the N28 bridge to achieve the width for this significant widening (approx. 3.5m) would be needed across the boundary wall and into the public greenspace to the east. Following the N28 bridge a mix of widening and re-painting the cross section where it is wider would be used to get the required cross section.

There is a pinch point at the bridge over the N28, queue relocation signals would be used to give bus priority over this, and widening would be used to give room for pedestrians and the cycle path.

The route would then use a new signalised junction provided at Maryborough Woods Road to follow this link west until reaching Carrigaline Road. The cross section of Maryborough Woods would be widened from a lane of traffic and footpath in each direction with grassy verges, to include a bus lane in both directions as well. This can be done by widening the carriageway onto the grassy verges without private landtake. A new signalised junction would also be provided at Carrigaline Road to give busses priority turning in / out at this junction.

The route then follows Carrigaline Road to The Fingerpost Roundabout. Dedicated bus lanes and traffic lanes would be provided in both directions along this route, with footpaths on either side of the road. For the first 675m of this route there is an existing traffic lane in each direction, this is at first bounded by private gardens, then woodland and public greenspace. Before the route reaches the woodland area, significant widening into private gardens and driveways would be required (up to 7m). Significant widening and earthworks would also be required through the woodland area, and closer to The Fingerpost Roundabout widening into public greenspace would be required.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow the new link to the east, this area is access only for general traffic so cycle lanes are not required. Cyclists would then link up with the existing greenway and use this to cross beneath the N28, then continue on this running parallel to Carrigaline Road, until joining The Vicarage, which again is a quiet access only road so no cycle paths are needed. The route then continues on the greenway following the park and through Ballybrack Woods, crossing Church Road into Douglas Village Community Park and finishing at Church Street.

Bus Stops

There would be bus stops in both directions on: Maryborough Hill in 3 locations, Maryborough Woods Road in 2 locations, and Carrigaline Road in 2 locations.

Cross Sections

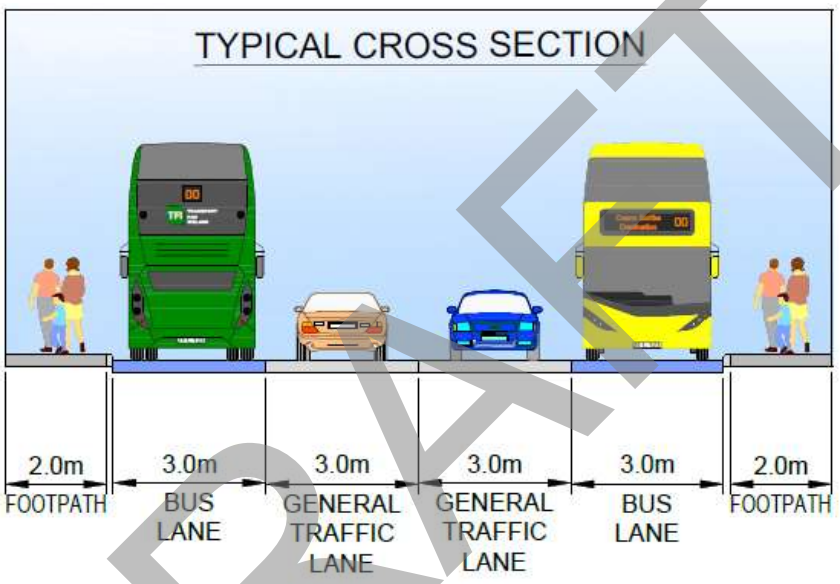


Figure 6-6 A-A

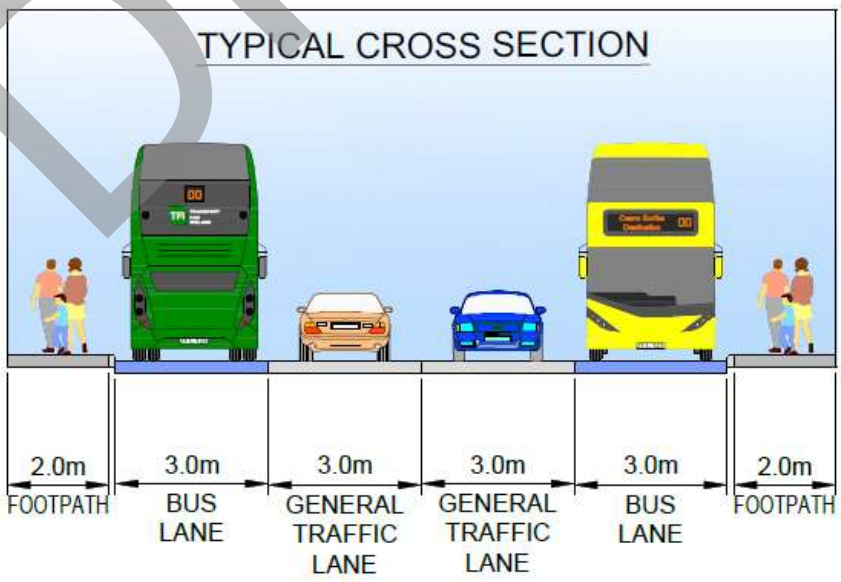


Figure 6-7 B-B

6.1.4 Route Option 2B:

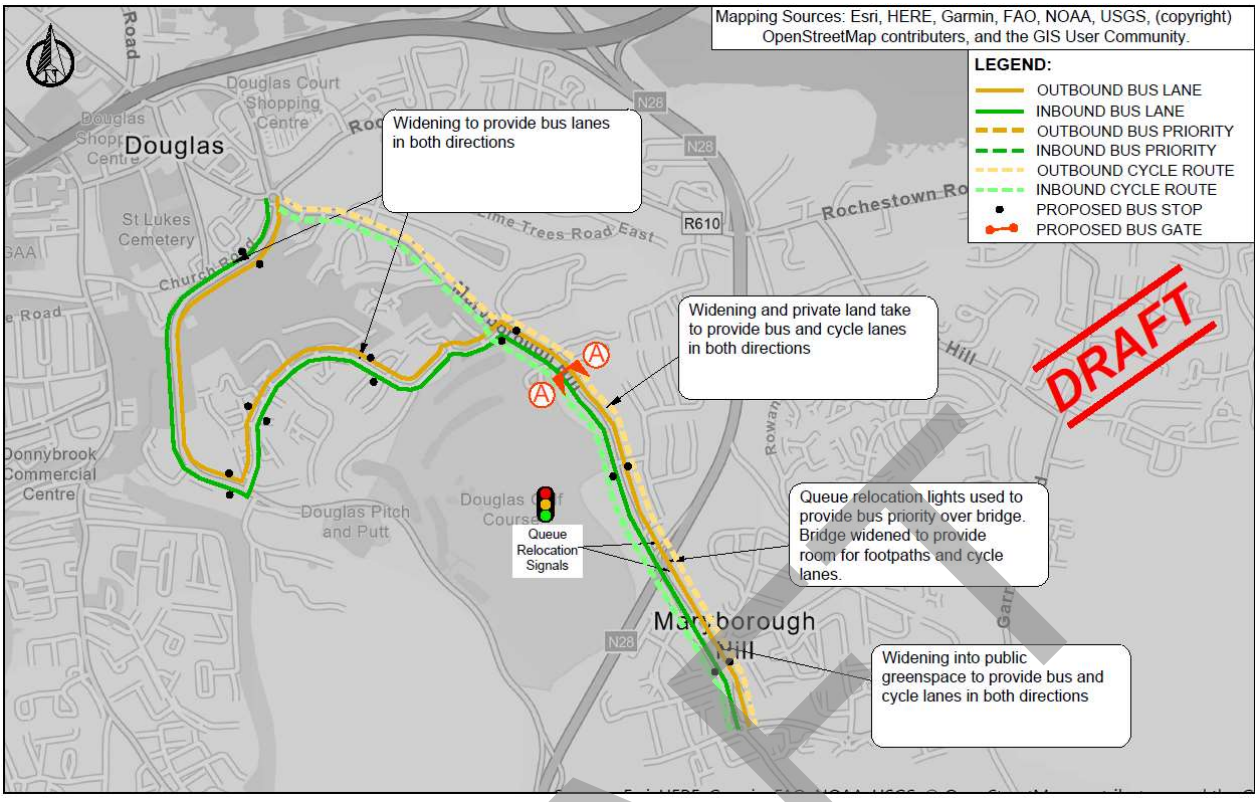


Figure 6-8

Route for Busses

The bus route for this Option is the same as for Option 2A above.

This route would follow Maryborough Hill until reaching Maryborough Woods Road, this would involve widening the cross section from the existing 2 traffic lanes and one cycle lane to 2 traffic lanes, two bus lanes and two cycle lanes. Before the N28 bridge to achieve the width for this significant widening (approx. 5m) would be needed across the boundary wall and into the public greenspace to the east. Following the N28 bridge a mix of widening and re-painting the cross section where it is wider would be used to get the required cross section.

There is a pinch point at the bridge over the N28, queue relocation signals would be used to give bus priority over this, and widening would be used to give room for pedestrians and the cycle path.

The route would then use a new signalised junction provided at Maryborough Woods Road to follow this link west until reaching Carrigaline Road. The cross section of Maryborough Woods would be widened from a lane of traffic and footpath in each direction with grassy verges, to include a bus lane in both directions as well. This can be done by widening the carriageway onto the grassy verges without private landtake. A new signalised junction would also be provided at Carrigaline Road to give busses priority turning in / out from Maryborough Woods Road.

The route then follows Carrigaline Road to The Fingerpost Roundabout. Dedicated bus lanes and traffic lanes would be provided in both directions along this route, with footpaths on either side of the road. For the first 675m of this route there is an existing traffic lane in each direction, and footpaths along one or 2 sides of the route, this is at first bounded by private gardens, then woodland and public greenspace. Before the route reaches the woodland area, significant widening into private gardens and driveways would be required (up to 7m). Significant widening over the boundary wall and earthworks would also be required through the woodland area, and closer to The Fingerpost Roundabout widening into public greenspace would be required.

Route for Cyclists

Cyclists would use Maryborough Hill for the whole of the route to The Fingerpost Roundabout. Currently cycle provision is provided in the southbound direction only along here. To start with the route would be as described above with cycle lanes provided in both directions down Maryborough Hill and across the widened N28 bridge. Once over the bridge significant widening would be required into a mix of public and private land while the bus route is also on Maryborough Hill. Then after Maryborough Woods road only minor widening would be required in some locations where the widths aren't available to provide cycle lanes on either side of the road.

Bus Stops

There would be bus stops in both directions on: Maryborough Hill in 3 locations, Maryborough Woods Road in 2 locations, and Carrigaline Road in 2 locations.

Cross Sections

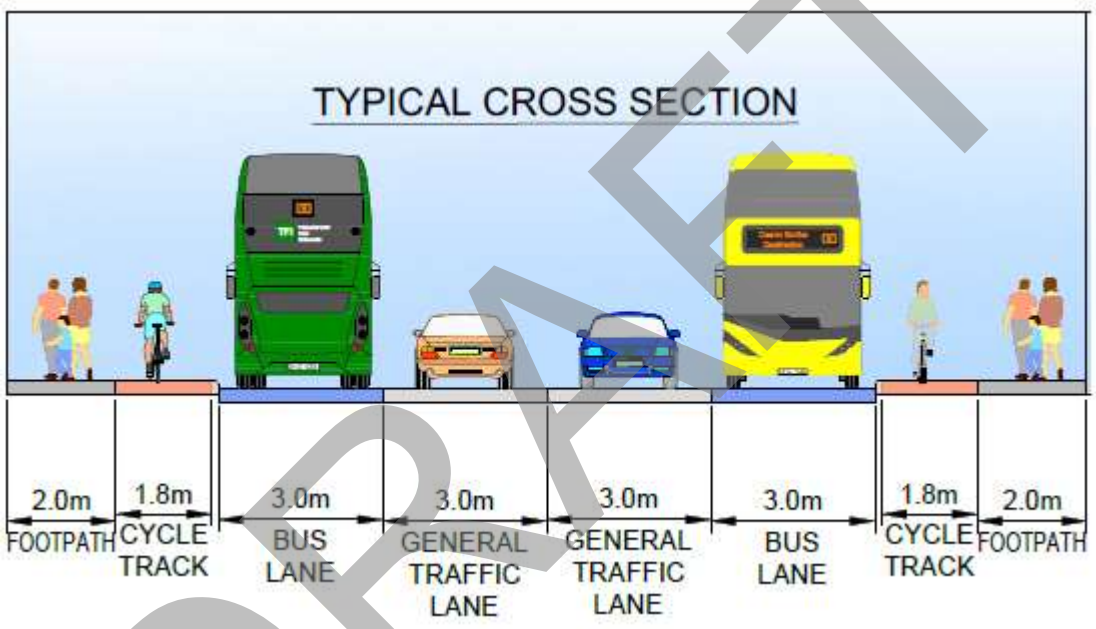


Figure 6-9 A-A

6.1.5 Route Option 3A:

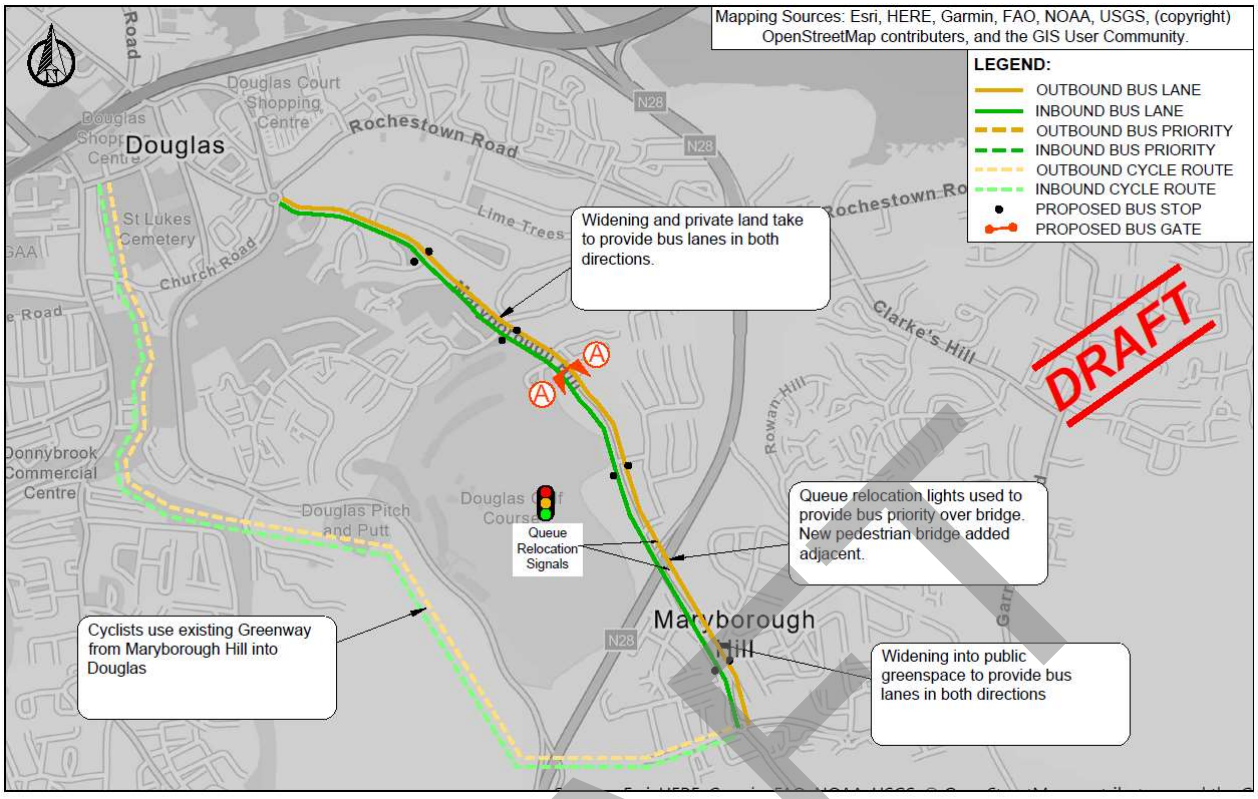


Figure 6-10

Route for Busses

The bus route follows Maryborough Hill for the whole of this route option. Currently this route has a lane of traffic in both directions, a cycle lane heading south (which would remain with the option) and footpaths along both sides. The proposed works would widen the carriageway to provide dedicated bus lanes in both directions alongside the existing road lanes, cycle lane, and footpaths. At the bridge over the N28 where there is a pinch point queue relocation signals would be used to provide bus priority and the bridge cross section would be widened to provide pedestrian footpaths. Significant public and private land take (max 3m extra width) would be required along the length of the scheme with some gardens likely affected.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow the new link to the east, this area is access only for general traffic so cycle lanes are not required. Cyclists would then link up with the existing greenway and use this to cross beneath the N28, then continue on this running parallel to Carrigaline Road, until joining The Vicarage, which again is a quiet access only road so no cucle paths are needed. The route then continues on the greenway following the park and through Ballybrack Woods, crossing Church Road into Douglas Village Community Park and finishing at Church Street.

Bus Stops
There would be bus stops in both directions on Maryborough Hill in 4 locations.

Cross Sections

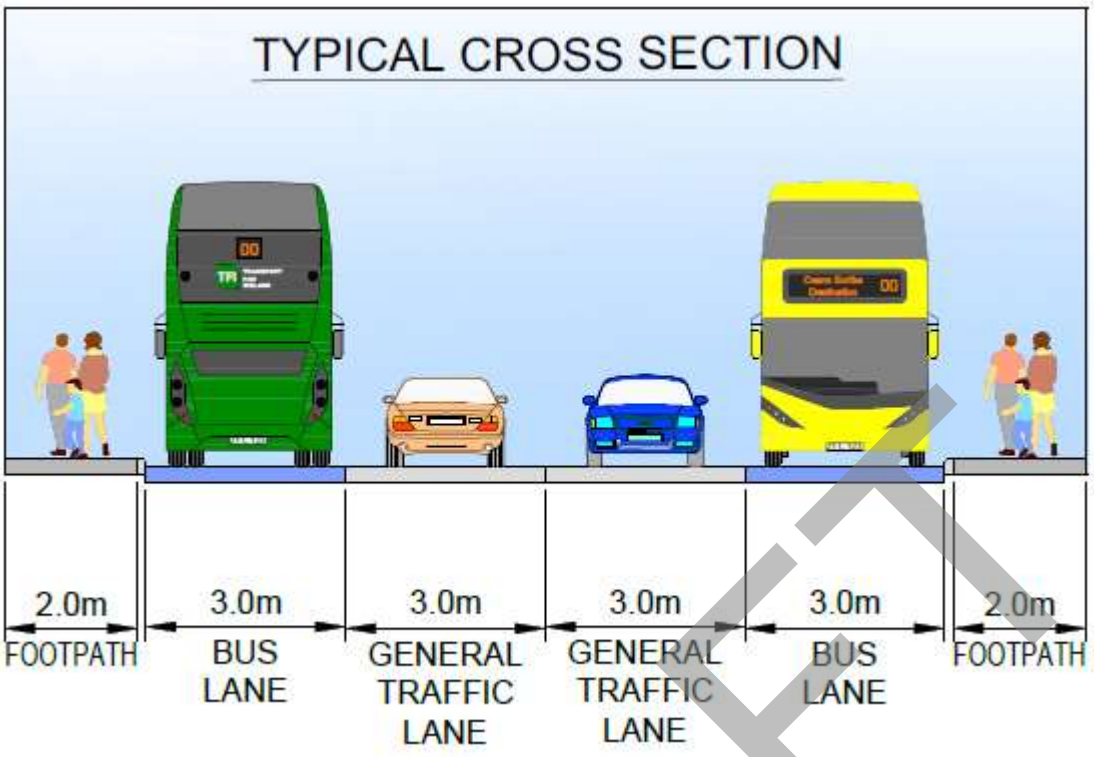


Figure 6-11 Cross Section A-A

6.1.6 Route Option 3B:

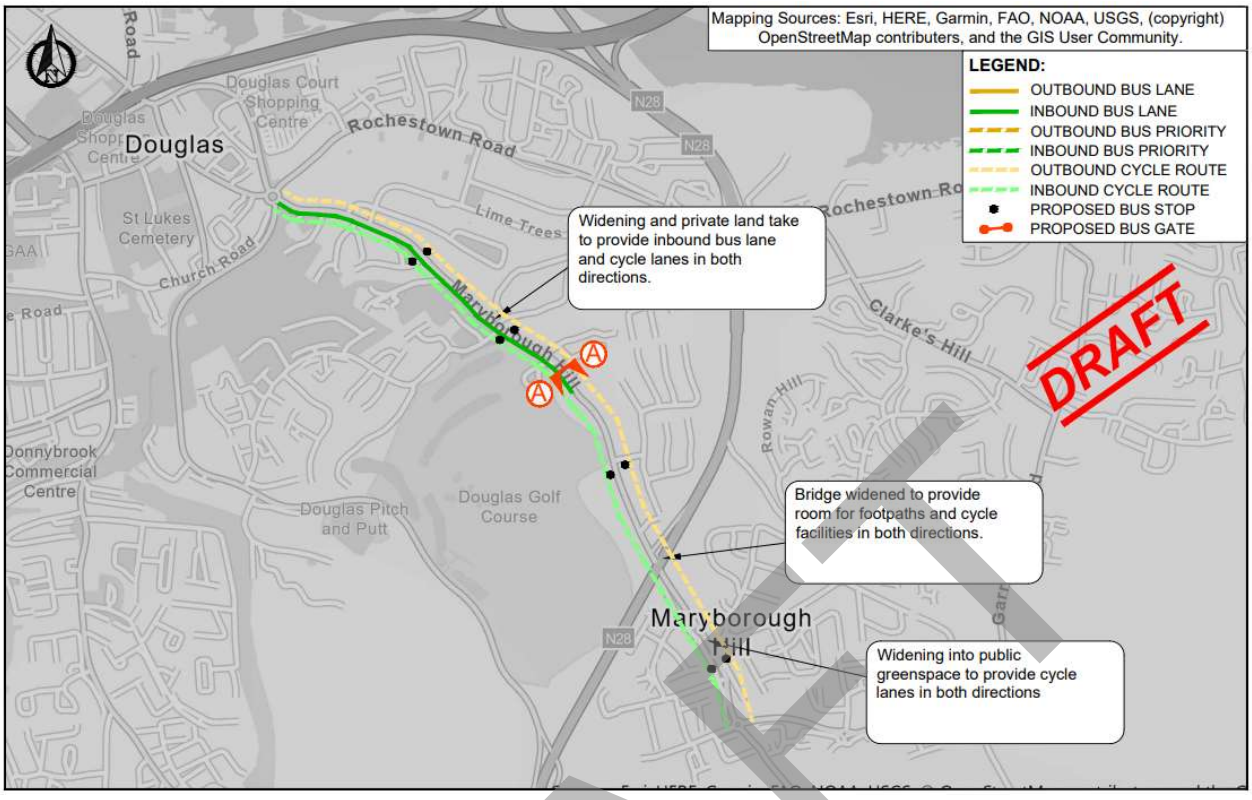


Figure 6-12

Route for Busses

The route for busses would be the same as for Option 3A above, however there will be less provision of bus lanes and instead cycle lanes provided in both directions.

The bus route follows Maryborough Hill for the whole of this route option. Currently this route has a lane of traffic in both directions, a cycle lane heading South and footpaths along both sides. Before reaching Douglas Golf Club, due to the constrained nature of the carriageway, and the relatively low frequency of busses and traffic, busses would share with general traffic. North of Douglas Golf Club the carriageway would be widened to provide a bus lane in the inbound direction only up to The Fingerpost Roundabout, and maintain existing traffic lanes.

Th bridge over the N28 would be widened to provide pedestrian footpaths and cycle lanes. Public and private land take (max 2m extra width) would be required along the length of the scheme with some gardens likely affected.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road. There is currently a cycle lane in the southbound direction only for the whole route, and in both directios for the 550m closest to The Fingerpost Roundabout. Widening is required to achieve the cross section.

Bus Stops
There would be bus stops in both directions on Maryborough Hill in 4 locations.

Cross Sections

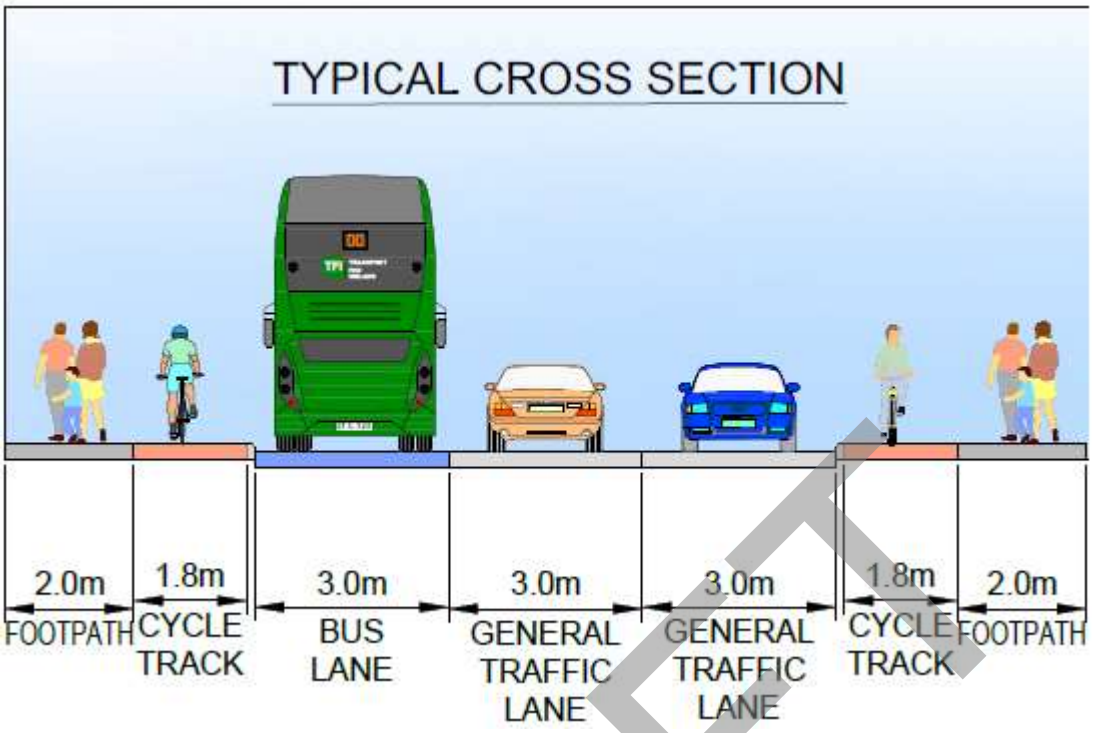


Figure 6-13 A-A

6.1.7 Route Option 4:

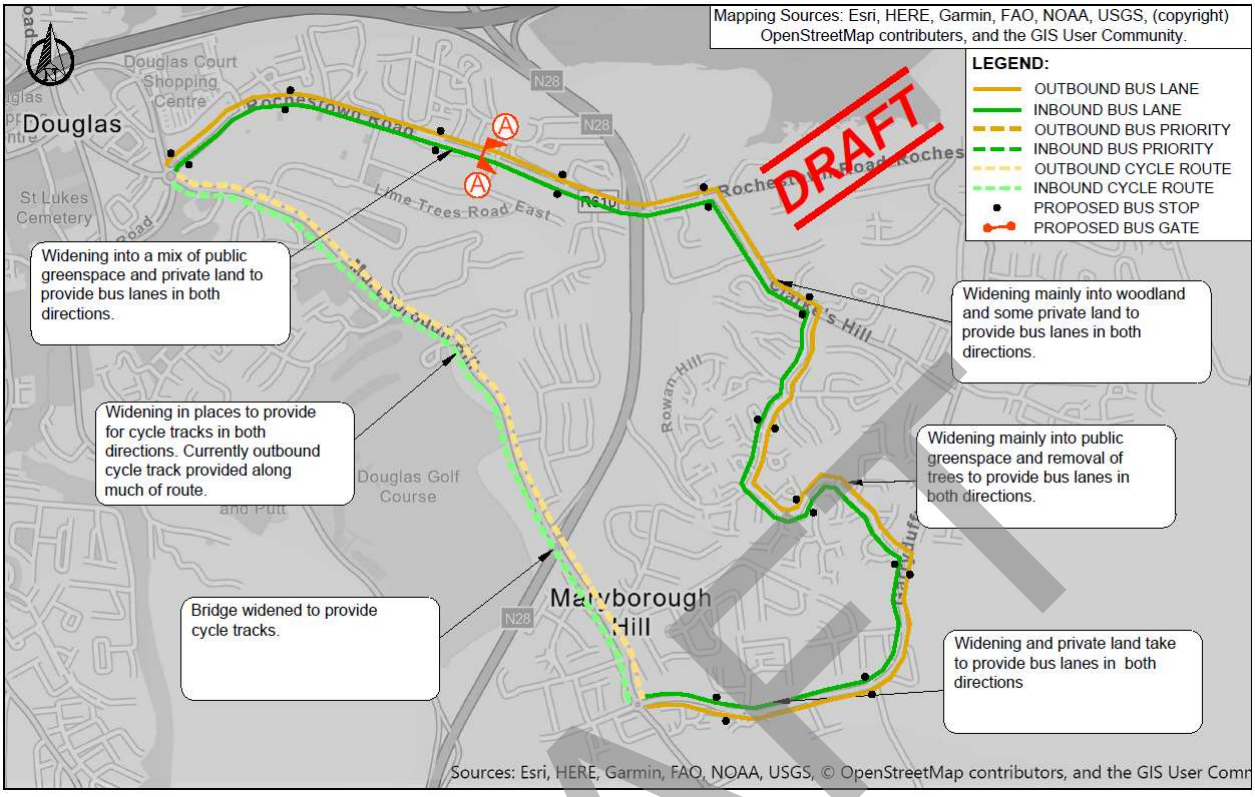


Figure 6-14

Route for Busses

Starting from Maryborough Hill Roundabout the route would head east along Garryduff Road until reaching Foxwood. This route currently has a lane of general traffic and pedestrian footpaths in each direction, and significant (max 5m) widening of the cross section into private gardens would be required to include two-way dedicated bus lanes. A new signalised junction would be constructed to give busses priority in / out of Foxwood.

The route would then follow Foxwood for 300m before taking a new 10m link that would connect Foxwood to Kilbrody. For Foxwood bus lanes would be added either side of the existing 7.5 wide single carriageway serving traffic in both directions. This would involve taking public greenspace and the row of trees lining the route. The existing footpaths offset from the traffic lanes would remain where they are far enough away that the bus lanes can fit in between them, where they are too close they would be reconstructed.

The new link would have bus lanes and footpaths in both directions only, it would have a 10m cross section and be constructed through vegetated public greenspace.

The existing single traffic lane in each direction cross section on Kilbrody would be widened to include dedicated bus lanes in both directions, and 2 way footpaths would be maintained. This widening would happen into public greenspace and involve removing the trees lining the road.

Once the route reaches Mount Oval it would follow this north until reaching Clarkes Wood, which it would follow until Clarkes Hill. Mount Oval and Clarkes Wood both have the same existing cross section as Kilbrody and would be widened into public greenspace in the same way to include dedicated bus lanes, traffic lanes and footpaths in both directions. A new signalised junction would be constructed to give busses priority on / off Clarkes Hill.

The route then follows Clarkes Hill until Rochestown Road. Clarkes Hill has a single traffic lane in each direction and a single thin footpath at its narrowest point, which is narrowly constrained by boundary walls, and 2 footpaths in other locations. Significant widening across into a mix of public and private land would be required on this route to achieve dedicated bus lanes, traffic lanes and footpaths in both directions. A new signalised junction would be constructed to give busses priority on / off Rochestown Road.

On Rochestown Road there is generally a traffic lane in each direction and sometimes a third lane before a turning. This road would be widened into a mix of public greenspace and where necessary private land to provide dedicated bus lanes in both directions, where the route is constrained and there are 3 existing traffic lanes, one of these would be re-purposed into a bus lane. In places up to 7m of private gardens would need to be taken (close to The Fingerpost Roundabout). Footpaths would continue to be provided in both directions. The roundabout at the N28 off ramp would be upgraded to a signalised roundabout to maintain bus priority.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road, currently a cycle lane is provided in the south direction only along this route. Minor widening of the carriageway would likely be needed in some locations, where the required widths aren't available.

The bridge over the N28 would be widenend to provide room for dedicated cycle tracks.

Bus Stops

There would be bus stops in both directions on: Garryduff Road in 3 locations, Kilbrody in 1 location, Mount Oval in 1 location, Clarkes hill in 1 location, and Rochestown Road in 5 locations.

Cross Sections

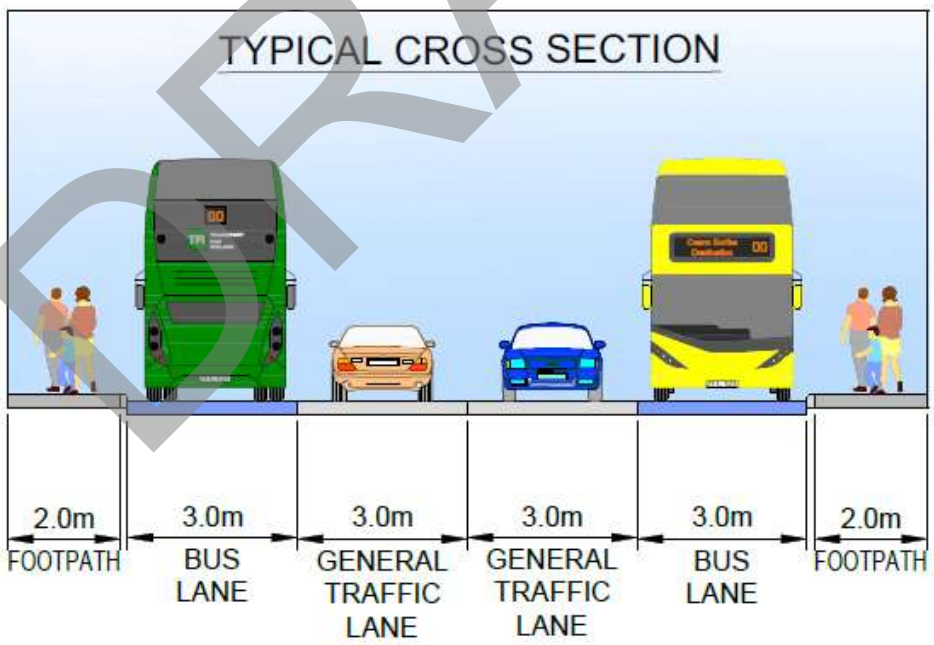


Figure 6-15 A-A

6.1.8 Route Option 5:

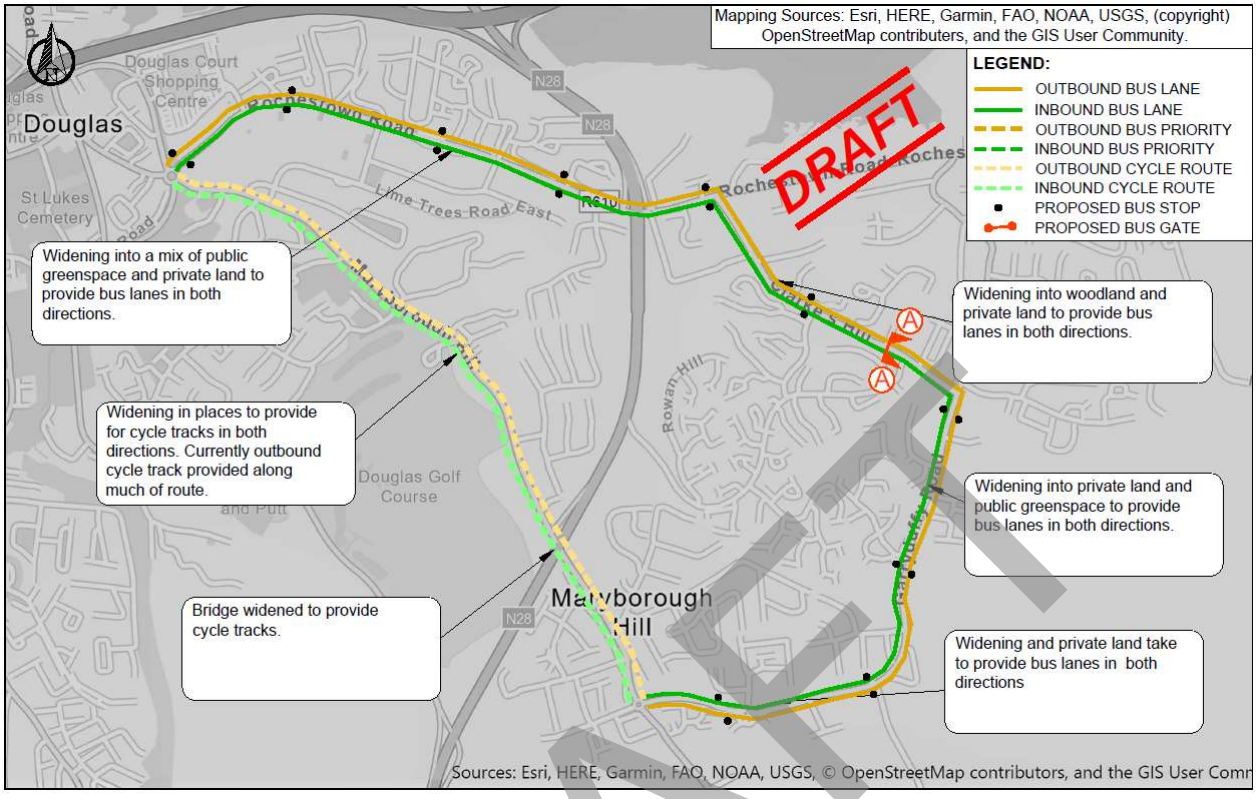


Figure 6-16

Route for Busses

Starting from Maryborough Hill Roundabout the route would head east along Garryduff Road until reaching Clarkes Hill. This route currently has a lane of general traffic and pedestrian footpaths in each direction, and significant (max 5m) widening of the cross section into a mix of private gardens and public greenspace would be required to include two-way dedicated bus lanes. A new signalised junction would be constructed to give busses priority on / off Clarkes Hill.

The route then follows Clarkes Hill until Rochestown Road. Clarkes Hill has a single traffic lane in each direction and a single thin footpath at its narrowest point, which is narrowly constrained by boundary walls, and 2 footpaths in other locations. Significant widening across into a mix of public and private land would be required on this route to achieve dedicated bus lanes, traffic lanes and footpaths in both directions. A new signalised junction would be constructed to give busses priority on / off Rochestown Road.

On Rochestown Road there is generally a traffic lane in each direction and sometimes a third lane before a turning. This road would be widened into a mix of public greenspace and where necessary private land to provide dedicated bus lanes in both directions, where the route is constrained and there are 3 existing traffic lanes, one of these would be re-purposed into a bus lane. In places up to 7m of private gardens would need to be taken (close to The Fingerpost Roundabout). Footpaths would continue to be provided in both directions. The roundabout at the N28 off ramp would be upgraded to a signalised roundabout to maintain bus priority.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road, currently a cycle lane is provided in the south direction only along this route. Minor widening of the carriageway would likely be needed in some locations, where the required widths aren't available.

The bridge over the N28 would be widenend to provide room for dedicated cycle tracks.

Bus Stops

There would be bus stops in both directions on: Garryduff Road in 4 locations, Clarkes hill in 1 location, and Rochestown Road in 5 locations.

Cross Sections

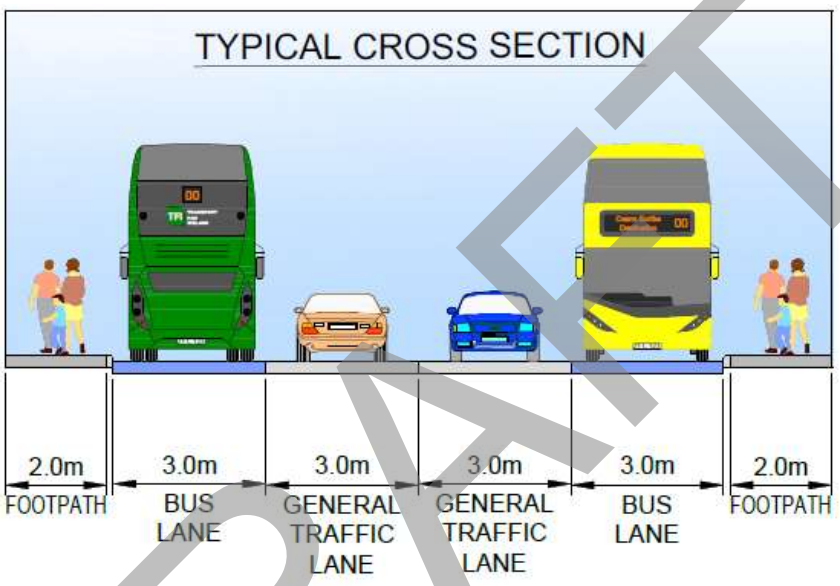


Figure 6-17 A-A

6.1.9 Route Option 6:

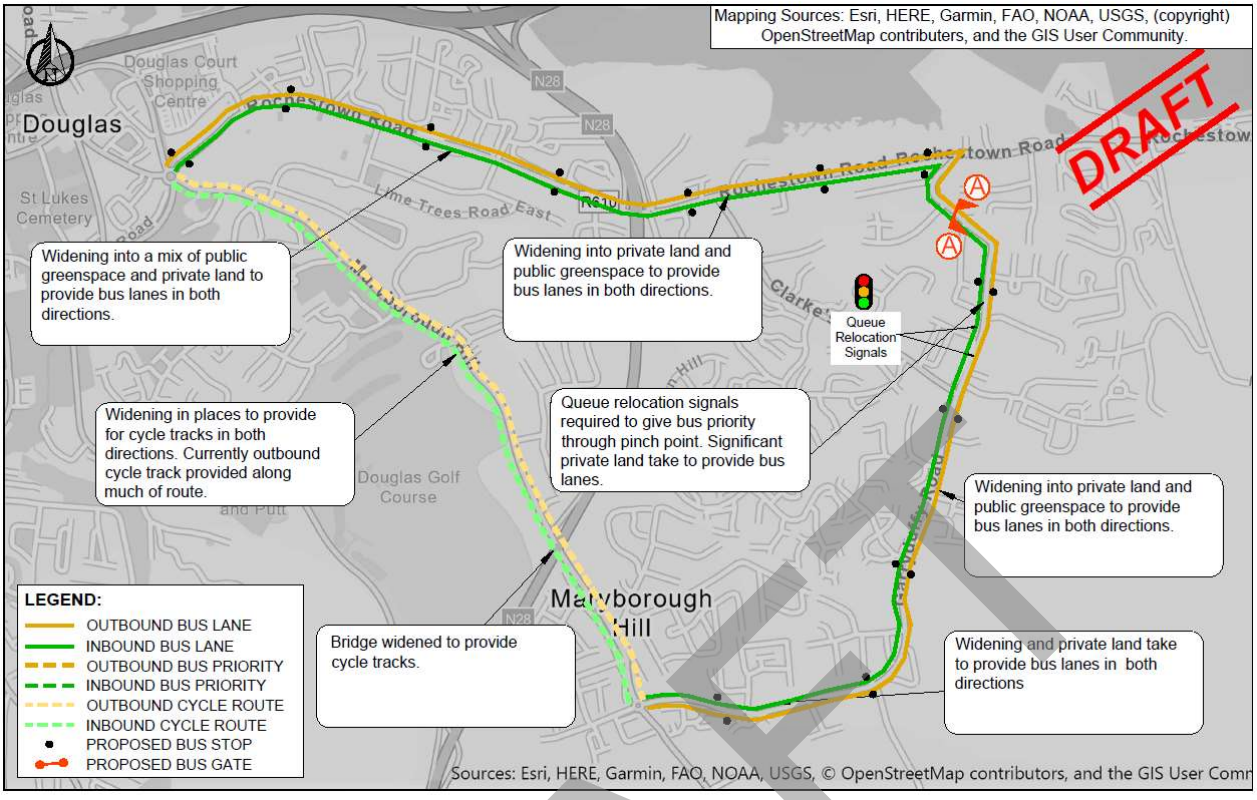


Figure 6-18

Route for Busses

Starting from Maryborough Hill Roundabout the route would head east along Garryduff Road until reaching Rochestown Road. Before Eyrecourt this route currently has a lane of general traffic and pedestrian footpaths in each direction, and significant (max 5m) widening of the cross section into a mix of private gardens and public greenspace would be required to include two-way dedicated bus lanes.

Between Eyrecourt and Thornbury View the route becomes more constrained with sections of the route having no footpaths and only a single lane of traffic serving both directions. Due to the lack of available width between properties in this location the route would only be widened to have 2 way traffic lanes and footpaths. Queue relocation signals would be used to give busses priority through the 250m long constrained section. Significant public greenspace and private land would be taken to provide this reduced cross section. After the pinch point, the cross section would continue as before with significant widening into private gardens required to provide dedicated bus lanes and footpaths in both directions. A new signalised junction would be constructed to give busses priority on / off Rochestown Road.

On Rochestown Road there is generally a traffic lane and footpath in each direction and sometimes a third lane before a turning. This road would be widened into a mix of public greenspace and private land to provide dedicated bus lanes in both directions, where the route is constrained and there are 3 existing traffic lanes, one of these would be re-purposed into a bus lane. In places up to 7m of private gardens would need to be taken (close to The Fingerpost Roundabout, and before Clarkes Hill). Footpaths would continue to be provided in both directions. The roundabout at the N28 off ramp would be upgraded to a signalised roundabout to maintain bus priority.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road, currently a cycle lane is provided in the south direction only along this route. Minor widening of the carriageway would likely be needed in some locations, where the required widths aren't available.

The bridge over the N28 would be widenend to provide room for dedicated cycle tracks.

Bus Stops

There would be bus stops in both directions on: Garryduff Road in 5 locations, and Rochestown Road in 7 locations.

Cross Sections

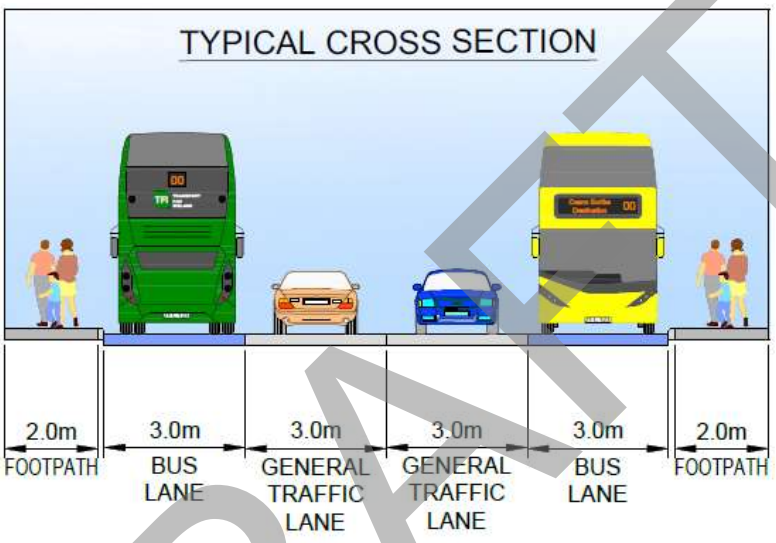


Figure 6-19 A-A

6.1.10 Maryborough to Fingerpost Roundabout Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 10 STC are presented in Appendix A.

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 6-1 below.

Table 6-1 Route Options Assessment Summary (Sub-Criteria)

Maryborough Hill to Fingerpost Roundabout									
Assessment Criteria	Sub-Criteria	Route 1	Route 2A	Route 2B	Route 3A	Route 3B	Route 4	Route 5	Route 6
Economy	Capital Cost								
	Average Journey Time								
	Journey Time Reliability								
Integration	Land Use Integration								
	Residential and Employment Catchment								
	Transport Integration								
	Cyclist Integration								
	Pedestrian Integration								
Accessibility and Social Inclusion	Key Trip Attractors (Education, Health, Commercial, Retail, Leisure)								
	Deprived Geographic Areas								
Safety	Road Safety								
Environment	Archaeological, Architectural and Cultural Heritage								
	Biodiversity								
	Soils and Geology								
	Water Resources								
	Landscape and visual								
	Noise, vibration and air quality								
	Land Use and Built Environment								

In terms of "Economy" Options 1, 4, 5 and 6 have the highest capital costs as they have longer route lengths and require more private land take. Options 2A & 2B have a higher cost than 3A and 3B which are similar and significantly cheaper than the other options. Options 3A & 3B also have the shortest journey times due to having the most direct route, with Options 1, 2A & 2B being faster than options 4, 5 & 6. In terms of journey time reliability, Option 3A performs best due to having the most direct route and dedicated bus lanes the whole way, with other options having more junctions and Option 3B not having dedicated bus lanes for its length so performing worse. Overall option 3A performs best for economy, closely followed by Option 3B.

In terms of "Integration", Options 1 & 2 serve the proposed developments adjacent to Carrigaline Road and so perform slightly better for Land Use Integration. Options 4, 5 & 6 serve the highest number of residential and employment catchment so perform better than the other options for this, with Options 3A & 3B serving the least so performing the worst. In terms of transport integration all options perform equally for their impact on general traffic. However Options 2, 3, 5 & 6 provide bus lanes in areas where the proposed bus network has busses serve more frquently, and for this reason would be more useful and score better overall for transport integration, with Option 3A performing the best. In terms of cyclist integration the options that provide improved infrastructure on Maryborough Hill (1, 2B, 3B, 4, 5, & 6) perform better than the options that don't, as these improve the provision along a primary cycle network, whereas the options that use the

existing greenway provide no new cycle infrastructure. All Options score equally for pedestrian integration. On balance the options with good transport and cyle integration, Options 2B, 3B, 5 & 6 are considered to be the best performers for Integration overall.

In terms of "Accessibility and Social Inclusion", All options serve areas of similar affluence. Options 5 & 6 serve Garryduff Sports Center meaning they are slightly prefereable in terms of trip attractors, therefore they score the best for this criterion, note however they are only performing slightly better than the other options.

In terms of Road Safety, the Options 2A & 3A score worse for this criterion as they provide no improved cycle infrastructure on Maryborough Hill, whereas the other options do.

In terms of "Environment", Route Option 3B requires the least length of infrastructure to be built and the least widening of the cross section, meaning that overall it performs best for all environmental criteria. Option 3A generally performs second best due to its short length and that it's bounded by less trees / vegetation. Option 1, 4, 5 & 6 all perform poorly for environment with significant impacts likely on biodiversity if they were to go ahead.

6.1.11 Conclusion

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 6-2.

Table 6-2 Route Options Assessment Summary (Main-Criteria)

Maryborough to Fingerpost Roundabout								
Assessment Criteria	**Route 1**	**Route 2A**	**Route 2B**	**Route 3A**	**Route 3B**	**Route 4**	**Route 5**	**Route 6**
Economy								
Integration								
Accessibility and Social inclusion								
Safety								
Environment								

Based on the assessments above it has been determined that Option 3B offers the preferred route option for the following reasons:

- It has a significantly lower cost when compared to all other options.
- Option 3 has the most direct route for busses.
- It provides a more direct route for cyclists compared to Option 3A.
- It serves the route that has the highest frequency of buses.
- It requires less significant land take and traffic interventions than Option 3A.
- It has the smallest environmental impact of all the options.

Route 3 provides the highest level of service for buses and would likely be recommended as the emerging preferred route for this section. The benefits of providing cycle lanes on Marybrough Hill on Route 3B appear to be outweighed by the negative impacts of having less bus lane provision compared to Option 3A.

Following this assessment, the spiders web is now reduced to the following shown below:

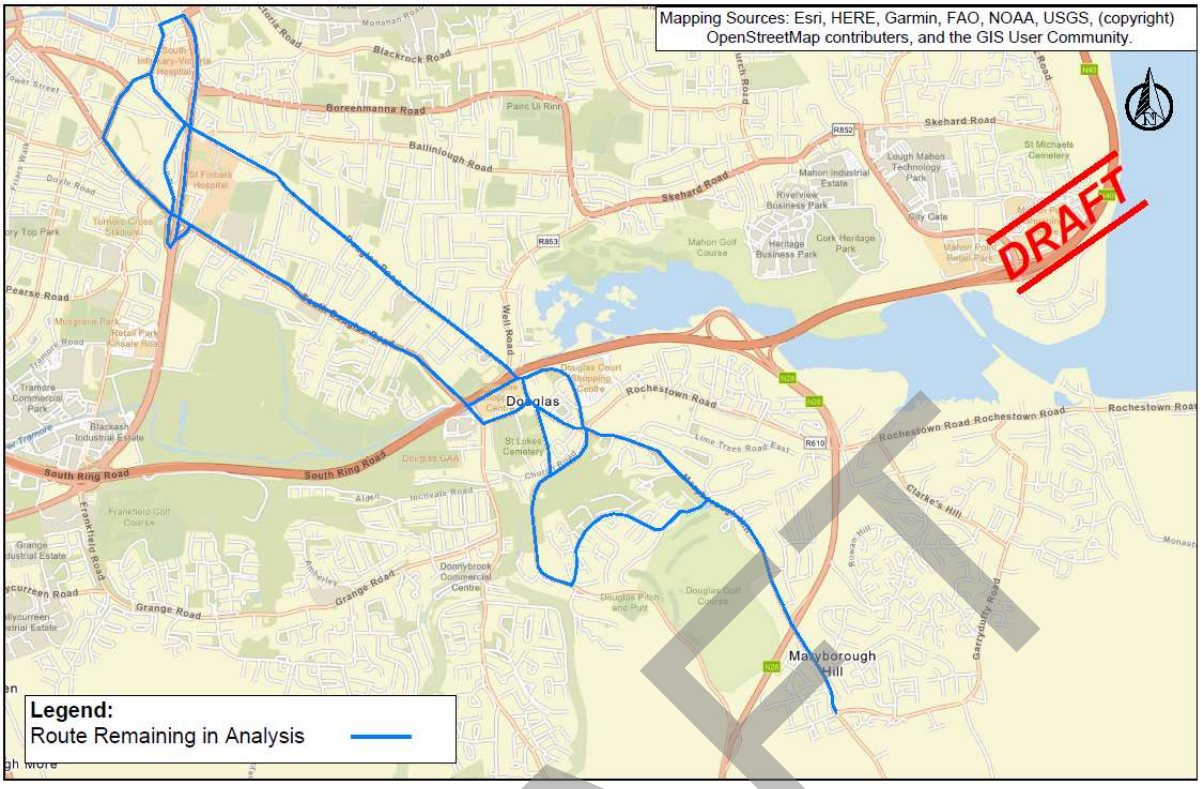


Figure 6-20

7. Stage 2 MCA Assessment – Section 2

7.1 Set 2A - The Fingerpost Roundabout to Douglas Road (at Well Road Junction)

7.1.1 Introduction and Route Description

Following the Stage 1 sifting process the remaining links in Section 2 are assembled to form three viable route options for Section 2 to finish at Douglas Road as follows:

- Route Option 1: Uses Douglas Relief Road, then Douglas Road.
- Route Option 2: Uses a one way system around East Douglas Street and Old Carrigaline Road, East Douglas Street 2 ways, and Douglas Road.
- Route Option 3: Uses East Douglas Street and Douglas Road.

All of these routes start at The Fingerpost Roundabout and finish at the junction between Douglas Road, Douglas Relief Road, East Douglas Street and River Walk.

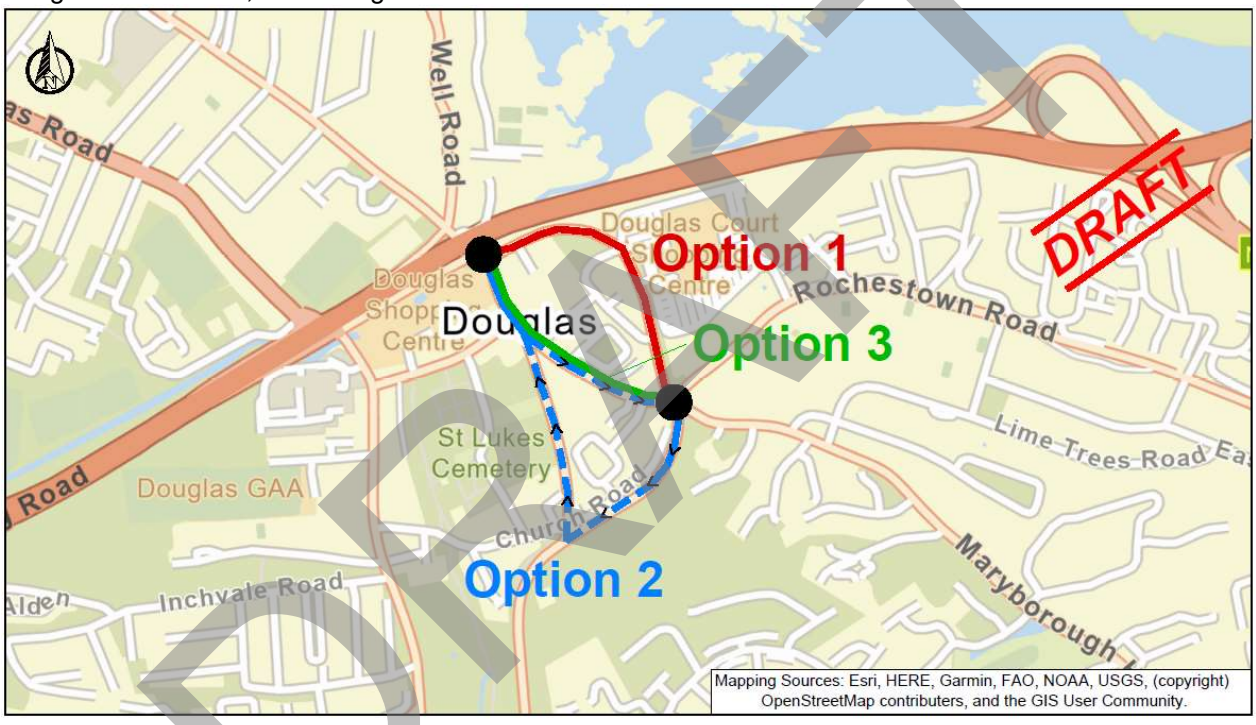


Figure 7-1

7.1.2 Route Option 1:

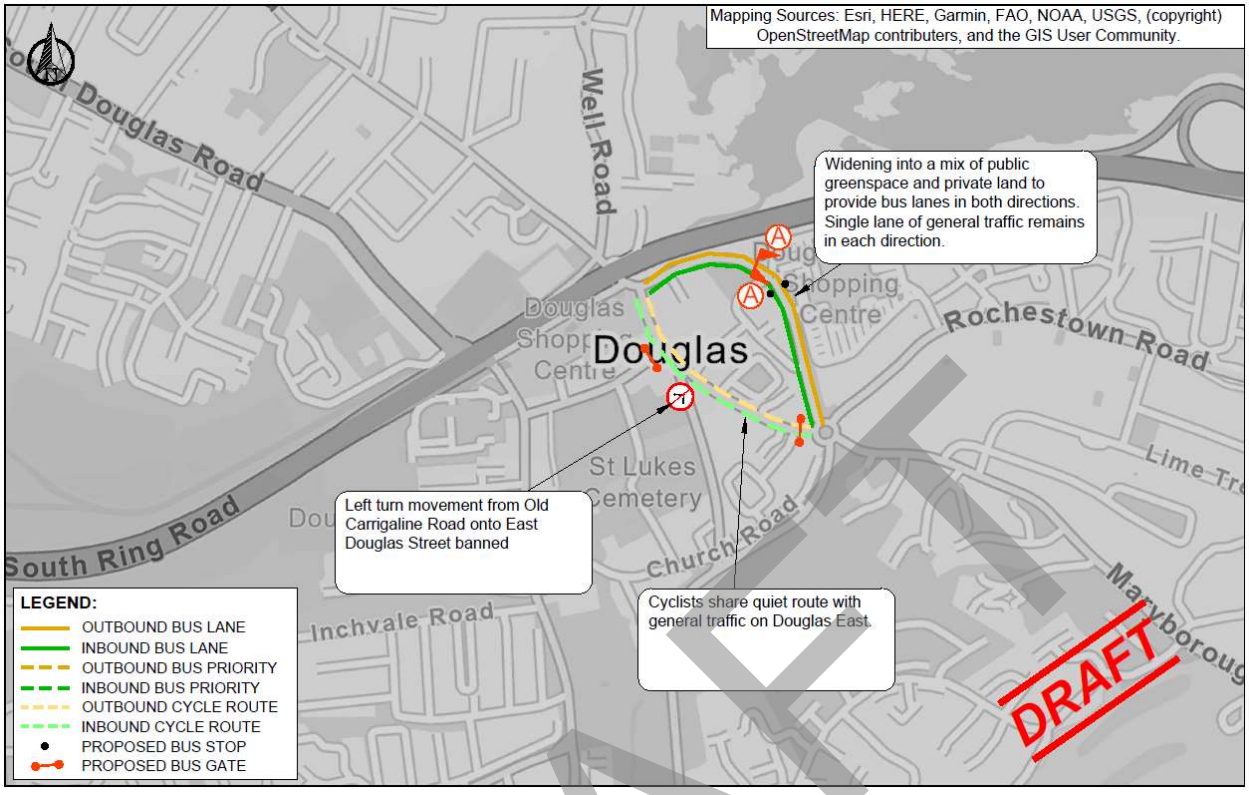


Figure 7-2

Route for Busses

Starting from The Fingerpost Roundabout, which would be upgraded to include signals that would give bus priority, busses would take Douglas Relief Road, until reaching Douglas Road. On Douglas Relief Road there are generally 3 general traffic lanes provided, and footpaths in both directions. This cross section would be widened, and one lane of general traffic removed to provide a dedicated bus lane and general traffic lane in each direction. The widening would be mainly into public and private greenspace, as well as some into private car parks. Footpaths in both directions would continue to be provided.

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Bus Stops
There would be bus stops in both directions on Douglas Relief Road in 1 location.

Cross Sections

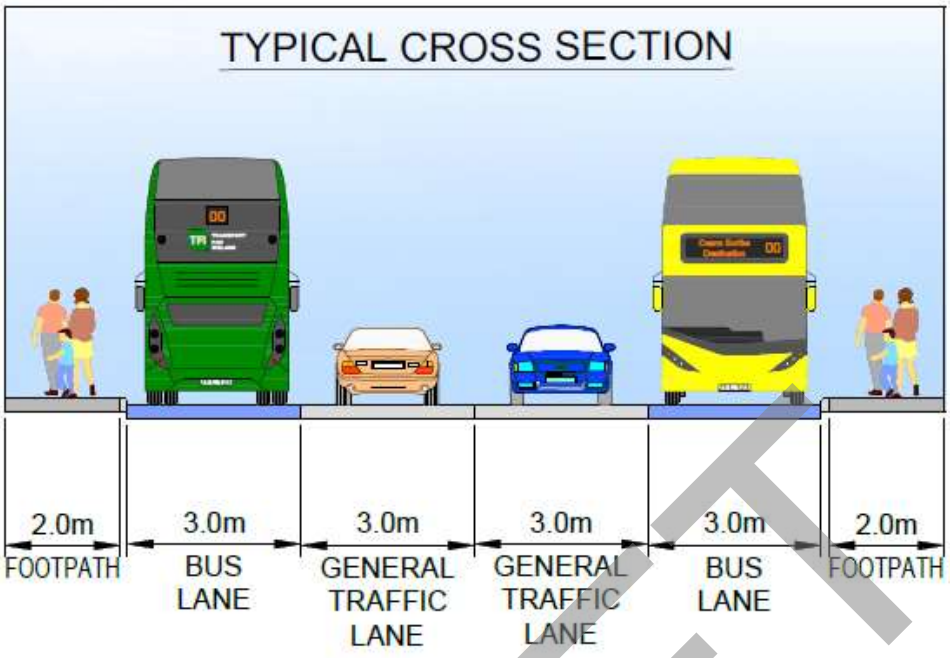


Figure 7-3 A-A

7.1.3 Route Option 2:

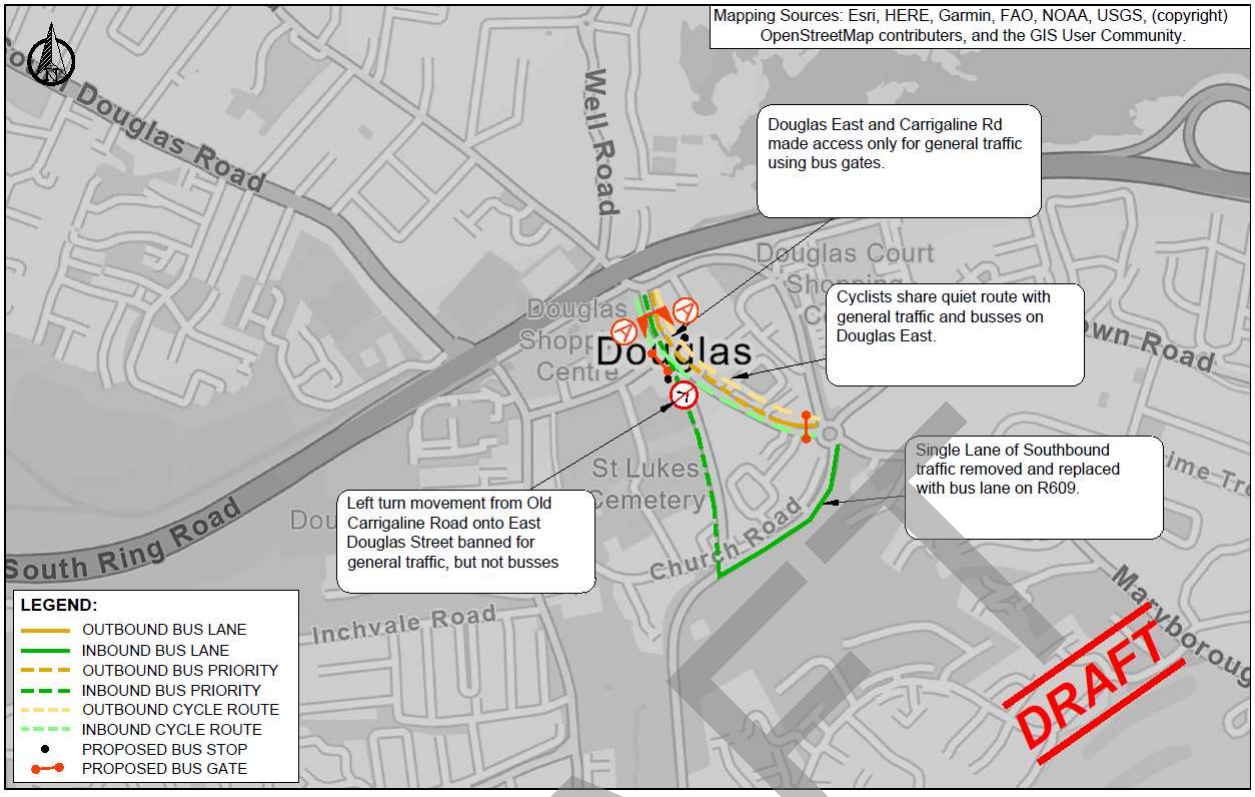


Figure 7-4

Route for Busses

This option would utilise a one way system. Starting from The Fingerpost Roundabout, inbound busses would use Carrigaline Road, and then Old Carrigaline Road to reach East Douglas Street, where they would join up with the outbound route. Outbound busses would use only East Douglas Street from The Fingerpost Roundabout. The Fingerpost Roundabout would be upgraded to include signals that would give bus priority.

On Carrigaline Road one of the 2 lanes of southbound traffic would be re-allocated to a bus lane, and new signals would be required to give busses priority onto Old Carrigaline Road. On Old Carrigaline Road and East Douglas Street bus priority is achieved by placing bus gates at the junctions with Church Street and Fingerpost Roundabout, left turns for general traffic would also be banned coming out of Old Carrigaline Road onto East Douglas Street. This means these roads would become access only and the current road cross sections can remain. A small amount of on street parking would be removed from East Douglas Street to allow footpaths to be provided in both directions along the whole of the route. The footpaths on Old Carrigaline Road and Carrigaline Road would remain the same.

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

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Bus Stops

There would be a bus stop in both directions priovided near the East Douglas Street / Old Carrigaline Road junction.

Cross Sections

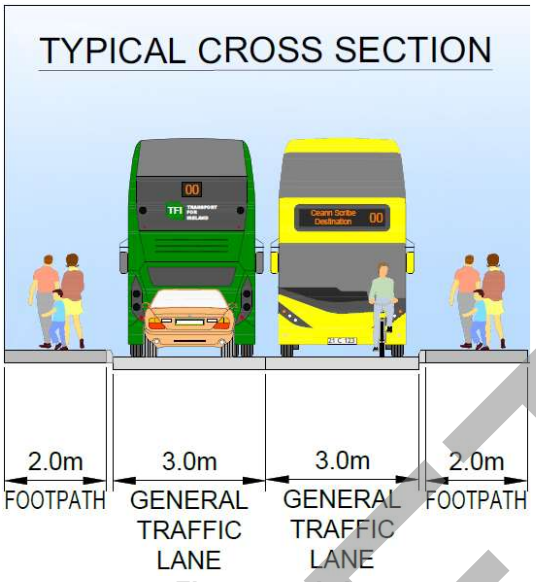


Figure 7-5 A-A

7.1.4 Route Option 3:

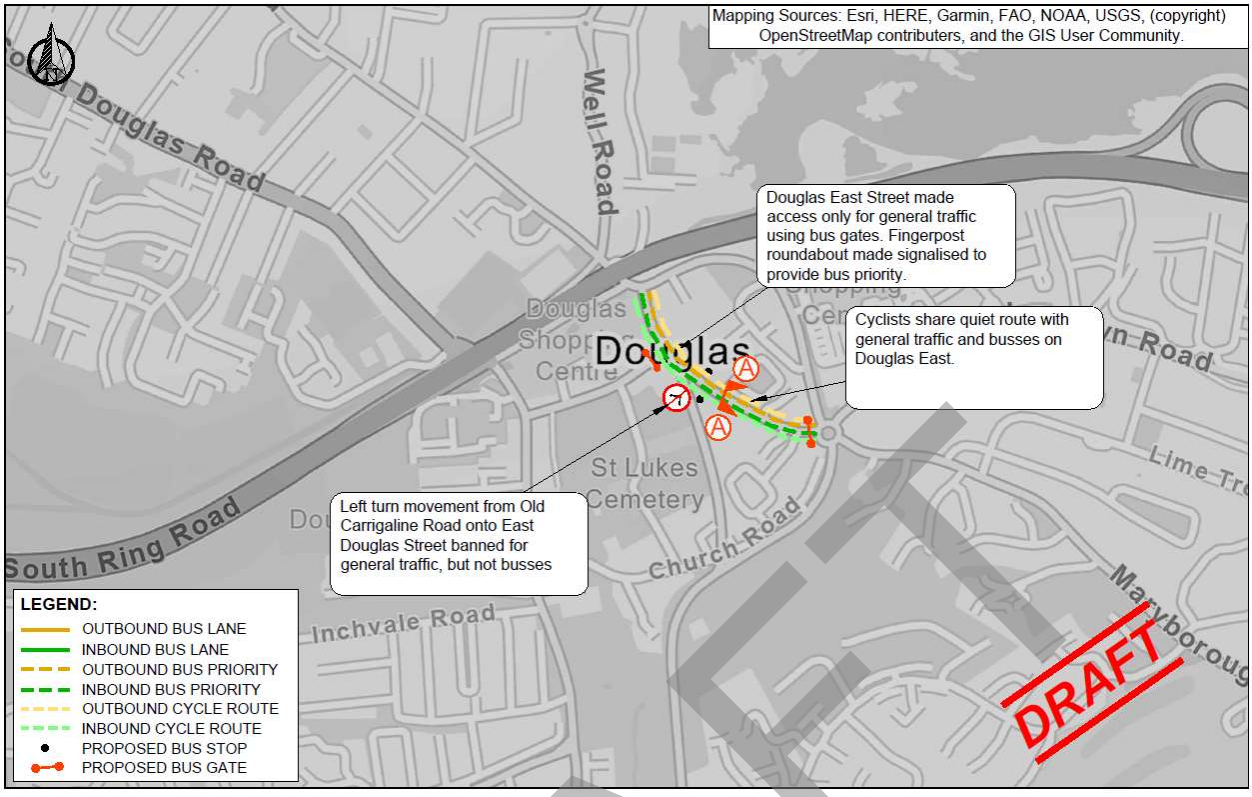


Figure 7-6

Route for Busses

Starting from The Fingerpost Roundabout busses would use East Douglas Street, until reaching Douglas Road. The Fingerpost Roundabout would be upgraded to include signals that would give bus priority. Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Bus Stops
There would be a bus stop in both directions priovided on East Douglas Street.

Cross Sections

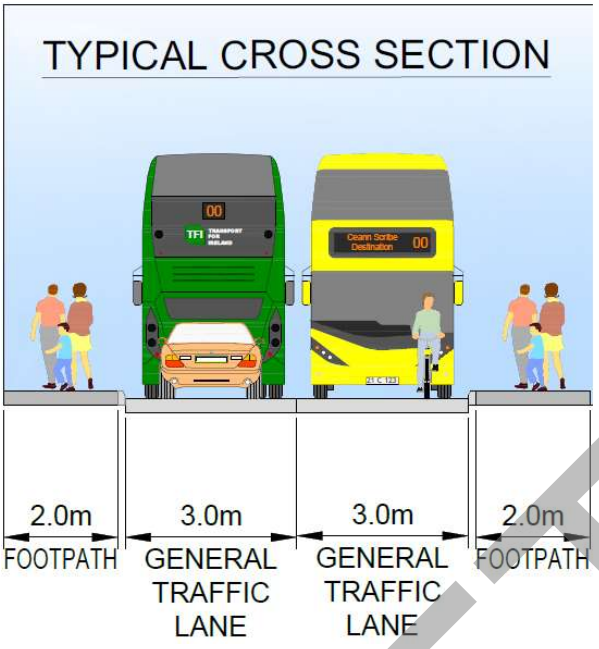


Figure 7-7 A-A

7.1.5 The Fingerpost Roundabout to Douglas Road (at Well Road Junction) - Options Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-1Table 7-1 Route 10 - Options Assessment Summary of Fingerpost Roundabout to Douglas Road (at Well Road Junction) below.

Table 7-1 Route 10 - Options Assessment Summary of Fingerpost Roundabout to Douglas Road (at Well Road Junction)

Set 2A				
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**
Economy	Capital Cost			
	Average Journey Time			
	Journey Time Reliability			
Integration	Land Use Integration			
	Residential and Employment Catchment			
	Transport Integration			
	Cyclist Integration			
	Pedestrian Integration			
Accessibility and Social Inclusion	Key Trip Attractors (Education, Health, Commercial, Retail, Leisure)			
	Deprived Geographic Areas			
Safety	Road Safety			
Environment	Archaeological, Architectural and Cultural Heritage			
	Biodiversity			
	Soils and Geology			
	Water Resources			
	Landscape and visual			
	Noise, vibration and air quality			
	Land Use and Built Environment			

In terms of “Economy” Options 3 has the lowest capital costs as it requires less private land take and the least significant works. Option 1 & 3 perform better for average journey time due to having more direct routes than Option 2. Option 1 performs better for journey time reliability as it has dedicated bus lanes in both directions for the length of the route. Overall, for economy Option 1 & 3 perform better than Option 2 and equally to each other on balance.

In terms of “Integration”, Options 2 and 3 serve a greater residential catchment and integrate best with the Douglas Land Use Study by providing a route through Douglas Village Centre, all options prevent through traffic using Douglas East and are likely to improve the public realm in Douglas Village. Option 3 serves the future proposed bus network better than the other options, with more frequent busses proposed to use this route than the other routes. For transport integration overall Options 3 performs better than Option 1&2, as all routes prevent through traffic through Douglas, but option 3 has the least impact on the traffic network outside of Douglas Village. All options are equal for cyclist and pedestrian integration. Therefore, overall Option 3 performs best for integration, Option 2 second best and Option 1 worst.

In terms of “Accessibility and Social Inclusion”, Options 2 and 3 are regarded as slightly better as both routes pass through Douglas Village Centre. Option 1 bypasses the village centre. All options were scored neutral in terms of cyclist and pedestrian integration.

In terms of Road Safety, all options are scored equally.

In terms of “Environment”, there is not much difference between the 3 options, as they all generally use existing carriageways and require relatively low amounts of widening. Option 1 performs slightly worse than the other 2 options for biodiversity due to requiring the removal of some trees and vegetated areas for widening the cross section. Option 2 performs worse than Option 1 & 3 for Archaeological, Architectural and Cultural Heritage due to requiring works on the 19th century bridge. Option 3 performs the best for landscape and visual as it requires the least widening of the carriageway. Options 2 & 3 require the removal of some on-street parking, Option 1 would require widening into some private car parks so they perform similarly for Land use and the built environment. Overall Option 3 performs slightly better for the environment criteria.

7.1.6 Fingerpost Roundabout to Douglas Road Conclusion

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 7-2.

Table 7-2

Fingerpost Roundabout to Douglas Road			
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**
Economy			
Integration			
Accessibility and Social inclusion			
Safety			
Environment			

Based on the assessments above it has been determined that Option 3 offers the preferred route option for the following reasons:

- It has a lower cost when compared to Options 1 & 2
- It serves Douglas Village well and by preventing through traffic is likely to improve the public realm.
- It requires less significant land take than Option 1.

Following this assessment, the spiders web is now reduced to the following shown below:

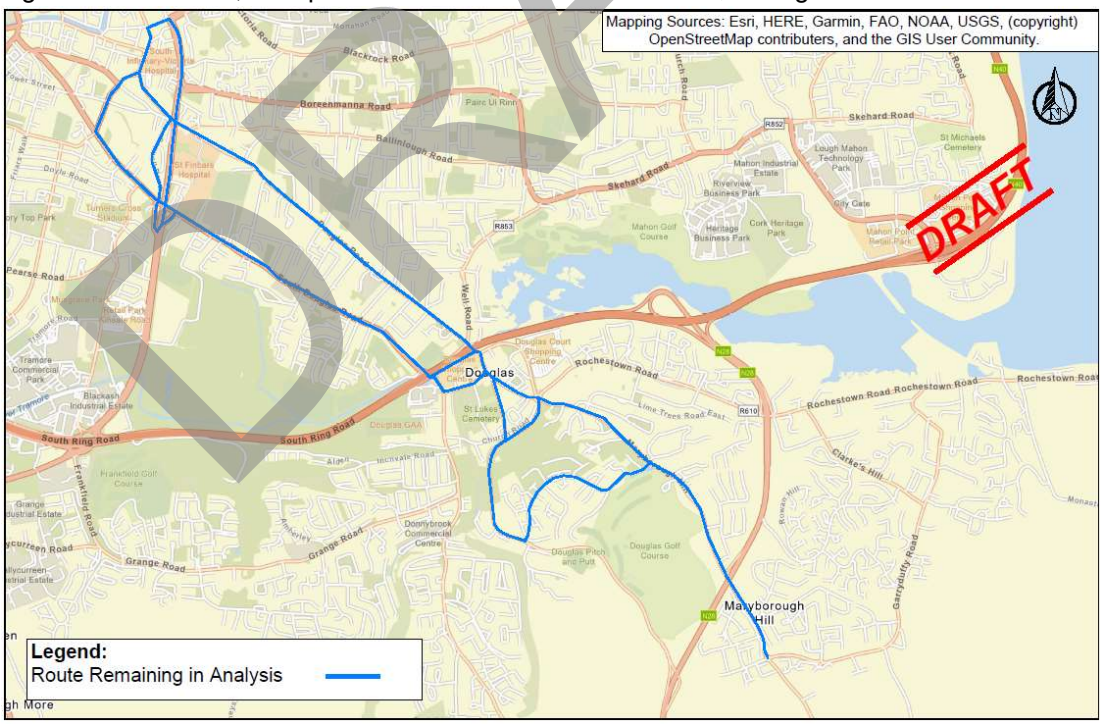


Figure 7-8

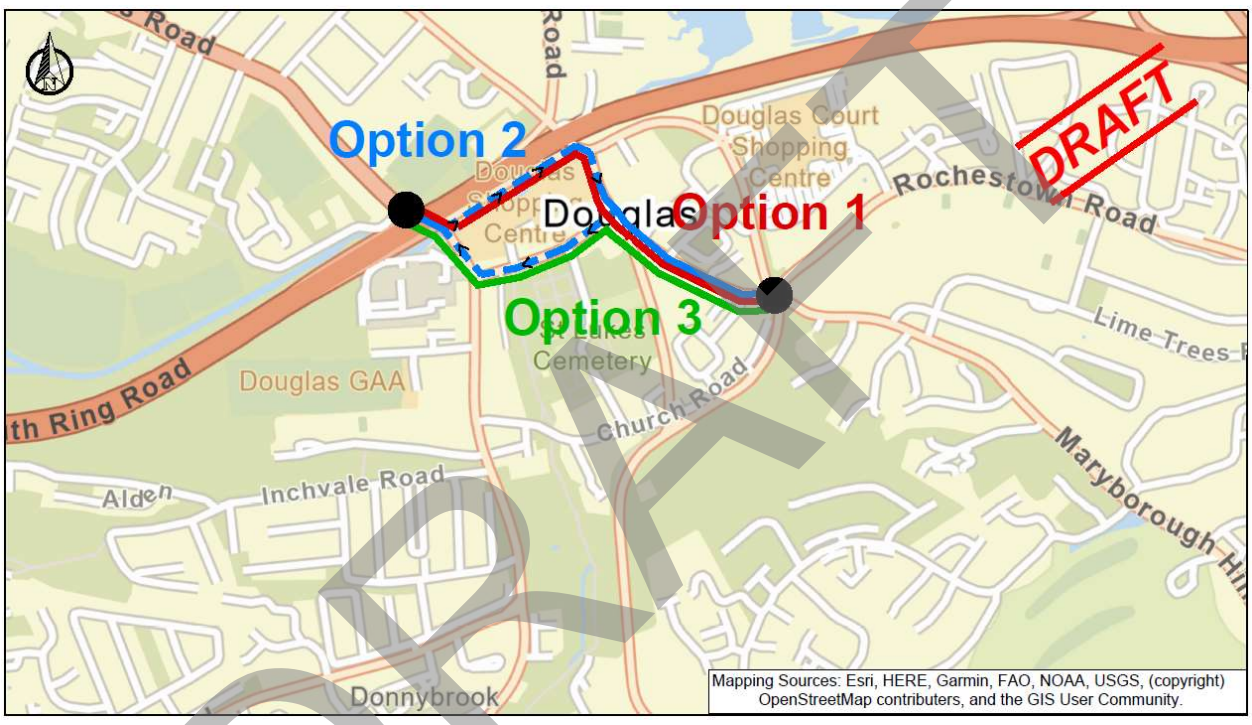
7.2 Set 2B - The Fingerpost Roundabout to South Douglas Road (at junction with River Walk)

7.2.1 Introduction and Route Description

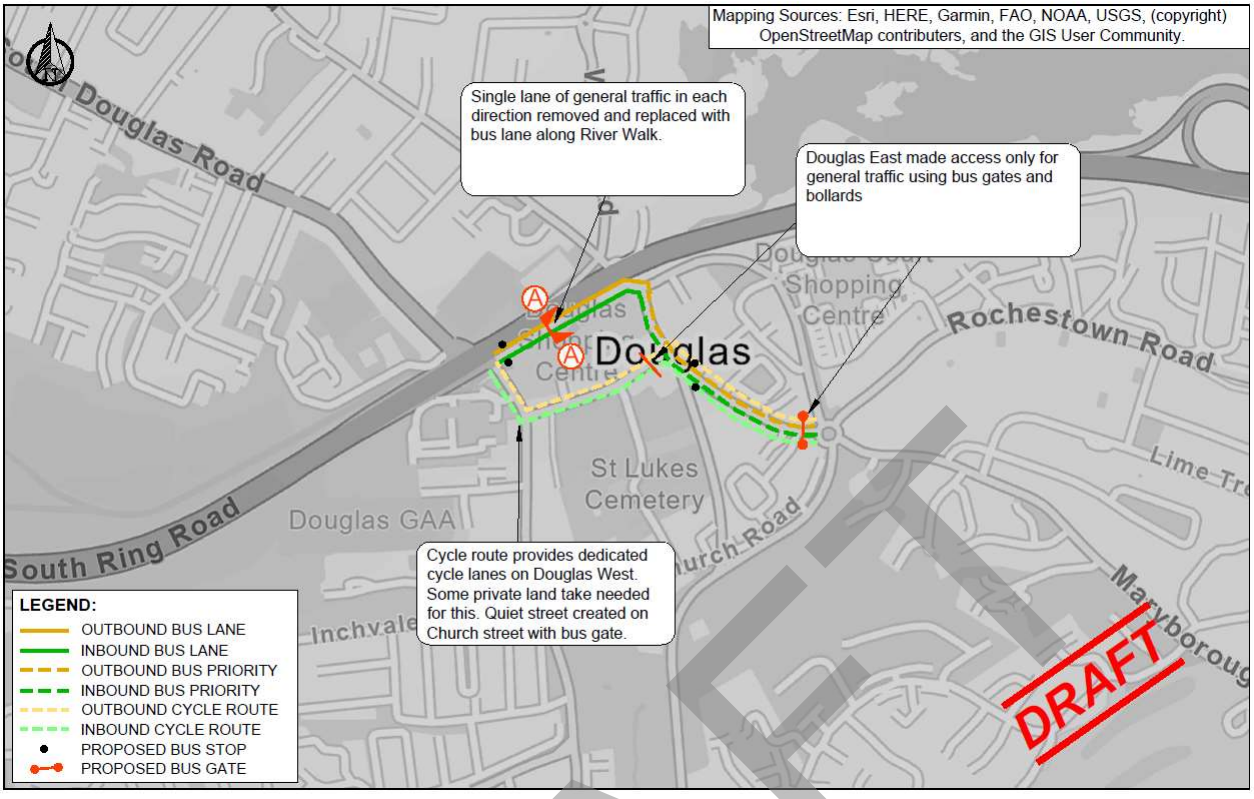
Following the Stage 1 sifting process the remaining links in Section 2 are assembled to form three viable route options for this journey as follows:

- Route Option 1: Uses East Douglas Street and then River Walk
- Route Option 2: Uses East Douglas Street and a one way system around River Walk and Church Street.
- Route Option 3: Uses East Douglas Street Church Street and West Douglas Street.

All of these routes start at The Fingerpost Roundabout and finish at the junction between West Douglas Street and River Walk.



7.2.2 Route Option 1:



Route for Busses

Starting from The Fingerpost Roundabout, which would be upgraded to include signals that would give bus priority, busses would take East Douglas Street, and the River Walk, to reach South Douglas Road.

Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route.

On River Walk a lane of general traffic in each direction would be converted to a dedicated bus lane, meaning that there would be a single lane of traffic and single bus lane in each direction. The provision for pedestrians along this section would remain the same.

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Church Street. Here the cyclists would follow Church Street which has also been made access only for general traffic through the use of bollards. Once on West Douglas Street dedicated bus lanes in each direction would be provided, with up to 3m land take required outside Haveli Restaurant required for this.

Bus Stops
There would be bus stops in both directions on East Douglas Street in 1 location, and on River Walk.

Cross Section

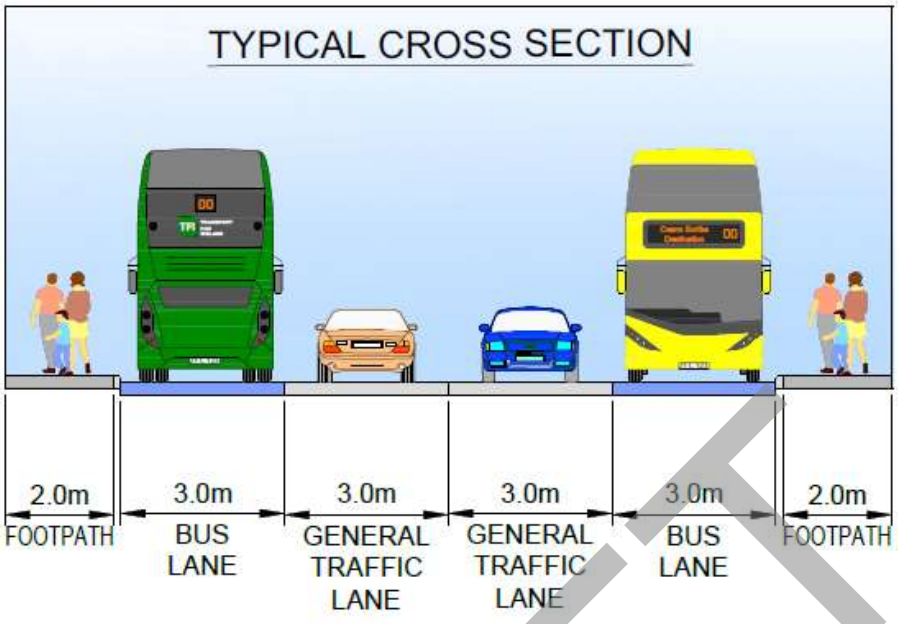
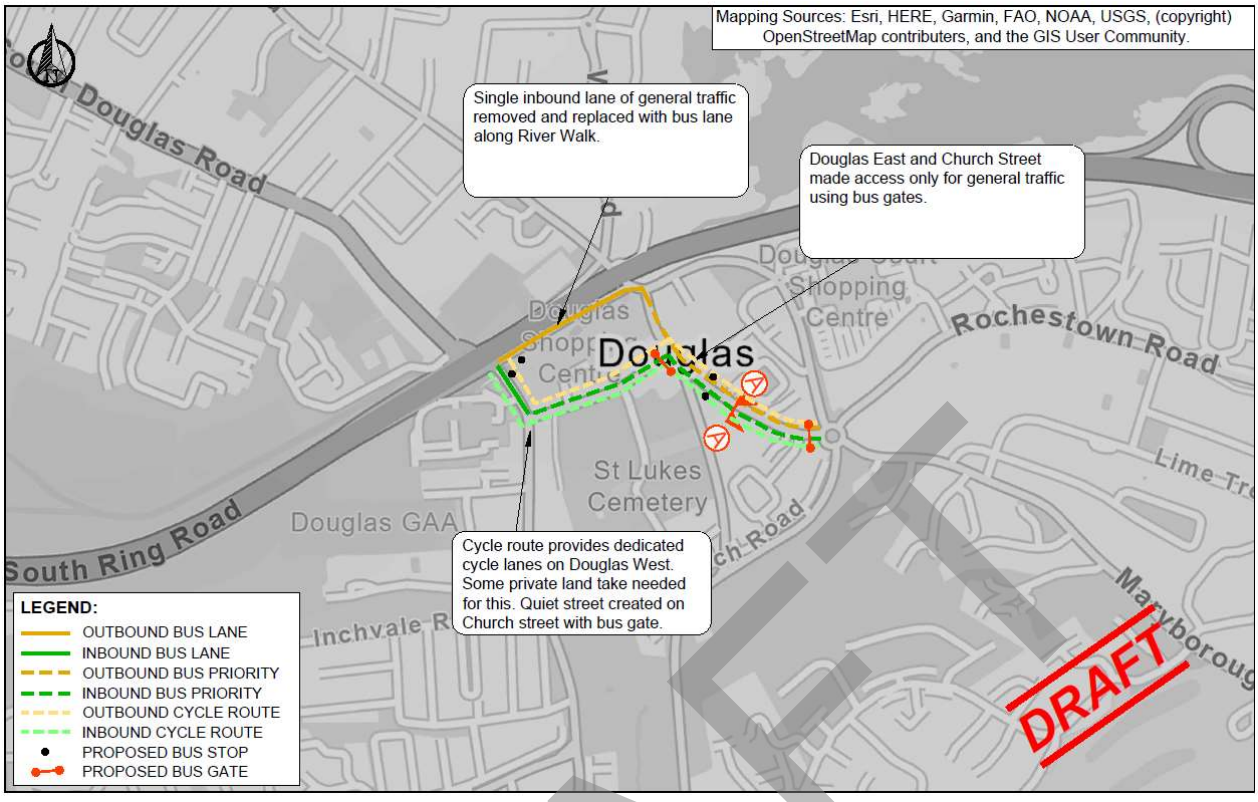


Figure 7-9 Cross Section A-A

7.2.3 Route Option 2:



Route for Busses

Starting from The Fingerpost Roundabout, which would be upgraded to include signals that would give bus priority, busses would take East Douglas Street, then inbound busses Church Street and West Douglas Street, and outbound busses would carry on on Douglas East and then take River Walk.

Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route.

A bus gate would also be used on Church Street to make Church Street a quiet route with bus priority. On West Douglas Street traffic signals would give inbound bus priority between Woollen Mills Business Park and Church Street, north of this, one of the two southbound traffic lanes would be converted to a bus lane.

On River Walk one of the two eastbound traffic lanes would be converted to a dedicated bus lane.

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Church Street. Here the cyclists would follow Church Street which has also been made access only for general traffic through the use of bollards. Once on West Douglas Street dedicated bus lanes in each direction would be provided, with up to 3m land take required outside Haveli Restaurant required for this.

Bus Stops
There would be bus stops in both directions on East Douglas Street in 1 location, and a bus stop on River Walk for outbound busses, and West Douglas Street for inbound busses.

Cross Section

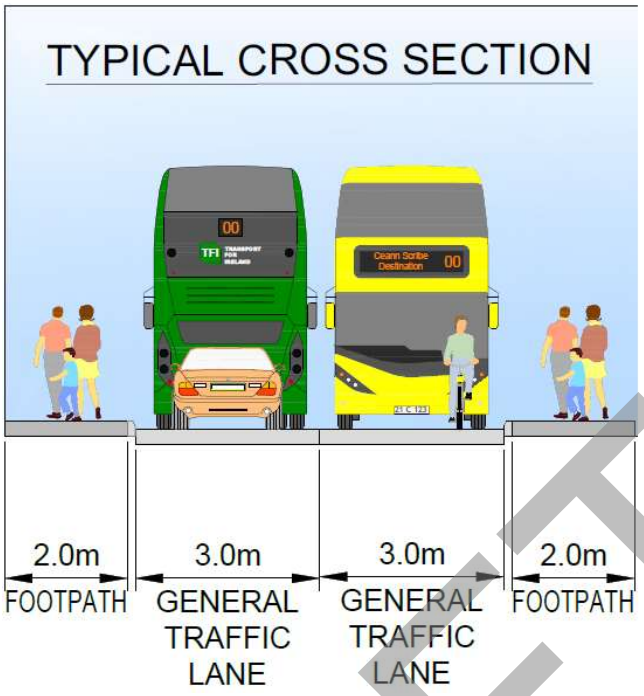
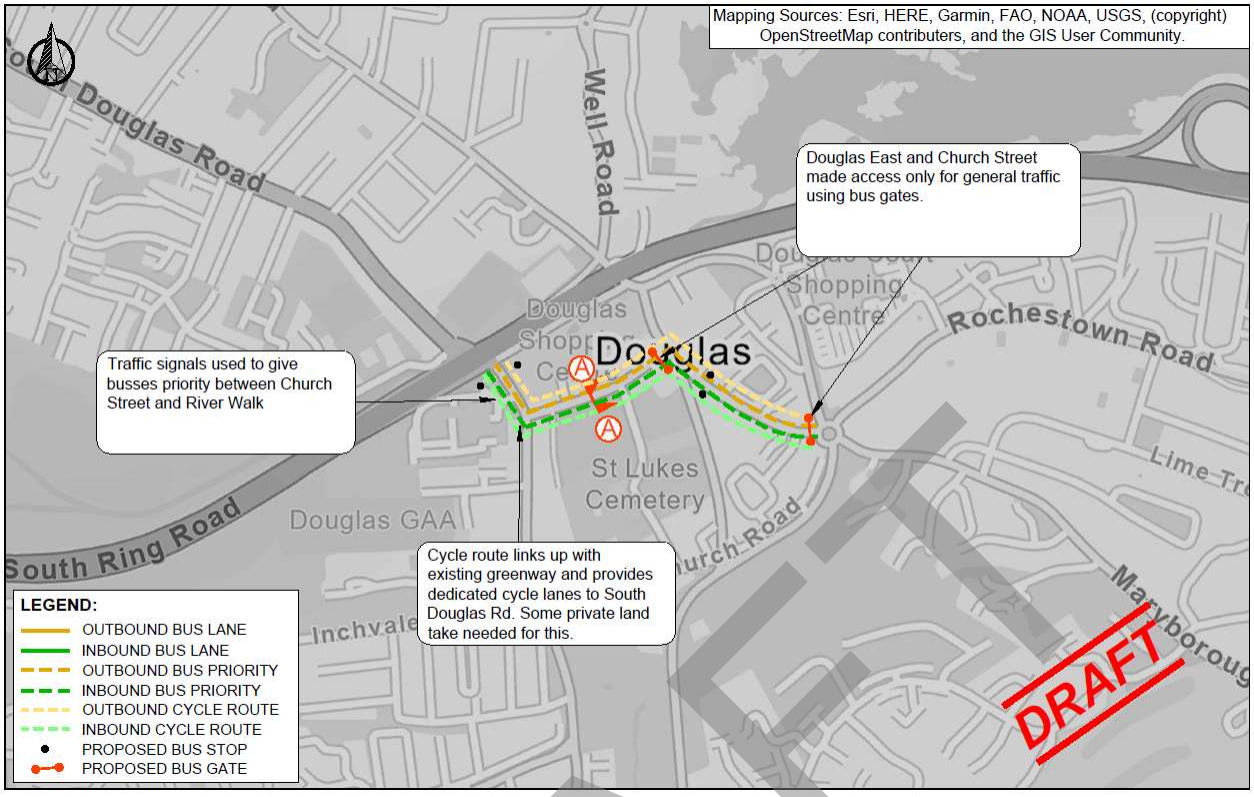


Figure 7-10 A-A

7.2.4 Route Option 3:



Route for Busses

Starting from The Fingerpost Roundabout, which would be upgraded to include signals that would give bus priority, busses would take East Douglas Street, then inbound Church Street and West Douglas Street.

Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route.

A bus gate would also be used on Church Street to make Church Street a quiet route with bus priority. On West Douglas Street traffic signals would give inbound bus priority between Woollen Mills Business Park and the junction with River Walk.

Route for Cyclists

Fingerpost roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Church Street. Here the cyclists would follow Church Street which has also been made access only for general traffic through the use of bollards. Once on West Douglas Street dedicated bus lanes in each direction would be provided, withup to 3m land take required outside Haveli Restaurant required for this.

Bus Stops
There would be a bus stop in both directions priovided on East Douglas Street and West Douglas Street.

Cross Sections

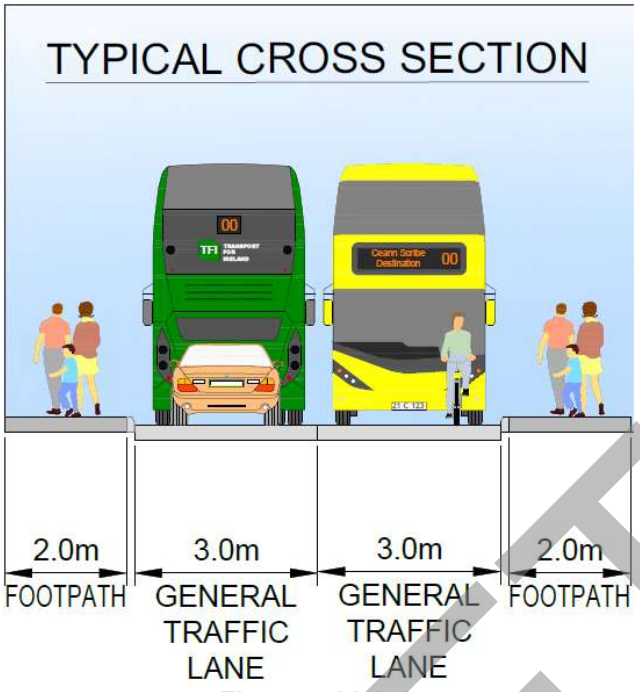


Figure 7-11 A-A

7.2.5 The Fingerpost Roundabout to South Douglas Road - Options Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-3Table 7-1Table 7-1 Route 10 - Options Assessment Summary of Fingerpost Roundabout to Douglas Road (at Well Road Junction) below.

Table 7-3 Route 10 - Options Assessment Summary of Fingerpost Roundabout to South Douglas Road (at Well Road Junction)

Set 2B				
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**
Economy	Capital Cost			
	Average Journey Time			
	Journey Time Reliability			
Integration	Land Use Integration			
	Residential and Employment Catchment			
	Transport Integration			
	Cyclist Integration			
	Pedestrian Integration			
Accessibility and Social Inclusion	Key Trip Attractors (Education, Health, Commercial, Retail, Leisure)			
	Deprived Geographic Areas			
Safety	Road Safety			
Environment	Archaeological, Architectural and Cultural Heritage			
	Biodiversity			
	Soils and Geology			
	Water Resources			
	Landscape and visual			
	Noise, vibration and air quality			
	Land Use and Built Environment			

In terms of “Economy” Options 2 has the highest capital cost as it requires works on bot Church Street and River Walk. All options have similar average journey time due to having similar length routes and the same number of junctions. Option 1 performs better for journey time reliability as it has dedicated bus lanes in both directions for a longer length of the route than the other two options. Overall, for economy Option 1 performs slightly better than Option 2 & 3.

In terms of “Integration”, the three options serve a similar area with bus stops in similar locations so generally perform the same across the Integration Criteria. However for transport integration option 1 serves the whole of East Douglas Street, which has a high volume of busses and is proposed to continue to have a high volume of busses, and for this reason Option 1 score better overall for transport integration and Integration as a whole.

In terms of “Accessibility and Social Inclusion”, all options serve a similar area so perform equally for this criterion.

In terms of Road Safety, all options are scored equally.

In terms of “Environment”, Options 2 & 3 require widening on Church Street, whereas Option 1 utilises the existing road carriageway on River Walk instead. For this reason Option 1 performs better for the biodiversity, Landscape and Visual, and land use and the built environment criteria. This means Option 1 scores better overall for the environment criteria.

7.2.6 Fingerpost Roundabout to South Douglas Road Conclusion

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 7-2.

Table 7-4

Fingerpost Roundabout to South Douglas Road			
Assessment Criteria	Route 1	Route 2	Route 3
Economy			
Integration			
Accessibility and Social inclusion			
Safety			
Environment			

Based on the assessments above it has been determined that Option 1 offers the preferred route option for the following reasons:

- It has better journey time reliability than Options 2 & 3.
- It serves Douglas Village well and by preventing through traffic is likely to improve the public realm.
- It requires less significant land take and therefore has a lower associated environmental impact than Options 2 & 3.

Following this assessment, the spiders web is now reduced to the following shown below:

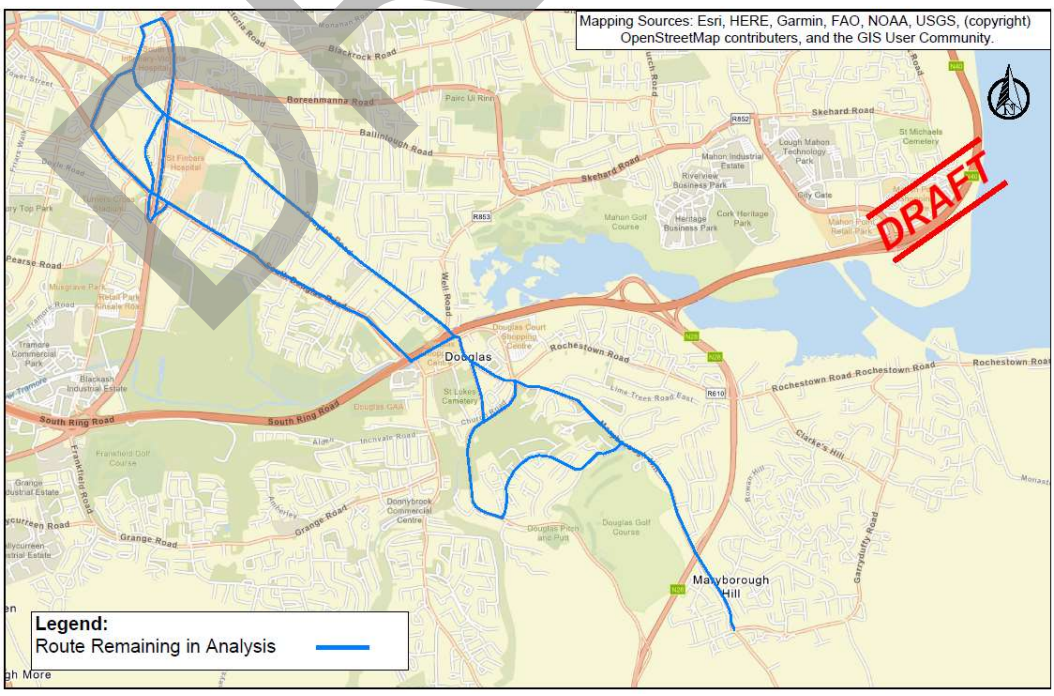


Figure 7-12

8. Stage 2 MCA Assessment - Section 3

8.1 Section 3 - Douglas Road / River Walk Junction to Old Station Road / South Link Road Junction

8.1.1 Introduction and route description

Following the Stage 1 sifting process, and the MCA analysis of Section 2, the route options between Douglas Road / River Walk Junction to Old Station Road / South Link Road Junction are assembled to form ten viable route options for Section 3. Note that an option that had 2 way busses and 2 way traffic on Douglas Road was considered unfeasible due to the large amount of landtake and potential properties that may have been affected, and for this reason was not considered.

- Route Option 1: Uses Douglas Road and Southern Road, with bus priority only and no dedicated bus lanes until Infirmary and Anglesea Road
- Route Option 2: Uses River Walk, South Douglas Road, Evergreen Road and Summerhill South, with bus priority only and no dedicated bus lanes until Summerhill South.
- Route Option 3: Uses a one way system with inbound busses on Douglas Road and Southern Road and outbound busses on River Walk, South Douglas Road, Evergreen Road and Summerhill South, with dedicated bus lanes the whole route.
- Route Option 4: Two-way busses on Southern Road, then uses a one way system with inbound busses on Douglas Road and outbound busses on River Walk, South Douglas Road and Capwell Road, dedicated bus lanes provided route wide except Capwell Road.
- Route Option 5: Uses River Walk and South Douglas Road with bus priority only, and South Link Road with dedicated bus lanes.
- Route Option 6: Uses Douglas Road and Southern Road, with dedicated bus lanes.
- Route Option 7: Uses River Walk, South Douglas Road, Evergreen Road and Summerhill South, with dedicated bus lanes.
- Route Option 8: Uses River Walk, South Douglas Road, Capwell Road and Southern Road with dedicated bus lanes except for Capwell Road.
- Route Option 9: Uses River Walk, South Douglas Road and South Link Road with dedicated bus lanes.
- Route Option 10: Uses Douglas Road and Southern Road, with dedicated bus lanes.

8.1.2 Route Options Section 3:

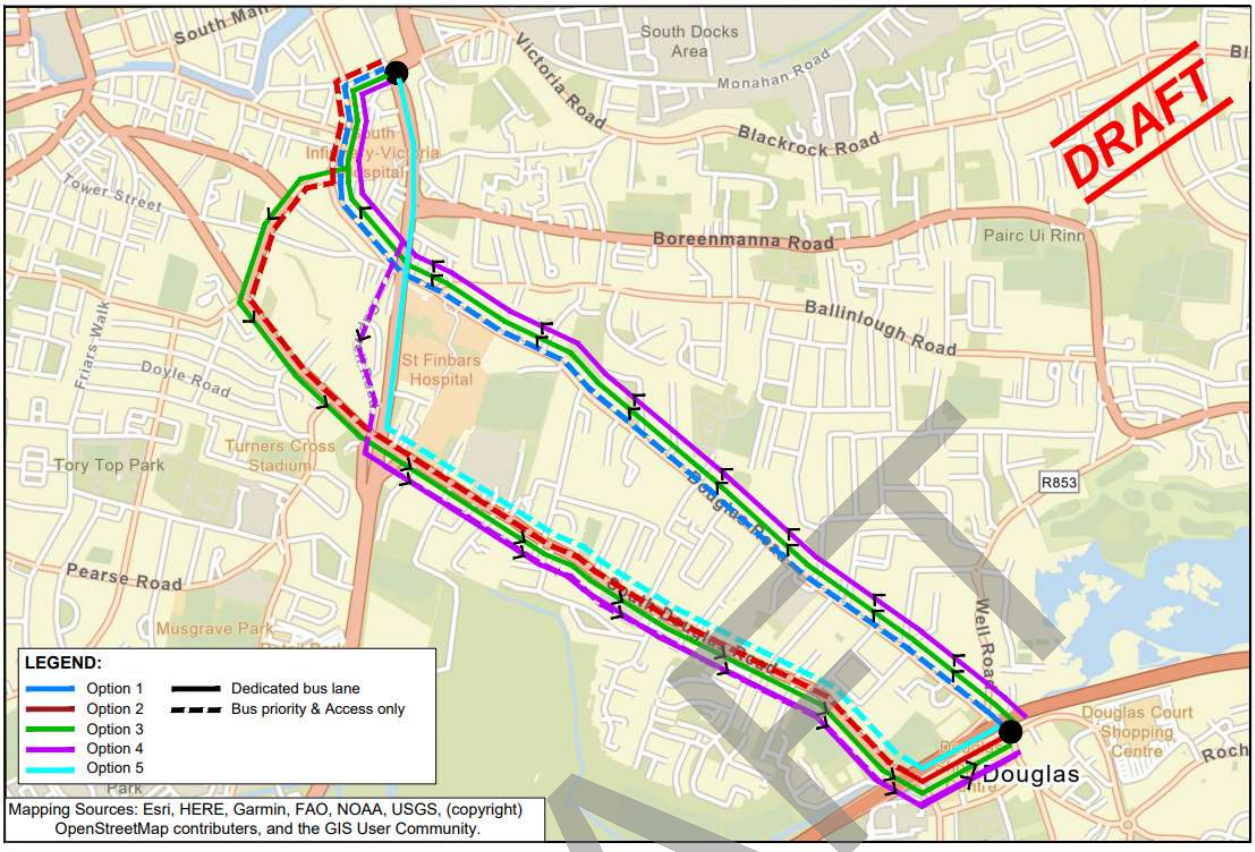


Figure 8-1

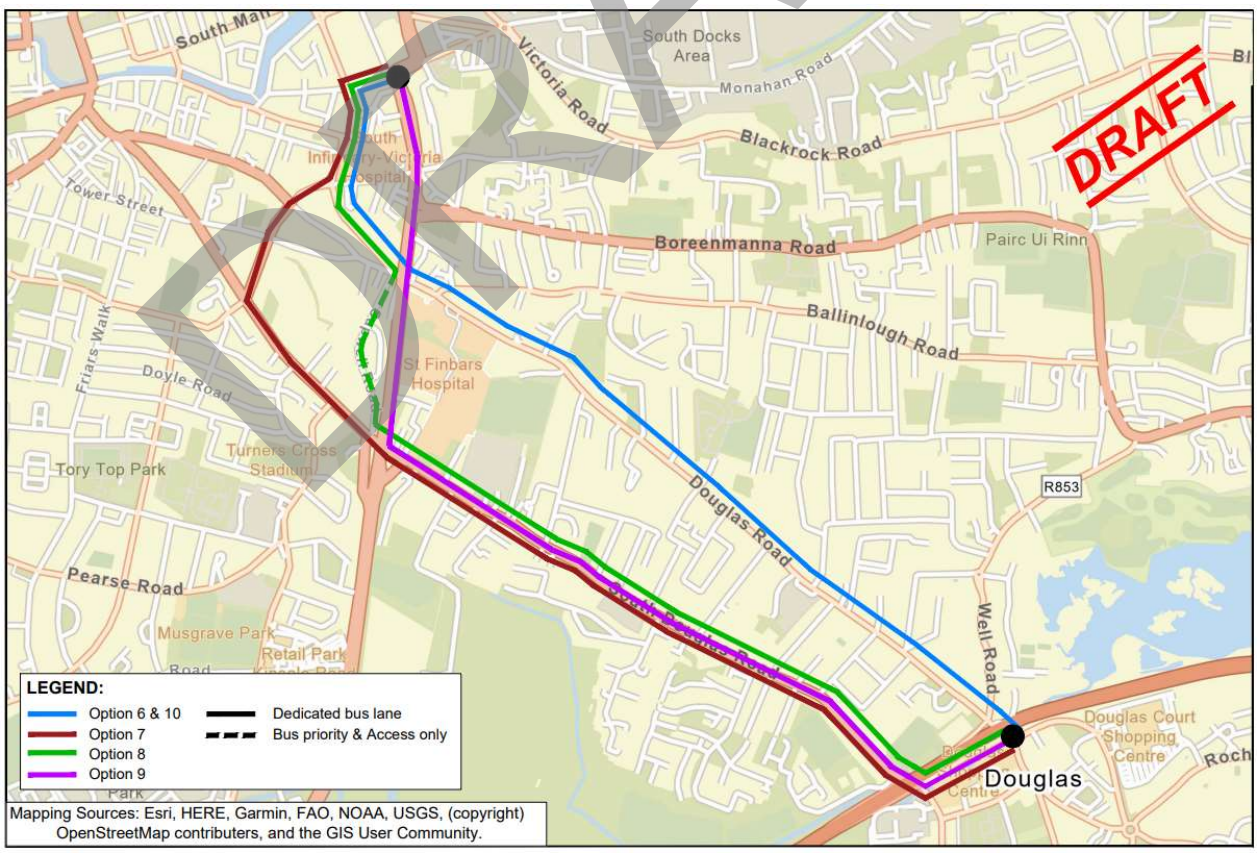


Figure 8-2

8.1.3 Route Option 1:

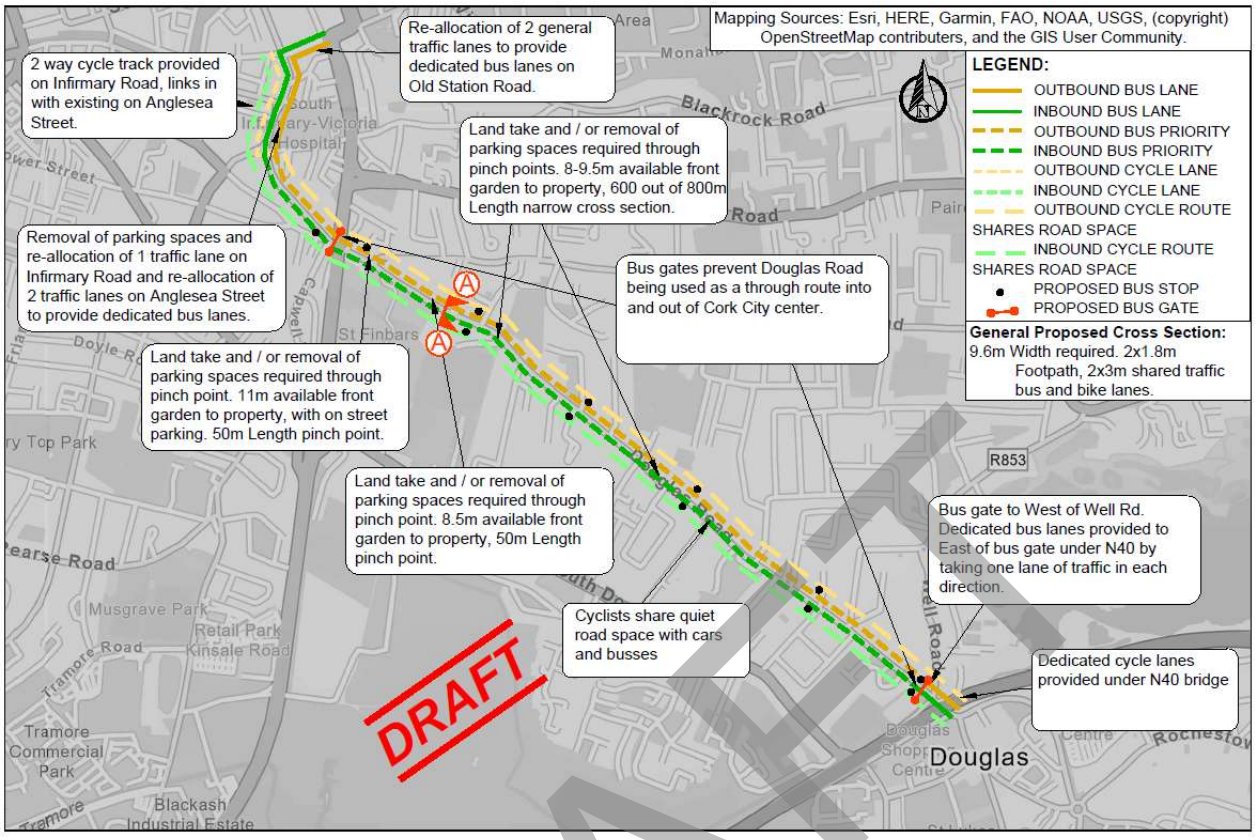


Figure 8-3

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road and finish at the junction with Old Blackrock Road. Dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

It is not feasible to provide dedicated bus lanes as well as general traffic lanes on this route. Therefore this option would give bus priority by placing bus gates on Douglas Road by the junction with Well Road and to the west of the bridge over South Link, preventing Douglas Road and Southern Road being used as a through route. With this in place only minor changes would be needed to the cross section to provide adequate footpaths on both sides of Douglas Road. Some widening, private land take and removal of on street parkingwould be required for this through the pinch points on Douglas Road.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks. Once Well Road is reached cyclists would share the now quiet Douglas Road and Southern Road route with busses and the access only traffic until the route finishes at the junction with Old Blackrock Road.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided in 6 locations on Douglas Road.

Cross Sections

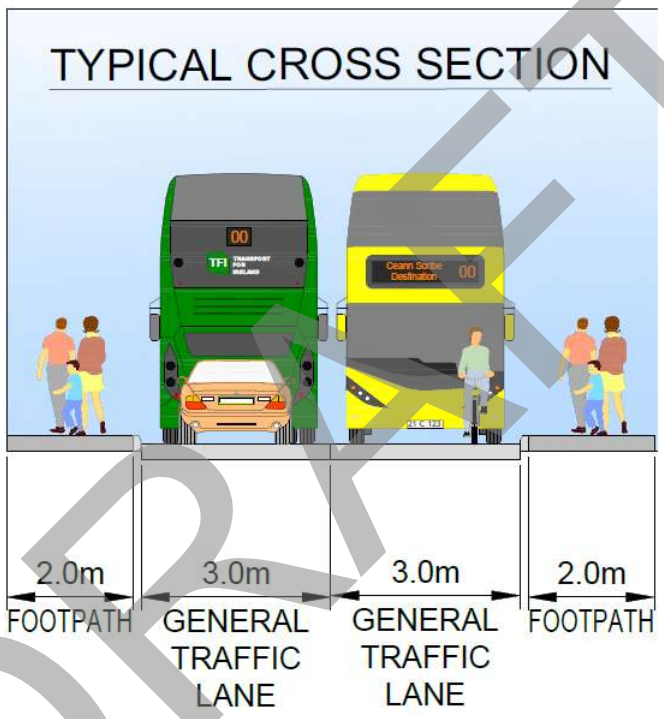


Figure 8-4 A-A

8.1.4 Route Option 2:

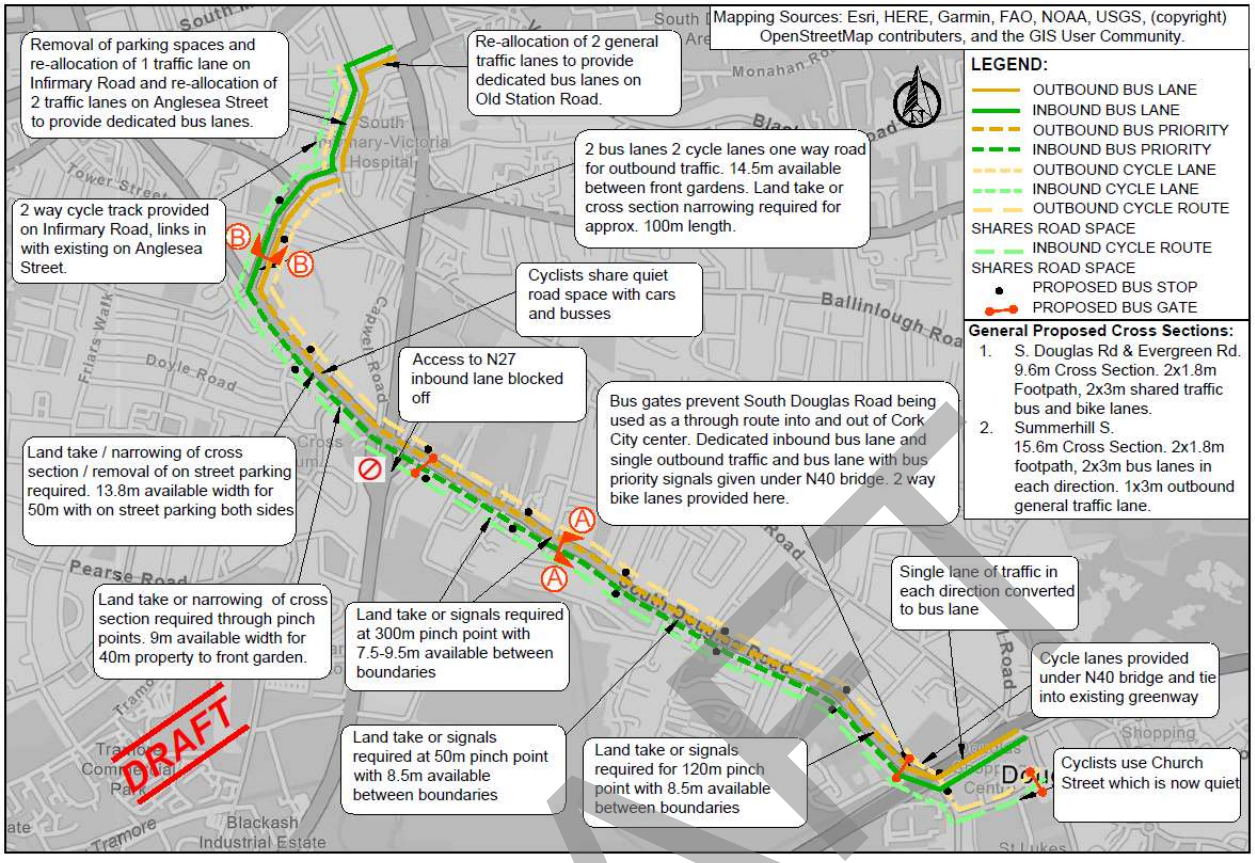


Figure 8-5

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow River Walk until reaching South Douglas Road, here a new signalised junction would take busses out onto South Douglas Road which it would follow until taking Evergreen Road and then Summerhill South.

On River walk, 2 of the existing 4 general traffic lanes would be repainted to create dedicated bus lanes in both directions, the existing footpaths would remian the same.

Bus gates placed on South Douglas Road, north of the Roundabout by Well Road and south of the N27 slip road, would make prevent South Douglas Road and Evergreen Road from being used as a through route by general traffic. The sliproad to take traffic onto the N27 would also be clsoed to facilitate this.This would give busses priority along this now quiet route.

The existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are several pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it, meaning it is not feasible to provide dedicated bus lanes as well as general traffic lanes. Private land take would be required through these pinch points to provide traffic lanes and footpaths in both directions.

On Summerhill South the lanes of general traffic would be reduced to have 1 lane of outbound only traffic, with northbuond traffic taking an alternative route. This would allow room for dedicated bus lanes in both directions. The existing cross section generally has 3 lanes of general traffic, in the narrowest point 2 lanes of general traffic and a cycle lane. In the narrowest section (for 100m length) widening would be needed into front gardens on either side of the properties.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Starting on Church Street at the junction with East Douglas Street, cyclists would share the queit roadspace with general traffic, heading west until reaching West Douglas Street. This road is made quiet with the introduction of a bus gate at the eastern end of Church Road. West Douglas Street has 2 traffic lanes and footpaths only, and widening would be required to provide the widths for cycle lanes. This would involve the taking of private land on West Douglas Street.

After the entrance to Woollen Mills Business Park on West Douglas Street there are 3 lanes of general traffic. One of the two southbound lanes would be removed to allow cycle lanes to be introduced without widening the road cross section.

Once past the roundabout by Well Road on South Douglas Road, cyclists would share the now quiet South Douglas Road and Evergreen Road route with busses and the access only traffic until reaching Summerhill South.

On Summerhill South dedicated cycle lanes are provided, private land take is required to achieve this.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided on: River Walk in 1 location, South Douglas Road in 5 locations, Evergreen Road in 1 location and Summerhill South in 1 location.

Cross Sections

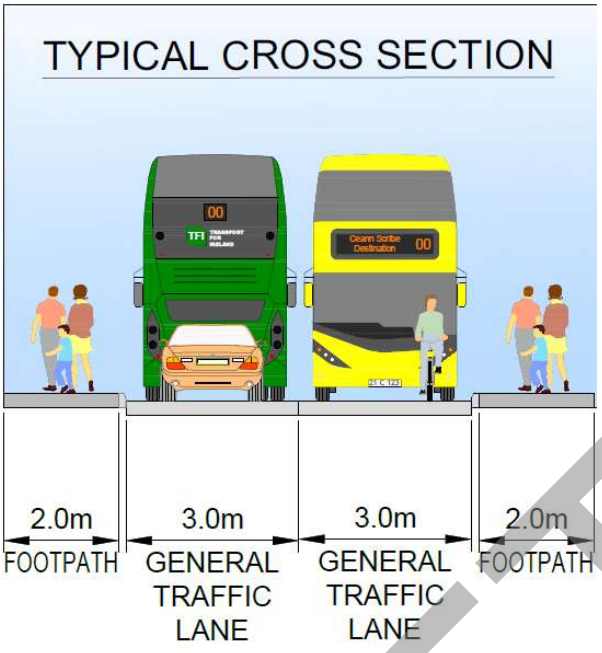


Figure 8-6 A-A

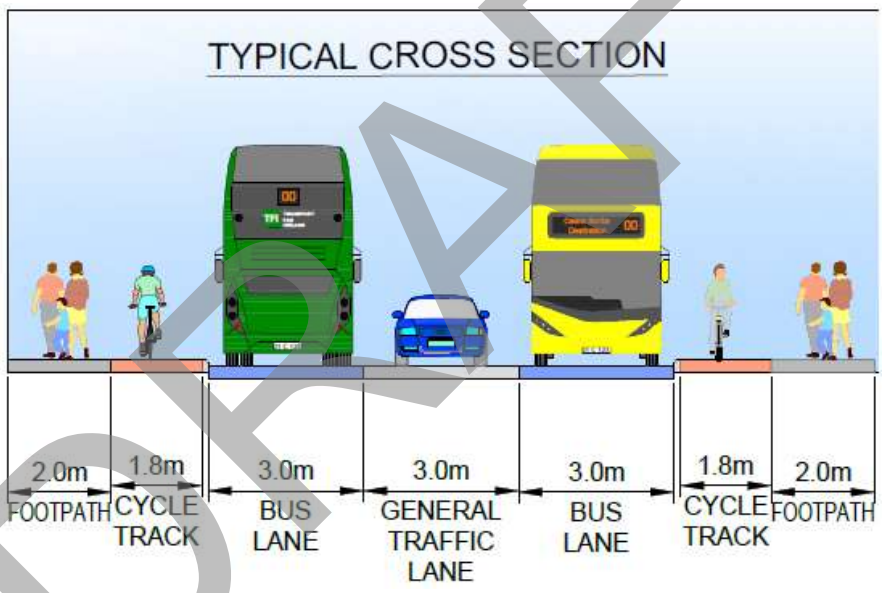


Figure 8-7 B-B

8.1.5 Route Option 3:

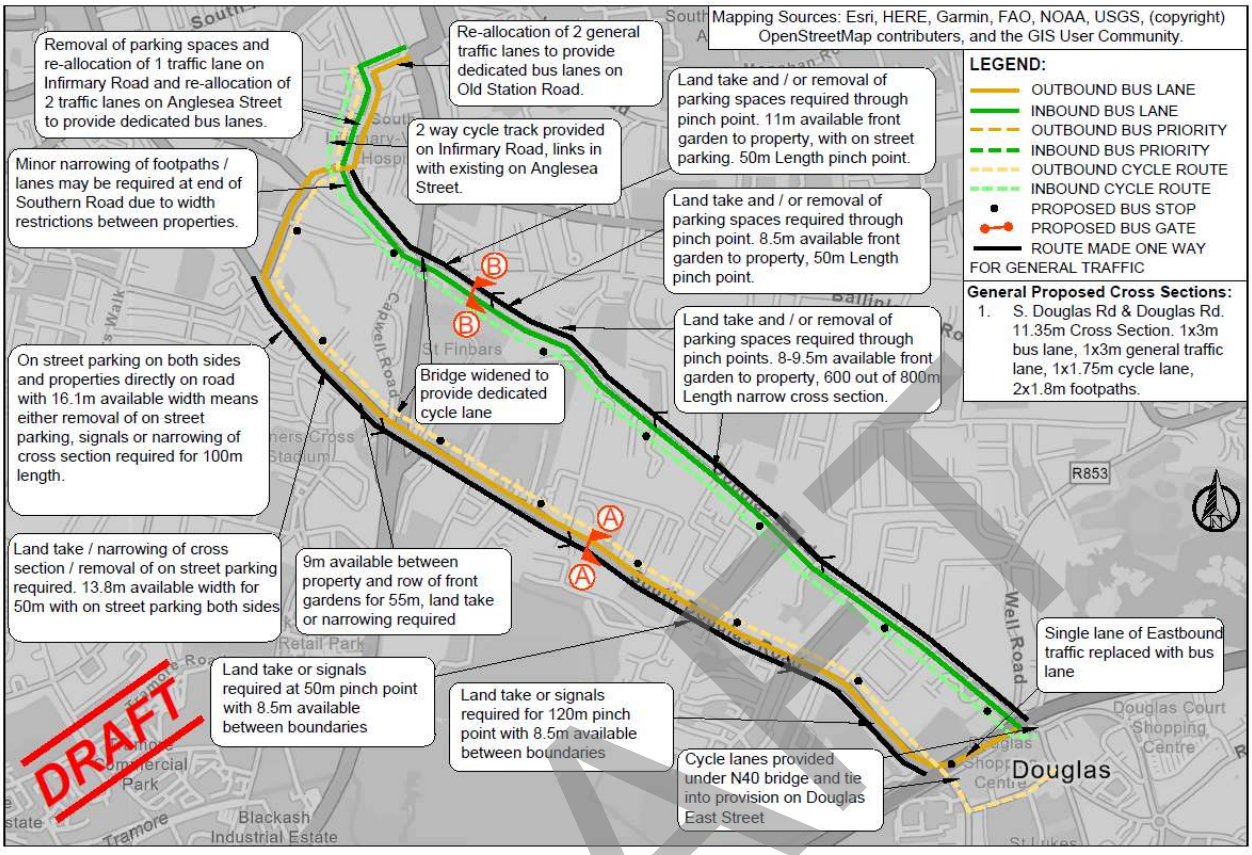


Figure 8-8

Route for Busses

This route utalises a one way loop, with inbound busses using Douglas Road and Southern Road, and outbound busses using, River Walk, South Douglas Road, Evergreen Road and Summerhill South. General traffic and bikes would also follow this same one way loop on these roads.

The existing cross sections of Douglas Road, South Douglas Road, Evergreen Road and Southern Road are generally similar, with a lane of general traffic in each direction and footpaths on either side. On all of these roads a lane of general traffic would be removed and a bus lane put in its place, making the road one way for busses and traffic in the same direction, and the overall route work as a one way system. There are pinch points along these routes where the space between boundries, which are generally private gardens and dwellings, is not enough for 2 traffic lanes and footpaths. Widening into private gardens would be needed through these pinch points to provide a dedicated bus lane, traffic lane and 2 footpaths.

For outbound busses on River Walk, one of the existing four general traffic lanes would be repainted to create dedicated bus lanes in the eastbound directoin, the existing footpaths would remain the same. Upgraded signals at the Junction with South Douglas Road would give busses priority through there.

On Summerhill South one of the 3 existing lanes would be repainted to create an outbound only bus lane, in one area where there are only 2 existing rtaffic lanes land take would be needed for this.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Cyclists would utalise the one way loop in the same way as the route for busses. With inbound cyclists using Douglas Road and Southern Road, and outbound cyclists using, South Douglas Road, Evergreen Road and Summerhill South. Dedicated cycle lanes would be provided the whole way round this loop. Widening into private land would be needed around this loop to get the required widths for cycle lanes and the planned route for busses.

To accesss the one-way from East Douglas Street outbound cyclists would use Church Street as far as West Douglas Street which is now a quiet street since the introduction of a bus gate to the east of it. From West Douglas Street a dedicated outbound bus lane would be provided to link up with South Douglas Road.

After the entrance to Woollen Mills Business Park on West Douglas Street there are 3 lanes of general traffic. One of the two southbound lanes would be removed to allow an outbound cycle lane to be introduced without widening the road cross section.

Inbound cyclists would go straight from East Douglas Street onto Douglas Road, where dedicated inbound cycle lanes would be provided.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be inbound only bus stops provided in 6 locations on Douglas Road.

There would be outbound only bus stops provided on: River Walk in 1 location, South Douglas Road in 5 locations, Evergreen Road in 1 location and Summerhill South in 1 location.

Cross Sections

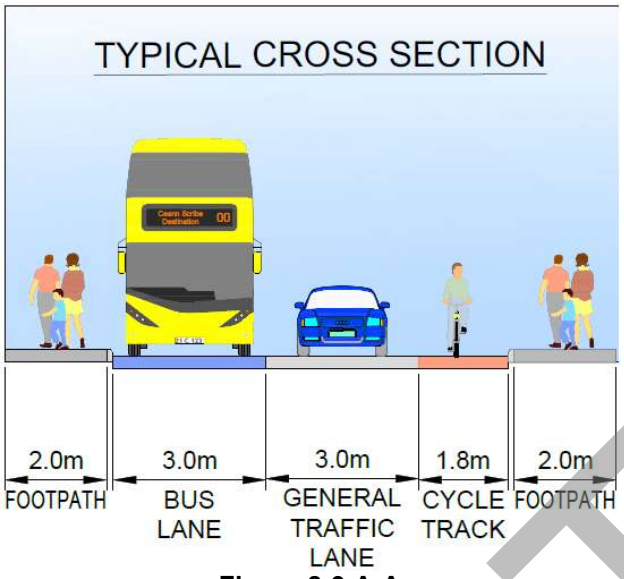


Figure 8-9 A-A

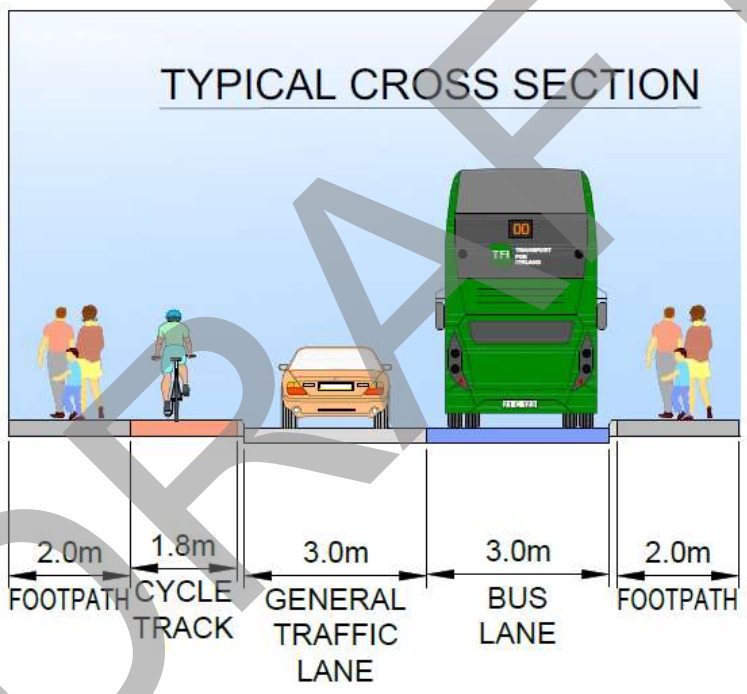


Figure 8-10 B-B

8.1.6 Route Option 4:

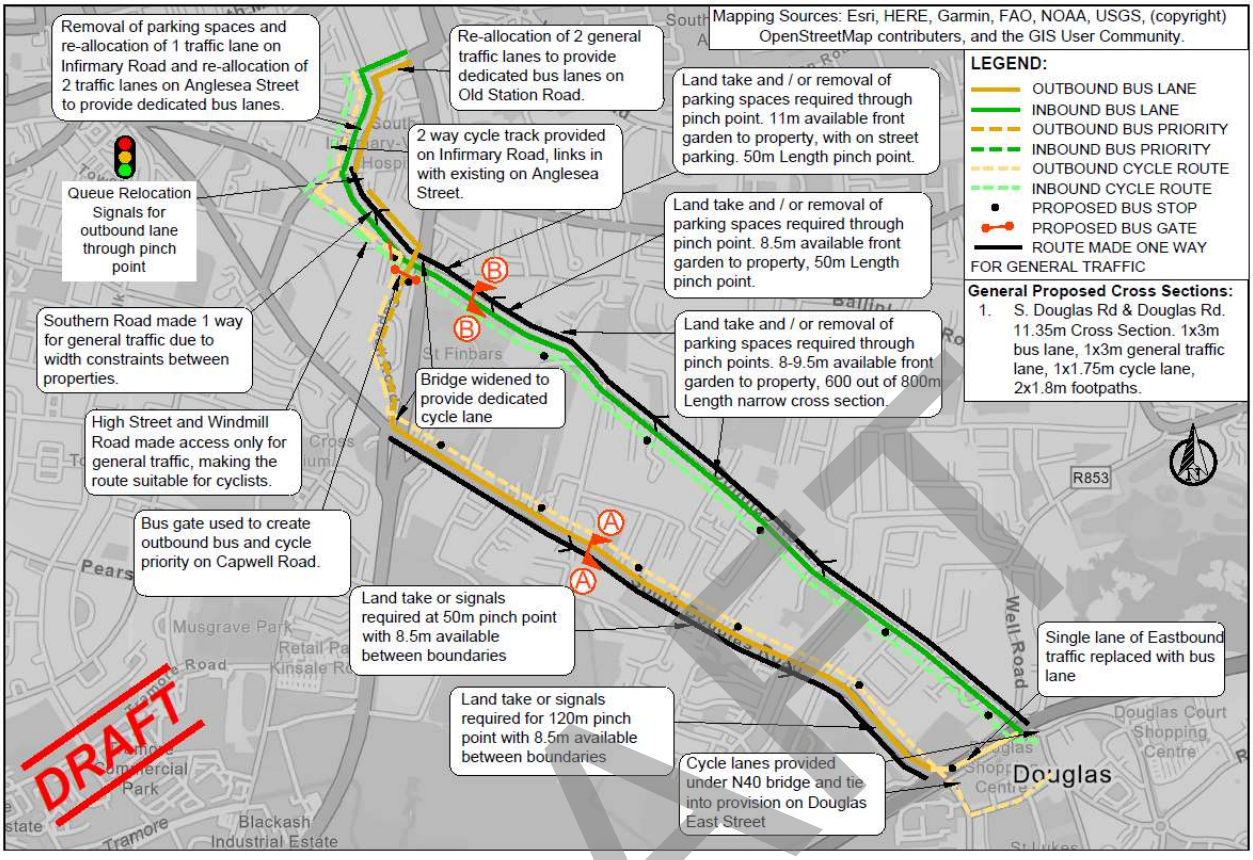


Figure 8-11

Route for Busses

This route utalises a one way loop, with inbound busses using Douglas Road and Southern Road, and outbound busses starting on Southern Road with the inbound busses, but then taking Capwell Road, South Douglas Road and River Walk. General traffic on Douglas Road, South Douglas Road and Southern Road would follow the same one way system as the busses.

The existing cross sections of Douglas Road and South Douglas Road are generally similar, with a lane of general traffic in each direction and footpaths on either side. On both of these roads a lane of general traffic would be removed and a bus lane put in its place, making the road one way for busses and traffic in the same direction, and the overall route work as a one way system. There are pinch points along these routes where the space between boundries, which are generally private gardens and dwellings, is not enough for 2 traffic lanes and footpaths. Widening into private gardens would be needed through these pinch points to provide a dedicated bus lane, traffic lane and 2 footpaths.

For outbound busses on River Walk, one of the existing four general traffic lanes would be repainted to create dedicated bus lanes in the eastbound directoin, the existing footpaths would remain the same. Upgraded signals at the Junction with South Douglas Road would give busses priority through there.

Capwell Road is tightly constrained between houses with driveways and is used by residents for on street parking. For this reason it is preferred to make the route access only for general traffic using a bus gate placed at the junction with Douglas Road. This would create a quiet route with bus and cycle priority.

The cross section would be widened on Southern Road to include a bus lane in each direction and an inbound only general traffic lane. There is a pinch point at the northern end of Southern Road where this

width cannot be achieved without removal of proprties, queue relocation signals are proposed here for the outbound lane to give bus priority through the pinch point.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Cyclists would utalise the one way loop in the same way as the route for busses. With inbound cyclists using Douglas Road and outbound cyclists using, South Douglas Road. Dedicated cycle lanes would be provided on these roads. Widening into private land would be needed along this loop to get the required widths for cycle lanes and the planned route for busses.

To accesss the one-way loop from East Douglas Street cyclists would head west on Church Street and then onto West Douglas Street, Church Street would be a quiet street since the introduction of a bus gate at its eastern end. Once on West Douglas Street the outbound route heads north, currently this roads has 2 traffic lanes and footpaths only, and widening would be required to provide the widths for an outbound cycle lane. This would involve some taking of private land on West Douglas Street.

After the entrance to Woollen Mills Business Park on West Douglas Street there are 3 lanes of general traffic. One of the two southbound lanes would be removed to allow an outbound cycle lane to be introduced without widening the road cross section.

Inbound cyclists would go straight to Douglas Road from East Douglas Street. Widening would be needed to provide this cycle lane.

At the northern end of the scheme, outbound cyclists would use Capwell Road which now has a bus gate on it to make it a quiet road, to link up with High Street. Inbound cyclists would turn off Douglas Road onto High Street. Bollards or similar would be used to make High Street access only for general traffic, meaning this is now a quiet route and suitable for cyclists without cycle lanes.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be inbound only bus stops provided in 6 locations on Douglas Road.

There would be outbound only bus stops provided on: River Walk in 1 location, South Douglas Road in 5 locations and Capwell Road in 1 location.

Cross Sections

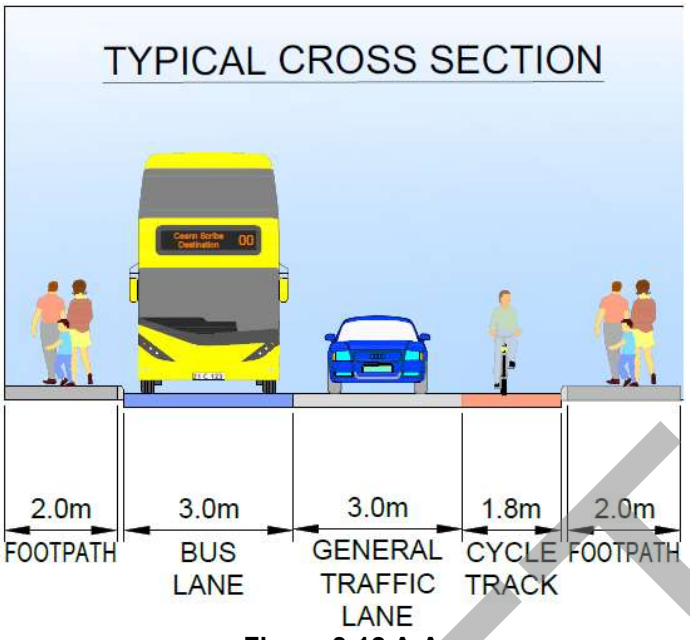


Figure 8-12 A-A

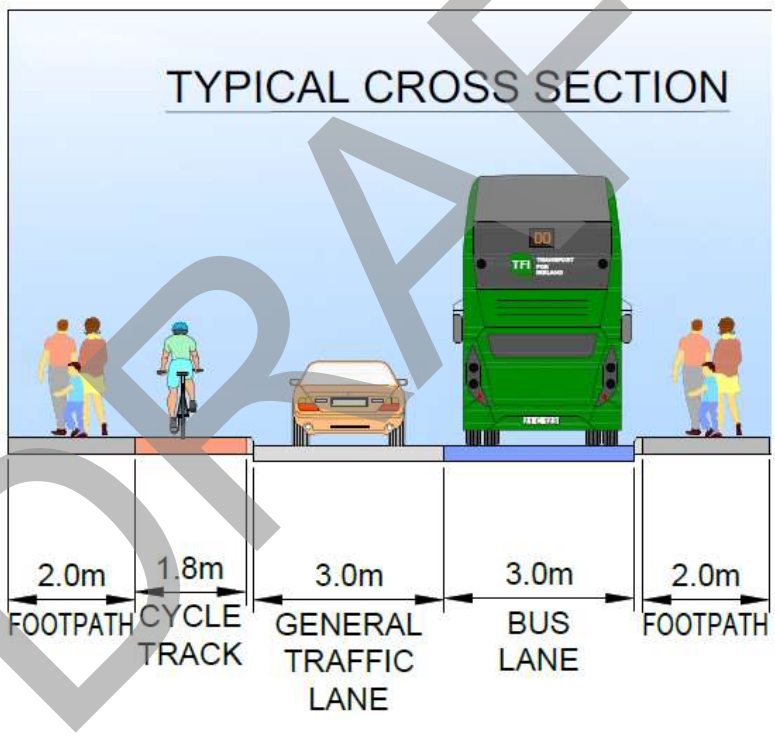


Figure 8-13 B-B

8.1.7 Route Option 5

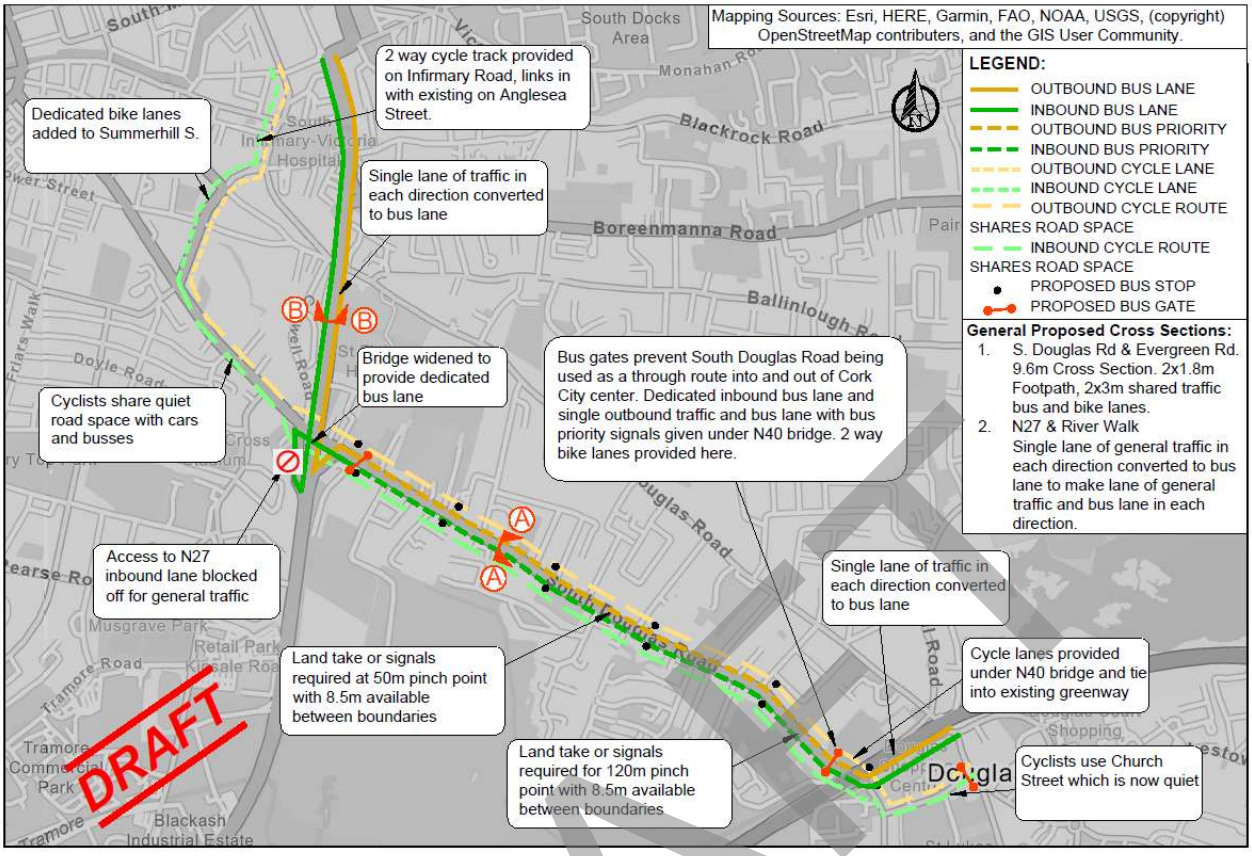


Figure 8-14

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow River Walk until reaching South Douglas Road, here a new signalised junction would take busses out onto South Douglas Road which it would follow until joining South Link Road which it would follow into Cork City Centre.

On River walk, 2 of the existing 4 general traffic lanes would be repainted to create dedicated bus lanes in both directions, the existing footpaths would remian the same.

Bus gates placed on South Douglas Road, north of the Roundabout by Well Road and south of the N27 slip road, would make prevent South Douglas Road and Evergreen Road from being used as a through route by general traffic. The sliproad to take traffic onto the N27 would also be closed to general traffic (but remain open to busses) to facilitate this.This would give busses priority along South Douglas Road which is now an access only route.

On South Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are several pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it, meaning it is not feasible to provide dedicated bus lanes as well as general traffic lanes. Private land take would be required through these pinch points to provide traffic lanes and footpaths in both directions.

On South Link Road the general cross section is 2 lanes of general traffic in each direction and no footpaths. This route is ightly constrained on both sides by large abutments. Dedicated bus lanes would be provided along this route by reallocating one of the general traffic lanes in each direction to a bus lane. Footpaths would not be provided due to space constraints and because this is a traffic only route currently with no access for pedestrians meaning footpaths would not be utalised.

Route for Cyclists

Starting on Church Street at the junction with East Douglas Street, cyclists would share the queit roadspace with general traffic, heading west until reaching West Douglas Street. This road is made quiet with the introduction of a bus gate at the eastern end of Church Road. West Douglas Street has 2 traffic lanes and footpaths only, and widening would be required to provide the widths for cycle lanes. This would involve the taking of private land on West Douglas Street.

After the entrance to Woollen Mills Business Park on West Douglas Street there are 3 lanes of general traffic. One of the two southbound lanes would be removed to allow cycle lanes to be introduced without widening the road cross section.

Once past the roundabout by Well Road on South Douglas Road, cyclists would share the now quiet South Douglas Road and Evergreen Road route with busses and the access only traffic until reaching Summerhill South.

On Summerhill South dedicated cycle lanes are provided, private land take is required to achieve this.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided on: River Walk in 1 location, and South Douglas Road in 5 locations.

Cross Sections

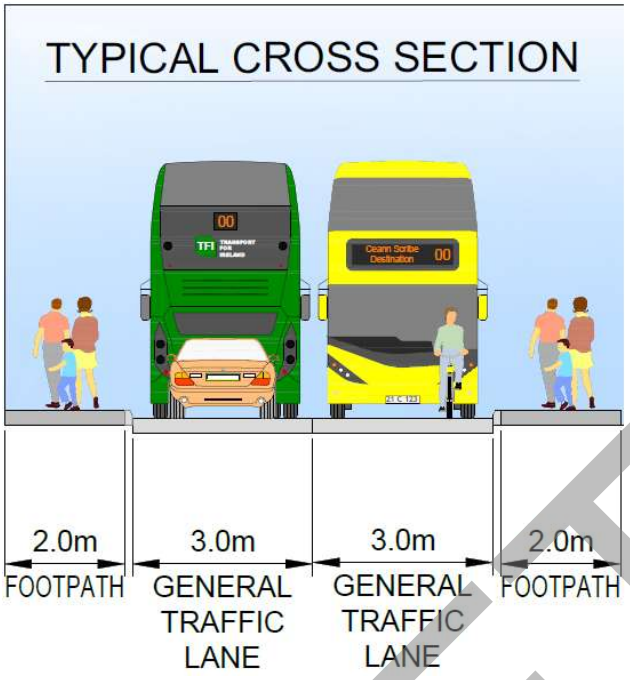


Figure 8-15 A-A

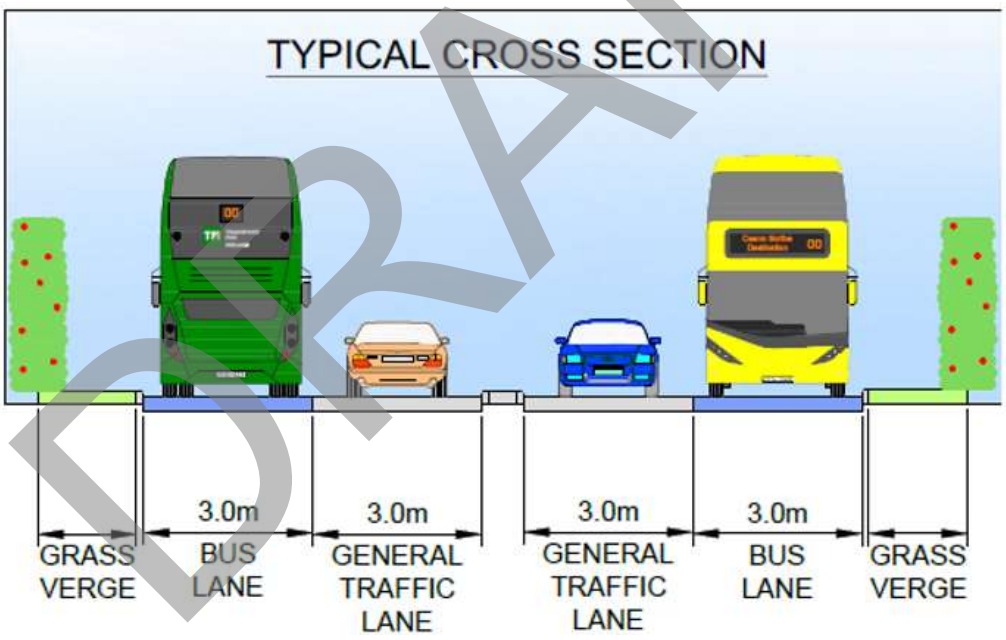


Figure 8-16 B-B

8.1.8 Route Option 6:

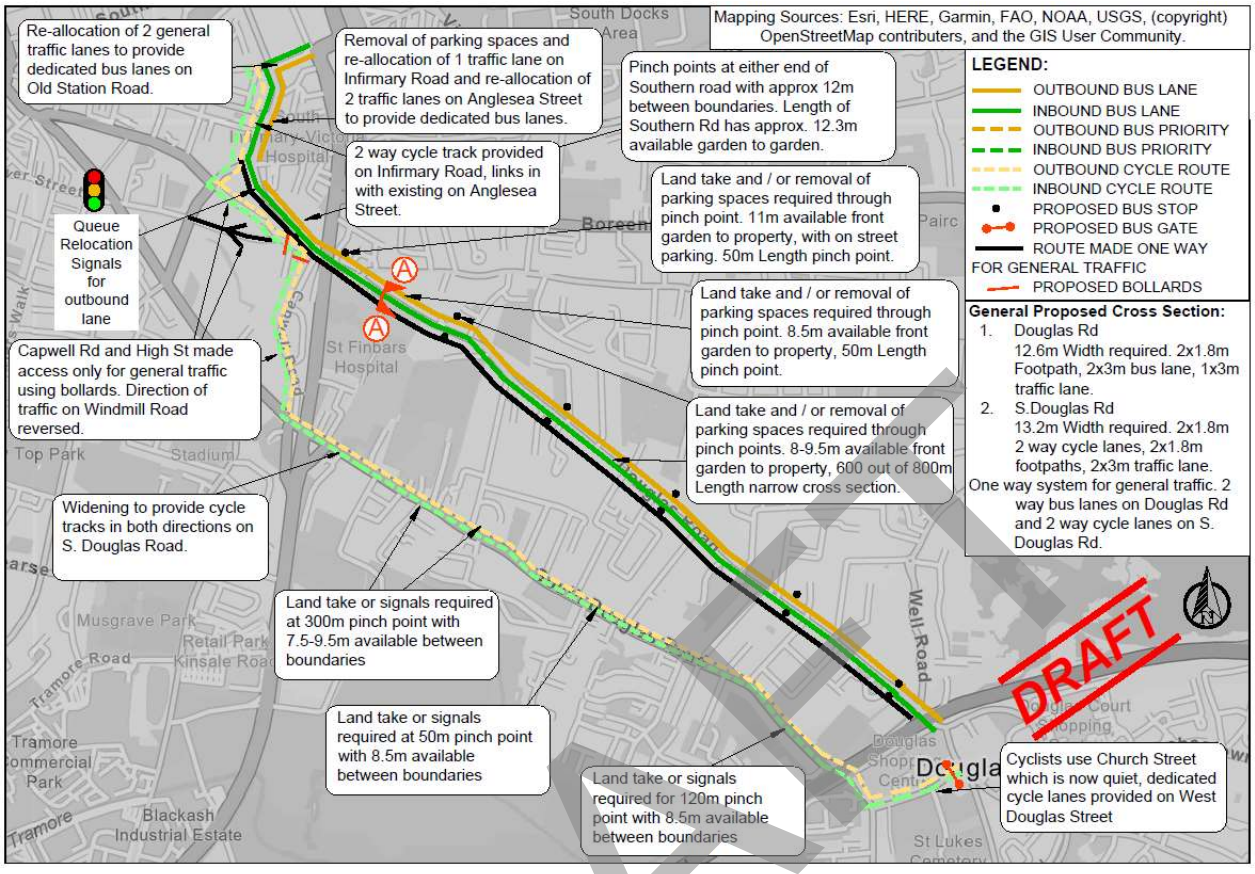


Figure 8-17

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road and finish at the junction with Old Blackrock Road. Dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route. Therefore this option would remove the inbound lane of general traffic, with South Douglas Road used as the alternative route. Dedicated bus lanes would then be provided in both directions on Douglas Road and Southern Road, pedestrian footpaths would also be put in place on both sides of the road. Significant widening into private gardens would be needed to achieve this along much of the route.

At the pinch point at the northern end of Southern Road it is not possible to widen to provide dedicated bus lanes in both directrions without affecting properties. Queue relocation signals would be used to give outbound busses priority as they would share the carriageway with general traffic.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea

Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Starting on Church Street at the junction with East Douglas Street, cyclists would share the queit roadspace with general traffic, heading west until reaching West Douglas Street. This road is made quiet with the introduction of a bus gate at the eastern end of Church Road. West Douglas Street has 2 traffic lanes and footpaths only, and widening would be required to provide the widths for cycle lanes. This would involve the taking of private land on West Douglas Street.

After the entrance to Woollen Mills Business Park on West Douglas Street there are 3 lanes of general traffic. One of the two southbound lanes would be removed to allow cycle lanes to be introduced without widening the road cross section.

Cyclists would continue up South Douglas Road with dedicated cycle lanes on both sides of the road until reaching Capwell Road. Widening into provate gardens will be needed to achieve the required cross section widths for this, and local narrowing of the cross section, including a section where cyclists and pedestrians will share a surface, will be required to prevent affecting prvate properties.

The route then turns off onto Capwell Road, then High Street. Bike priority is achieved on these roads by placing bollards to make them access only.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be bus stops provided in both directions in 6 locations on Douglas Road.

Cross Sections

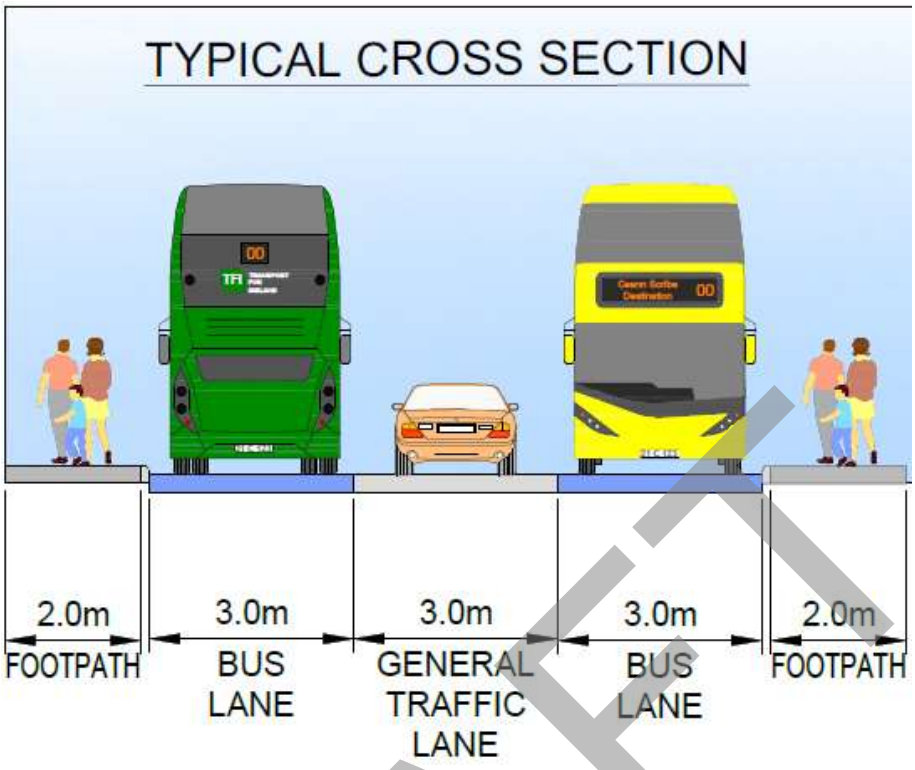


Figure 8-18 A-A

8.1.9 Route Option 7:

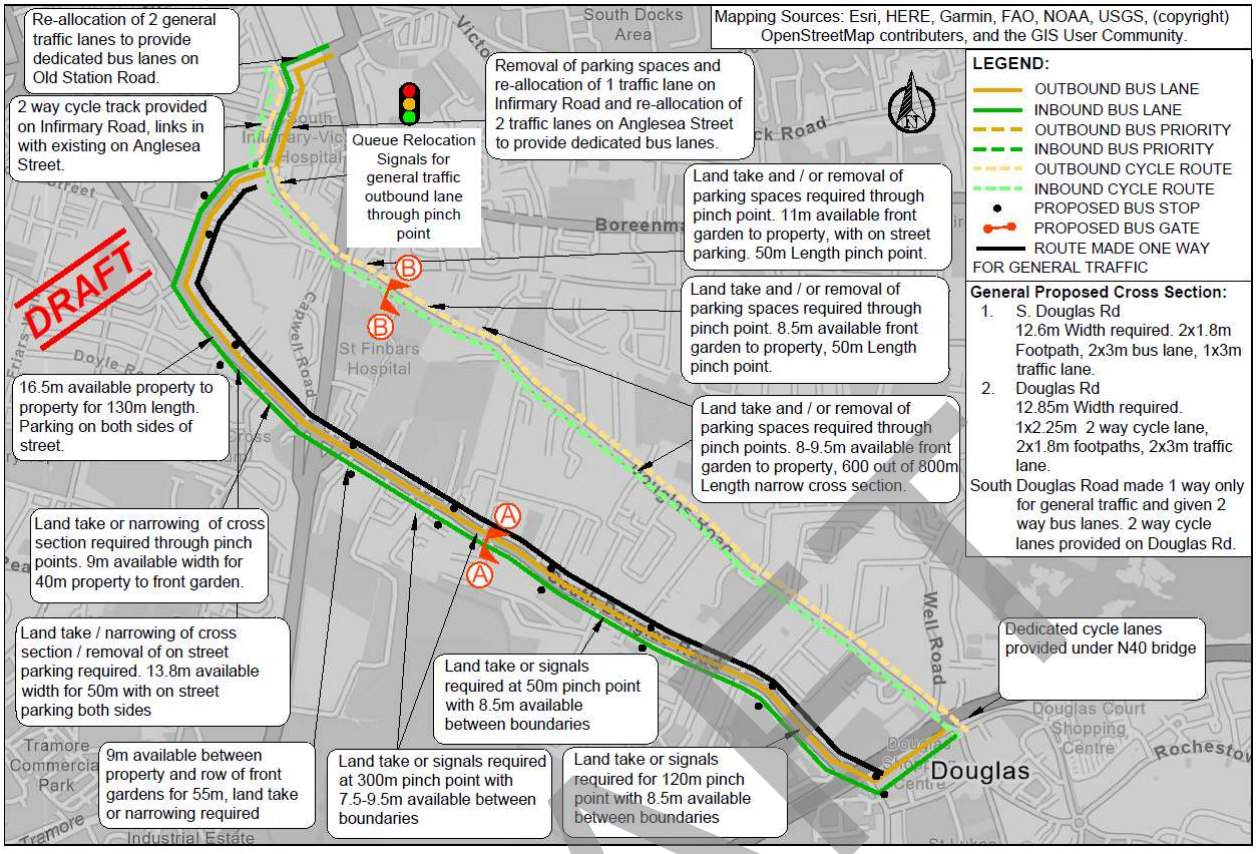


Figure 8-19

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow River Walk until reaching South Douglas Road, here a new signalised junction would take busses out onto South Douglas Road which it would follow until taking Evergreen Road and then Summerhill South.

On River walk, 2 of the existing 4 general traffic lanes would be repainted to create dedicated bus lanes in both directions, the existing footpaths would remian the same.

On South Douglas Road and Evergreen Road, the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route. Therefore this option would remove the outbound lane of general traffic, with Douglas Road used as the alternative route. Dedicated bus lanes could then be provided in both directions on South Douglas Road and Evergreen Road, pedestrian footpaths would also be put in place on both sides of the road. Significant widening into private gardens would be needed to achieve this along much of the route.

On Summerhill South the lanes of general traffic would be reduced to have 1 lane of outbound only traffic, with northbound traffic taking an alternative route. This would allow room for dedicated bus lanes in both directions. The existing cross section generally has 3 lanes of general traffic, in the narrowest point 2 lanes of general traffic and a cycle lane. In the narrowest section (for 100m length) widening would be needed into front gardens on either side of the properties.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Dedicated bike lanes would then be priovided the length of the route along Douglas Road and Southern Road. This would be achieved by widening the road cross section, significant land take into private gardens would be required for this.

At the northern end of Southern Road there is a pinch point where the distance between properties would not be enough o provide dedicated cycle lanes and maintain 2 way traffic. Queue relocation signals would be used here for general traffic to narrow the cross section and cycle lanes would continue through.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided on: River Walk in 1 location, South Douglas Road in 5 locations, Evergreen Road in 1 location and Summerhill South in 1 location.

Cross Sections

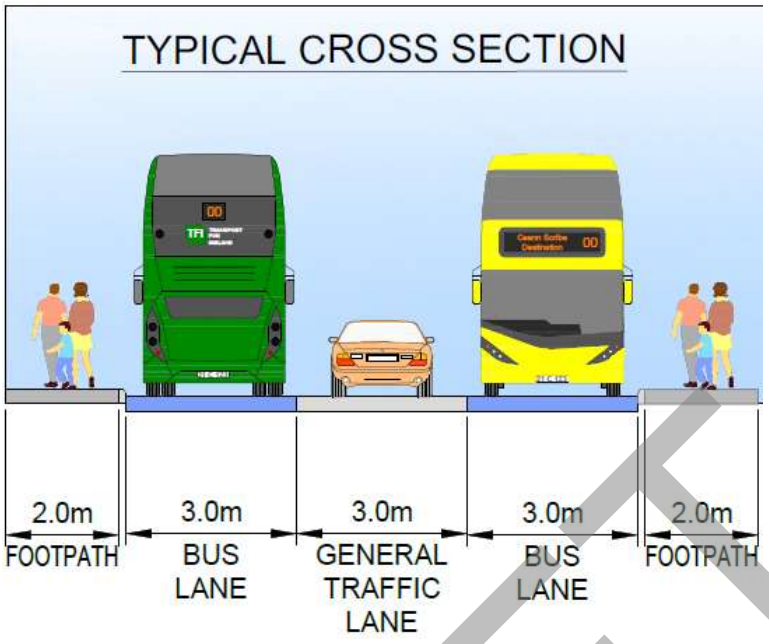


Figure 8-20 A-A

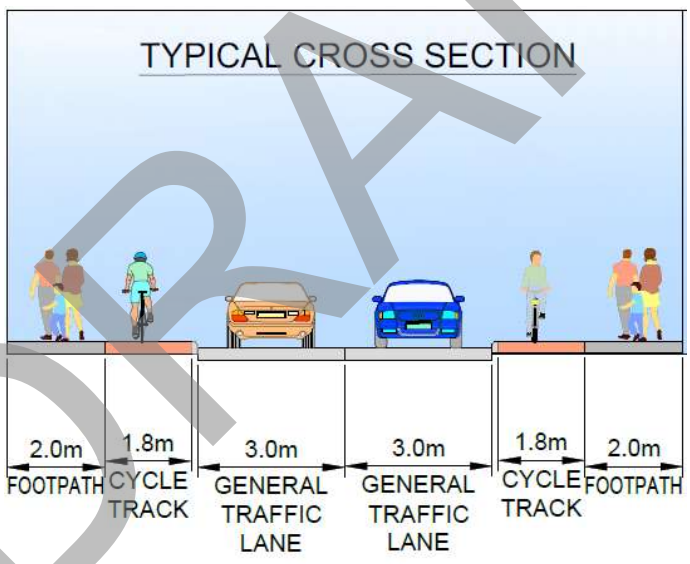


Figure 8-21 B-B

8.1.10 Route Option 8:

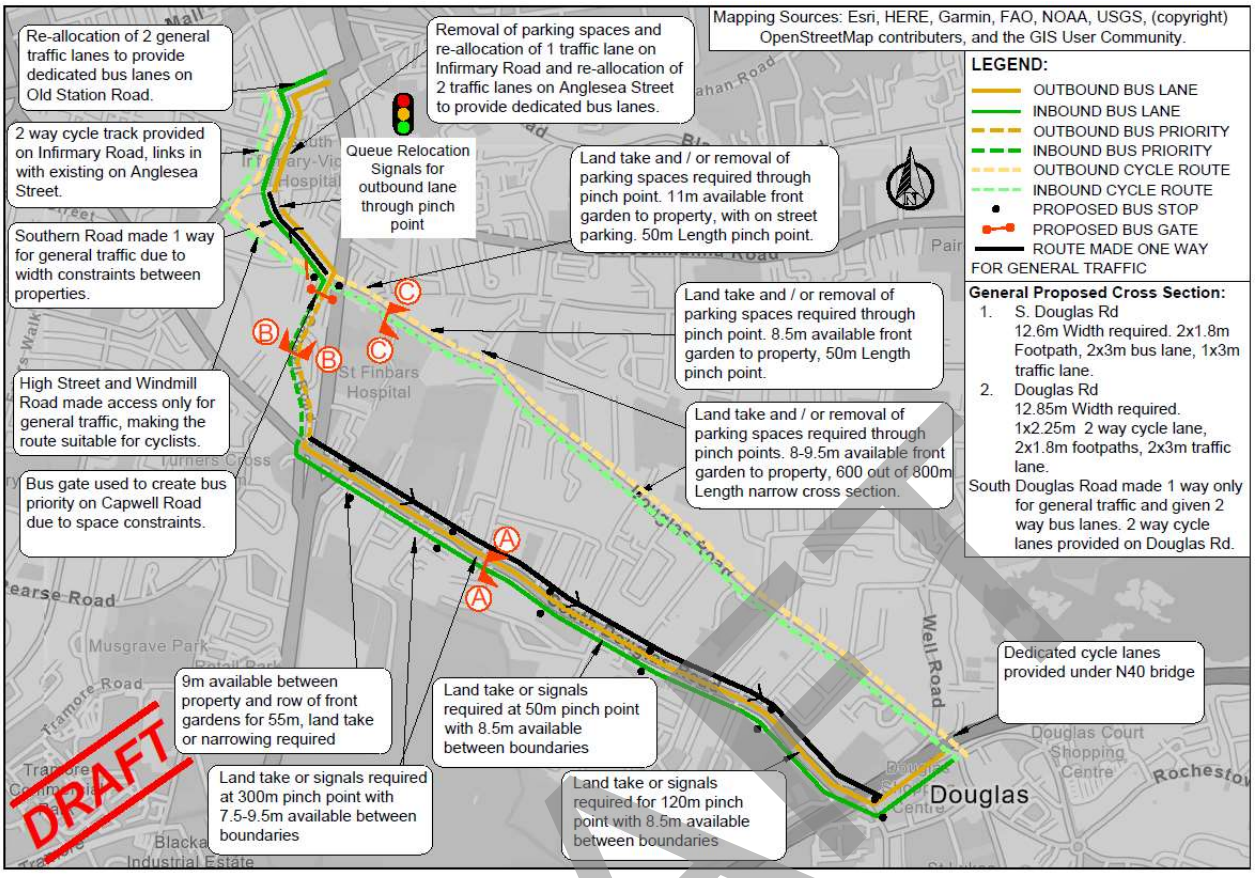


Figure 8-22

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow River Walk until reaching South Douglas Road, here a new signalised junction would take busses out onto South Douglas Road which it would follow until taking Capwell Road and then Southern Road.

On River walk, 2 of the existing 4 general traffic lanes would be repainted to create dedicated bus lanes in both directions, the existing footpaths would remian the same.

On South Douglas Road, the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is preferred not to provide dedicated bus lanes while maintaining two general traffic lanes on this route. Therefore this option would remove the outbound lane of general traffic, with Douglas Road used as the alternative route. Dedicated bus lanes could then be provided in both directions on South Douglas Road, pedestrian footpaths would also be put in place on both sides of the road. Significant widening into private gardens would be needed to achieve this along much of the route.

Capwell Road is tightly constrained by private driveways on both side, therefore this option would use a bus gate placed at the northern end to make the road access only for general traffic and provide bus priority.

Dedicated bus lanes would then be provided in both directions on Southern Road, pedestrian footpaths would also be put in place on both sides of the road. Due to space constraints between properties the

inbound lane of general traffic would be removed and the space re-allocated to a bus lane. Widening into private gardens would be needed to achieve this.

At the pinch point at the end of Southern Road queue relocation signals would be used to give outbound busses priority and they would share the carriageway with general traffic here as it is not possible to widen to provide dedicated bus lanes in both directrions without affecting properties.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Dedicated bike lanes would then be priovided the length of the route along Douglas Road until the junction with High Street. This would be achieved by widening the road cross section, significant land take into private gardens would be required for this.

The route would then follow High Street, with cycle priority achievd by making High Street access only for general traffic. At the western end of High Street cyclists would join Langford Row where cycle paths would be provided on either side of the road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided on: River Walk in 1 location, South Douglas Road in 5 locations, Evergreen Road in 1 location and Summerhill South in 1 location.

Cross Sections

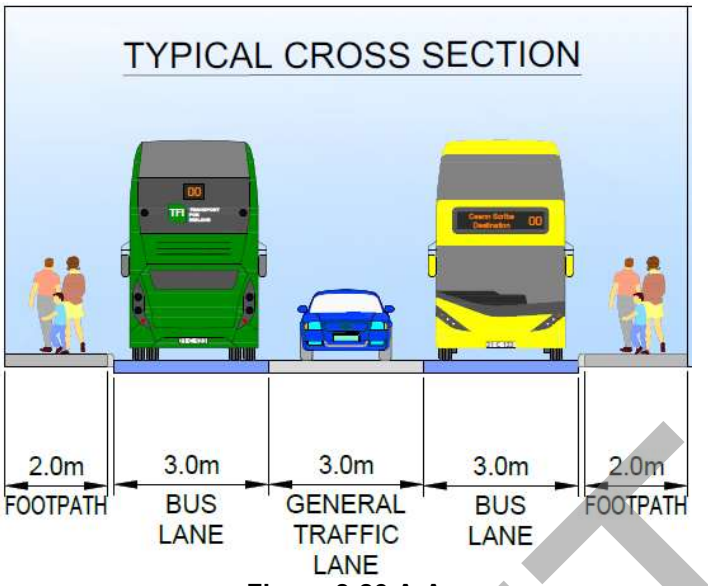


Figure 8-23 A-A

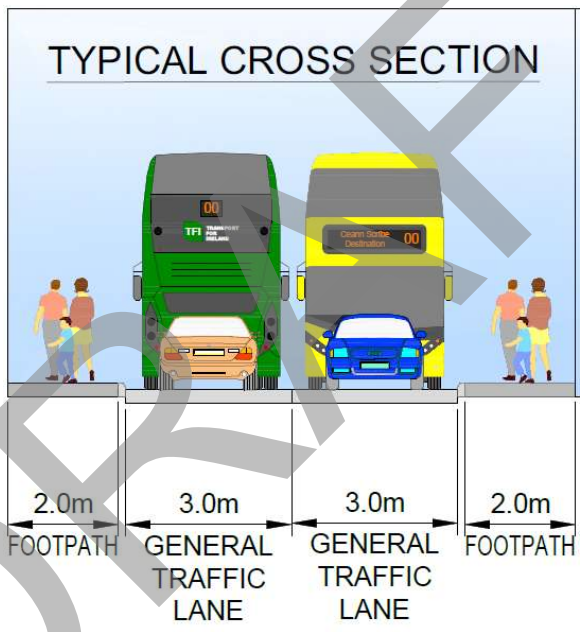


Figure 8-24 B-B

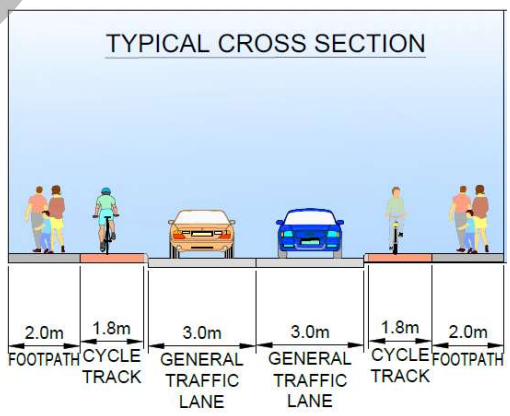


Figure 8-25 C-C

8.1.11 Route Option 9:

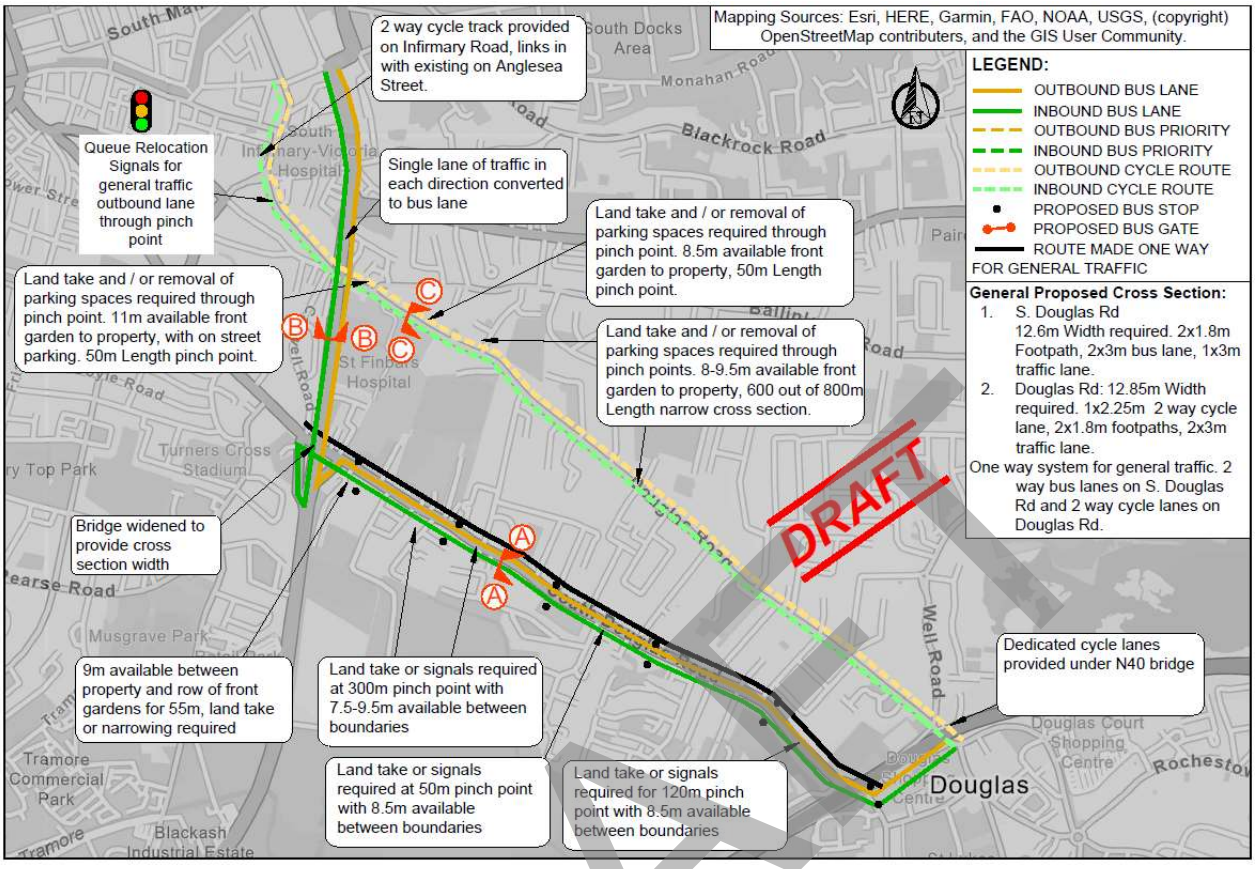


Figure 8-26

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow River Walk until reaching South Douglas Road, here a new signalised junction would take busses out onto South Douglas Road which it would follow until taking Evergreen Road and then Summerhill South.

On River walk, 2 of the existing 4 general traffic lanes would be repainted to create dedicated bus lanes in both directions, the existing footpaths would remian the same.

On South Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route. Therefore this option would remove the outbound lane of general traffic, with Douglas Road used as the alternative route. Dedicated bus lanes could then be provided in both directions on South Douglas Road until the junction with South Link Road, pedestrian footpaths would also be put in place on both sides of the road. Significant widening into private gardens would be needed to achieve this along much of the route.

Busses would then use the slip roads to access South Link Road, the slip roads would be widened to allow dedicated bus lanes on / off. On South Link Road the general cross section is 2 lanes of general traffic in each direction and no footpaths. This route is tightly constrained on both sides by large abutments. Dedicated bus lanes would be provided along this route by repainting one of the general traffic lanes in each

direction to create bus lanes. Footpaths would not be provided due to space constraints and because this is a traffic only route currently with no access for pedestrians meaning footpaths would not be utalised.

Route for Cyclists

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Once Well Road is reached dedicated bike lanes would be priovided the length of the route along Douglas Road and Southern Road. This would be achieved by widening the cross section to make cycle lanes, significant private land take would be required for this.

At the pinch point at the northern end of Southern Road it is not possible to widen to provide dedicated cycle lanes and general traffic lanes in both directrions without affecting properties. Therefor queue relocation signals would be used and the roadway would go down to one carriageway, cycle lanes would remain un-interrupted.

The cycle route then uses Infirmary Road where dedicated cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be a bus stop in both directions priovided on: River Walk in 1 location, and South Douglas Road in 5 locations.

Cross Sections

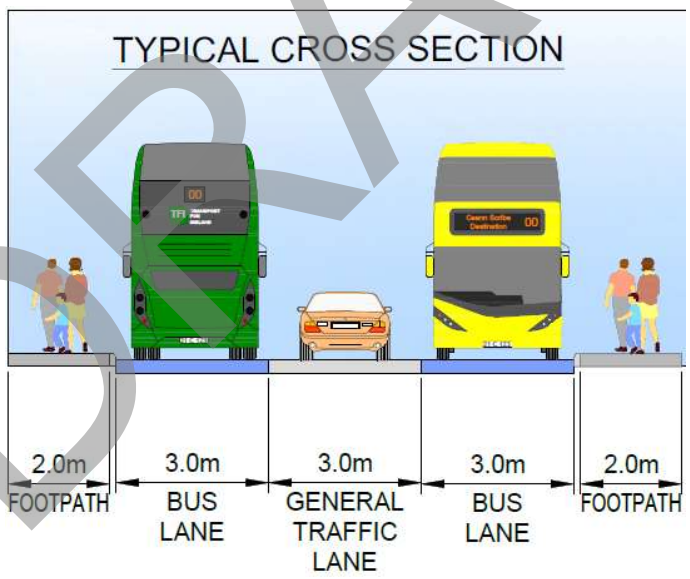


Figure 8-27 A-A

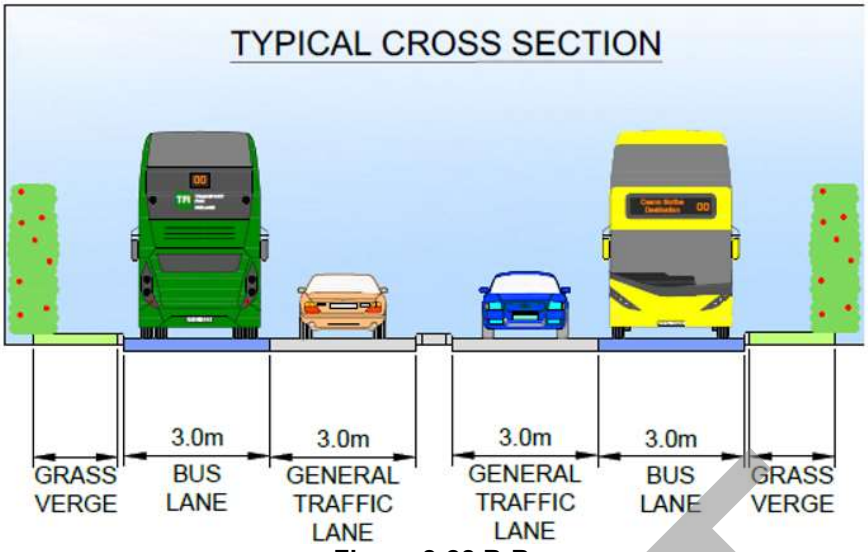


Figure 8-28 B-B

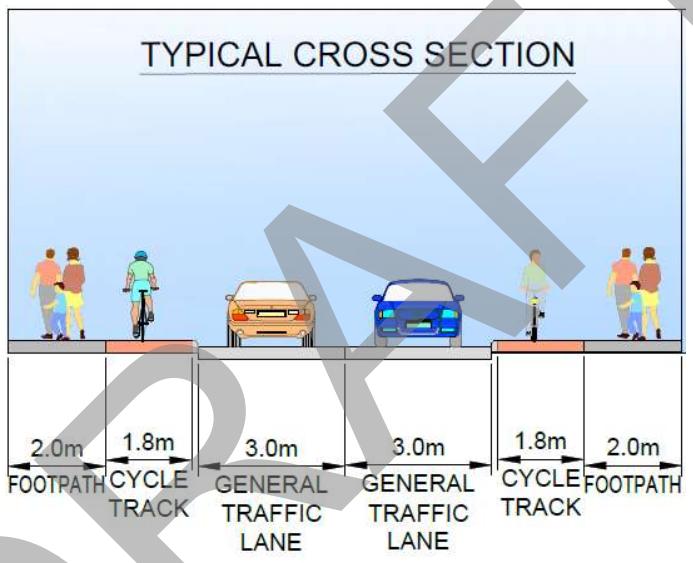


Figure 8-29 C-C

8.1.12 Route Option 10:

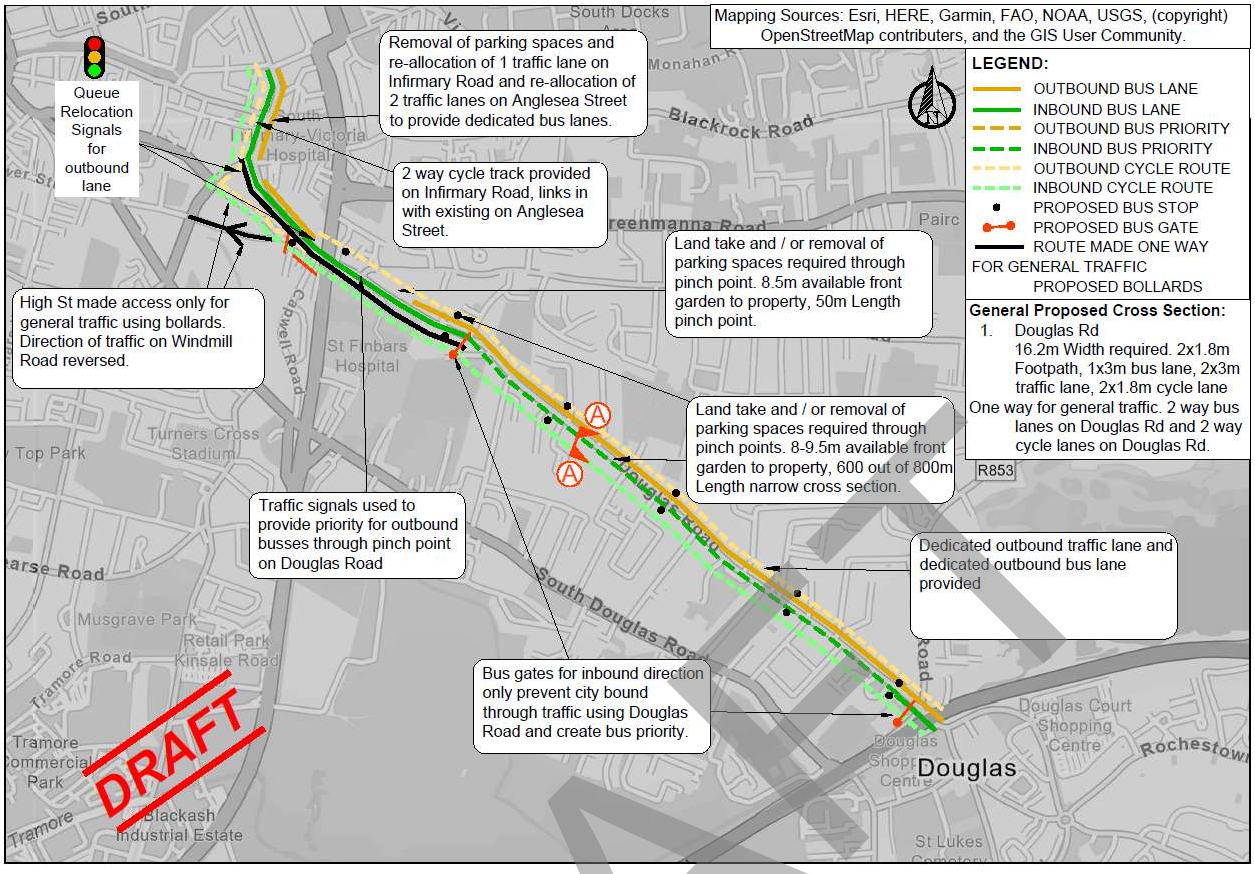


Figure 8-30

Route for Busses

Starting on Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road and finish at the junction with Old Blackrock Road. Dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route. Therefore this option would use bus gates on the inbound traffic lane to prevent city bound through traffic, giving inbound busses priority, and in the outbound direction provides both a dedicated bus lane and a dedicated traffic lane. Pedestrian footpaths would be put in place on both sides of the road for the length of Dougla Road. Significant widening into private gardens would be needed to achieve this cross section along much of the route.

At the pinch point on northwest end of Douglas Road to widen to provide bus lanes and cycle lanes would have a large impact on the gardens, private property and parking in the area. For this reason queue relocation signals have been proposed to allow bus priority in the outbound direction where general traffic and busses will be sharing a single lane.

On Southern Road for 100m between Douglas Road until the first house access on the west of the road it is proposed to have a footpath on the east side of the road only. This is to allow 2 way bus lanes and a wide

footpath without the need for a large amount of landtake and earthworks, and instead of provideing a footpath where there are no house acesses. From this point north a footpath would be provided on both sides of the road. A signalised crossing would be provided to provide access to the footpath by the entrances.

At the pinch point at the northern end of Southern Road it is not possible to widen to provide dedicated bus lanes in both directrions without affecting properties. Queue relocation signals would be used to give outbound busses priority as they would share the carriageway with general traffic.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Dedicated bike lanes would then be priovided the length of the route along Douglas Road until the junction with High Street. This would be achieved by widening the road cross section, significant land take into private gardens would be required for this.

The route would then follow High Street, with cycle priority achievd by making High Street access only for general traffic. At the western end of High Street cyclists would join Langford Row where cycle paths would be provided on either side of the road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Bus Stops
There would be bus stops provided in both directions in 6 locations on Douglas Road

Cross Sections

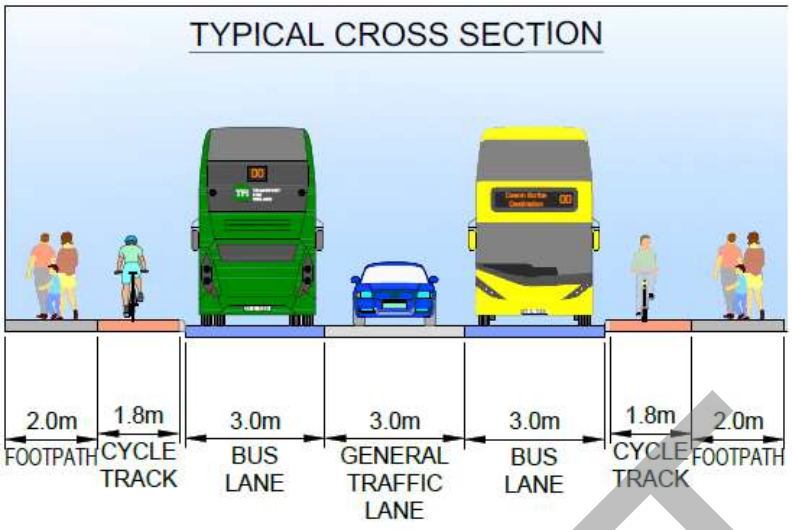


Figure 8-31 A-A

8.1.13 Options Assessment – Section 3

A summary of the ranking of options against the scheme criteria is presented in Table 8-1 below.

Table 8-1 Route 10 – Section 3 - Options Assessment Summary

Douglas Road / River Walk Junction to Old Station Road / South Link Road Junction MCA Summary											
Assessment Criteria	Sub-Criteria	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8	Route 9	Route 10
Economy	Capital Cost										
	Average Journey Time										
	Journey Time Reliability										
Integration	Land Use Integration										
	Residential and Employment Catchment										
	Transport Integration										
	Cyclist Integration										
	Pedestrian Integration										
Accessibility and Social Inclusion	Key Trip Attractors (Education, Health, Commercial, Retail, Leisure)										
	Deprived Geographic Areas										
Safety	Road Safety										
Environment	Archaeological, Architectural and Cultural Heritage										
	Biodiversity										
	Soils and Geology										
	Water Resources										
	Landscape and visual										
	Noise, vibration and air quality										
	Land Use and Built Environment										

In terms of “Economy” Options 1 & 5 have the lowest capital cost due to relying on traffic calming measures instead of infrastructure to get bus priority. Option 2 is the next best for capital cost followed by Option 10, these options require less significant widening of the cross section to complete, and Option 10, while having significant works on Douglas Road, because there are no works on S. Douglas Road it costs less than Options 3, 4 6, 7, 8 & 9 which are all roughly equal and more expensive. In terms of average journey time the routes that use South Douglas Road and Evergreen Terrace (Options 2, 7 & 8) are less direct, and therefore have longer predicted journey times than the other options. Journey time reliability is best for the options that have dedicated bus lanes for the majority of the route, therefore Options 3, 6, 7, 9 & 10 perform better for this criterion. Overall for economy Options 1, 5 and 10 perform better than the other options.

In terms of “Integration”, specifically for land use integration, the options that use S. Link Road (Options 5 & 9) miss out a key area to the west of S. Link Road that is designated as City Centre in the Cork City Development Plan, and therefore score worse than the other options which serve this area for this criterion. Similarly these Options on S. Link Road serve a lower amount of residential and employment catchment, along with the options that use a one way loop, as the inbound and outbound for these loops are up to 400m apart, meaning the effective catchment is reduced. In terms of transport integration, the options that best serve Douglas Road will be useful to the most busses based on the 2023 draft bus network, furthermore the options that have the least impact to general traffic movements also perform better for this option, overall considering both of these factors Options 1, 6 & 10 are the best performers for Transport Integration. For cyclist integration the options that give dedicated cycle lanes perform better than the options that don’t, and the options that give more direct routes (up Douglas Road) perform better than the options that use S. Douglas Rod for cycling. Considering both of these factors, Options 6, 7, 8 & 10 perform best for this

criterion. All options perform equally for pedestrian integration. Overall for integration Options 6 & 10 perform best, followed by Options 1, 7 & 8.

In terms of "Accessibility and Social Inclusion", Options 5 and 9 score worse than the other Options as they serve the City Centre trip attractors less well than the other options which don't use S. Link Road. All areas score areas that are equally affluent.

In terms of Road Safety, those route options which provide a dedicated cycle track score best for cyclist integration over those where cyclists are required to share 'quiet road space'. This means Options 1, 2 & 5 score worse than the other options for this criterion.

In terms of "Environment", generally speaking the schemes that utilise traffic calming measures and require less significant works perform better than those that require more widening off the road cross section. All options require some level of road widening, removal of on street parking and land take, and for this reason they are all impactful to some extent. Options 1, 2 & 5 require the least widening and so are the best performing for this criterion.

8.1.14 Douglas Road / River Walk Junction to Old Station Road / S. Link Road Junction MCA Conclusion

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 8-2.

Table 8-2

Douglas Road / River Walk Junction to Old Station Road / S. Link Road Junction										
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**	**Route 4**	**Route 5**	**Route 6**	**Route 7**	**Route 8**	**Route 9**	**Route 10**
Economy										
Integration										
Accessibility and Social inclusion										
Safety										
Environment										

Based on the assessments above it has been determined that Option 10 offers the preferred route option for the following reasons:

- It has the best average journey time and journey time reliability, offering the highest level of service to bus passengers.
- It provides a segregated and direct cycle route offering the highest level of service to cyclists.

Following this assessment, the spiders web is now reduced to the following shown below:

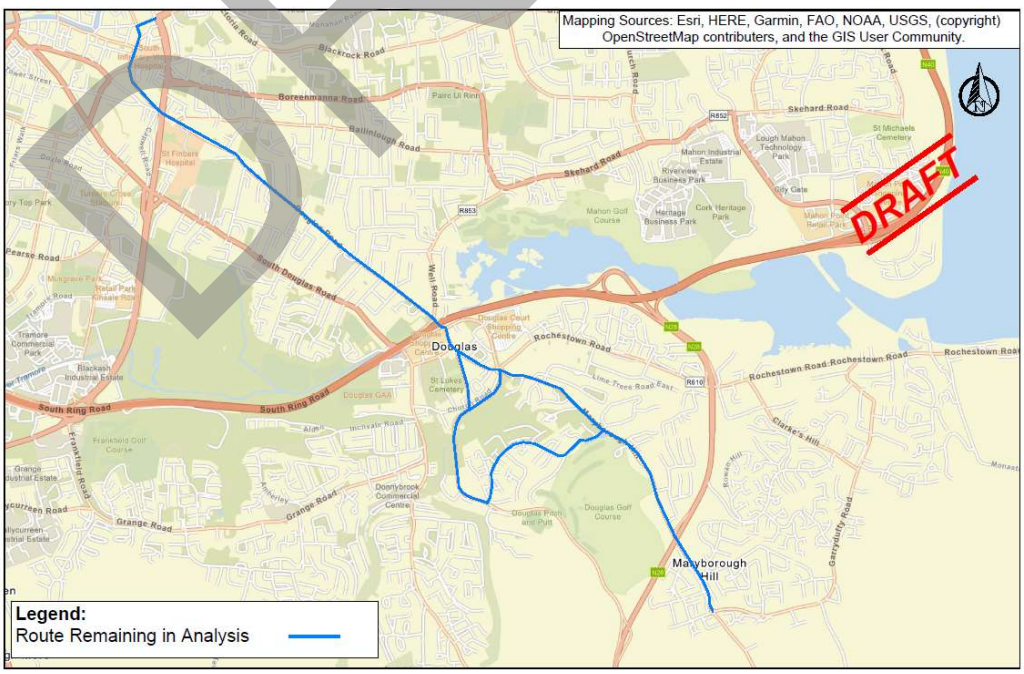


Figure 8-32

9. Stage 2 MCA Assessment – End to End Assessment

9.1.1 Introduction and route description

Following the Stage 1 sifting process, and the MCA analysis of Sections 1 to 3, the route options for the length of the scheme were assembled to form four viable route options for the length of the route, these options were chosen to ensure that the combination of the winners of each set formed together to form the option that would overall best meet project objectives.

- Route Options 1A & 1B: Uses Maryborough hill, East Douglas Street, Douglas Road, Southern Road, Infirmary Road and Anglesea Street.
- Option 2A & 2B: Uses Maryborough Hill, Greendale Road, Maryborough Woods Road, Carrigaline Road, a one way loop around Old Carrigaline Road, East Douglas Street and Carrigaline Road, then Douglas Road, Southern Road, Infirmary Road and Anglesea Street.

9.1.2 Route Options for End to End Assessment.

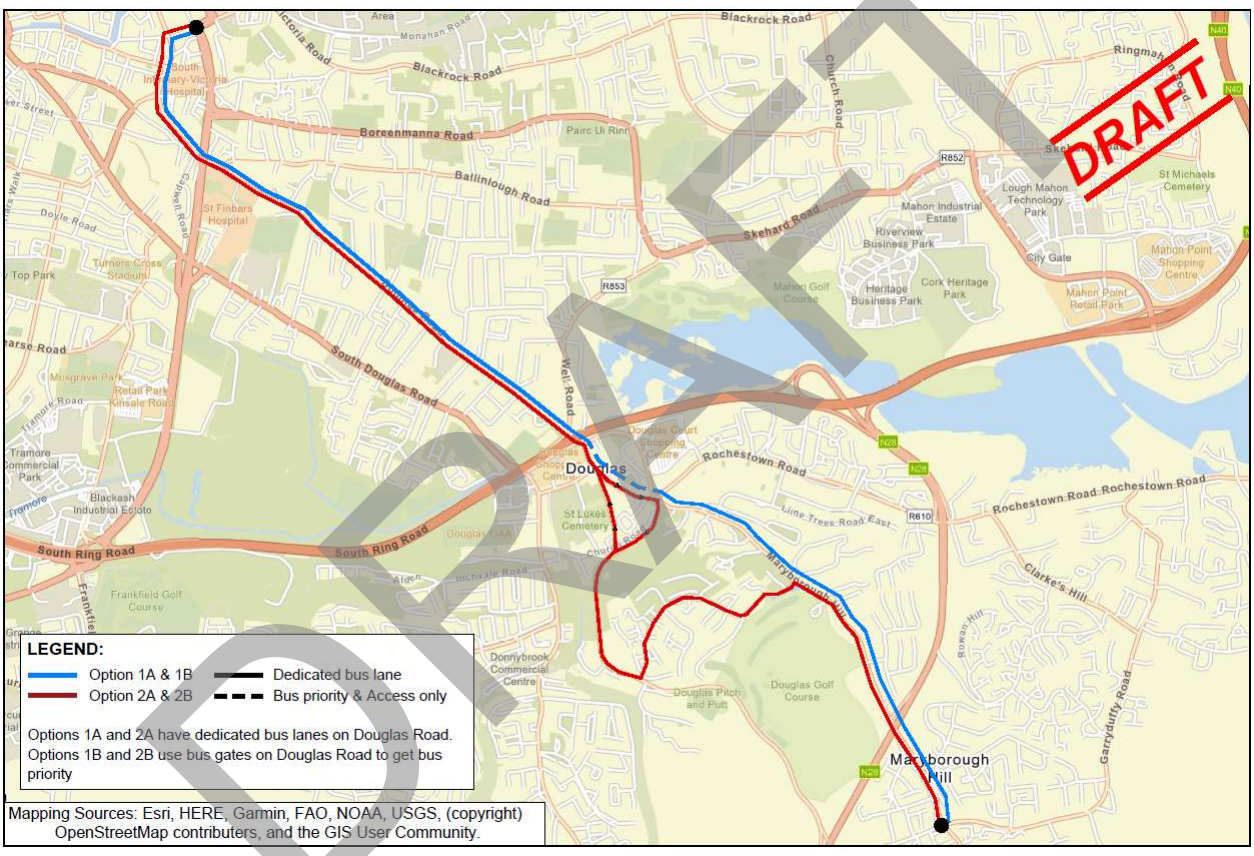
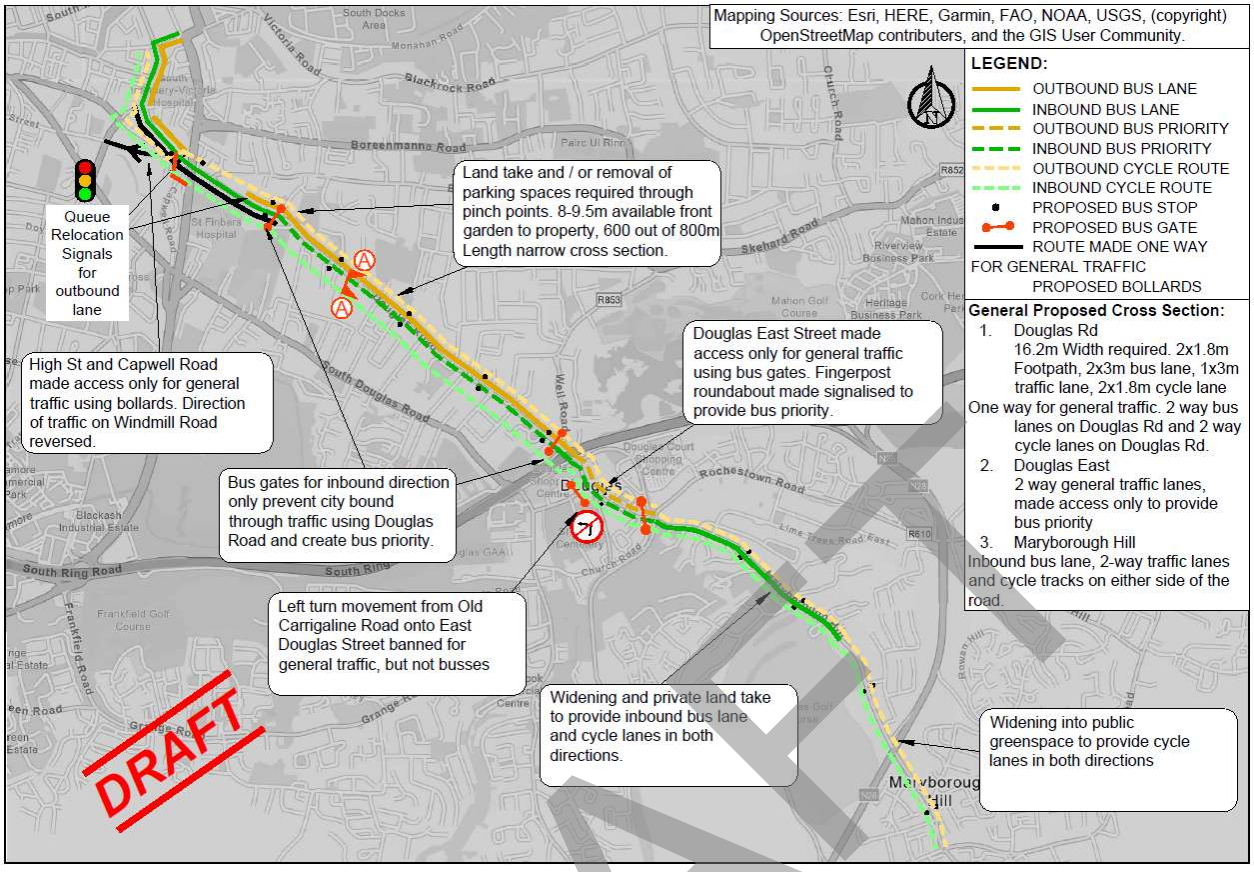


Figure 9-1

9.1.3 Route Option 1A



Route for Busses

The route for busses, starting from Maryborough Hill, would first follow Maryborough Hill to The Fingerpost Roundabout. Currently this route has a lane of traffic in both directions, a cycle lane heading South and footpaths along both sides. Before reaching Douglas Golf Club, due to the constrained nature of the carriageway, and the relatively low frequency of busses and traffic, busses would share with general traffic. North of Douglas Golf Club the carriageway would be widened to provide a bus lane in the inbound direction only up to The Fingerpost Roundabout, and maintain existing traffic lanes.

Th bridge over the N28 would be widened to provide pedestrian footpaths and cycle lanes. Public and private land take (max 2m extra width) would be required along the length of the scheme with some gardens likely affected.

From The Fingerpost Roundabout busses would use East Douglas Street, until reaching Douglas Road. The Fingerpost Roundabout would be upgraded to include signals that would give bus priority. Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally, the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route.

From Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road, Old Station Road, and finish at the junction with South Link Road.

The junction leaving East Douglas Street onto Douglas Road would be upgraded to provide bus priority, from here dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point on Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route.

Therefore this option would utalise strategically placed bus gates for inbound traffic, placed to the west of the junction with Well Road and to the west of the junction with Bellair Estate. These would prevent inbound through traffic on Douglas Road but still allow local access traffic, and by doing so create bus priority with less need for widening. In the outbound direction a dedicated bus lane would be provided for the length of the route as well as an outbound general traffic lane. Significant widening into private gardens would be needed to achieve this along much of the route.

At the pinch point on northwest end of Douglas Road, widening to provide an outbound bus lane and cycle lanes would have a large impact on the gardens, private property and parking in the area. For this reason queue relocation signals have been proposed to allow bus priority in the outbound direction where general traffic and busses will be sharing a single lane.

On Southern Road for 100m between Douglas Road until the first house access on the west of the road it is proposed to have a footpath on the east side of the road only. This is to allow 2 way bus lanes and a wide footpath without the need for a large amount of landtake and earthworks. From this point north a footpath would be provided on both sides of the road. A signalised crossing would be provided to provide access to the footpath by the entrances.

At the pinch point at the northern end of Southern Road it is not possible to widen to provide dedicated bus lanes in both directrions without affecting properties. Queue relocation signals would be used to give outbound busses priority as they would share the carriageway with general traffic.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would first follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road. There is currently a cycle lane in the southbound direction only for the whole route, and in both directions for the 550m closest to The Fingerpost Roundabout. Widening is required to achieve the cross section.

The Fingerpost Roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Dedicated bike lanes would then be priovided the length of the route along Douglas Road until the junction with High Street. This would be achieved by widening the road cross section, significant land take into private gardens would be required for this.

The route would then follow High Street, with cycle priority achievd by making High Street access only for general traffic. At the western end of High Street cyclists would join Langford Row where cycle paths would be provided on either side of the road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Cross Sections

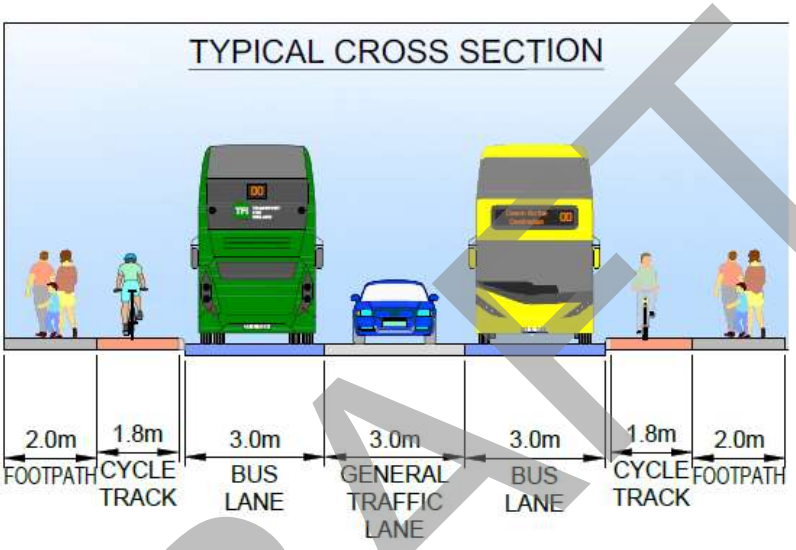
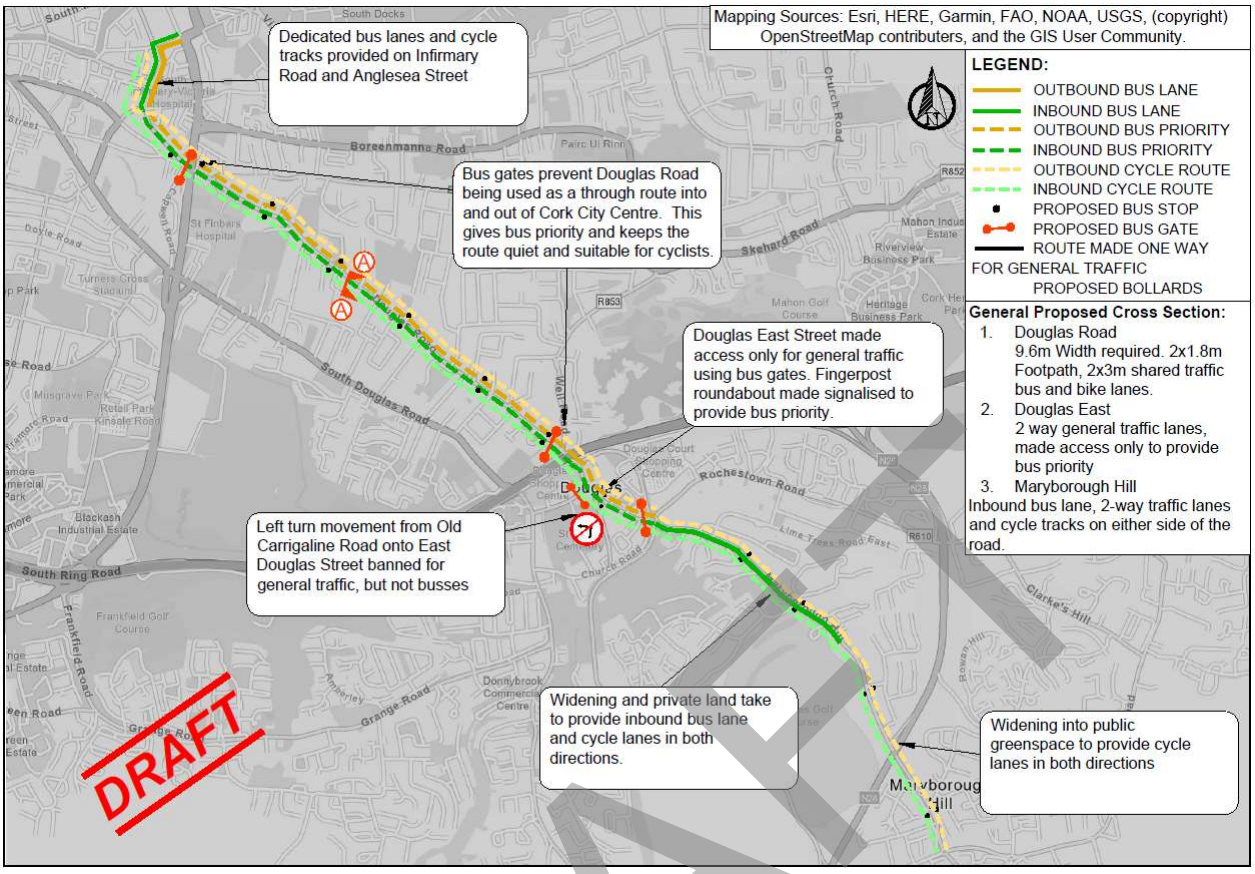


Figure 9-2 Cross Section A-A

9.1.4 Route Option 1B



Route for Busses

The route for busses would be the same as for Option 1A above, however there will be less provision of dedicated bus lanes and instead more reliance on traffic management features to get bus priority on Douglas Road.

The bus route first follows Maryborough Hill as far as The Fingerpost Roundabout. Currently this route has a lane of traffic in both directions, a cycle lane heading South and footpaths along both sides. Before reaching Douglas Golf Club, due to the constrained nature of the carriageway, and the relatively low frequency of busses and traffic, busses would share with general traffic. North of Douglas Golf Club the carriageway would be widened to provide a bus lane in the inbound direction only up to The Fingerpost Roundabout, existing traffic lanes would be maintained.

The bridge over the N28 would be widened to provide pedestrian footpaths and cycle lanes. Public and private land take (max 2m extra width) would be required along the length of the scheme with some gardens likely affected.

From The Fingerpost Roundabout busses would use East Douglas Street, until reaching Douglas Road. The Fingerpost Roundabout would be upgraded to include signals that would give bus priority. Bus priority would be achieved on East Douglas Street by placing bus gates by The Fingerpost Roundabout and by Church Street, these would make East Douglas Street access only for general traffic. Generally, the cross section would remain the same except a small amount of on street parking would be removed to allow footpaths to be provided in both directions along the whole of the route.

From Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road, Old Station Road, and finish at the junction with South Link Road.

The junction leaving East Douglas Street onto Douglas Road would be upgraded to provide bus priority, from here dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point on Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route.

Therefore this option would give bus priority by placing bus gates on Douglas Road by the junction with Well Road and to the west of the bridge over South Link, preventing Douglas Road and Southern Road being used as a through route. With this in place only minor changes would be needed to the cross section to provide adequate footpaths on both sides of Douglas Road. Some widening, private land take and removal of on street parkingwould be required for this through the pinch points on Douglas Road.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road. There is currently a cycle lane in the southbound direction only for the whole route, and in both directios for the 550m closest to The Fingerpost Roundabout. Widening is required to achieve the cross section.

The Fingerpost Roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Once Well Road is reached cyclists would share the now quiet Douglas Road and Southern Road route with busses and the access only traffic as far as the junction with Infirmary Road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Centre.

Cross Sections

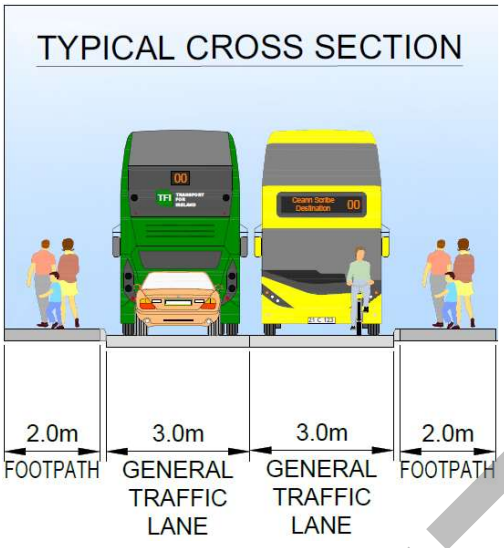
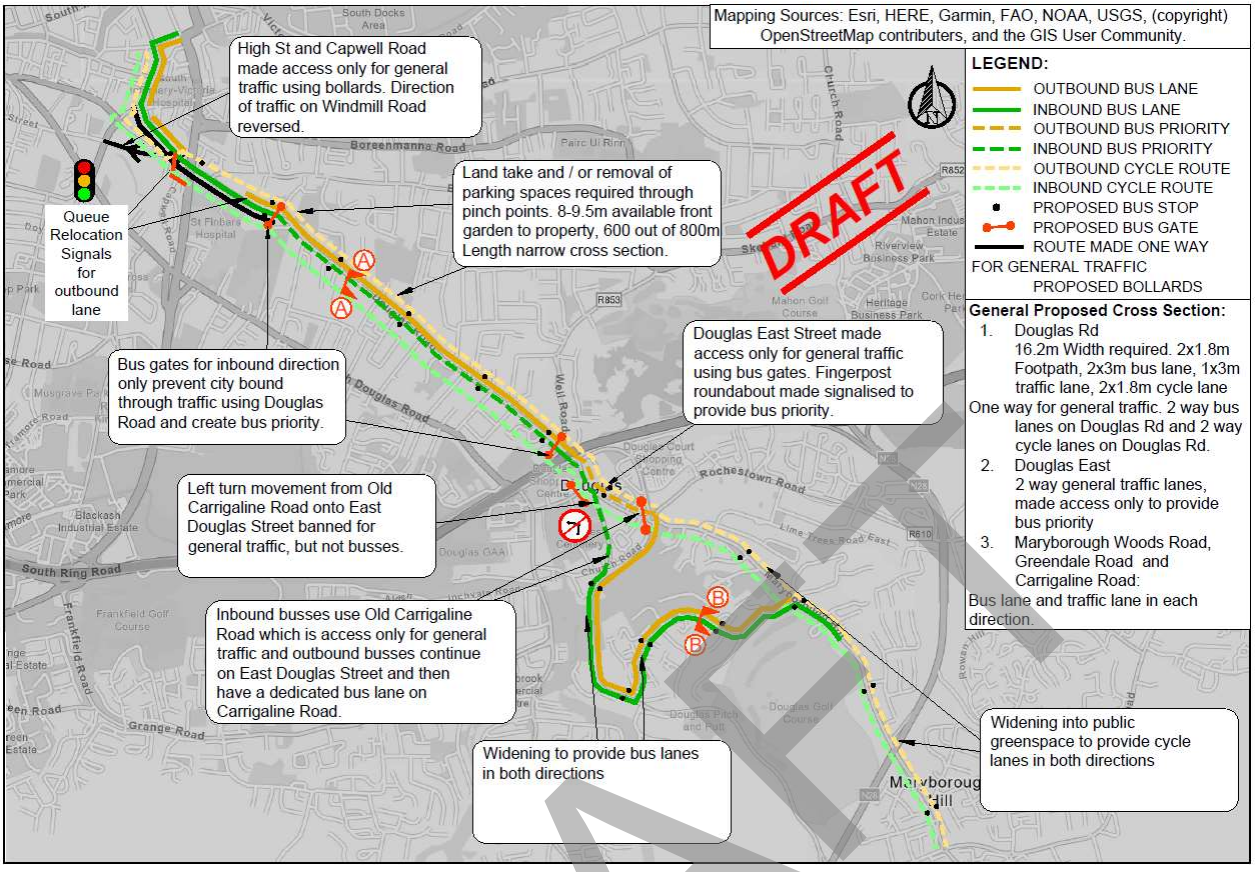


Figure 9-3 Cross Section B-B

9.1.5 Route Option 2A



Route for Busses

This route would first follow Maryborough Hill until reaching Greendale Road, this would involve widening the cross section from the existing 2 traffic lanes and one cycle lane to have cycle lanes in both directions, and for the 300m before the turning onto Greendale Road an inbound bus lane.

The bridge over the N28 would be widened to provide pedestrian footpaths and cycle lanes. Public and private land take (max 2m extra width) would be required along the length of the scheme with some gardens likely affected.

The route would then use a new signalised junction provided at Greendale Road to head west and not Maryborough Woods Road until reaching Carrigaline Road. The cross section of Maryborough Woods would be widened from a lane of traffic and footpath in each direction with grassy verges, to include a bus lane in both directions as well. This can be done by widening the carriageway onto the grassy verges without private landtake. A new signalised junction would also be provided at Carrigaline Road to give busses priority turning in / out at this junction.

The route then follows Carrigaline Road to The Fingerpost Roundabout. Dedicated bus lanes and traffic lanes would be provided in both directions along this route, with footpaths on either side of the road. For the first 675m of this route there is an existing traffic lane in each direction, this is at first bounded by private gardens, then woodland and public greenspace. Before the route reaches the woodland area, significant widening into private gardens and driveways would be required (up to 7m). Significant widening and earthworks would also be required through the woodland area, and closer to The Fingerpost Roundabout widening into public greenspace would be required.

From the junction with Old Carrigaline Road this option would have inbound busses and outbound busses using different routes. Inbound busses would follow Old Carrigaline Road, whereas the outbound bus route

would continue to The Fingerpost Roundabout, the turn onto Douglas East until both routes re-converge at the junction between East Douglas Street and Old Carrigaline Road.

On Carrigaline Road new signals would be required to give busses priority onto Old Carrigaline Road. On Old Carrigaline Road and East Douglas Street bus priority is achieved by placing bus gates at the junctions with Church Street and Fingerpost Roundabout, left turns for general traffic would also be banned coming out of Old Carrigaline Road onto East Douglas Street. This means these roads would become access only and the current road cross sections can remain. A small amount of on street parking would be removed from East Douglas Street to allow footpaths to be provided in both directions along the whole of the route. The footpaths on Old Carrigaline Road and Carrigaline Road would remain the same.

After the junction between Old Carrigaline Road and Douglas East where the routes have re-converged, both inbound and outbound busses use Douglas East as far as the junction with Douglas Road. Douglas East would be made an access only route for general traffic as described above so busses would have priority through here.

From Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road, Old Station Road, and finish at the junction with South Link Road.

The junction leaving East Douglas Street onto Douglas Road would be upgraded to provide bus priority, from here dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point on Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it.

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route.

Therefore this option would utalise strategically placed bus gates for inbound traffic, placed to the west of the junction with Well Road and to the west of the junction with Bellair Estate. These would prevent inbound through traffic on Douglas Road but still allow local access traffic, and by doing so create bus priority with less need for widening. In the outbound direction a dedicated bus lane would be provided for the length of the route as well as an outbound general traffic lane. Significant widening into private gardens would be needed to achieve this along much of the route.

At the pinch point on northwest end of Douglas Road, widening to provide an outbound bus lane and cycle lanes would have a large impact on the gardens, private property and parking in the area. For this reason queue relocation signals have been proposed to allow bus priority in the outbound direction where general traffic and busses will be sharing a single lane.

On Southern Road for 100m between Douglas Road until the first house access on the west of the road it is proposed to have a footpath on the east side of the road only. This is to allow 2 way bus lanes and a wide footpath without the need for a large amount of landtake and earthworks. From this point north a footpath would be provided on both sides of the road. A signalised crossing would be provided to provide access to the footpath by the entrances.

At the pinch point at the northern end of Southern Road it is not possible to widen to provide dedicated bus lanes in both directrions without affecting properties. Queue relocation signals would be used to give outbound busses priority as they would share the carriageway with general traffic.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea

Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane.

Route for Cyclists

Starting from Maryborough Roundabout cyclists would first follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road. There is currently a cycle lane in the southbound direction only for the whole route, and in both directions for the 550m closest to The Fingerpost Roundabout. Widening is required to achieve the cross section.

The Fingerpost Roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Dedicated bike lanes would then be priovided the length of the route along Douglas Road until the junction with High Street. This would be achieved by widening the road cross section, significant land take into private gardens would be required for this.

The route would then follow High Street, with cycle priority achievd by making High Street access only for general traffic. At the western end of High Street cyclists would join Langford Row where cycle paths would be provided on either side of the road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Center.

Cross Sections

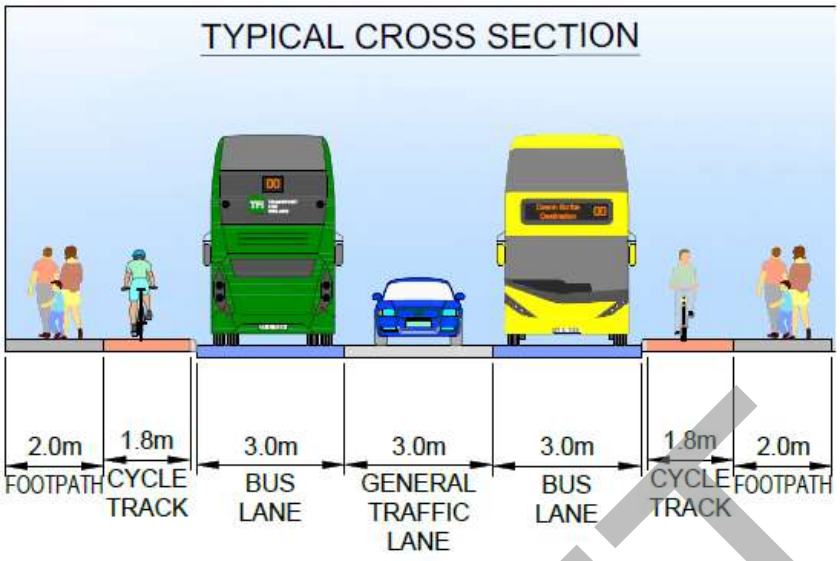


Figure 9-4 Cross Section A-A

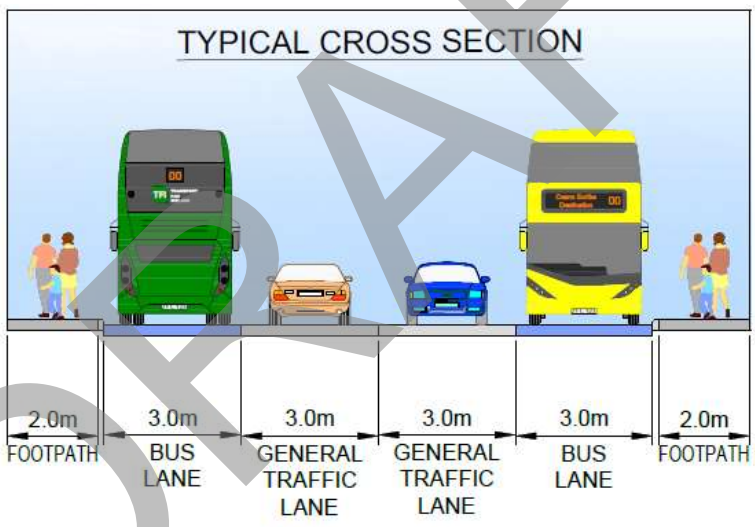
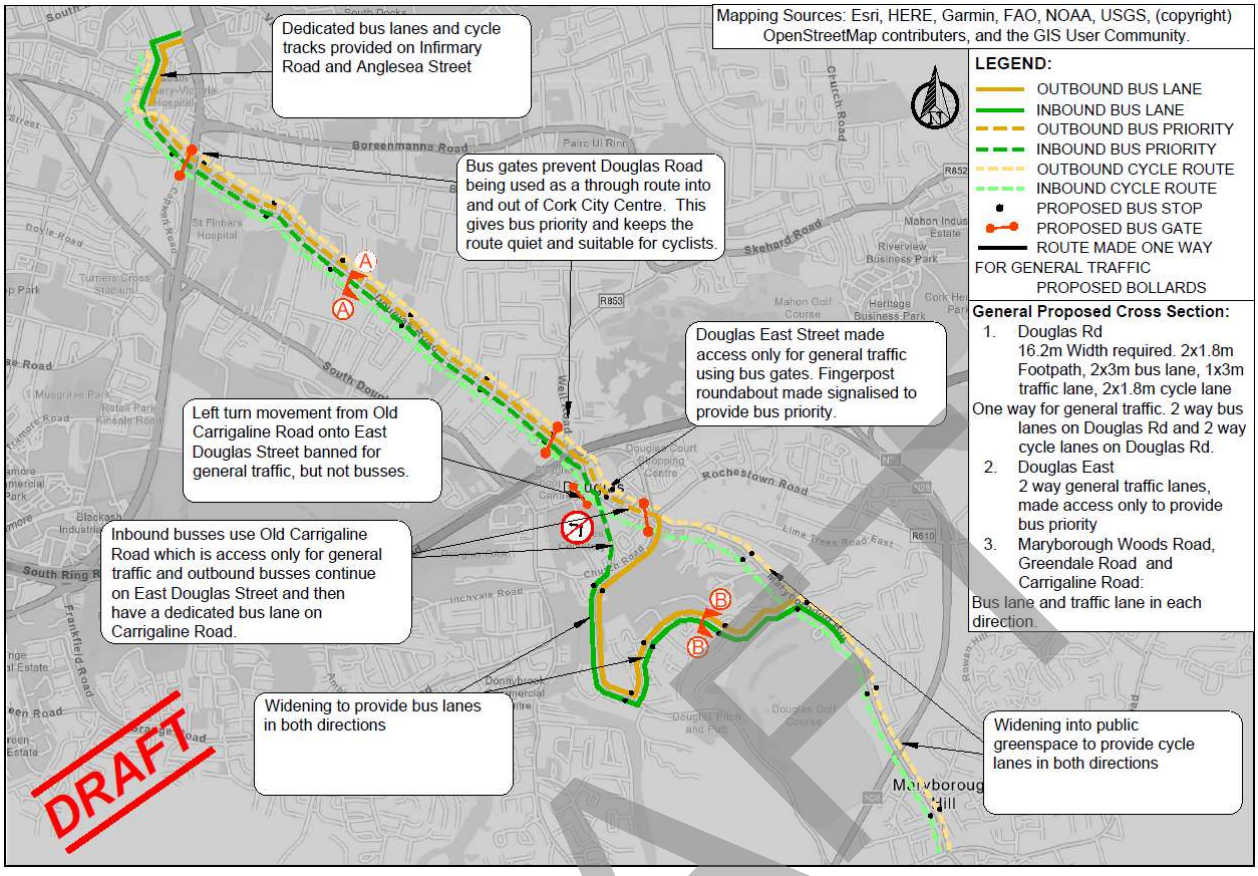


Figure 9-5 Cross Section B-B

9.1.6 Route Option 2B



Route for Busses

This route would first follow Maryborough Hill until reaching Greendale Road, this would involve widening the cross section from the existing 2 traffic lanes and one cycle lane to have cycle lanes in both directions, and for the 300m before the turning onto Greendale Road an inbound bus lane.

The bridge over the N28 would be widened to provide pedestrian footpaths and cycle lanes. Public and private land take (max 2m extra width) would be required along the length of the scheme with some gardens likely affected.

The route would then use a new signalised junction provided at Greendale Road to head west and not Maryborough Woods Road until reaching Carrigaline Road. The cross section of Maryborough Woods would be widened from a lane of traffic and footpath in each direction with grassy verges, to include a bus lane in both directions as well. This can be done by widening the carriageway onto the grassy verges without private landtake. A new signalised junction would also be provided at Carrigaline Road to give busses priority turning in / out at this junction.

The route then follows Carrigaline Road to The Fingerpost Roundabout. Dedicated bus lanes and traffic lanes would be provided in both directions along this route, with footpaths on either side of the road. For the first 675m of this route there is an existing traffic lane in each direction, this is at first bounded by private gardens, then woodland and public greenspace. Before the route reaches the woodland area, significant widening into private gardens and driveways would be required (up to 7m). Significant widening and earthworks would also be required through the woodland area, and closer to The Fingerpost Roundabout widening into public greenspace would be required.

From the junction with Old Carrigaline Road this option would have inbound busses and outbound busses using different routes. Inbound busses would follow Old Carrigaline Road, whereas the outbound bus route would continue to The Fingerpost Roundabout, the turn onto Douglas East until both routes re-converge at the junction between East Douglas Street and Old Carrigaline Road.

On Carrigaline Road new signals would be required to give busses priority onto Old Carrigaline Road. On Old Carrigaline Road and East Douglas Street bus priority is achieved by placing bus gates at the junctions with Church Street and Fingerpost Roundabout, left turns for general traffic would also be banned coming out of Old Carrigaline Road onto East Douglas Street. This means these roads would become access only and the current road cross sections can remain. A small amount of on street parking would be removed from East Douglas Street to allow footpaths to be provided in both directions along the whole of the route. The footpaths on Old Carrigaline Road and Carrigaline Road would remain the same.

After the junction between Old Carrigaline Road and Douglas East where the routes have re-converged, both inbound and outbound busses use Douglas East as far as the junction with Douglas Road. Douglas East would be made an access only route for general traffic as described above so busses would have priority through here.

From Douglas Road at the junction with River Walk, the bus route would follow Douglas Road until reaching Southern Road, where it would then follow Southern Road, Old Station Road, and finish at the junction with South Link Road.

The junction leaving East Douglas Street onto Douglas Road would be upgraded to provide bus priority, from here dedicated bus lanes would be provided on the first section of Douglas Road, until the Junction with Well Road is reached, this would be achieved by repainting 2 of the 4 lanes of general traffic that are present there.

After this point on Douglas Road the existing general cross section is a traffic lane in each direction with footpaths on both sides. However there are pinch points along the route where the carriageway is reduced to having a small single footpath and a single wide lane serving traffic in both directions. Space is generally constrained on the route with private properties, gardens and driveways backing directly onto it

Due to lack of space between properties bounding the route it is not feasible to provide dedicated bus lanes while maintaining two general traffic lanes on this route.

Therefore this option would give bus priority by placing bus gates on Douglas Road by the junction with Well Road and to the west of the bridge over South Link, preventing Douglas Road and Southern Road being used as a through route. With this in place only minor changes would be needed to the cross section to provide adequate footpaths on both sides of Douglas Road. Some widening, private land take and removal of on street parkingwould be required for this through the pinch points on Douglas Road.

The route then turns onto Infirmary Road, where parking spaces would be removed and a general traffic lane re-allocated to provide dedicated bus lanes and a general traffic lane in both directions. On Anglesea Street there are 3 existing southbound general traffic lanes, 2 of these would be re-allocated to provide dedicated bus lanes. On Old Station Road there are 2 general traffic lanes in each direction, and one of these in each direction would be re-allocated to a dedicated bus lane

Route for Cyclists

Starting from Maryborough Roundabout cyclists would follow Maryborough Hill until The Fingerpost Roundabout is reached. Cycle lanes would be provided both sides of the road. There is currently a cycle lane in the southbound direction only for the whole route, and in both directios for the 550m closest to The Fingerpost Roundabout. Widening is required to achieve the cross section.

The Fingerpost Roundabout would be upgraded to a signalised junction that would provide safe passage for cyclists through to East Douglas Street. Cyclists would then follow East Douglas Street until reaching Douglas Relief Road on the north side of Douglas.

On East Douglas Street cyclists would share the quiet roadspace with general traffic. East Douglas Street is made access only using bus gates adjacent to the Fingerpost Roundabout, at Church Street and by making the turning off Old Carrigaline Road right only for general traffic.

Dedicated cycle lanes would be provided on the first section of Douglas Road where widening would be needed in places. Under the N40 bridge, where there are currently 5 general traffic lanes, one of these would be removed allowing space for 2 way cycle tracks.

Once Well Road is reached cyclists would share the now quiet Douglas Road and Southern Road route with busses and the access only traffic as far as the junction with Infirmary Road.

The cycle route then uses Infirmary Road where dedicated 2 way cycle lanes would be provided to the west of the road, removal of on street parking would be needed for this. These cycle lanes would then tie into existing cycle lanes on Anglesea Street which would take cyclists into Cork City Centre.

Cross Sections:

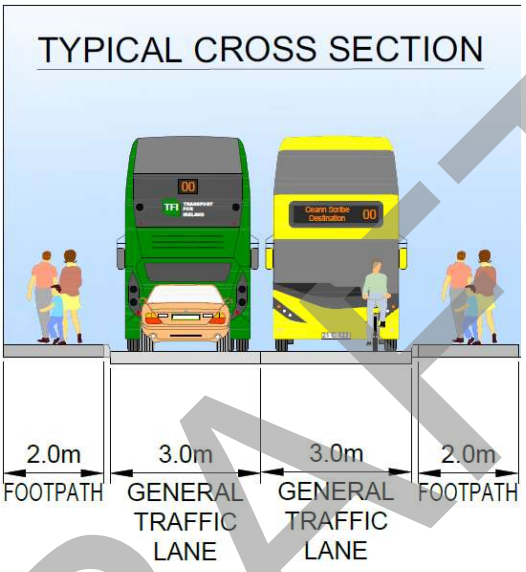


Figure 9-6 Cross Section A-A

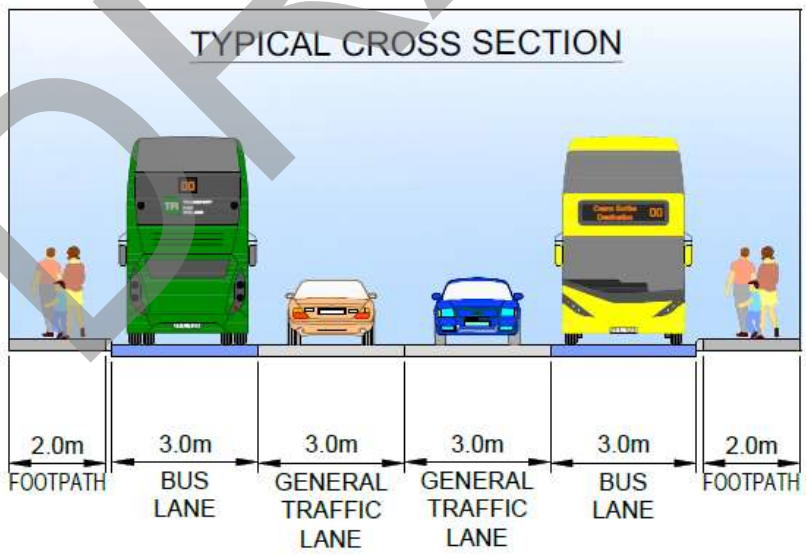
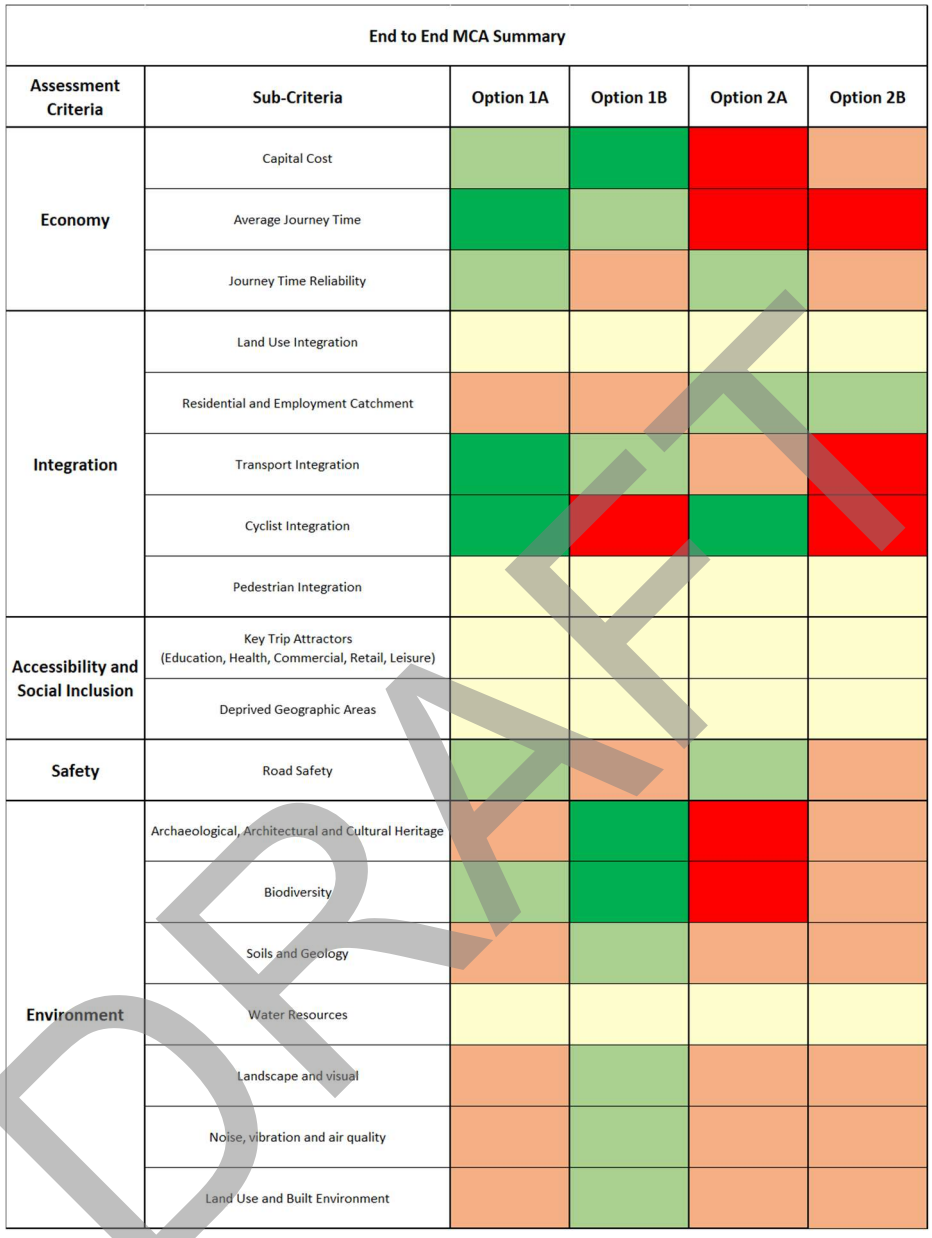


Figure 9-7 Cross Section B-B

9.1.7 Options Assessment – End to End

A summary of the ranking of options against the scheme criteria is presented in Table 9-1 below.

Table 9-1 Route 10 - End to End - Options Assessment Summary



In terms of "Economy" Option 1B has the lowest capital cost, followed by Option 1A, then 2B then 2A. This is directly related to the amount of widening and private land take that is required for each of the schemes. For average journey time Options 1A & 1B perform the best as they take a more direct route than Options 2A & 2B. In terms of journey time reliability Options 1A and 2A perform better as they have a higher proportion of dedicated bus lanes.

In terms of "Integration", all options serve Douglas Village, Maryborough and Douglas Road so performs similarly for the Land Use Integration criterion. Options 2A & 2B serve a slightly larger total population so score better for Residential and Employment Catchment. Option 1A & 1B serve the whole of Maryborough Road which is designated to have a higher frequency of busses in the future than Carrigaline Road, also, Options 1A and 2A are less disruptive to general traffic on Douglas Road than Options 1B and 2B. Therefore, Option 1A scores best for transport integration, followed by 1B, then 2A and last 2B. For cyclist integration Options 1A and 2A have dedicated cycle lanes, whereas Options 1B & 2B have cyclists sharing the street with busses and local access traffic, for this reason Options 1A & 2A score significantly better for cyclist

integration. All options are similar for pedestrian integration. Overall Option 1A scores best for Integration, followed by Option 2A, then 1B and finally scoring worst is Option 2B.

In terms of “Accessibility and Social Inclusion”, all options have been scored equally.

In terms of Road Safety, those route options which provide a dedicated cycle track score best over those where cyclists are required to share road space.

In terms of “Environment”, generally speaking the more road widening that would be required the worse the option scores. Options 2A & B require significant widening on Carrigaline Road, and is more impactful than the options which use Maryborough Hill. Options 1B and 2B provide bus priority on Douglas Road through the introduction of bus gates and so would require less road widening on this road than Options 1A & 1B. As a result, Option 1B scores the best under the environmental criteria, followed by 1A, 2B and 2A.

9.1.8 Conclusion – End to End

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 9-2.

Table 9-2

End to End MCA Summary				
Assessment Criteria	Option 1A	Option 1B	Option 2A	Option 2B
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

Based on the assessments above it has been determined that Option 1A offers the preferred route option for the following reasons:

- It has the best average journey time and journey time reliability, offering the highest level of service to bus passengers.
- It provides a segregated and direct cycle route offering the highest level of service to cyclists.

Route Option 1A is identified as the emerging preferred route for this section and as such the other links considered here have been removed from the spider's web, resulting in the reduced spiders web shown below.

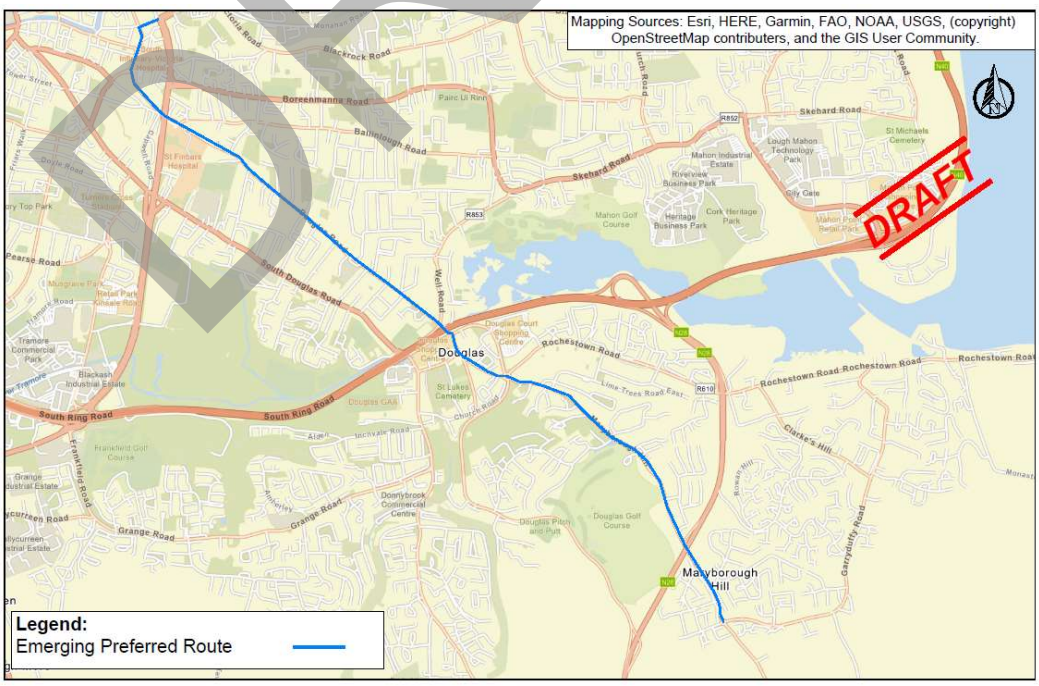


Figure 9-8

10. Proposed Scheme

10.1 Introduction

Chapters 5 to 9 of this report presented an appraisal of all route options considered for study area Sections 1, 2 & 3 respectively. Following this appraisal, preferred route sections are combined to form an end-to-end Emerging Preferred Route. This chapter of the report presents and describes the emerging preferred route identified and the concept scheme design. Concept scheme design drawings are included in Volume 3 of this report.

10.2 Emerging Preferred Route

The Emerging Preferred Route is presented in Figure 10-1 below:

Figure 10-1

10.2.1 Bus Route:

Inbound: The emerging preferred route would start on Maryborough Hill, 90m south-east of the junction with Elden. From here it would follow Maryborough Hill to the Fingerpost Roundabout. From there the route would cross into Douglas East until reaching Douglas Road. The route would then follow Douglas Road, then Southern Road, before joining Infirmary Road and then Anglesea Street. From here the route would turn onto Old Station Road and at the junction with South Link Road the route would join with the adjacent STC 9 and follow that route into Cork City Center.

Outbound: The emerging preferred route for outbound provision is the same as that for inbound, with the exception of Maryborough Hill, which has no outbound bus provision.

10.2.2 Cycle Route:

Inbound and outbound cyclists would share the same route. Starting from the roundabout at the top of Maryborough Hill (where Garryduff Road meets Maryborough Hill), cyclist provision would be in place along Maryborough Hill to the Fingerpost Roundabout. The route would then take Douglas East before joining Douglas Road, it would then follow Douglas Road until joining High Street, then Langford Row. From here the route would link up with existing cycle infrastructure on Anglesea Street and follow that into Cork City Center.

10.3 Concept Scheme Design

Draft Emerging Preferred Route

10.3.1 Maryborough to City Overview

The Maryborough to City Sustainable Transport Corridor (STC I) starts near the top of Maryborough Hill at the existing roundabout that links to the Monegurney/Garryduff Road. Segregated cycle lanes are proposed in both directions from this roundabout to the Fingerpost Roundabout, which is proposed to be converted to a signalised junction. An inbound (towards the city) bus lane is proposed to start from close to the junction of Maryborough Hill with Elden Estate and continue northwards as far as the proposed signalised Fingerpost Junction. The proposed bus and cycle facilities proceed through Douglas Village via East Douglas Street. It is proposed to restrict traffic to local access only on East Douglas Street with the introduction of two bus gates. This would reduce delays for buses and provide a safe route for cyclists without the need for road widening.

The bus and cycle route continues on Douglas Road (R610) where bus priority and segregated cycle lanes are proposed in both directions. To facilitate this, a series of bus gates would be used to restrict inbound traffic on the road to local access, bus and cyclists only. At the junction of Douglas Road and Southern Road the bus route continues on Southern Road, and cyclists will travel on a quiet street route on High Street and Langford Row before merging with the proposed bus route again at the northern end of Southern Road. Southern Road is proposed to be made one-way outbound for general traffic in order to provide bus priority in both directions.

The bus and cycle routes continue on Infirmary Road and Anglesea Street. At the junction with Old Station Road the proposed bus route turns east on Old Station Road and joins with the adjacent Sustainable Transport Corridor 9 (Airport to City). The proposed cycle route ties into the existing infrastructure on Anglesea Street.

The following paragraphs will describe each section of STC I in more detail, identifying the measures proposed so that sustainable transport is prioritised.

10.3.2 Maryborough Hill Roundabout to Fingerpost Roundabout Junction

Segregated cycle lanes are proposed in both directions along the length of Maryborough Hill to the Fingerpost Roundabout junction. An inbound (towards the city) bus lane is to start close to the junction with Elden Estate and continue to the proposed Fingerpost Junction. This will allow the bus to have priority over queueing traffic. No outbound (from the city) bus lane is provided along this section as no significant delays are expected for buses as they travel south on Maryborough Hill. Road widening is required in some locations along Maryborough Hill with some private gardens likely to be affected. The Fingerpost Roundabout is to be converted to a signalised junction to provide bus priority and enhanced pedestrian and cycling crossing facilities.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Maryborough Hill	Two new bus stops provided. Two new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
Maryborough Hill	Continuous segregated cycle lanes on both sides of the road.
Fingerpost Roundabout	Converted to a signalised junction to provide bus priority and to prioritise pedestrian and cycle friendly design. Signalised crossings for pedestrians provided on all arms of the junciton.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on Maryborough Hill.

The indicative extents of this land take are shown on the drawings provided in the Appendix of this brochure.

10.3.3 Douglas Village

It is proposed that East Douglas Street is restricted to local access only for general traffic. To do this the southern end of East Douglas Street (where it meets the Fingerpost Junction) would become bus and cycle only, as would the eastern end of Church St where it meets East Douglas Street. General traffic can still access the village using Carrigaline Road (which would be made two-way) or via Douglas Relief Road and East Village. Northbound through traffic would use Douglas Relief Road instead. This allows for East Douglas Street to be used as a quiet route by pedestrians, cyclists and buses without the need for road widening. Village improvement works such as placemaking, landscaping and mobility improvements will be done as part of the construction of the Sustainable Transport Corridor I (STC I). The signalised junction at the northern end of East Douglas Street is to be upgraded to provide priority for pedestrians, cyclists and buses.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
East Douglas Street	Village improvement works such as placemaking, landscaping, and mobility improvements. A traffic calmed environment will provide a safer and more attractive environment for pedestrians and cyclists. One new bus stop and one new zebra crossing to facilitate easy access to bus stops and generally improved permeability for pedestrians. Wider footpaths on both sides that are continuous across entrances and accesses.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on East Douglas Street.

The indicative extents of this land take are shown on the drawings provided in the Appendix of this brochure.

10.3.4 Douglas Road

It is proposed that bus prioirty and segregated cycle lanes will be provided for the full length of Douglas Road. In the inbound (towards the city) direction it is proposed that traffic on Douglas Road is restricted to local access only by the introduction of bus gates. Inbound movements are still permitted for some sections of the road but general traffic would not be allowed to pass through the bus gates, and so the road could not be used as a through route. City bound traffic coming from the Douglas/Maryborough area could use a detour route on the N40 and N27 instead. This reduces delays for inbound buses without the need for a dedicated bus lane.

Bus gates (short section of bus/cycle-only roadway) for city bound traffic are proposed on Douglas Road at the following locations:

- Junction with Well Road;
- Junction with Bellair Estate;
- Junction with Ballinlough Road.

Whilst this reduces the impact of widening along the route, land take is still required from private gardens along Douglas Road. In sections where buildings are located close to the road and it is not possible to provide bus lanes, it is proposed that outbound (towards Maryborough Hill) bus priority will be provided using traffic lights that will hold back general traffic during times of congestion. To improve pedestrian connectivity conitnuous footpaths with a mimimum width of 1.8m are provided on both sides of Douglas Road along with several new toucancrossings.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Douglas Road	Bus stop and pedestrian crossing locations rationalised to facilitate easy access to bus stops and generally improved permeability for pedestrians. Continuous, minimum 1.8m wide footpaths provided on both sides of the road. Including the provision of 400m of footpath from Wrightville Dental Clinic to Woolhara Park on the southern side of the road where there is no existing footpath. Continuous segregated cycle lanes on both sides of the road.

To facilitate these sustainable transport improvements, it is proposed that land take would be required at the following approximate locations:

- Lands on Douglas Road.

The indicative extents of this land take are shown on the drawings provided in the Appendix of this brochure.

10.3.5 Southern Road to City via Infirmary Road and Anglesea Street

Southern Road is physically constrained with buildings close to the road and it is not possible to provide bus priority while maintaining through traffic in both directions. Along with the proposal to remove through traffic from Douglas Road it is proposed to make Southern Road one-way outbound (towards Maryborough Hill) for general traffic. A continuous inbound (towards the city) bus lane is proposed on Southern Road and an outbound bus lane is also proposed for a portion of the road. Traffic lights will provide priority through the sections where no dedicated bus lane is provided.

Cyclists take an alternative route to buses from the junction of Douglas Road and Capwell Road. Connectivity to the existing cycling facilities on Langford Row is proposed via High Street and Capwell Road. It is proposed that High Street and Capwell Road are closed to through traffic at the junction with Douglas Road. This will create a low volume/low speed environment on these streets that will provide a quiet route for cyclists. It will also allow for a new small landscaped urban park area to be created for the area.

It is proposed that one lane of outbound (towards Maryborough Hill) traffic is removed on both Infirmary Road and Anglesea Street to provide bus and cycle lanes in both directions. The cycle route joins with the existing facilities along Anglesea Street that continue into the city centre. On Old Station Road it is proposed that two lanes of general traffic would be reallocated to bus lanes allowing buses to continue onto Old Station Road and Eglinton Street where the route connects to Sustainable Transport Corridor (STC) 9 – Airport to City.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Capwell Road/High Street	Quiet street will provide a safer and more attractive environment for pedestrians and cyclists. New landscaped urban park area created on what was previously roadway.
Southern Road/Langford Row Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.
Southern Road	New pedestrian crossing provided on Southern Road.
High Street/Langford Row Junction	Junction upgraded to prioritise pedestrian and cycle friendly design.
Infirmary Row/Anglesea Street Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.
Anglesea Street/Old Station Road Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.

10.4 Summary

10.4.1 Infrastructure Provision

The emerging preferred route measures approximately 5.7 km in total. Along the emerging preferred route there is currently no bus lanes or bus provision.

The emerging preferred route would provide dedicated bus lanes for the inbound direction for 4.7km of the emerging preferred route, and for 3.3km in the outbound direction. No bus lanes would be provided on Maryborough Hill in the outbound direction and 2 locations totalling 300m of length where bus priority is achieved for outbound busses using signals, creating a "virtual bus lane".

In addition, improvements to cycle infrastructure along / adjacent to the emerging preferred route would increase the overall provision to 5.7km (100%) in each direction, with an off-route cycle track provided for the sections where there is not room to have cycle facilities directly next to the STC.

10.4.2 Journey Time Benefits

Current journey times for the Cork Bus 220 route, for the section which follows the emerging preferred route from Maryborough to City Centre, can be seen to vary by over 100% when comparing average peak and off-peak journey times.

The daytime journey times outside of peak hours, when traffic volumes are lower, are likely to be reflective of the journey times which could be achieved by a combination of improved bus priority, better enforcement of bus lanes and cashless fares. The current daytime off-peak journey times average between 13 and 16 minutes.

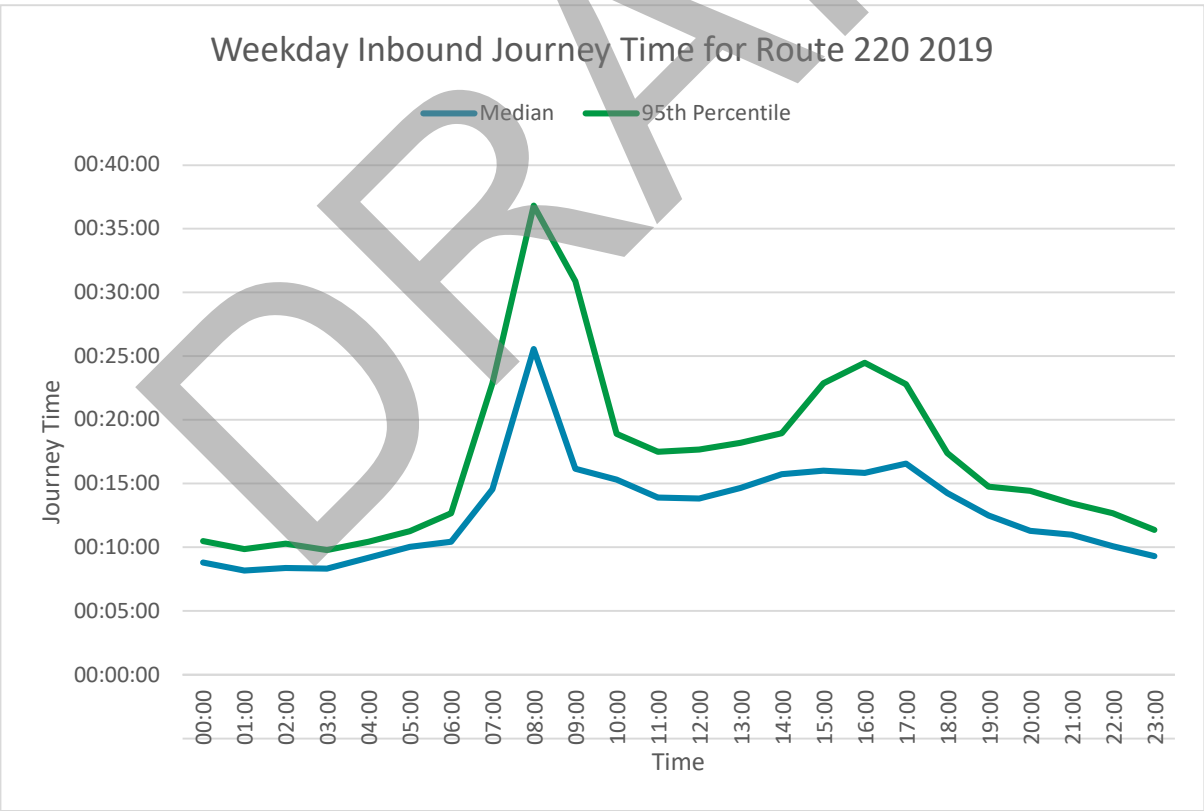


Figure 10-2

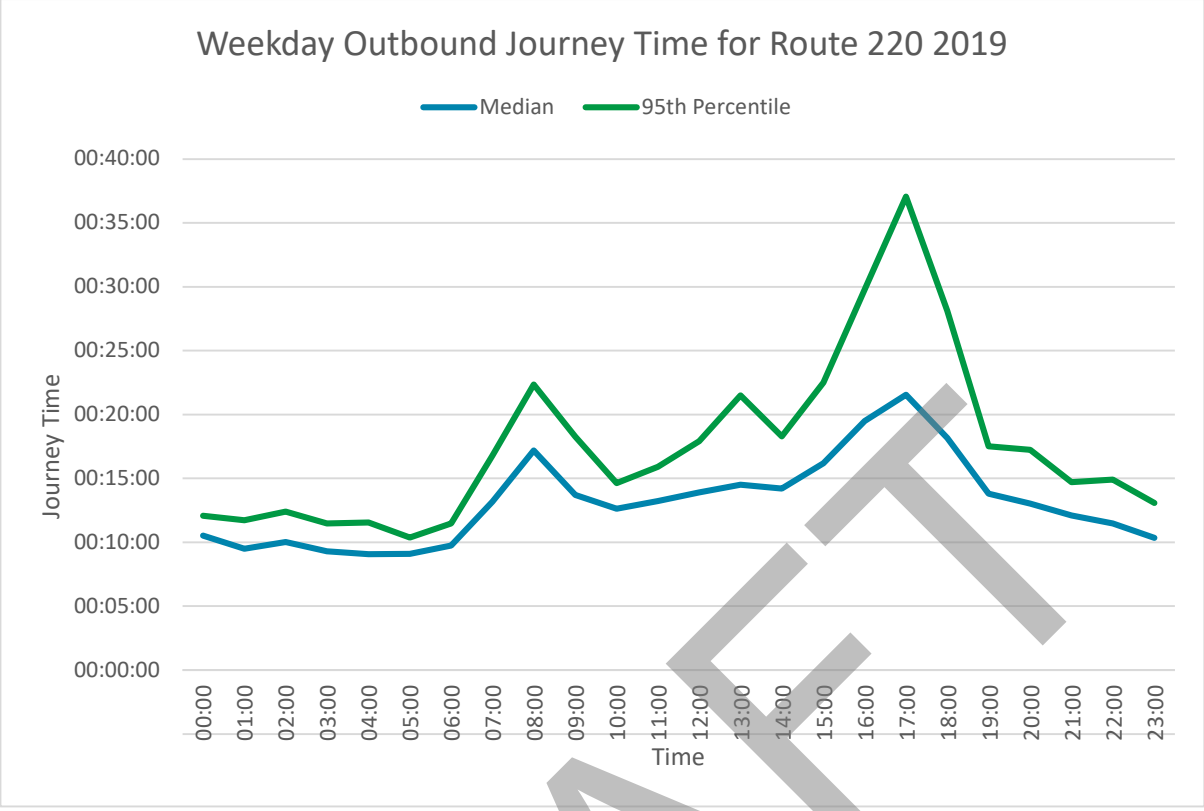


Figure 10-3

Based on the above, a conclusion can be drawn that by improving the provision of bus lanes along the route the risk of turbulence to buses would be significantly reduced, allowing the buses to move along the route quicker and with more consistent journey times. The extent of these benefits will be confirmed and quantified at the next design stage.

11. Next Steps

This report has identified an emerging preferred route for the bus infrastructure and pedestrian and cycle facilities along this Sustainable Transport Corridor, and a concept design has been developed. This option will be put forward as part of a non-statutory public consultation and the inputs and feedback received will be incorporated where practical and appropriate to do so.

The emerging preferred route is presented as STC I in the public consultation drawings. The infrastructure corridors were renamed from numbers to letters to avoid confusion with the bus routing naming (the routes that the individual buses follow are labelled using numbers and the infrastructure corridors are labelled using letters).

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 separate bus network review process. The proposals will be amended, if and as required, to integrate any resultant changes. The Preliminary Design will define the final practically achievable scheme for the STC, considering more detailed studies of constraints, impacts and environmental assessment required at a local level.

Prior to finalisation of the STC scheme design, a second public consultation process will be undertaken, with inputs and feedback received again incorporated where practical and appropriate to do so.

This 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.