National Transport Authority

Bus Connects Infrastructure Cork – Project C

DRAFT Route 1 – Emerging Preferred Options Report

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Executive Summary

General

Barry Transportation was 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) 1 - Dunkettle to City Centre via Tivoli and Kent Station STC Scheme, which is designed to full Sustainable Transport Corridor standards.

This route is presented as STC A 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 Dunkettle to Cork City Centre. The study area was generally developed to run east from the City Centre, picking up main trip attractors either side of Lower Glanmire Road, including Kent Train Station, Tivoli Docks, Horgan's Quay and linking up to the Dunkettle N40 Interchange. The study area also takes in the South Docklands and considers several potential new bridge crossings over the river. 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. and is described in the following paragraphs and in detail in Chapter 8.

The Dunkettle to City Centre Sustainable Transport Corridor (STC 1) commences at the Dunkettle Roundabout. From here the proposed bus route heads south, crossing over the existing railway line into the Tivoli Docklands Development on a new bridge. It proceeds through the Tivoli Docklands on new roads before re-joining Lower Glanmire Road at the Silversprings junction. From Silversprings the bus route follows Lower Glanmire Road via the Skew Bridge until Water Street where it turns south and continues to Horgan's Quay before turning right onto Alfred Street, the route follows Alfred Street then turns onto Brian Boru Street, and ends at Cork Bus Station.

The proposed cycle route follows Lower Glanmire Road (N8) from the Dunkettle Roundabout along the dual carriageway as far as the skew bridge with segregated cycle lanes provided in both directions. It then uses a new bridge to pass over the railway line and connect to the exiting path within the Port of Cork Millennium Gardens. A new cantilevered pedestrian and cyclist boardwalk along Lower Glanmire Road is proposed to link the entrance to the park as far as Castleview Terrace. From here an elevated boardwalk is proposed along the river edge to connect to a new cycle track along the quays within the North Docks. It then connects to a quayside cycle route on Horgan's Quay that continues towards the city centre.

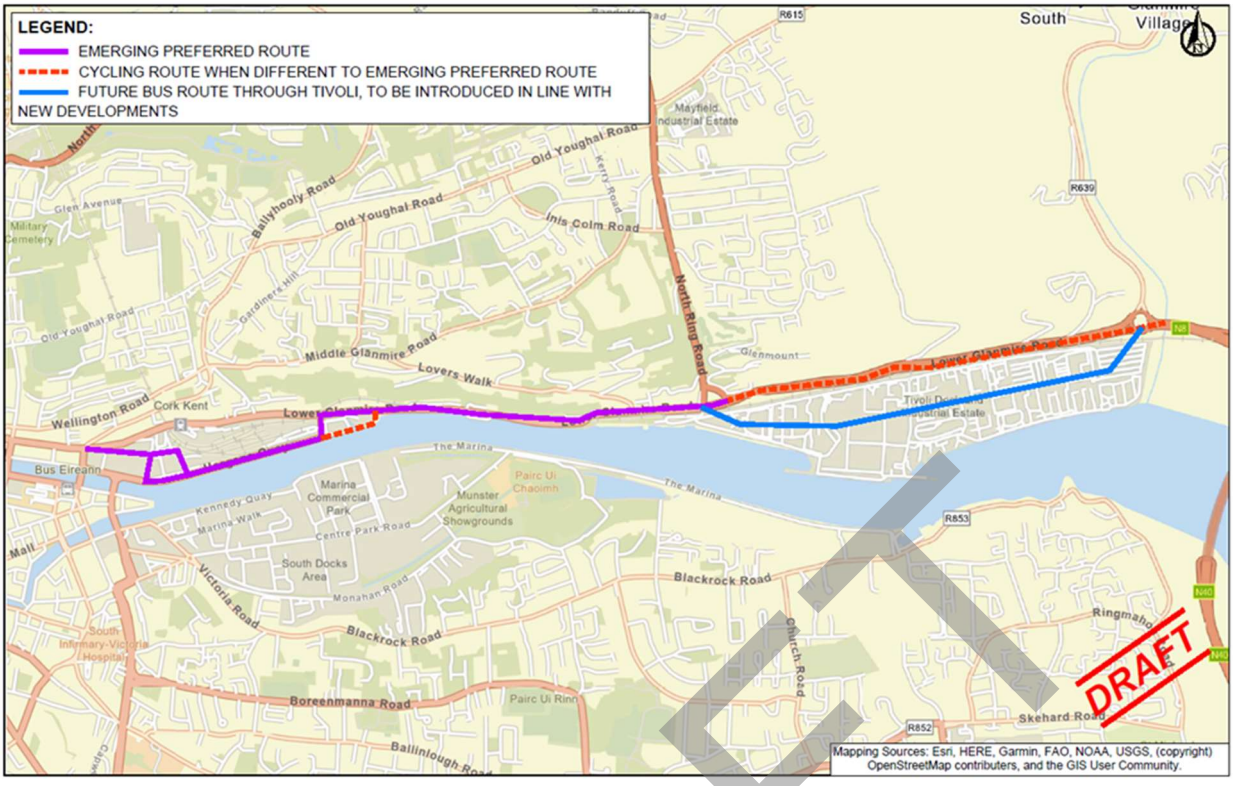


Figure 1-1 Emerging Preferred Route

Concept Scheme Design

Dunkettle Roundabout to Silversprings Junction

The corridor commences at the Dunkettle Roundabout, a new bridge and junction are proposed here to allow buses to cross over the railway line to access the Tivoli Docklands. The bus route follows new roads through the Tivoli Docklands Development before re-joining Lower Glanmire Road (N8) at the Silversprings junction. The design of the proposed route through Tivoli Docklands as well as the new bridge and junctions at either end will be carried out in conjunction with the design for the redevelopment of the docklands. This design will be completed at a later date and drawings of this section of the scheme are not presented as part of this consultation.

On Lower Glanmire Road segregated cycle lanes are proposed on both sides of the existing dual carriageway. It is proposed to change the speed limit of this section of road from 100 km/h to 60 km/h to make the road safer and more suitable for cyclists. Cycle links and signalised toucan crossings are to be provided at the Dunkettle Roundabout so that cyclists can connect onwards towards Glanmire and Little Island.

Table 1-1 Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Dunkettle Roundabout	Improvements to the existing junction prioritising pedestrian and cycle friendly design and allowing safe onward connections to Glanmire and Little Island.
Lower Glanmire Road near entrance to Lotamore House	One new bus stop is proposed on the inbound section of the Lower Glanmire Road dual carriageway. New toucan crossing to facilitate

	easy access to new bus stop and generally improved permeability for pedestrians.
Silversprings Junction	Improvements to the existing junctions prioritising pedestrian and cycle friendly design. On and off ramps to be signalised to mange conflict and provide priority for cyclists. Three new signalised pedestrian crossings to be provided.

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

- Lands on the northern side of Lower Glanmire Road.

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

1.1.2 Silversprings Junction to Water Street

Between Silversprings and the existing skew bridge a dedicated outbound (towards Dunkettle) bus lane is proposed, and inbound (towards the city) priority is achieved using traffic lights. There is limited width available over the skew bridge and it is not possible to provide bus lanes so bus priority in both directions will be provided using traffic lights. West of the skew bridge dedicated bus lanes are provided in both directions as far as Myrtle Hill Terrace. This can be achieved by narrowing the traffic lanes, removing the hatched central median and relocating pedestrians to a new boardwalk on the southside of the quay wall. On the narrow section between Myrtle Hill Terrace and Water Street a bus lane is provided in the inbound direction only and outbound bus priority is provided through signal management at the Water Street Junction during times of congestion.

Dedicated cycle tracks are provided on both sides of the road from Silversprings as far as the junction with Trafalgar Hill. From here the outbound (towards Dunkettle) cycle route uses the local access road running parallel on the northern side of the railway, while inbound (towards the city) cyclists are on a segregated cycle lane on Lower Glanmire Road. Cyclists in both directions use a new bridge to cross over the railway line This new bridge is proposed to be built to the east of the skew bridge and connect to a two-way cycle route within the Port of Cork Millennium Gardens.

Cyclists then continue through the park before using a proposed 850m long cantilevered boardwalk built outside the existing quay walls along Lower Glanmire Road. This boardwalk runs from the entrance to the Millennium Gardens as far as Castleview Terrace. The elevated boardwalk then passes around the riverside (southside) of Castleview Terrace to connect to a new cycle route through the North Docks. Some land-take from the existing quayside in the North Docks area would be required to facilitate this new link.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Skew bridge over the railway line	A new bridge constructed adjacent to the Skew Bridge is proposed to allow pedestrians and cyclists to safely cross the railway line and to provide greater connectivity and an opportunity for enhancements at the Port of Cork Millennium Gardens.
Lower Glanmire Road	A new cycle and pedestrian boardwalk adjacent to river Lee would provide a high level of amenity as well as a direct and useful link into Cork City Centre.
Lower Glanmire Road	Three new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
North Docks	Creation of a new pedestrian route and opportunities for landscaping and amenities on quayside lands within the North Docklands.

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

- Lands adjacent to the railway line on Lower Glanmire Road.
- Lands within the North Docklands east of Water Street

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

1.1.3 Water Street to MacCurtain Street

It is proposed to reallocate one of the two inbound traffic lanes on Water Street and Horgan's Quay to a us lane and widen the road to construct a new outbound contraflow bus lane. This cross section would continue on Horgan's Quay as far as Alfred Street. The section of Alfred Street outside Kent Station is to be widened to allow for two-way bus movements. A dedicated westbound bus lane is to be provided on the section between Railway Street and Ship Street. To achieve this, it is proposed to make Alfred Street eastbound only for general traffic. Traffic would access Alfred Street using a clockwise one-way loop with Horgan's Quay and Ship Street. The existing one-way bus only access road between MacCurtain Street and Alfred Street is to be widened to allow for two-way bus movements.

A two-way cycle track is to be provided on the southern side of Horgan's Quay adjacent to the River Lee as far as Alfred Street. A segregated two-way cycle track is proposed for the length of Alfred Street as far as MacCurtain Street.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Horgan's Quay	Widen pedestrian and cyclist area provided along the river edge. Opportunities for landscaping, urban realm enhancement and a quayside amenity area.
Horgan's Quay	Two new bus stops proposed as well as two new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
Kent Station	Two new zebra crossings to allow safe and convenient access to the station.

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

- Private lands along Horgan's Quay

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

Journey Time Benefits

Current journey times for the Cork Bus 214/221 route, for the section which follows the emerging preferred route from Dunkettle to City Centre, can be seen to vary by as much as 100% when comparing average peak and off-peak journey times.

The 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 due to new infrastructure, better enforcement of bus lanes and cashless fares reducing time spent waiting at stops. The current off-peak journey times average between 8 and 10 minutes.

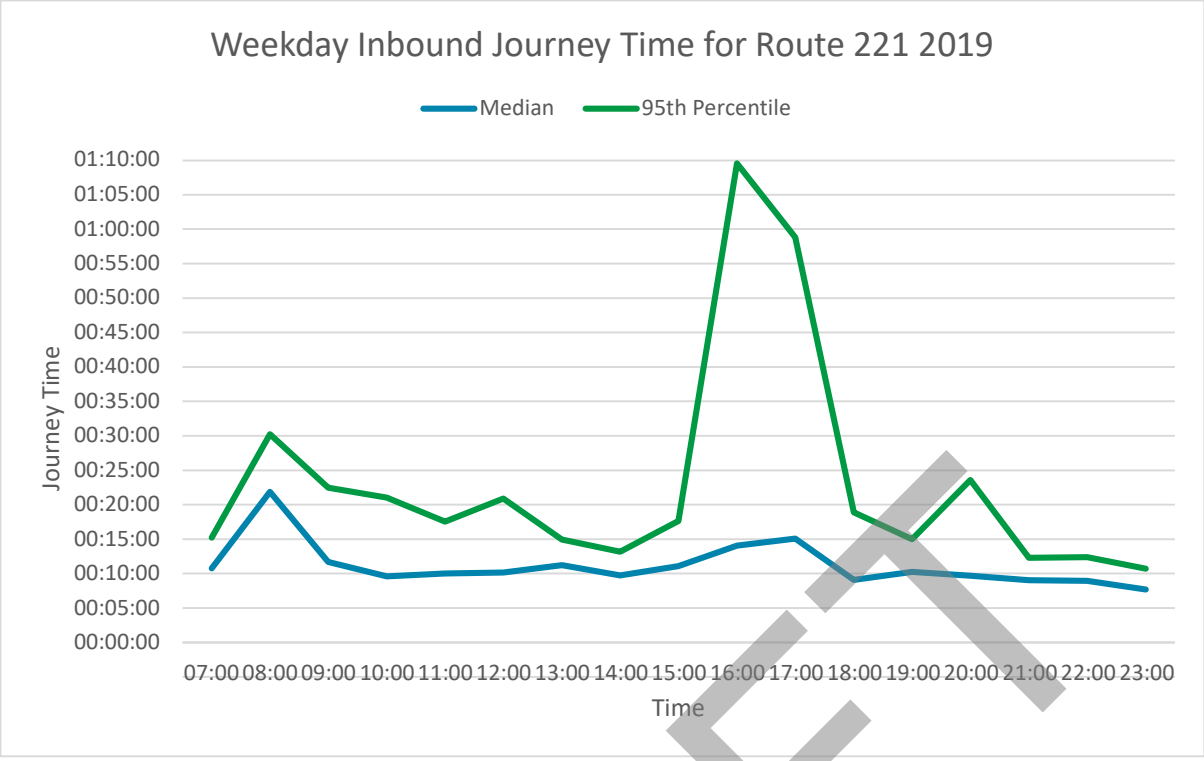


Figure 1-2

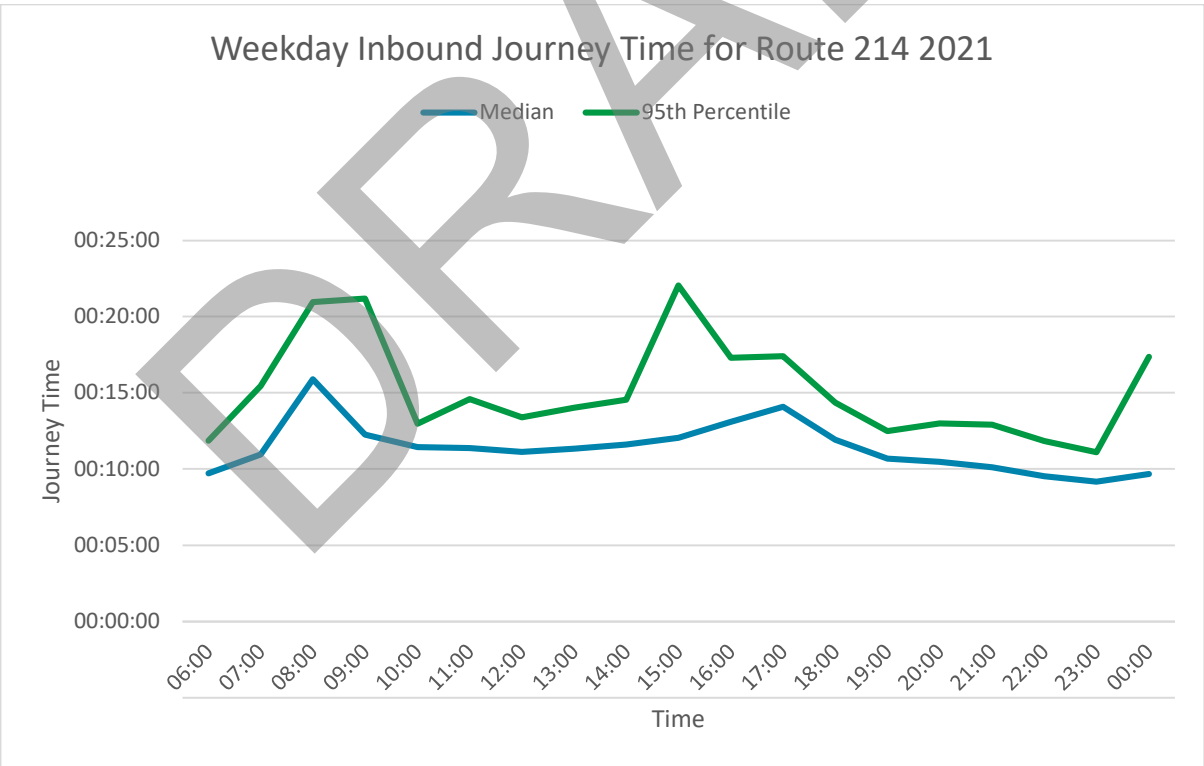


Figure 1-3

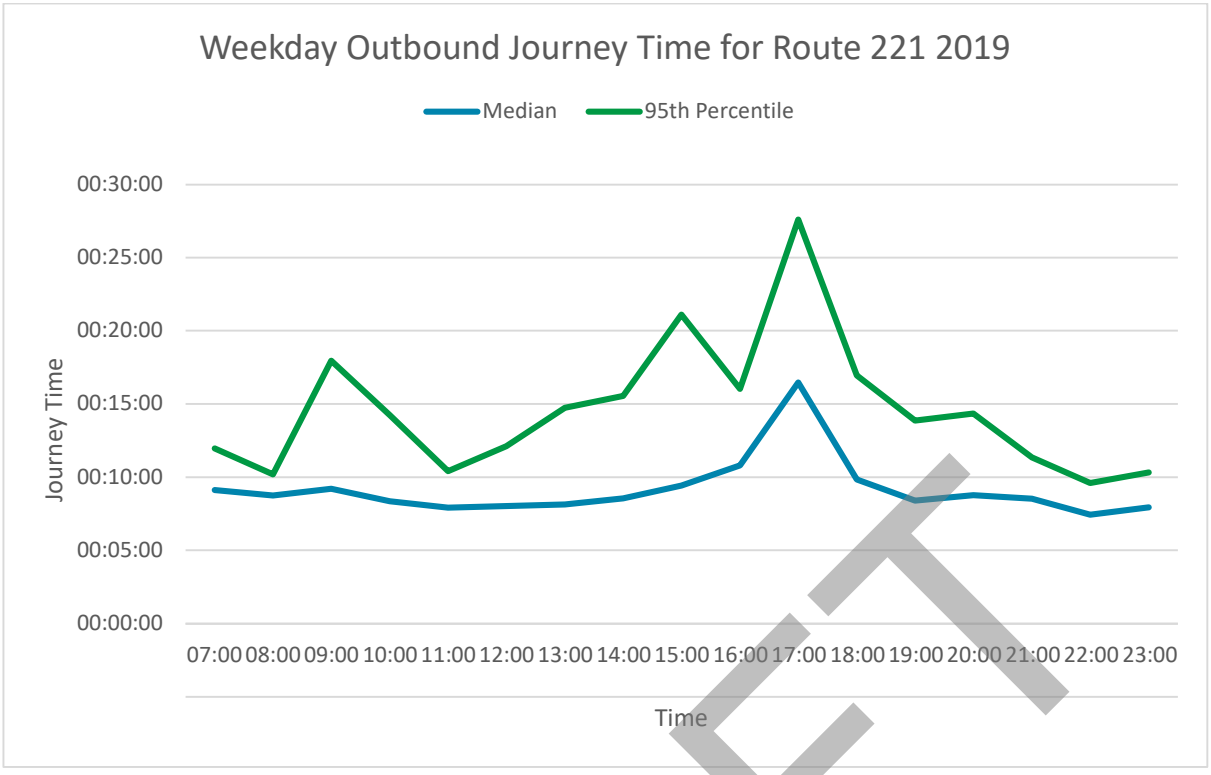


Figure 1-4

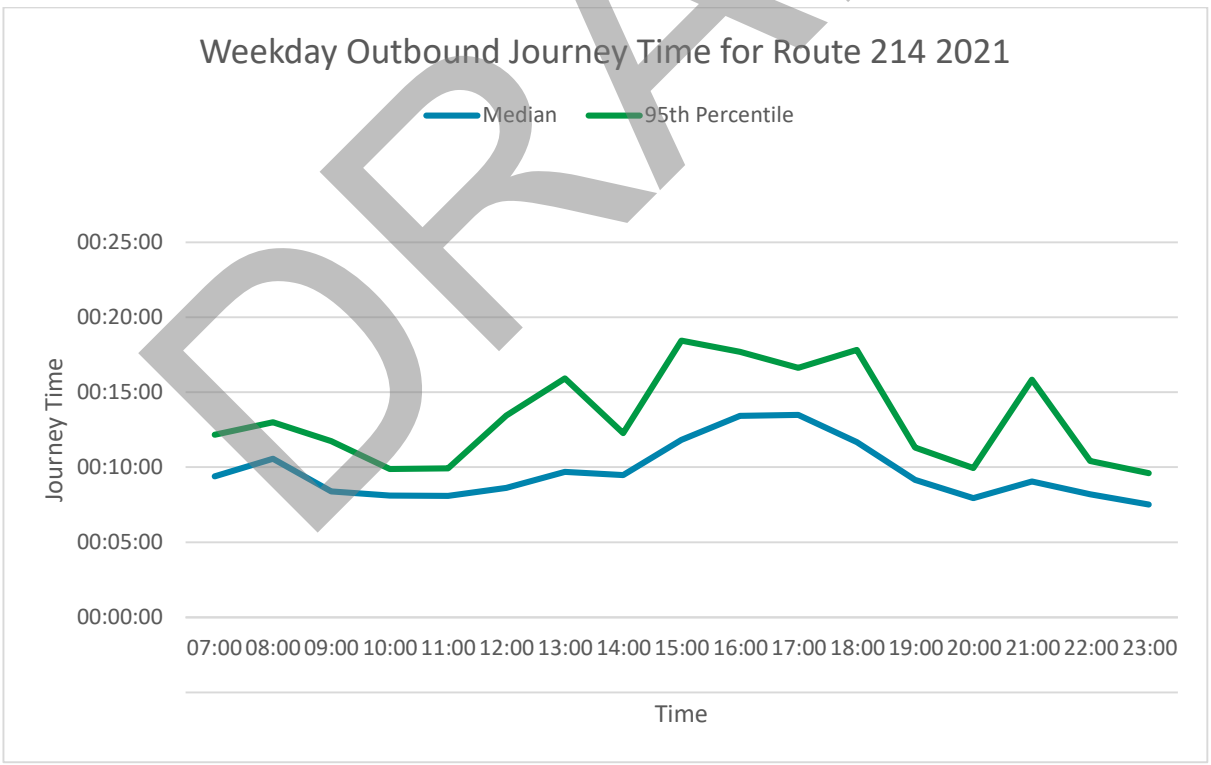


Figure 1-5

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 and reliable 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 A 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 the Dunkettle to Cork City Centre Sustainable Transport Corridor (STC). This is based off the Glanmire – Ballincollig CBC as identified in CMATS (NTA, 2020). The CMATS CBC 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 having 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 Cork 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 lane / bus priority in total (CMATS, NTA 2040).

The Dunkettle to City Centre Corridor Study Area runs from just east of the Dunkettle / Glanmire Road Roundabout to the City Centre at the N27 bridge by Cork Bus Station. The corridor is within the administrative area of Cork City Council. The Core Bus Network as identified in CMATS is illustrated in Figure 1-6, with Dunkettle 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.

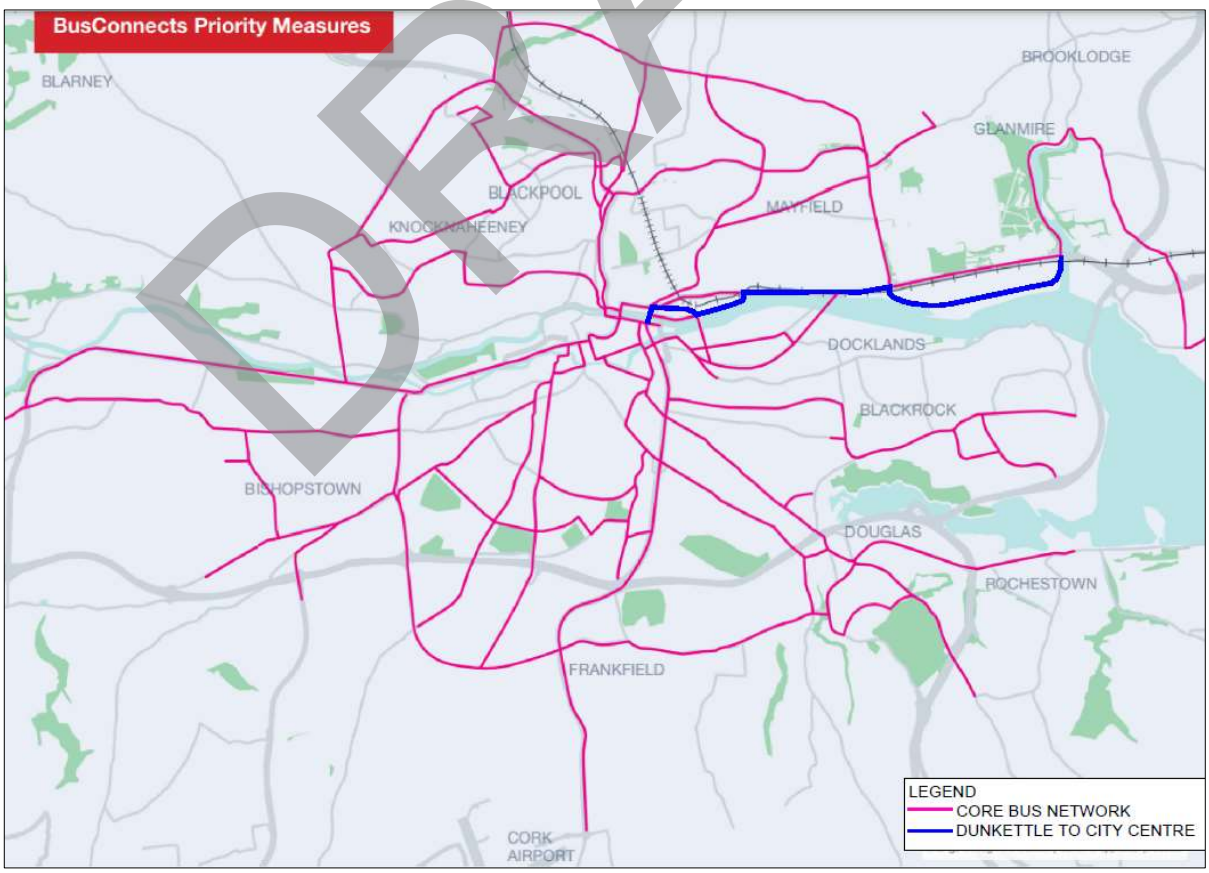


Figure 1-6 Indicative Sustainable Transport Corridors (CMATS 2020)

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 scheme are set out and any other transport policies relevant to the STC network are presented.

- **Chapter 3** – In this chapter, the study area for the Dunkettle to City Centre STC is detailed and divided into two 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** – These chapters detail the Emerging Preferred Route selection process, for Sections 1 and 2 respectively, through Options Assessment Stage Stage 2 analysis.

- **Chapter 8** – This chapter gives the overall conclusions of the scheme options assessment process and identifies and describes the Emerging Preferred Route.

- **Chapter 9** – 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 Dunkettle 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 Dunkettle to City Centre STC are:

- Glanmire – Ballincollig (Sustainable Transport Corridor)
- Midleton – 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, feeder and greenway cycle routes were identified. A number of these routes lie within the core study area of the Dunkettle 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 of Transport in Ireland (NIFTI) is the Department of 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 the 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 NIFTI providing access to critical services such as education, healthcare and employment within the Cork City area.

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:

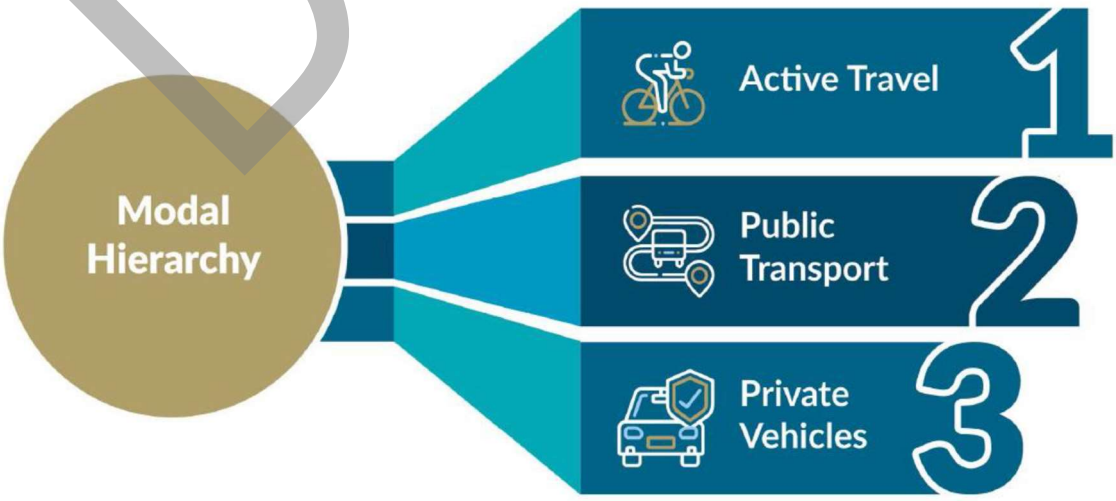


Figure 2-2: NIFTI Modal Hierarchy

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 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 the Bus Connects scheme 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 Sustainable Transport Corridors

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 bus 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 will be suited to the individual conditions at each bus stop location.

3. Study Area

3.1 Introduction

In this chapter, the study area for the Dunkettle 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 Dunkettle to City Centre Sustainable Transport Corridor Study Area runs from the Dunkettle N40 interchange to Cork City Centre. The study area was generally developed to include the main trip generators and existing roads between Dunkettle and the City Centre and encompassing the areas around Tivoli Docks, Lower Glanmire Road, Horgan's Quay and Kent Station. The study area also takes in the South Docklands and considers several potential new bridge crossings over the river. The study area lies within the administrative area of Cork City Council and is shown below in Figure 3-1.

This route is located between the proposed STC Routes 2 & 12 and there is some overlap on each side with the study areas for those routes.

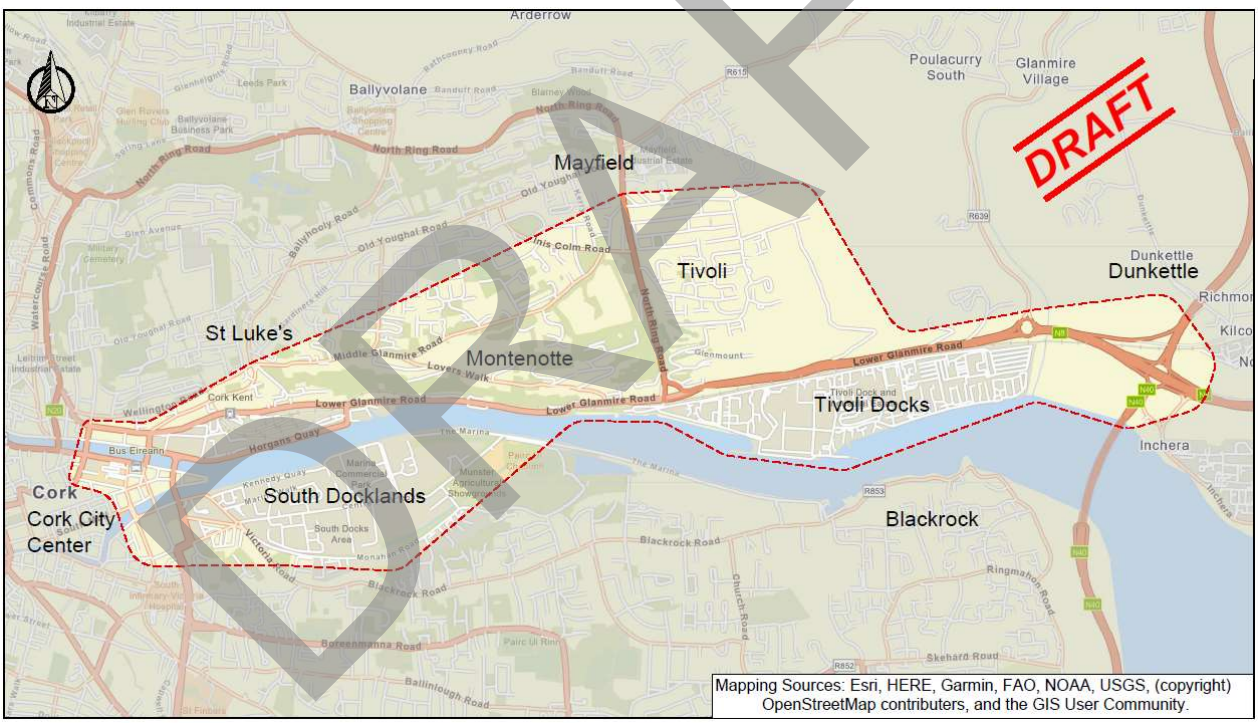


Figure 3-1 - Study Area

The Study Area was split into two smaller sections, as shown by Figure 3-2 below:

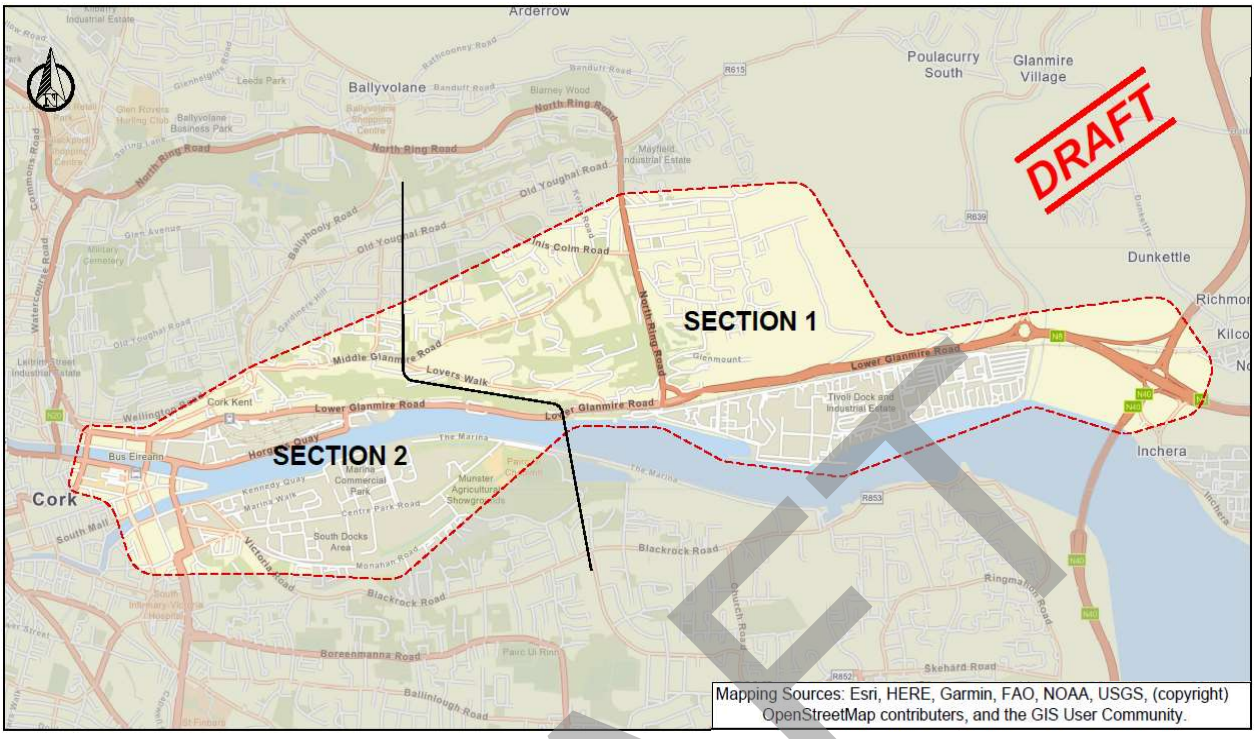


Figure 3-2 Study Area Sections

The western terminus for the STC is identified as the south side of the N8 Brian Boru Bridge, as it can be reasonably assumed to represent Cork City Centre, with a terminus at this location serving the main trip attracters associated with the city centre area. Any routes which terminate here could travel along the Quays to connect to another outbound STC.

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:

- River Lee and Glashaboy river (these limit options for crossing restricts design options)
- Public transport infrastructure, including Kent Station, Cork Bus Station and Cork City Bus Services
- Planned and committed developments including Dunkettle interchange Upgrade, The Tivoli Docks LAP, MacCurtain Street PTI, and South Docks LAP.
- 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 Dunkettle 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 who's objectives refer specifically to cyclists and pedestrians.

It is proposed to provide on-street cycle facilities as required under the CMA CNP, published in 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 Dunkettle to City Centre STC Route Options Assessment. This methodology seeks to determine the optimal 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.

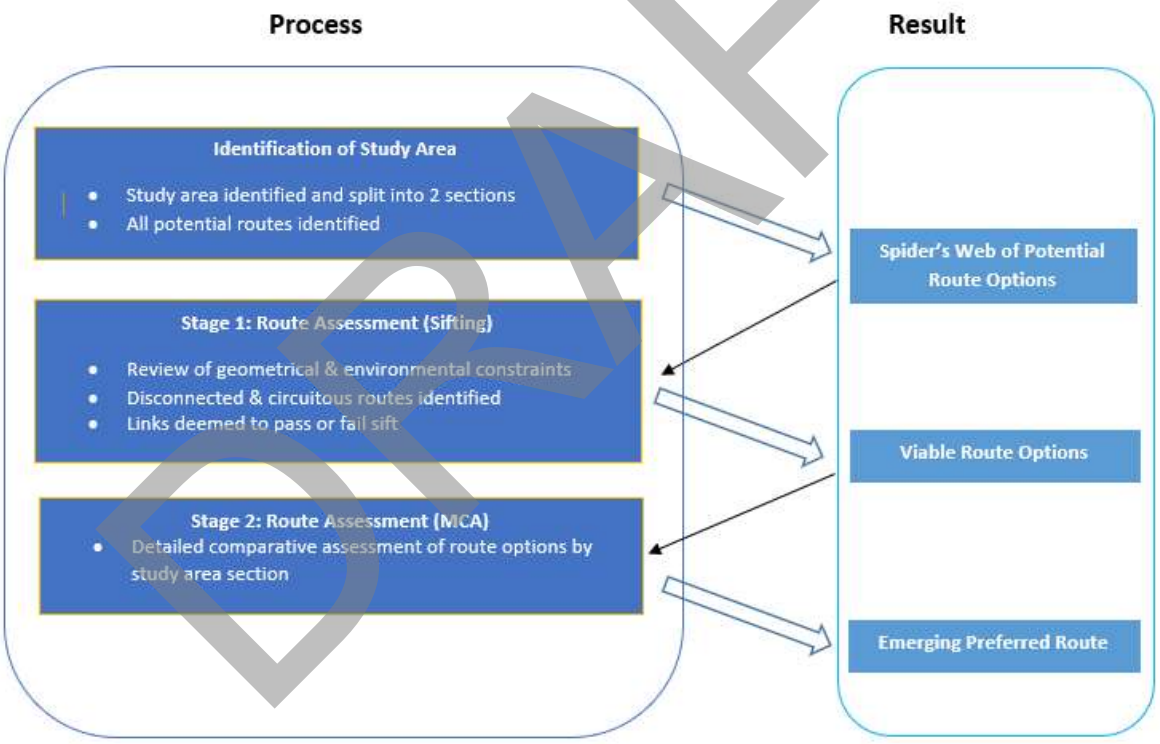


Figure 4-1 Assessment Process

4.3 Stage 1: Route Options Assessment

4.3.1 Spiders Web Development

An initial 'spiders-web' of potential route options that could possibly form part of an STC were 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 bus 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 clearly could not form part of a Dunkettle 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)
	Pedestrian 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 (5.f)

	Noise and Vibration (5.g)
	Land Use and Built Environment (5.h)

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, moderate, 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.	€3,000,000

	• Signage. • Road lighting. • Accommodation Works. • Landscaping works (top soiling, fence, trees, hedges etc);	

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 or 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 30km/h 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 fifteen min intervals and were estimated based on an average walking speed of 5km/h. The population and employment within the isochrones were 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.

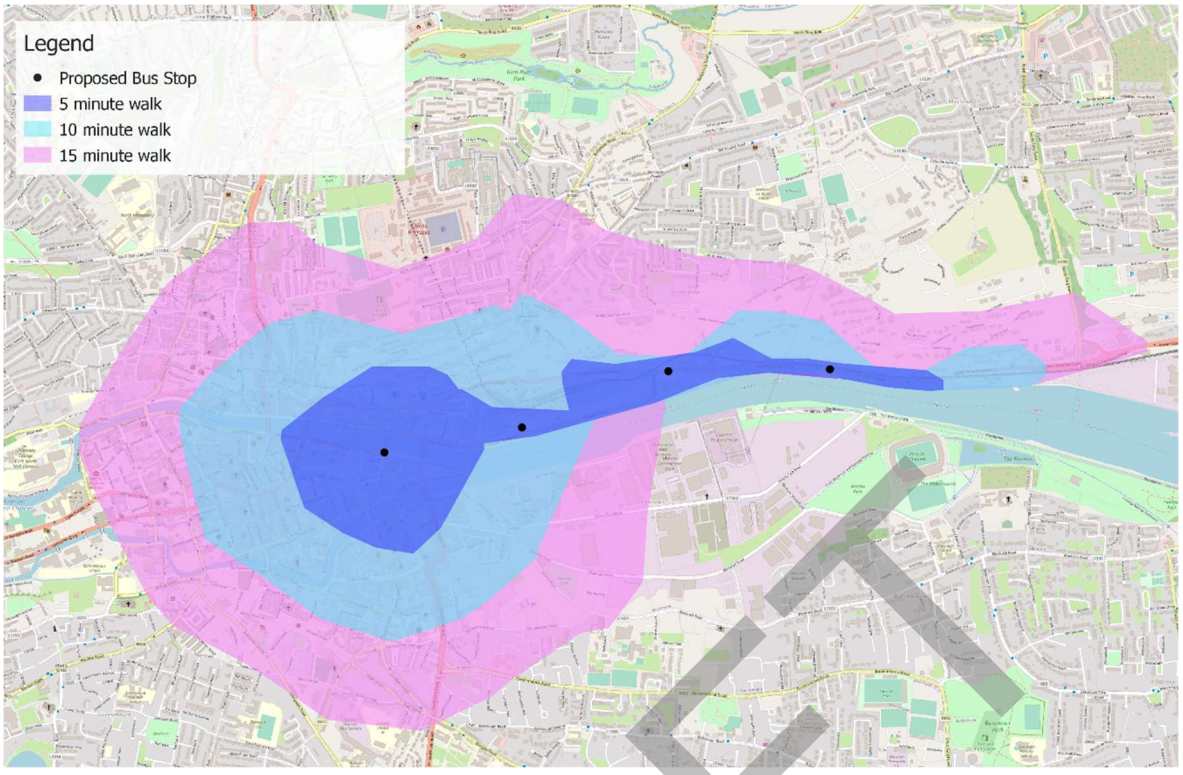


Figure 4-2 Sample bus stop catchment map with walking isochrones shown at 5/10/15 minute intervals

Transport Network Integration (2.c.)

Under this criterion, integration with the wider transport network was assessed and compared for each scheme. This includes transport modes such as railway, coaches, public bike schemes (e.g. Coca Cola bikes), and public and private bus operators. The potential for interchange facilities such as safe walking areas, cycle parking areas, etc. were also assessed under this criterion. Where a potential STC route shared 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 was also factored in. The disadvantages experienced by motorists in respect of reduced junction capacity and restricted movements were 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 was assessed. In some cases, it is necessary to provide an alternative cycle route on alternative streets to the STC and this was considered under this criterion.

Pedestrian Network (2.e)

Similar to the cycle network, the compatibility of a scheme with the proposals in CMATS was examined and the level of service was 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 was 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 were 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 was 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, were compared. In addition, the number of turning movements were compared, as these can also potentially lead to lower safety conditions along the scheme. Differentials in traffic speeds along a route were 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 an STC has the potential for impacts on architectural, archaeological 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 were 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 were 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 Walkways
- 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 assessed the impact of each scheme option on land use, character, and measured 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 are 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 Options Assessment - Sifting

This Chapter outlines the sifting process undertaken, due to the size of the study area this has been split into 2 sections.

5.1 Section 1 Sifting

This chapter outlines the sifting 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 an 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.

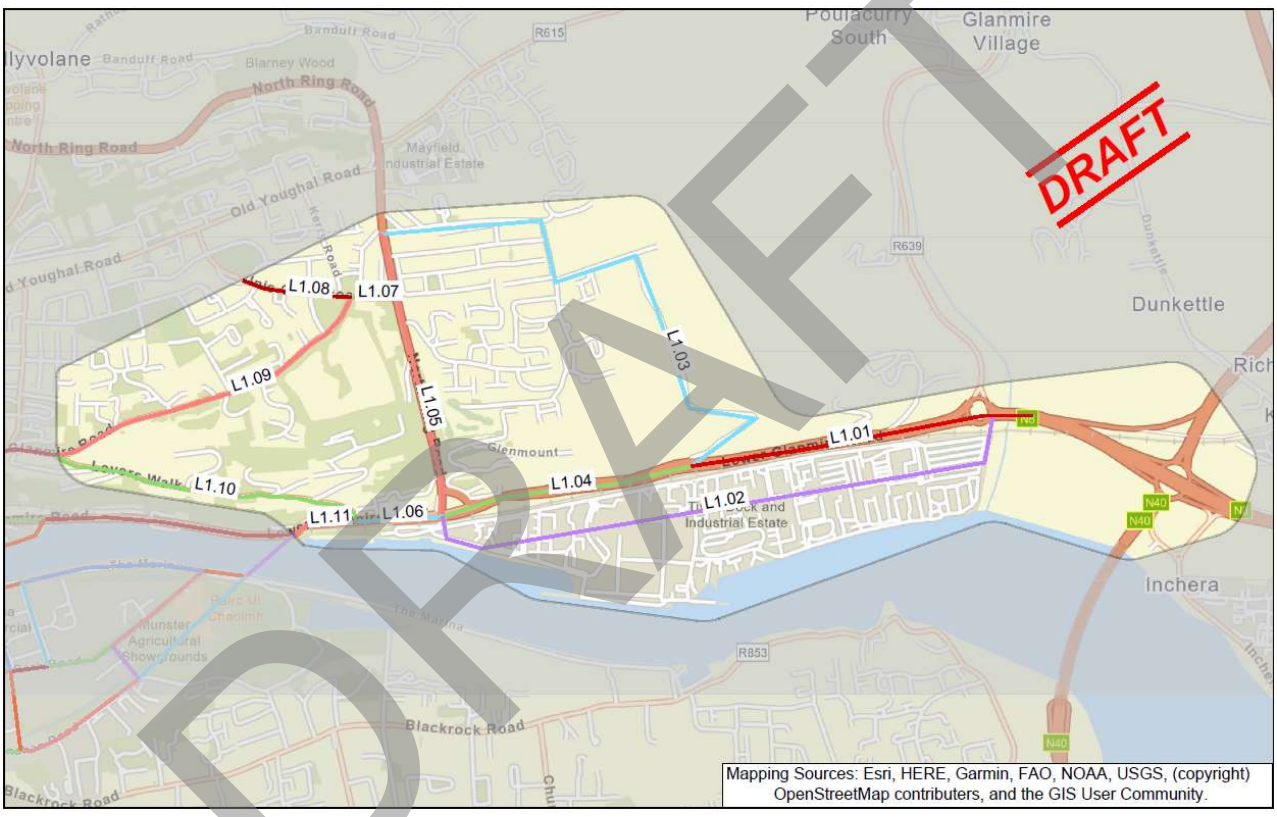


Figure 5-1 Section 1 Route Options

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
L1.01	National Road	N8 Lower Glanmire Road; this link runs from east of the LGR roundabout to Burkes Hill. This link consists of a dual carriageway with a speed limit of 100kph. This link caters for a high volume of traffic including HGVs accessing the nearby Industrial Area (Tivoli Docks). The widths vary throughout but the narrowest point is approx. 22m. The route forms part of the Primary Cycle Network outlined in CMATS, however there are no existing cycle facilities. There is a central median which varies in width along the section; some sections of the median have potentially significant trees. There are no dedicated bus lanes currently on this link, however, there is sufficient width to include these, by removing a lane of general traffic in each direction. Bus priority could be added to the LGR in both directions by road widening without private land take or by reallocating road space. This is considered a viable route option for this STC.	Pass
L1.02	New Road/Street Urban/Residential	Tivoli new road/street; this could create a multi-modal route through the Tivoli Docklands. It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. A new bridge over the railway line would be required at the eastern end to link to the N8. A full reconstruction of the bridge and junction at the western end would be required to provide bus priority. Currently Port of Cork and other industrial businesses operate in Tivoli Docklands but as Port of Cork are moving operations to Ringaskiddy, there are proposals to create residential developments throughout the area. This is considered a viable route option for this STC.	Pass
L1.03	Rural/Residential	Boherboy Road/Burkes Hill. This link connects the North Ring Road (R635) to the outbound N8 dual carriageway. The southern section of the link (Burkes Hill) comprises a very narrow single carriageway rural route (approx. 5m wide) with a steep gradient. There are a few roadside properties and tight turns. This link is not frequently used, and traffic volumes are very low. This link is not associated with any proposed cycle route in CMATS or the CCNP.	Fail

		The northern section (Boherboy Road) passes through residential areas and connects with an existing bus route. The width varies with the narrowest section approx. 8.5m wide. The existing bus route forms part of STC2 radial corridor as outlined in the project brief. Given that the route is only accessible to/from the outbound N8, the significant level differences and the very narrow widths on the southern section, this link is not considered a viable route option for this STC.	
L1.04	National Road	N8 route. This link is a continuation of L1.01, from Burkes Hill to the Tivoli junction, the speed limit is 80kph and subsequently 60kph on approach to the Tivoli junction. There is an inbound cycle facility and the route forms part of the Primary Cycle Network outlined in CMATS. There is a central median which transitions from a grass verge with potentially significant trees to a concrete separation strip. The route is predominantly dual carriageway but splits into two individual westbound routes at the Tivoli junction. The junction provides access from the N8 to the North Ring Road (R635) and vice versa. The junction includes an overbridge, the structure of which creates a width constraint of approx. 18m underneath. There are no dedicated bus lanes currently on this link, however, there is sufficient width to include these by changing the cross section and reallocating road space. It is therefore considered a viable route option for this STC.	Pass
L1.05	Regional	R635 North Ring Road, from Tivoli junction to junction with Colmcille Avenue. This section consists of a single carriageway lane in each direction with the addition of a climbing lane northbound. The width is approx. 18m. There is a footpath on the east side of the route and verge on both sides, with potentially significant trees within the verge. There are no bus or cycle lanes currently on this route. The route is identified as a Primary Cycle route in CMATS. Based on the existing widths, bus lanes could be provided by amending the cross section of the route and reallocating road space on the majority of the link; however, the existing bridge over the N8 and the approach ramps are too narrow to create dedicated bus lanes. Measures such as signal priority control or bridge widening could be used to provide priority for buses at this location. This is considered a viable route option for this STC.	Pass

L1.06	National Road	N8 Lower Glanmire Road; this link runs from the Tivoli junction to the signalised junction with Lovers Walk. This section consists of one inbound traffic lane and two outbound traffic lanes. There are existing footpaths on each side of the carriageway. The narrowest point is approx. 16.0m. This route is identified as a primary cycling route in CMATS. There are no dedicated bus or cycle lanes on the route, however there is potential to provide dedicated bus lanes through re-allocation of road space, localised footway narrowing and/or land take on this link. The route is considered a viable route option for this STC.	Pass
L1.07	Suburban & Residential	Colmcille Avenue; this link runs from the R635 junction to the junction with Middle Glanmire Road junction. This section consists of single carriageway lanes in both directions with a width of approx. 17.5m at the narrowest point. There are footpaths on either side of the carriageway. There are some potentially significant trees located in the verge. This route forms part of a primary cycling route outlined in CMATS. There are no existing bus or cycle lanes. There is sufficient width to create dedicated bus lanes in both direction by amending the cross section and reallocation of road space. This route is considered a viable route option for this STC.	Pass
L1.08	Suburban & Residential	Colmcille Avenue; this link runs from the junction with Middle Glanmire Road to the junction with Slí Gartan residential estate. This section consists of single carriageway lanes in both directions with a width of approx. 15m at the narrowest point. There are footpaths on either side of the carriageway. This route forms part of a secondary cycling route outlined in CMATS. There are no existing bus or cycle lanes. There is not sufficient width to create dedicated bus lanes in both direction without land take of front gardens. The existing boundary to boundary width is 15m. However, this could be achieved with localised land take from gardens and this route is considered a viable route option for this STC.	Pass
L1.09	Suburban & Residential	Middle Glanmire Road; from the junction of Colmcille Avenue to the junction with Lovers Walk. The eastern half of the link consists of a single carriageway lane in both directions with a footpath on the northern side of the carriageway only. The width at the narrowest point is approx. 8.5m.	Fail

		The western half of the link consists of a very narrow two-way single lane road. There is a very narrow footpath on the northern side of the carriageway. The approx. boundary to boundary width is 6.5m. There are no existing bus or cycle lanes on the route. The route does form part of a primary cycling route as outlined in CMATS. Dedicated bus facilities on this route would require significant property, land take and the likely removal of potentially significant trees; there is also a significant difference in level between the road and surrounding properties. Based on the constraints, this link is not considered viable as part of this STC.	
L1.10	Suburban & Residential	Lovers Walk; from the signalised junction with the N8 to Middle Glanmire Road. This is a narrow single carriageway route without any footpaths for most of the route. At the northern end of the link there is on-street parking where widths allow. The parking forces motorists to yield to each other on the route. There is a narrow footpath (approx. 1m) on the southern side of the carriageway. The approx. boundary to boundary width at the narrowest point is 4.5m. This link is not associated with any proposed cycling route in CMATS or the CCNP. Dedicated bus facilities on this route would require significant land take including purchase of several properties and the likely removal of potentially significant trees.; there is also a significant difference in level between the road and surrounding properties. Based on the constraints, this link is not considered viable as part of this STC.	Fail
L 1.11	National	N8 Lower Glanmire Road; from the signalised junction with Lovers Walk to the west side of the skew bridge over the railway line. This link consists of a two-way single carriageway road with footpaths on either side which narrow over the skew bridge. There are no dedicated bus or cycle lanes on this route. The narrowest point on the skew bridge is approx. 10m. CMATS indicates that this link is classified as a primary cycling route. There is insufficient width on the existing bridge to provide bus lanes while maintaining two lanes for general traffic. A reconstruction of the bridge would be required to provide dedicated bus lanes. A reconstruction of this bridge is also	Pass

		proposed in CMATS as part of the construction of the new Eastern Gateway Bridge. Alternatively, a queue relocation could be used to create bus priority through this link as the pinch point is relatively short. This route is considered a viable route option for this STC.	

5.1.1 Sifting Outcome

The outcome of the sift for all links can be seen in Figure 5-2. Links shown in red failed the sift and those in blue passed. All links shown in red have been discounted from any further study.

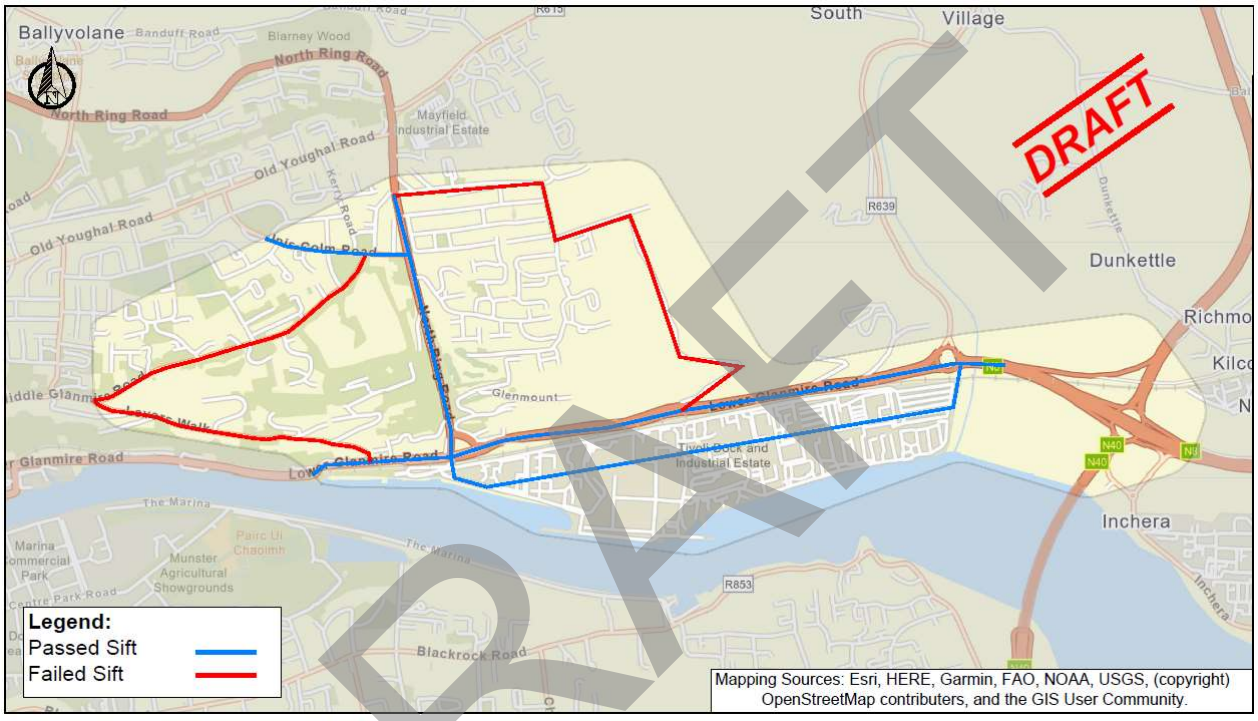


Figure 5-2 Section 1 Sifting Process Step 1

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.

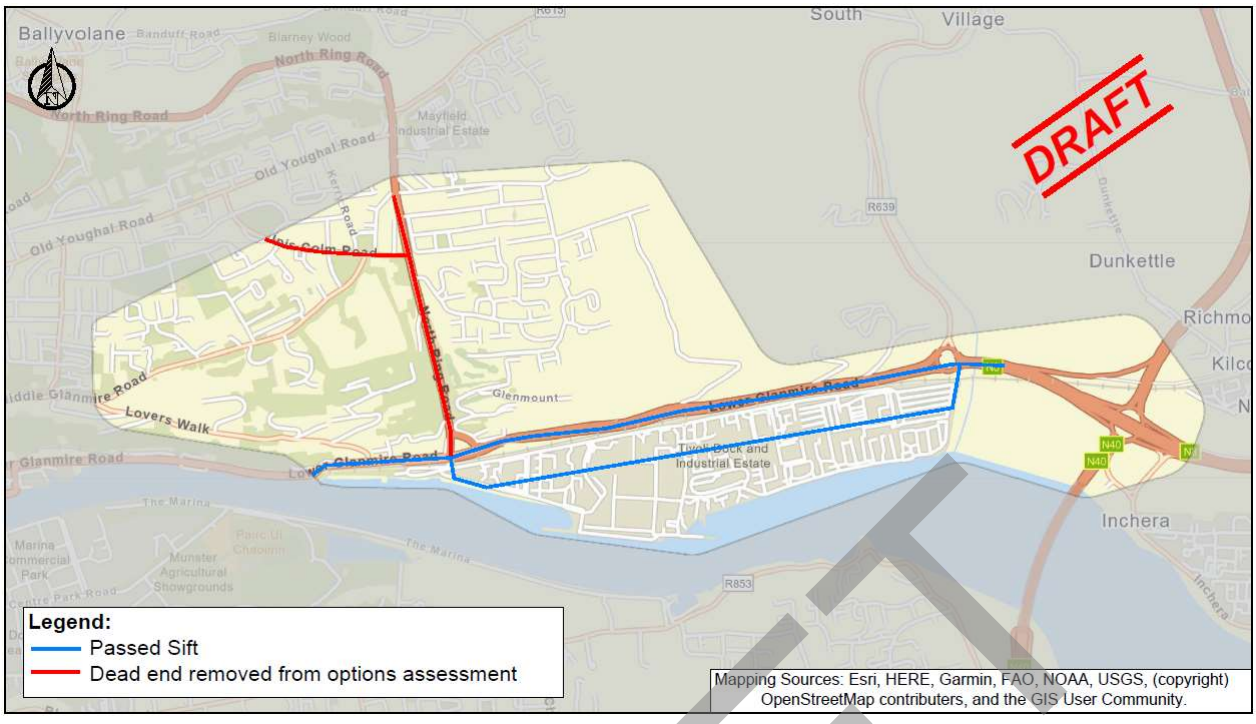


Figure 5-3 Spiders Web post removal of isolated links and dead ends.

5.1.3 Preliminary Route Assessment for Section 1

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 identified in Section 1 of Route 1, therefore the conclusion of the sift can be seen below.

5.1.4 Sifting Conclusion

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

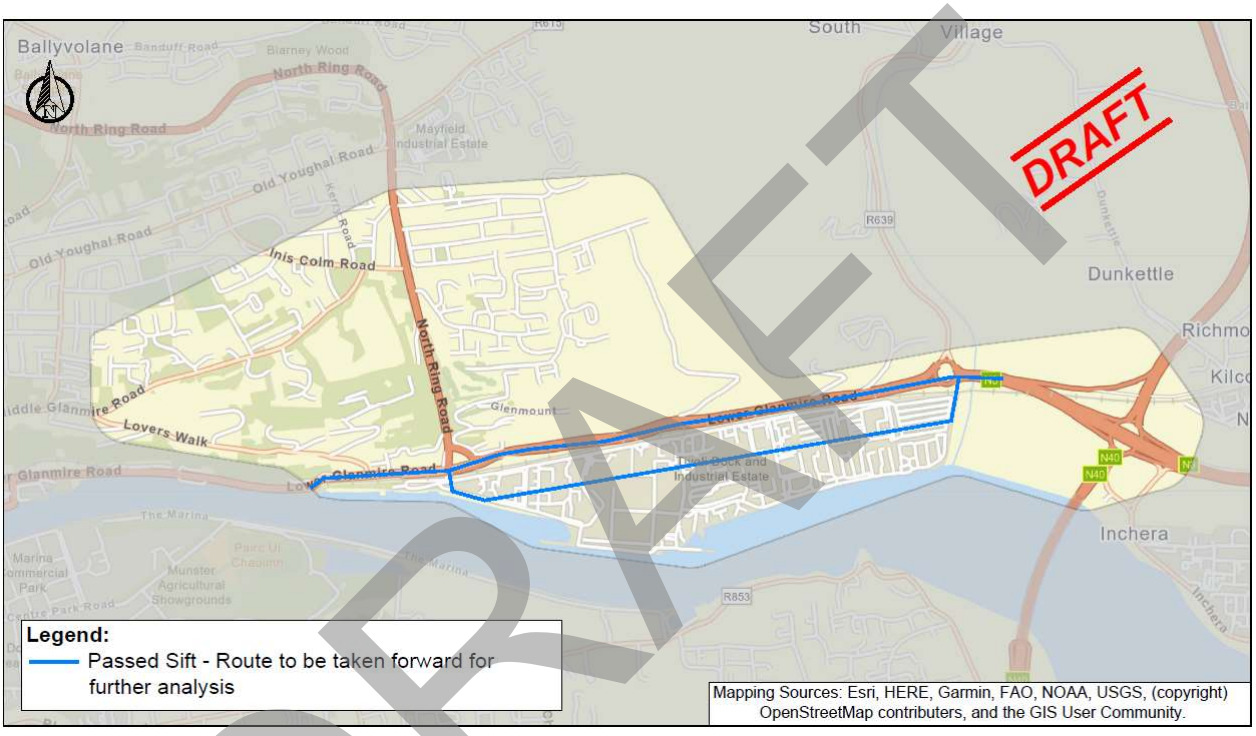


Figure 5-4 Section 1 Route Options Remaining After Stage 1 Assessment

5.2 Section 2 Sifting

This chapter outlines the sifting 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 an 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 5-5.

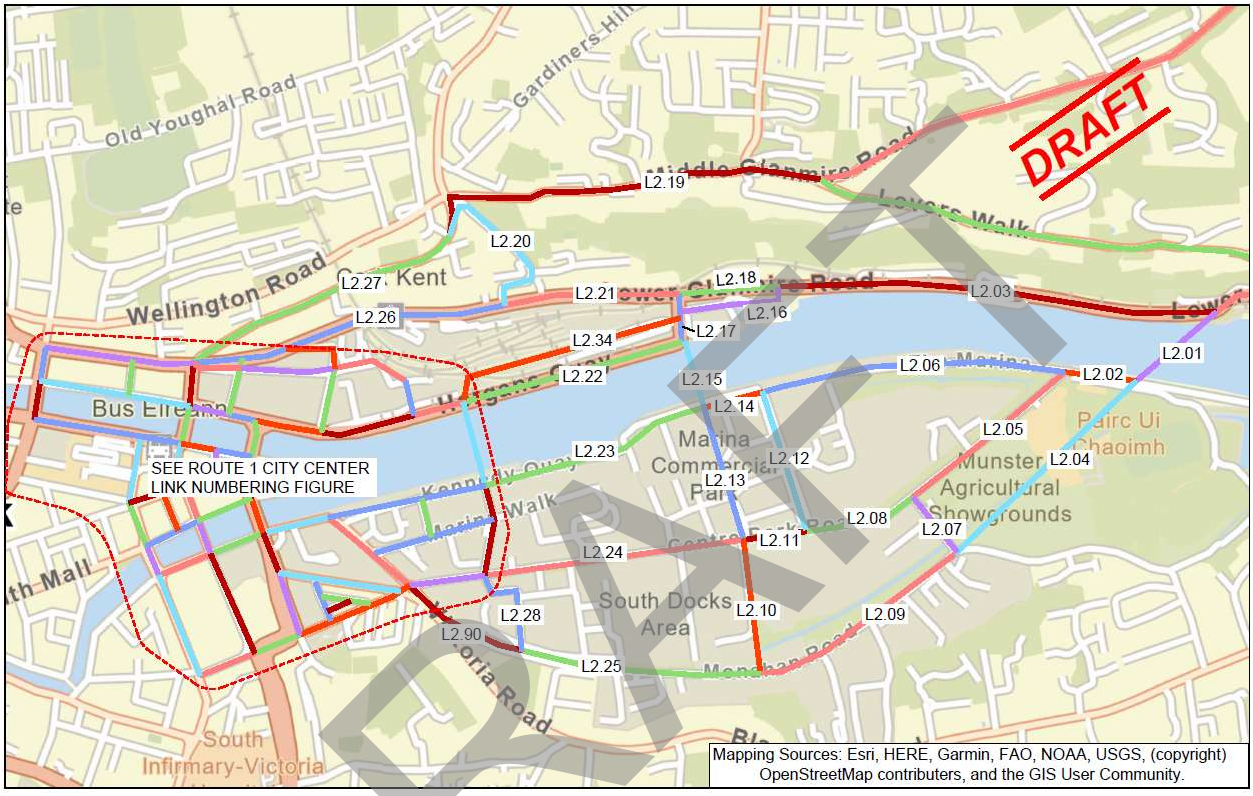


Figure 5-5 Section 2 Route Options

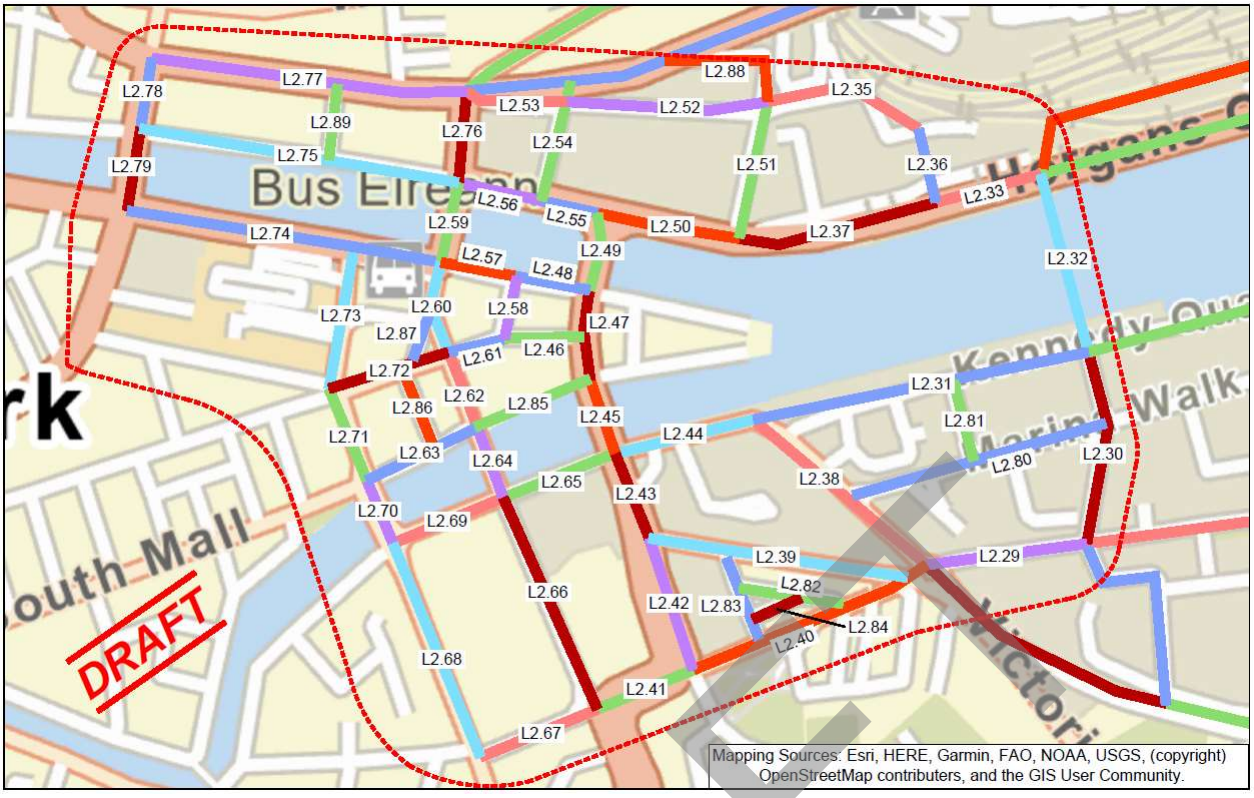


Figure 5-6 Section 2 (City Centre) Route Options

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

Table 5-2 Section 2 Route Option Assessment Stage 1

Link No.	Road Characteristics	Comments	Pass / Fail
L2.01	New Bridge	Eastern Gateway Bridge (EGB); this will link the skew bridge on LGR to the Monahan Road extension, over the river Lee. It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. The construction of this new bridge is proposed in CMATS. The route is identified as a primary cycling route in CMATS. This is considered a viable route option for this STC.	Pass
L2.02	Amenity/ Access	The Marina; this link runs from the proposed EGB to the junction with Centre Park Road (CPR). The link includes a pedestrianised road, with a parallel access road. The approx. combined width of these routes is 20m. The roadside verges are tree lined with potentially significant trees. The Marina has recently been fully pedestrianised as an amenity area by Cork City Council. CMATS indicates that this link is classified as a Greenway cycling route.	Fail

		This link forms part of a strategic walking and cycling route. It is also an amenity area with potentially significant trees along the route and defined as an area of High Landscape Value in the City Development Plan, this link is not considered a viable option for this STC.	
L2.03	National	N8 Lower Glanmire Road; from the skew bridge to Beale's Hill. This section consists of one inbound traffic lane and one outbound traffic lanes with a speed limit of 60kph. There is a hatched median along the link. The route is sandwiched between the rail line and the river. There are existing footpaths on each side of the carriageway with trees on the southern footpath. The narrowest point is approx. 14.5m There is an existing inbound cycle lane and this route is identified as a primary cycling route in CMATS. There are no dedicated bus lanes on the route, however, there is potential to provide dedicated bus lanes by amending the cross-section, re-allocating road space and/or localised footway narrowing. The route is considered a viable route option for this STC.	Pass
L2.04	New Street/Road	Monahan Road extension; from the EGB to the junction with Marquee Road. This is a new section of road and it is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. The route is outlined as a Green route within CMATS. The City Council have commissioned consultants to design an extension of Monahan Road to provide access to the future EGB, with a focus on bus users, cyclists, and pedestrians. This is considered a viable route option for this STC.	Pass
L2.05	Access/Amenity/ Industrial	Centre Park Road; from the junction with Marquee Road to the Marina. This link consists of single carriageway lanes in both directions with an approx. width of 17.5m. There are footpaths and verges on each side of the carriageway. Both verges contain potentially significant trees. There are no existing bus lanes on the link, however, there is an outbound cycle lane. The link is identified within CMATS as a secondary cycle route. There is sufficient width to amend the cross section of the route to provide dedicated bus lanes without lane take. This is considered a viable route option for this STC.	Pass

L2.06	Amenity/New Street/ Road	The Marina/New Road; from the junction with CPR proposed new junction. (See Link Numbering Drawing) The eastern half of this link comprises a shared pedestrian/cycle facility and car park, forming part of the Marina amenity area. Existing verge includes trees of potentially significance. The approx. width is 20m. The western half of this link would form a new street/road through the existing Marina Power Station. It is anticipated this could create a multi-modal route and that all desired widths could be accommodated as part of a new design creating dedicated walking, cycling and an STC. The route is identified as a Green cycling route in CMATS. Given the opportunity, a dedicated bus and cycle route could be developed on this link; however, given that the Marina Power Station is still in operation and the eastern section is defined as a strategic walking and cycling route as well as an area of High Landscape Value in the City Development Plan, an STC route through the area it is not considerable a viable route options for this STC.	Fail
L2.07	Industrial/ Access	Marquee Road; from the junction with Monahan Road to CPR junction. This link consists of single carriageway lanes in both directions with an approx. width of 15m. There are footpaths and verges on each side of the carriageway. Both verges contain potentially significant trees. The link is not identified as a cycle route in CMATS. Dedicated bus lanes could be provided by removing the existing trees or with land take from industrial land to either side. This is considered a viable route option for this STC.	Pass
L2.08	Industrial/Acce ss	Centre Park Road; from the junction with Marquee Road to the access to Marina Power Station. This link consists of single carriageway lanes in both directions with an approx. width of 16m. There are footpaths and verges on each side of the carriageway. Both verges contain large numbers of potentially significant trees. There are no existing bus lanes on the link, however, there is an outbound cycle lane. The link is identified within CMATS as a secondary cycle route. There is potential to provide bus priority on this link with land take from industrial lands to either side, introduction of traffic restrictions and/or removal of trees. This is considered a viable route option for this STC.	Pass

L2.09	Industrial/ Commercial/ Access	Monahan Road; from the junction of Marquee Road to junction of proposed new route. (See Link Numbering Drawing) This link consists of single carriageway lanes in both directions. There is a footpath on the north side of the carriageway and verges on each side. Both verges contain potentially significant trees. The narrowest point is approx. 16m. There are no existing bus lanes on the link, however, there is an inbound cycle lane. The link is identified within CMATS as a Green cycle route. There is potential to provide bus priority on this link with land take from industrial lands to either side, introduction of traffic restrictions and/or removal of trees. This is considered a viable route option for this STC.	Pass
L2.10	South Docks New Street/Road	New road/street; this would create a multi-modal route through the South Docks from Monahan Road to Centre Park Road. (See Link Numbering Drawing) It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. The route is identified in CMATS as a primary cycle route. This is considered a viable route option for this STC.	Pass
L2.11	Industrial/Commercial/ Access	Centre Park Road; from the to the Marina Power Station to the access to Marina Commercial Park. This link consists of single carriageway lanes in both directions with an approx. width of 15m. There are footpaths and verges on each side of the carriageway. Both verges contain potentially significant trees. There are no existing bus lanes on the link, however, there is an outbound cycle lane. The link is identified within CMATS as a secondary cycle route. There is potential to provide bus priority on this link with land take from industrial lands to either side, introduction of traffic restrictions and/or removal of trees. This is considered a viable route option for this STC.	Pass

L2.12	Marina Commercial Park New Street/Road	New road/street; this would create a new multi-modal route adjacent to the Marina Power Station from Centre Park Road to the new waterfront link. (See Link Numbering Drawing) This new road is proposed in CMATS and it is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. Land take from industrial lands would be required for its construction. The route is not identified in CMATS as a cycling route. This is considered a viable route option for this STC.	Pass
L2.13	Marina Commercial Park New Street/Road	New road/street; this would create a multi-modal route through the Marina Commercial Park from Centre Park Road to the new waterfront link. (See Link Numbering Drawing) This new road is proposed in CMATS and it is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. Land take from industrial lands would be required for its construction. The route is identified in CMATS as a primary cycling route. This is considered a viable route option for this STC.	Pass
L2.14	Marina Commercial Park New Street/Road	New road/street; this would create a multi-modal route through the Marina Commercial Park along the waterfront. (See Link Numbering Drawing) This new road is proposed in CMATS and it is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. Land take from industrial lands would be required for its construction. The route is identified in CMATS as a Green cycling route. The route is identified a strategic walking and cycling route as well as an amenity route in the CCDP. As such, an STC route through the area, it is not considerable viable.	Fail
L2.15	New Bridge	Water Street Bridge; this will link the Water Street to the South Docklands, over the river Lee. This bridge is proposed in CMATS. It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. The route is not identified as a cycling route in CMATS. This is considered a viable route option for this STC.	Pass

L2.16	New Road/Street	New Street; this will link the N8 LGR directly to N8 Horgan's Quay, by-passing Water Street and an area of residential properties with width constraints. (See Link Numbering Drawing) The existing warehouse buildings are heritage features along with the former Port of Cork Docklands slipways; therefore, the link would be routed around these features if possible. Land take would be required. This route does not form part of CMATS. This route is considered a viable route option for this STC.	Pass
L2.17	National Route	Water Street; from the junction with LGR to Horgan's Quay. This link is a one-way street, comprising two single carriageway lanes inbound. The width at the narrowest point is approx. 15.5m. There is a footpath and on-street parking on both sides of the carriageway. Dedicated bus lanes could be provided by reallocating road space and would require the removal of some on-street parking. This is considered a viable route option for this STC.	Pass
L2.18	National Route	Lower Glanmire Road; from Beale's Hill to the junction with Water Street. This section consists of one inbound traffic lane and one outbound traffic lane with a speed limit of 50kph. There are existing footpaths on each side of the carriageway. The narrowest point is approx. 11m. There are no bus lanes on this link, however, there is an inbound cycle lane, and this route is identified as a primary cycling route in CMATS. There is limited potential for road widening as there are rows of properties fronting directly onto the footpath, some of which are protected structures. Traffic diversions are not considered viable as there are no suitable diversion routes. This link could provide bus priority on one direction and could form part of an STC in conjunction with L2.16. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.19	Urban/ Residential	Middle Glanmire Road; from the junction with Lovers Walk to St Luke's Cross. The section consists of a very narrow two-way single lane road. There is a very narrow footpath on the northern side of the carriageway. The width varies throughout with the narrowest point having an approx. width of 7.5m.	Fail

		There are no existing bus or cycle lanes on the route. The route does form part of a primary cycling route as outlined in CMATS. Dedicated bus facilities on this route would require significant property, land take and the likely removal of potentially significant trees; there is also a significant difference in level between the road and surrounding properties. Based on the constraints, this link is not considered viable as part of this STC.	
L2.20	Urban/ Residential	Lower Grattan Hill and Mahoney's Avenue; from LGR to St. Lukes Cross. This section consists of a very narrow two-way single carriageway route with on-street parking where widths allow. The parking forces motorists to yield to each other on the route. There is a very narrow footpath on the west side of the carriageway. The approx. width at the narrowest point is 5m. This link is not associated with any proposed cycling route in CMATS or the CCNP. Dedicated bus facilities on this route are not feasible based on the required property take, and steep gradient. The removal of potentially significant trees would also be likely. Based on the constraints, this link is not considered viable as part of this STC.	Fail
L2.21	Urban/ Residential	Lower Glanmire Road; from Water Street to Lower Grattan Hill. This link is a one-way street, comprising two single carriageway lanes outbound. The width at the narrowest point is approx. 14m. There is a footpath and residential on-street parking on both sides of the road. The terraced houses do not have driveways or alternative parking. This route is outlined as a primary cycle route in CMATS. There is limited potential for road widening as there are rows of properties fronting directly onto the footpath. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.22	National Route	Horgan's Quay; from Water Street to the proposed new street at the east side of Kent train station car park. (See Link Numbering Drawing) This link is a one-way quayside street, comprising two single carriageway lanes inbound. The width is generally consistent throughout, with an approx. width of 11m. There is a shared	Pass

		surface track on the north sides of the carriageway to cater for pedestrians and cyclists. There is not sufficient width to create dedicated bus lanes and two-way traffic lanes without some land take. However, there appears to be potential for land take to the north side of the carriageway to create bus priority on this link. As such, the route is considered a viable route option for this STC.	
L2.23	Kennedy Quay New Street/ Road	Kennedy Quay/New Street; from Water Street bridge to Mill Road. (See Link Numbering Drawing) It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling facilities and an STC. The route is identified in CMATS as a Green cycling route. Currently the area is used for commercial/industrial purposes; it is not clear what the timeline is for the redevelopment of the area. Given the opportunity, a dedicated bus and cycle route could be developed as part of the future development scheme; however, it is unclear if the timelines of both projects will align. Additionally, the route is proposed as an amenity route and strategic pedestrian link in the CCDP. As such, an STC route through the area, it is not considerable viable at this time.	Fail
L2.24	Industrial/ Commercial/ Access	Centre Park Road; from the access to Marina Commercial Park to Mill Road. This link consists of single carriageway lanes in both directions with an approx. width of 16m. There are footpaths and verges on each side of the carriageway. Both verges contain potentially important trees. There are no existing bus lanes on the link, however, there is an outbound cycle lane. The link is identified within CMATS as a secondary cycle route. There is potential to provide bus priority on this link with land take from industrial lands to either side, introduction of traffic restrictions and/or removal of trees. This is considered a viable route option for this STC.	Pass
L2.25	Industrial/ Commercial/ Access	Monahan Road; between the junctions of two new proposed routes. (See Link Numbering Drawing) This link consists of single carriageway lanes in both directions. There is a footpath on the north side of the carriageway and verges on each side. Both verges contain trees of potentially important significance. The boundary-to-boundary width is approx. 16.5m	Pass

		There are no existing bus lanes on the link, however, there is an inbound cycle lane on the southside of the carriageway. The link is identified within CMATS as a Green cycle route. AN STC could be provided through by amending the cross section of the carriageway. The removal of the verge area and trees of potentially important significance would be required. Some minor land take may be required. As such, the route is considered a viable route option for this STC.	
L2.26	National/Urban / Residential	Lower Glanmire Road; from Lower Grattan Hill to MacCurtain Street. This link is a one-way street, comprising two single carriageway lanes outbound. The width at the narrowest point is approx. 14m. There is a footpath and on-street parking on both sides of the carriageway. West of the Kent station entrance, there is also a two-way cycle track on the south side of the carriageway. There road passes under an existing railway bridge with a height restriction of 4.74m. This route is outlined as a primary cycle route in CMATS. Dedicated bus lanes could be provided on the majority of the link by reallocating road spaces and/or road widening with some land take from Kent Station. However there is a pinch point on the eastern end where residential properties front onto the footpath. There may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.27	Regional/Urban	Summerhill North; from St. Luke's Cross to MacCurtain Street. This section consists of single carriageway lanes in both direction; the width varies throughout with the narrowest point having an approx. width of 9.5m. There is on-street parking on the southern side of the carriageway and footpaths on both sides. There are no dedicated bus or cycle lanes on the route. The route is identified as a primary cycle route in CMATS. There is insufficient width to create dedicated bus lanes in both direction, without significant land take. There is also a large elevation change between the road and neighbouring properties in areas of the route. However, there may be potential to re-route/remove general traffic or introduce a	Pass

		one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L2.28	New Road/ Industrial	New Street; this will link Monahan Road to Centre Park Road. (See Link Numbering Drawing) This new street is proposed in CMATS and would require land take from industrial land. It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. This route does not form part of CMATS. This is considered a viable route option for this STC.	Pass
L2.29	Industrial/Commercial/Access	Centre Park Road; from Mill Road to Victoria Road Roundabout. This link consists of single carriageway lanes in both directions with an approx. width of 16m. There are footpaths on each side of the carriageway. The boundary-to-boundary widths increase on approach to the Victoria Road Roundabout which includes a southside verge containing trees which are potentially significant. There are no existing bus lanes on the link, however, there is an outbound cycle lane. The link is identified within CMATS as a secondary cycle route. Dedicated bus lanes could be provided by reallocating road space. This is considered a viable route option for this STC.	Pass
L2.30	Industrial/Commercial/Access	Mill Road; from Centre Park Road to Kennedy Quay. The link consists of single carriageway lanes in both directions. The southern half of the link has an approx. width of 15m with on-street parking and trees of potentially significant trees on the western side of the carriageway. There is a discontinuous footpath on the east side of the carriageway only which runs for approx. 40m. The northern half of the link has an approx. width of 14m. There are footpaths (2m approx.) and on-street parking on both sides of the carriageway. There are no existing bus lanes on the link. The link is not identified as a cycle route within CMATS. Dedicated bus lanes could be provided with reallocation of road space, land take form industrial lands and/or removal of on-street parking.	Pass

		This is considered a viable route option for this STC.	
L2.31	Industrial/Commercial/ Quayside	Kennedy Quay; from Mill Road to Albert Quay East. The link consists of a working quayside area with an approx. width of 40m. There are no formal road marking designating traffic lanes. The area currently operates as working quayside where ships unload cargo to waiting HGVs. There is perpendicular parking along the southside of the link. There are no existing bus lanes on the link. The link is identified as a Green cycle route within CMATS. The CCDP highlights this link as an amenity route with strategic pedestrian links. There is sufficient width to create dedicated bus facilities, however, the quayside area has been highlighted as a strategic walking and cycling route as well as an amenity route within the CCDP, therefore this is not considered a feasible route option for this STC.	Fail
L2.32	New Bridge	Mill Road Bridge; this will link the Horgan's Quay to Kennedy Quay, over the river Lee. This bridge is proposed in CMATS. It is anticipated that all desired widths could be accommodated as part of a new design including dedicated walking, cycling and an STC. The route is not identified as a cycling route in CMATS. This is considered to be a viable route option for this STC.	Pass
L2.33	National Route	Horgan's Quay; from proposed new street at east side of Kent station car park to the one-way street at the west side of the car park. (See Link Numbering Drawing) This link is a one-way street, comprising two single carriageway lanes inbound. The width is generally consistent throughout, with a width of 12m. There is a shared surface track (3m approx.) on the north sides of the carriageway. There is not sufficient width to create dedicated bus lanes and two-way traffic lanes without some land take. However, there appears to be potential for land take to the north and south side of the carriageway to create bus priority on this link. As such, the route is considered a viable route option for this STC.	Pass
L2.34	New Road	Re-aligned Horgan's Quay, from Horgan's Quay to Water Street. This route is proposed as part of CMATS, and would be a new link through the depot of Kent Train Station.	Pass

		This is currently private industrial land that contains no structures. There would be sufficient widths to provide 2 way dedicated bus lanes and pedestrian footpaths through this area. As such this is considered a viable route option for this STC.	
L2.35	Urban Street	Alfred Street; from Railway Street to Kent Station Bus Stop. This link comprises a one-way bus lane and a two-way on road cycle lane. There are open public realm/footpaths on either side of the carriageway. There is a set-down area outside the Dean Hotel. Currently, there is hoarding to existing building sites on the south side of the carriageway. There is not sufficient width to create two-way dedicated bus lanes without land take. However, the existing arrangement could be maintained to provide a dedicated one-way system. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.36	Urban Street	Alfred Street; from Railway Street to Horgan's Quay. This link comprises two outbound lanes and one inbound traffic lane. There is a dedicated bus lane outbound. The inbound traffic lane terminates at the entrance to an underground car park. Currently, there is hoarding to existing building sites on the west side of the carriageway. The route is not identified in CMATS or the CCNP. There is not sufficient width to create two-way dedicated bus lanes without land take. However, the existing arrangement could be maintained to provide a dedicated one-way system. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.37	National Route	Horgan's Quay; from Alfred Street to Railway Street. This link is a one-way street, comprising two single carriageway lanes and one dedicated bus lane inbound. The width is generally consistent throughout, with a width of 12m but widens to approx. 14m at the Railway Street junction. There is a footpath and on-street parking (outside new office development) on the north sides of the carriageway. There is not sufficient width to create dedicated bus lanes and two-way traffic lanes without some land take. However, there appears to be potential for land take to the north and south side of the carriageway to create bus priority on this	Pass

		link. As such, the route is considered a viable route option for this STC.	
L2.38	Urban Street/ Residential/ Commercial	Victoria Road; from Victoria Road roundabout to Kennedy Quay. This link consists of a one-way street with two outbound lanes, perpendicular on-street parking and footpaths on both sides of the carriageway. The approx. width of the link varies between 27.5m and 29m. There are no dedicated bus lanes on this route and this route is identified as a Secondary cycle route within CMATS. There is provision to create dedicated bus lanes on this link by amending the cross section of the street. This is considered a viable a feasible route option for this STC.	Pass
L2.39	Urban Street/ Residential/ Commercial	Albert Road; from Victoria Road Roundabout to the N27 (Albert Street). This link consists of a one-way street with two inbound lanes and footpaths on both sides of the carriageway with an approx. width of 15m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There is also on-street, parallel parking on the southside of the carriageway. There are trees along the northside of the carriageway. In the footpaths There are no existing bus facilities on the route and the link is not identified in CMATS as a cycle route. There is not sufficient width to create dedicated bus lanes and two-way traffic lanes. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.40	Urban Street/ Residential	Marina/Monerea Terrace/Hibernian Buildings; from Victoria Road roundabout to Albert Street. The link consists of a short section of one-way street comprising two lanes from Victoria Road Roundabout to Geraldine Place. Subsequently, the street consists of single carriageway lanes in both directions. The narrowest point along the route is approx. 11m. There is on-street residential parallel parking on both sides of the street on the eastern half of the link with parking on the	Pass

		north side of the carriageway only on the western half of the link. The terraced houses along the link would not have any suitable alternative to the existing on-street parking. There are footpaths on both sides of the carriageway with an approx. width of 1.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no existing bus lanes on the link. The link is not identified as a cycle route within CMATS. There is insufficient width to include dedicated bus lanes in both directions while maintaining traffic movements. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L2.41	National	N27 (Albert Street); from the junction of Marina/Monerea Terrace/Rock Borough Road to South Link Road. This link consists of a 6-lane carriageway, 4 outbound and 2 inbound, with a median concrete verge and railings between both. There are footpaths on both sides of the carriageway and trees of potential significance on the north side of the carriageway. The approx. width of the link is 31m. There are no existing bus lanes on the link, and it is not identified in CMATS as a cycling route. There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	Pass
L2.42	National	N27 (Albert Street); from Albert Road to the junction of Marina/Monerea Terrace/Rockborough Road. This link consists of a 5-lane carriageway, 3 outbound and 2 inbound, with a median verge containing potentially significant trees. There are footpaths on both sides of the carriageway and further trees of potential significance on the west side of the carriageway. The narrowest point of the link is approx. 25m. There are no existing bus lanes on the link, and it is not identified in CMATS as a cycling route. There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	Pass

L2.43	National	N27 (Albert Street); from Albert Road to the junction of Marina/Monerea Terrace/Rockborough Road. This link consists of a 4-lane carriageway, 2 outbound and 2 inbound, with a hatched median verge. There is also a hatched area segregated by bollards along the west side of the carriageway. There are footpaths and trees of potential significance on both sides of the carriageway. The approx. width of the link is 25m. There are no existing bus lanes on the link, and it is identified as a secondary cycling route within the CCNP. There not sufficient width to provide dedicated bus facilities without land take through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	Pass
L2.44	Urban/ Commercial	Albert Quay; from Victoria Road to N27 (Albert Street). This link consists of a one-way street with two outbound lanes with some parallel on-street parking/set-down areas on the south side of the carriageway. There is a footpath on the south side of the carriageway only. The approx. width of the link is 12m. Beyond the northern boundary of the carriageway is open quayside which may potentially increase the available widths. There are no dedicated bus lanes on this route and this route is identified as a Secondary cycle route within CMATS. Dedicated bus lanes could be provided by road widening into the open quayside and reallocation of road space. The Design Team is also cognisant of the City Councils upgrade plan for this area, which includes and inbound bus lane and a two-way segregated cycle track. This is considered a viable a feasible route option for this STC.	Pass
L2.45	National/Bridge	N27 (Eamon De Valera Bridge); from Albert Quay to Customs House Street. This link comprises a bridge with a 4-lane carriageway, 2 outbound and 2 inbound lanes. There are footpaths on both sides of the carriageway. The approx. width of the bridge is 19.5m. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a feasible link option for this STC.	Pass

L2.46	Urban	Oliver Plunkett Street Lower; from Customs House Street to Anderson's Street. This link consists of single carriageway lanes in both directions with an approx. width of 11.5m. There are footpaths on each side of the carriageway and on-street parallel parking (disc) on the southern side of the carriageway. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no existing bus lanes on the link, and this link is not identified as a cycling route within CMATS. The Design Team is also cognisant of the City Councils upgrade plan for this area. There is insufficient width to include dedicated two-way bus lanes with general traffic on this link. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.47	National	N27 (Custom House Street); from Eamon De Valera Bridge to Michael Collins Bridge. This link comprises a 4-lane carriageway, 2 outbound and 2 inbound lanes. There are footpaths on both sides of the carriageway with some intermittent verges including potentially significant trees. There is also a set down area on the east side of the carriageway. The approx. width of the link is 25m. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	Pass
L2.48	Urban	Anderson's Quay; from Anderson's Street to Custom House Street. This link comprises a one-way street consisting of 2 traffic lanes which widen to 3 on approach to the junction. There are footpaths on both sides of the carriageway and on-street disc parking on the southern side of the carriageway. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. The Design Team is also cognisant of the City Councils upgrade plan for this area as part of the 'MacCurtain Street Public Transport Improvement Scheme'.	Pass

		There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	
L2.49	National	N27 (Michael Collins Bridge); from Customs House Street to Penrose Quay. This link comprises a bridge with a 4-lane carriageway, 2 outbound and 2 inbound lanes. There are footpaths on both sides of the carriageway. The approx. width of the bridge is 19.5m. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. There is sufficient width to provide dedicated bus facilities through the reallocation of existing traffic lanes. This is considered a viable link option for this STC.	Pass
L2.50	National	N8 (Penrose Quay); from Railway Street to Michael Collins Bridge. This link is a one-way street, comprising two single carriageway lanes and one dedicated bus lane inbound. There are footpaths on both sides of the carriageway and an outbound (contraflow) cycle track on the north side of the carriageway. There are potentially significant trees located on the southside of the carriageway. The approx. width of the link is 24m. There is a dedicated inbound bus lane on the right-hand side of the carriageway and the route has been identified as a primary cycle route in CMATS. There is sufficient width to create dedicated bus lanes and two-way traffic lanes on this link by amending the cross section and reallocating traffic lanes. This is considered a viable route option for this STC.	Pass
L2.51	Urban/ Commercial	Railway Street; from Penrose Quay to Alfred Street. This link comprises a single carriageway two-way street. There are footpaths on both sides and set down/loading, parking spaces trees of potential significance on the west side of the street. Currently, there is an existing building site/hoarding adjacent to the eastern boundary. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no existing dedicated bus or cycle facilities on this link and the link is not identified as a cycle route in CCNP. There is not sufficient width to create dedicated bus lanes and two-way traffic on this link. However, there may be	Pass

		potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L2.52	Urban/ Commercial	Alfred Street; from Railway Street to Ship Street. This link comprises two single carriageway lanes, one inbound and one outbound. There is parallel on-street disc parking available on the northern side of the street. There are footpaths on both sides of the link. The approx. width of the link is 17m. There are no existing dedicated bus facilities on this link, however, there are inbound and outbound cycle lanes. The outbound cycle lanes include a buffer zone of approx. 0.5m between the on-street parking and the cycle lane. The route is identified as a Primary cycling route within the CCNP. There is sufficient width to create dedicated bus lanes on this link, by amending the cross-section and reallocating road space. This is considered a viable route option for this STC.	Pass
L2.53	Urban/ Commercial	Lower Glanmire Road; from Ship Street to Brian Boru Street. This link consists of a dedicated outbound bus lane and a two-way segregated cycle track. Both are segregated by a concrete verge. This link is separated from L2.26 by a public realm area which includes planters, a Coca-Cola bike share stand, and a tree of potential significance. The width of the link varies with the narrowest point measuring approx. 11m. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. This is currently a public transport and active travel only link. Given the existing widths, there is sufficient width to create a two-way dedicated bus facility on this link if it remains a public transport only link. This is considered a feasible route option for this STC.	Pass
L2.54	Regional/Urban	Ship Street; from N8 (St. Patrick's Quay) to Lower Glanmire Road. This link is a one-way street, comprising two single carriageway lanes. There are footpaths on both sides of the carriageway and on-street parallel disc parking on the east side of the carriageway. The approx. width of the link is 15m. Buildings front directly onto the footpath on both sides along this link which restricts road widening.	Pass

		There are no dedicated bus or cycle facilities on this link and the route has not been identified as a cycle route in the CCNP. There is not sufficient width to create dedicated two-way bus facilities and two-way traffic facilities. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	
L2.55	National	N8 (Penrose Quay); from Michael Collins Bridge to Ship Street. This link is a one-way street, comprising three single carriageway lanes. There are footpaths on both sides of the carriageway and a two-way segregated cycle track on the south side of the carriageway. There are potentially significant trees located on the southside of the carriageway. There is parallel on-street disc parking located on the south side of the carriageway. The approx. width of the link is 23m. There are no dedicated bus lanes on the link and the route has been identified as a primary cycle route in CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. The scheme includes a two-way cycle track on the southside of the carriageway. There is sufficient width to create dedicated bus lanes on this link by amending the cross section and reallocating traffic lanes. This is considered a feasible route option for this STC.	Pass
L2.56	National	N8 (St. Patrick's Quay); from Ship Street to Brian Boru Street. This link is a one-way street, comprising two single carriageway lanes. There are footpaths on both sides of the carriageway and a two-way segregated cycle track on the south side of the carriageway. There are potentially significant trees located on the southside of the carriageway. There is parallel on-street disc parking located on the south side of the carriageway. The approx. width of the link is 23m. There are no dedicated bus lanes on the link and the route has been identified as a primary cycle route in CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. The scheme includes a two-way cycle track on the southside of the carriageway.	Pass

		There is sufficient width to create dedicated bus lanes on this link by amending the cross section and reallocating traffic lanes. As such, this is considered a feasible route option for this STC.	
L2.57	Urban	Anderson's Quay; from Brian Boru Bridge to Anderson's Street Street. This link comprises a two-way single carriageway street with footpaths on both sides of the carriageway. There is also a verge with green areas, benches and potentially significant trees on the northern side of the carriageway. The approx. width of the link is 19m with a pinch-point of 12m at the western side of the link. The pinch-point is created by the bridge structure and piers. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. There is insufficient width to include dedicated two-way bus lanes and general traffic on this link. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.58	Urban/ Residential	Anderson's Street; from Oliver Plunkett Street Lower to Anderson's Quay. This link consists of two-way street on with on-street disc parking. The on-street parking forces oncoming traffic to yield as there is not sufficient space for two vehicles to pass each other. There are footpaths on both sides of the carriageway. The approx. width of the link is 6m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There is no bus or cycling facilities on this link and the route is not identified as a cycling route within CMATS. Due to the width constraints, this is not considered a feasible route option for this STC.	Fail
L2.59	Regional/ Bridge/Urban	Brian Boru Bridge; from Clontarf Street to St. Patrick's Quay. This link comprises a bridge with a one-way, three-lane carriageway. There are footpaths on both sides of the carriageway. The approx. width of the bridge is 14.5m. There are no existing bus lanes on the link, and it is not identified as a cycling route within CMATS. There is sufficient width to create dedicated bus lanes on this link by amending the cross section and reallocating traffic	Pass

		lanes. As such, this is considered a feasible route option for this STC.	
L2.60	Regional/ Urban/ Commercial	Clontarf Street; from Brian Boru Bridge to Oliver Plunkett Street Lower. This link comprises a one-way street with two traffic lanes. The street runs adjacent to Parnell Place bus station. There is a contraflow bus lane for a section of the street. There are on-street loading bays on the east side of the carriageway and an outbound cycle track. The width of the link varies with the narrowest point having an approx. width of 12m. There is sufficient width to create dedicated bus lanes on this link by amending the cross section and reallocating traffic lanes. As such, this is considered a feasible route option for this STC.	Pass
L2.61	Urban	Oliver Plunkett Street Lower; from Clontarf Street to Anderson's Street. This link consists of a one-way street with a single carriageway lane with on-street parallel parking (Disc) on the southern side of the carriageway. There are footpaths on each side of the carriageway and the approx. width of the link is 10m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no existing bus lanes on the link, and this link is not identified as a cycling route within CMATS. The Design Team is also cognisant of the City Councils upgrade plan for this area. There is not sufficient width on this link to provided dedicated bus facilities in both directions with two-way general traffic, however, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.62	Regional/ Urban/ Commercial	Clontarf Street; from Oliver Plunkett Street Lower to Clontarf Bridge. This link comprises a one-way street with three traffic lanes. There are a few set-down areas as well as a Coca-Cola bike stand on the east side of the carriageway. There is an outbound cycle track on the east side of the carriageway and	Pass

		footpaths are present on both sides. The approx. boundary to boundary width of the link is 18.5m. There are no dedicated bus lanes on this route and the route is identified as a secondary cycle route in CMATS. There is sufficient width on this link to provided dedicated bus facilities through the reallocation of road space. As such, this is considered a viable route option for this STC.	
L2.63	Urban/ Commercial	Lapps Quay; from Clontarf Street to Parnell Place. This link comprises a one-way street with on-street, perpendicular, disc parking. There is a footpath on the northern side of the street, along with some trees of potential significance. A Coca-Cola Bike Share stand is located on the south west side of the street. The width varies throughout and the width at the narrowest point is approx. 13m. Buildings front directly onto the footpath on the northern side and the river Lee is to the south which restricts road widening. There are no dedicated bus lanes or cycle facilities on this link. The route is identified as a primary cycle route in the CCNP. There is not sufficient width to provide two-way dedicated bus facilities on this street, however, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.64	Regional/Bridge/Urban	R610/Clontarf Bridge; from Clontarf Street to Albert Quay. This link comprises a one-way street with three traffic lanes. The structure of the bridge restricts the traffic lanes to an approx. boundary width of 9m. There are footpaths on both sides of the carriageway. There are no dedicated bus lanes on this route and the route is identified as a secondary cycle route in CMATS. There is sufficient width on this link to provided dedicated bus facilities through the reallocation of road space. As such, this is considered a viable route option for this STC.	Pass
L2.65	Urban	Albert Quay; from Eamon De Valera Bridge to Clontarf Bridge. This link consists of a one-way street with three traffic lanes. There are footpaths on both sides of the carriageway. The approx. width of the link is 19.5m. There are potentially significant trees located on the north side of the carriageway.	Pass

		There are no dedicated bus lanes on this route, however, an outbound cycle lane is provided, and this route is identified as a Secondary cycle route within the CCNP. The Design Team are aware of Cork City Councils 'Cork Docklands to City Centre Road Network Improvement Scheme'. This link is included in the scheme and a dedicated inbound bus lane and a two-way cycle track are proposed as part of this scheme. There is sufficient width to create dedicated bus lanes and general traffic lanes on this link by amending the cross-section of the street. As such, this is considered a feasible route option for this STC.	
L2.66	Urban	Eglinton Street; from South City Link Road (N27) to Albert Quay. This link consists of a one-way street with three traffic lanes. There are footpaths on both sides of the carriageway. The approx. width of the link at its narrowest point is 17m. There are potentially significant trees located on the east side of the carriageway. There are no dedicated bus or cycle lanes on this route, and this route is not identified as a cycle route within CMATS. There is sufficient width to create dedicated bus lanes and two-way traffic lanes on this link by amending the street cross section. As such, this is considered a feasible route option for this STC.	Pass
L2.67	Urban	Old Station Road; from Eglington Street to Anglesea Street. This link consists of a two-way street comprising four traffic lanes. There are footpaths on both sides of the carriageway and the narrowest boundary-to-boundary width is approx. 16.5m. There are no dedicated bus or cycle lanes on this route, and this route is not identified as a cycle route within CMATS. There is sufficient width to create dedicated bus lanes and two-way traffic lanes on this link through the reallocation of traffic lanes. As such, this is considered a feasible route option for this STC.	Pass
L2.68	Regional/Urban	Anglesea Street; from Old Station Road to Terence MacSwiney Quay. This link consists of a one-way street with three traffic lanes. There are footpaths on both sides of the carriageway. The approx. boundary to boundary width of the link is 21m. There are potentially significant trees located on both sides of the carriageway. There is a partial outbound bus lane on the eastern side of the carriageway. It runs to about half the length of the link.	Pass

		There is a segregated cycle track on the western side of the link. This route is identified as a primary cycle route within CMATS. There is sufficient width to create dedicated bus lanes on this link through the reallocation of road space. As such, this is considered a feasible route option for this STC.	
L2.69	Regional/Urban	R610/Terrance MacSwiney Quay; from Clontarf Bridge to Pernell Bridge/Anglesea Street. This link consists of a one-way street with four lanes. There are footpaths on both sides of the carriageway. The approx. width of the link is 20m. There is an inbound bus lane on the southern side of the carriageway; there are no dedicated cycle facilities on the link, however, this route is identified as a Secondary cycle route within the CCNP. The Design Team are aware of Cork City Councils 'Cork Docklands to City Centre Road Network Improvement Scheme'. This link is included in the scheme and a dedicated inbound bus lane and a two-way cycle track are provided as part of this scheme. There is sufficient width to create dedicated bus lanes and two-way traffic lanes on this link through the reallocation of road space. As such, this is considered a feasible route option for this STC.	Pass
L2.70	Regional/Urban	R610/Parnell Bridge; from Terence MacSwiney Quay to Parnell Place. This link consists of three traffic lanes; two inbound and one outbound, separated by a median verge. There are footpaths on both sides of the carriageway; a segregated two-way cycle track is provided on the west side of the carriageway. The approx. boundary to boundary width is 24.5m There are no dedicated bus facilities on the link and the route is identified as a primary cycle route in CMATS. There is sufficient space to create dedicated bus facilities and two-way traffic lanes on this link by amending the cross-section. As such, this is considered a feasible option for this STC.	Pass
L2.71	Urban	Parnell Place; from Parnell Bridge to Oliver Plunkett Street Lower. This link consists of a one-way street with three traffic lanes. There is on-street parking and footpaths on both sides of the carriageway. The approx. boundary to boundary width of the link is 27m. There are potentially significant trees located on both sides of the carriageway.	Pass

		There are no dedicated bus facilities on the link. There is a segregated cycle track on the western side of the link. This route is identified as a primary cycle route within CMATS. There is sufficient width to create dedicated bus lanes on this link through the reallocation of road space. As such, this is considered a feasible route option for this STC.	
L2.72	Urban/ Commercial	Oliver Plunkett Street Lower; from Oliver Plunkett Street to Clontarf Street. This link consists of a two-way street comprising an inbound bus lane and an outbound traffic lane. There is bus parking/set-down areas and a taxi rank on the south side of the carriageway, adjacent to the bus lane. There are footpaths on each side of the carriageway and the approx. width of the link is 11.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no existing cycle lanes on the link, and this link is not identified as a cycling route within CMATS. There is insufficient width due to roadside buildings to include dedicated two-way bus lanes on this link with two-way general traffic. However, there may be potential to re-route/remove general traffic to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.73	Regional/Urban	Parnell Place; from Oliver Plunkett Street to Merchant's Quay. This link consists of a one-way street with three traffic lanes and a partial dedicated bus lane. There is on-street parking on the west side of the carriageway and a taxi rank on the east side. There are footpaths on both sides of the carriageway. The approx. boundary to boundary width of the link is 29m. There are potentially significant trees located on both sides of the carriageway. The partial dedicated bus lane terminates at the access to Parnell Place Bus Station. There is a segregated cycle track on the western side of the link and this route is identified as a primary cycle route within CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. Part of this link is included in the scheme. There is sufficient width to create dedicated bus lanes on this link by amending the cross section and the reallocation of road space. As such, this is considered a feasible route option for this STC.	Pass

L2.74	National/Urban	N8/Merchants Quay; from Brian Boru bridge to St. Patrick's Street. This link consists of a four-lane quayside carriageway, comprising three inbound lanes and one outbound lane. There are footpaths on both sides of the carriageway with trees of potentially significant importance on the northern side of the carriageway. The approx. width of the link is 21m. There inbound bus lane is located on the southside of the carriageway, and an outbound cycle lane is provided on the north side of the link. The route is identified as a secondary cycling route within CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. The scheme proposes an inbound bus lane and a two-way cycle track. There is sufficient width to include dedicated two-way bus lanes on this link with general traffic, by reallocating road space. As such, the route is considered a viable route option for this STC.	Pass
L2.75	Regional/Urban	R854/St Patricks Quay; from Brian Boru Bridge to Bridge Street. This is a one-way quayside street comprising two traffic lanes. There is on-street parking on the north side of the link and coach/bus parking on the southside of the street; footpaths are provided on both sides. The coach/bus parking is used as the terminus for private intercity coaches. There are trees of potential significance on the south side of the carriageway. There are no dedicated bus or cycle facilities on this link, however, the route is identified as a Primary Cycling Route within CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. The scheme includes a two-way cycle track on the southside of the carriageway. Given the width constraints due to the quayside and adjacent buildings, there is insufficient width to include dedicated two-way bus lanes on this link with two-way general traffic. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass

L2.76	Regional/Urban	R854/Brian Boru Street; from St Patricks Quay to Lower Glanmire Road/MacCurtain Street. This link consists of a one-way street with three inbound traffic lanes. There are footpaths on both sides of the carriageway. The approx. boundary to boundary width of the link is 16.5m. There are no dedicated bus facilities on the link, however, there is a segregated inbound and outbound cycle track on both sides of the street. This route is identified as a primary cycle route within CMATS. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme. There is sufficient width to include dedicated two-way bus lanes on this link with general traffic, by reallocating road space. As such, the route is considered a viable route option for this STC.	Pass
L2.77	National/Urban /Commercial/ Retail	N8/MacCurtain Street; from Bridge Street to Lower Glanmire Road. This link consists of a one-way street with two outbound traffic lanes. There are footpaths on both sides of the carriageway with a set down area outside the Metropole Hotel. The approx. boundary to boundary width of the link is 18m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle lanes on the link; however, the Design Team is aware of a separate NTA scheme to upgrade facilities on this link and revert the street to two-way traffic. There are temporary extended footpaths in place which will remain in place until the NTA scheme is implemented. This route is identified as a primary cycle route within CMATS. Given the width constraints due to the roadside buildings, there is insufficient width to include dedicated two-way bus lanes on this link with two-way general traffic. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.78	National/Urban / Commercial/ Retail	Bridge Street; from St. Patricks Bridge to MacCurtain Street. This link consists of a one-way street with three outbound traffic lanes and on-street (disc) parking on the eastern side of the street. There are footpaths on both sides of the carriageway and the approx. boundary to boundary width of the link is 17m.	Pass

		There is an outbound dedicated bus lane on the link; no cycle facilities are provided on the route; however, the Design Team is aware of a separate NTA scheme to upgrade facilities on this link; the upgrades will provide an inbound and outbound bus lane. This route is identified as a primary cycle route within CMATS. There is sufficient width to include dedicated two-way bus lanes on this link with general traffic, by reallocating road space. As such, the route is considered a viable route option for this STC.	
L2.79	National/Bridge/Urban	N8/St Patricks Bridge; from Merchants Quay to St Patricks Quay. This link consists of a two-way street with three traffic lanes, two outbound and one inbound. The inbound lane is a dedicated bus lane. There are footpaths on either side of the carriageway. The approx. width of the bridge is 18m. There are no dedicated cycle facilities on the bridge however, it is outlined a possible primary route in the CCNP. The Design Team are aware of Cork City Councils 'MacCurtain Street Public Transport Improvement Scheme'. This link is included in the scheme which proposes an inbound and outbound bus lane. Given the width constraints due to large footpaths on the bridge, there is insufficient width to include dedicated two-way bus lanes on this link with two-way general traffic. However, dedicated bus lanes can be provided through the reallocation of existing traffic lanes. As such, the route is considered a viable route option for this STC.	Pass
L2.80	Industrial	Marina Walk; from Mill Road to Victoria Road. This link consists of a two-way single carriageway street through an industrial area. On the western half of the link, there is on-street parking and potentially significant trees on the north side of the carriageway. There is a footpath on the south side. On the eastern half of the link, there are footpaths on both sides of the carriageway and no on-street parking. The approx. width of the narrowest part of the route is 10.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle facilities on the link and the link is not identified as a cycling route in CMATS. Given the width constraints due to the roadside buildings, there is insufficient width to include dedicated two-way bus lanes on this link with general traffic in either direction. As such, the route is not considered a viable route option for this STC.	Fail

L2.81	Industrial	Furlong Street; from Marina Walk to Kennedy Quay. This link consists of a two-way single carriageway street through an industrial area. There are footpaths and on-street parking on both sides of the street. There is a grass verge on the west side of the street with trees of potentially significant importance. The approx. width of the link is 17.5m. There are no dedicated bus or cycle facilities on the link and the link is not identified as a cycling route in CMATS. Given the sufficient width, there is scope to provide dedicated bus facilities and two-way general traffic through the reallocation of road space. As such, this is considered a feasible route option for this STC.	Pass
L2.82	Residential/ Urban	Hibernian Buildings; from Albert Road to no.59/60 Hibernian Buildings. This link consists of a two-way single carriageway street, with on-street disc parking and a footpath on the north side of the street only. There is insufficient space for two vehicles to pass each other due to the parking. The on-street parking forces motorists to yield to each other. The boundary-to-boundary width at the narrowest point is approx. 5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle facilities on this route and the link is not identified as route within CMATS. Due to the width constraints as a result of residential properties, this is not considered a feasible route option for this STC.	Fail
L2.83	Residential/ Urban	Hibernian Buildings; from Marina Terrace to Albert Road. This link consists of a two-way single carriageway street, with on-street disc parking on both sides of the carriageway and a footpath on the east side of the street only. There is insufficient space for two vehicles to pass each other due to the parking. The on-street parking forces motorists to yield to each other. The boundary-to-boundary width at the narrowest point is approx. 7.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle facilities on this route and the link is not identified as route within CMATS. Due to the width constraints as a result of roadside properties, this is not considered a feasible route option for this STC.	Fail

L2.84	Residential/ Urban	Hibernian Buildings; from no.77 Hibernian Buildings to no.68 Hibernian Buildings. This link consists of a two-way single carriageway street, with on-street disc parking and a footpath on the south side of the street only. There is insufficient space for two vehicles to pass each other due to the parking. The on-street parking forces motorists to yield to each other. The boundary-to-boundary width at the narrowest point is approx. 5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle facilities on this route and the link is not identified as route within CMATS. Due to the width constraints because of residential properties, this is not considered a feasible route option for this STC.	Fail
L2.85	Urban/ Commercial	Lapps Quay; from Custom House Street to Clontarf Street. This link consists of a pedestrianised street with restaurants, café's, hotels, and offices fronting onto the street. It is an amenity space, including a boardwalk with outdoor seating and treesIt is not a route for traffic or buses, however the link is identified as primary route within the CCNP. As the route is an amenity area with outdoor dining and a boardwalk, this is not considered a feasible route option for this STC.	Fail
L2.86	Urban/ Commercial	Connell St; from Lapps Quay to Oliver Plunkett Street Lower. This link consists of a two-way single carriageway street, with on-street disc parking on the west side of the carriageway and a footpath on both sides of the street. There appears to be insufficient space for two vehicles to pass each other due to the parking. The on-street parking forces motorists to yield to each other. The boundary-to-boundary width is approx. 7.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. There are no dedicated bus or cycle facilities on this route and the link is not identified as route within CMATS. Due to the width constraints because of roadside properties, this is not considered a feasible route option for this STC.	Fail
L2.87	Urban	Deane Street; from Oliver Plunkett Street Lower to Clontarf Street. This short link comprises a one-way bus lane and bus parking; it is not open to general traffic. There are footpaths on each side of the street and the boundary-to-boundary width is approx. 10.5m. The route is not identified as a cycling route within the CCNP.	Pass

		As the route is operating as a bus only route currently, this is considered a feasible route option for this STC.	
L2.88	Urban	Railway Street; from Lower Glanmire Road to Alfred Street. The northern section of this link consists of a two-way single carriageway street with on-street disc parking and footpaths on both sides of the street. The boundary-to-boundary width is approx. 13.5m. Buildings front directly onto the footpath on both sides along this link which restricts road widening. The link narrows at the southern section to form a one-way street with footpaths on both sides. There is also on-street parking on the east side of the carriageway. The eastern boundary comprises a public area with cycle parking and steps to LGR. There are no dedicated bus or cycle facilities on this route and the link is not identified as route within CMATS. There is not sufficient width to create dedicated two-way bus facilities and two-way traffic facilities. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	Pass
L2.89	Urban	Harley Street; from St Patricks Quay to MacCurtain Street. This link consists of a pedestrianised street linking the Mary Elmes walking and cycling bridge to MacCurtain Street. The route is closed to general traffic and the boundary-to-boundary width is approx. 6m. There are no bus facilities on this route as it is pedestrianised, and the route is categorised as a primary cycle route in CMATS. As the route is narrow and pedestrianised this is not considered a feasible route option for this STC.	Fail
L2.90	Sub-urban/ Commercial	Monahan Road; from proposed new link to Victoria Road. This is a two-way single carriageway street with on-street parking on both sides. There is a footpath on the northside of the carriageway only. There is a row of commercial buildings tight against the carriageway/footpath on both sides. The boundary-to-boundary width is approx. 9m. There are no dedicated bus or cycle facilities on the route. The route is identified as a Green route in CMATS.	Pass

		There is not sufficient width to include dedicated bus lanes without taking existing land/buildings/warehouses. However, there may be potential to re-route/remove general traffic or provide a one-way system to create bus priority on this link. As such, the route is considered a viable route option for this STC, provided a traffic diversion or one way system is implemented.	

5.2.1 Sifting Outcome

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

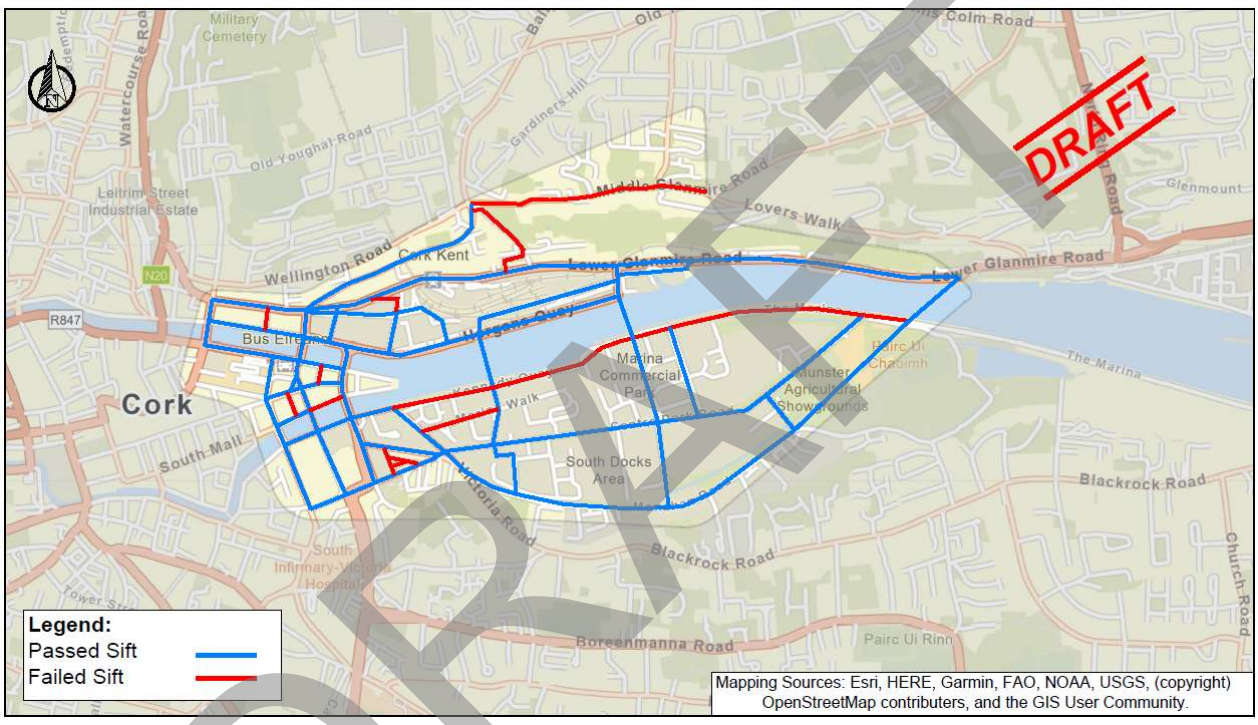


Figure 5-7

5.2.2 Removal of Disconnected Links

Based on Figure 5-7, 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.

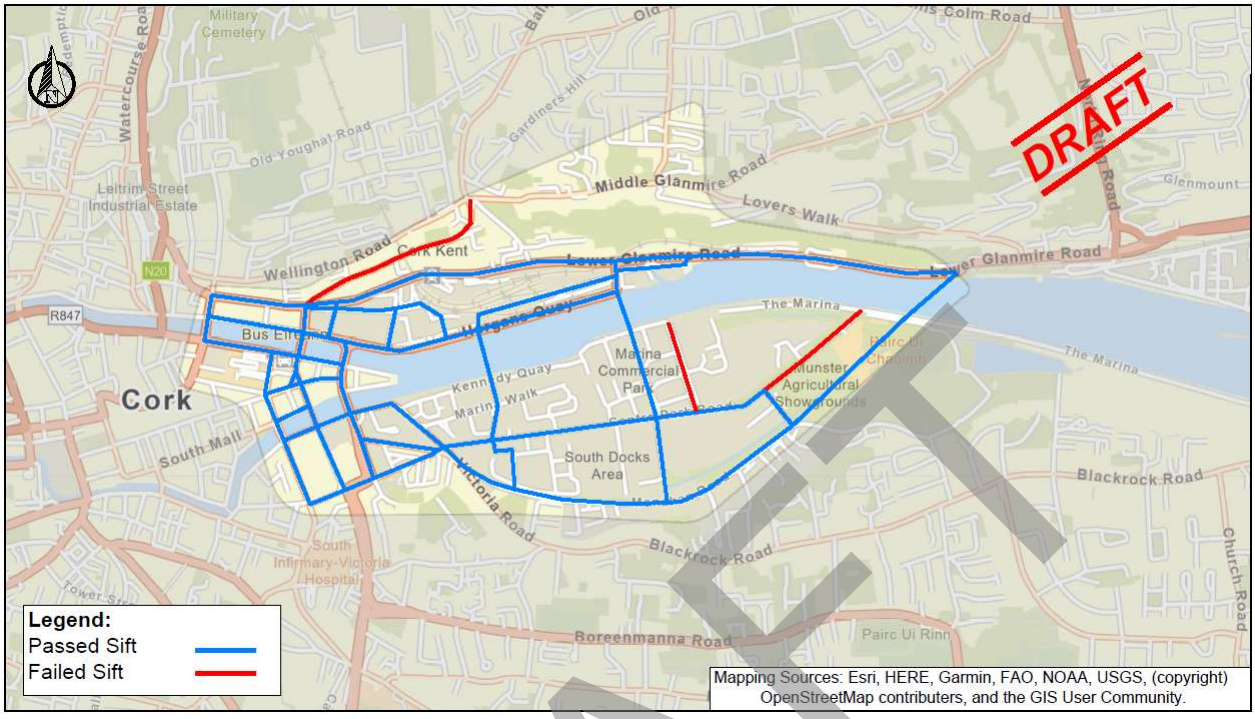


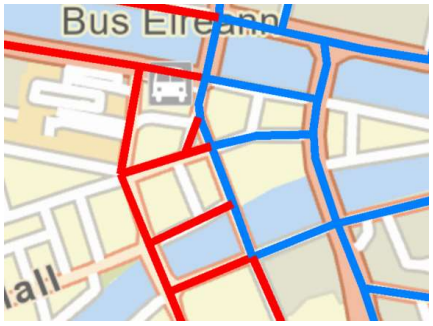
Figure 5-8

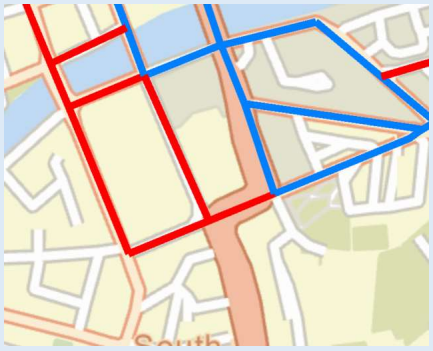
5.2.3 Preliminary Route Assessment for Section 2

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 5-3 Route 1 Preliminary Route Assessment

Road Names	Comments	Map
MacCurtain Street, Bridge Street, St Patricks Quay, Saint Patricks Bridge and Merchants Quay.	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 Brian Boru Bridge and Michael Collins Bridge. 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.	
Terence MacSwiney Quay, Parnell Bridge, Parnell Place, Lapp's Quay, Deane Street and the western part of Oliver Plunkett Street Lower.	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 Clontarf 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.	

Old Station Road, Eglington Street, Old Market Road and Terrence MacSwiney Street	All route options using Old Station Road, Old Market Road and Terrence MacSwiney Street have routes which are circuitous in nature and would lead to longer journey times when compared to the more direct adjacent option of 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. For the route to use Eglington Street 2 major junctions on S. Link Road would have to be passed through, the options that don't require this will have shorter journey times and better journey time reliability. For this reason Eglington Street has been removed from further analysis.	
Ship Street	Due to the constrained nature of Ship Street, it would not be possible to have 2 way bus lanes down here without significant impacts to traffic movements and to the residents on street parking that is present along the route. Any options that use this street would also have more junctions that those that use Brian Boru Street and would therefore likely have longer journey times and worse journey time reliability. For these reasons Ship Street has been removed from further analysis.	
Western end of Monahan Road	The western end of Monahan Road is tightly constrained by buildings on either side, meaning it would not be possible to provide bus lanes while keeping the route open to general traffic. This would be possible on the adjacent Centre Park Road. For this reason, these route options are not considered further.	

The outcome of the Preliminary Route Assessment for Section 2 can be seen in Figure 5-9 below. The links shown in red have failed those shown in blue have passed.

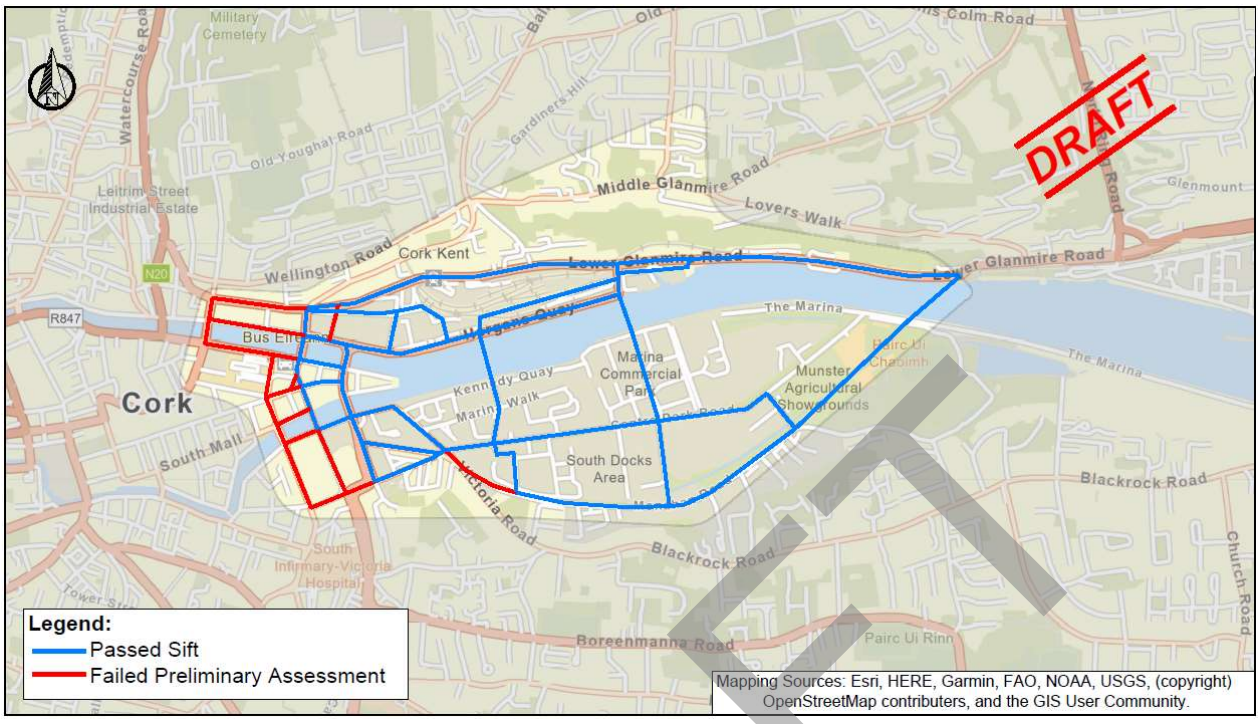


Figure 5-9

5.2.4 Sifting Conclusion

Figure 5-10 below shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

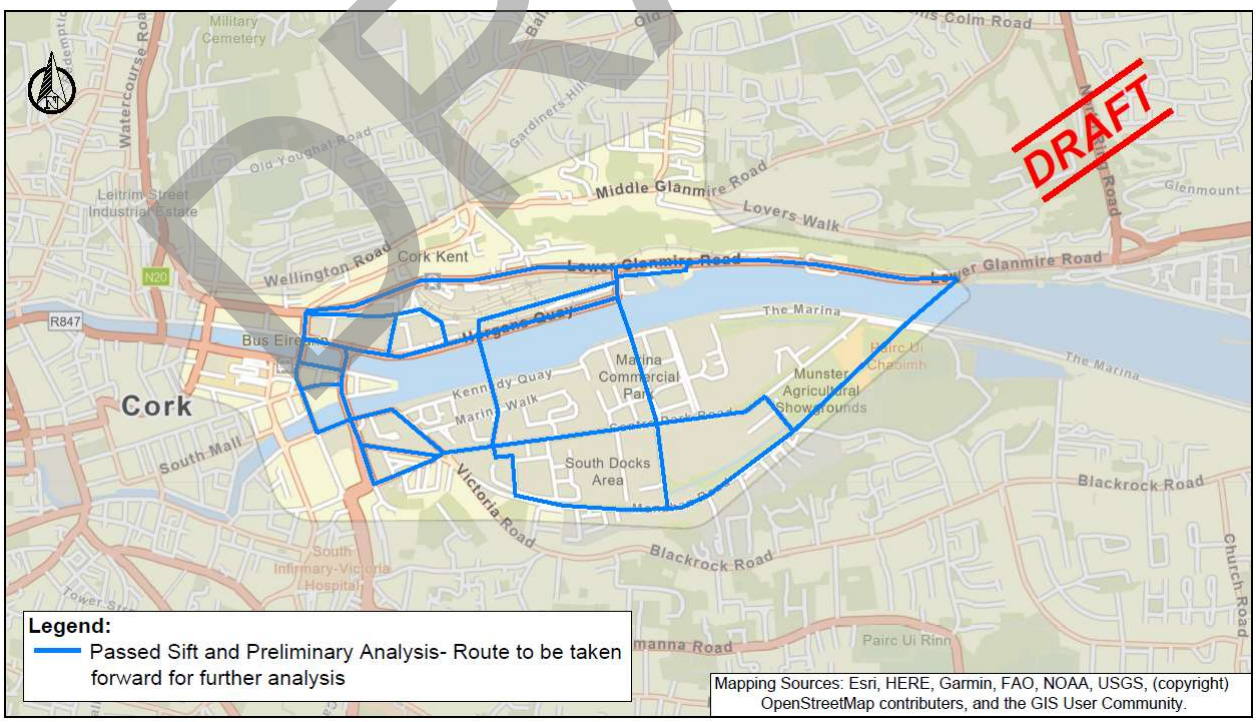


Figure 5-10

5.3 Overall Sifting Outcome - Sections 1 & 2

Below Figure 5-11 shows the overall spiders web of options for the full study area post sifting.

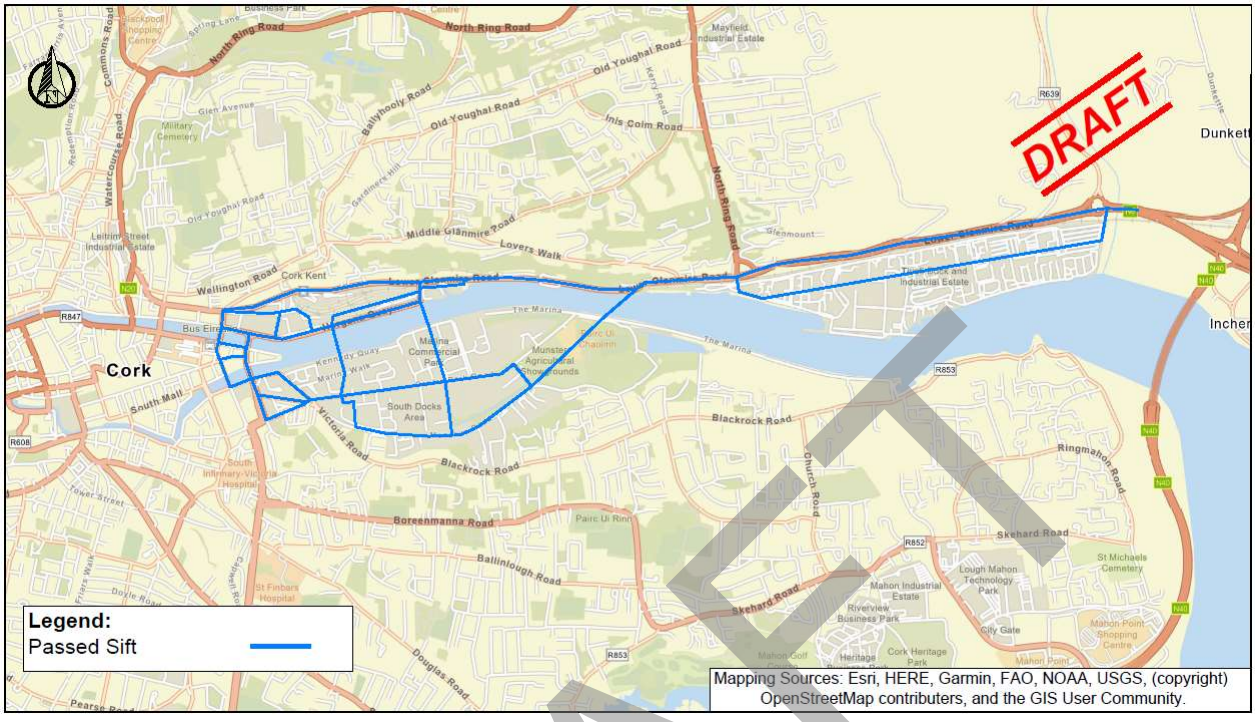


Figure 5-11

6. Stage 2 MCA Assessment – Section 1

6.1 Section 1 - Lower Glanmire Road/Tivoli Docks

6.1.1 Introduction and Route Description

Following the Stage 1 sifting process the links in this section were assembled to form two viable route options for Section 1, as follows:

- Route Option 1A: Busses on Lower Glanmire Road, and cyclists through Tivoli.
- Route Option 1B: Busses on Lower Glanmire Road, and cyclists on Lower Glanmire Road.
- Route Option 2A: Busses use a new link / bridge over the river and railway line to the east to connect to Tivoli Docks, passing through Tivoli Docks, and then re-joining Lower Glanmire Road, cyclists also through Tivoli.
- Route Option 2B: Busses use a new link / bridge over the river and railway line to the east to connect to Tivoli Docks, passing through Tivoli Docks, and then re-joining Lower Glanmire Road, cyclists on Lower Glanmire Road.

All of these routes start 100m to the east of the Dunkettle/Lower Glanmire Road Roundabout and finish just prior to the Skew Bridge on Lower Glanmire Road.

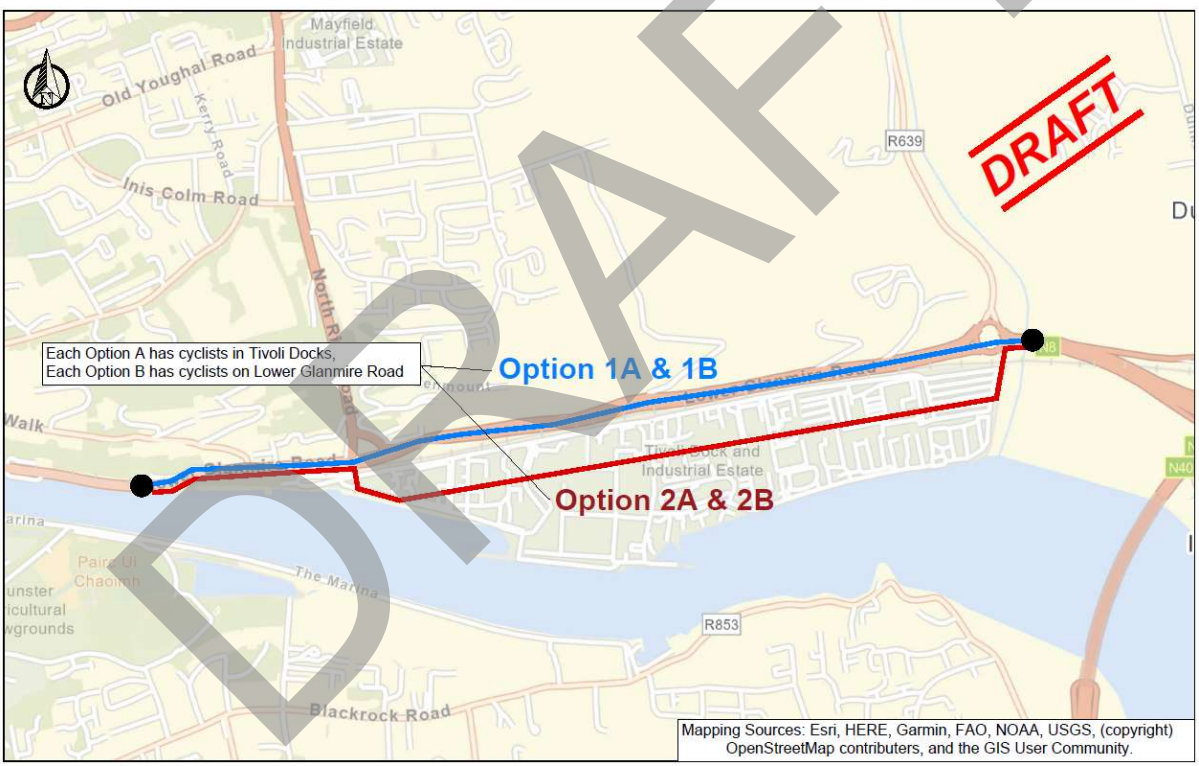


Figure 6-1 Section 1 (Lower Glanmire Road / Tivoli Docks) Route Options

6.1.2 Route Option 1A

Indicative Scheme Design

Figure 6-2 illustrates the indicative scheme design for Route Option 1A as well as the location of an indicative cross-section.

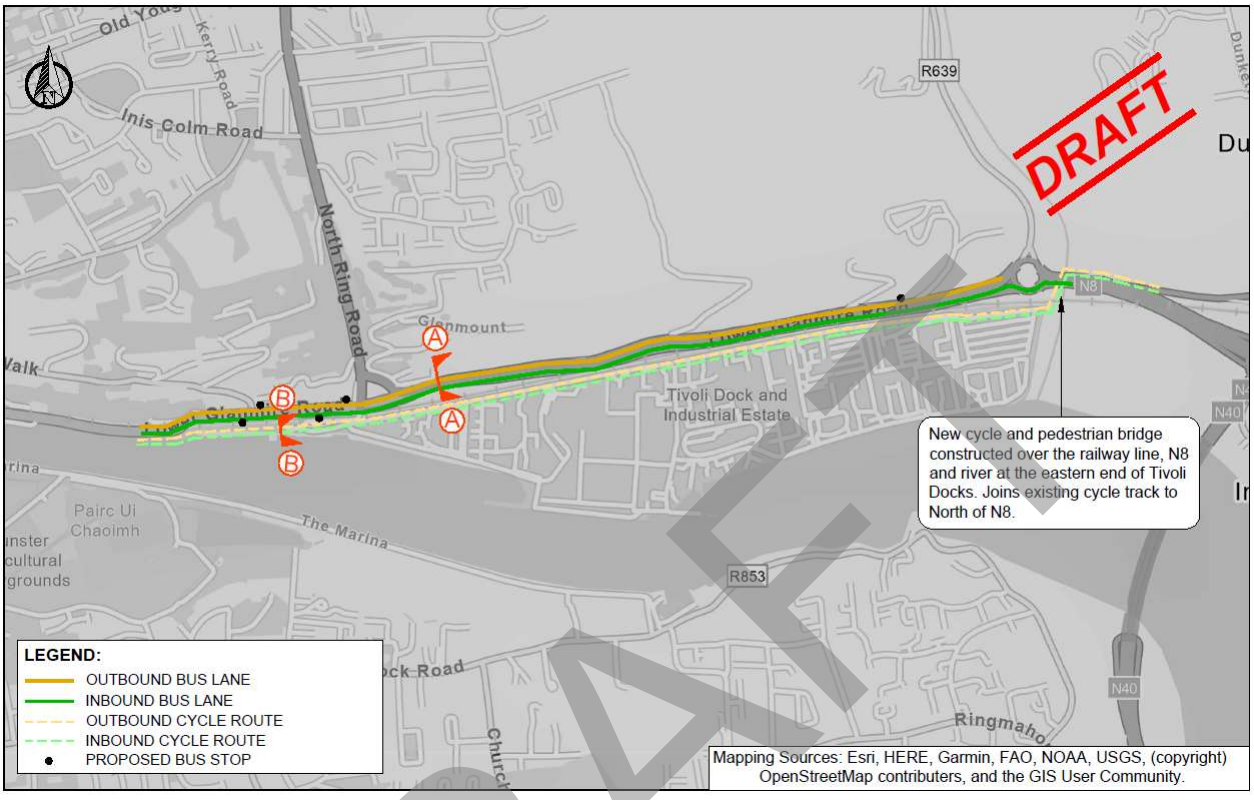


Figure 6-2 Option 1 Indicative Scheme Design

Route for Buses:

Starting from the east, a bus lane would be provided on the inbound approach to the Glanmire Road/Dunkettle Roundabout. This would be achieved by widening into the verge and reallocation some of the hard shoulder.

From the roundabout the road carriageway would be widened into the central median and grass verges either side, with the lane widths reduced, to provide 2 traffic lanes in each direction and a dedicated bus lane in each direction. By Lotamore House the cross section is constrained so the outbound bus lane will be dropped for 220m through the pinch point, with queue relocation signals used to provide bus priority through here when there is queuing. The outbound bus lane is also dropped at HSS Hire where there is another pinch point, the Silversprings signalised junction would act as a queue relocation signal to allow outbound busses to skip queues forming here.

After the Silversprings junction the cross section reduces to have one general traffic lane in each direction, and an outbound bus lane only. Over the Skew bridge a single traffic lane in each direction is provided with a queue relocation signal to give outbound busses priority. After the Skew Bridge bus lanes and dedicated traffic lanes are provided in both directions.

Route for Cyclists:

The cycle route would link up with the existing cycle track to the north of the N8. A new cycle and pedestrian bridge would be constructed over the railway line, N8 and river at the eastern end of Tivoli Docks. The route would then take quiet roads through Tivoli Docks and then follow a new cycleway constructed along the edge of the river Lee.

Bus Stops: A total of three bus stops on the outbound lane and two on the inbound lane would be provided along this route, as shown in Figure 6-2.

A cross-section on Lower Glanmire Road is presented in Figure 6-3, a cross section of the two-way cycle track provided north of the river Lee is presented in Figure 6-4.

Typical Cross Sections

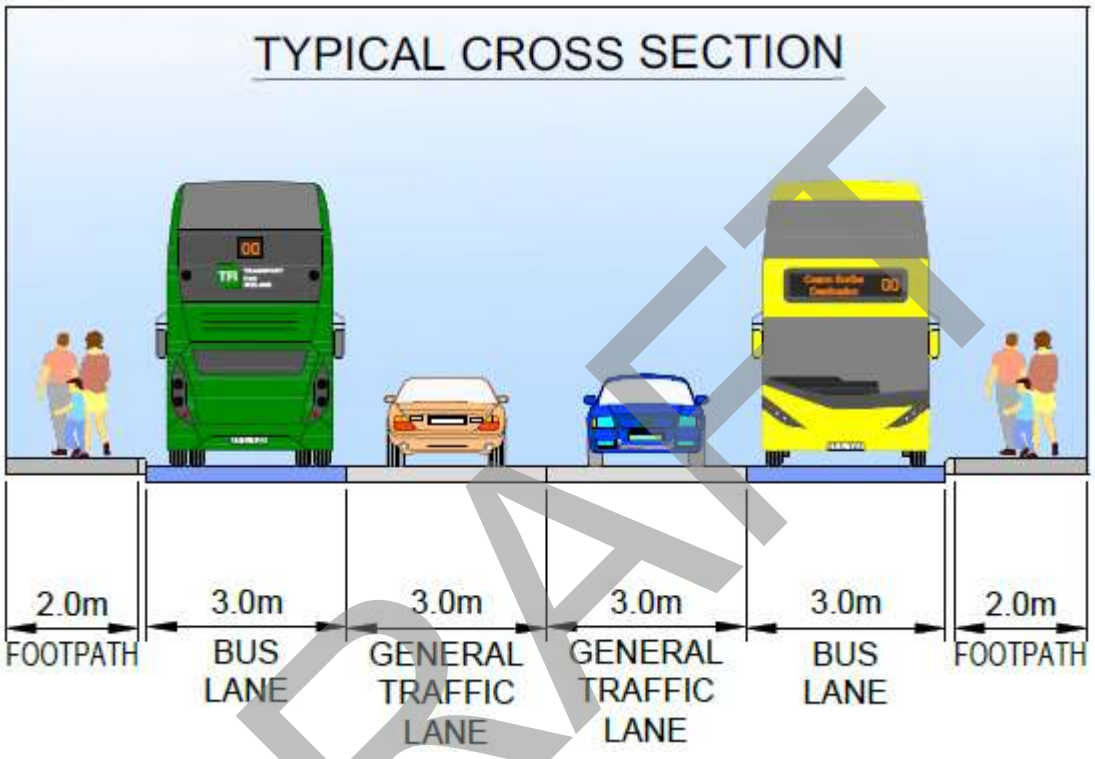


Figure 6-3 Cross Section A-A

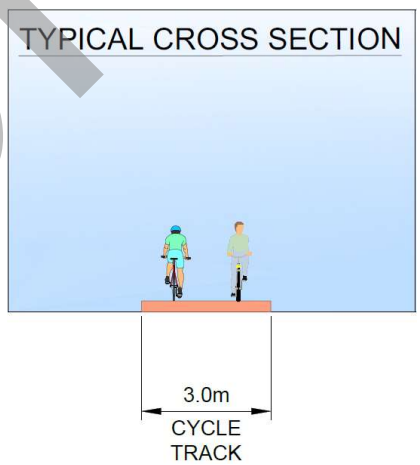


Figure 6-4 Cross Section B-B

6.1.3 Route Option 1B

Indicative Scheme Design

Figure 6-5 illustrates the indicative scheme design for Route Option 1B as well as the location of an indicative cross-section.

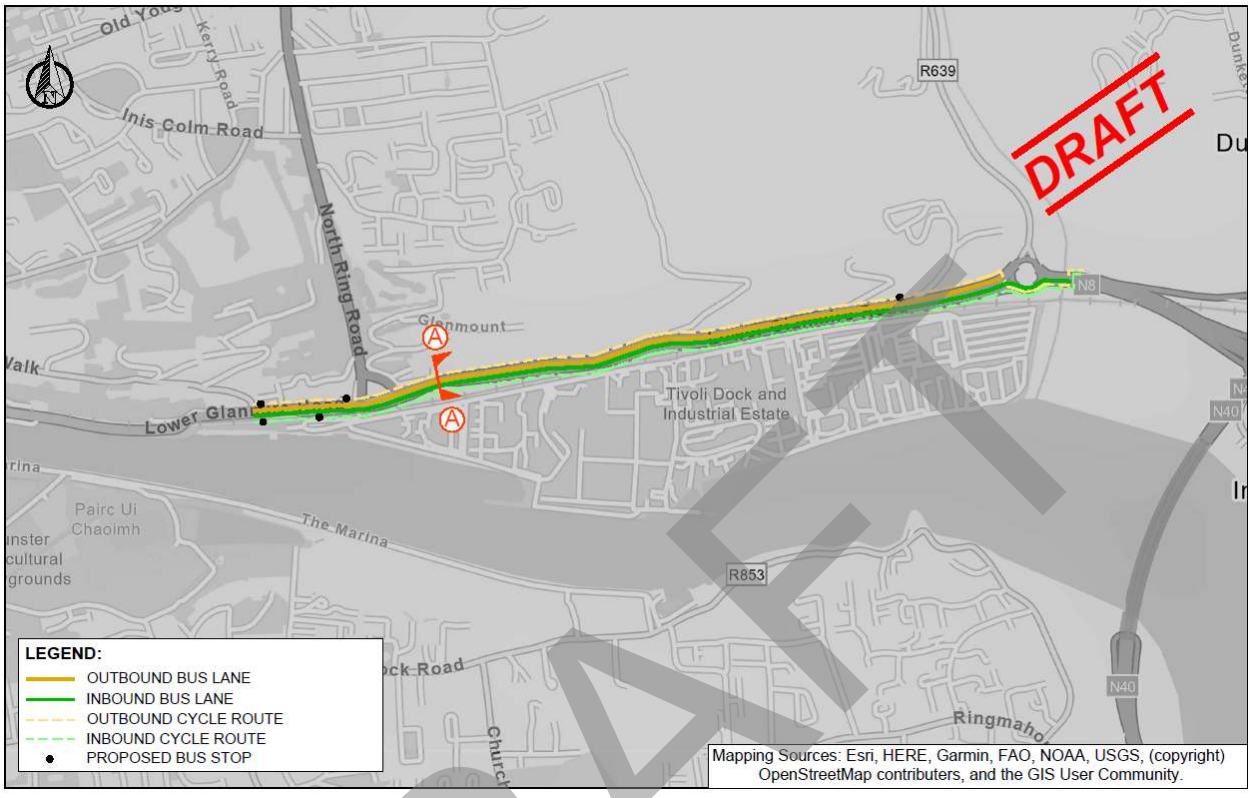


Figure 6-5 Option 1 Indicative Scheme Design

Route for Buses:

Starting from the east, a bus lane would be provided on the inbound approach to the Glanmire Road/Dunkettle Roundabout. This would be achieved by widening into the verge and reallocation some of the hard shoulder.

From the roundabout the road carriageway would be widened into the central median and grass verges either side, with the lane widths reduced, to provide 2 traffic lanes in each direction and a dedicated bus lane in each direction. Cycle lanes would also be added on both sides of the road carriageway here. By Lotamore House the cross section is constrained so the outbound bus lane will be dropped for 220m through the pinch point, with queue relocation signals used to provide bus priority through here when there is queuing. The outbound bus lane is also dropped at HSS Hire where there is another pinch point, the Silversprings signalised junction would act as a queue relocation signal to allow outbound busses to skip queues forming here.

After the Silversprings junction the cross section reduces to have one general traffic lane in each direction, and an outbound bus lane only, with cycle lanes still provided on either side of the road. Over the Skew bridge a single traffic lane in each direction is provided with a queue relocation signal to give outbound busses priority.

Route for Cyclists:

Starting from the east cycle provision will be provided on segregated cycle tracks with signalised crossings around the Dunkettle/Lower Glanmire Road Roundabout. On Lower Glanmire Road dedicated cycle tracks would be provided on either side of the carriageway as far as the Trafalgar Hill. From here outbound cyclists would use the quiet access road that runs adjacent to Lower Glanmire Road as far as the Skew Bridge, just before the Skew Bridge a signalised crossing would allow cyclists to cross so that both inbound and outbound cyclists are on a track to the south of the road carriageway.

Due to width constraints on the bridge both inbound and outbound cyclists would be provided for on a new cycle and pedestrian bridge provided on the south side of the Skew Bridge. The route would then run through the Port of Cork Park, until reaching Lower Glanmire Road, where a new cycle and pedestrian boardwalk would be provided outside the existing Quay walls over the river Lee adjacent to the road.

Bus Stops: A total of three bus stops on the outbound lane and two on the inbound lane would be provided along this route, as shown in Figure 6-5.

Typical Cross Sections

A cross-section on Lower Glanmire Road is presented in Figure 6-6.

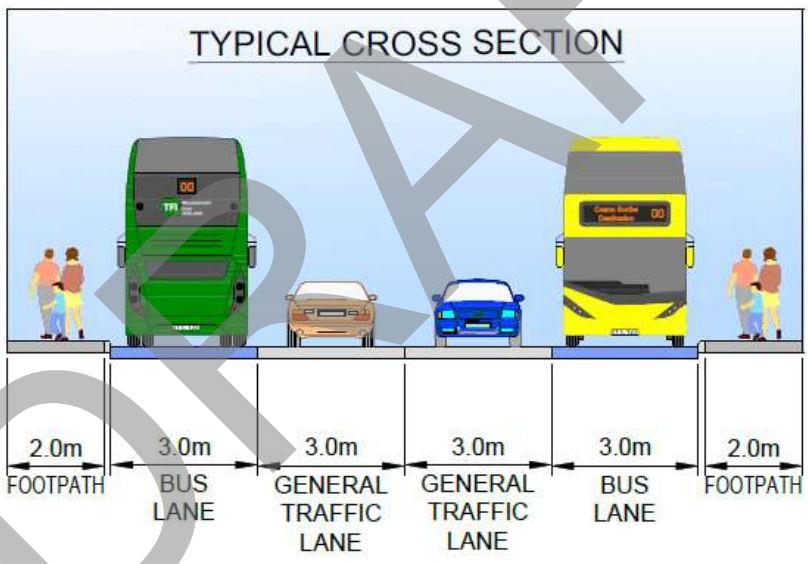


Figure 6-6

6.1.4 Route Option 2A

Indicative Scheme Design

Figure 6-7 illustrates the indicative scheme design for Route Option 2A as well as the location of an indicative cross-section.

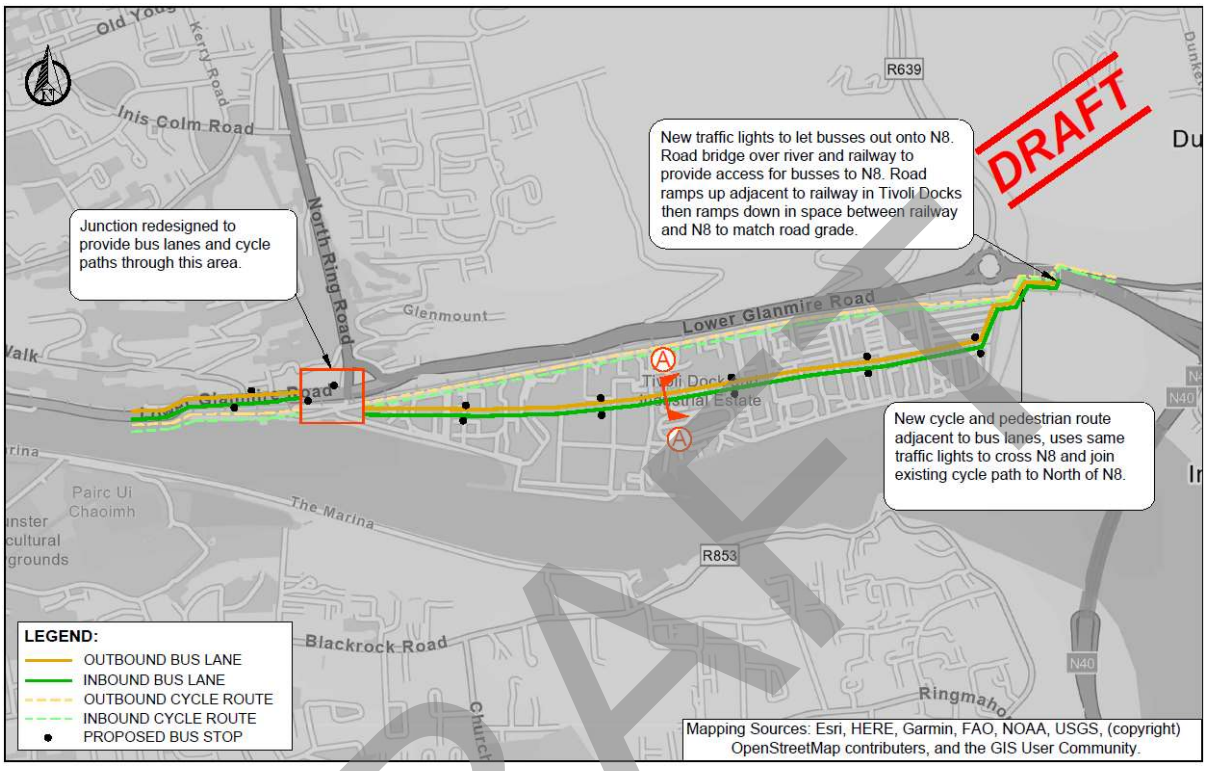


Figure 6-7 Option 2 Indicative Scheme Design

Route for Buses:

Starting from the east a new junction with traffic light signals would let busses onto the N8. A new bridge over the river and railway would be constructed to provide access for busses to the N8 from Tivoli Docks. The route would then run down a new road through the centre of Tivoli Docks, with dedicated bus lanes provided in both directions. The junction with Lower Glanmire Road would be re-designed to allow dedicated bus lanes to access Lower Glanmire Road and from here dedicated bus lanes would be provided to the west on Lower Glanmire Road. Widening the road cross section would be required for this.

Route for Cyclists:

The cycle route would link up with the existing cycle track to the north of the N8, a signalised toucan crossing would allow cyclists and pedestrians to cross the N8. A new cycle and pedestrian bridge would be constructed over the railway line at the eastern end of Tivoli Docks. The route would then take quiet roads through Tivoli Docks and then follow the existing paths within the Port of Cork Millennium Gardens.

Bus Stops: Bus stops would be provided at roughly 350m intervals through Tivoli Docks.

Cross Sections:
Note that the concept design for this section of route will be finalised at a later date, so the cross section here is indicative and may not represent what would be built.

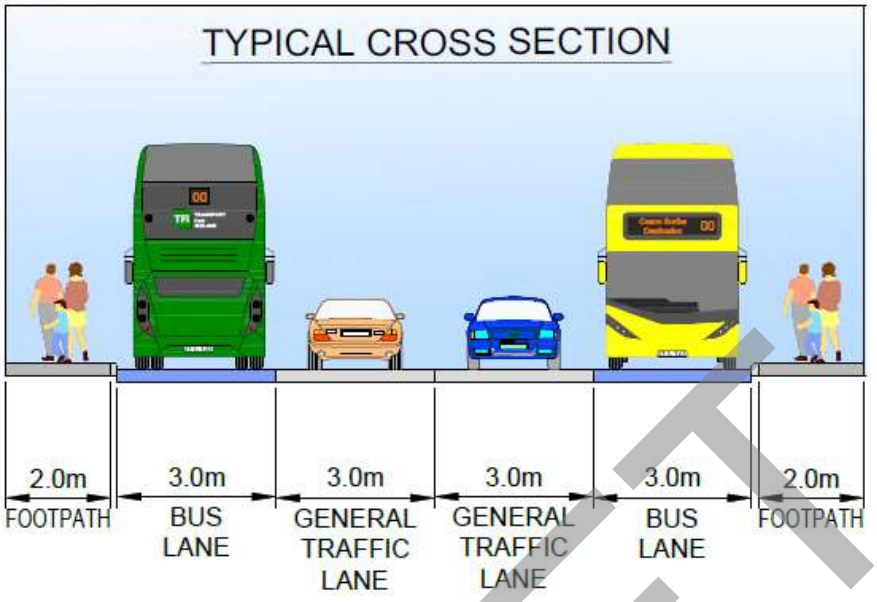


Figure 6-8 Cross Section A-A

6.1.5 Route Option 2B

Indicative Scheme Design

Figure 6-9 illustrates the indicative scheme design for Route Option 2B as well as the location of an indicative cross-section.

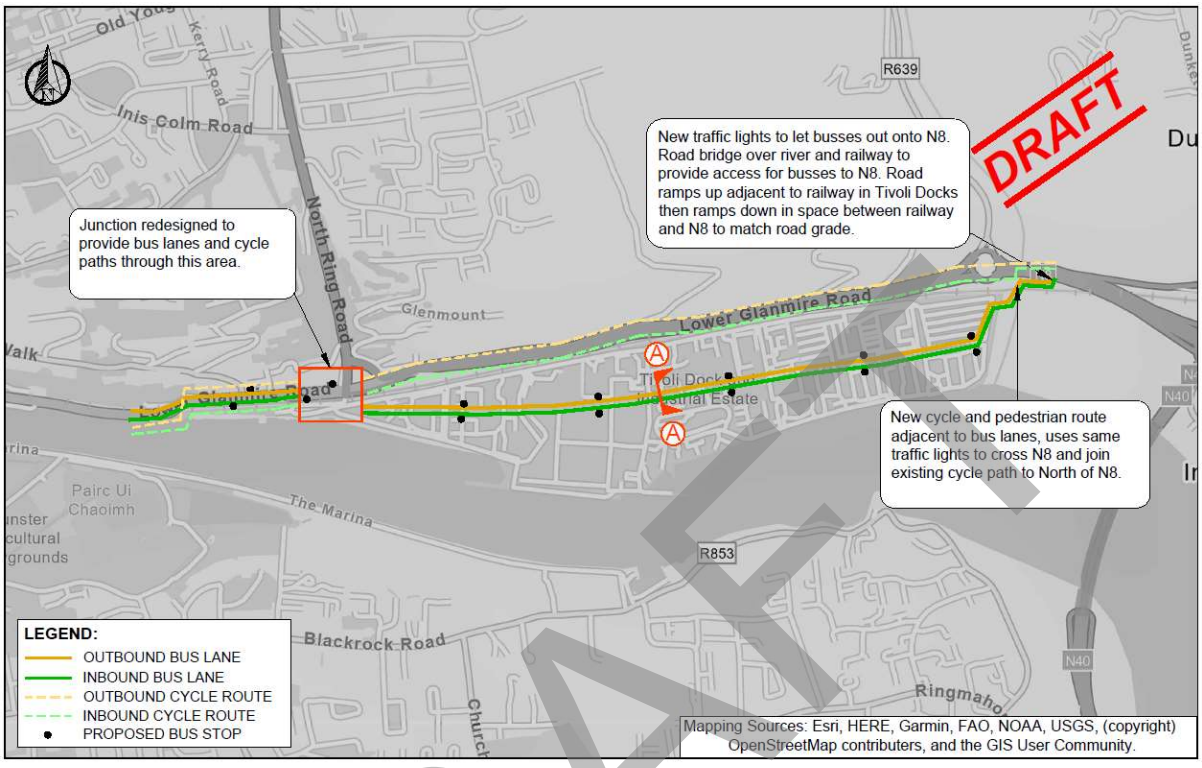


Figure 6-9 Option 2 Indicative Scheme Design

Route for Buses:

Starting from the east a new junction with traffic light signals would let busses onto the N8. A new bridge over the river and railway would be constructed to provide access for busses to the N8 from Tivoli Docks. The route would then run down a new road through the centre of Tivoli Docks, with dedicated bus lanes provided in both directions. The junction with Lower Glanmire Road would be re-designed to allow dedicated bus lanes to access Lower Glanmire Road and from here dedicated bus lanes would be provided to the west on Lower Glanmire Road. Widening the road cross section would be required for this.

Route for Cyclists:

Starting from the east cycle provision will be provided on segregated cycle tracks with signalised crossings around the Dunkettle/Lower Glanmire Road Roundabout. On Lower Glanmire Road dedicated cycle tracks would be provided on either side of the carriageway as far as the Trafalgar Hill. From here outbound cyclists would use the quiet access road that runs adjacent to Lower Glanmire Road as far as the Skew Bridge, just before the Skew Bridge a signalised crossing would allow cyclists to cross so that both inbound and outbound cyclists are on a track to the south of the road carriageway.

Due to width constraints on the bridge both inbound and outbound cyclists would be provided for on a new cycle and pedestrian bridge provided on the south side of the Skew Bridge. The route would then run through the Port of Cork Park, until reaching Lower Glanmire Road, where a new cycle and pedestrian boardwalk would be provided outside the existing Quay walls over the river Lee adjacent to the road.

Bus Stops: Bus stops would be provided at roughly 350m intervals through Tivoli Docks.

Cross Sections:

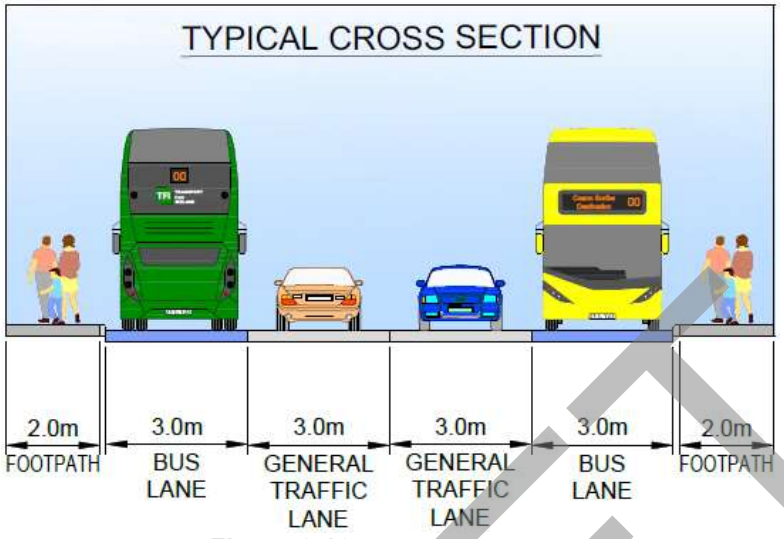


Figure 6-10 Cross Section A-A

6.1.6 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 1 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)

Assessment Criteria	Sub-Criteria	Route 1A	Route 1B	Route 2A	Route 2B
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 1A & 1B would cost significantly less to construct than Options 2A & 2B, with Option 1B costing less again than Option 1A. However due to the lands in Tivoli Docks being highlighted as an area that is to be developed, it is likely that some of the infrastructure costs for Options 2A & 2B would fall under the cost of the development of the area, this reduces the effective cost of those options. Additionally, Tivoli is currently an Industrial area with two Seveso sites which may incur additional costs. Due to having a more direct route Options 1A & 1B perform better for both average journey time and journey time reliability, so score better for economy overall.

Regarding 'Integration', Options 2A & 2B perform significantly better, particularly for Land Use Integration as they would serve Tivoli Docklands which is proposed to undergo significant development, this will be a major trip attractor and employment zone. Lower Glanmire Road currently has few bus stops and a low population catchment. For cyclists, the options using Lower Glanmire Road better serves a larger population, and it is likely that cycle infrastructure will be provided into Tivoli Docks as part of the redevelopment there.

Regarding 'Road Safety', Options 1B & 2B score as slightly preferable when compared to Options 1A & 2A. This is because Options 1B & 2B provide a safe cycle route along Lower Glanmire Road that would also serve the accesses that on that road, allowing all users a safe cycle route into Cork if desired. Whereas Options 1A and 2A would not serve these accesses on Lower Glanmire Road, forcing the cyclists to use the existing infrastructure which is not safe for cyclists.

In terms of 'Environment', Options 2A & 2B require more structures to be built and requires the construction of a new route, whereas Options 1 A & 1B generally utilise existing roads, for this reason Options 1A & 1B have a lower environmental impact and performs better for this criterion than Options 2A & 2B.

6.1.7 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

Assessment Criteria	Route 1A	Route 1B	Route 2A	Route 2B
Economy				
Integration				
Accessibility and Social Inclusion				
Safety				
Environment				

Based on the assessments above it has been determined that Option 2B offers the preferred route option for the following reasons:

- It has a significantly better Land Use Integration due to serving Tivoli Docks. The longer journey time for buses is considered to be outweighed by the benefits of serving this area.
- The cycle route along Lower Glanmire Road better serves residents of lower Glanmire Road and those approaching from the North Ring Road, Little Island and Glanmire directions when compared to the options with cyclists through Tivoli.

Due to the redevelopment of Tivoli being a long-term plan, the route for busses through there will be finalised at a later date when more information about the development is available, and when the route would be used to serve the proposed development. The cycling on Lower Glanmire Road would be useful to implement now, therefore this has been included as part of the emerging preferred route at this stage.

Route 2B was identified as the preferred option for this section and is brought forward into the Emerging Preferred Route as described in Chapter 9.

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

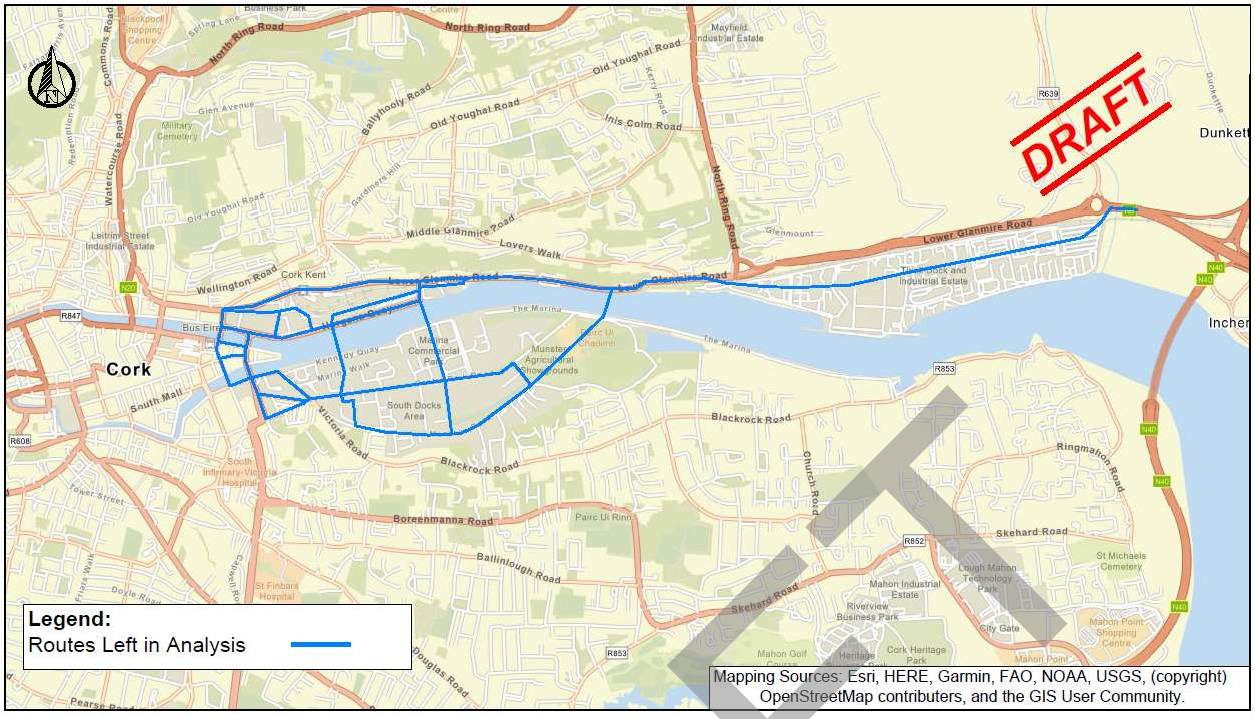


Figure 6-11

7. Stage 2 MCA Assessment – Section 2

To help with the route selection process Section 2 has been split into several smaller subsections. The route options developed within each of these subsections are described below.

The options within each sub-section will be assessed in their own MCA table with the preferred route from each sub-section progressing to become part of longer route options.

7.1 Section 2 Set 1 - Lower Glanmire Road

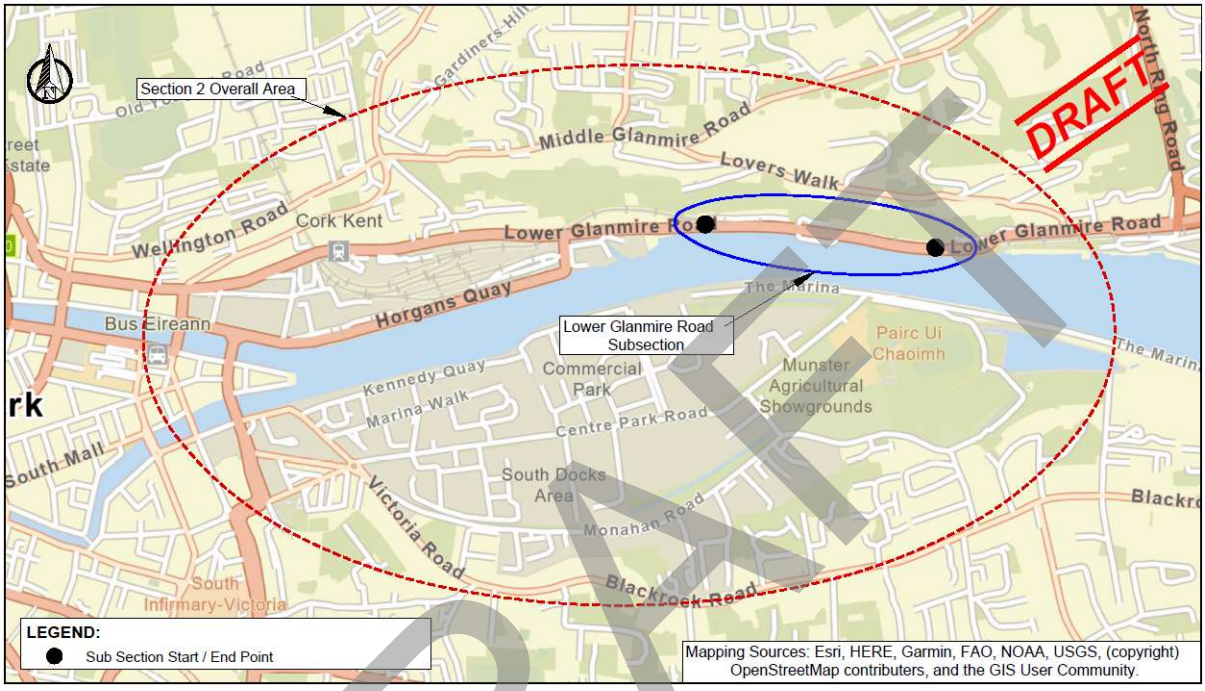


Figure 7-1

7.1.1 Introduction and Route Description

Following the Stage 1 sifting process, one bus route option and two cycle route options were identified for this section, as follows:

- Route Option 1A: Buses using Lower Glanmire Road, with cyclists on a new boardwalk
- Route Option 1B: Buses using Lower Glanmire Road, with cyclists on a route north of the railway line

This options begin at the Skew Bridge over the existing railway and finishes approximately 100m east of Beales's Hill.

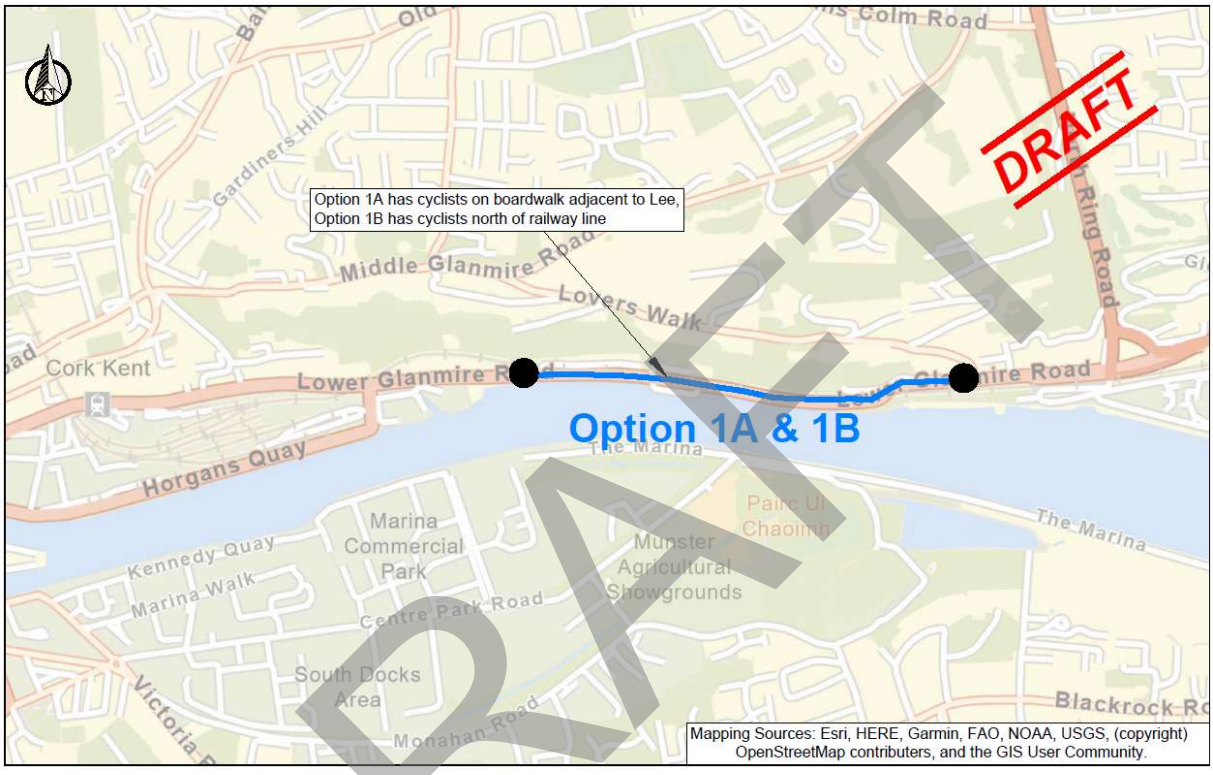


Figure 7-2 Section 2 (Lower Glanmire Road) Route Options

7.1.2 Route Option 1A

Indicative Scheme Design

Figure 7-3 illustrates the indicative scheme design for Route Option 1A as well as the location of an indicative cross-section.

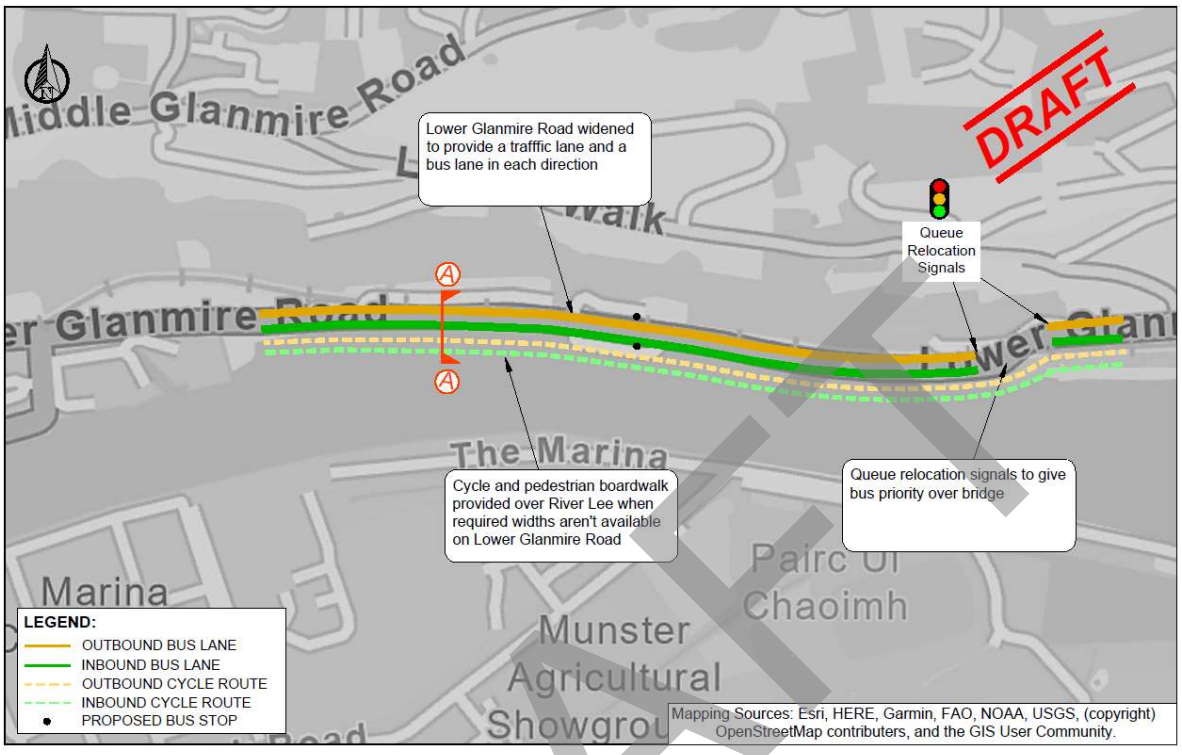


Figure 7-3 Option 1A Indicative Scheme Design

Route for Buses:

The route would follow Lower Glanmire Road with dedicated bus lanes provided for the whole length of the route except the Skew Bridge. The bus lanes would start 50m west of the Skew Bridge and signal priority controls would provide priority for buses over the bridge.

Currently, this section of the Lower Glanmire Road comprises a single traffic lane with central hatching. As such, the reallocation of road space between the boundaries including widening would be used to provide the dedicated bus lanes. A cantilevered pedestrian and cyclist boardwalk would be constructed outside the quay walls to free up space for bus lanes.

Route for Cyclists:

Given existing width constraints, a new cycle track would be constructed outside the southern quay wall on a cantilevered boardwalk, which would link up with the inbound/outbound cycle track at either side of this section. Pedestrians would also be accommodated adjacent to the cycle route and appropriate crossing points would be constructed for access to the northern side of the carriageway where necessary, including at bus stops.

Bus Stops: A total of three bus stops on the outbound lane and three on the inbound lane would be provided along this route, as shown in Figure 7-3.

A cross-section of Lower Glanmire Road is presented in Figure 7-4.

Cross Sections

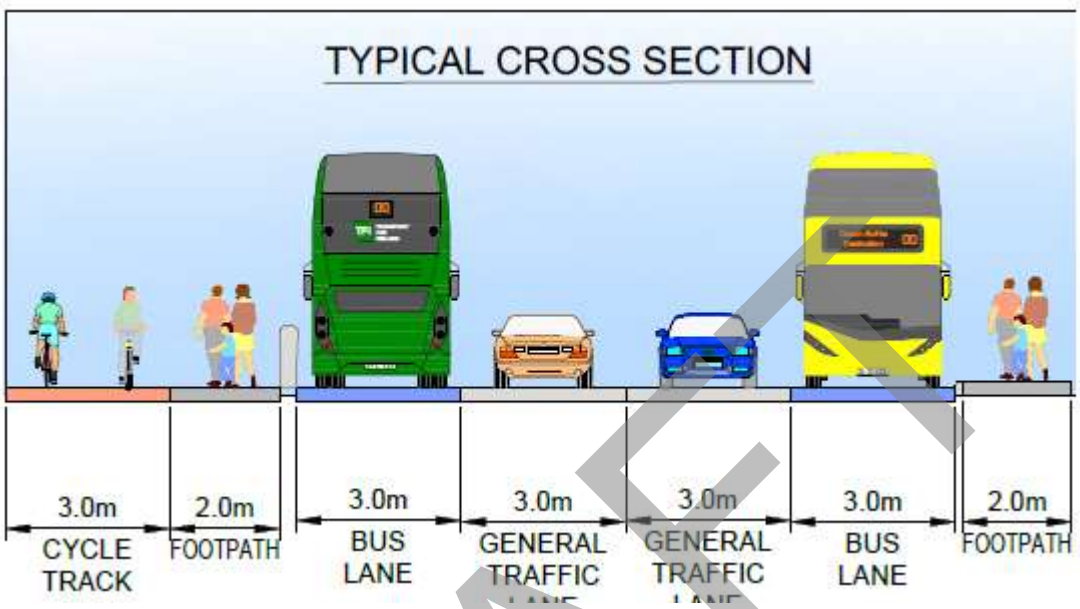


Figure 7-4 Option 1 Indicative Cross Section

7.1.3 Route Option 1B

Indicative Scheme Design

Figure 7-5 illustrates the indicative scheme design for Route Option 1B as well as the location of an indicative cross-section.

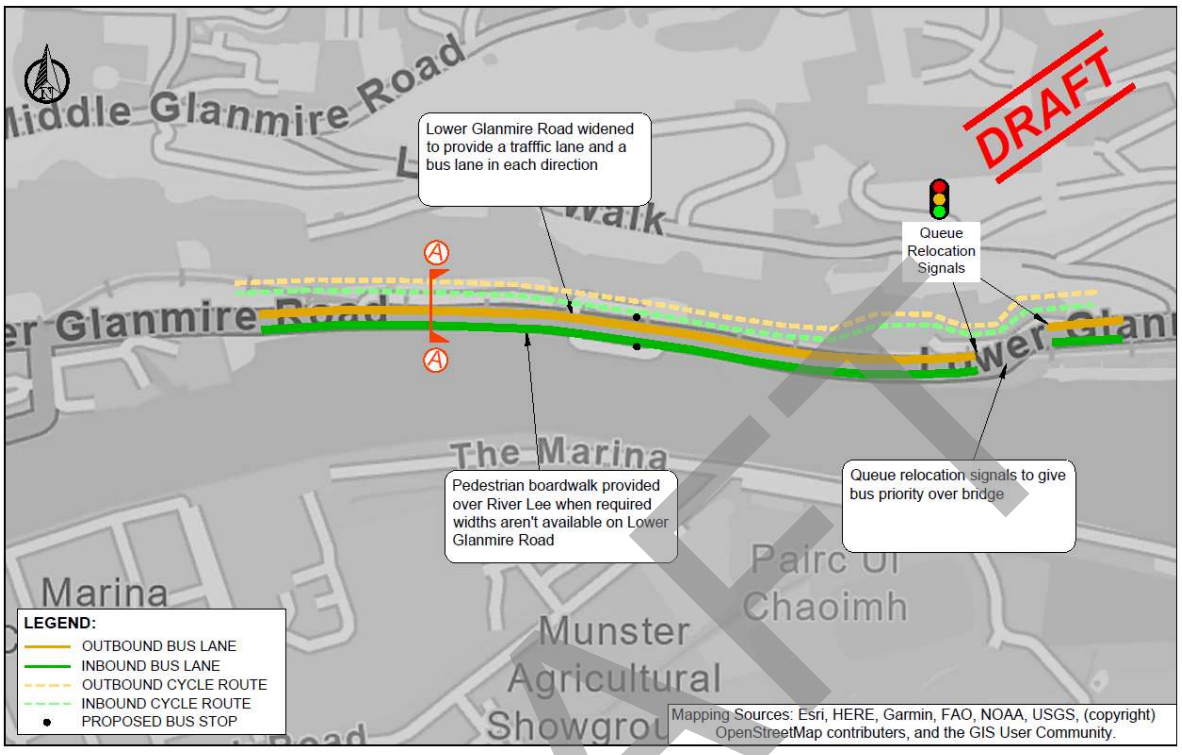


Figure 7-5 Option 1B Indicative Scheme Design

Route for Buses:

The route would follow Lower Glanmire Road with dedicated bus lanes provided for the whole length of the route except the Skew Bridge. The bus lanes would start 50m west of the Skew Bridge and signal priority controls would provide priority for buses over the bridge.

Currently, this section of the Lower Glanmire Road comprises a single traffic lane with central hatching. As such, the reallocation of road space between the boundaries including widening would be used to provide the dedicated bus lanes. A cantilevered pedestrian boardwalk would be constructed outside the quay walls to free up space for bus lanes. Appropriate crossing points would be constructed for access to the northern side of the carriageway where necessary, including at bus stops

Route for Cyclists:

Given existing width constraints, a new cycle track would be constructed to the north of the railway track, which would link up with the access road that turns off Trafalgar Hill to the east and Myrtle Hill Terrace to the west. Toucan crossings would be provided at either end of this route to allow cyclists to cross onto this cycle track. Pedestrians would also be accommodated adjacent to the cycle route.

Bus Stops: A total of three bus stops on the outbound lane and three on the inbound lane would be provided along this route, as shown in Figure 7-5.

Cross Sections

A cross-section of Lower Glanmire Road is presented in Figure 7-6.

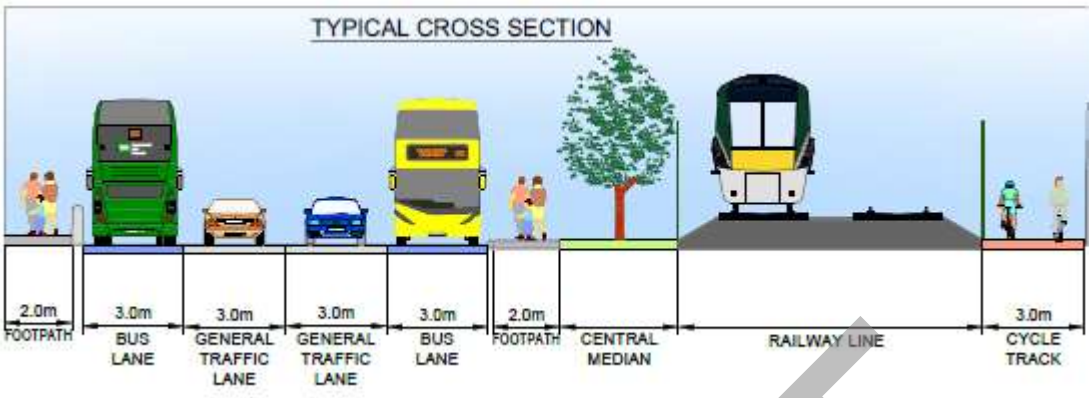


Figure 7-6 Cross Section A-A

7.1.4 Route Options Assessment

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

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 7-1 below.

Table 7-1 Route Options Assessment Summary (Sub-Criteria)

Set 2			
Assessment Criteria	**Sub-Criteria**	**Route 1A**	**Route 1B**
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' both options are similar due to having the same bus route, and therefore the same journey times and journey time reliability, and the route for cyclists likely costing similar amounts to implement, meaning the cost for both would be similar

Regarding 'Integration', Option 1A performs significantly better for cyclist integration due to having a more direct route for cyclists, with less changes in gradient, turns and potential conflicts. Furthermore, the high amenity value of Option 1A ties in better with the development plans for Tivoli Docklands by linking it to the city centre with a more direct and higher amenity route.

Regarding ‘Accessibility and Social inclusion’ and ‘Road Safety’ both options score the same.

In terms of ‘Environment’, Option 1A performs better for biodiversity because Option 1B passes through dense vegetation to the north of the railway line so would have a larger impact there. Option 1A would also provide a boardwalk with views of the Lee and Cork City Centre so scores preferably for Landscape and Visual. Finally for land use and the built environment, Option 1B would utilise routes that are currently private access to houses, so would potentially affect landowners there, so performs worse for this criterion.

7.1.5 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 Route Options Assessment Summary (Main-Criteria)

Assessment Criteria	Route 1A	Route 1B
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 provides a better level of service for cyclists,
- It has less environmental impacts

Route 1A is identified as the preferred option for this section and is brought forward into the Emerging Preferred Route as described in Chapter 9.

The spider's web is now reduced to the following shown in Figure 7-7 below:

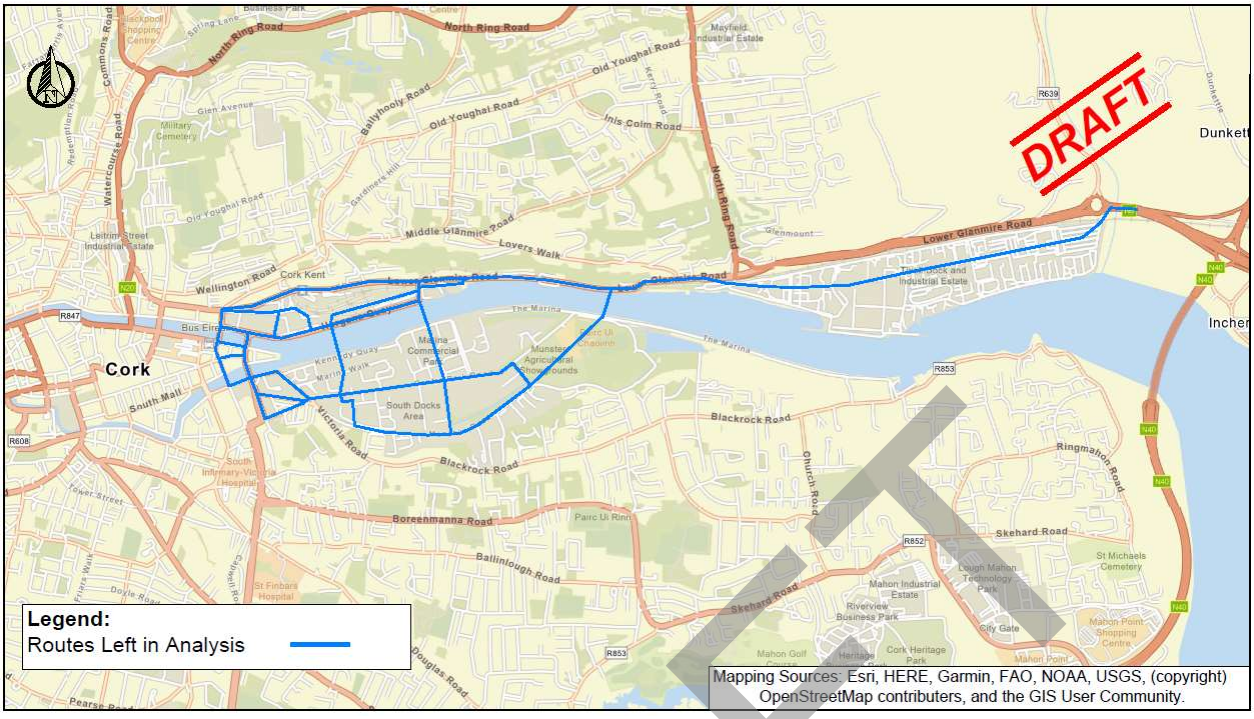


Figure 7-7

7.2 Section 2 Set 2 - Horgan's Quay to Parnell Place

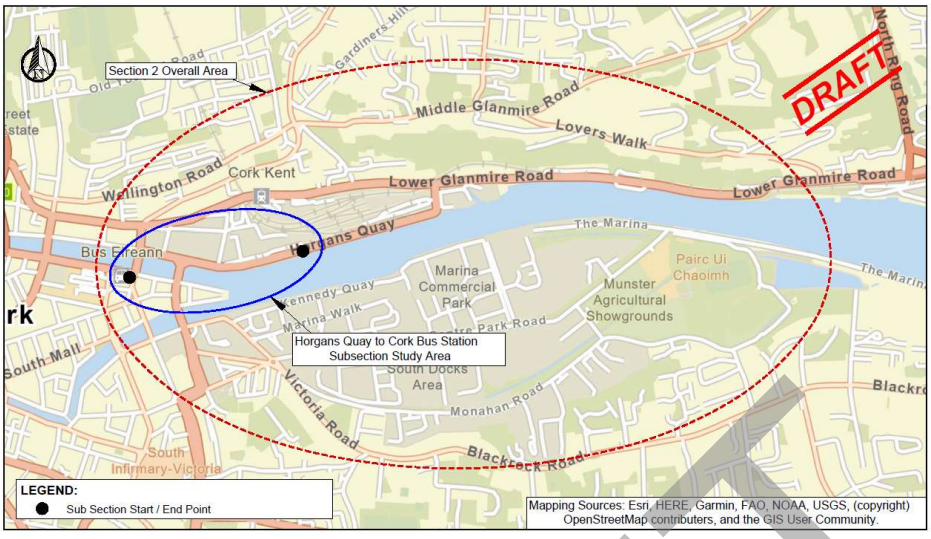


Figure 7-8

7.2.1 Introduction and Route Description

Following the Stage 1 sifting process, three possible route options were created to determine the optimum route for two- way buses on the western section of Horgan's Quay, the preferred option from this set was then used as part of longer route options using Horgan's Quay:

- Route Option 1: Using two-way bus lanes on Horgan's Quay.
- Route Option 2: Using two-way bus lanes on Horgan's Quay, with the busses taking a 1-way loop around Railway Street and Ship Street to access Kent Station.
- Route Option 3: Using two-way bus lanes on Alfred Street, passing via Kent Station, and then to City Centre via Brian Boru Street.

All of these routes start at the Bus Station and finish where the Kent Station car park access joins Horgan's Quay.

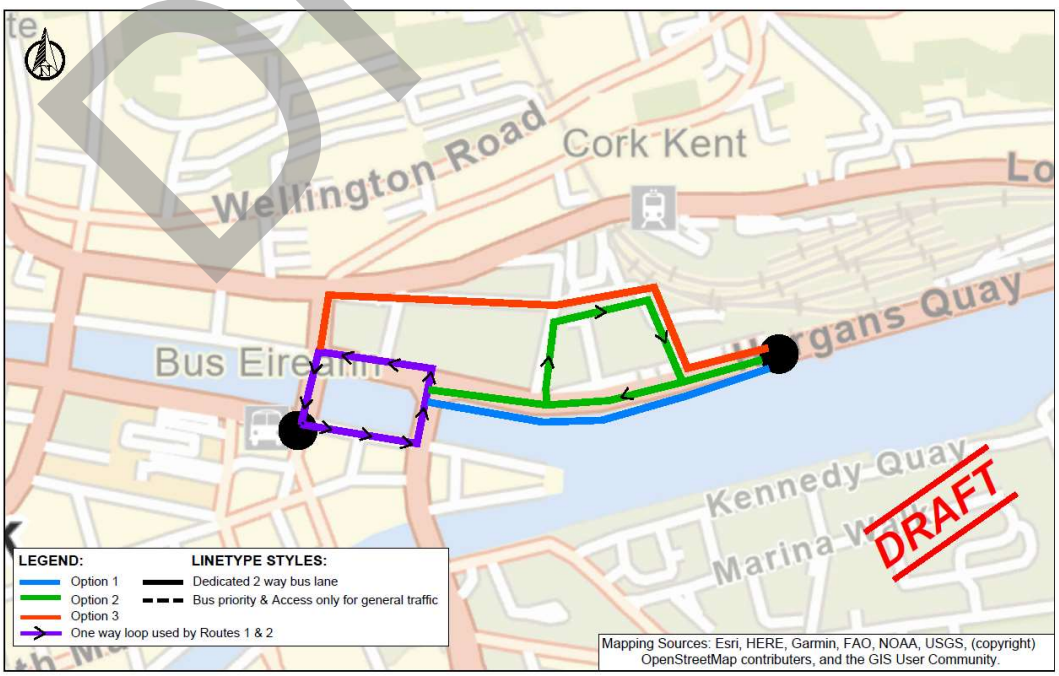


Figure 7-9

7.2.2 Route Option 1:

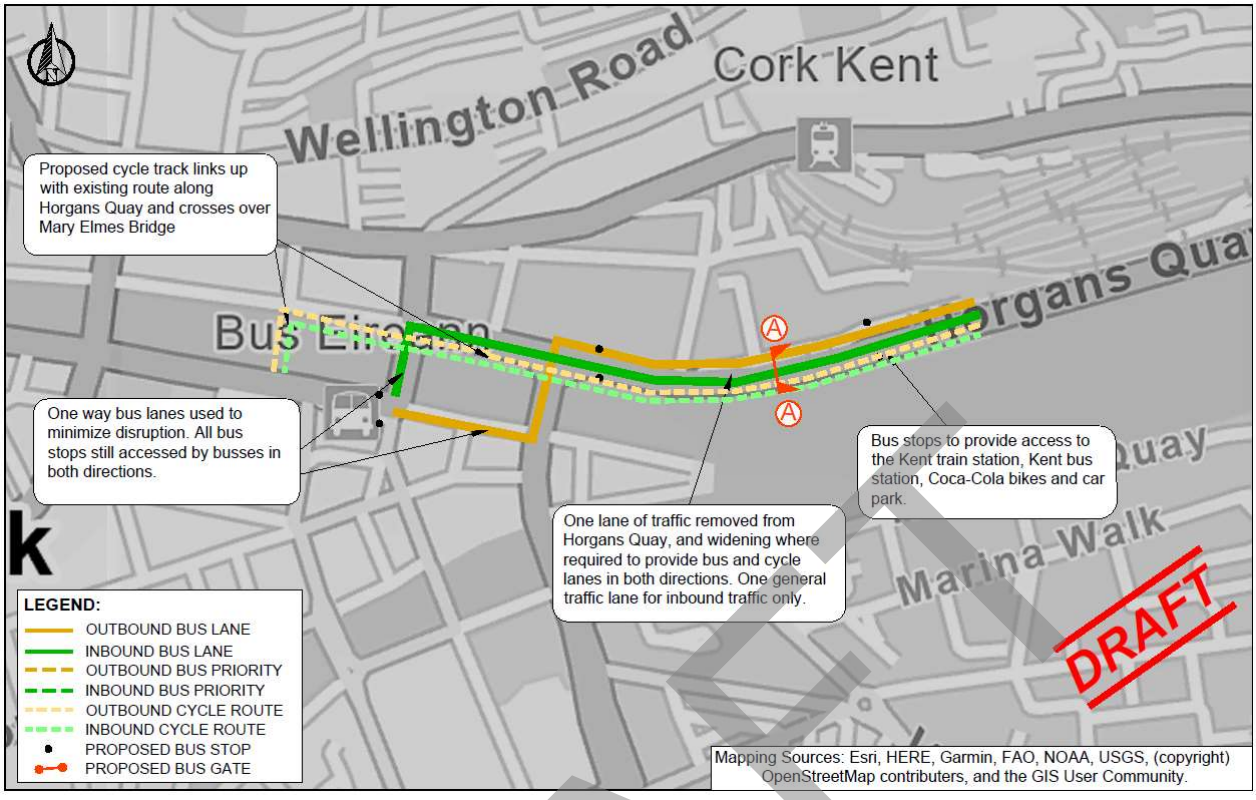


Figure 7-10

Bus Route:

Currently this section of Horgan's Quay comprises of 2 eastbound general traffic lanes, one eastbound bus lane, and a footpath along the north side of the carriageway only. The route is bounded by Kent Train Station car park and private land on the North and Tivoli Shipping Dock A on the South. The general width of the carriageway is approximately 11.5m.

This route option would provide dedicated bus lanes in both directions along Horan's Quay by removing one eastbound lane of general traffic and replacing it with an outbound bus lane.

In Cork City Centre the busses would utilise a one way loop around the Michael Collins Bridge, Penrose Quay, St Patricks Quay, Andersons Quay and the Brian Boru Bridge. This would require taking a single lane of general traffic and replacing it with a bus lane and would still allow all general traffic movements.

Cycle Route:

New cycle provision would be provided along Horgan's Quay in both directions, with widening required in some locations to achieve this, this links up with the existing cycle infrastructure on Penrose Quay.

One outbound traffic lane also converted to two-way cycle lane along Lower Glanmire Road, leaving one remaining outbound traffic lane.

The route will also provide for pedestrians with walkways both sides of Horgan's Quay for its length.

Bus Stops: Bus stops are provided for inbound and outbound busses on Horgan's Quay outside of Kent Station car park, and they are provided just east of the Michael Collins bridge.

Cross Sections

A cross-section on Horgan's Quay is presented in Figure 7-11.

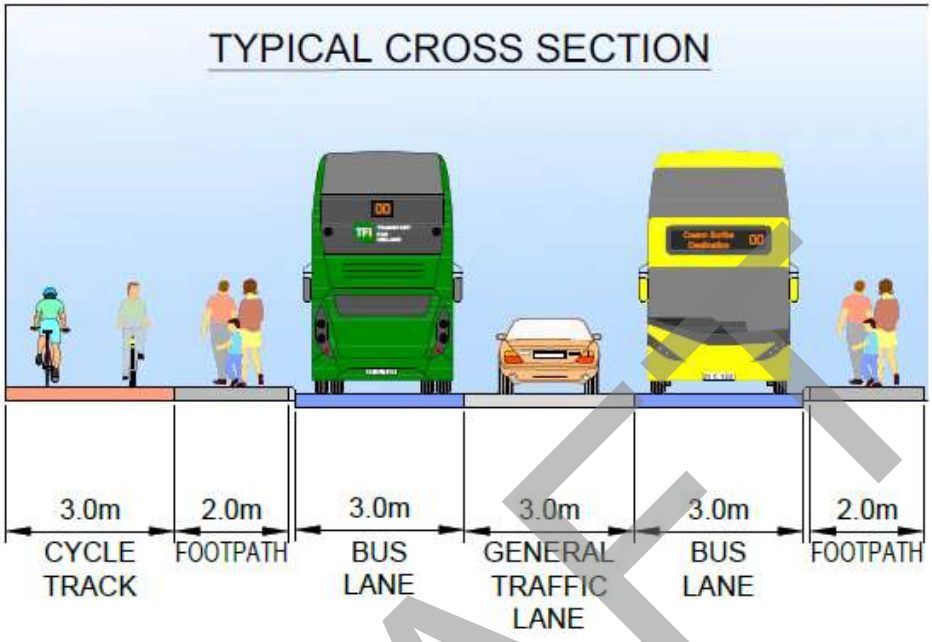


Figure 7-11 Cross Section A-A

7.2.3 Route Option 2:

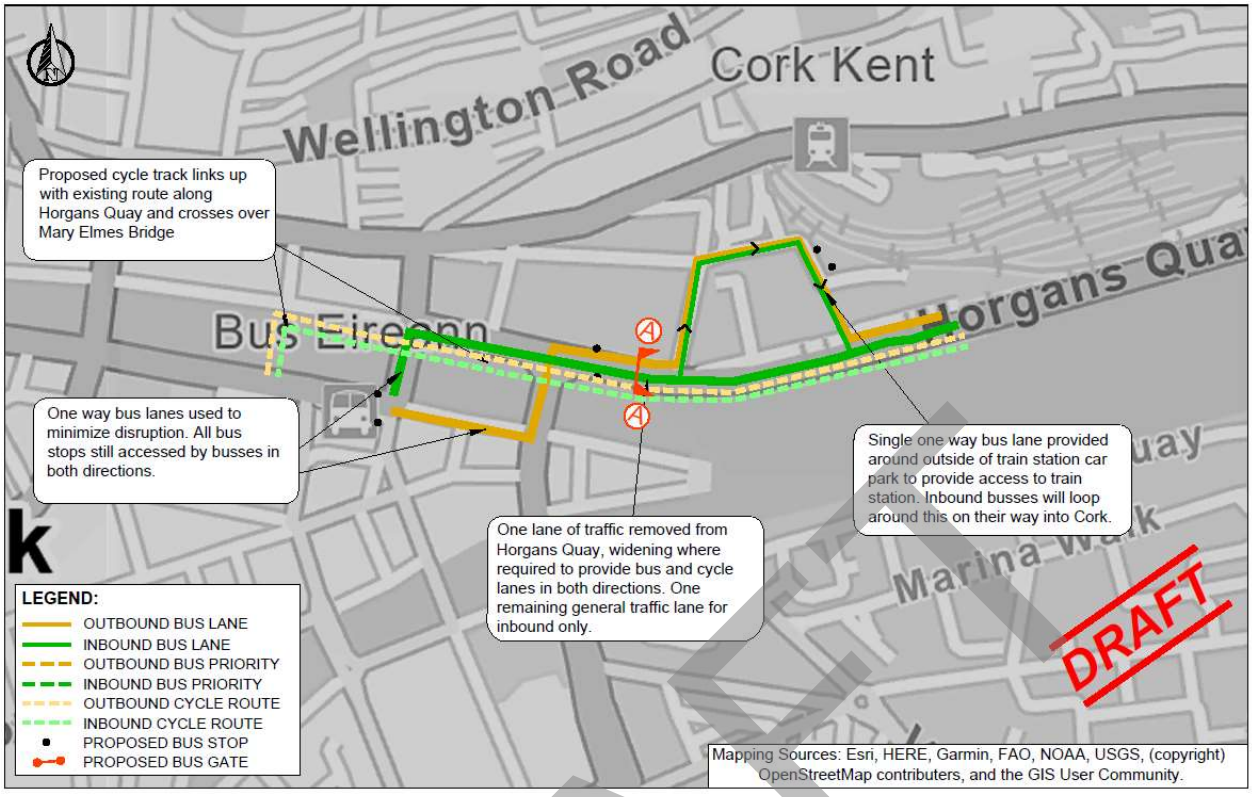


Figure 7-12

Bus Route:

Currently this section of Horgan's Quay comprises of two eastbound general traffic lanes, one eastbound bus lane, and a footpath along the north side only of the carriageway. The route is bounded by Kent Train Station car park and private land on the North and Tivoli Shipping Dock A on the South. The general width of the carriageway is approximately 11.5m.

This route option would provide dedicated bus lanes in both directions along Horan's Quay by removing one eastbound lane of general traffic and replacing it with an outbound bus lane. On Railway Street and Alfred Street a single lane of traffic would be converted to a bus lane to allow busses to access Kent Train Station in a one way loop. Horgan's Quay between the junction with Alfred Street and Railway Street would have an inbound bus lane and traffic lane only with busses using the one way loop to access Kent Station. Outbound busses would also use Railway Street and then Alfred Street through this section.

Cycle Route:

New cycle provision would be provided along Horgan's Quay in both directions, with widening required in some locations to achieve this, this links up with the existing cycle infrastructure on Penrose Quay.

One outbound traffic lane also converted to 2 way cycle lane along Lower Glanmire Road, leaving 1 remaining outbound traffic lane.

The route will also provide for pedestrians with walkways both sides of Horgan's Quay for its length.

Bus Stops: Bus stops are provided for inbound and outbound busses outside of Kent Station, and they are provided just east of the Michael Collins bridge.

Cross Sections
A cross-section on Horgan's Quay is presented in Figure 7-13.

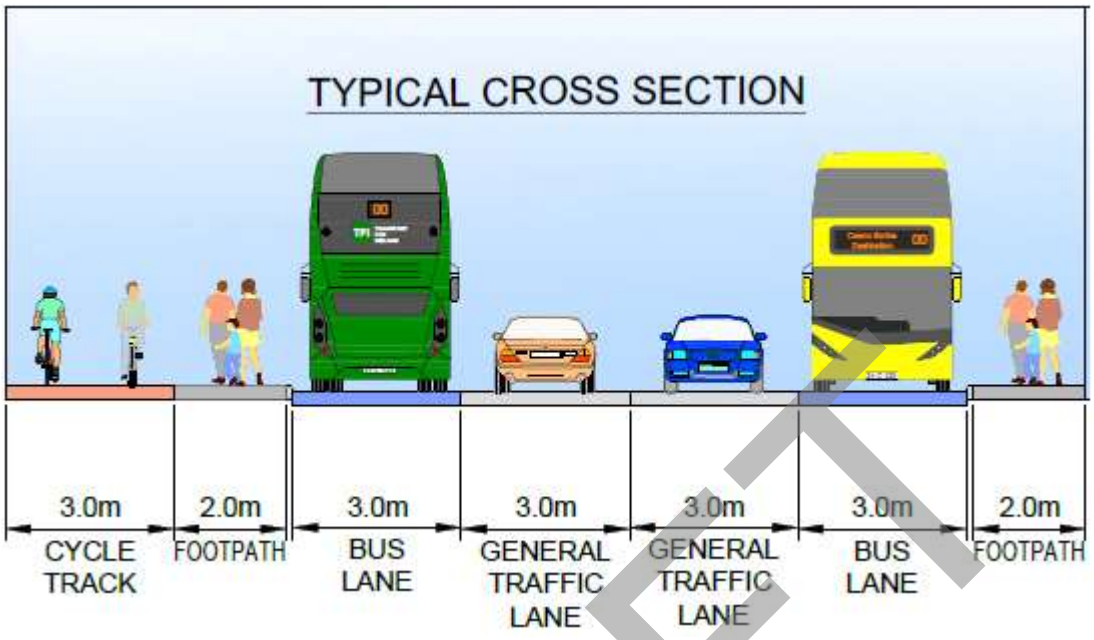


Figure 7-13 Cross Section A-A

7.2.4 Route Option 3:

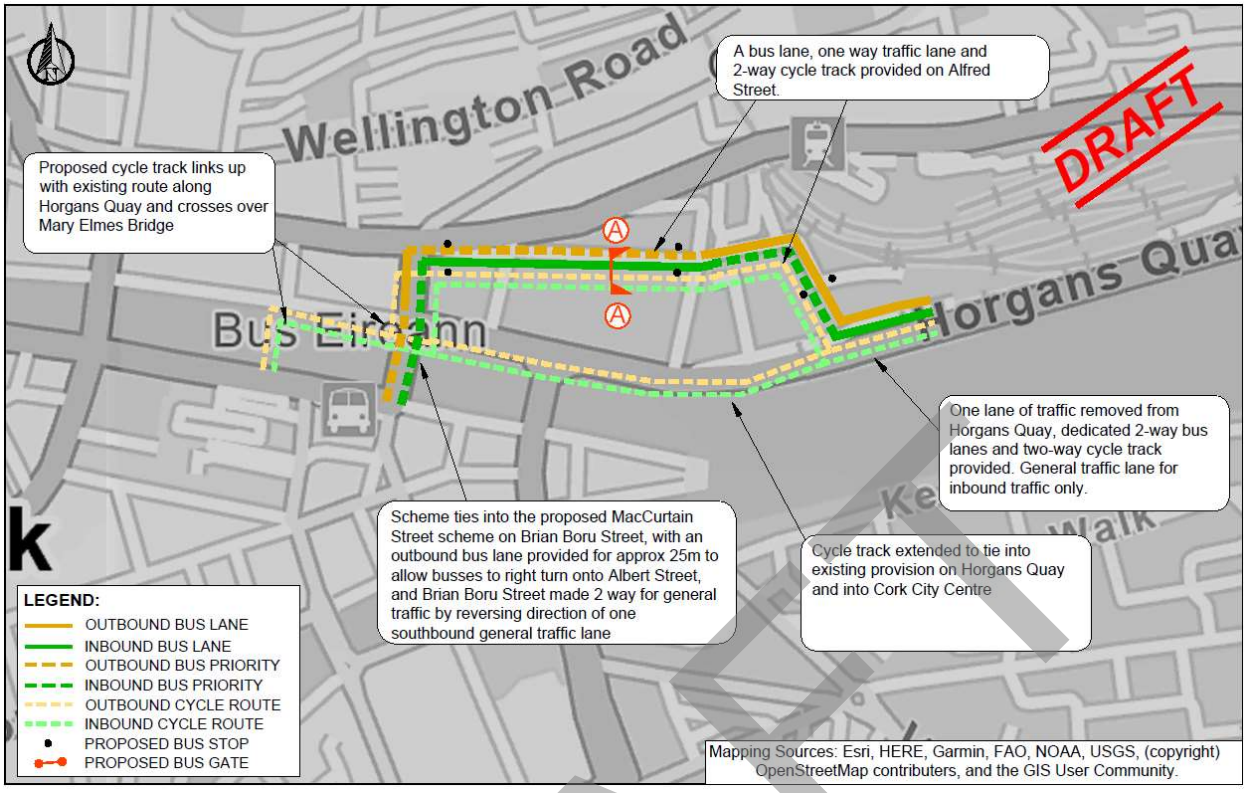


Figure 7-14

Bus Route:
Currently the proposed route comprises of Horgan's Quay, Alfred Street and Brian Boru Street. On Horgan's Quay one lane of general inbound traffic would be converted to an inbound bus lane, and the cross section would be widened to provide two-way dedicated bus lanes, and one inbound general traffic lane.

On Alfred Street, east of Railway Street, the route has an existing cross section with two-way cycle tracks and a single eastbound bus lane, here the cross section would be widened to have a contraflow traffic lane provided adjacent to the bus lane, this traffic lane would only be used for local accesses and therefore would be a quiet route effectively with bus priority.

Between Railway Street and Ship Street the existing route has a cycle track in each direction, traffic lanes in each direction, on street parking and bus stops. There are footpaths on either side for the length of the route and the carriageway is bounded by private buildings. The proposed route through here would reduce the traffic lanes to have a single eastbound traffic lane as far as Railway Street, this would only serve local accesses so would be a quiet route shared by the outbound busses, this allows parking on the north of Alfred Street to remain in place. The westbound traffic lane would be converted to a dedicated bus lane, meaning that Alfred Street would be one way for general traffic.

West of Ship Street the existing eastbound bus only route would be widened to have dedicated bus lanes in both directions, allowing busses only to run through and access MacCurtain Street and Brian Boru Street. This effectively acts as a bus gate and keeps Alfred Street a quiet route with bus priority.

On Brian Boru Street the route would tie into the proposed MacCurtain Street scheme design, with an outbound bus lane provided for the right turn movement onto Alfred Street, and apart from that general traffic lanes in both direction, this is achieved by reversing the direction of one of the existing southbound lanes of general traffic.

Cycle Route:

A two-way cycle track would be provided along Horgan's Quay which would tie into the existing provision there which continues into Cork City Centre. A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Bus Stops: Bus stops are provided for inbound and outbound busses outside of Kent Station, just west of Railway Street, and on Alfred Street before the junction with MacCurtain Street.

A cross-section Alfred Street is presented in Figure 7-15.

Cross Sections

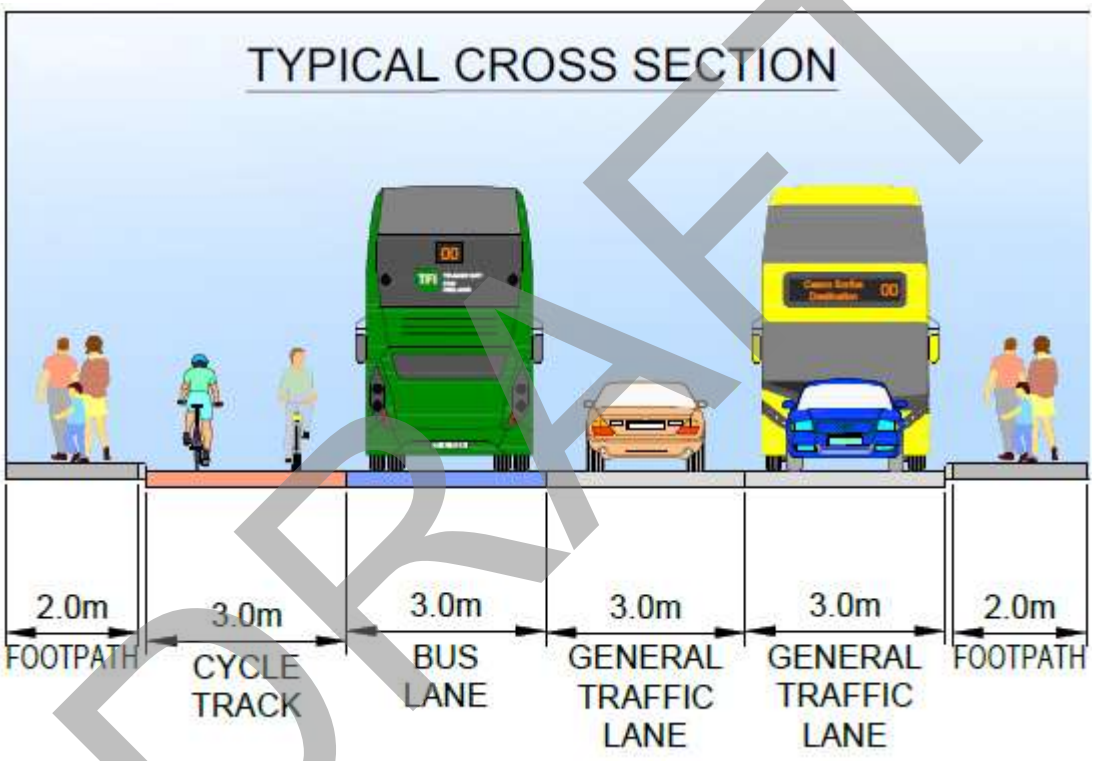


Figure 7-15

7.2.5 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 1 STC are presented in Appendix A.

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 7-3 below.
Table 7-3

Set 3				
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 1 performs the best overall, followed by Option 3 and then Option 2. Option 3 scores best for capital cost due to requiring less widening, infrastructure and land take on Horgan's Quay and being better able to utilise existing lanes. However, Option 1 scores better for average journey time and journey time reliability due to having the most direct route with less junctions. Option 3 also requires busses to share with general traffic for a larger proportion of its route than the other options, and for this reason scores worse for Journey Time Reliability.

Regarding ‘Integration’ Option 3 performs best. This is because it ties into the MacCurtain Street Public Transport Improvement Scheme, whereas the other two options would require changes to this scheme and reduce the number of general traffic lanes on some of the major through routes in Cork City Centre, this could have a large negative impact on the traffic network. Option 3 also improves the cycle connectivity between MacCurtain Street and Kent Station, as well as providing a link along Horgan’s Quay, and for this reason performs better for Cycle Network Integration. This option also maintains two inbound lanes for general traffic on Horgan’s Quay.

In terms of ‘Accessibility and Social Inclusion’, given that this option selection covers a small area without significant differences in what is nearby, all options are neutral when compared to each other.

Regarding ‘Road Safety’, Option 1 has fewer turning movements and interfaces with less junctions so performs best under this criterion, Option 2 performs worse than the other two options due to having more junctions and turning movements.

The options overall perform similarly on the Environmental criteria. Option 3 performs slightly better for water resources because the works mainly take place away from the Lee and the associated downstream cork Habour SPA, for this reason Option 3 performs slightly better overall for environment, although this difference is very minor.

7.2.6 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 7-4.

Table 7-4 Route Options Assessment Summary

Section 3			
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**
Economy			
Integration			
Accessibility and Social inclusion			
Safety			
Environment			

Based on the assessment, it has been determined that Route 3 offers the preferred route option for the following reasons:

- It has the lowest cost
- It performs significantly better for integration, as provides bus stops directly outside Kent Station, ties in with the MacCurtain Street scheme allowing better integration of cross city bus routes and doesn't remove general traffic lanes on Horgan's Quay.

Route 1 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.

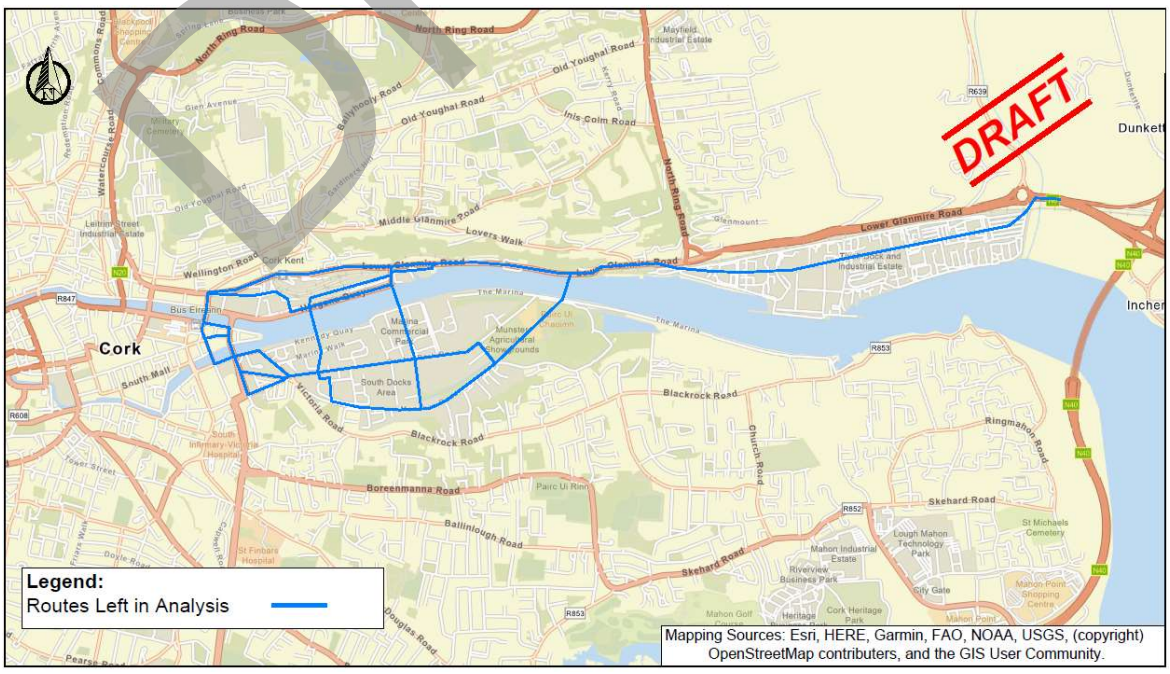


Figure 7-16

7.3 Section 2 Set 3 – Water Street to Cork City Centre

7.3.1 Introduction and Route Description

Following the Stage 1 sifting process and the subset assessment of Horgan's Quay to Parnell Place, four possible route options were created to determine the optimum route between Water Street and Cork City Centre.

Two-way buses on the western section Horgan's Quay, the winner of this set was then used as part of a larger set to compare the best options for the whole of Horgan's Quay:

- Route Option 1: Using a one-way loop around Lower Glanmire Road, Horgan's Quay and Alfred Street. Then two-way busses on Brian Boru Street.
- Route Option 2: Using two-way busses on Lower Glanmire Road and Brian Boru Street.
- Route Option 3: Using two-way busses on Horgan's Quay, Alfred Street and Brian Boru Street.
- Route Option 4: Using two-way busses on a new link just North of Horgan's Quay, Alfred Street and Brian Boru Street.

All these routes start at the junction between Water Street and Lower Glanmire Road, and finish in Cork City Centre on St Patricks Quay at the Bus Station.

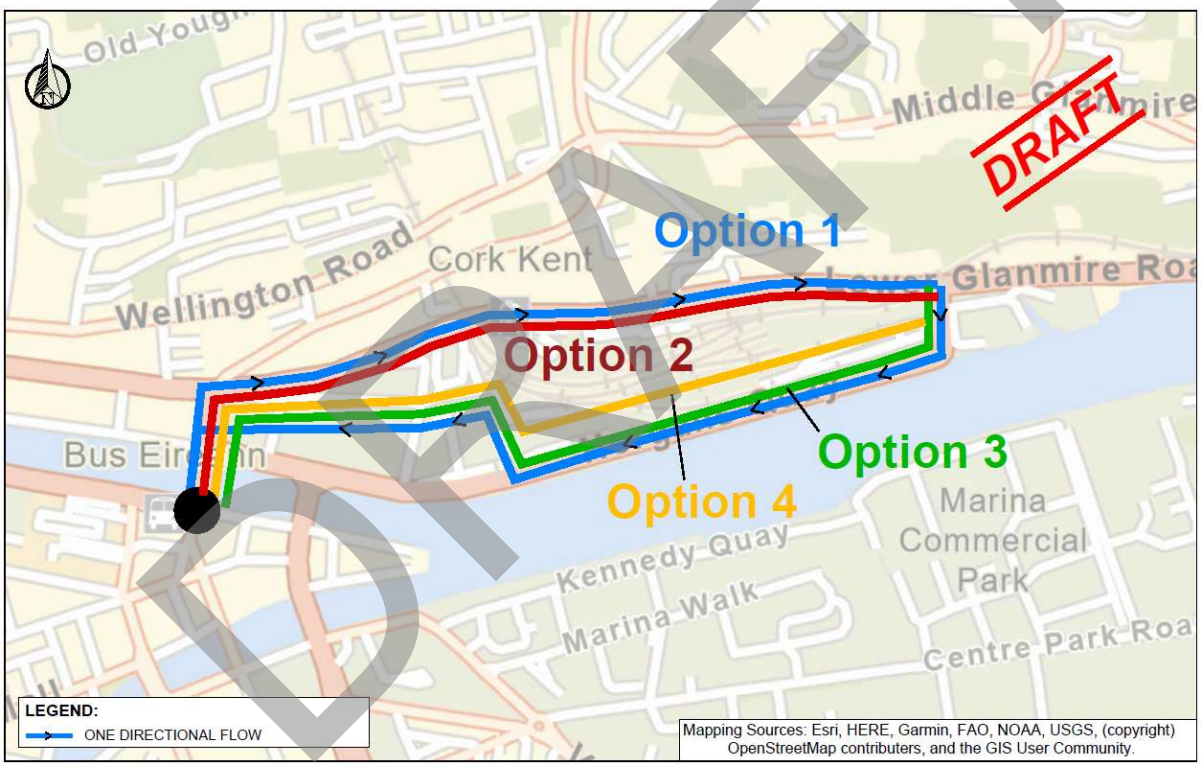


Figure 7-17

7.3.2 Route Option 1:

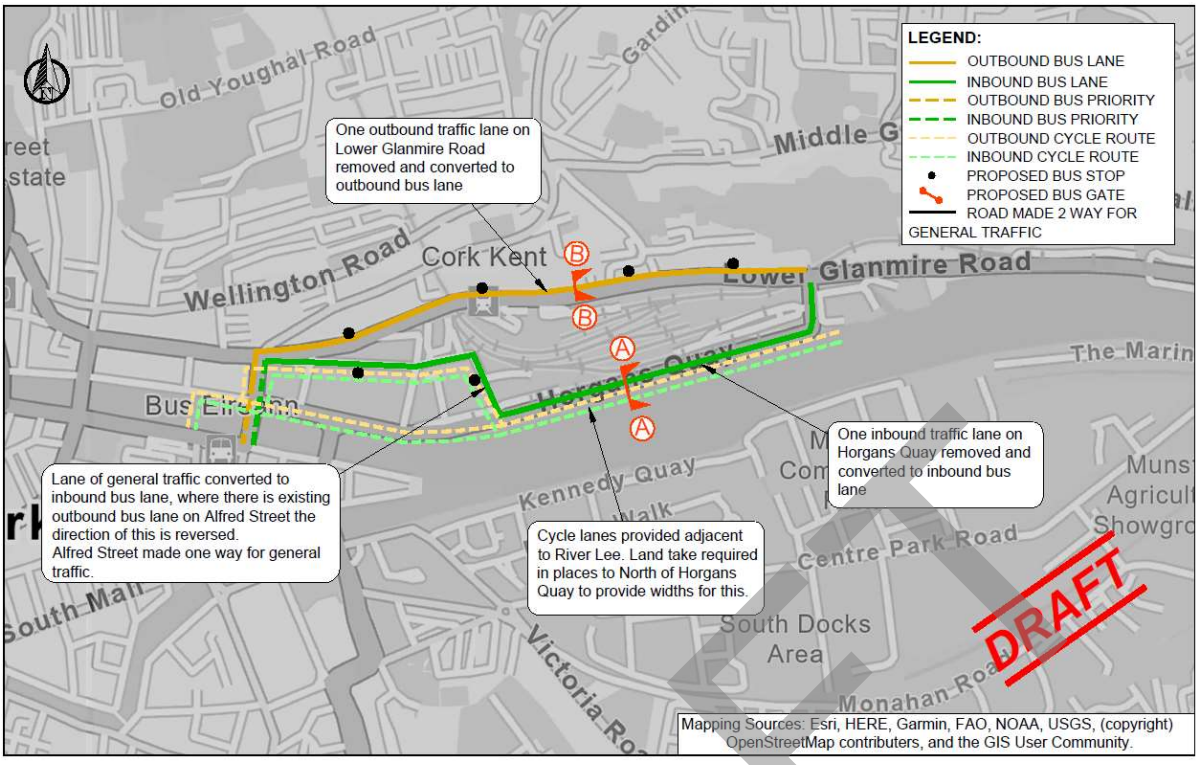


Figure 7-18

Bus Route:
The proposed route mainly uses Lower Glanmire Road and Horgan's Quay, with small sections on Water Street, Alfred Street and Brian Boru Street.

Lower Glanmire Road currently has a cross section of twoeastbound traffic lanes, on street parking for residents on both sides, and footpaths on both sides, at its narrowest point it is approximately 15m boundary to boundary and is bounded by properties on either side. Horgan's Quay is currently made up of 2 lanes of westbound traffic, with a wide footpath on the northern side only, it is bounded by the walls of the train station depot and the river Lee and has a total carriageway width of approximately 12.8m.

This route option would work in a one way loop with outbound busses on Lower Glanmire Road and Brian Boru Street and inbound busses on Horgan's Quay and Water Street. On these roads a single lane of traffic would be removed and replaced with a bus lane, with the rest of the cross section remaining the same.

On Alfred Street, inbound busses would be given a dedicated bus lane, to achieve this without impacting the on street parking, Alfred Street would be made one way only for general traffic. A new general traffic lane would be provided between Railway Street and Horgan's Quay, where there is currently only a bus lane, to allow the one way traffic to pass through and access this area.

Cycle Route:
A two-way cycle track would be provided along Horgan's Quay which would tie into the existing provision there and continue into Cork City Centre.

A separate two way cycle track would follow the inbound bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Provision for pedestrians would remain the same as existing.

Bus Stops: Bus stops are provided for inbound and outbound busses on Horgan's Quay outside of Kent Station, and on St Patricks Quay by Ship Street. For outbound busses a total of four bus stops would be provided on Lower Glanmire Road to match with the positions of existing bus stops.

Cross Sections

Indicative cross sections showing the proposed layouts of Lower Glanmire Road and Horgan's Quay are shown in Figure 7-19 and Figure 7-20 respectively.

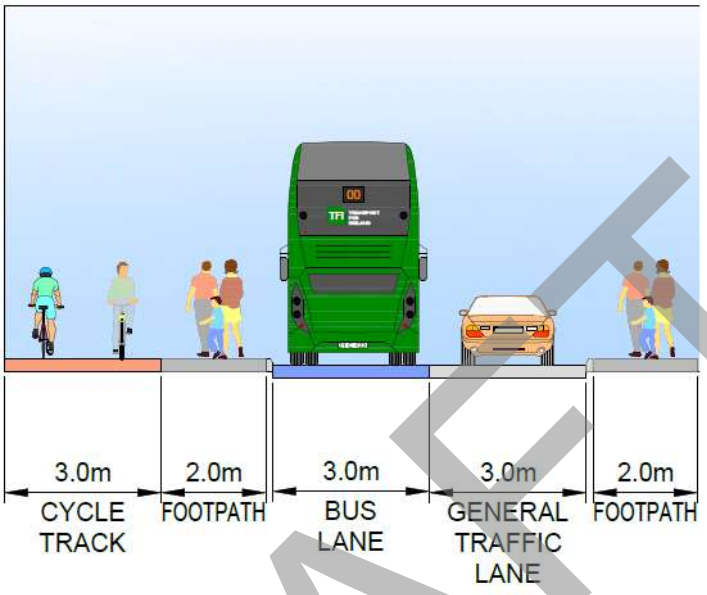


Figure 7-19 Cross Section A-A

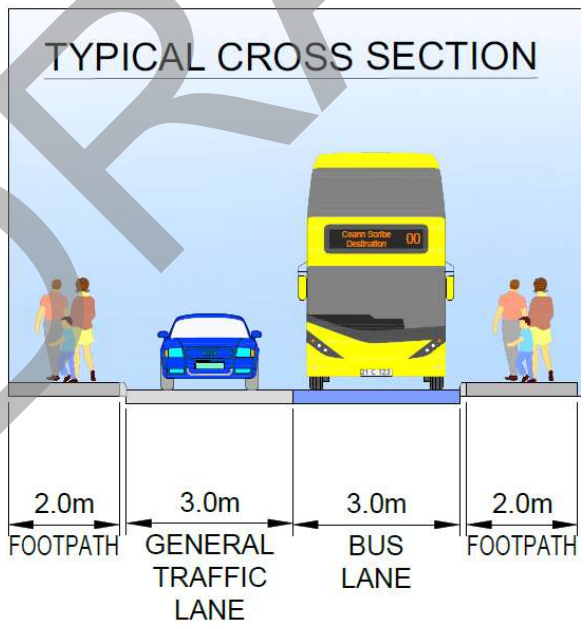


Figure 7-20 B-B

7.3.3 Route Option 2:

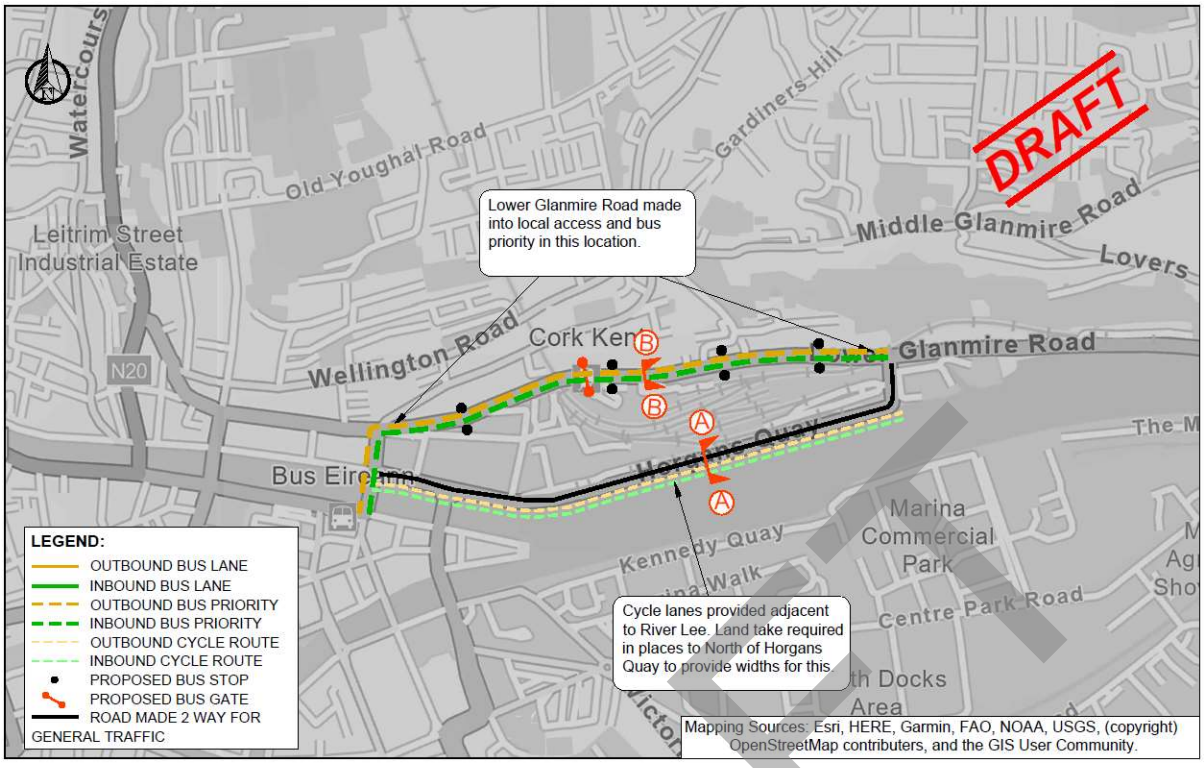


Figure 7-21

Bus Route:
The proposed route runs for 1.1km on Lower Glanmire Road and 170m on Brian Boru Street. Lower Glanmire Road currently has a cross section of two eastbound traffic lanes, on street parking for residents on both sides, and footpaths on both sides, at its narrowest point it is approximately 15m boundary to boundary and is bounded by properties on either side.

This route option would introduce a bus gate on Lower Glanmire Road to the east of Grattons Hill, this would effectively make the section of Lower Glanmire Road access only for general traffic while allowing busses to pass through in either direction. Only minor changes would be required to the road markings and signs for this.

On Brian Boru Street a bus lane would be provided northbound for approx. 35m before the turning onto Lower Glanmire Road to give busses priority for this movement. The rest of Brian Boru Street would be for general traffic only as per the MacCurtain Street Scheme.

Horgan's Quay would be made two-way for general traffic by removing one of the inbound lanes of traffic and making it outbound, to account of the removal of the through route on Lower Glanmire Road.

Cycle Route:
A two-way cycle track would be provided along Horgan's Quay which would tie into the existing provision there and continue into Cork City Centre.

A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Bus Stops: A total of four bus stops in both directions are provided to match with the positions of existing bus stops.

Cross Sections

Indicative cross sections showing the proposed layouts of Lower Glanmire Road and Horgan's Quay are shown in Figure 7-22 and Figure 7-23 respectively.

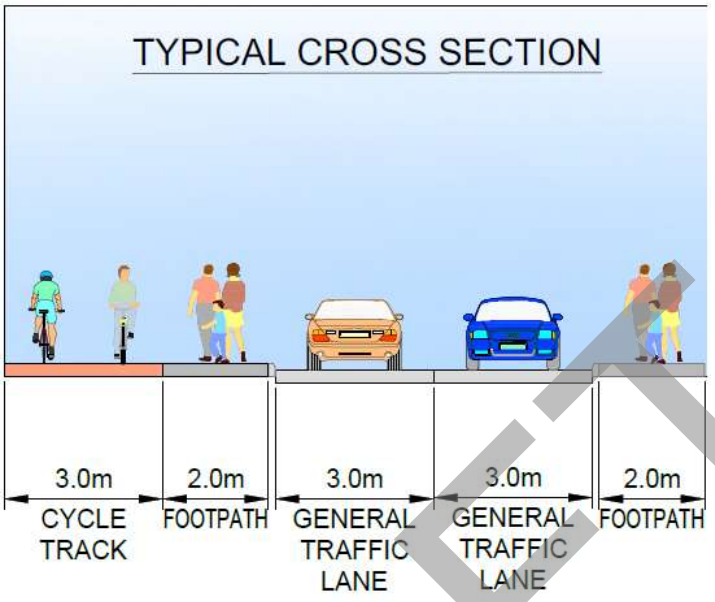


Figure 7-22 A-A

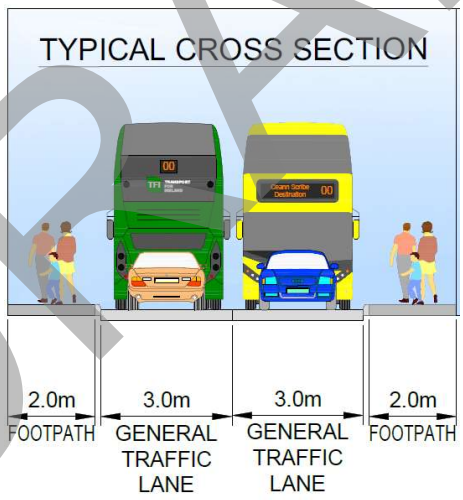


Figure 7-23 B-B

7.3.4 Route Option 3:

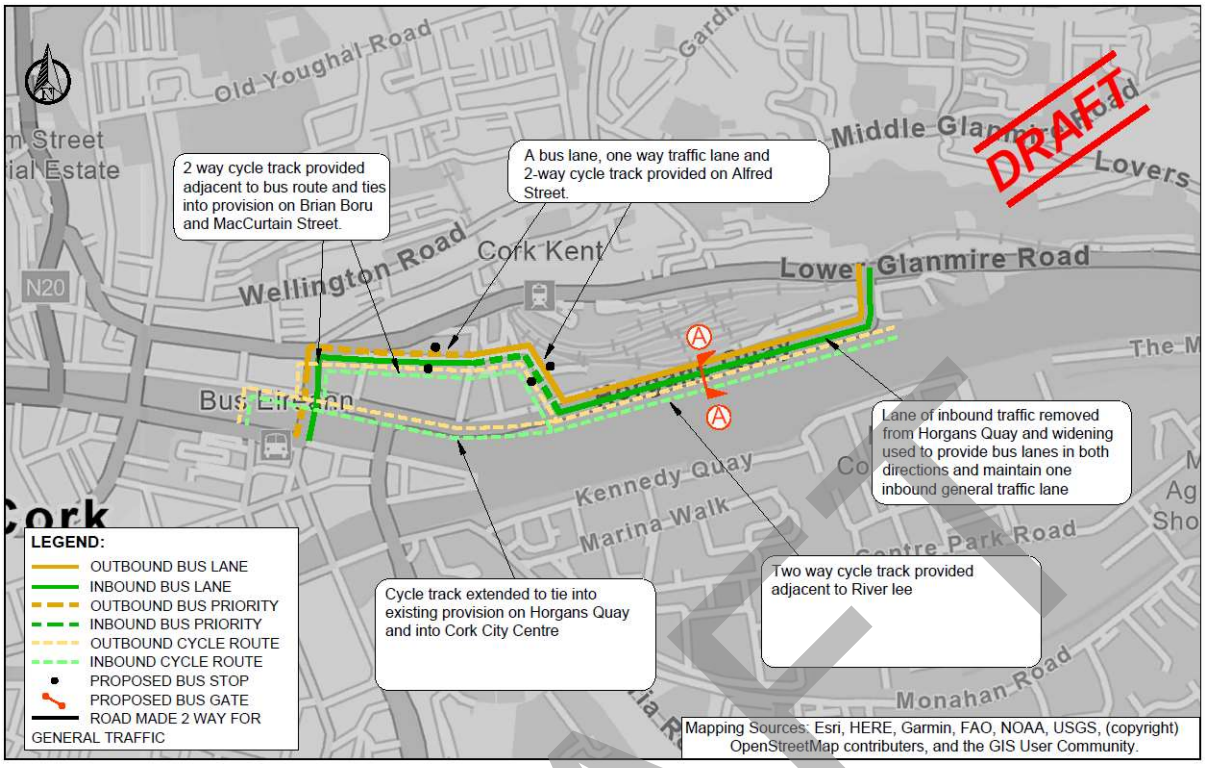


Figure 7-24

Bus Route:
The proposed route runs along Water Street, Horgan's Quay and Alfred Street from Lower Glanmire Road and into the Cork City Centre on Brian Boru Street.

On Water Street and Horgan's Quay one lane of general inbound traffic would be converted to an inbound bus lane, and the cross section would be widened to provide an outbound bus lane as well as maintaining one inbound general traffic lane, some land take to the north and south of the alignment would be required for this.

On Alfred Street, east of Railway Street, the route has an existing cross section with two-way cycle tracks and a single eastbound bus lane, here the cross section would be widened to have a contraflow traffic lane provided adjacent to the bus lane, this traffic lane would only be used for local accesses and therefore would be a quiet route effectively with bus priority.

Between Railway Street and Ship Street the existing route has a cycle track in each direction, traffic lanes in each direction, on street parking and bus stops. There are footpaths on either side for the length of the route and the carriageway is bounded by private buildings. The proposed route through here would reduce the traffic lanes to have a single eastbound traffic lane as far as Railway Street, this would only serve local accesses so would be a quiet route shared by the outbound busses, this allows parking on the north of Alfred Street to remain in place. The westbound traffic lane would be converted to a dedicated bus lane, meaning that Alfred Street would be one way for general traffic.

West of Ship Street the existing eastbound bus only route would be widened to have dedicated bus lanes in both directions, allowing busses only to run through and access MacCurtain Street and Brian Boru Street. This effectively acts as a bus gate and keeps Alfred Street a quiet route with bus priority.

On Brian Boru Street the route would tie into the proposed MacCurtain Street scheme design, with an outbound bus lane provided for the right turn movement onto Alfred Street, and apart from that general

traffic lanes in both direction, this is achieved by reversing the direction of one of the existing southbound lanes of general traffic.

Cycle Route and pedestrian provision:
A two-way cycle track would be provided along Horgan's Quay which would tie into the existing provision there and continue into Cork City Centre.

A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Pedestrian footpaths would be provided either side of the road along Horgan's Quay.

Bus Stops: Two bus stops are provided in each direction to match with the positions of existing bus stops, one set by Kent Station and one set by Ship Street.

An Indicative cross section showing the proposed layout on Lower Glanmire Road is shown in Figure 7-25 A-A.

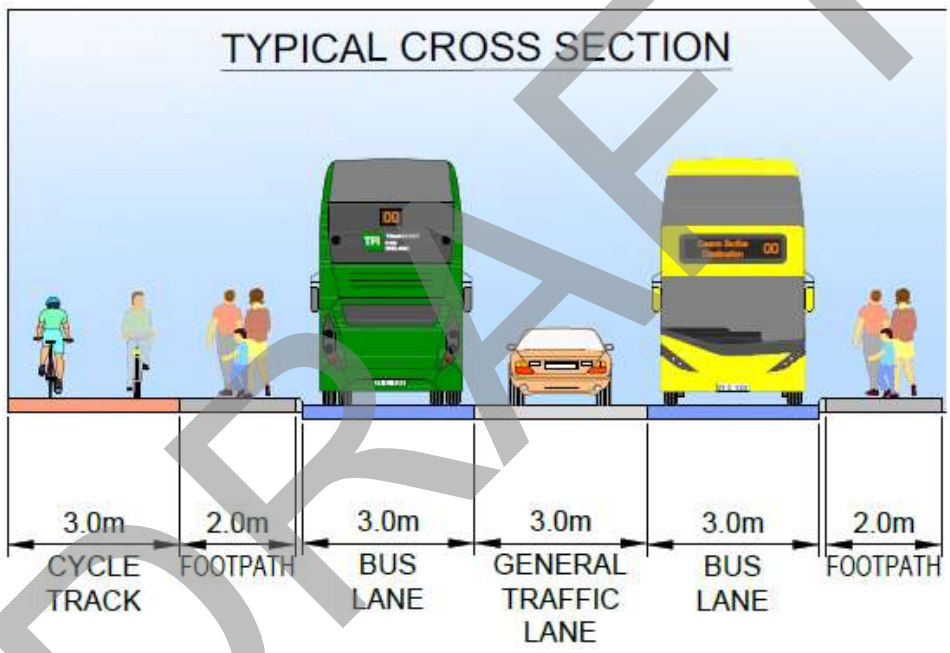


Figure 7-25 A-A

7.3.5 Route Option 4:

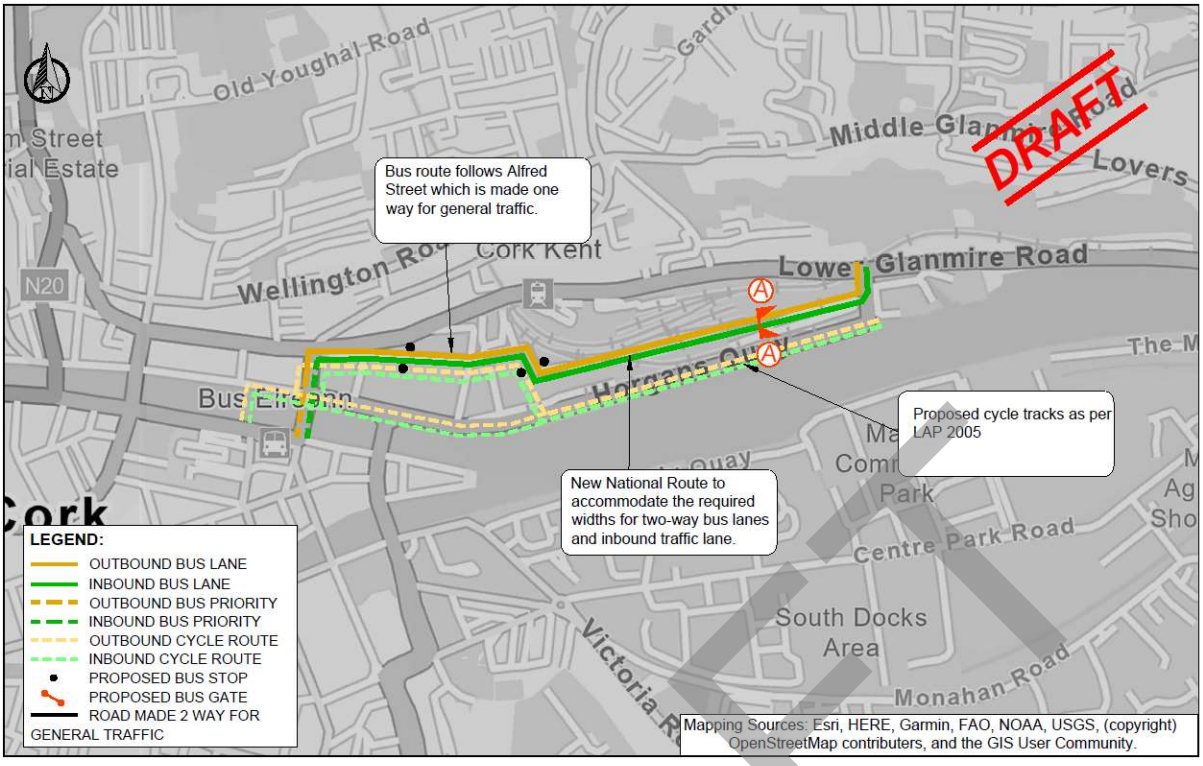


Figure 7-26

Bus Route:
The proposed route runs from Water Street to a new link between Horgan's Quay and the train station to Horgan's Quay and into Cork City Centre at St Patricks Quay. The new link is currently an industrial area part of the train station depo, and Horgan's Quay is currently made up of 2 lanes of westbound traffic, with a wide footpath on the northern side only, it is bounded by the walls of the train station depot and the river Lee and has a total carriageway width of approximately 12.8m.

This route option would involve creating a new link through the industrial area that accommodates the required widths for two-way bus lanes and a westbound traffic lane, the link passes by the South Entrance to Kent Station, and through Kent Station car park before joining Horgan's Quay. Horgan's Quay will be changed to the same cross section as this new link with some widening to the north required for this.

Cycle Route and pedestrian provision:
A two-way cycle track would be provided along Horgan's Quay which would tie into the existing provision there and continue into Cork City Centre.

A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Pedestrian footpaths would be provided either side of the road along the new link, other than this pedestrian provision is to remain the same.

Bus Stops: Two bus stops are provided in each direction to match with the positions of existing bus stops, one set by Kent Station and one set by Ship Street.

Cross Sections

An indicative cross section showing the proposed layout of New National Road is shown in Figure 7-27.

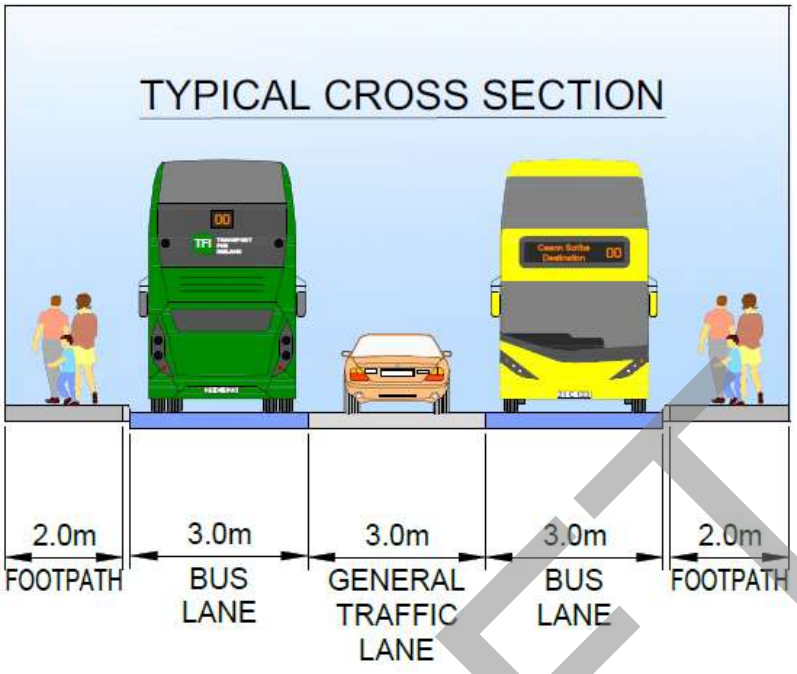


Figure 7-27 A-A

7.3.6 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 1 STC are presented in Appendix A.

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 7-5 below.

Table 7-5

Water Street to Cork City Centre					
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**	**Route 4**
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' Option 2 has the lowest capital cost due to utilising bus gates and making only minor changes to the road cross section, this is followed by Options 1 & 3. Option 4 would be significantly more expensive as a new carriageway would have to be constructed and land take would be required for this. Journey times are generally similar due to a similar route length and number of junctions for the options,

with Option 2 performing slightly worse due to the larger number of bus stops on the route. Option 2 also provides the lowest proportion of dedicated bus lanes for the route so performs worse for journey time reliability, with options 1, 3 & 4 performing similarly for this criterion as they have a similar proportion of bus lanes and junctions as each other.

Regarding 'Land Use Integration' Options 3 and 4 best serves the new development lands along Horgan's Quay, Option 4 scores best as it completes a new section of road that was identified in the North Docks LAP. Options 2, 3 and 4 pick up a similar catchment to each other due to having bus stops in similar locations, whereas Option 2 picks up a lower overall catchment because the bus stops for inbound and outbound are located away from each other. In terms of transport integration Options 1 & 2 would impact traffic on both Lower Glanmire Road and Horgan's Quay, whereas Options 3 & 4 would impact Horgan's Quay only, for this reason 3 & 4 perform better for transport integration. All options are similar for cyclist integration as they all have a dedicated cycle track on Horgan's Quay as well as a route that connects MacCurtain Street and Kent Station. Option 4 performs better for pedestrian integration as it takes traffic away from Horgan's Quay allowing this to be an amenable area for pedestrians and also provides a new pedestrian link along the new National Road.

In terms of 'Accessibility and Social Inclusion' Route 1 scores worse as the split route means the bus stops in opposite directions would not be located close to one another.

Regarding 'Road Safety' all options have a similar number of junctions and so score equally.

In terms of "Environment" Option 4 require more earthworks, particularly in the industrial area to the south of Kent Train Station, and therefore perform worse for the soil and geology criterion. Option 4 would also segregate the lands belonging to Iarnród Éireann and for this reason Option 4 scores worse for the land use and built environment criterion.

7.3.7 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 7-6.

Table 7-6 Route Options Assessment Summary

Section 1				
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**	**Route 4**
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

]

Based on the assessment, it has been determined that Route 3 offers the preferred route option for the following reasons:

- It has a lower cost that Option 4 and a faster journey time and better journey time reliability than Option 2.
- It performs well for all aspects of integration and environment.

Route 3 is identified as the emerging preferred route for this section and as such the other links considered here have been removed from the spiders web, resulting in the reduced spiders web shown below.

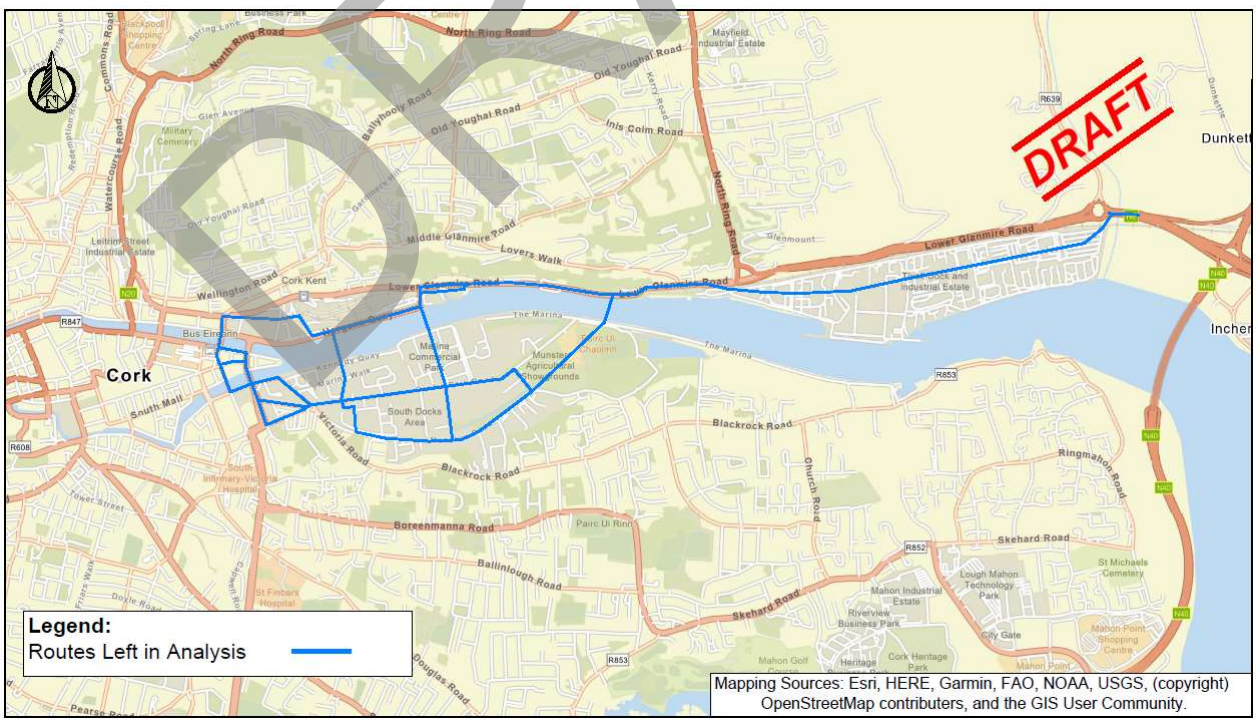


Figure 7-28

7.4 Section 2 Set 4 - Lower Glanmire Road to Water Street

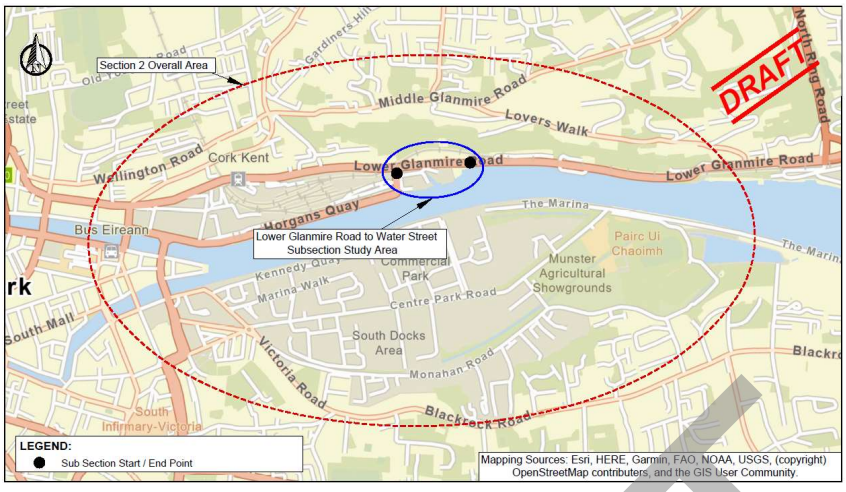


Figure 7-29

7.4.1 Introduction and Route Description

Currently, this section of the Lower Glanmire Road comprises single traffic lanes in each direction with footpaths and buildings fronting onto the footpaths on both sides of the road. As a result, road widening to provide both dedicated bus lanes and two-way traffic lanes is not viable. The narrowest boundary to boundary point on this section is approx. 11m. Three viable options were created to provide bus priority through this constrained section of Lower Glanmire Road as follows.

- Route Option 1: Using the area to the south of the Old Harbour Commission Warehouse
- Route Option 2: Using Lower Glanmire Road.
- Route Option 3: Using a one-way system to the south of the Old Harbour Commission Warehouse and Lower Glanmire Road.

All these routes start approx. 50m to the east of the Beale's Hill and finish at or near the junction of Lower Glanmire Road and Water Street.

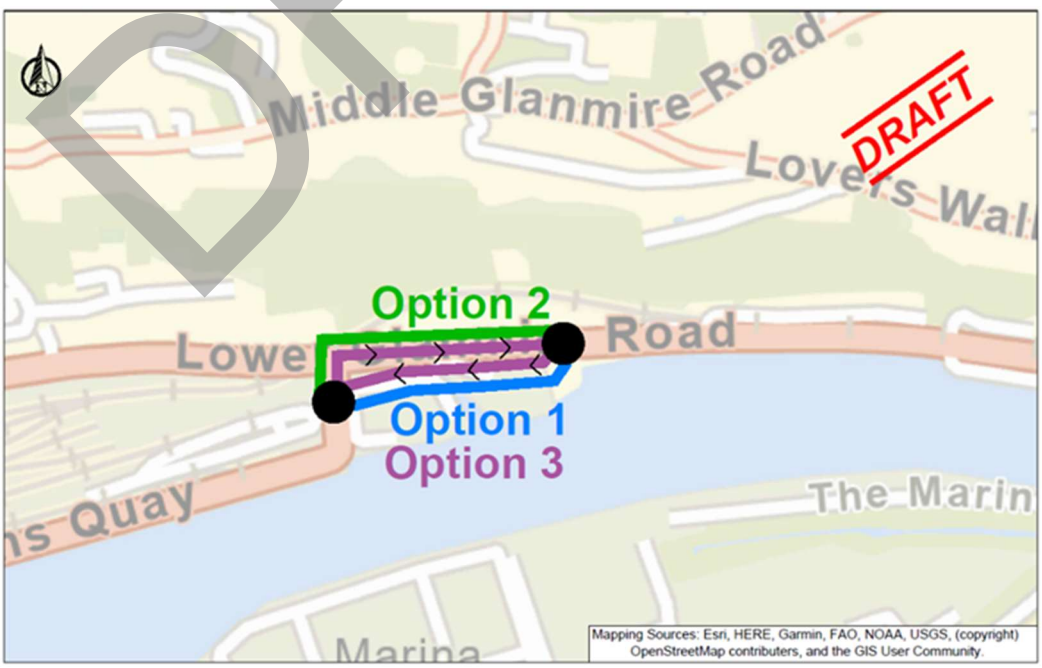


Figure 7-30

7.4.2 Route Option 1

Indicative Scheme Design

Figure 7-31 illustrates the indicative scheme design for Route Option 1 as well as the location of an indicative cross-section.

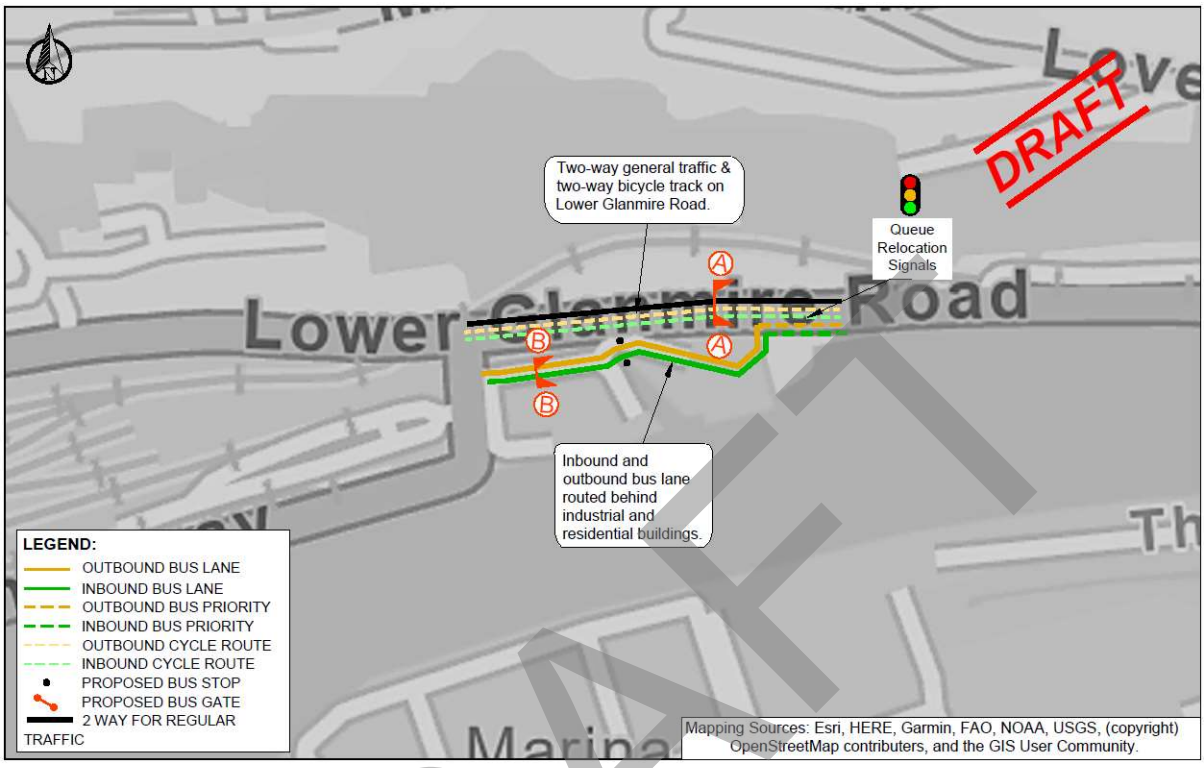


Figure 7-31 Option 1 Indicative Scheme Design

Route for Buses:

This route option would utilise the existing industrial area to the south of the Old Harbour Commission Warehouse. Inbound buses would divert off the Lower Glanmire Road to the proposed route south of the existing buildings. Outbound buses would also follow the new route from Water Street to Lower Glanmire Road. A queue relocation signals would provide priority for both inbound and outbound buses on the route where widths are constrained on Lower Glanmire Road. The outbound bus would have to cross lanes of general traffic in two locations to reach the new proposed route.

Route for Cyclists:

A new cycle track would be constructed on Lower Glanmire Road through the reallocation of road space and the narrowing of existing traffic lanes and footpaths. The cycle route would be located on the southern side of Lower Glanmire Road adjacent to the two-way traffic lanes. This route would also accommodate pedestrians.

Bus Stops: One bus stop is proposed for each inbound and outbound buses on this route, as shown in Figure 7-31. Appropriate pedestrian facilities would be constructed to provide appropriate access to/from the bus stops.

Cross Sections

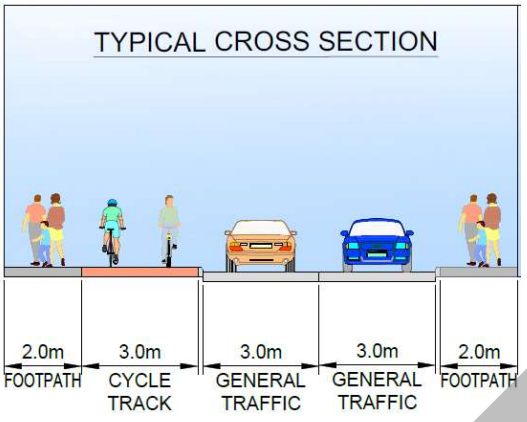


Figure 7-32 A-A

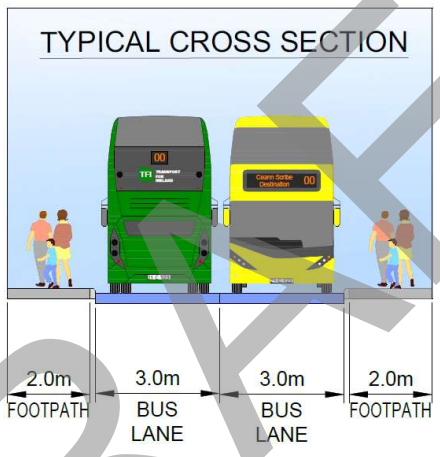


Figure 7-33 B-B

7.4.3 Route Option 2

Indicative Scheme Design

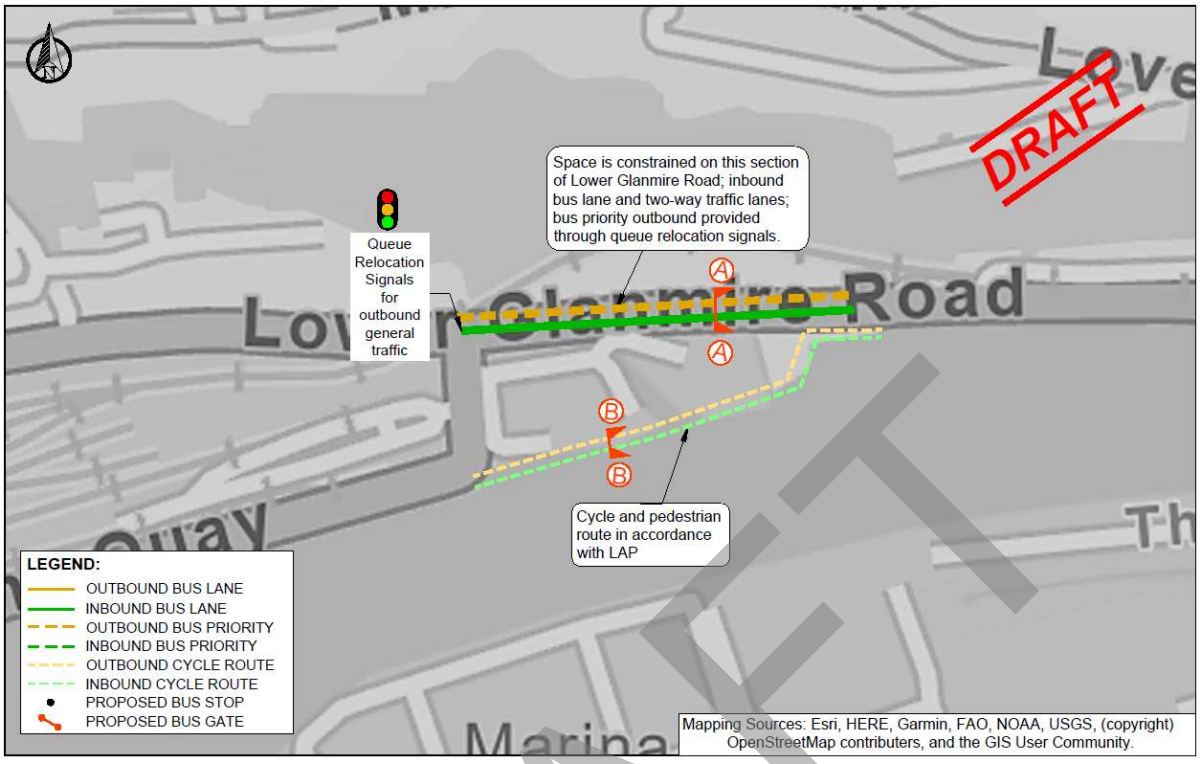


Figure 7-34 Option 2 Indicative Scheme Design

Route for Buses:

Currently, this section of the Lower Glanmire Road comprises single traffic lanes with footpaths and buildings fronting onto the footpaths, particularly on the south side. As such, the reallocation of road space between the boundaries including widening to provide the dedicated bus lanes and two-way traffic lanes is not viable. The narrowest boundary to boundary point of this section is approx. 11m.

This route option would provide a dedicated inbound bus lane on the existing route as well as accommodating two-way traffic. To accommodate bus priority for outbound buses, queue relocation traffic signals would be provided for general outbound traffic. As such, the signals would create priority for approaching outbound buses. The outbound bus would use the general traffic lane through the constrained area and re-join the proposed outbound dedicated bus lane to the east on Lower Glanmire Road.

Route for Cyclists:

A new cycle track would be constructed along the southern boundary of the Industrial area. This proposed route is in accordance with a previous Local Area Plan (LAP) for the area. This route will also accommodate pedestrians.

Bus Stops: Given that this is a very short section of the route, one bus stop would be provided in each direction of this route option. Appropriate pedestrian facilities would be constructed to provide appropriate access to/from the bus stops.

Cross Sections

A cross-section on Lower Glanmire Road is presented inFigure 7-35 and an indicative cross-section of the pedestrian/two-way cycle track provided on the southern boundary of the Industrial area is presented in Figure 7-36.

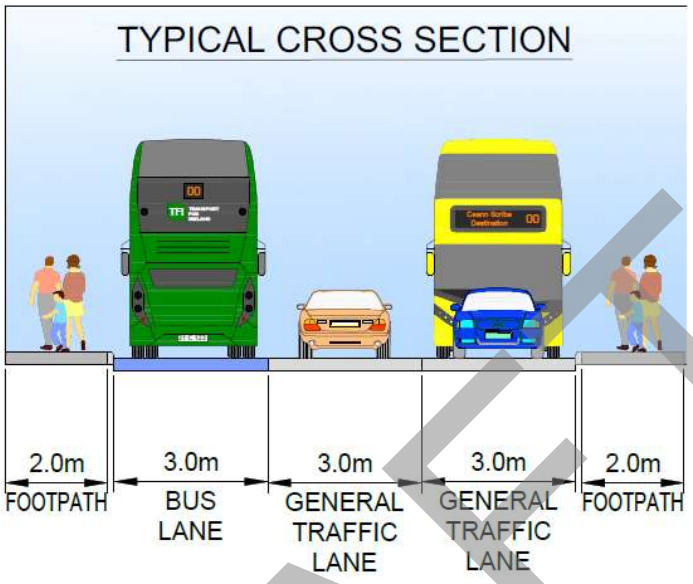


Figure 7-35 A-A

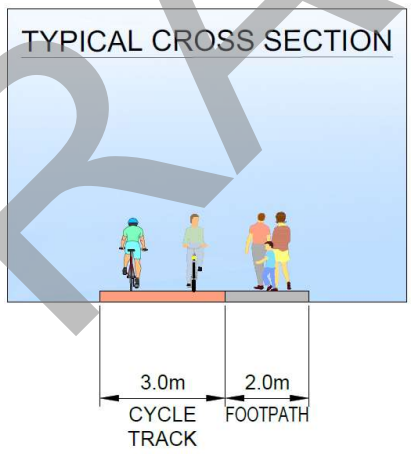


Figure 7-36 B-B

7.4.4 Route Option 3

Indicative Scheme Design

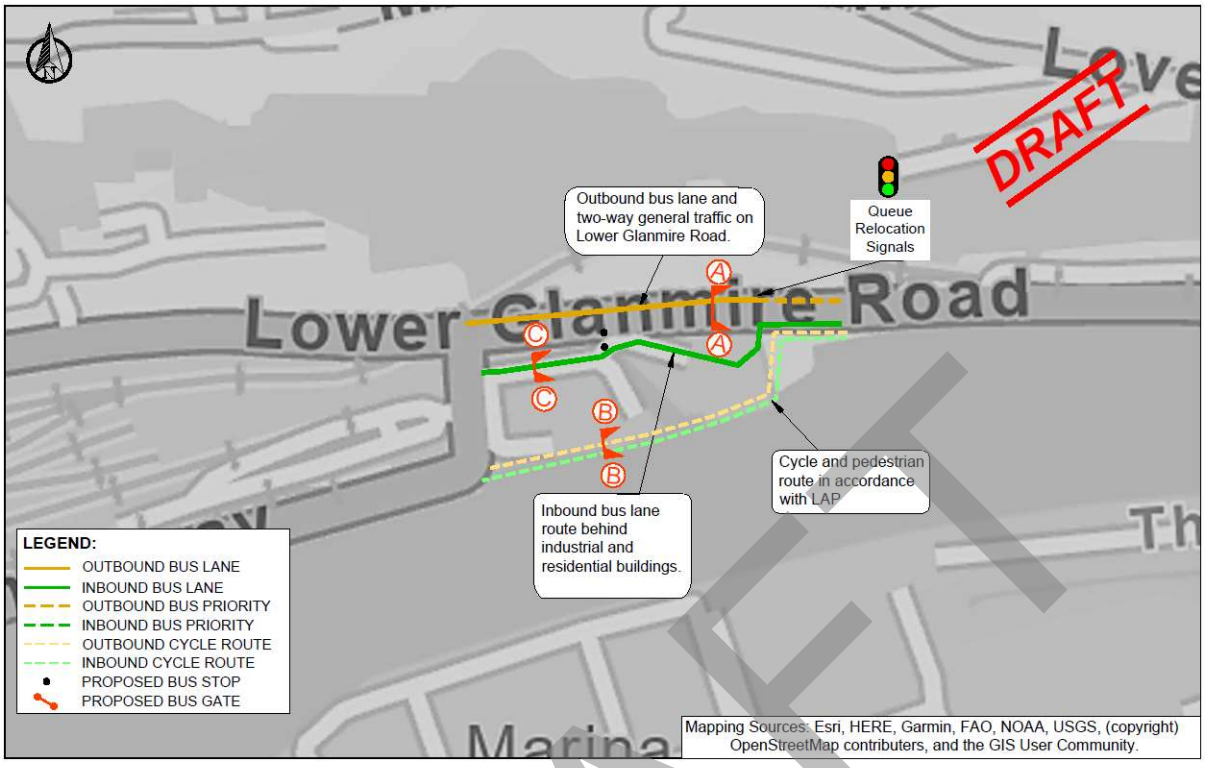


Figure 7-37

Route for Buses:

Currently, this section of Lower Glanmire Road comprises single traffic lanes with footpaths and buildings fronting onto the footpaths, particularly on the south side. As such, the reallocation of road space between the boundaries including widening to provide the dedicated bus lanes and two-way traffic lanes is not viable. The narrowest boundary to boundary point of this section is approx. 11m.

This route option would provide a dedicated inbound bus lane to the south of existing buildings which front onto Lower Glanmire Road. A new route would be created through the Industrial area which would divert inbound buses off Lower Glanmire Road and would re-join the existing road network at Water Street. On Lower Glanmire Road, a dedicated outbound bus lane would be provided up to Beale's Hill, where traffic signals would provide priority for approaching outbound buses. General traffic would be held at the signals and the outbound bus would utilise the general traffic lane before re-joining the dedicated outbound bus lane to the east on Lower Glanmire Road.

Route for Cyclists:

A new cycle track with adjacent pedestrian provision would be constructed along the southern boundary of the industrial area, a lightweight cycle bridge would be constructed over the channel adjacent to the McMahon building providers. This proposed route is in accordance with a previous Local Area Plan (LAP) for the area.

The new bus route will also accommodate pedestrians with new pedestrian provision on both sides of the inbound bus route.

Bus Stops: One bus stop would be provided in each direction of this route option. Appropriate pedestrian facilities would be constructed to provide appropriate access to/from the bus stops.

Cross Sections

A cross-section on Lower Glanmire Road is presented in Figure 7-38 and an indicative cross-section of the pedestrian/two-way cycle track provided on the southern boundary of the Industrial area is presented in Figure 7-39.

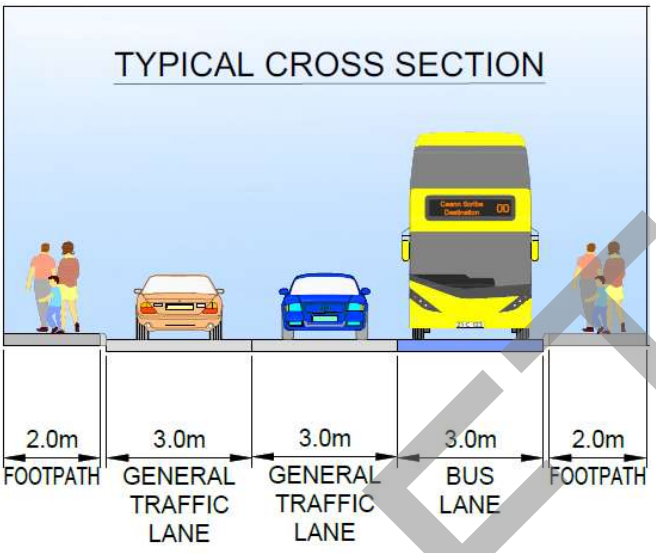


Figure 7-38 Option 1 Indicative Cross Section A-A

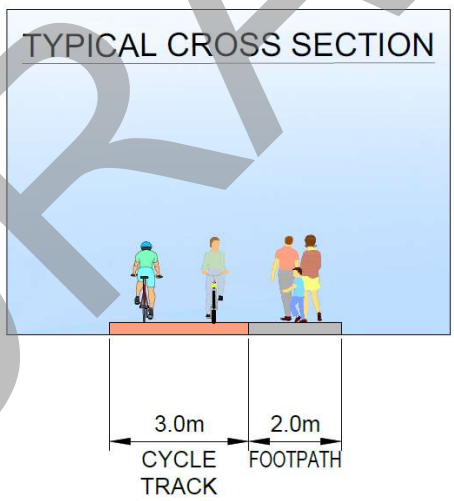


Figure 7-39 Option 1 Indicative Cross Section B-B

Figure 7-40 Option 1 Indicative Cross Section C-C

7.4.5 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 1 STC are presented in Appendix A.

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 7-7 below.

Table 7-7 Route Options Assessment Summary (Sub-Criteria)

Eastern Gateway Bridge to Mill Road					
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3A**	**Route 3B**
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', Option 2 is more advantageous in relation to capital costs as it would not require the construction of a new bus route. Option 3 is the most advantageous in terms of journey time reliability, this

is because it has a smaller length where queue relocation signals are used to provide outbound bus priority when compared to Option 2, and because in two locations the outbound busses would have to cross traffic lanes for Option 1.

Regarding 'Integration', Options 1 and 3 will significantly detract from the economic opportunities of the area by running a bus route/road through the area, it also takes away from the potential of this area as an amenity plaza as was outlined in the North Docks LAP. Option 1 has a long section of queue relocation signals for outbound traffic when compared to Option 3, so performs worse for this criterion based on this. Option 2 requires busses and traffic to cross at two extra points when compared to Option 3 so scores worse for this criterion based on this, therefore overall Option 3 scores best for transport network integration. Option 1 performs worse for cyclist integration as the bus lanes and cycle lanes would have to cross as the cyclists move onto Lower Glanmire Road, whereas for Options 2 & 3 the cyclists and busses do not cross. For this reason, Option 1 performs worse for cyclist integration. Options 2 & 3 also perform better for pedestrian integration because they provide a new route for pedestrians away from traffic and adjacent to the river Lee.

In terms of 'Accessibility and Social Inclusion' all options are neutral when compared to each other due to the route options being close to each other.

Regarding 'Road Safety', Options 1 and 3 introduce additional junctions; there is also limited space and a blind corner when turning off Lower Glanmire Road to access the former industrial area. Therefore Option 2 scores best for this criterion.

In terms of 'Environment', Option 2 is more favourable with regards to archaeological and cultural heritage as it does not send bus routes through the former industrial/shipping area which includes protected structures. For Landscape and visual Options 2 & 3 would have views of two strategic landmark buildings from the proposed new cycle / pedestrian route so perform better for this criterion. Options 1 & 3 also require a new link that would have busses adjacent to the back of the houses that front onto Lower Glanmire Road, and for this reason they perform worse than Option 2 for Noise Vibration and Air Quality. Option 2 is also more in line with the North Docks LAP 2005, as it leaves this land available to be developed as intended in this plan, whereas Options 1 & 3 would stop sever the land with a new bus link, therefore Option 2 also performs better for Land Use and the built Environment.

7.4.6 Conclusion

A summary of the assessment and a relative ranking for each of the five assessment criteria is shown below in Table 7-8:

Table 7-8 Route Options Assessment Summary (Main Criteria)

Eastern Gateway Bridge to Mill Road				
Assessment Criteria	**Route 1**	**Route 2**	**Route 3A**	**Route 3B**
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

Based on the assessments above, it has been determined that Route 2 offers the preferred route option for the following reasons:

- It has a significantly lower cost than the other routes
- It does not create severance of the former industrial/shipping area
- It does not interfere with the existing protected structures or take away from their potential reuse
- It scores better on safety than the other routes
- It provides a better link for cyclists as the cyclists won't be forced to cross a bus lane when using the route.

Routing the cycle track on the southside of the former shipping/industrial area will allow a direct connection to the proposed cycle track on Horgan's Quay and is in accordance with the most recent LAP for the area.

Route 2 is identified as the emerging preferred route for this section and as such the other links considered here have been removed from the spiders web, resulting in the reduced spiders web shown below.

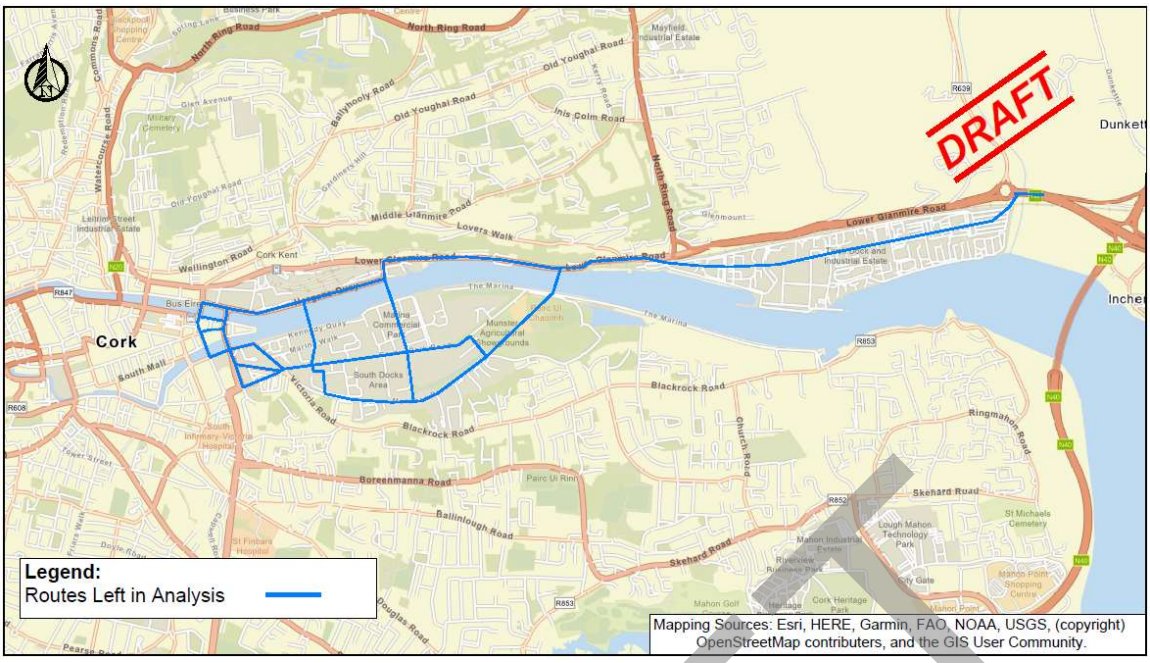


Figure 7-41

7.5 Section 2 Set 5 - Eastern Gateway Bridge to Water Street Bridge

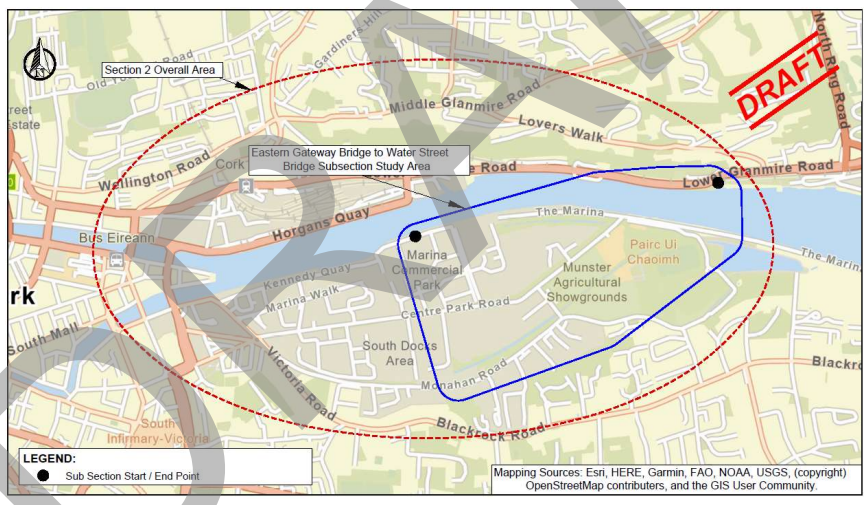


Figure 7-42

7.5.1 Introduction and Route Description

Three possible options were created to determine the optimum route between Eastern Gateway and Water Street proposed bridges connecting the north and south of the river Lee. The preferred option of this set was then used as part of a larger set to compare the best options for STCs that run south of the Lee:

- Route Option 1: Using the Eastern Gateway bridge and link to cross the river Lee and join Monahan Road, turning north off Monahan Road and taking a new link through South Docklands to reach the start of the proposed Water Street Bridge.
- Route Option 2A: Using the Easter Gateway Bridge and link to cross the river Lee and join Monahan Road, turning north onto Marquee Road, then west onto Centre Park Road before turning North through South Docklands to reach the start of the proposed Water Street bridge. Bus priority is provided on Centre Park Road by introducing bus gates
- Route Option 2B: Similar to 2A but dedicated bus lanes provided instead of using bus gates.

These routes start at the northern end of the proposed Eastern Gateway bridge on Lower Glanmire Road and finish at the southern end of the proposed Water Street Bridge connecting the southeast of Horgan's Quay to The Marina.

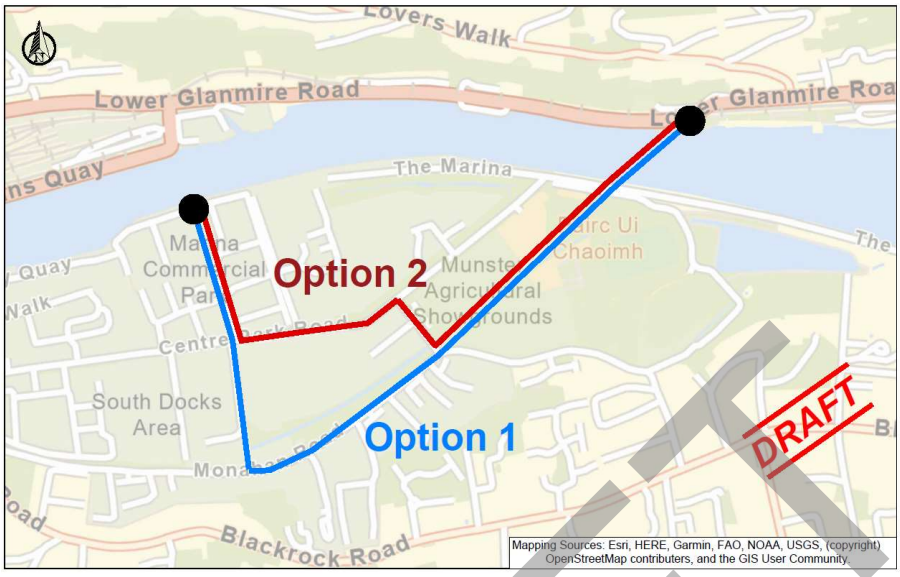


Figure 7-43

7.5.2 Route Option 1:

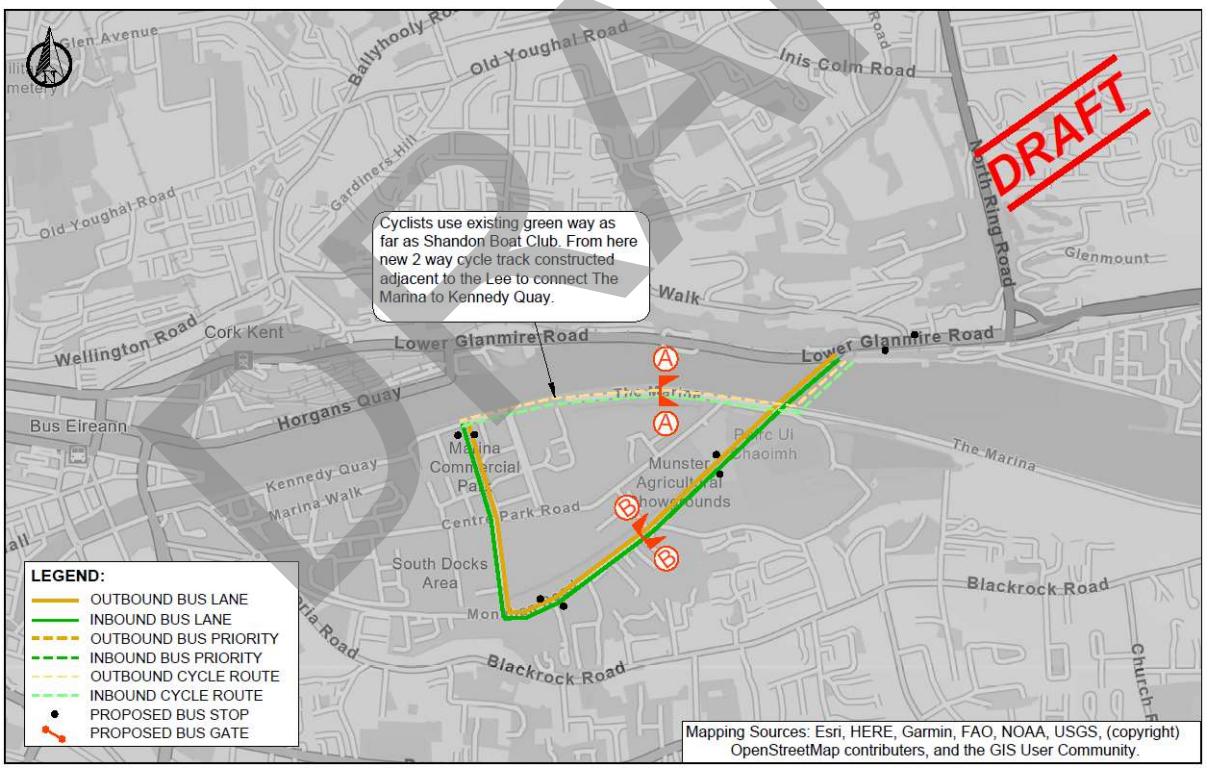


Figure 7-44

Route:

The route would use the Eastern Gateway bridge and a new link road to cross the river Lee and join Monahan Road. It would follow Monahan Road for approximately 500m before turning north and taking a new link through South Docklands and The Marina Commercial Park to reach the start of the proposed Water Street Bridge.

A new bridge is required at the start of this option as well as a new road in the greenspace between the bridge and Monahan Road. Monahan Road would be widened into the greenspace that bounds it in order to include room for two new bus lanes as well as maintaining the current traffic lanes and footpaths.

When the route turns north through South Docklands a new link would be constructed through a private industrial area.

Cycle Route and pedestrian provision:

Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with onea set on the new link between Monahan Road and the Eastern Gateway Bridge, one set on Monahan Road, and one set at The Marina, just south of the Water Street Bridge.

Cross Sections
Indicative cross sections showing the proposed layouts of Monahan Road and the greenway are shown in Figure 7-45 and Figure 7-46 respectively.

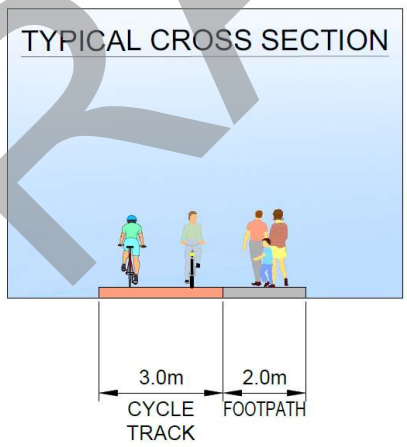


Figure 7-45 A-A

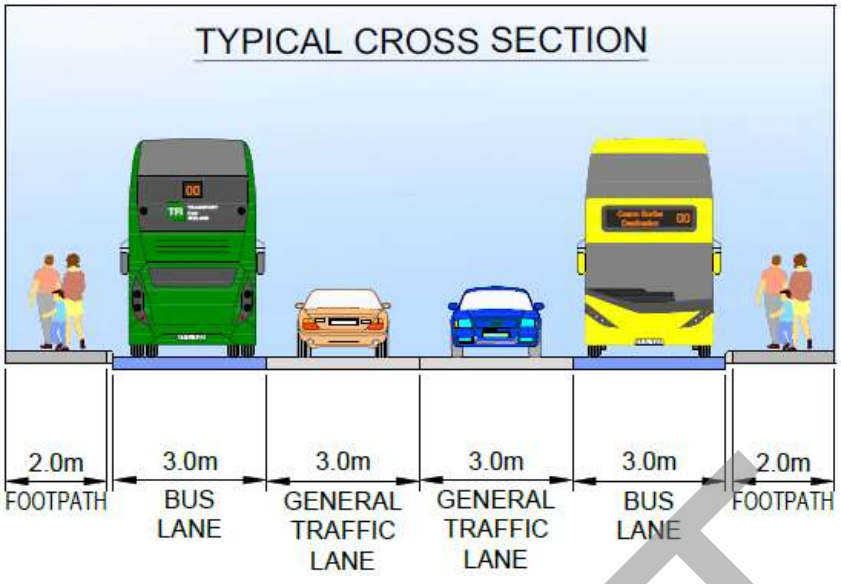


Figure 7-46 B-B

7.5.3 Route Option 2A

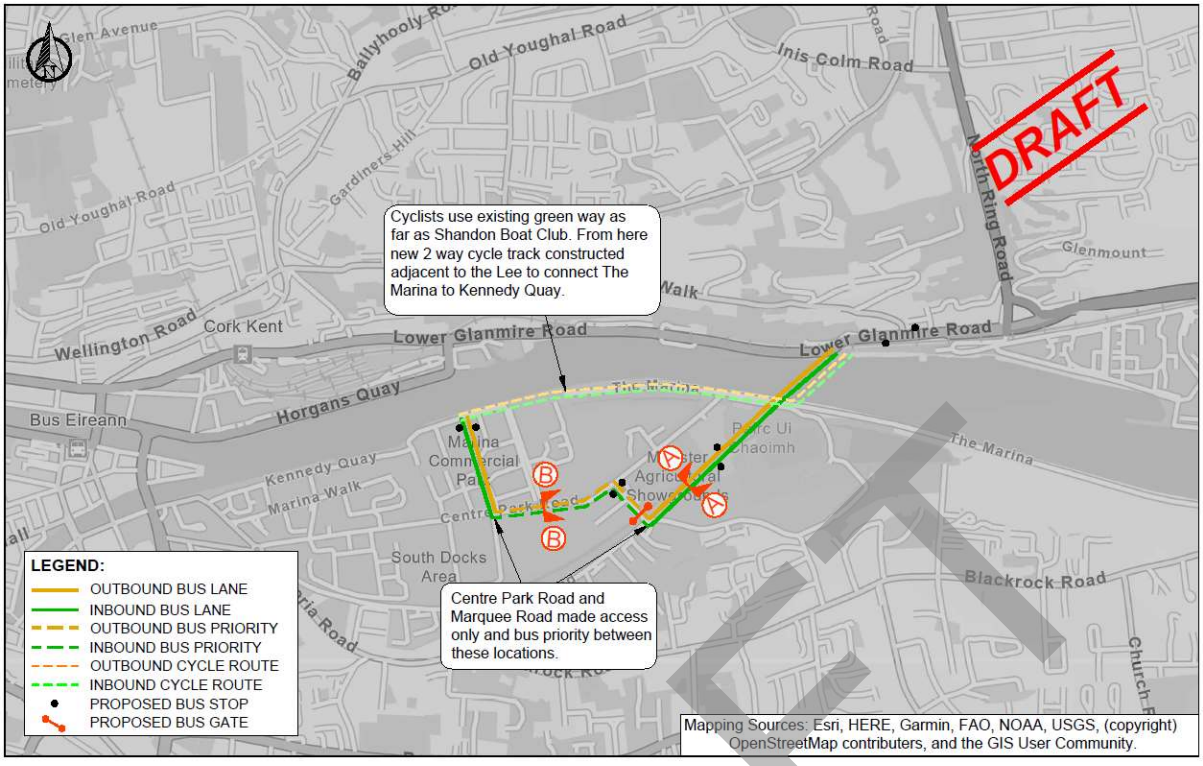


Figure 7-47

Route:
The route would use the Eastern Gateway Bridge and new link to cross the river Lee and join Monahan Road. After joining Monahan Road, it would turn north onto Marquee Road, then west onto Centre Park Road, after approximately 300m on Centre Park Road the route turns north through The Marina Commercial Park and terminates at the south end of the proposed Water Street Bridge.

A new bridge is required at the start of this option as well as a new road in the greenspace between the bridge and Monahan Road. A bus gate would be used to make Marquee Road and Centre Park Road access only for general traffic, thereby giving busses priority without widening the cross sections here. Traffic would be required to divert using the existing roundabout at Victoria St. Dedicated bus lanes would be provided through The Marina Commercial Park which would require the construction of a new road.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with one set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Marquee Road, and one set at The Marina, just south of the Water Street Bridge.

Cross Sections

Indicative cross sections showing the proposed layouts of the new link to Monahan Road and Centre Park Road are shown in Figure 7-48 and Figure 7-49 respectively

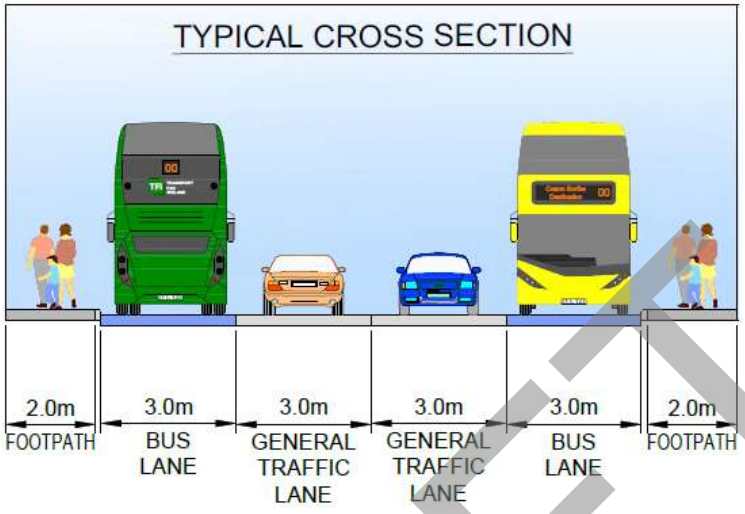


Figure 7-48 A-A

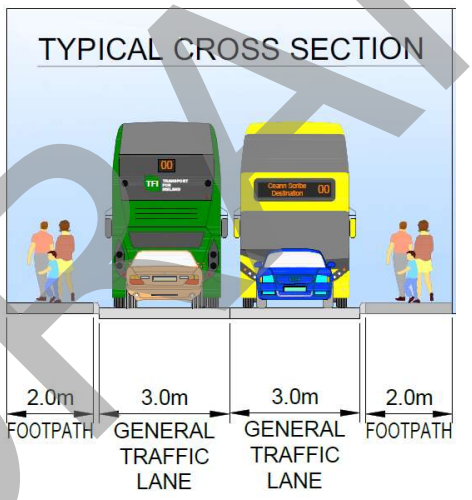


Figure 7-49 B-B

7.5.4 Route Option 2B

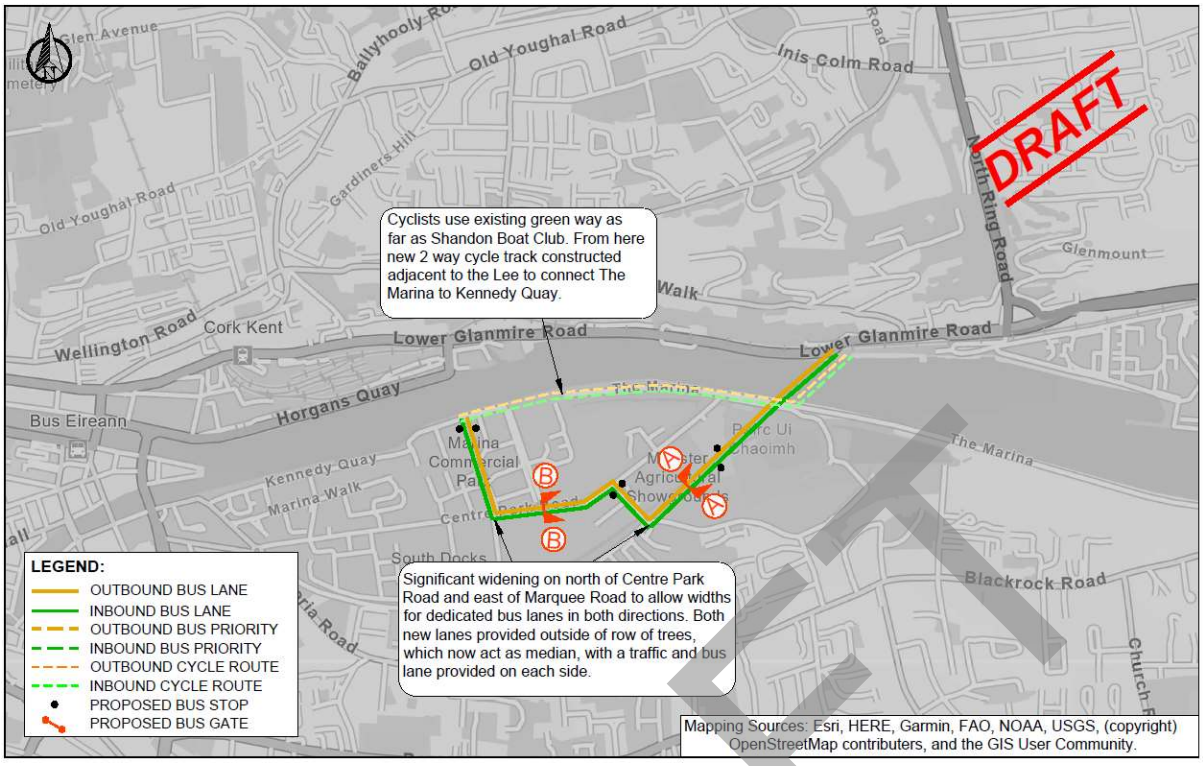


Figure 7-50

Route:
This route follows the same roads as Route 2A but road widening would be used to provide dedicated bus lanes on Marquee Road and Centre Park Road.

On Marquee Road significant widening would occur to the east, to allow two lanes of traffic and a footpath to be constructed on the eastern side of the row of trees that bounds the road lanes. This allows the rows of trees to be retained in the central median, with a bus lane and a traffic lane on each side.

A similar process would be used on Centre Park Road with widening to occur to the north.

Cycle Route and pedestrian provision:

Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with one set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Marquee Road, and one set at The Marina, just south of the Water Street Bridge.

Cross Sections

Indicative cross sections showing the proposed layouts of the new link to Monahan Road and Centre Park Road are shown in Figure 7-51 and Figure 7-52 respectively.

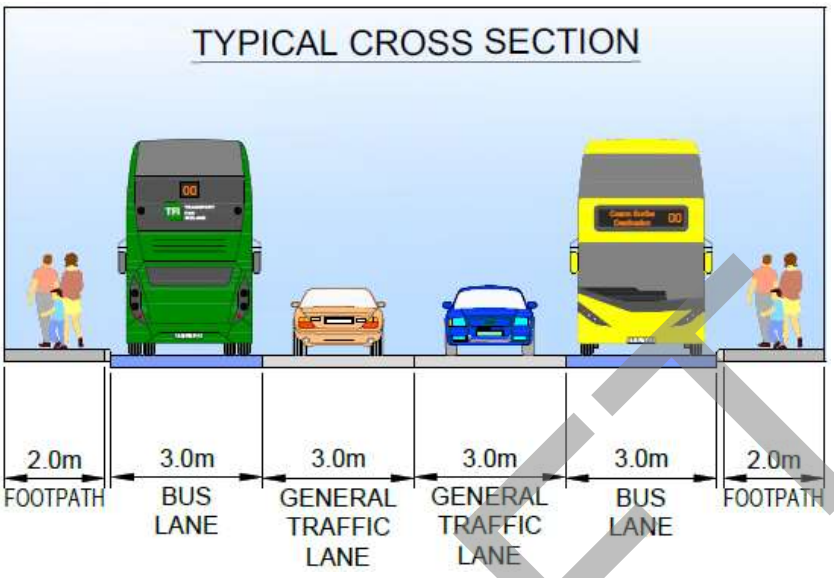


Figure 7-51 A-A

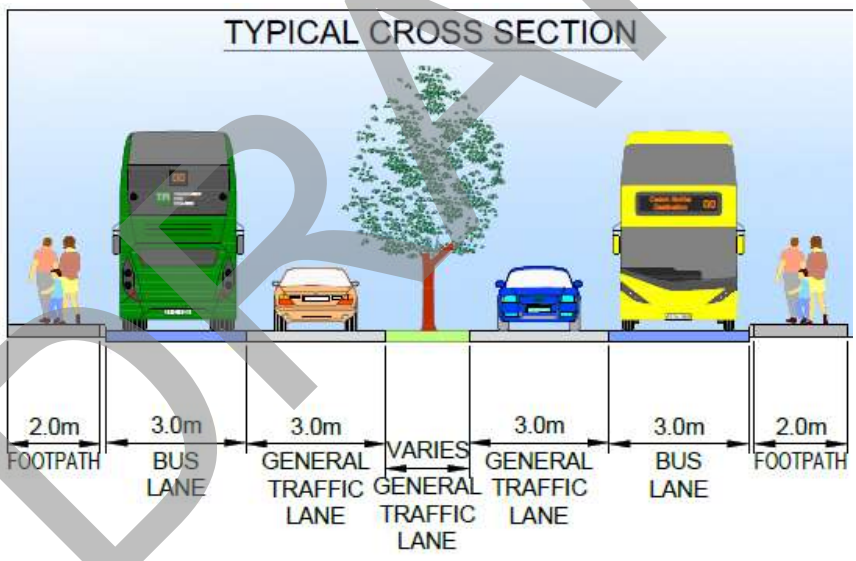


Figure 7-52 B-B

7.5.5 Option Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-9 below.

Table 7-9 Route 1 - Set 6 - Options Assessment Summary

Eastern Gateway Bridge to Water Street Bridge				
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2A**	**Route 2B**
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’, all options require a new bridge over the river Lee; Option 2A performs better for capital cost because it uses bus gates instead of widening the carriageway to provide for busses. Option 1 takes a longer route so performs slightly worse on average journey time, and Option 2A performs worse for journey time reliability because it uses bus gates instead of bus lanes to give bus priority.

Regarding ‘Integration’, Option 2B would integrate better with the South Docklands which has secured planning permission at the former Ford distribution site. It is considered beneficial for the route to use Centre Park Road as it travels through the south docks area, where as Monahan Road travels around the south side of the area. However, Option 2A would restrict access to the new development with the bus gates, and for this reason scores worse for integration. Option 2A would also perform worse for ‘Transport Integration’ for the same reason

In terms of ‘Accessibility and Social Inclusion’ all options score equally as the routes are in close proximity, so have similar trip attractors and serve similar areas.

In terms of ‘Road Safety’ both options are considered neutral. Option 2A would decrease the volume of through traffic on Centre Park Road and Marquee Road, increasing safety on these routes, however, there may be some traffic turning at the local access only points. As such, both are considered equal compared to each other.

In terms of ‘Environment’, Option 2A avoids the removal of roadside trees and requires less widening of the carriageway so scores better for this criterion.

7.5.6 Conclusion

A summary of the assessment and a relative ranking of each of the five assessment criteria is shown below in Table 7-10.

Table 7-10 Route Options Assessment Summary

Eastern Gateway Bridge to Water Street Bridge			
Assessment Criteria	**Route 1**	**Route 2a**	**Route 2b**
Economy			
Integration			
Accessibility and Social inclusion			
Safety			
Environment			

Based on the assessment, it has been determined that Route 2B offers the preferred route option for the following reasons:

- It has a faster journey time than Option 1 and a better journey time reliability than Option 2A.
- It is better integrated in terms of Land Use than Option 1 and better integrated for traffic than Option 2A.

Route 2B is identified as the emerging preferred route for this section, as the links that were in this analysis may be useful for another sub section it is not yet possible to remove them from the analysis. But cognisance of the outcome of this sift will be used in Set 10 to develop an option that uses the proposed Water Street Bridge, and route Option 2B will be used to reach the bridge.

7.6 Section 2 Set 6 – Eastern Gateway Bridge to Mill Road

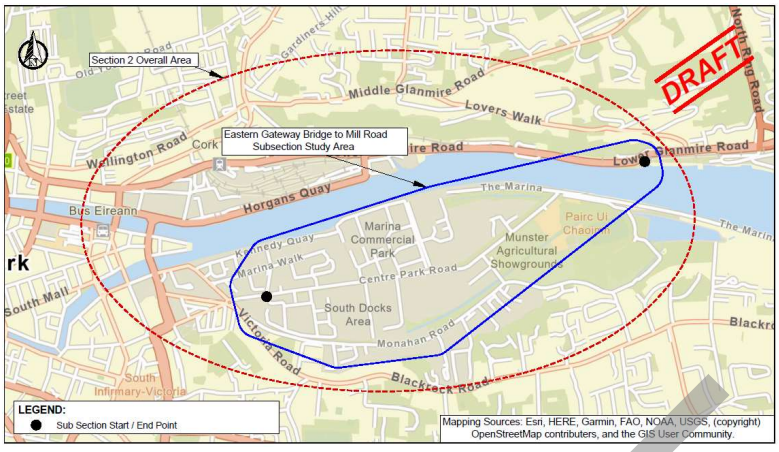


Figure 7-53

7.6.1 Introduction and Route Description

A subset of 3 possible routes were created to determine the optimum route between Eastern Gateway Bridge and Mill Road. The winner of this set was then used as part of a larger set to create the best options for STCs that run South of the Lee:

- Route Option 1: Uses the Eastern Gateway bridge and link to cross the river Lee and join Monahan Road, runs along Monahan Road for approx. 900m before taking a new link through South Docklands to reach the south of Mill Road.
- Route Option 2: Uses the Eastern Gateway bridge and link to cross the river Lee and join Monahan Road, runs along Monahan Road for approx. 500m before taking a new link through South Docklands to reach Centre Park Road, then follows Centre Park Road until reaching the south of Mill Road.
- Route Option 3A: Uses the Eastern Gateway bridge and link to cross the river Lee and join Monahan Road, turns north onto Marquee Road to reach Centre Park Road, then follows Centre Park Road until reaching the south of Mill Road. Bus priority on Centre Park Road is provided using bus gates.
- Route Option 3B: Similar to 3A but bus priority provided using dedicate d bus lanes

All of these routes start at the northern end of the proposed Eastern Gateway bridge on Lower Glanmire Road and finish at the south end of Mill Road.

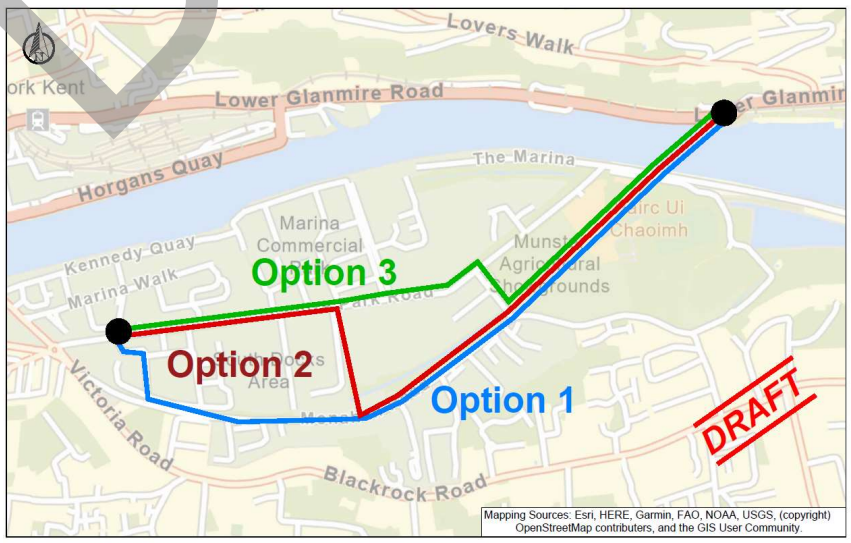


Figure 7-54

7.6.2 Route Option 1

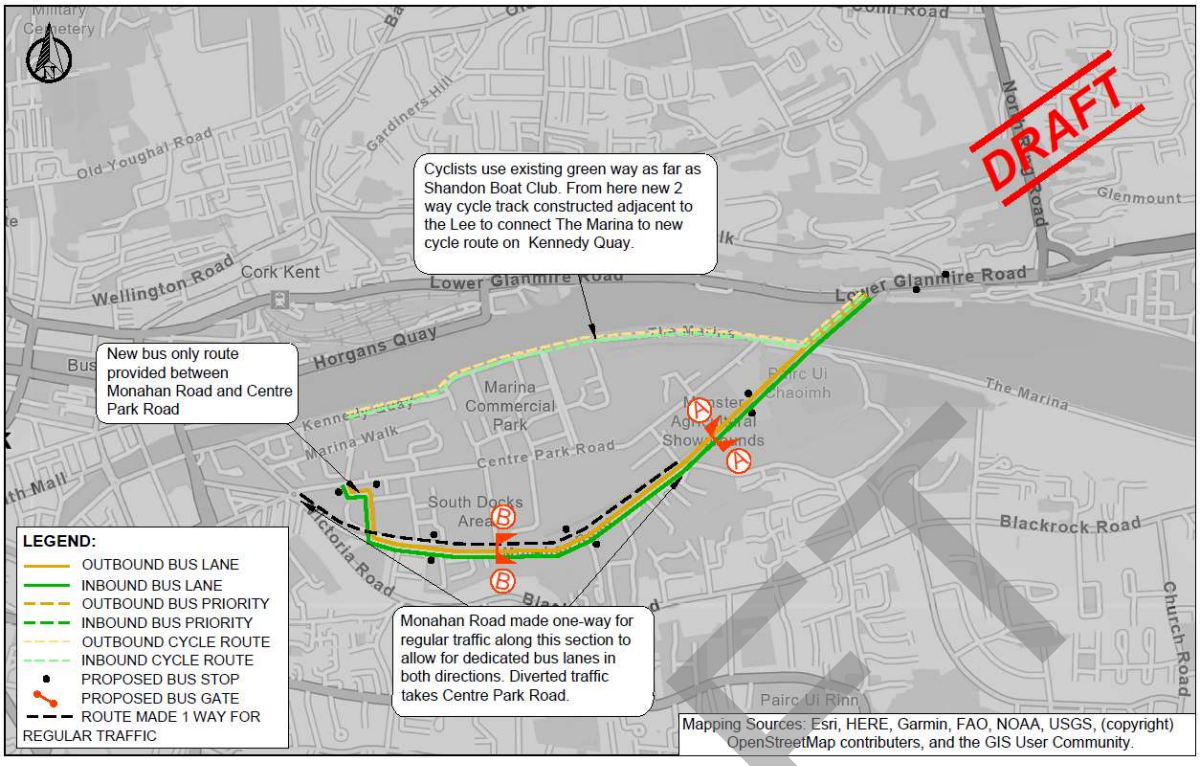


Figure 7-55

Route:

Dedicated bus lanes would be provided in both directions over the new Eastern Gateway Bridge and through the new link connecting the bridge to Monahan Road. Monahan Road would have dedicated bus lanes in both directions, to achieve the widths required for this Monahan Road would be made one way for general traffic and widening would be required into public greenspace, with removal of trees along some of the route. Some on-street parking would also be removed. The diverted traffic off Monahan Road would take Centre Park and Marquee Roads.

A new bus only link with lanes in both directions would be constructed through The South Docklands to connect the route to the south of Mill Road.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to new cycle provision on Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Four bus stops would be provided in each direction, with one set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Rehab Recycle on Monahan Road, one by Blackrock Motor Company on Monahan Road and one set on Centre Park Road at the south end of Mill Road.

Indicative cross sections showing the proposed layouts of the new link to Monahan Road and Monahan Road are shown in Figure 7-56 and Figure 7-57 respectively.

Cross Sections

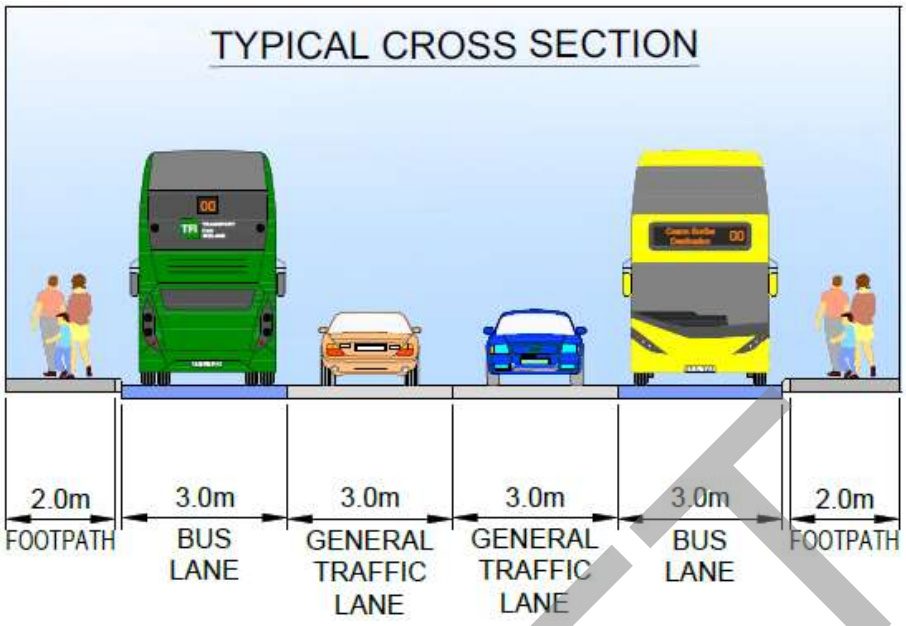


Figure 7-56 A-A

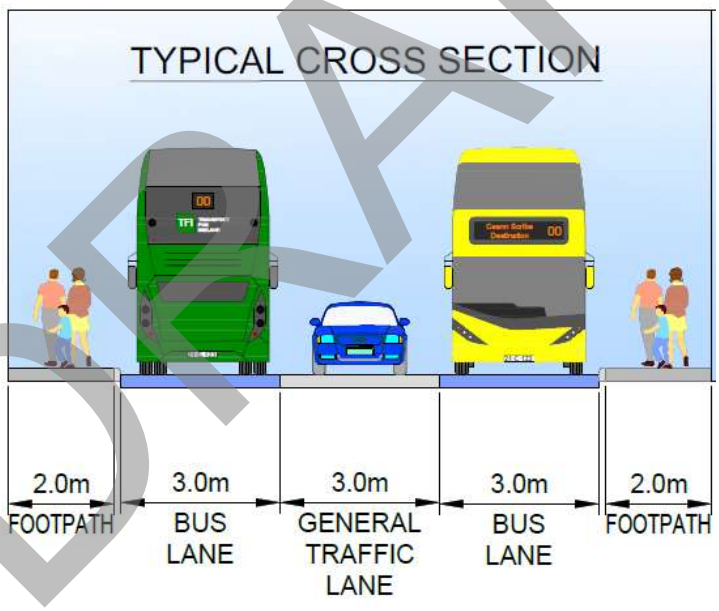


Figure 7-57 B-B

7.6.3 Route Option 2

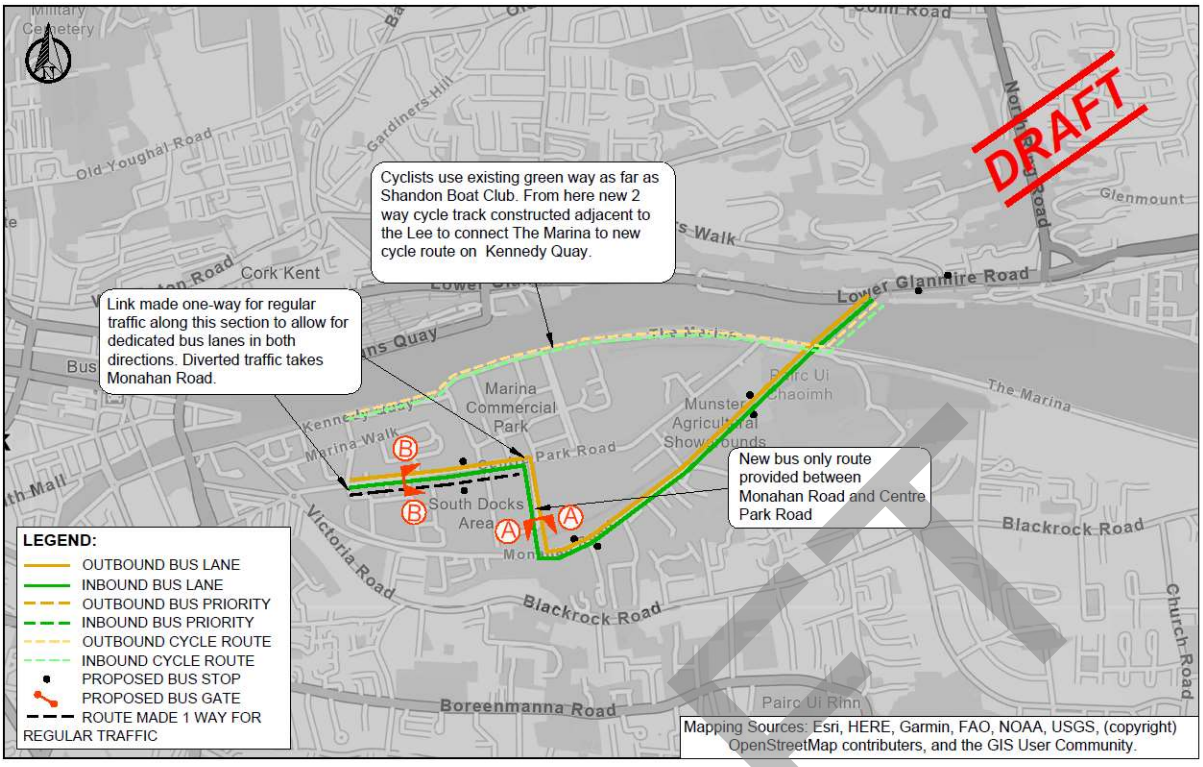


Figure 7-58

Route:
Dedicated bus lanes would be provided in both directions over the new Eastern Gateway Bridge and through the new link connecting the bridge to Monahan Road. Monahan Road would have dedicated bus lanes in both directions, to achieve the widths required for this widening would be required into public and private greenspace, with removal of trees along some of the route. Some on-street parking would also be removed.

A new bus only link with lanes in both directions would be constructed through The South Docklands to connect the route to Centre Park Road.

Centre Park Road would be made one way for general traffic to allow bus lanes to be constructed in both directions. Some minor widening into private greenspace and industrial area would also be required and some trees along Centre Park Road may need to be removed. Diverted traffic would use Monahan Road.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to new cycle provision on Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with one set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Rehab Recycle on Monahan Road, and one set on Centre Park Road at the south end of Mill Road.

Cross Sections

Indicative cross sections showing the proposed layouts of the new link through South Docklands and Centre Park Road are shown in Figure 7-59 and Figure 7-60 respectively.

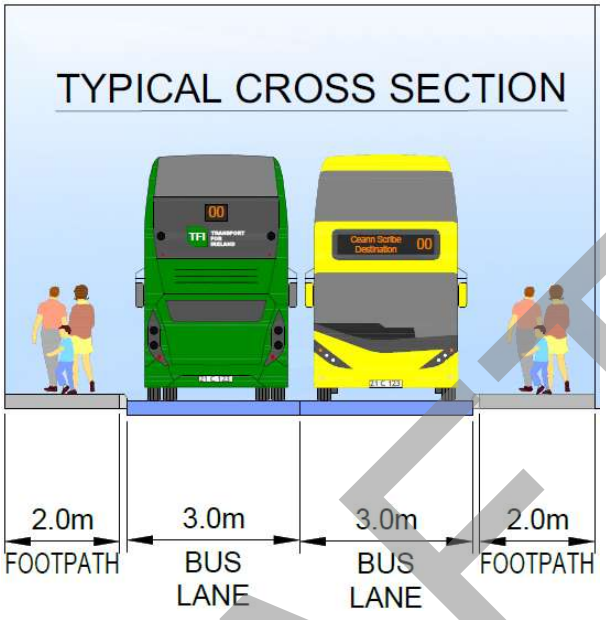


Figure 7-59 A-A

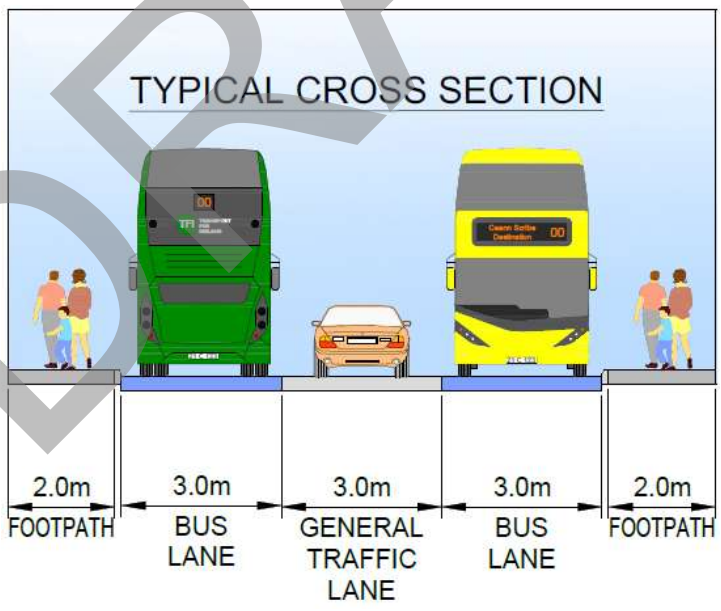


Figure 7-60 B-B

7.6.4 Route Option 3A:

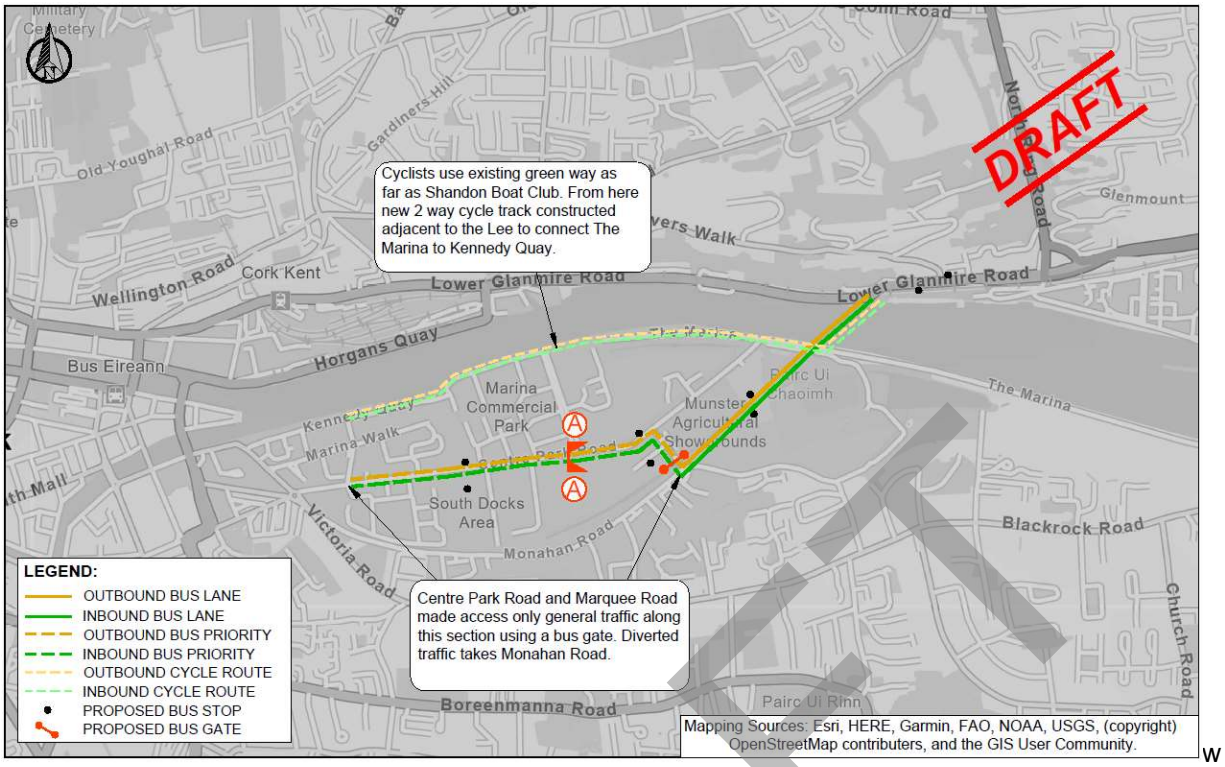


Figure 7-61

Route:
Dedicated bus lanes would be provided in both directions over the new Eastern Gateway Bridge and through the new link connecting the bridge to Monahan Road. Here the route turns north onto Marquee Road and then onto Centre Park Road.

A bus gate placed on Marquee Road adjacent to Monahan Road would be used to make Marquee Road and Centre Park Road access only for general traffic, thereby giving busses priority without widening the cross sections here. Diverted traffic would use Monahan Road.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to new cycle provision on Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with 1 set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Marquee Road, and one set on Centre Park Road at the south end of Mill Road.

Cross Sections

Indicative cross sections showing the proposed layout of Centre Park Road is shown in Figure 7-62.

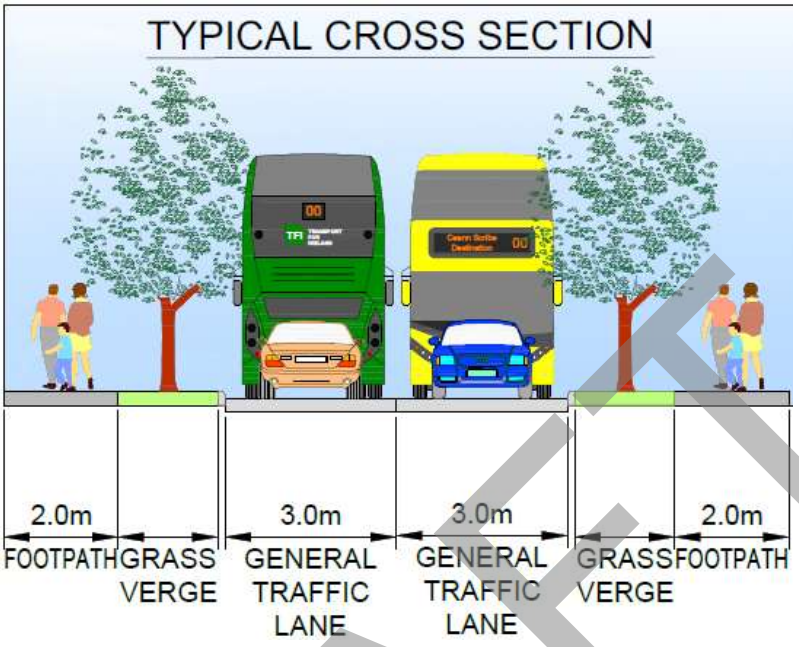


Figure 7-62 A-A

7.6.5 Route Option 3B:

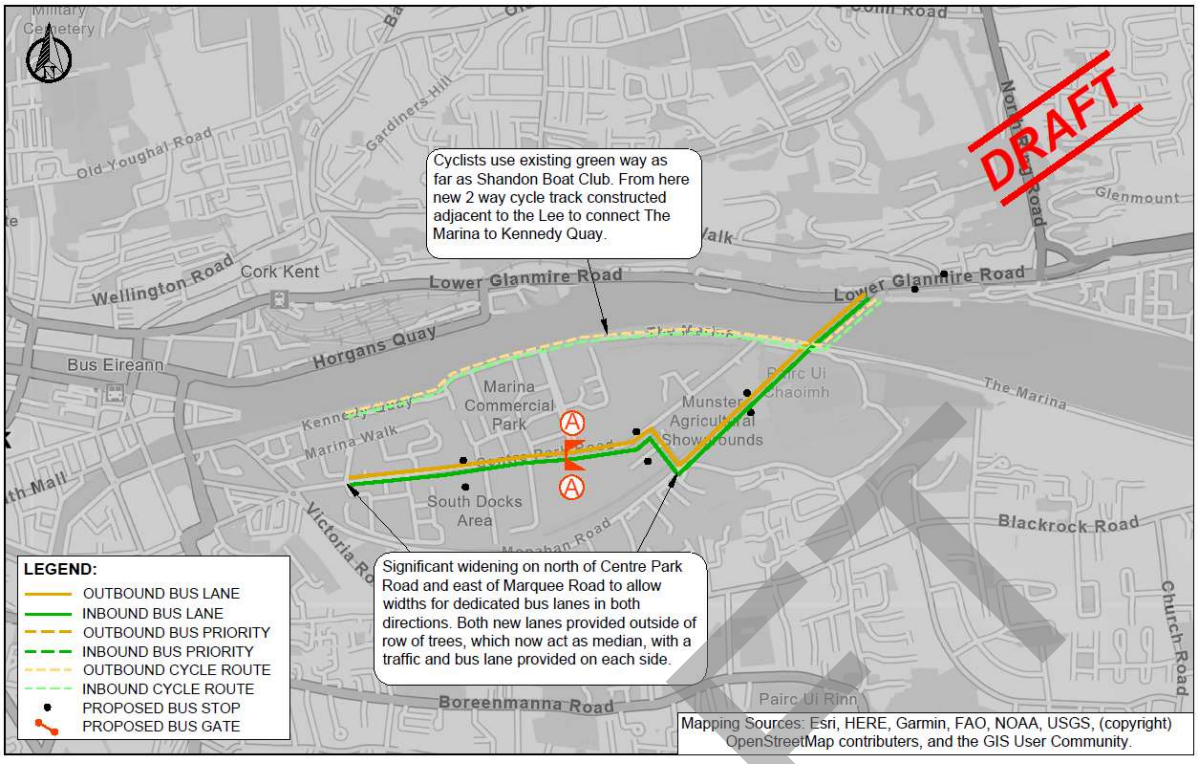


Figure 7-63

This route follows the same alignment as Route 3A but road widening would be used to provide dedicated bus lanes on Marquee Road and Centre Park Road.

On Marquee Road significant widening would occur to the east, to allow two lanes of traffic and a footpath to be constructed on the eastern side of the row of trees that bounds the road lanes. This allows the rows of trees to be retained in the central median, with a bus lane and a traffic lane on each side.

A similar process would be used on Centre Park Road with widening would occur to the north to allow the trees to be retained.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee as far as the Shandon Boat Club, from here a new two way cycle track would be provided adjacent to the Lee connecting The Marina to new cycle provision on Kennedy Quay.

New pedestrian footpaths would be provided either side of the Eastern Gateway Bridge and adjacent to the new cycle link.

Bus Stops: Three bus stops would be provided in each direction, with one set on the new link between Monahan Road and the Eastern Gateway Bridge, one set by Marquee Road, and one set on Centre Park Road at the south end of Mill Road.

Cross Sections

Indicative cross sections showing the proposed layout of Centre Park Road is shown in Figure 7-64.

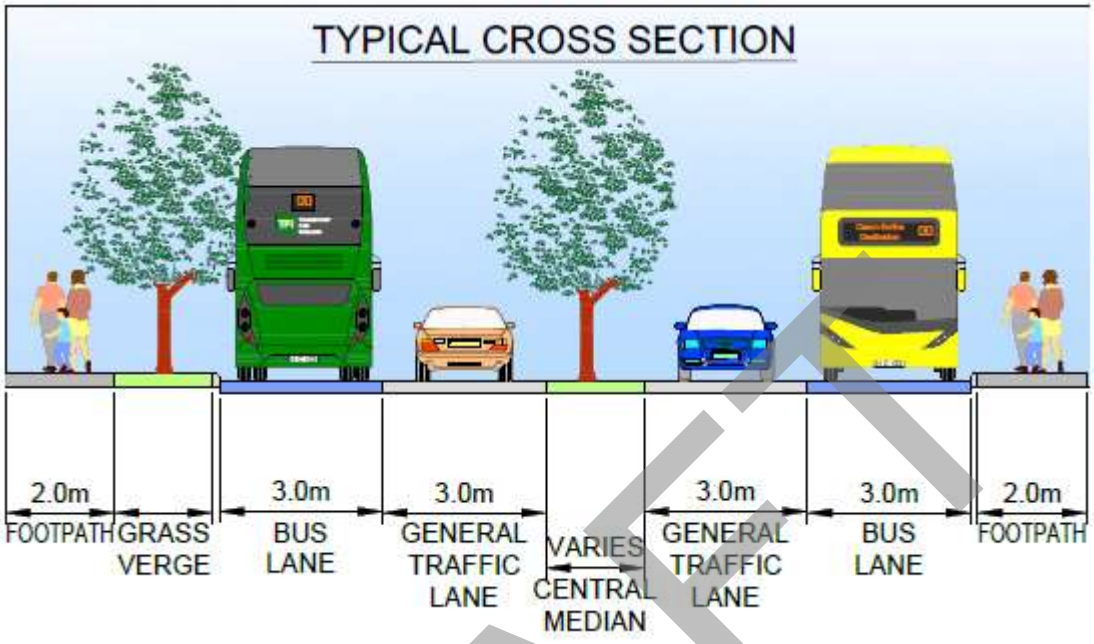


Figure 7-64 A-A

7.6.6 Option Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-11 below.

Table 7-11 Route 1 - Set 7 - Options Assessment Summary

Eastern Gateway Bridge to Mill Road					
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3A**	**Route 3B**
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', Option 3A performs the best for capital cost. This is because it requires less private land take and construction due to utilising bus gates and existing road carriageways to a larger extent than the other options. Options 3A and 3B have slightly shorter routes and so score better for average journey

time. For journey time reliability Option 3A performs worse than the other options as it does not provide dedicated bus lanes for the whole length of route, which the other options do.

Regarding ‘Integration’, Options 3A & 3B integrate better with the future developments proposed for the south docklands area which wouldn’t be fully captured by Options 1 & 2, so 3A & 3B perform better for Land Use Integration. However, Option 1 picks up a larger residential and employment catchment so performs better for that criterion. In terms of transport integration, Option 3b performs best as it doesn’t interfere with any traffic movements, Options 1 & 2 require making a road one way for general traffic and as such perform worse under this criterion, Option 3A provides causes more disruption to general traffic with bus gates so performs the worst for this criterion.

In terms of ‘Accessibility and Social Inclusion’ all options score equally as the routes are in close proximity, so have similar trip attractors and serve similar areas.

In terms of the ‘Environment’ criteria, generally, Option 3A performs the best, this is because it uses bus gates to reduce the amount of widening and associated works and removal of trees when compared to the other options which require more widening of the road carriageway. Option 3B doesn’t require severance of land parcels and therefore performs better than Options 1 & 2 for land use and the built environment, as Options 1 & 2 would sever land for the new link between Monahan Road and Centre Park Road.

7.6.7 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 7-12

Table 7-12 Route Options Assessment Summary

Eastern Gateway Bridge to Mill Road				
Assessment Criteria	**Route 1**	**Route 2**	**Route 3A**	**Route 3B**
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

Based on the assessment, it has been determined that Route 3B offers the preferred route option for the following reasons:

- It has a better journey time reliability than Option 3A.
- It doesn't require closure of general traffic lanes, whereas all other options do.
- It doesn't sever any land parcels so performs better for Land Use and the built environment than Options 1 & 2.

Route 3B is identified as the emerging preferred route for this section and as such the other links considered here have been removed from the spiders web, resulting in the reduced spiders web shown below.

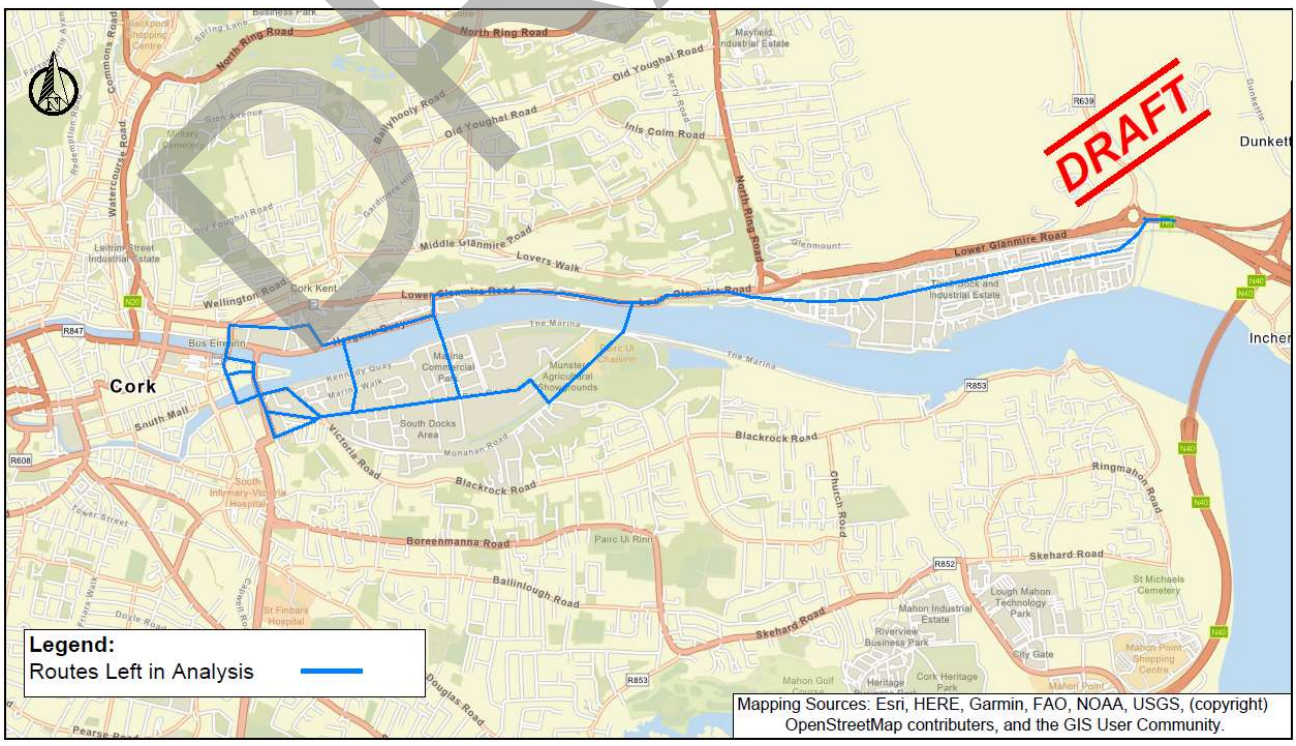


Figure 7-65

7.7 Section 2 Set 7 – Victoria Road Roundabout to Eamon de Valera Bridge

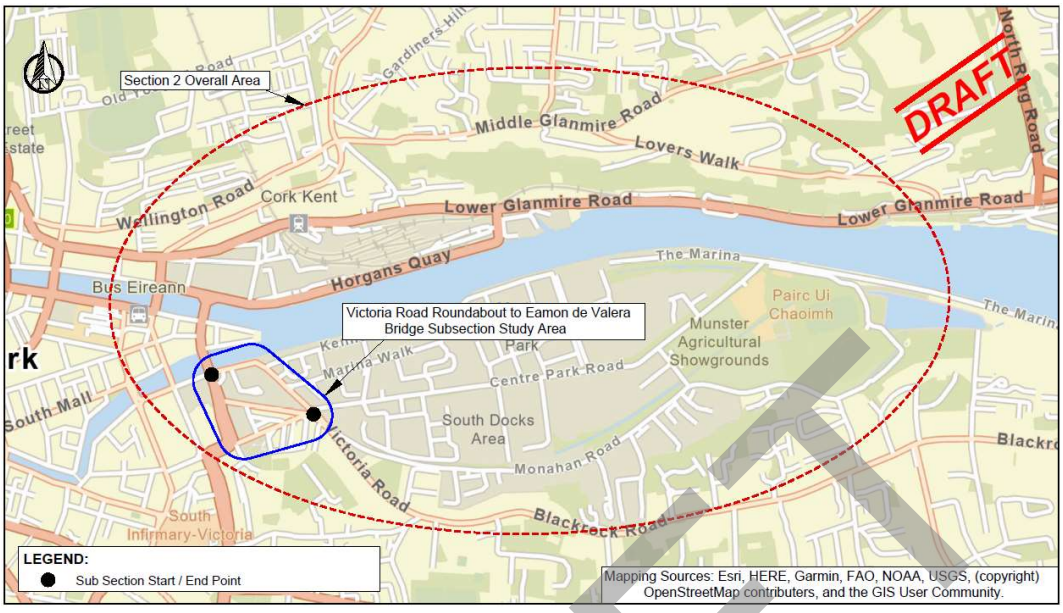


Figure 7-66

7.7.1 Introduction and Route Description

A set of 3 possible routes were created to determine the optimum route between Victoria Road Roundabout and Eamon de Valera Bridge. The winner of this set was then used as part of the larger set to determine the best route for Section 2.

- Route Option 1: Uses Victoria Road and Albert Quay.
- Route Option 2: Uses Albert Road and the N27 South Link Road.
- Route Option 3: Uses Montenotte View, Marina Terrace, and the N27 South Link Road.

All these routes start at Victoria Road Roundabout and finish at the south end of Eamon de Valera Bridge.

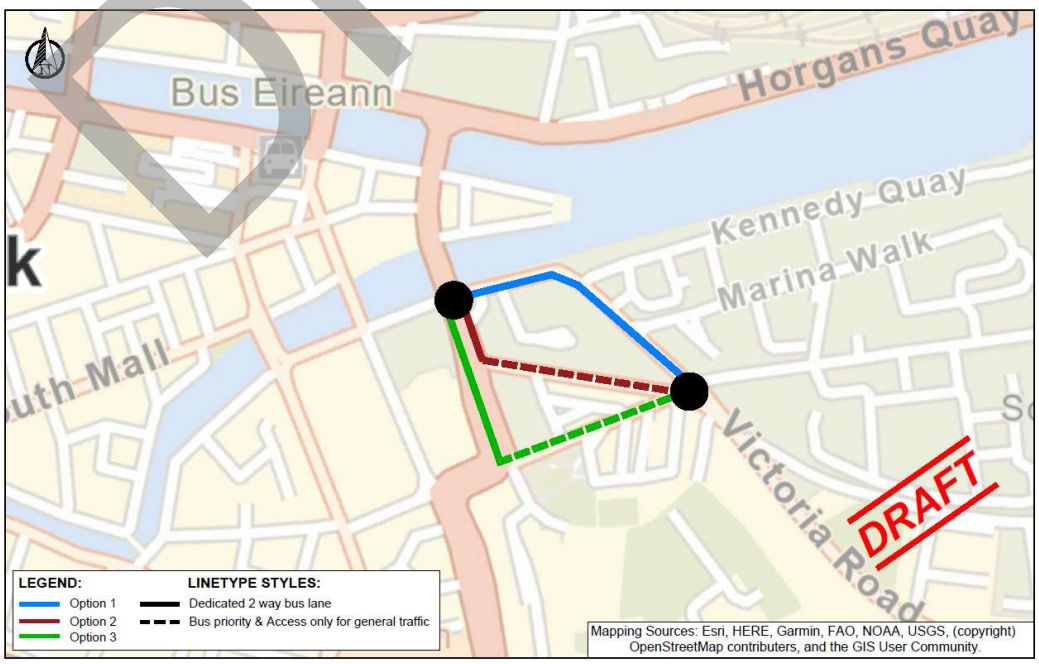


Figure 7-67

7.7.2 Route Option 1:

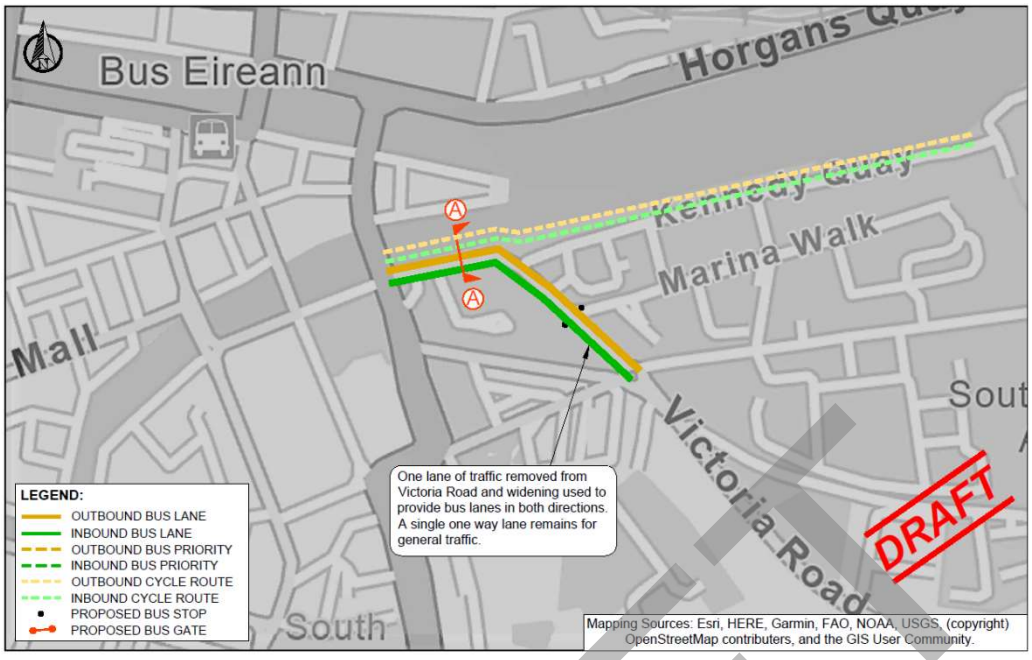


Figure 7-68

Route:
Dedicated bus lanes would be provided in both directions along both Victoria Road and Albert Quay. Currently two lanes of eastbound traffic are present on both roads, to create the widths for dedicated bus lanes one of these lanes of traffic would be removed and the cross section widened, some private land take may be required for this to the north of Albert Quay. Some of the on-street parking on Albert Quay may also need be removed.

Cycle Route and pedestrian provision:

Cycle lanes would be provided along Kennedy Quay following on from the existing cycle provision on The Marina. Cycle lanes would then continue to be provided alongside the river Lee on Albert Quay until reaching South Link Road.

New pedestrian footpaths would be provided along Kennedy Quay and on the North side of Albert Quay.

Bus Stops: One bus stop would be provided in each direction.

Cross Sections
An indicative cross section showing the proposed layout of Albert Quay is shown in Figure 7-69.

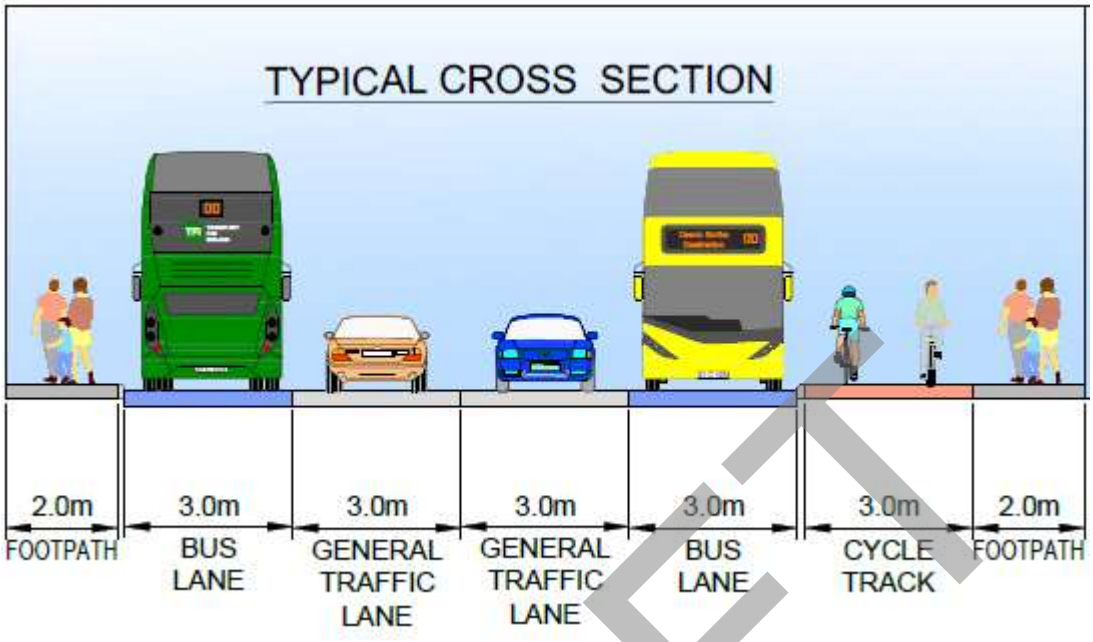


Figure 7-69 A-A

7.7.3 Route Option 2:

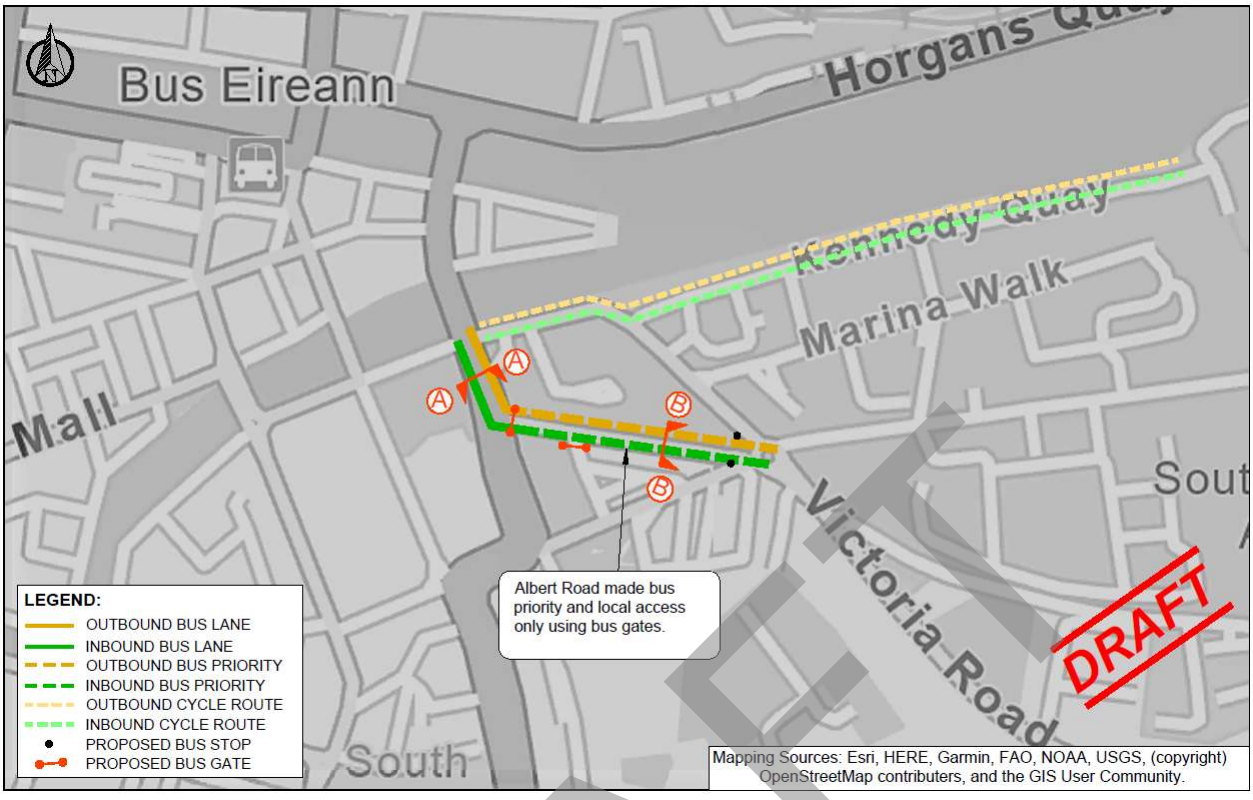


Figure 7-70

Route:
Bus priority would be achieved on Albert Road by making it access only for general traffic using a bus gate adjacent to the N27 and bollards by Hibernian Buildings. Once busses reach the N27 a new signalised junction would allow them to access the N27, where a lane of general traffic in both directions would be converted to a bus lanes.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along Kennedy Quay following on from the existing cycle provision on The Marina. Cycle lanes would then continue to be provided alongside the river Lee on Albert Quay until reaching South Link Road.

New pedestrian footpaths would be provided along Kennedy Quay and on the North side of Albert Quay.

Bus Stops: One bus stop would be provided in each direction, with both located adjacent to Victoria Road Roundabout.

Cross Sections

Indicative cross sections showing the proposed layout of Albert Road and the N27 are shown in Figure 7-71 and Figure 7-72 respectively.

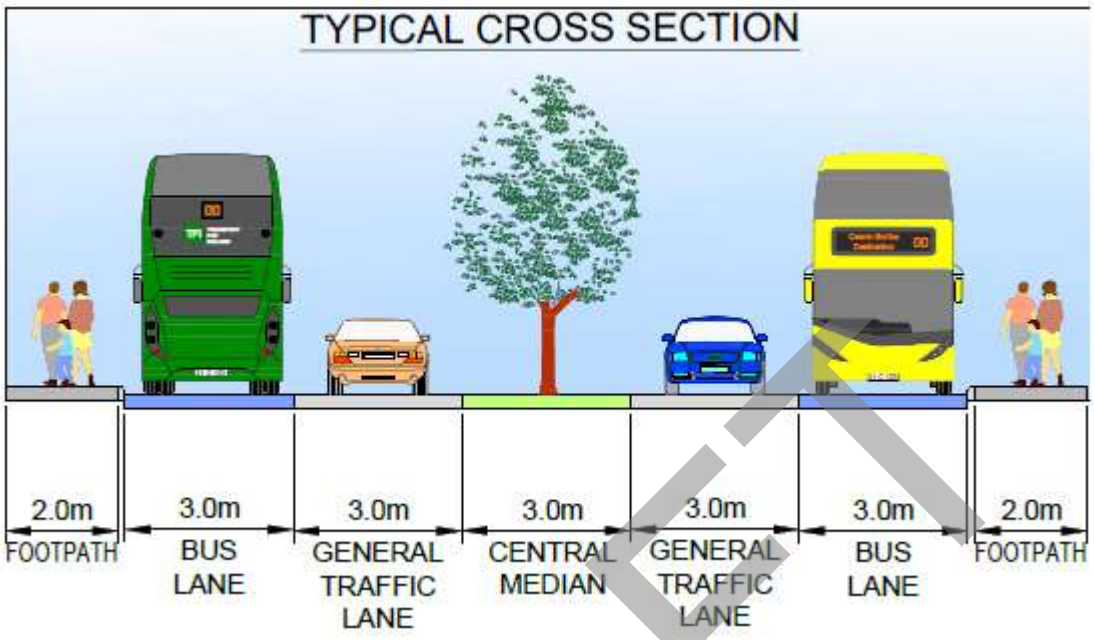


Figure 7-71 A-A

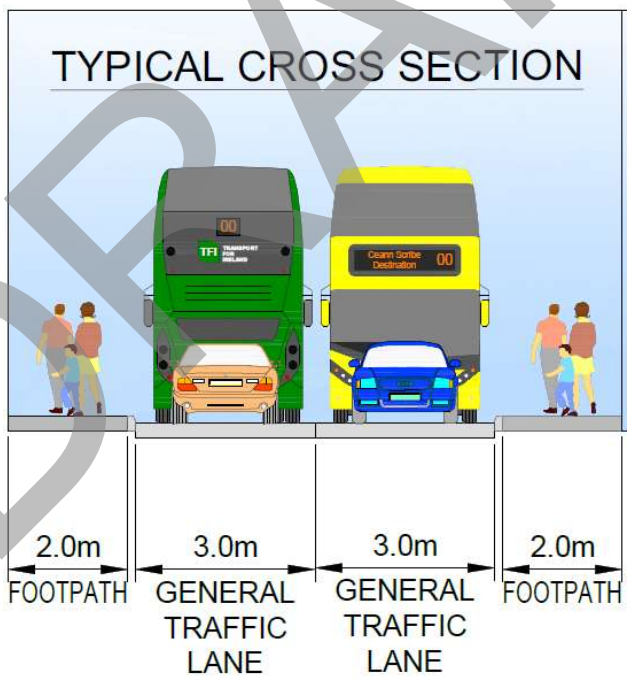


Figure 7-72 B-B

7.7.4 Route Option 3:

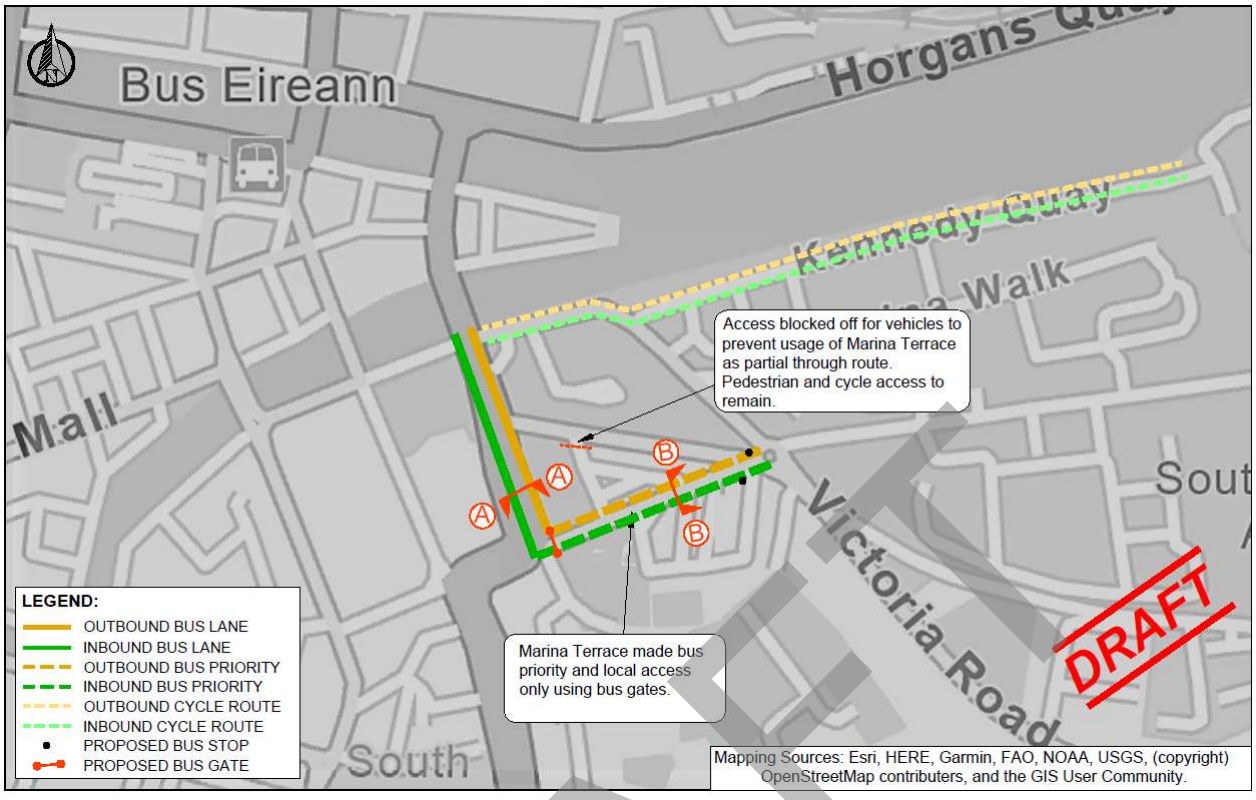


Figure 7-73

Route:
Bus priority would be achieved on Montenotte View and Marina Terrace by making it access only for general traffic using a bus gate adjacent to the N27 and bollards by Hibernian Buildings. Once busses reach the N27 a new signalised junction would allow them to access the N27, where a lane of general traffic in both directions would be converted to bus lanes up to the Eamon de Valera Bridge.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along Kennedy Quay following on from the existing cycle provision on The Marina. Cycle lanes would then continue to be provided alongside the river Lee on Albert Quay until reaching South Link Road.

New pedestrian footpaths would be provided along Kennedy Quay and on the North side of Albert Quay.

Bus Stops: One bus stop would be provided in each direction, with both located adjacent to Victoria Road Roundabout.

Cross Sections

Indicative cross sections showing the proposed layout of Montenotte View and the N27 are shown in Figure 7-74 and Figure 7-75 respectively.

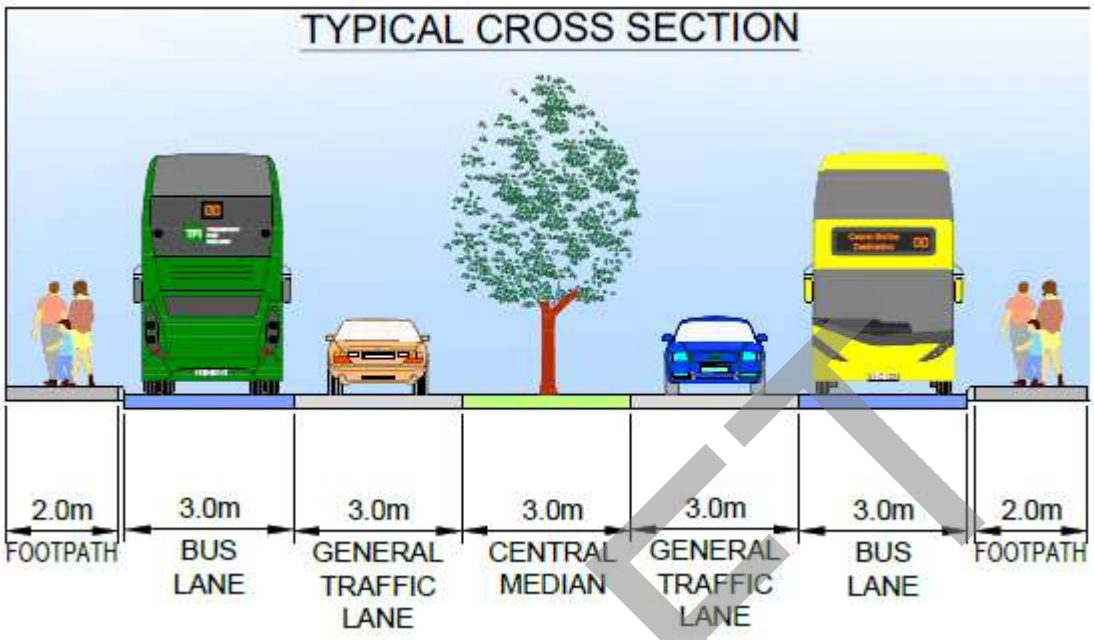


Figure 7-74 A-A

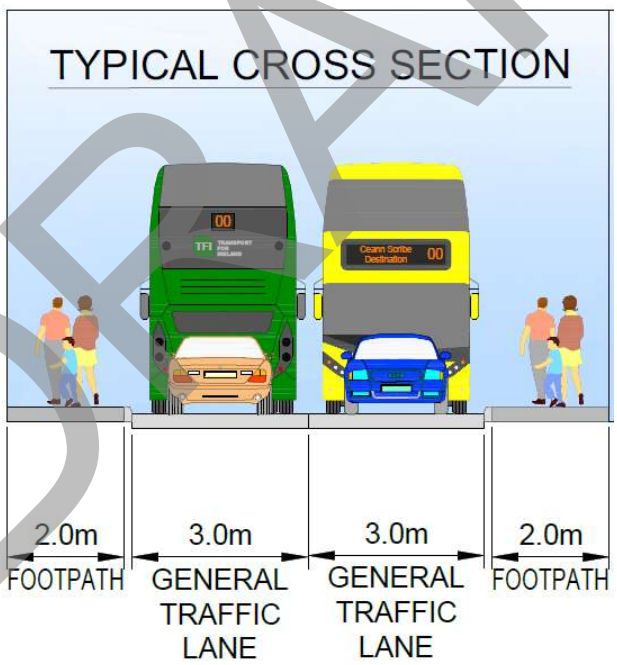


Figure 7-75 B-B

7.7.5 Option Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-13 below.

Table 7-13 Route 1 - Set 8 - Options Assessment Summary

Victoria Road Roundabout to Eamon de Valera Bridge				
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’, all options are similar in terms of cost. However, due to having dedicated bus lanes provided for the full length of the route, and because it’s a slightly shorter length route Option 1 performs better for Average Journey Time and Journey Time Reliability.

Regarding ‘Integration’, Option 1 is more advantageous as it ties in well with the proposals for the development of the city quays. The city quay proposal provides one inbound bus lane and two outbound traffic lanes; one of the general traffic lanes will need to be changed to a bus lane within the scheme to provide an STC. Option 1 would also allow the same general traffic movements to be maintained (although the number of traffic lanes would be reduced), whereas Options 2 & 3 would make local roads access only for general traffic, and so perform worse for transport integration.

In terms of ‘Accessibility and Social Inclusion’, all options would have similar bus stop locations so perform equally for these criteria.

Regarding ‘Road Safety’, all options have the same number of turning movements and junctions, therefore all options perform equally for this criterion.

In terms of the ‘Environment’ criteria, all options are neutral apart from the sub-criteria Land Use and the Built Environment. Options 1 & 2 are preferrable as they are unlikely to require removal of on-street parking or land acquisition on Albert Quay.

7.7.6 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 7-14.

Table 7-14 Route Options Assessment Summary

Victoria Road Roundabout to Eamon de Valera Bridge			
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**
Economy			
Integration			
Accessibility and Social inclusion			
Safety			
Environment			

Based on the assessment, it has been determined that Route 1 offers the preferred route option for the following reasons:

- It has a faster journey time a better journey time reliability than Options 2 and 3.
- It ties in better with the proposals for the city quays.
- Option 1 still allows all traffic movements to be maintained.

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

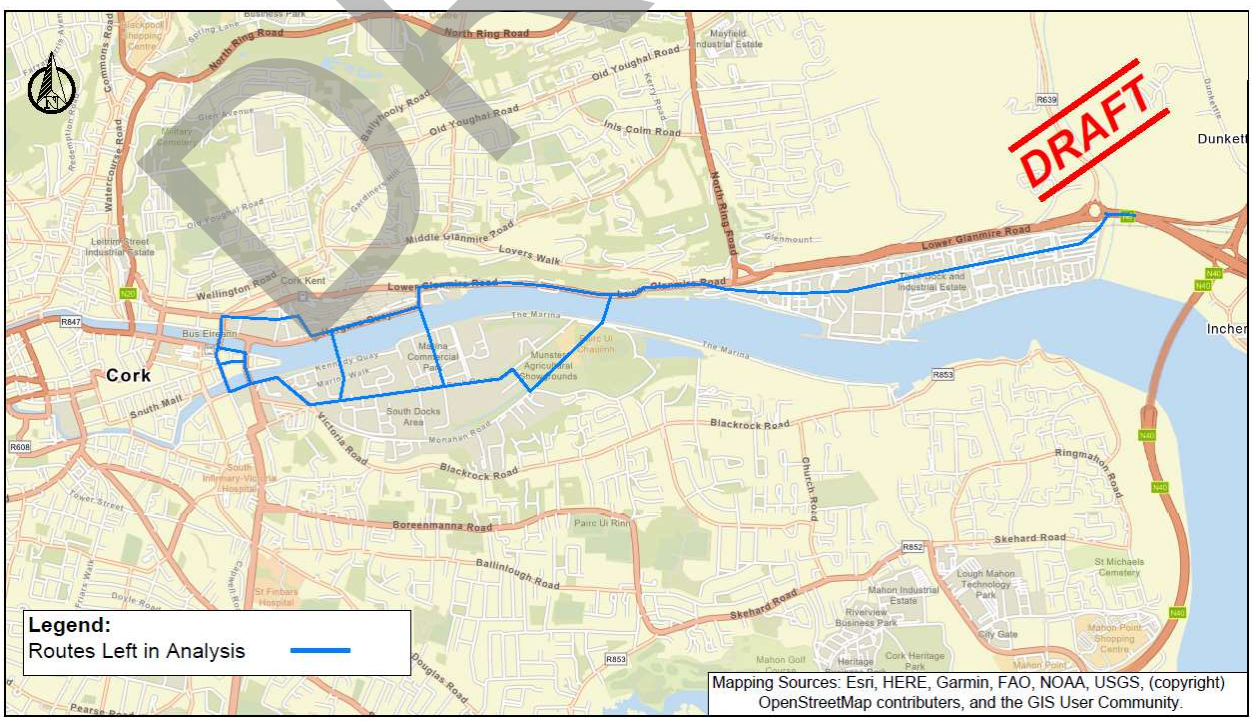


Figure 7-76

7.8 Section 2 Set 8 – Eamon de Valera Bridge to Cork Bus Station

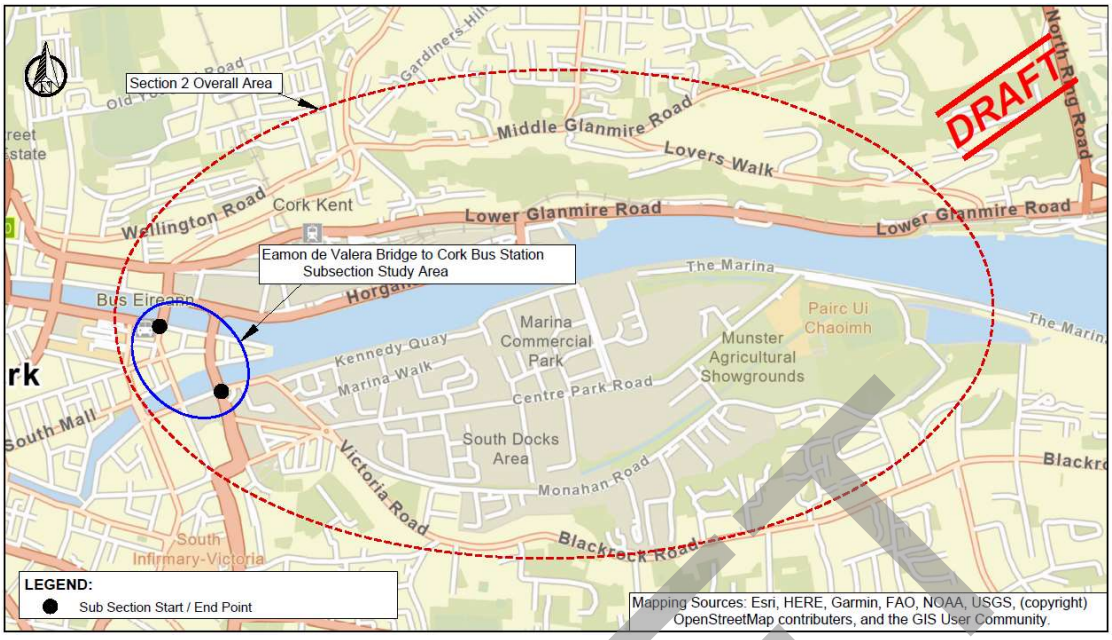


Figure 7-77

7.8.1 Introduction and Route Description

Following the Stage 1 sifting process a set of 4 possible routes were created to determine the optimum route between Eamon de Valera Bridge and Cork Bus Station. The winner of this set was then used as part of a larger set to create the best options for STCs that run South of the Lee:

- Route Option 1: Uses Albert Quay and Clontarf Street
- Route Option 2: Uses South Link Road (N27), Oliver Plunkett Street Lower and Clontarf Street
- Route Option 3: Uses South Link Road, and a one-way loop around Oliver Plunkett Street Lower, Clontarf Street and Andersons Quay
- Route Option 4: Uses South Link Road and Anderson's Quay.

All these routes start at Eamon de Valera Bridge and finish at Cork Bus Station.

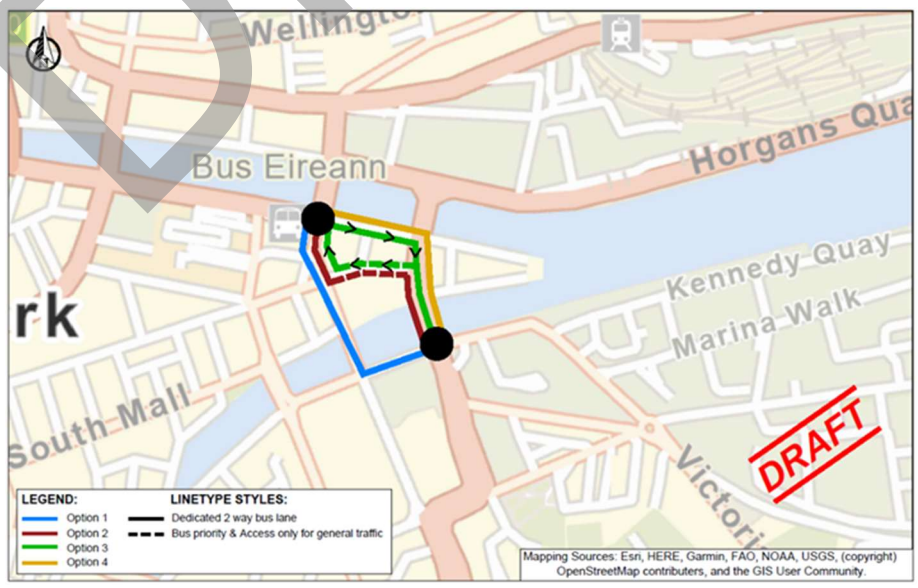


Figure 7-78

7.8.2 Route Option 1

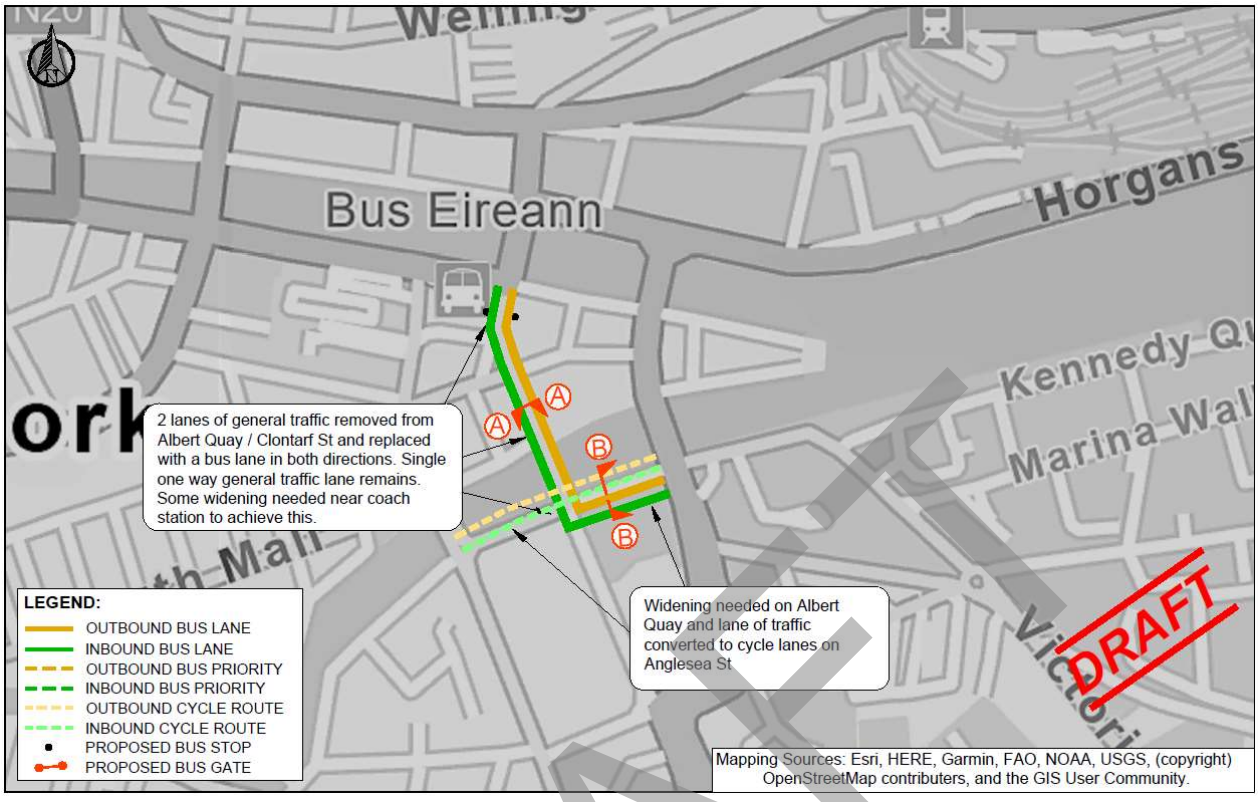


Figure 7-79

Route:
Dedicated bus lanes would be provided in both directions on Albert Quay and Clontarf Street. To achieve this, 2 existing traffic lanes would be repurposed to bus only lanes, leaving a single lane of one-way general traffic remaining. As the routes are currently one-way general traffic movements are not affected, although the volume of traffic that can pass through is. Some widening and removal of on street parking would be required close to the Bus Station to achieve this cross section.

Cycle Route and pedestrian provision:
Dedicated cycle lanes will be provided on Albert Quay and Anglesea St. Widening will be needed to achieve this on Albert Quay and a lane of traffic will be taken to width for the cycle room on Anglesea St.

Pedestrians would be provided for along both sides of the route for the length of this scheme.

Bus Stops: One bus stop would be provided in each direction, both located outside Cork Bus Station.

Cross Sections

Indicative cross sections showing the proposed layout of Albert Quay and Clontarf Street are shown in Figure 7-80 and Figure 7-81 respectively.

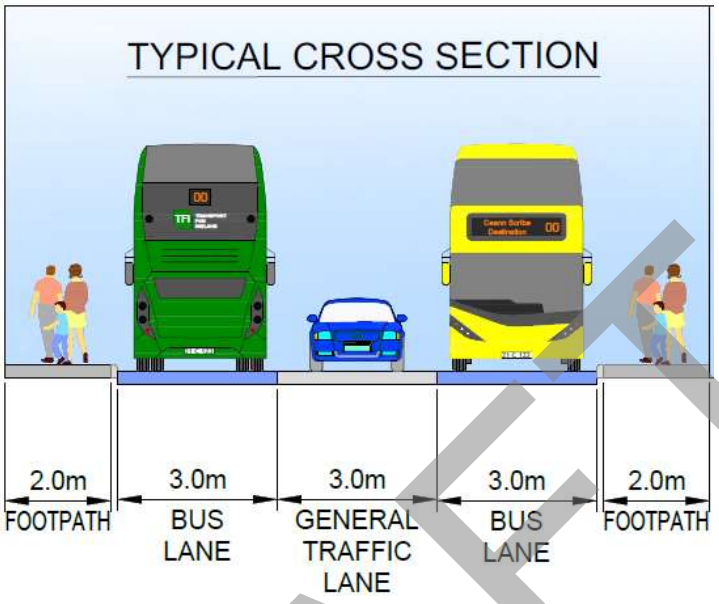


Figure 7-80 A-A

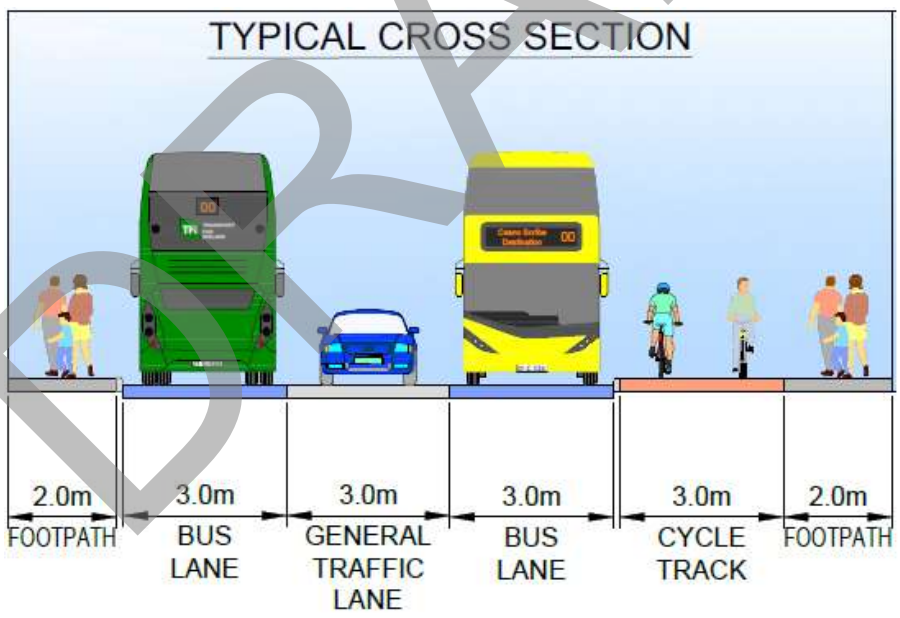


Figure 7-81 B-B

7.8.3 Route Option 2:

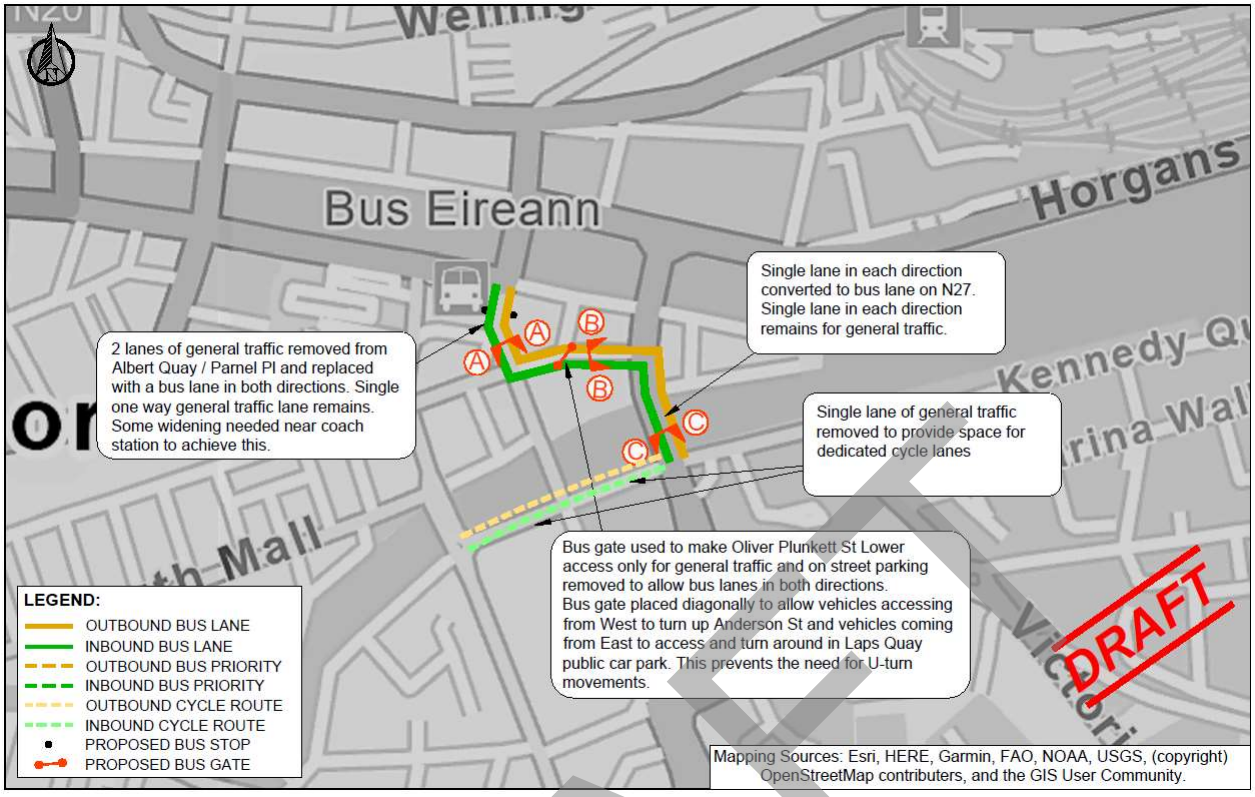


Figure 7-82

Route:
Dedicated bus lanes would be provided in both directions on South Link Road until Oliver Plunkett Street Lower is reached. This will be achieved by converting a lane of traffic in each direction from a general traffic lane to a bus lane, leaving a single lane of general traffic in each direction remaining.

Bus priority would be achieved on Oliver Plunkett Street Lower by placing a bus gate across the road by Anderson's Street, this will make Oliver Plunkett Street Lower access only for general traffic, on street parking will also be removed to achieve the required widths.

Bus lanes in both directions would be provided on Clontarf Street, a lane of general traffic and on street parking would be removed to achieve this.

Cycle Route and pedestrian provision:
Cycle lanes will be provided along Albert Quay and Anglesea St. A single lane of general traffic will be re-allocated on each of these streets to allow widths for the dedicated cycle lanes.

Pedestrians would be provided for along both sides of the route for the length of this scheme.

Bus Stops: One bus stop would be provided in each direction, both located outside Cork Bus Station.

Cross Sections

Indicative cross sections showing the proposed layout of South Link Road, Oliver Plunkett Street Lower and Clontarf Street are shown in Figure 7-83, Figure 7-84 and Figure 7-85 respectively.

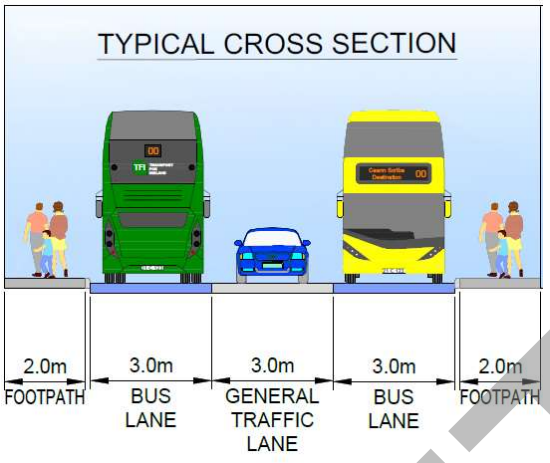


Figure 7-83 A-A

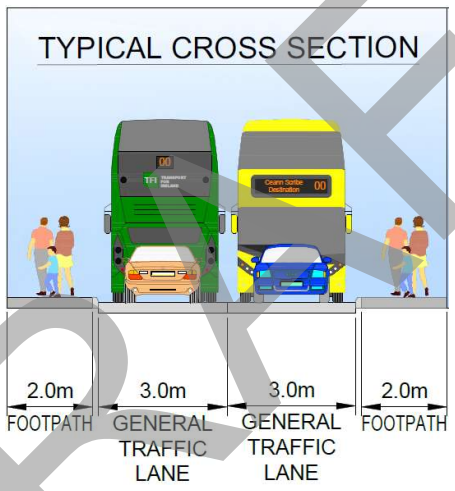


Figure 7-84 B-B

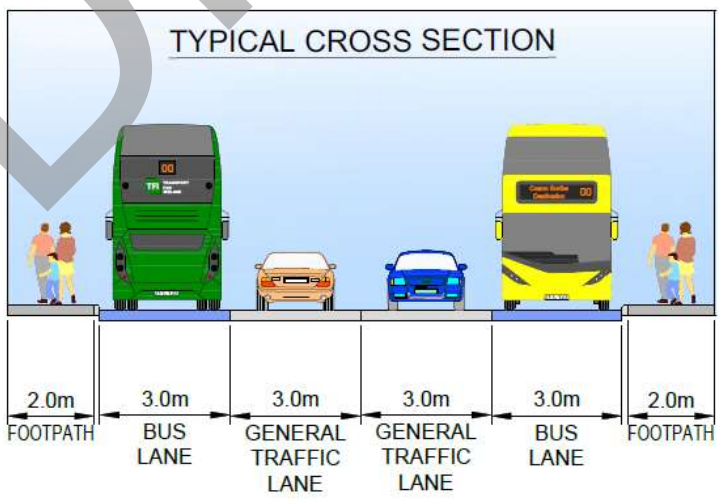


Figure 7-85 C-C

7.8.4 Route Option 3:

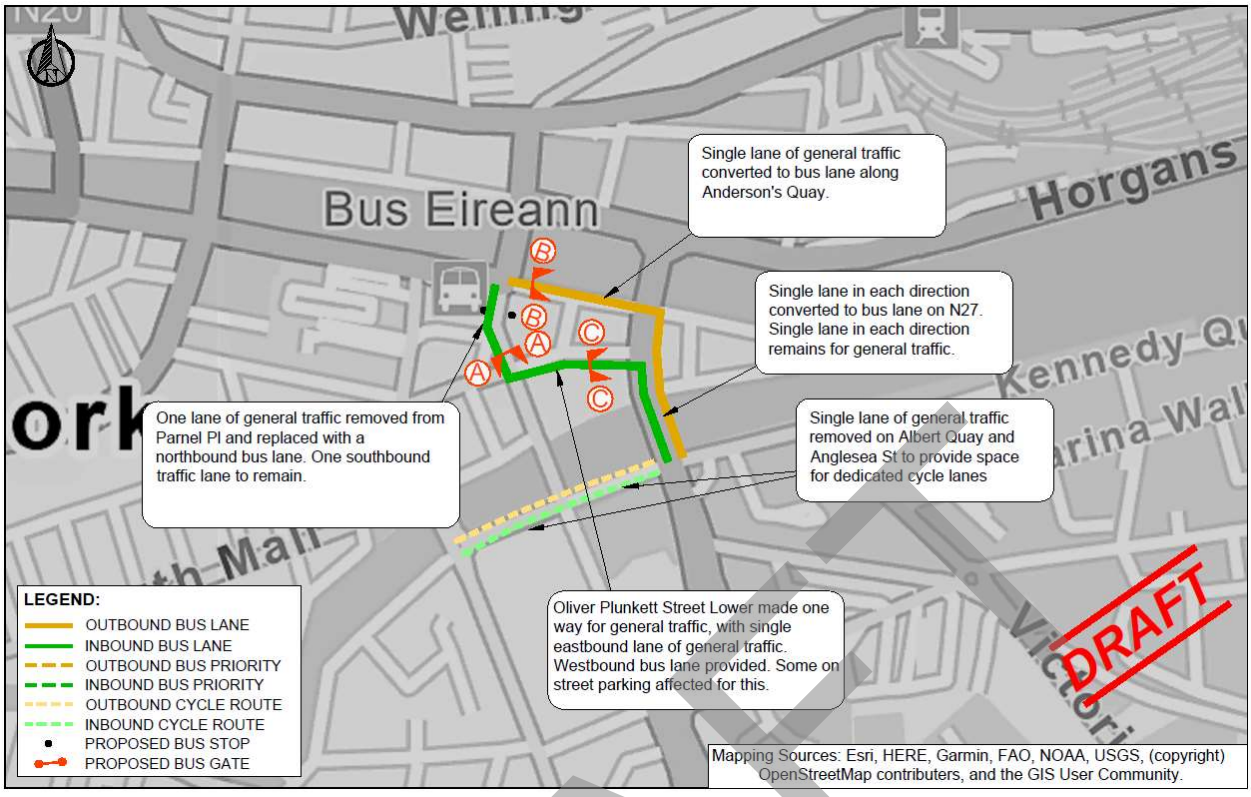


Figure 7-86

Route:
Dedicated bus lanes would be provided in both directions on South Link Road until Oliver Plunkett Street Lower is reached. This will be achieved by converting a lane of traffic in each direction from a general traffic lane to a bus lane, leaving a single lane of general traffic in each direction remaining.

Inbound busses will then use Oliver Plunkett Street Lower, with a dedicated westbound bus lane and a general traffic lane in the eastbound direction. Some on street parking would be impacted by this.

The route for outbound busses continues up South Link Road, before turning west onto Andersons Quay, where a single lane of general traffic will be converted to a bus lane, leaving one lane of general traffic and one bus lane remaining, both eastbound.

Cycle Route and pedestrian provision:
Cycle lanes will be provided along Albert Quay and Anglesea St. A single lane of general traffic will be re-allocated on each of these streets to allow widths for the dedicated cycle lanes.

Pedestrians would be provided for along both sides of the route for the length of this scheme.

Bus Stops: One bus stop would be provided in each direction, both located outside Cork Bus Station.

Cross Sections

Indicative cross sections showing the proposed layout of Andersons Quay, Oliver Plunkett Street Lower and Clontarf Street are shown in Figure 7-87, Figure 7-88 and Figure 7-89 respectively.

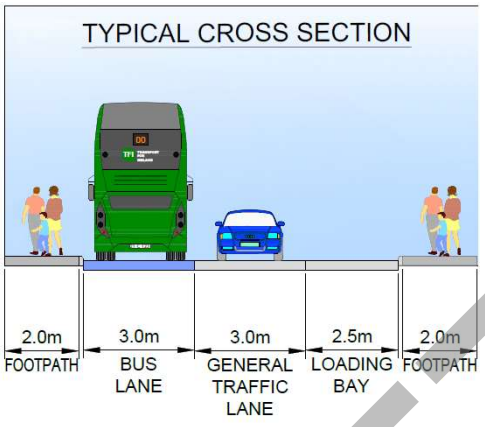


Figure 7-87 A-A

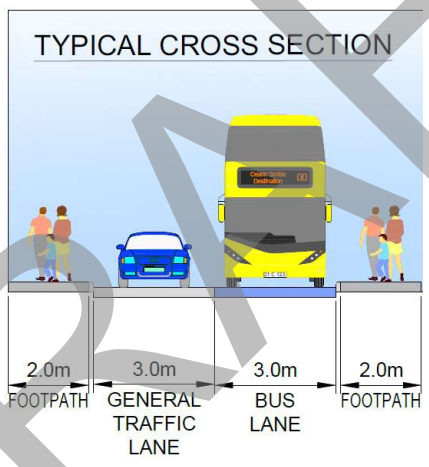


Figure 7-88 B-B

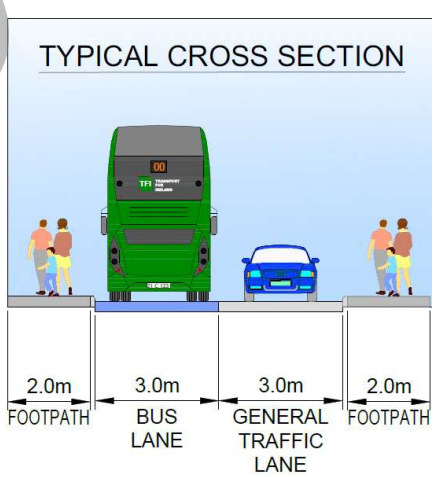


Figure 7-89 C-C

7.8.5 Route Option 4:

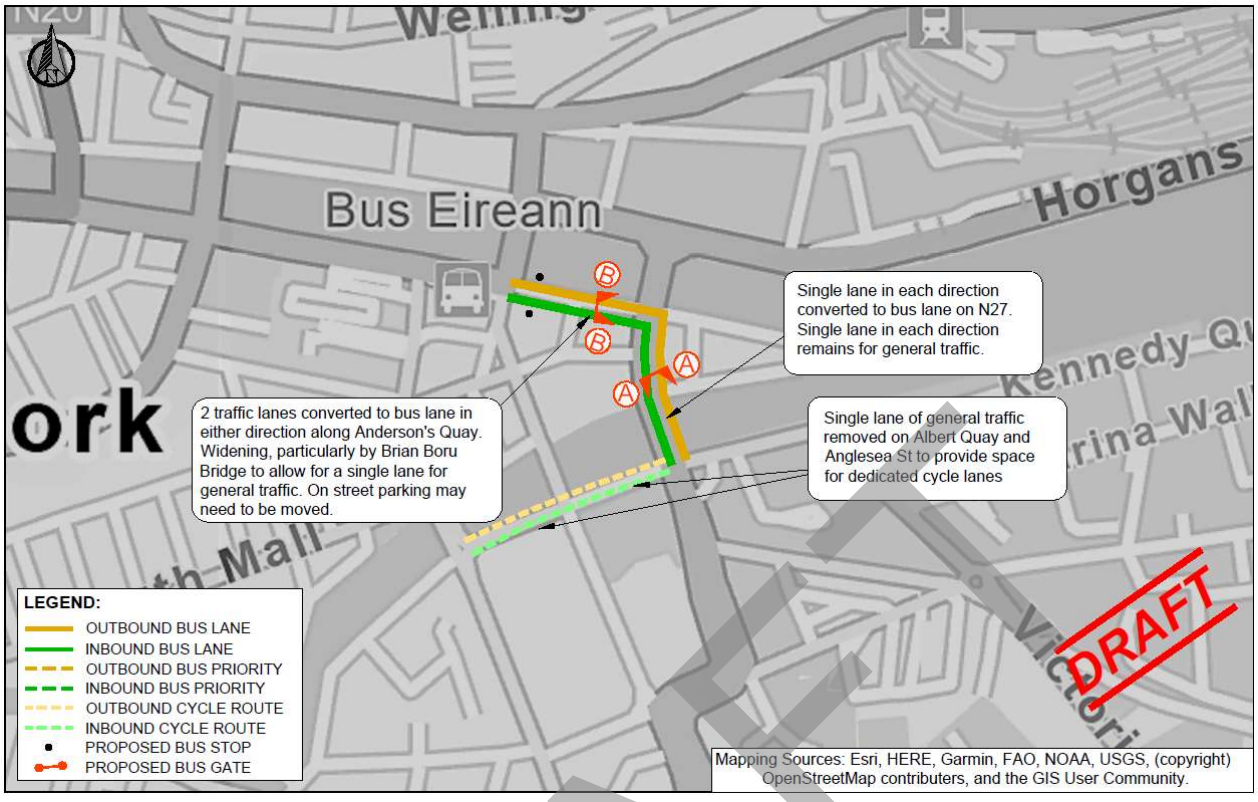


Figure 7-90

Route:
Dedicated bus lanes would be provided in both directions on South Link Road until Andersons Quay. This will be achieved by converting a lane of traffic in each direction from a general traffic lane to a bus lane, leaving a single lane of westbound general traffic in each direction remaining.

Dedicated bus lanes will be provided in both directions on Andersons Quay by widening the cross section and reducing the lanes of existing traffic from 2/3 (3 being present towards the Michael Collins Bridge) to a single lane of general traffic. On street parking may also be affected.

Cycle Route and pedestrian provision:
Cycle lanes will be provided along Albert Quay and Anglesea St. A single lane of general traffic will be re-allocated on each of these streets to allow widths for the dedicated cycle lanes.

Pedestrians would be provided for along both sides of the route for the length of this scheme.

Bus Stops: One bus stop would be provided in each direction, both located outside Cork Bus Station.

Cross Sections

Indicative cross sections showing the proposed layout of South Link Road and Andersons Quay are shown in Figure 7-91 and Figure 7-92 respectively.

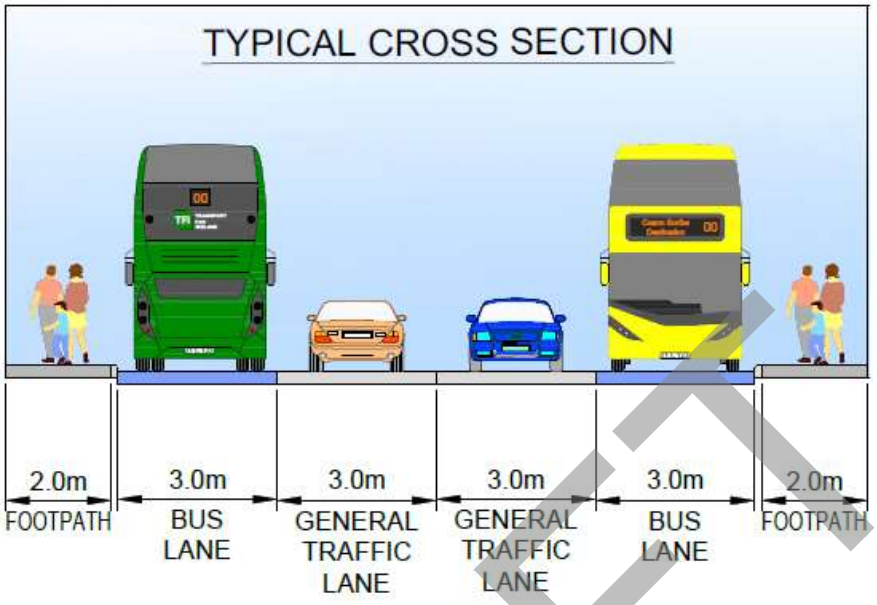


Figure 7-91 A-A

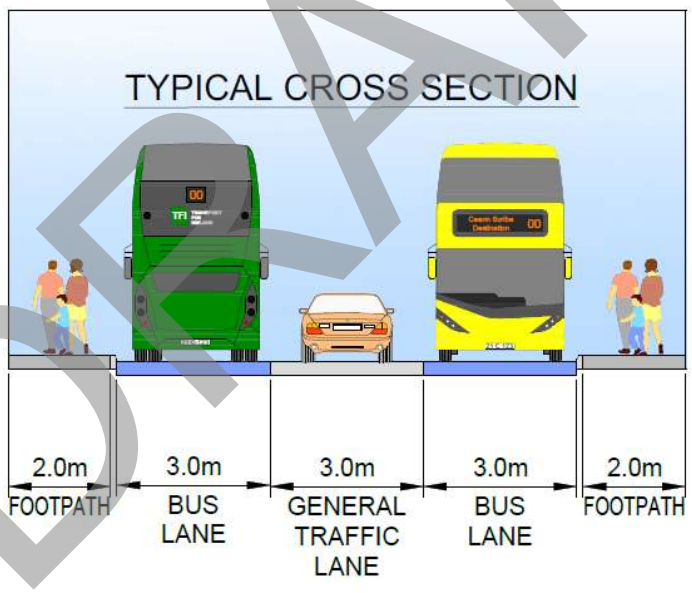


Figure 7-92 B-B

7.8.6 Option Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-15 below.

Table 7-15 Route 1 - Set 9 - Options Assessment Summary

Eamon de Valera Bridge to Cork Bus Station					
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**	**Route 4**
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', Option 4 performs better for capital cost due to requiring less significant works. All options would have a similar journey time so perform the same for this, however, Options 1 and 4 have better journey time reliability as they provide dedicated bus lanes for the whole length of the route.

Regarding 'Integration'; Options 1 and 4 perform better for transport integration as they don't require bus gates as part of the scheme and allow all traffic movements to remain.

In terms of ‘Accessibility and Social Inclusion’, Option 1 appears to be preferrable as it passes closest to City Hall, the South Mall, the Clarion Hotel, and the Lapps Quay offices. All other options pass directly in front of the proposed skyscraper on Custom House Quay.

In terms of “Road Safety” Options 1 and 4 require less interfaces with junctions and turning movements than the other options. They also use wider roads more suitable for busses than Options 2 & 3 which use in part Oliver Plunkett Street Lower.

Regarding ‘Environment’; there is little difference between all options. All routes use existing city streets. Some parking may need to be removed for Option 4 on Anderson Quay, otherwise all options all neutral.

7.8.7 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 7-16

Table 7-16 Route Options Assessment Summary

Eamon de Valera Bridge to Cork Bus Station				
Assessment Criteria	**Route 1**	**Route 2**	**Route 3**	**Route 4**
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

Based on the assessment, it has been determined that Route 1 offers the preferred route option for the following reasons:

- It has a better journey time reliability than Options 2 & 3.
- It doesn't require the closure of general traffic lanes.
- It has better trip attractors than Option 4.
-

Route 1 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.

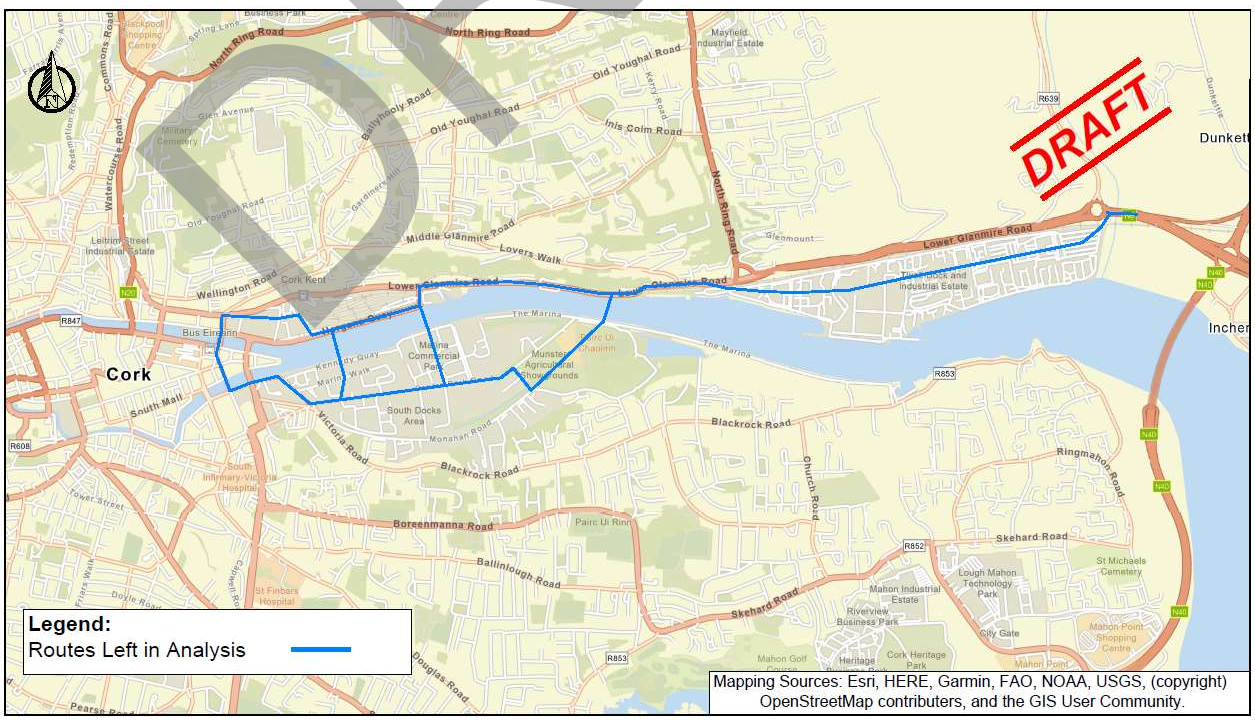


Figure 7-93

7.9 Section 2 Set 9 – Overall Preferred Route for Section 2

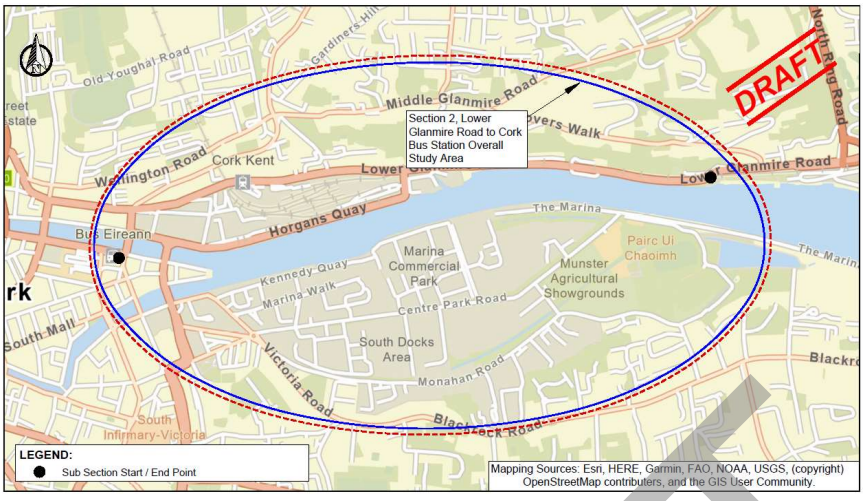


Figure 7-94

7.9.1 Introduction and Route Description

Following the options assessments for the various sub sections and MCAs undertaken in Section 2, the remaining links will be assembled to create routes that span all of Section 2.

- Route Option 1: Uses Lower Glanmire Road, Water Street, Horgan's Quay, Alfred Street and Brian Boru Street.
- Route Option 2: Uses Eastern Gateway Bridge, a new link between Monahan Road and Eastern Gateway Bridge, Monahan Road, a new link through South Docklands and The Marina Commercial Park, Water Street Bridge, Horgan's Quay, Alfred Street and Brian Boru Street.
- Route Option 3: Uses Eastern Gateway Bridge, a new link between Monahan Road and Eastern Gateway Bridge, Monahan Road, a new link through South Docklands, Centre Park Road, Mill Road, Mill Street Bridge Horgan's Quay, Alfred Street and Brian Boru Street.
- Route Option 4: Uses Eastern Gateway Bridge, a new link between Monahan Road and Eastern Gateway Bridge, Monahan Road, a new link through South Docklands, Centre Park Road, Victoria Road, Albert Quay and Clontarf Street.

All these routes start on Lower Glanmire Road to the West of the railway bridge and finish at Cork City Centre by Cork Bus Station.

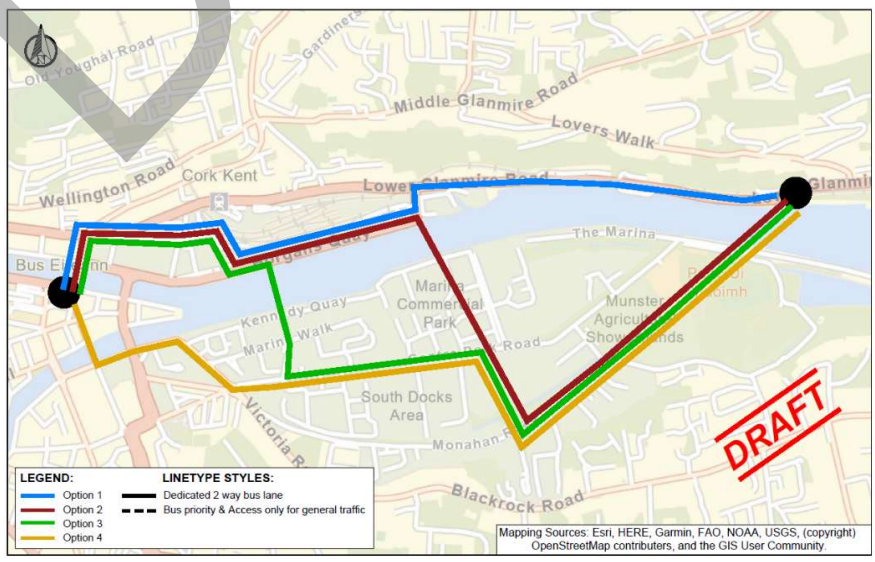


Figure 7-95

7.9.2 Route Option 1:

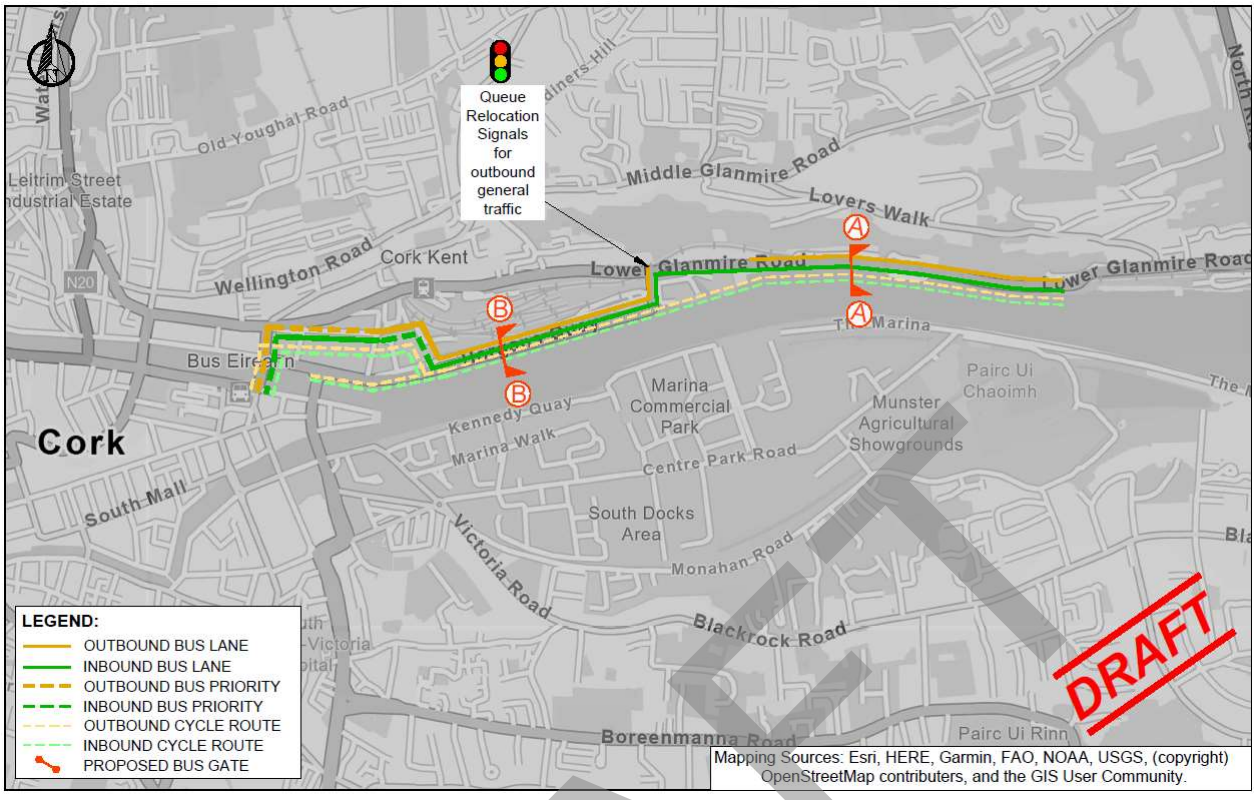


Figure 7-96

Bus Route:

Starting from the east the route would follow Lower Glanmire Road with dedicated bus lanes provided on both sides until the pinch point is reached 40m east of Beale's Hill, widening of the current cross section into the verges at either side of the road is required to achieve the widths for this and to keep general traffic lanes in both directions, a pedestrian and cycleway would be built on a cantilevered boardwalk to the south of the existing quay wall.

The pinch point on Lower Glanmire Road comprises of single traffic lanes with buildings fronting onto the footpaths. As such, the reallocation of road space between the boundaries including widening to provide the dedicated bus lanes and two-way traffic lanes is not viable. The narrowest boundary to boundary point of this section is approx. 11m. This route option would provide a dedicated inbound bus lane on the existing route as well as accommodating two-way traffic. To accommodate bus priority for outbound buses, queue relocation traffic signals would be provided for general outbound traffic. The outbound bus would use the general traffic lane through the constrained area and re-join the proposed outbound dedicated bus lane to the east on Lower Glanmire Road.

The proposed route runs along Water Street and Horgan's Quay from Lower Glanmire Road and into the Cork City Centre at St Patricks Quay. Horgan's Quay is currently made up of two lanes of westbound traffic, with a wide footpath on the northern side only, it is bounded by the walls of the train station depot and the river Lee and has a total carriageway width of approximately 12.8m. This route option would involve removing a lane of westbound traffic from Horgan's Quay and widening the cross section into the area to the North of the route to allow for bus lanes to be provided in both directions.

The route would then turn onto Alfred Street. On Alfred Street, east of Railway Street, the route has an existing cross section with two-way cycle tracks and a single eastbound bus lane, here the cross section would be widened to have a contraflow traffic lane provided adjacent to the bus lane, this traffic lane would only be used for local accesses and therefore would be a quiet route effectively with bus priority.

Between Railway Street and Ship Street the existing route has a cycle track in each direction, traffic lanes in each direction, on street parking and bus stops. There are footpaths on either side for the length of the route and the carriageway is bounded by private buildings. The proposed route through here would reduce the traffic lanes to have a single eastbound traffic lane as far as Railway Street, this would only serve local accesses so would be a quiet route shared by the outbound busses, this allows parking on the north of Alfred Street to remain in place. The westbound traffic lane would be converted to a dedicated bus lane, meaning that Alfred Street would be one way for general traffic.

West of Ship Street the existing eastbound bus only route would be widened to have dedicated bus lanes in both directions, allowing busses only to run through and access MacCurtain Street and Brian Boru Street. This effectively acts as a bus gate and keeps Alfred Street a quiet route with bus priority.

On Brian Boru Street the route would tie into the proposed MacCurtain Street scheme design, with an outbound bus lane provided for the right turn movement onto Alfred Street, and apart from that general traffic lanes in both direction, this is achieved by reversing the direction of one of the existing southbound lanes of general traffic.

Cycle Route:

Starting from the western side of Tivoli Docks, a new cycle and pedestrian route would be constructed on a cantilevered boardwalk on the southern side of the existing quay wall, this would link up with the inbound/outbound cycle track that runs through Tivoli Docks and continue west between the river and Lower Glanmire Road until Castleview Terrace.

The pedestrian and cyclist boardwalk would pass to the south of Castleview Terrace and run along a newly constructed cycle and pedestrian route to take them to the south of McMahons Builders Providers, a lightweight cycle bridge would be constructed over the channel adjacent to the building providers.

After this they would join Horgan's Quay and two-way cycle track would be provided which would tie into the existing provision there which continues into Cork City Centre. A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Bus Stops: A total of seven bus stops on the inbound and six on the outbound bus lanes would be provided along this route.

Cross Sections

Cross-sections of Lower Glanmire Road before the pinch point, and realigned Horgan's Quay are presented in Figure 7-97 and Figure 7-98 respectively.

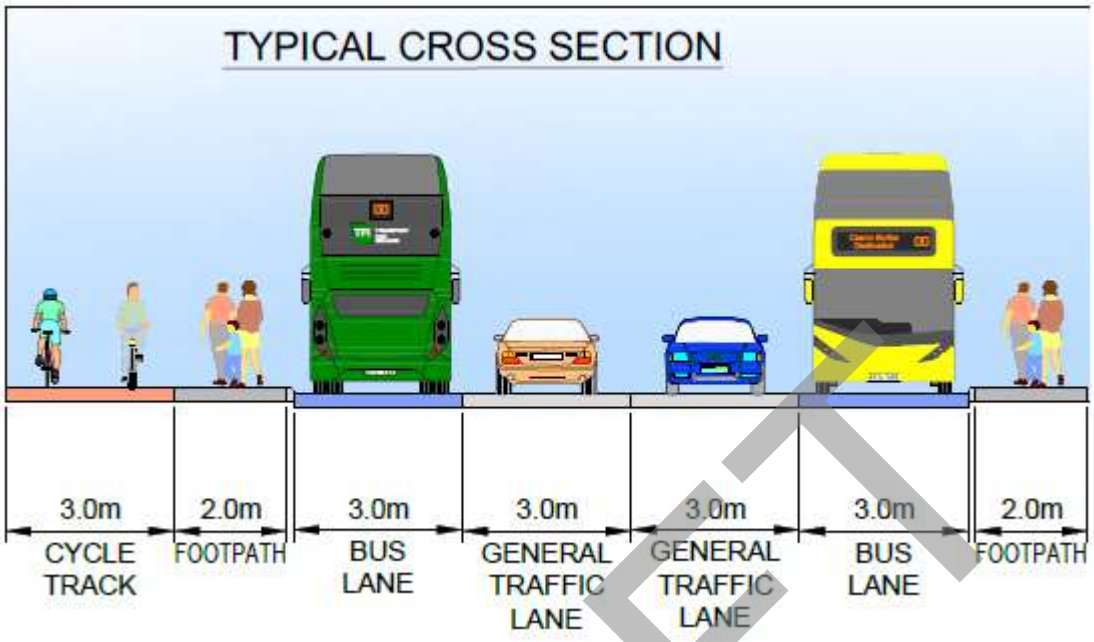


Figure 7-97 A-A

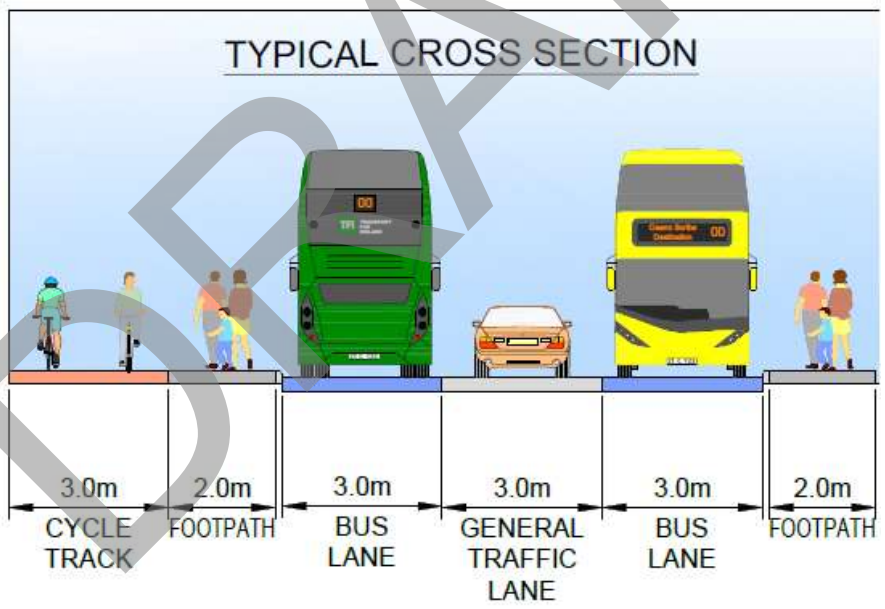


Figure 7-98 B-B

7.9.3 Route Option 2

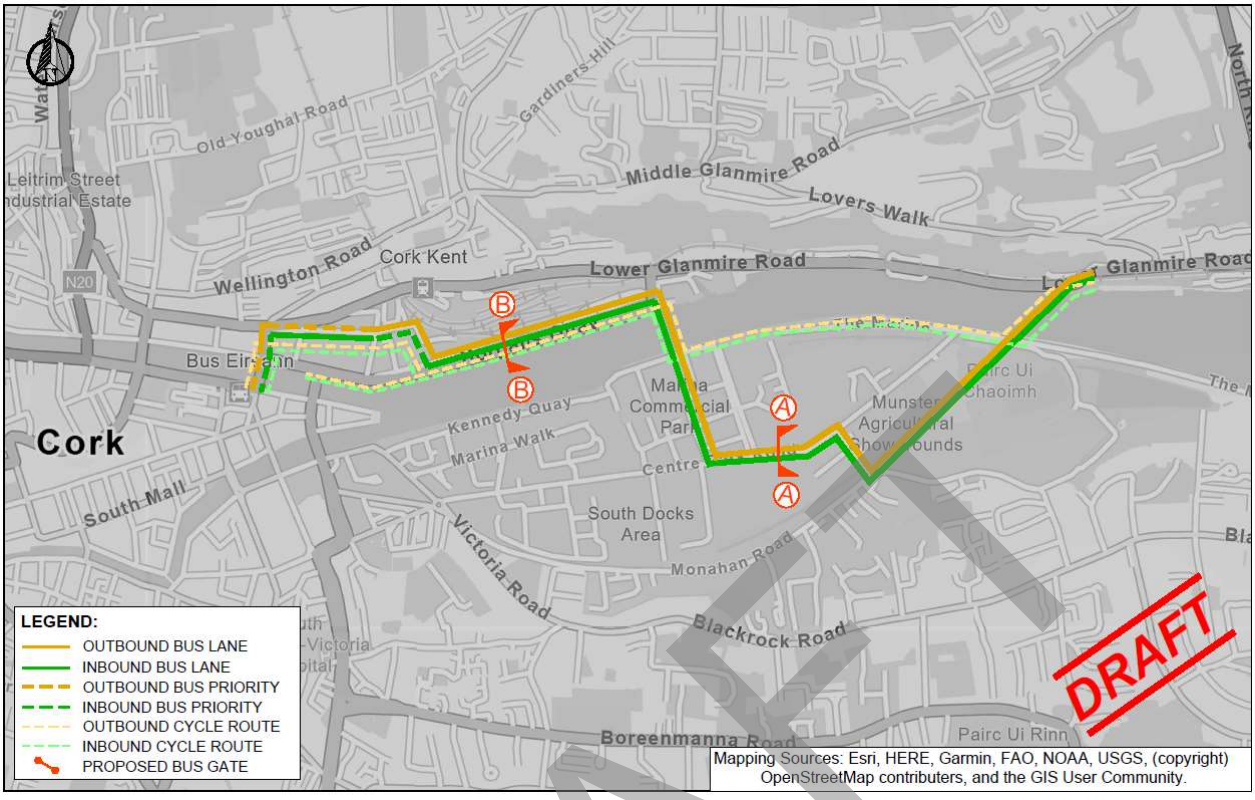


Figure 7-99

Route:
The route would use the Eastern Gateway bridge and a new link to cross the river Lee and join Monahan Road. It would follow Monahan Road for approximately 500m before turning north and taking a new link through South Docklands and The Marina Commercial Park to reach the start of the proposed Water Street Bridge.

A new bridge is required at the start of this option as well as a new road in the greenspace between the bridge and Monahan Road.

Once Monahan Road is reached the route turns immediately north onto Marquee Road, then west onto Centre Park Road which it follows for approximately 375m until reaching The Marina Commercial Park. On Marquee Road the cross section will be widened into private land approximately 6m to the east and on Centre Park Road the cross section will be widened into private land approximately 6m to the north. This will allow two new traffic lanes to be constructed on the outside of the existing row of trees, and the new cross section will have a bus lane and a traffic lane in both directions, either side of the row of trees.

The route then turns north through The Marina Commercial Park, where a new link with bus lanes in both directions would be constructed through the private industrial area that is currently present there.

The route would then cross the proposed Water Street Bridge (which would involve the construction of the Bridge), before joining up with Horgan's Quay on the North of the Lee. The bus route follows Horgan's Quay west into Penrose Quay and then Cork City Centre, Horgan's Quay cross section is currently made up of 2 lanes of westbound traffic, with a wide footpath on the northern side only, it is bounded by the river Lee and private land, and has a total carriageway width of approximately 12.8m. Minor widening on parts of Horgan's Quay would be required to change its cross section to have dedicated bus lanes in both directions, an inbound only general traffic lane a 2 way cycle track adjacent to the Lee and footpaths on both sides.

The route would then turn onto Alfred Street. On Alfred Street, east of Railway Street, the route has an existing cross section with two- way cycle tracks and a single eastbound bus lane, here the cross section would be widened to have a contraflow traffic lane provided adjacent to the bus lane, this traffic lane would only be used for local accesses and therefore would be a quiet roue effectively with bus priority.

Between Railway Street and Ship Street the existing route has a cycle track in each direction, traffic lanes in each direction, on street parking and bus stops. There are footpaths on either side for the length of the route and the carriageway is bounded by private buildings. The proposed route through here would reduce the traffic lanes to have a single eastbound traffic lane as far as Railway Street, this would only serve local accesses so would be a quiet route shared by the outbound busses, this allows parking on the north of Alfred Street to remain in place. The westbound traffic lane would be converted to a dedicated bus lane, meaning that Alfred Street would be one way for general traffic.

West of Ship Street the existing eastbound bus only route would be widened to have dedicated bus lanes in both directions, allowing busses only to run through and access MacCurtain Street and Brian Boru Street. This effectively acts as a bus gate and keeps Alfred Street a quiet route with bus priority.

On Brian Boru Street the route would tie into the proposed MacCurtain Street scheme design, with an outbound bus lane provided for the right turn movement onto Alfred Street, and apart from that general traffic lanes in both direction, this is achieved by reversing the direction of one of the existing southbound lanes of general traffic.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along the south bank of the river Lee up to Water Street bridge. Cyclists would then use dedicated cycle lanes provided on Water Street Bridge to cross the River Lee.

Once on the north side of the river Lee, they would join Horgan's Quay and two-way cycle track would be provided which would tie into the existing provision there which continues into Cork City Centre. A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Pedestrian footpaths would be provided either side of the new bridges bus corridors.

Bus Stops: A total of 6 bus stops in each direction would be provided along this route.

Cross Sections
Indicative cross sections showing the proposed layouts of Centre Park Road and Horgan's Quay are shown in Figure 7-100 and Figure 7-101 respectively.

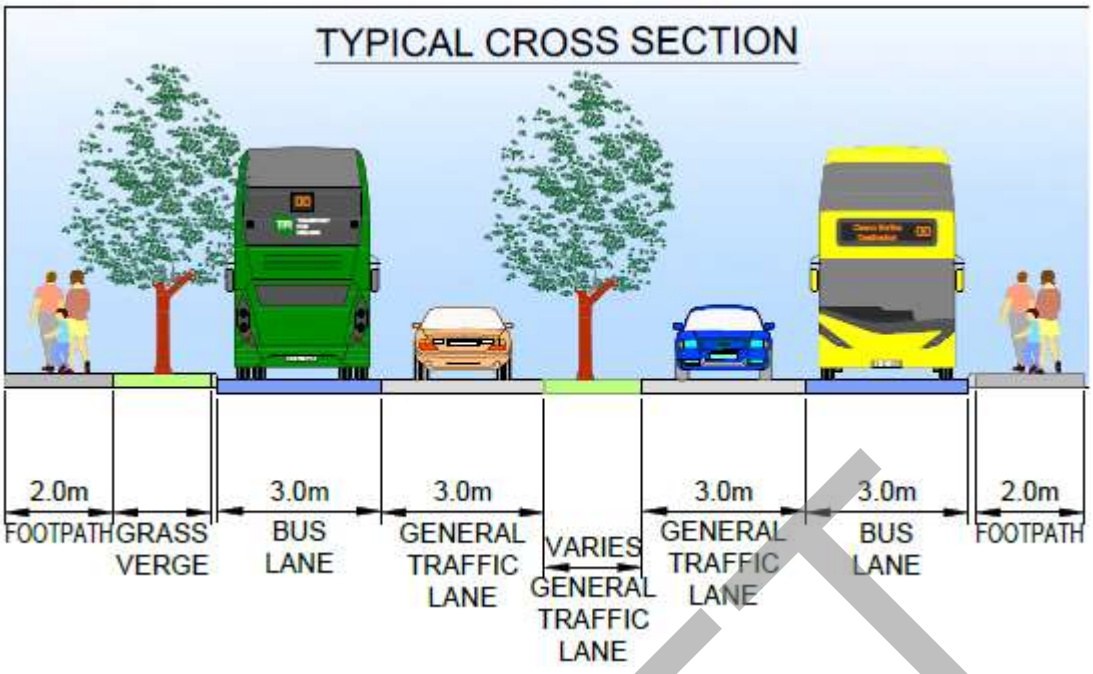


Figure 7-100 A-A

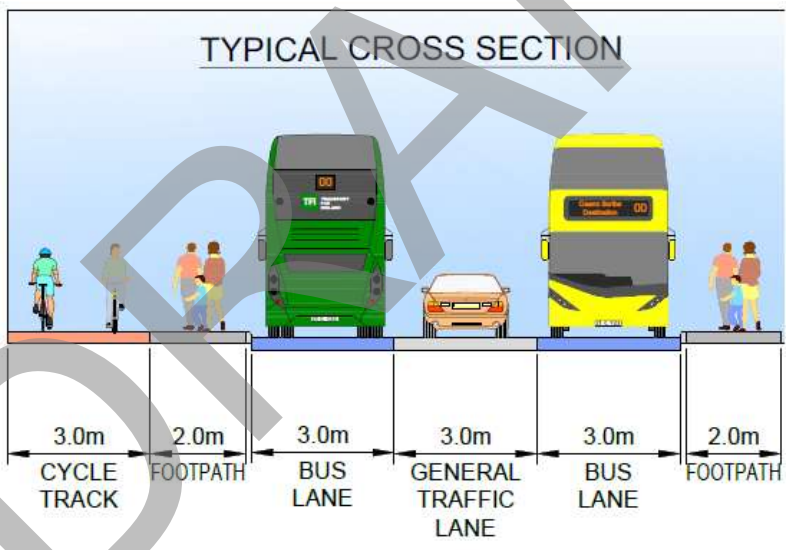


Figure 7-101 B-B

7.9.4 Route Option 3

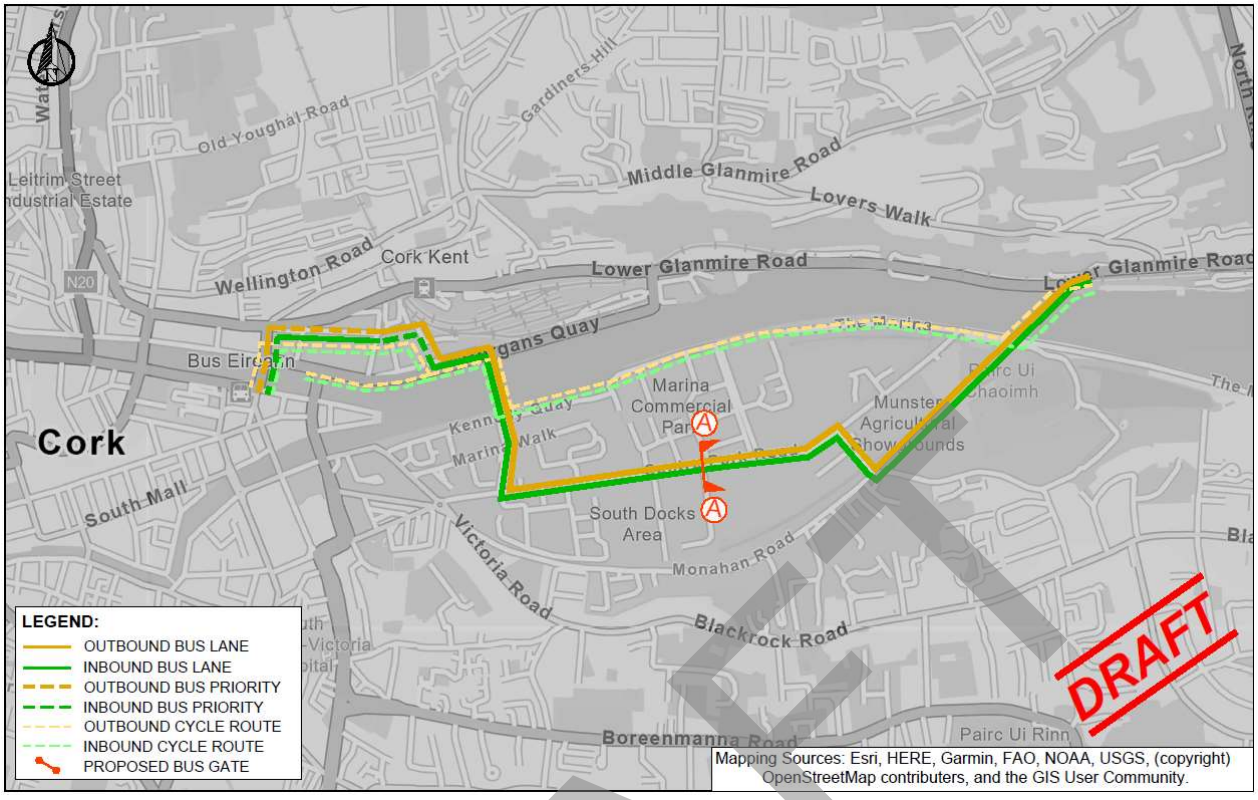


Figure 7-102

Route:
The route would use the Eastern Gateway bridge and a new link to cross the river Lee and join Monahan Road. It would follow Monahan Road for approximately 500m before turning north and taking a new link through South Docklands to reach Centre Park Road.

A new bridge would be required at the start of this option as well as a new road in the greenspace between the bridge and Monahan Road.

Once Monahan Road is reached the route turns immediately north onto Marquee Road, then west onto Centre Park Road which it follows until reaching Mill Road. On Marquee Road the cross section will be widened into private land approximately 6m to the east and on Centre Park Road the cross section will be widened 6m into private land to the north for the first 375m, then less after this. This will allow two new traffic lanes to be constructed on the outside of the existing row of trees, and the new cross section will have a bus lane and a traffic lane in both directions, either side of the row of trees.

Once Mill Road is reached the bus route would turn north along this road. Widening into the private industrial area to the west and removal of on street parking would be required to construct bus lanes and general traffic lanes in both directions. The route would then cross Mill Street Bridge which would require construction, and then link up with Horgan's Quay.

The route would then turn onto Alfred Street. On Alfred Street, east of Railway Street, the route has an existing cross section with two-way cycle tracks and a single eastbound bus lane, here the cross section would be widened to have a contraflow traffic lane provided adjacent to the bus lane, this traffic lane would only be used for local accesses and therefore would be a quiet roue effectively with bus priority.

Between Railway Street and Ship Street the existing route has a cycle track in each direction, traffic lanes in each direction, on street parking and bus stops. There are footpaths on either side for the length of the route and the carriageway is bounded by private buildings. The proposed route through here would reduce the traffic lanes to have a single eastbound traffic lane as far as Railway Street, this would only serve local

accesses so would be a quiet route shared by the outbound busses, this allows parking on the north of Alfred Street to remain in place. The westbound traffic lane would be converted to a dedicated bus lane, meaning that Alfred Street would be one way for general traffic.

West of Ship Street the existing eastbound bus only route would be widened to have dedicated bus lanes in both directions, allowing busses only to run through and access MacCurtain Street and Brian Boru Street. This effectively acts as a bus gate and keeps Alfred Street a quiet route with bus priority.

On Brian Boru Street the route would tie into the proposed MacCurtain Street scheme design, with an outbound bus lane provided for the right turn movement onto Alfred Street, and apart from that general traffic lanes in both direction, this is achieved by reversing the direction of one of the existing southbound lanes of general traffic.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along The Marina on the south bank of the river Lee. At the end of the existing cycle route a new cycle route will be provided through the industrial area along the bank of the river and along Kennedy Quay until Mill Street Bridge is reached. Cyclists would then cross Mill Street Bridge on dedicated cycle lanes.

Once on the north side of the river Lee they would join Horgan's Quay and two-way cycle track would be provided which would tie into the existing provision there which continues into Cork City Centre. A separate two-way cycle track would follow the bus route, go via Kent Train Station along Alfred Street and tie into the existing provision on Brian Boru and MacCurtain Street.

Pedestrian footpaths would be provided either side of the new bridges and new links, a new pedestrian footpath would be provided alongside the cycle routes on the south bank of the Lee between The Marina and Mill Street Bridge.

Bus Stops: A total of 7 bus stops in each direction would be provided along this route.

Cross Sections

An indicative cross section showing the proposed layout of Centre Park Road is shown in Figure 7-103.

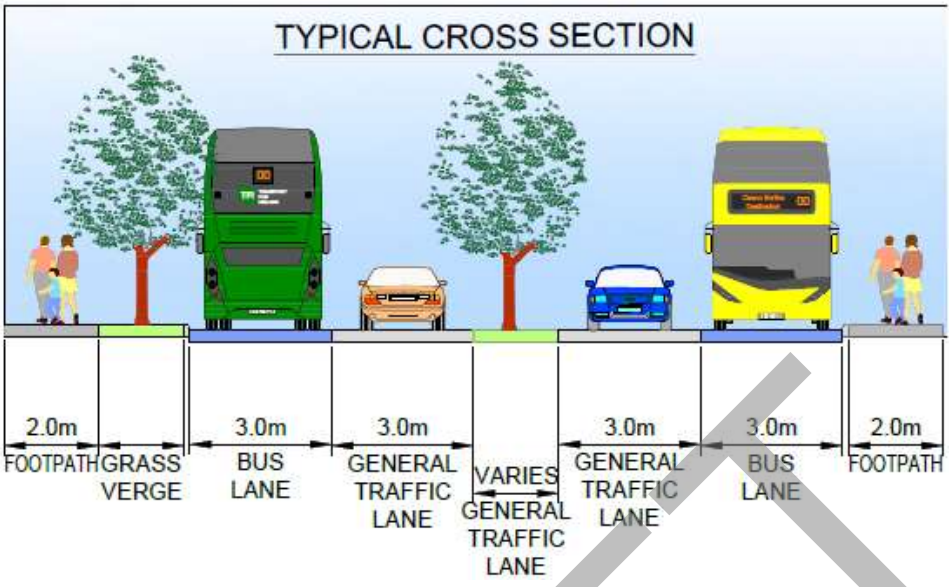


Figure 7-103 A-A

7.9.5 Route Option 4

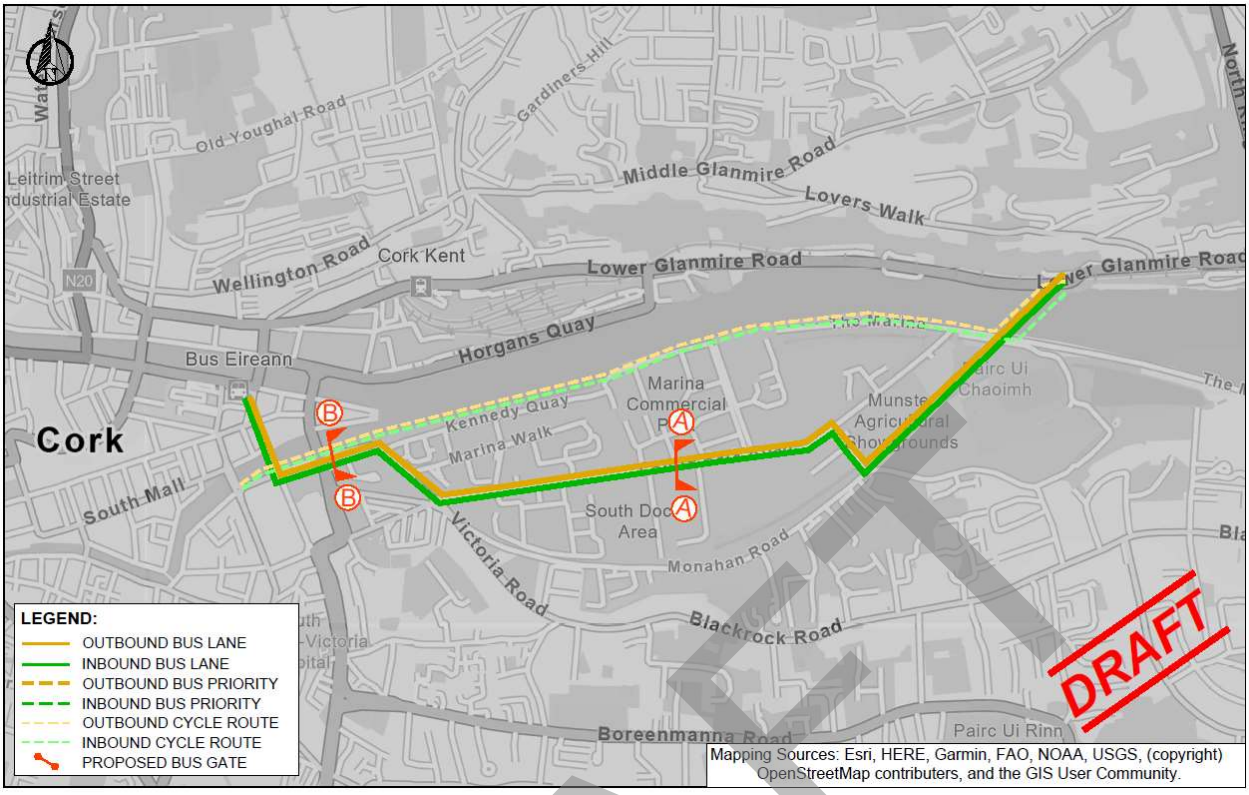


Figure 7-104

Route:
The route would use the Eastern Gateway bridge and a new link to cross the river Lee and join Monahan Road. It would follow Monahan Road for approximately 500m before turning north and taking a new link through South Docklands to reach Centre Park Road.

Construction of a new bridge (Eastern Gateway Bridge) would be required at the start of this option as well as a new road in the greenspace between the bridge and Monahan Road.

Once Monahan Road is reached the route turns immediately north onto Marquee Road, then west onto Centre Park Road which it follows until reaching Victoria Road Roundabout. On Marquee Road the cross section will be widened into private land approximately 6m to the east and on Centre Park Road the cross section will be widened 6m into private land to the north for the first 375m, then less after this. This will allow two new traffic lanes to be constructed on the outside of the existing row of trees, and the new cross section will have a bus lane and a traffic lane in both directions, either side of the row of trees.

Once Victoria Road Roundabout is reached the route would take Victoria Road and Albert Quay. Dedicated bus lanes would be provided in both directions along both Victoria Road and Albert Quay. Currently two lanes of eastbound traffic are present on both roads, to create the widths for dedicated bus lanes one of these lanes of traffic would be removed and the cross section widened, some private land take may be required for this to the north of Albert Quay. Some of the on-street parking on Albert Quay would also be removed.

The route would then continue along Albert Quay and onto Clontarf Street, before finishing at Cork Bus Station. Two existing traffic lanes on Albert Quay and Clontarf Street would be repurposed to bus only lanes, leaving a single lane of one-way general traffic remaining. As the routes are currently one-way general traffic movements are not affected, although the volume of traffic that can pass through is. Some widening and removal of on street parking would be required close to Cork Bus Station to achieve this cross section. The signalised junctions at the South Link Road and from Albert Quay onto Clontarf Street would be upgraded to provide bus priority.

Cycle Route and pedestrian provision:
Cycle lanes would be provided along the Eastern Gateway Bridge, and cyclists would then use the existing greenway present along The Marina on the south bank of the river Lee. At the end of the existing cycle route a new cycle route will be provided through the industrial area along the bank of the river and along Kennedy Quay and Albert Quay. Widening of the cross section to the North of Albert Quay will be required to provide the widths for cycle lanes.

Pedestrian footpaths would be provided either side of the new bridges and new links, a new pedestrian footpath would be provided alongside the cycle routes on the south bank of the Lee between The Marina and Mill Street Bridge.

Bus Stops: A total of 7 bus stops in each direction would be provided along this route.

Cross Sections
Indicative cross sections showing the proposed layouts of Centre Park Road and Albert Quay are shown in Figure 7-105 and Figure 7-106 respectively.

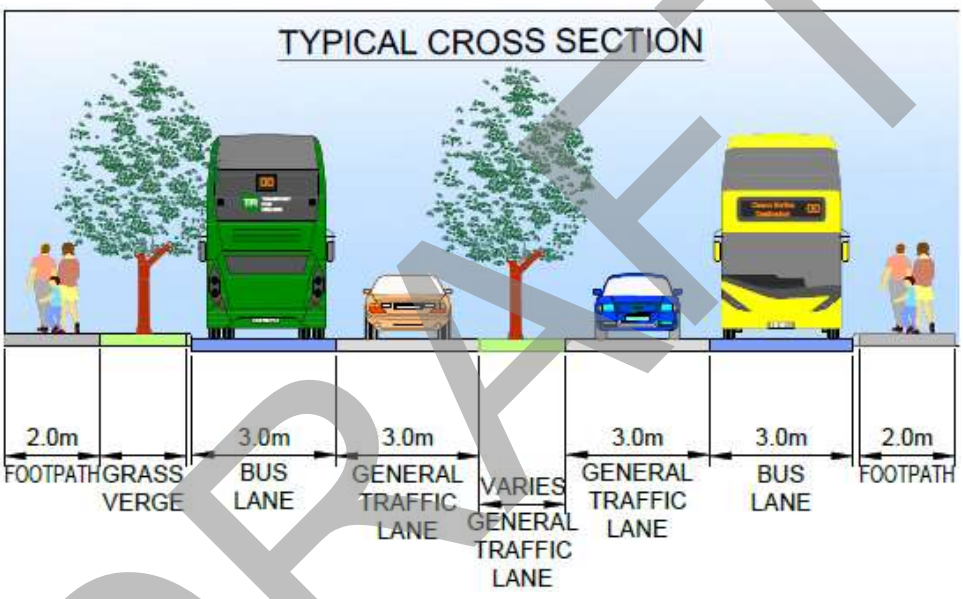


Figure 7-105 A-A

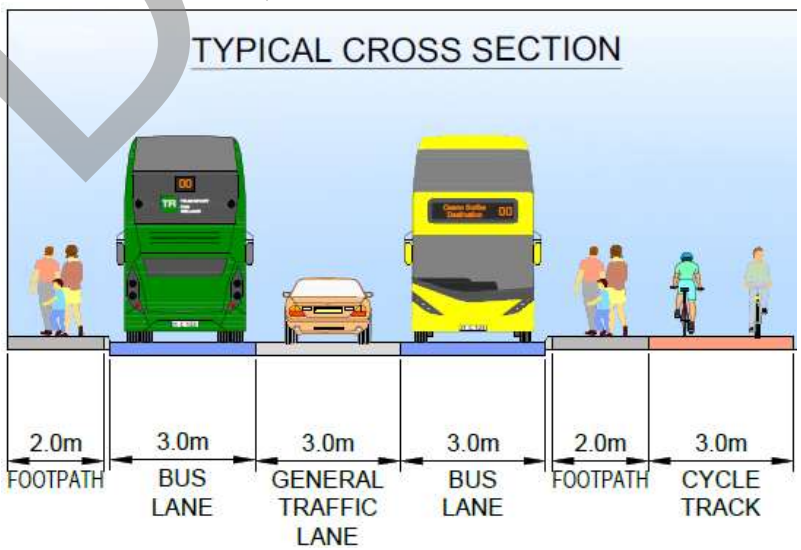


Figure 7-106 B-B

7.9.6 Option Assessment

A summary of the ranking of options against the scheme criteria is presented in Table 7-17 below.

Table 7-17 Route 1 - Set 10 - Options Assessment Summary

Stage 2	Overall Preferred Route for Section 2				
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**	**Route 4**
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, 3 and 4 require the construction of the Eastern Gateway Bridge to connect to the south docklands from north of the river Lee. Options 2 and 3 require new additional bridges at either Mill Street or Water Street to cross to the north of the Lee. This increases the cost of these options. Option 1 would not require the construction of any new bridges, has the shortest route length and least land take requirements, as such has significantly lower capital cost. Due to the shorter journey length and requiring passing through less junctions Option 1 also performs the best in terms of average journey time and journey time reliability. For these reasons Option 1 scores significantly better overall for Economy.

Regarding ‘Integration’ Option 1 performs slightly worse than the other options as it does not pick up the future developments earmarked in the South Docklands or construct any new bridges, which could also be used as future cycle and pedestrian links, although it does provide a key link highlighted in CMATS that would take people on the north of the Lee into the City Centre. Option 3 performs the best as it serves future developments in the South Dockland and also those on Horgan’s Quay. It would develop two of the bridges proposed for the docklands area. Option 4 performs the worst for transport integration as it does not serve Kent Station and would have a more significant impact on the traffic network than the other options.

In terms of ‘Accessibility and Social Inclusion’ Options 2 and 3 serve a higher number of ‘high volume trip attractors’, including Páirc Úi Chaoimh, The Marina, the Marina Park, the future developments of the south docklands and the Horgan’s Quay commercial area, whereas Options 1 & 4 only serve areas on 1 side of the Lee so perform worse for this criterion. Options 1 & 2 better serve the area where Horgan’s Quay and Lower Glanmire Road meet, which is described as a deprived geographic area.

In terms of “Road Safety” Option 1 has the most direct route with the least junctions and turning movements, so performs better under this criterion.

Regarding the ‘Environment’ criteria, the options to the south of the river involve more road widening, removal of trees and construction of new bridges, as a result they score worse than Option 1.

7.9.7 Conclusion

A summary of the assessment and a relative ranking of each of the five assessment criteria is shown below in Table 7-18.

Table 7-18 Route Options Assessment Summary

Overall Preferred Route for Section 2				
Assessment Criteria	Route 1	Route 2	Route 3	Route 4
Economy				
Integration				
Accessibility and Social inclusion				
Safety				
Environment				

Based on the assessment, it has been determined that Route 1 offers the preferred route option for the following reasons:

- It has a lower cost than Options 2, 3 & 4.
- It has a better average journey time and journey time reliability than Options 2, 3 & 4.
- It requires less infrastructure and no bridges over the Lee to be built so performs better on the environmental factors.

Route 1 is identified as the emerging preferred route for this section, as a result of this the spider's web has now been reduced down to a single route, as shown below, this route is bought forward into the emerging preferred route as described in Chapter 8.

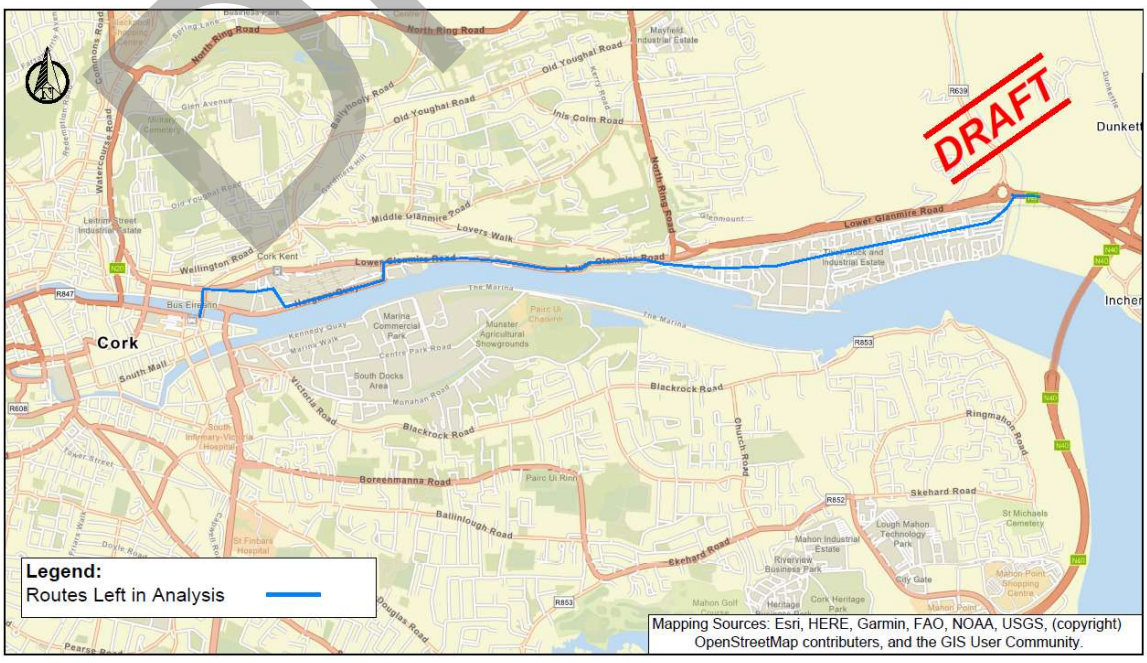


Figure 7-107

8. Proposed Scheme

8.1 Introduction

Chapters 5, 6 and 7 of this report presented an appraisal of all route options considered for study area Sections 1 and 2 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.

8.2 Emerging Preferred Route

The Emerging Preferred Route is presented in Figure 8-1 below:

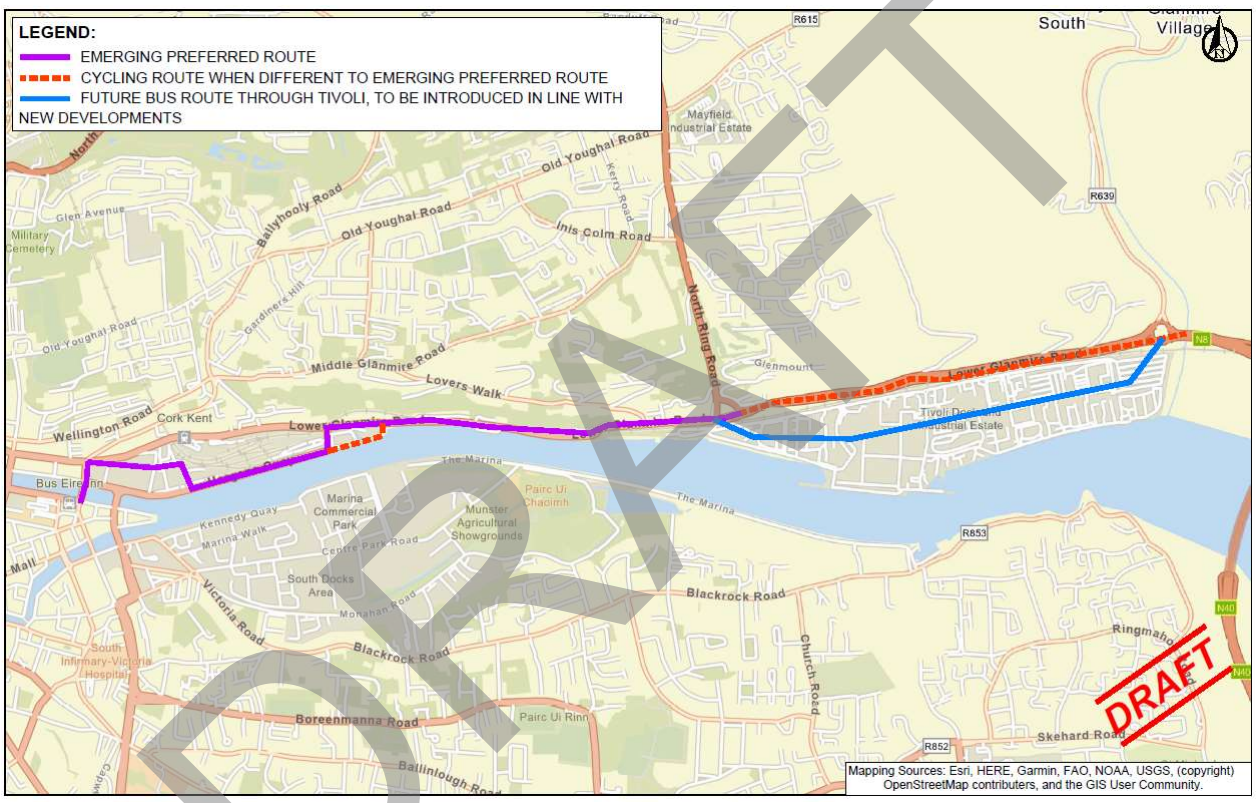


Figure 8-1

Dunkettle to City Overview

The Dunkettle to City Centre Sustainable Transport Corridor (STC 1) commences at the Dunkettle Roundabout. From here the proposed bus route heads south, crossing over the existing railway line into the Tivoli Docklands Development on a new bridge. It proceeds through the Tivoli Docklands on new roads before re-joining Lower Glanmire Road at the Silversprings junction. From Silversprings the bus route follows Lower Glanmire Road via the Skew Bridge until Water Street where it turns south and continues to Horgan's Quay before turning right onto Alfred Street, the route follows Alfred Street then turns onto Brian Boru Street, and ends at Cork Bus Station.

The proposed cycle route follows Lower Glanmire Road (N8) from the Dunkettle Roundabout along the dual carriageway as far as the skew bridge with segregated cycle lanes provided in both directions. It then uses a new bridge to pass over the railway line and connect to the exiting path within the Port of Cork Millennium Gardens. A new cantilevered pedestrian and cyclist boardwalk along Lower Glanmire Road is proposed to link the entrance to the park as far as Castleview Terrace. From here an elevated boardwalk is proposed

along the river edge to connect to a new cycle track along the quays within the North Docks. It then connects to a quayside cycle route on Horgan's Quay that continues towards the city centre.

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

1.1.1 Dunkettle Roundabout to Silversprings Junction

The corridor commences at the Dunkettle Roundabout, a new bridge and junction are proposed here to allow buses to cross over the railway line to access the Tivoli Docklands. The bus route follows new roads through the Tivoli Docklands Development before re-joining Lower Glanmire Road at the Silversprings junction. The design of the proposed route through Tivoli Docklands as well as the new bridge and junctions at either end will be carried out in conjunction with the design for the redevelopment of the docklands. This design will be completed at a later date and drawings of this section of the scheme are not presented as part of this consultation.

On Lower Glanmire Road segregated cycle lanes are proposed on both sides of the existing dual carriageway. It is proposed to change the speed limit of this section of road from 100 km/h to 60 km/h to make the road safer and more suitable for cyclists. Cycle links and signalised toucan crossings are to be provided at the Dunkettle Roundabout so that cyclists can connect onwards towards Glanmire and Little Island.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Dunkettle Roundabout	Improvements to the existing junction prioritising pedestrian and cycle friendly design and allowing safe onward connections to Glanmire and Little Island.
Lower Glanmire Road near entrance to Lotamore House	One new bus stop is proposed on the inbound section of the Lower Glanmire Road dual carriageway. New toucan crossing to facilitate easy access to new bus stop and generally improved permeability for pedestrians.
Silversprings Junction	Improvements to the existing junctions prioritising pedestrian and cycle friendly design. On and off ramps to be signalised to mange conflcits and provide priority for cyclists. Three new signalised pedestrian crossings to be provided.

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

- Lands on the northern side of Lower Glanmire Road.

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

1.1.2 Silversprings Junction to Water Street

Between Silversprings and the existing Skew Bridge a dedicated outbound bus lane is proposed, and inbound priority is achieved using traffic lights. There is limited width available over the skew bridge and it is not possible to provide bus lanes so bus priority in both directions will be provided using traffic lights. West of the Skew Bridge dedicated bus lanes are provided in both directions as far as Myrtle Hill Terrace. This can be achieved by narrowing the traffic lanes, removing the hatched central median and relocating pedestrians to a new boardwalk on the southside of the quay wall. On the narrow section between Myrtle Hill Terrace and Water Street a bus lane is provided in the inbound direction only and outbound bus priority is provided by traffic lights which will hold outbound traffic at the Water Street Junction during times of congestion.

Dedicated cycle tracks are provided on both sides of the road from Silversprings as far as the junction with Trafalgar Hill. From here the outbound cycle route uses the local access road running parallel on the northern side of the railway, while inbound cyclists are on a segregated cycle lane on Lower Glanmire Road. Cyclists in both directions use a new bridge to cross over the railway line, this new bridge is proposed to be built to the east of the Skew Bridge and connect to a two-way cycle route within the Port of Cork Millennium Gardens. Cyclists then continue through the park before using a proposed 850m long cantilevered boardwalk built outside the existing quay walls along Lower Glanmire Road. This boardwalk runs from the entrance to the Millennium Gardens as far as Castleview Terrace. The elevated boardwalk then passes around the riverside (southside) of Castleview Terrace to connect to a new cycle route through the North Docks. Some land-take from the existing quayside in the North Docks area would be required to facilitate this new link.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Skew bridge over the railway line	A new bridge constructed adjacent to the Skew Bridge is proposed to allow pedestrians and cyclists to safely cross the railway line and to provide greater connectivity and an opportunity for enhancements at the Port of Cork Millennium Gardens.
Lower Glanmire Road	A new cycle and pedestrian boardwalk adjacent to river Lee would provide high level of amenity as well as a direct and useful link into Cork City Centre.
Lower Glanmire Road	Three new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
North Docks	Creation of a new pedestrian route and opportunities for landscaping and amenities on quayside lands within the North Docklands.

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

- Lands adjacent to the railway line on Lower Glanmire Road.
- Lands within the North Docklands east of Water Street

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

1.1.3 Water Street to MacCurtain Street

It is proposed to reallocate one of the two inbound traffic lanes on Water Street and Horgan's Quay to a bus lane and widen the road to construct a new outbound contraflow bus lane. This cross section would continue on Horgan's Quay as far as Alfred Street. The section of Alfred Street outside Kent Station is to be widened to allow for two-way bus movements. A dedicated westbound bus lane is to be provided on the section between Railway Street and Ship Street. To achieve this, it is proposed to make Alfred Street eastbound only for general traffic. Traffic would access Alfred Street using a clockwise one-way loop with Horgan's Quay and Ship Street. The existing one-way bus only access road between MacCurtain Street and Alfred Street is to be widened to allow for two-way bus movements.

A two-way cycle track is to be provided on the southern side of Horgan's Quay adjacent to the river Lee as far as Alfred Street. A segregated two-way cycle track is proposed for the length of Alfred Street as far as MacCurtain Street.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Horagan's Quay	Wide pedestrian and cyclist area provided along the river edge. Opportunities for landscaping, urban realm enhancement and a quayside amenity area.
Horgan's Quay	Two new bus stops proposed as well as two new signalised toucan crossings to facilitate easy access to bus stops and generally improved permeability for pedestrians.
Kent Station	Two new zebra crossings to allow safe and convenient access to the station.

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

- Lands of private property on Horgan's Quay

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

8.3 Summary

8.3.1 Infrastructure Provision

The emerging preferred route measures approximately 5.0 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 whole length of the emerging preferred route except for a 200m gap in outbound direction, where priority is achieved with 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 5.0km (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.

8.3.2 Journey Time Benefits

Through the provision of increased bus priority infrastructure, the proposed scheme would improve the overall journey time for buses as well as the journey time reliability. A review of the existing journey time data for buses illustrates the issues that will be addressed by the proposed scheme.

The following graphs show the existing journey time and bus speed data for the section of the Bus Eireann 214 bus route which overlaps with the emerging preferred route (between Cork City Center and the N8/R639 Roundabout). The information presented in these graphs has been taken from the automatic vehicle location system on the Cork Bus fleet and the journey times are inclusive of dwell times at stops. The figures below present the average journey time and the 95th percentile journey times during a normal weekday for the inbound and outbound directions. Data for 2019 and 2021 is shown due to potential outliers in the 2019 data that may have been affected by construction work on the scheme.

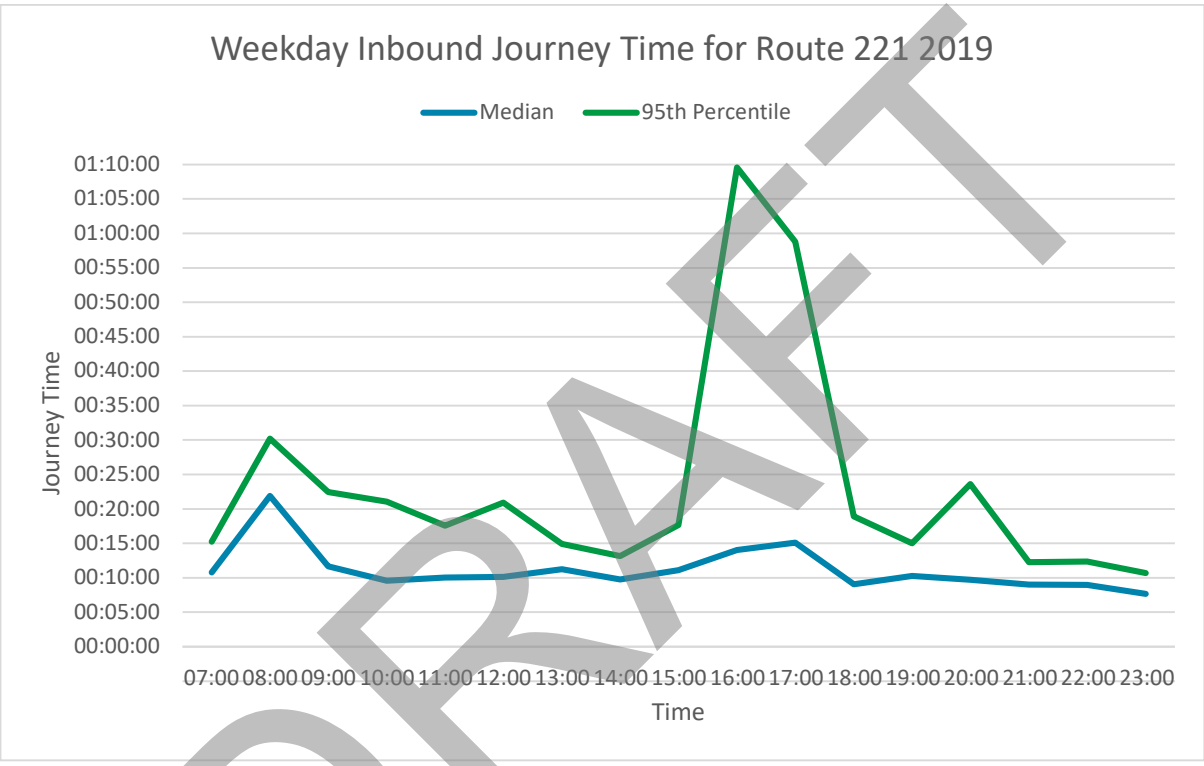


Figure 8-2

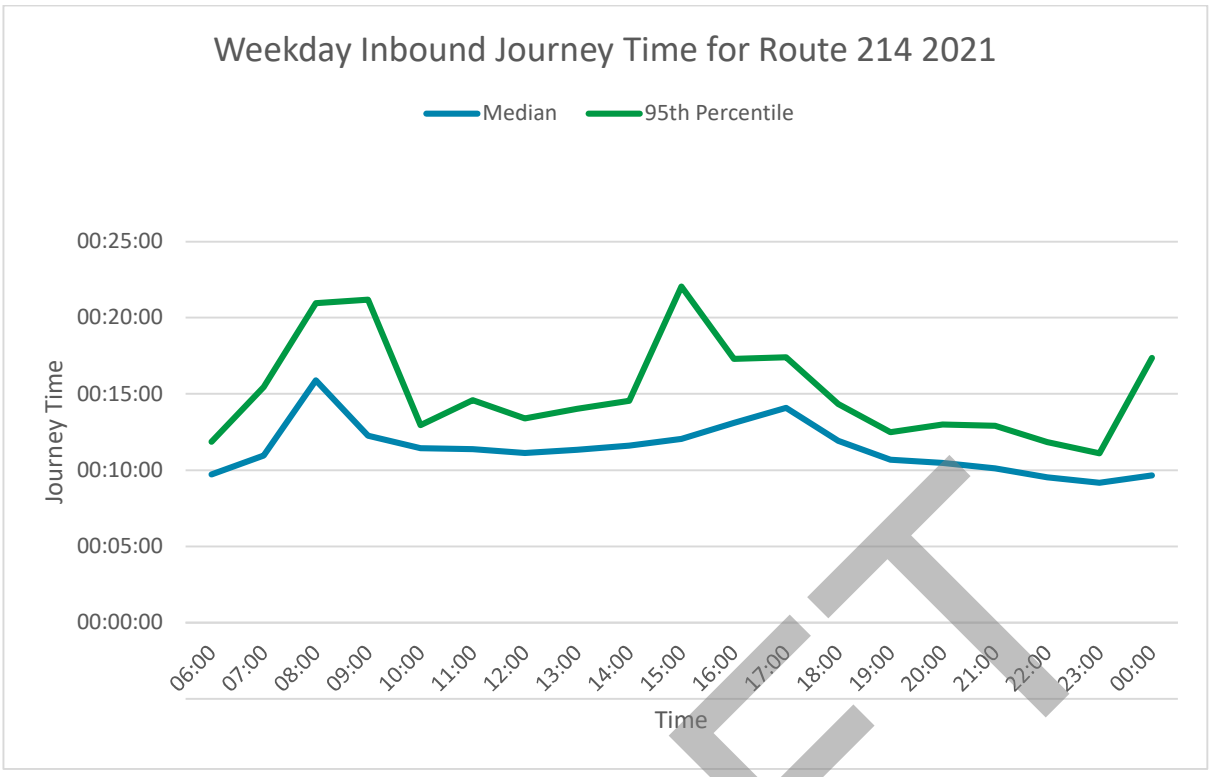


Figure 8-3

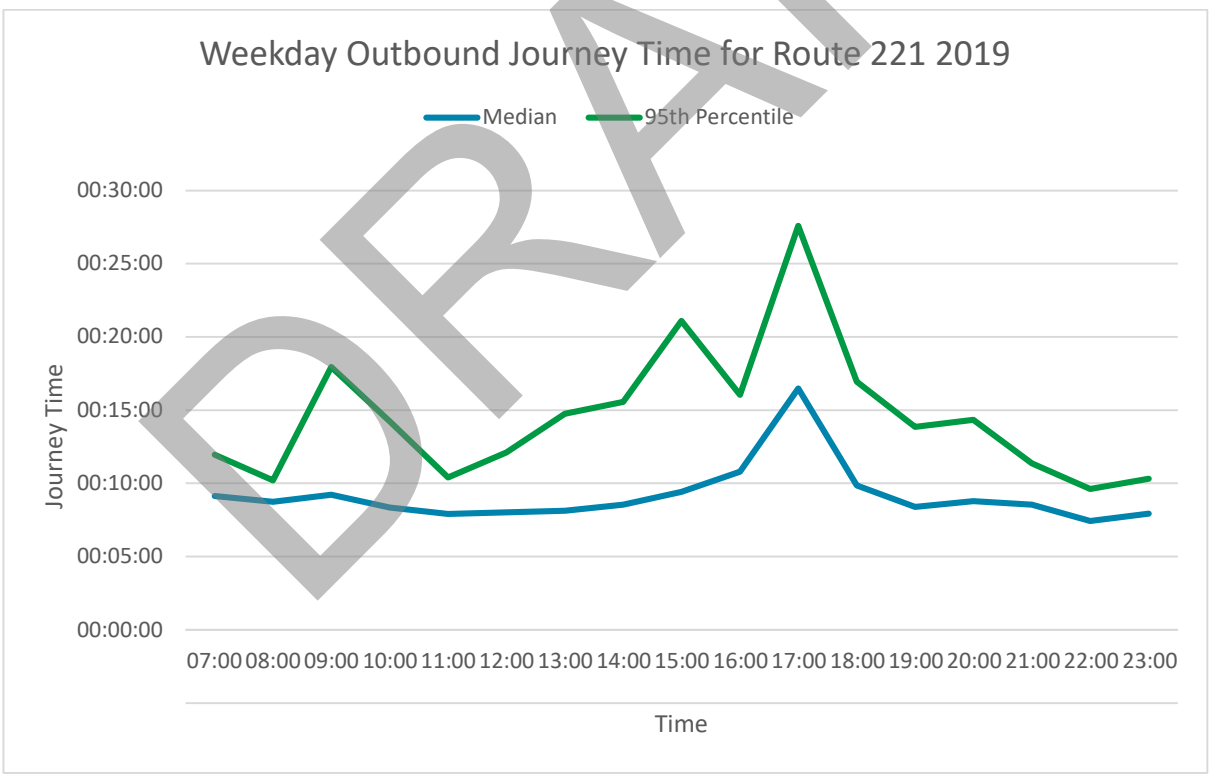


Figure 8-4

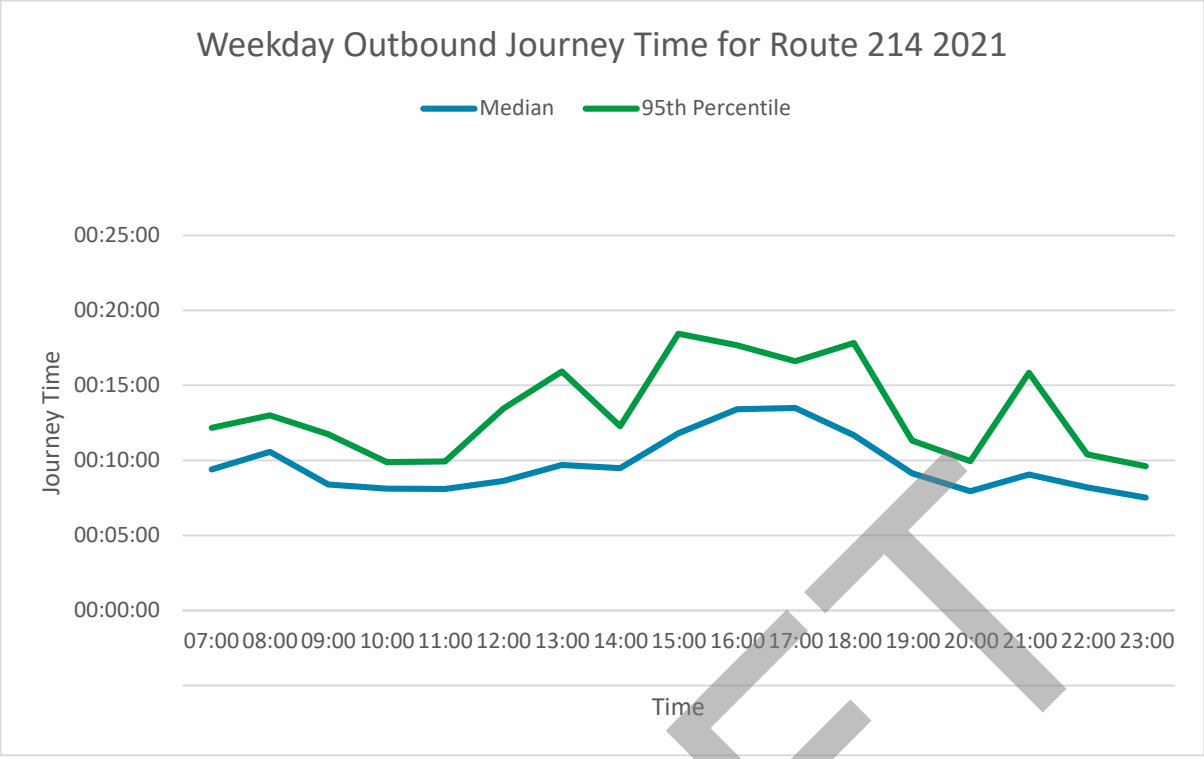


Figure 8-5

The graphs presented in Figure 8-2 and Figure 8-3 show the current issues with journey time reliability along the route. Journey times during the core hours of bus operation (07:00 – 19:00) are observed to vary between 10 and 65 minutes inbound and between 10 and 27 minutes outbound. The variation in journey times is most likely due to the lack of bus priority on sections of the route as well as boarding times at stops which are high due to the requirement for each passenger to interact with the driver.

As such, the journey times outside of these hours, when traffic volumes are lower, are more reflective of the journey times which could be achieved by a combination of improved bus priority, better enforcement of bus lanes and cashless fares. Outside of the core hours of operation the average journey time is observed to reduce to around 8-10 minutes for inbound and outbound busses. This would be a realistic idea of what to expect at peak times with BusConnects infrastructure in place, with significantly less variance throughout the day due to dedicated infrastructure allowing busses to act independently of general traffic and congestion as well as reduced journey times and journey time variance from caused by the introduction of cashless fares.

9. 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 A 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.