National Transport Authority

Bus Connects Infrastructure Cork – Project C

DRAFT Route 11 – Emerging Preferred Options Report

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Executive Summary

General

Barry Transportation were appointed by the National Transport Authority to undertake the Feasibility and Options Report for four Sustainable Transport Corridors (STC) in Cork City as part of the Bus Connects Infrastructure Cork Project. This report details the route selection process for Route 11.

This route is presented as part of STC J in the July 2022 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 now labelled using letters).

The route begins at Jacobs Island and ends at the junction of N27/Eglington Street, close to the City Centre. The route was subsequently curtailed at the junction of N27/Boreenmanna Road as STC H superseded STC J from this junction to the city centre. For the purposes of this assessment, Route 11 is assessed to its original termination point of N27/Eglinton Street junction.

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 Jacobs Island to Cork City Centre. The study area was generally developed to run east from the City Centre, serving the main trip attractors such as Mahon Industrial/Business Parks, Mahon Point Shopping Centre, Mahon Retail Park, local schools, public open spaces and residential areas along the route. 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 this assessment 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 9.

The Mahon to City Sustainable Transport Corridor (STC J) approaches the city from Jacob's Island and makes its way inbound (towards the city) on the Loughmahon Link Road (R852) as far as the junction with Skehard Road.

From this point (near the Central Statistics Office) the STC continues inbound to the city on Skehard Road, Churchyard Lane and Boreenmanna Road, before joining the Sustainable Transport Corridor H (Airport to City) at the junction with the South City Link Road (N27). Along Skehard Road there is also a cycle connection to Sustainable Transport Corridor K (Well Road Cycle Scheme) at the junction with Well Road.

The cycle route follows the bus route for most of its length but diverges from the bus route at the junction of Boreenmanna Road and Rockboro Avenue. From here it is proposed that cyclists use the quiet streets of Rockboro Avenue, Old Blackrock Road and Rockboro Road. A new, wider pedestrian and cyclist bridge is proposed to link Rockboro Road to Hibernian Road. The cycle route then joins with Sustainable Transport Corridor I (Maryborough to City) on Anglesea Street, to continue into the city centre.

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

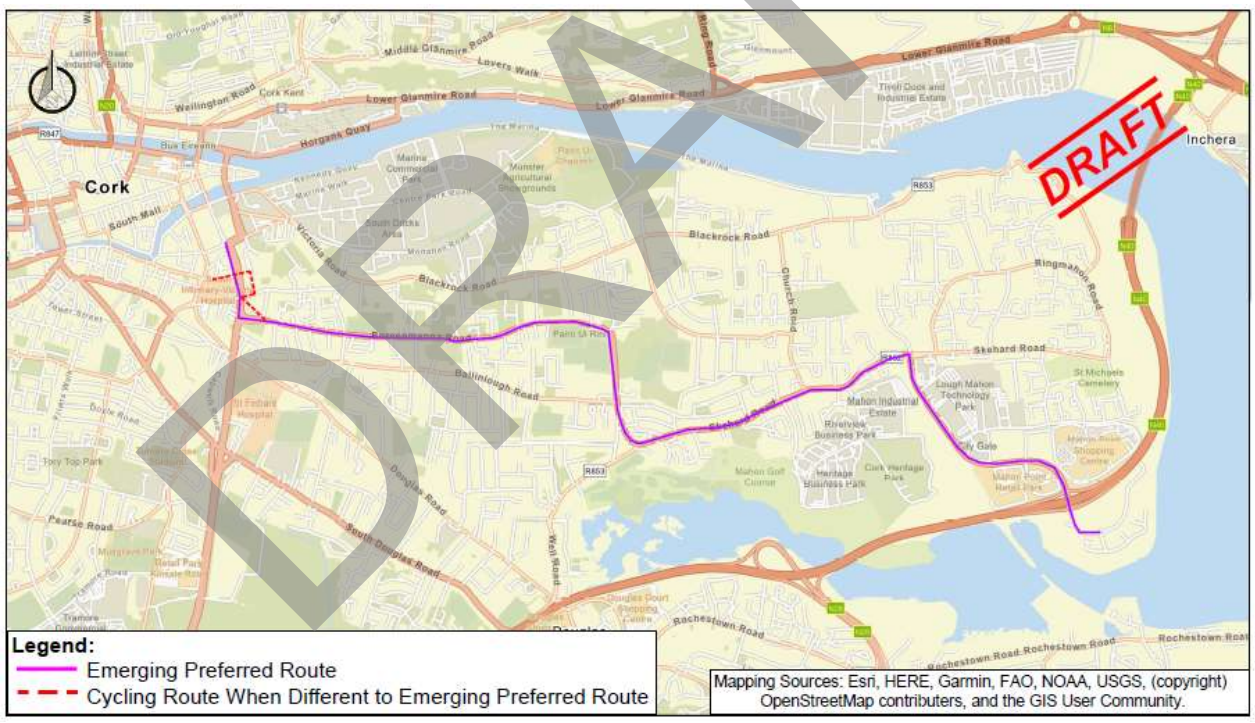


Figure 1-1 Emerging Preferred Route

Concept Scheme Design

Jacob's Island to CSO

The route starts at the existing roundabout on Jacob's Island. An inbound(towards the city) bus lane and segregated cycle lanes in both directions are proposed on approach to the bridge over the South Ring Road

(N40). Two new bridges are proposed, one either side of this existing bridge, to provide dedicated cycling and pedestrian facilities. Relocating pedestrians off the current bridge frees up space that allow bus lanes to be included on the existing bridge without reducing the number of lanes available for general traffic. Bus lanes and segregated cycle lanes are proposed in both directions on Loughmahon Link Road (R852) as far as the junction with Skehard Road. Some widening into green spaces either side of the road is likely to be required in places to achieve this.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Mahon Interchange Bridge, over the South Ring Road (N40)	Two new pedestrian and cyclist bridges built either side of the existing bridge and upgrade of the two junctions either end of the bridge to provide bus priority and prioritise pedestrian and cycle movements.
Jacob's Island and Loughmahon Road	Continuous segregated cycle lanes on both sides of the road.
Loughmahon Road/Mahon Retail Park Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design. Direct crossings for pedestrians provided on all arms of the junciton and waiting times reduced.
Skehard Road/Loughmahon Road Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.

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 Jacob's Island;
- Lands of private property on Loughmahon Link Road (R852).

CSO to Skehard Road, Churchyard Lane and Boreenmanna Road

Bus and cycle lanes are proposed in both directions along Skehard Road, Churchyard Lane and Boreenmanna Road. Some road widening and removal of on-street parking spaces would be required to achieve this. Land take would be required from private properties for some sections of this route. One lane in each direction is maintained for general traffic and there are no new restrictions for general traffic proposed. The route ends at the South Link Road(N27) where it joins the Sustainable Transport Corridor H (Airport to City).

Before the bus route reaches the South Link Road(N27) the cycle route diverges onto Rockboro Avenue, Old Blackrock Road and Rockboro Road, to avoid travelling along the South Link Road. A new, wider pedestrian and cyclist bridge would be constructed passing over the South Ring Road to link Rockboro Road to Hibernian Road and the existing narrow bridge would be replaced. It is proposed to restrict traffic on Rockboro Road to local access only to create a safer environment for pedestrians and cyclists. The cycle route joins with Sustainable Transport Corridor I (Maryborough to City) on Anglesea Street, to continue into the city centre. Along Skehard Road there is also a cycle connection to Sustainable Transport Corridor K (Well Road Cycle Scheme) at the junction with Well Road.

Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Skehard Road, Churchyard Lane and Boreenmanna Road	Bus stop and pedestrian crossing locations rationalised to facilitate easy access to bus stops and generally improved permeability for pedestrians. Pedestrian crossings at junctions upgraded so that pedestrians can cross each arm in a single movement Continuous segregated cycle lanes on both sides of the road.
Hibernian Footbridge	The existing narrow Hibernian pedestrian and cycle bridge would be replaced with a new, wider, and more accessible bridge.
Rockboro Road	Through traffic removed from Rockboro Road to provide a safer environment for pedestrians and cyclists. Urban realm and mobility improvements will create a safe, attractive route for pedestrians and cyclists.
Hibernian Road	Urban realm and mobility improvements will create a safe, attractive route for pedestrians and cyclists.

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 Boreenmanna Road
- Lands of private property on Churchyard Lane
- Lands of private property on Skehard Road

Journey Time Benefits

Current journey times for the Cork Bus 215 route, from Jacob's Island to St. Finbarr's Hospital, provide the best data to represent the emerging preferred route. This is because no data was available for busses using Boreenmanna Road, and this route shared most of the same roads as the emerging preferred route. The graphs presented in Figure 1-2 and Figure 1-3 show the current issues with journey time reliability along the route. From the data, journey times can be seen to vary by as much as 100% when comparing average peak and off-peak journey times.

As such, the journey times outside of the peak 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 15-20 minutes for inbound and outbound busses. This would be a realistic idea of what to expect at peak times with Bus Connects 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 caused by the introduction of cashless fares.

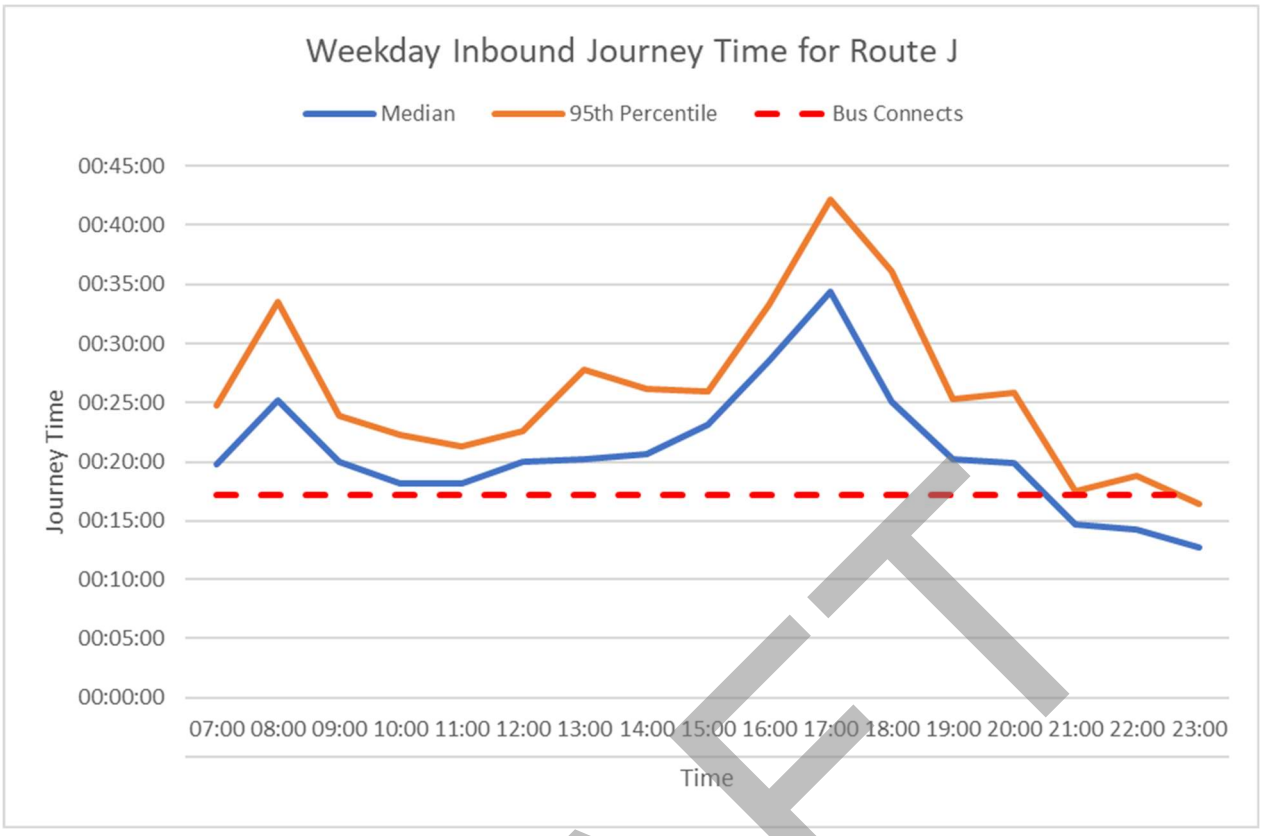


Figure 1-2

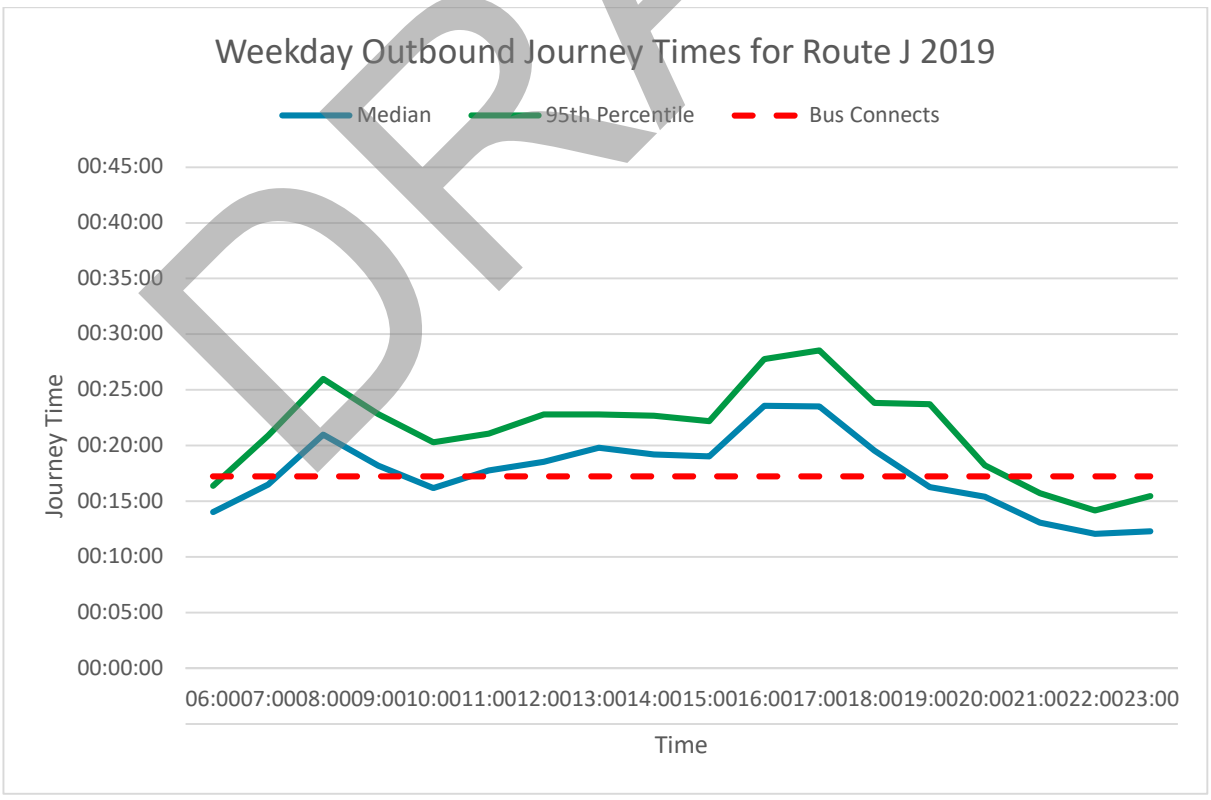


Figure 1-3

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

Next Steps

This report identifies an emerging preferred route for the bus infrastructure along this STC been developed.

The next project stage (the development of a Preliminary Design) will further refine and update the initial concept design along the route. Further account will be taken of likely public transport service levels, particularly the bus service patterns and any changes to the overall bus network which may arise from the 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 public consultation process will be undertaken, with inputs and feedback received incorporated into the final design 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 Jacobs Island to Cork City Centre Sustainable Transport Corridor (STC). This is based on the Mahon – Apple Core Bus Corridor (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 with significant trip attractors located along the route. High quality bus corridors will reduce journey times and encourage modal shift away from private cars including commuting trips while also promoting economic development.

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

The Jacobs Island to City Centre Corridor Study Area runs from Jacobs Island in Mahon to the City Centre. The corridor is within the administrative area of Cork City Council. The Core Bus Network as identified in CMATS is illustrated in Figure 1.4, with Jacobs Island to City Centre STC highlighted. This report presents the results of the various studies and surveys undertaken, details all feasible scheme options, reports on the option assessment process, and proposes an Emerging Preferred Route.

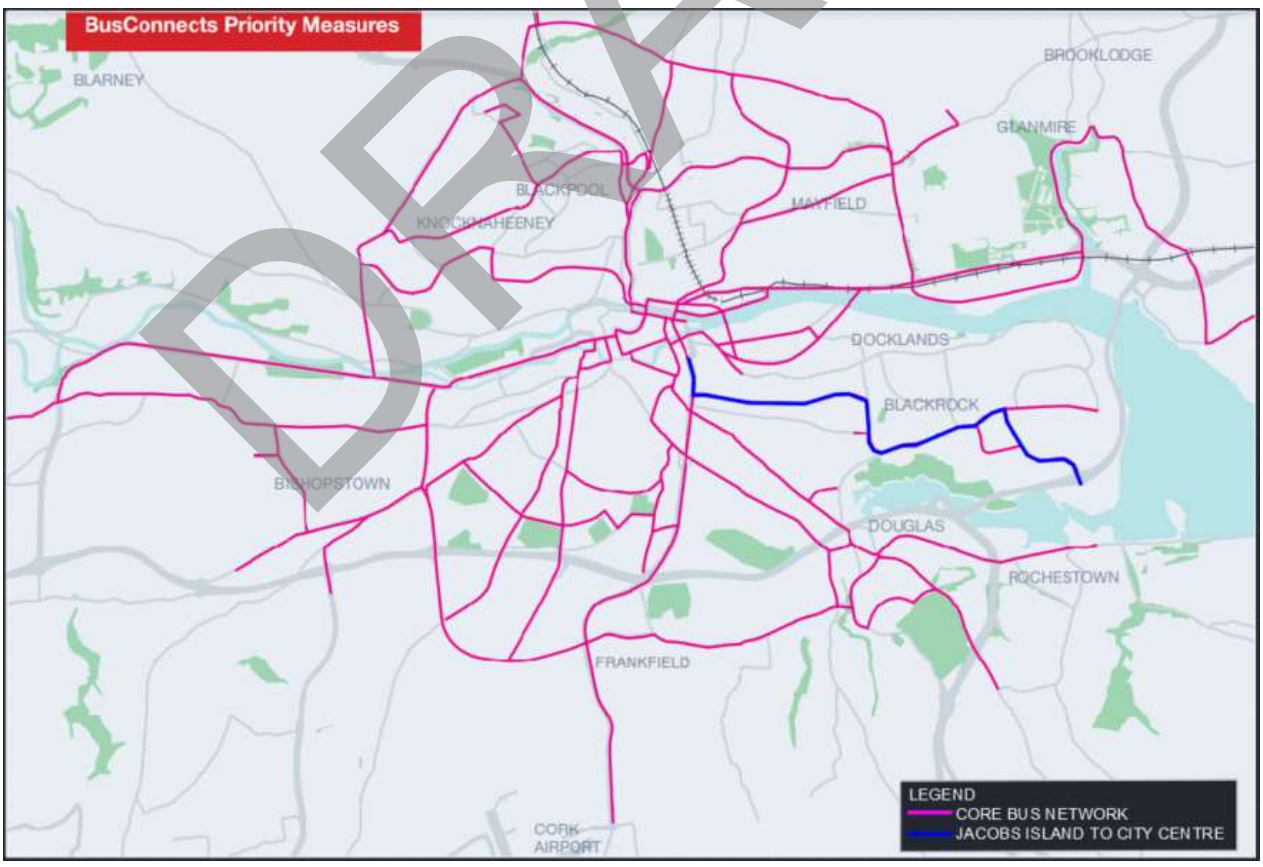


Figure 1-4 Indicative Sustainable Transport Corridors (CMATS 2020)

1.2 Report Structure

This report is structured as follows:

- **Chapter 2** – This chapter outlines the general background information to the project and the proposed STC network. It also outlines the policy context in which the STC was developed and presents the concept of the STC network as outlined in CMATS 2040 (NTA 2020). The objectives for the 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 Jacobs Island to City Centre STC is detailed and divided into three distinct sections. Scheme specific constraints and opportunities are discussed. The integration of the scheme with existing and planned transport networks is considered, along with considerations of the scheme for other road users.

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

  - Stage 1 Options Assessment Sifting Stage: development of the "spider's web" for each of the three 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)

- **Chapters 5**, **6, 7 and 8** – These chapters detail the Emerging Preferred Route selection process for Sections 1, 2 and 3 respectively, through Options Assessment Stage 1 and Stage 2 analysis.

- **Chapter 9** – This chapter gives the overall conclusions of the scheme options assessment process and identifies and describes the Emerging Preferred Route.

- **Chapter 10** – 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 Jacobs Island 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 infrastructure. A core bus network is identified consisting of nine indicative core radial bus routes, four orbital services and seven supporting radial bus services.

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

- Mahon – Apple (Sustainable Transport Corridor)
- Mahon – Blarney/Tower (Sustainable Transport 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 which was subsequently included in CMATS. 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 CNP, primary, secondary, feeder and greenway cycle routes were identified. A number of these routes lie within the core study area of the Jacobs Island to City Centre STC. In accordance with the CMA CNP, any upgrade to bus infrastructure which runs along any of the cycle routes would provide cycle infrastructure to the appropriate level (described in the NTA National Cycle Manual). If appropriate cycle infrastructure cannot be provided along the STC route, alternative routes for cyclists, to the appropriate standard provided on parallel / alternative streets should be identified.

2.4 National Investment Framework for Transportation Projects

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

Figure 2-1: NIFTI Investment Priorities

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

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

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

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

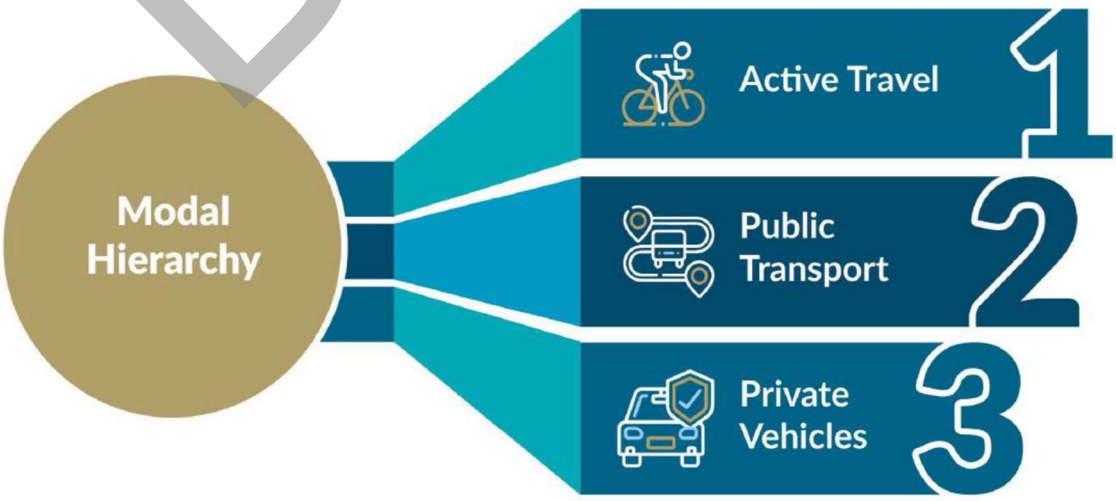


Figure 2-2: NIFTI Modal Hierarchy

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 a viable alternative 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 BusConnects 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
- National Development Plan 2018-2027
- Proposed Cork City Development Plan (2022-2028) Currently under consultation.
- South Docks Local Area Plan 2008
- Mahon Local Area Plan 2014

- Transport Schemes
  - City Quays - Cork Docklands to City Centre Junctions Scheme
  - Skehard Road Scheme
  - St Michaels Drive Improvement Works

- Cycling
  - Cork Metropolitan Area Cycle Network Plan
  - Mahon Cycle Scheme
  - Passage Railway Greenway Improvement Scheme

2.11 Sustainable Transport Corridor 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 interchanges 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

Scheme 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, continuous links where there are currently gaps in the provision, upgraded crossings 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 6, 7 & 8.

2.13.2 Bus Stops

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

3. Study Area

3.1 Introduction

In this chapter, the study area for the Jacobs Island 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 Jacobs Island to City Centre STC Study Area runs from Jacobs Island to Cork City Centre. The study area was generally developed to include the main trip generators and existing roads between Jacobs Island and the City Centre, encompassing the areas around Jacobs Island, Mahon, Beaumont, Ballinlough and the City Centre. The study area also takes cognisance of the other STC's and pragmatic tie in points between the schemes near the City Centre have subsequently been identified. The study area lies within the administrative area of Cork City Council and is shown below in Figure 3-1.

This route is located adjacent to other proposed STC's and there is some overlap with the study areas for those routes.

Figure 3-1 - Study Area

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

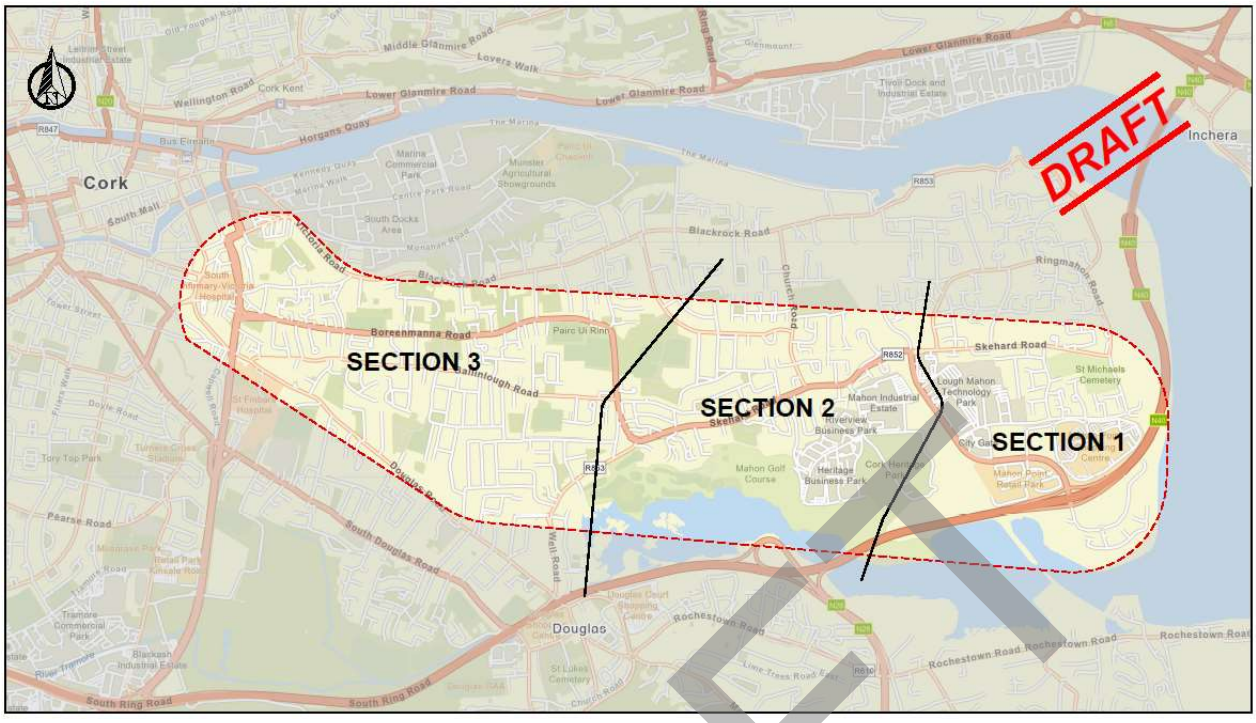


Figure 3-2 Study Area Sections

The western terminus for the STC is identified as the junction of the N27/Eglinton Street on the south side of the city centre. This was subsequently curtailed to the junction of N27/Boreenmanna Road following the completion of all STC assessments; as such, STC J ties in with STC H, where the dedicated bus facilities continue to the City Centre. For the purposes of our assessment, the original termination point has been used. Cycle facilities for this STC extends to the junction of Hibernia Road/Anglesea Street where it ties in with STC I. The eastern terminus for the STC is identified for both dedicated bus and cycle facilities as the first roundabout on Jacob's Island, approx. 250m south of the Mahon Interchange Bridge.

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:

- Public transport infrastructure, including Cork City Bus Services.
- Planned and committed developments including the Mahon LAP and the South Docks LAP.
- Planned or committed residential or commercial developments.
- 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 Jacob's Island to 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.
- Cork Metropolitan Area Cycle Network Plan (CMA CNP).
- Future public transport proposals such as Cork Light Rail.

3.5 Compatibility with Other Road Users

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

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

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

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

Traffic flow and access routes would be maintained along the route where practical. However, inevitably, there will be a negative impact on traffic capacity along the STC route (this is because 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 would be 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 Jacob's Island to City Centre STC Route Options Assessment. This methodology seeks to determine the optimum route and scheme design for this STC. It assessed and compared alternative options under various criteria including a comparison of the environmental effects.

4.2 Assessment Process

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

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

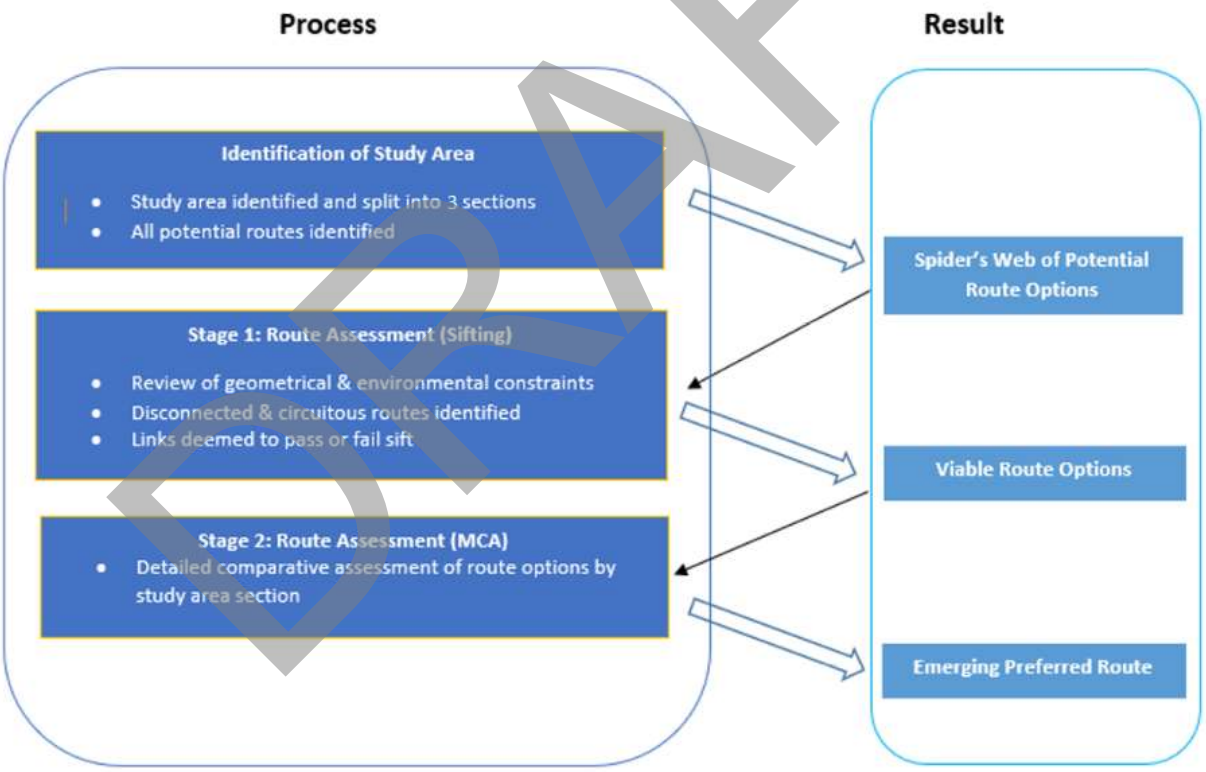


Figure 4-1 Assessment Process

4.3 Stage 1: Route Options Assessment - Sifting

4.3.1 Spiders Web Development

An initial 'spiders-web' of potential route options that could possibly form part of an STC was identified for each study area section. This 'spider's-web' of route options was chosen with reference to the STC system characteristics and 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 ensuring 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" or "unnecessary" 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.

The 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)
- 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
- Cork Metropolitan Area Transport Strategy 2040
- Cork Metropolitan Area Cycle Network Plan
- Cork City Development Plan 2015 -2021
- South Docks Local Area Plan 2008
- Mahon Local Area Plan 2014
- City Quays - Cork Docklands to City Centre Junctions Scheme
- Skehard Road Scheme
- St Michaels Drive Improvement Works

4.3.3 Removal of Disconnected Links

In this step, links that were disconnected or could clearly not form part of a Jacobs Island 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 (MCA)

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 comprises 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.

4.4.2 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 are detailed in Table 4.2.

For each route option, the length of the route requiring either the minor, moderate 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 Junction Cost Assumptions 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

4.4.3 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.

4.4.4 Average Bus Journey Time (1.b)

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

- Buses travel at 30kph unless they are delayed.
- Dwell time of 10-60 sec per stop depending on usage.

- Delay of 15 – 120 secs per junction depending on level of priority achievable.

4.4.5 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.

4.4.6 Integration (2)

Land Use Integration (2.a.)

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

Population and Employment Catchments (2.b.)

The current residential and employment population within a particular walking route distance of each of the STC stops is calculated in order to determine the number of potential users for each scheme option. To assess the potential population and employment catchments the walking distance from bus stop locations along each route was analysed using the network analyst module of ArcGIS to create walk time isochrones from each stop. The distances to the stops correlate to walk times of five, ten and 15min intervals and were estimated based on an average walking speed of 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.

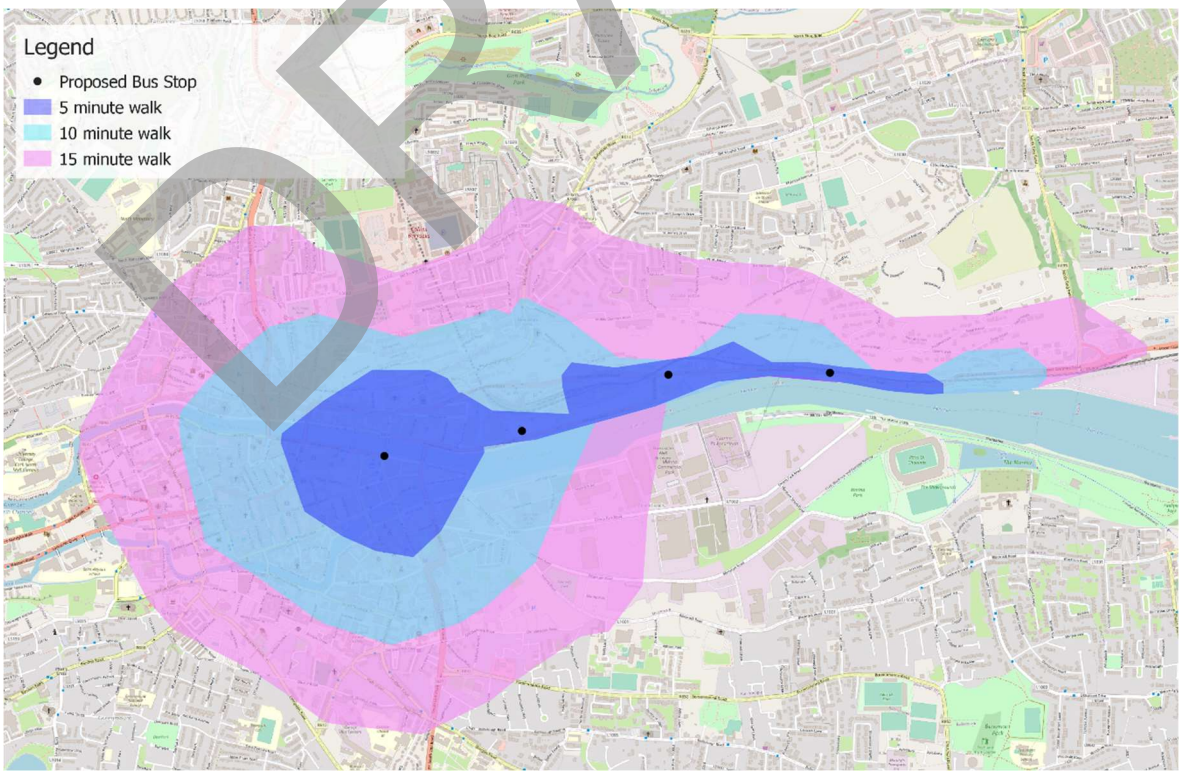


Figure 4-2 Sample bus stop catchment map with walking isochrones shown at 5/10/15 minute intervals

Transport Network Integration (2.c.)

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

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

Cycle Network Integration (2.d.)

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

Pedestrian Network (2.e)

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

4.4.7 Accessibility & Social Inclusion (3)

Key trip attractors (3.a.)

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

Deprived Geographic Areas (3.b.)

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

4.4.8 Safety (4)

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

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

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

Biodiversity (5.b.)

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

Soils and Geology (5.c.)

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

Water Resources (5.d.)

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

Landscape and visual (5.e.)

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

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

- land use zonings (amenity, open space, recreation, sport)
- protected views and prospects
- Recreation Access Routes / Designated 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 assesses the impact of each scheme option on land use character, and measures impacts which prevent land from achieving its intended use, for example through land acquisition, removal of parking spaces or severance of land.

4.4.10 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 coloured score (advantage/disadvantage) on a 5-point scale for each of the criteria listed in Table 4-5Table 4-5 MCA comparative advantage/disadvantage colour ranking table below.

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

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

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

In applying the assessment criteria to the Route Selection process, it is recognised that for different sections of the study area corridor, greater emphasis may need to be applied to some criterion over others in terms of their significance and influence on the route selection process. In drawing a conclusion as to which route represents the best option considering all of the criteria put together, professional judgement was applied to arrive at the preferred option.

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

5. Stage 1 Route Options Assessment - Sifting

This chapter outlines the sifting process undertaken; due to the size of the study area this has been split into three 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.

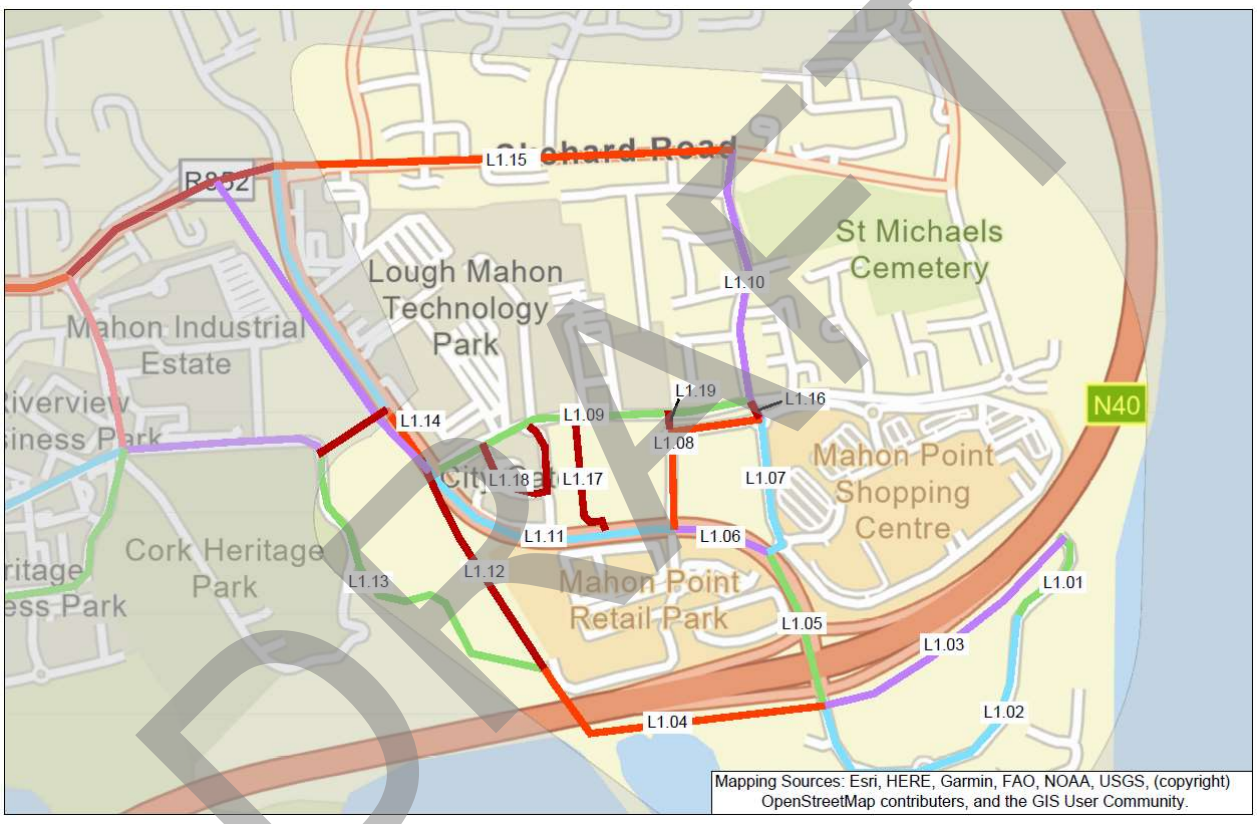


Figure 5-1 Section 1 Route Options

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
L 1.01	Residential Estate Road	The Sanctuary estate road from the bus terminus stop as far the turning area at the end of the cull-de-sac access road. This is a single carriageway estate road between four apartment blocks with intermittent grass verges and green open spaces. There is a gated access which separates this link from the public road. There are currently no bus or cycle lanes along this route. There is limited potential to widen the road to include a bus lane on both sides due to the close proximity of the buildings and would require private land take. This is not considered a viable route option for this CBC.	Fail
L 1.02	Residential Estate Road	Jacob's Island estate road from the Sanctuary bus terminus to the N40 interchange. This single carriageway estate road with the house estate along its southern side and green open space along its northern side. This is the main access road to Jacob's Island. There are currently no bus or cycle lanes along this route, but Bus Route No. 215 uses this road to access its terminus located within Jacob's Island. There is potential to widen the road into the open green space along its northern side to include a bus lane on both sides of the road. Widening of this road into the green space could require some private land take from the green space. This is considered a viable route option for this CBC.	Pass
L 1.03	Green space beside national road	Green space adjacent to N40 slip road for Exit 10 westbound off-ramp. This section consists of an overgrown green area in private ownership which runs along the southern side of the slip road, located in Jacobs Island. The available width between the apartment block and the edge of the N40 is circa 6.0m. To the west of the apartment block is private open green space. There are currently no bus or cycle facilities present within Jacobs Island.	Fail

		There is limited available space (6m width) between the apartment blocks and the N40. The entire link is within privately owned open green space. The level differences and width constraints would hinder construction of bus lanes. This is not considered a viable route option for this CBC.	
L 1.04	Green space beside national road	Green space adjacent to N40 slip road for Exit 10 westbound on-ramp. This section consists of partly local authority owned and partly privately owned open green space which runs between the N40 slip road. Telecommunications masts and supporting cables are located within the same green space further away from the N40. This route would also require the construction of a new overpass bridge over the N40 to accommodate the two bus lanes. This route would pass through an area designated by the EPA as the Cork Harbour Special Protection Area. This is not considered a viable route option for this CBC.	Fail
L 1.05	Urban & Regional	Mahon Link Road (R852) from and including its junction with N40 and a pedestrian crossing, 180m to the north. This section consists of four lanes of traffic, two in each direction with additional turning lanes at the junction. This link is bounded by grass verges, embankments and open space. The available width between boundaries varies but is generally circa 28.0m. There are no bus lanes along this section. There is a cycle track on both sides of the road. There is potential to widen this road to include a bus lane in each direction using the grass verges and embankments. This may require encroachment into private green space. An additional pedestrian/cycle bridge would be required over the N40 to allow for bus lanes over the existing bridge. This is considered a viable route option for this CBC.	Pass
L 1.06	Urban & Regional	Mahon Link Road (R852) from junction with Mahon Point Shopping Centre / Mahon Retail Park and a pedestrian crossing, 160m to the southeast. This section consists of four lanes of traffic, two in each direction with additional turning lanes at the junction. This link is bounded by grass verges, embankments and private car parks. The width between the roadside boundaries varies but is generally circa 24.0m. There are no bus lanes along this section. There is a cycle track on both sides of the road.	Pass

		There is potential to widen this road to include a bus lane in each direction using the existing grass verges. This may require encroachment into private green space. This is considered a viable route option for this CBC.	
L 1.07	Urban, Retail Park	Mahon Point Shopping Centre Access Road from a pedestrian crossing on Mahon Link Road to an internal roundabout adjacent to The Maple Housing Estate. This section consists of one lane of traffic in each direction and links two existing roundabouts at each end. There is 15.0m of available width from the back of each footpath. This link is bounded by grass verges, open space, private car parks. There are no bus or cycle facilities on this access road. This route would involve creating a new arm at the southern roundabout to link onto the Mahan Link Road (R852). Due to a significant level difference between this roundabout and the Link Road over a very short distance this is not considered a viable route option for this CBC.	Fail
L 1.08	Urban, Retail Park	City Gate Park Access Road, from junction with Mahon Link Road (R852) to Mahon Point Shopping Centre roundabout adjacent to the Maple Housing Estate. This link consists of a traffic lane in each direction with an additional flared left turn exit lane at the junction with the R852. There is a 2.0m wide raised medium along its length. This link is bounded by grass verges, open spaces, private a car park. There are no bus or cycle facilities within Mahon Point access roads. There is limited scope to widen the road along its western side due to the close proximity of the building line, but it is possible to widen along all other sides by encroaching into the grass verges and a stone surface overspill carpark. This widening would require private land take and redesign of all junctions. This is considered a viable route option for this CBC.	Pass
L 1.09	Urban, Residential	St Michael's Drive from its junction with Mahon Link Road to the junction with The Maples access road. This is a single carriageway road, widened to include a turning lane at its junction with Mahon Link Road. It is bounded by Mahon Shopping Centre along its southern side and a mix of private car parks, open green space and 12 private driveways. It has a varying available width with a minimum width of 13.0m between walls.	Pass

		There are no bus and cycle facilities along this link. There is potential to provide bus lanes, this would require some private land take mainly from green space. This is considered a viable route option for this CBC.	
L 1.10	Urban, Residential Estate with on-street parking	The Maples and Ballinure Avenue estate roads from Mahon Point Shopping Centre internal roundabout to junction with Skehard Road. This section consists of one lane of traffic in both directions, with on-street parking and driveway access along the Maples estate road. This link is bounded by grass verges, open space and private front gardens. Where boundary walls exist, a minimum of 14.0m exists within the Maples estate. There are no bus or cycle lanes. Widening the Maples estate road to provide bus lanes would require the removal of all on-street residential parking, affecting about 23 residences and land take from private front gardens within The Maples Estate. This is not considered a viable route option for this CBC.	Fail
L 1.11	Urban & Regional	Mahon Link Road (R852) from junction with Mahon Point Shopping Centre / Mahon Retail Park and junction with St Michael's Drive. This section consists of two lanes of traffic, one in each direction with additional turning lanes at each junction. This link is bounded by grass verges, open space, private car parks. There is 14.0m to 16.0m of available road space where boundary walls exist. There are no bus lanes along this section. There is a cycle lane on both sides of the road. There is potential to widen this road to include a bus lane in each direction using existing grass verges and open space. Private land take into other green areas and carparks would also be required in places. This is considered a viable route option for this CBC.	Pass
L 1.12	Green Route	New bus corridor along a green route at Bessborough from the N40 to a pedestrian crossing at Telus International Ireland. Currently this is a green route along a disused railway line in a deep cutting and runs parallel with the Mahon Link Road. It forms part of the Passage West to Monahan Road green route as destinated in the CCNP. There is a circa 3.0m wide shared surface which accommodates cyclists and pedestrians.	Fail

		This is an amenity area and is defined as an area of High Landscape Value in the City Development Plan. Widening this green route to provide two bus lanes is not considered feasible due to level differences requiring to cut into significant embankments, and the removal of excessive number of trees. This is not considered a viable route option for this CBC.	
L 1.13	Access Road and Green Area	Bessborough Castle Access Road from Bessborough Castle (near the N40) to the Sacred Heart Convent. This is lightly trafficked single carriageway, partially and temporarily closed-off at its southern end, which provides access to Bessborough Castle and surrounding lands and premises. It is generally bounded by grass verges and open ground. A short section has a 10.5m restrictive width between boundary walls. There are no bus lanes or cycle lanes along this road. There are a series of speed ramps. There is potential to widen this road to include a bus lane on both sides. This would require encroaching into private land and the setting back of some boundary walls. This is considered a viable route option for this CBC.	Pass
L 1.14	Urban & Regional	Mahon Link Road (R852) from junction with St Michael's Drive and a bus stop at car park access to Telus International Ireland. This 100m long section consists of two lanes of traffic, one in each direction. It ranges from 16.0m to 19.0m in width between boundaries. It is bounded by the Passage West greenway on its western side and private green space and a car park along its eastern side. There are no bus lanes along this section. There is a cycle lane on both sides of the road. There is potential to widen this road to include a bus lane in each direction using the existing grass verges. Due to the steep embankments associated with the greenway, private land take may be required on the opposite side. This is considered a viable route option for this CBC.	Pass
L 1.15	Urban, Residential	Skehard Road from its junction with Mahon Link Road to the junction with Ballinure Avenue. This section consists of one lane of traffic in each direction with additional turning lanes at junctions. A central reserve provides for alternate right turn lanes for the side roads. This link is bounded by grass verges, open spaces and private gardens. Where boundary	Pass

		walls exist, the minimum available width between them is 16.0m. There are no bus lanes along this link. There are partial cycle tracks/lanes on both sides of Skehard Road to the west near its junction with Mahon Link Road. There is potential to widen the Skehard Road to facilitate a bus lane on both sides where grass verges and open space permit and would require the setting back of a boundary wall. This is considered a viable route option for this CBC.	
L1.16	Urban, Access	New Route linking roundabout at Mahon Point Shopping Centre Access Road to St Michaels Drive. This area is currently made up of vegetation and trees, a new bus link through here could be created with a bus lane and footpath in each direction. This is currently a mix of public and private land, and there are no adjacent boundaries that would affect this. As this is a new link there are no existing bus or cycle facilities. This is considered a viable route option for this CBC.	Pass
L1.17	Urban, Access	PM Group Car Park Access Road, linking St Michaels Drive and Loughmahon Link Road (R853). The cross section consists of a lane of traffic in each direction. There are no footpaths along the link. The link is bounded by car parking spaces along most of its length and by the private property. There is generally approx.. 6m between boundaries. This is not currently a public right of way and there are no bus routes and no cycle routes along this link. Due to space constraints between boundaries and the impacts on parking this is not considered a viable route option for this CBC.	Fail
L1.18	Urban, Access	City Gate Access Road (Private Road), coming off and onto St Michaels Drive. The cross section generally consists of one way traffic. There are footpaths along 50% the link. The link is bounded by car parking spaces and by the private property. There is generally 4-6m between boundaries. There are no bus routes and no cycle routes along this link. Due to space constraints between boundaries and the impacts on parking this is not considered a viable route option for this CBC.	Fail

L1.19	Urban, Access	New Route linking roundabout at City Gate Access Road to St Michaels Drive. This area is currently made up of vegetation and trees, a new bus link through here could be created with a bus lane and footpath in each direction. This is currently a mix of public and private land, and there are no adjacent boundaries that would affect this. As this is a new link there are no existing bus or cycle facilities. This is considered a viable route option for this CBC.	Pass

Sifting Outcome

The outcome of the sift for all links can be seen in Figure 5-2 Section 1 Sifting Process Step 1 below. Links shown in red failed the sift and those in blue passed. All links shown in red have been discounted from any further study.

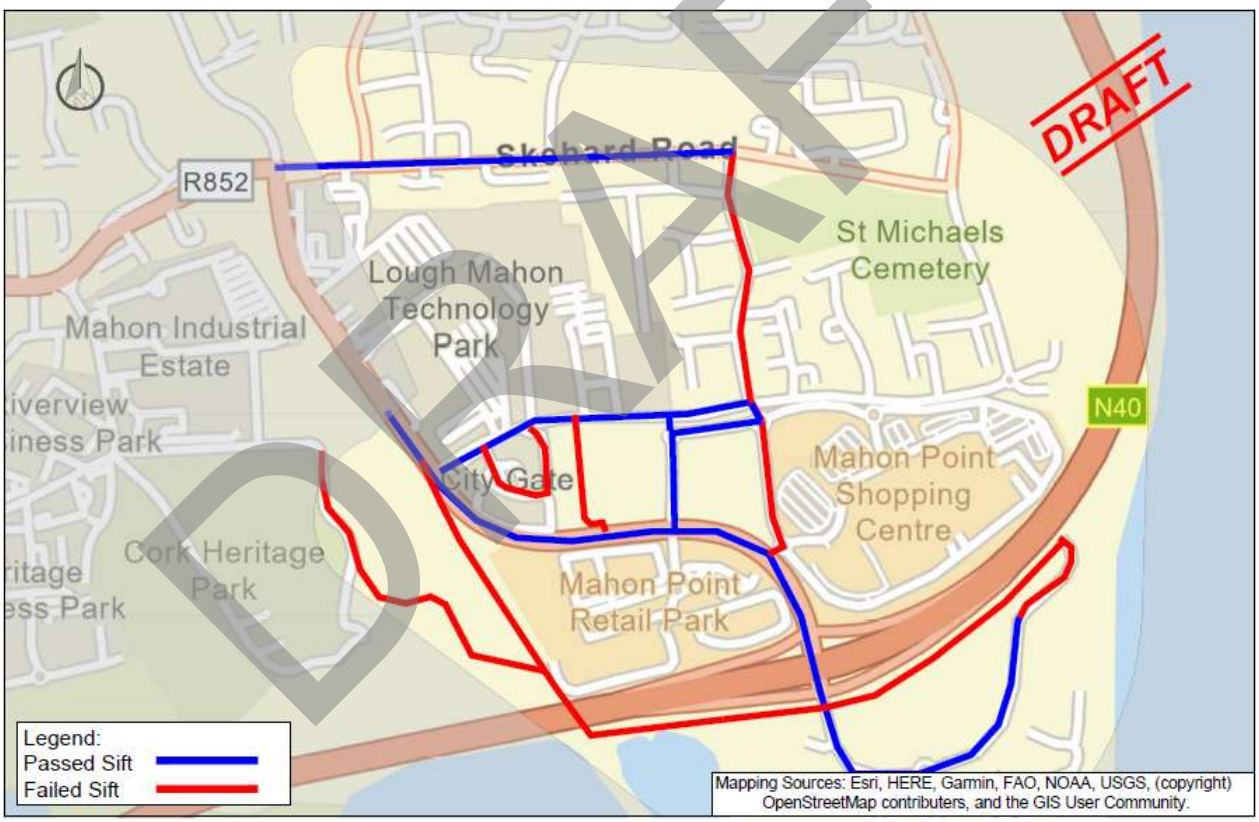


Figure 5-2 Section 1 Sifting Process Step 1

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.

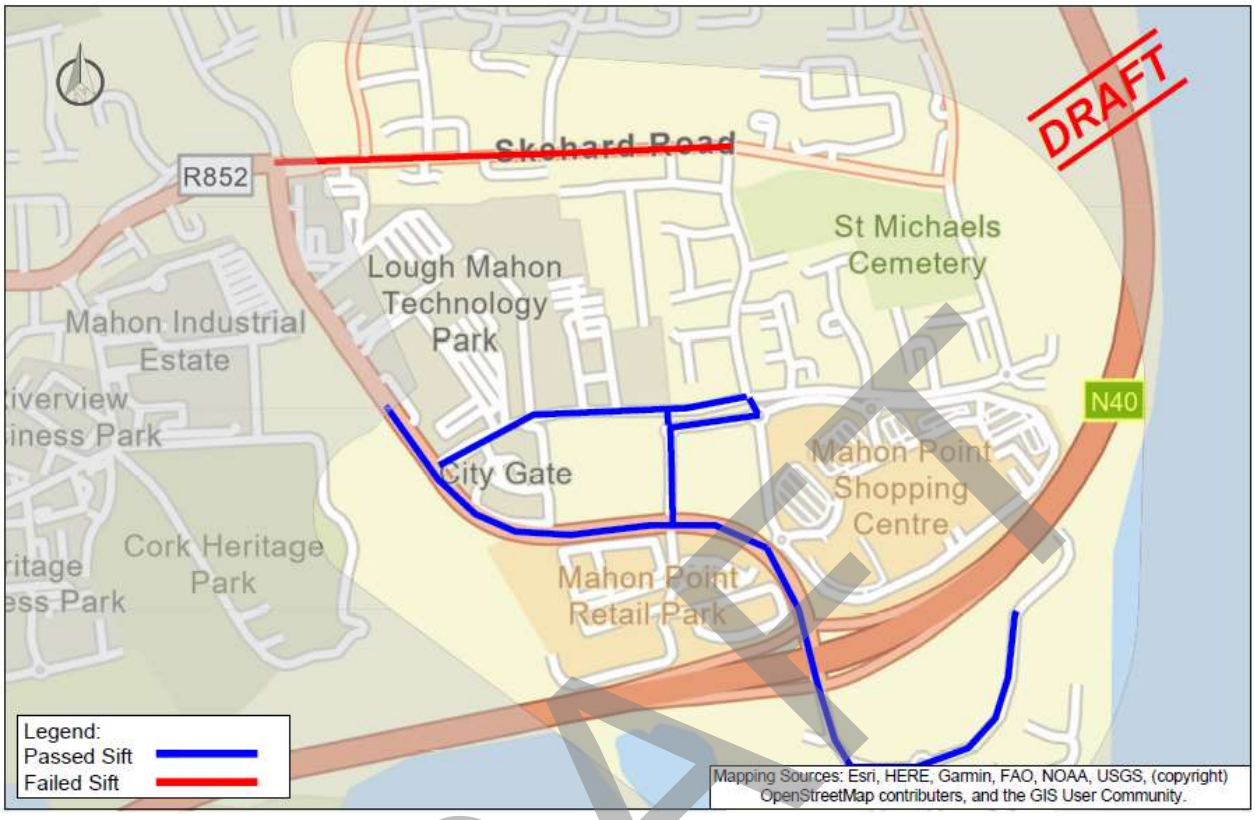


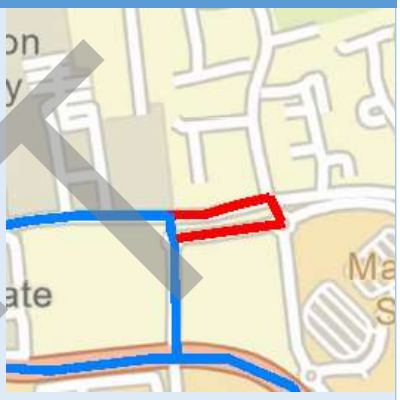
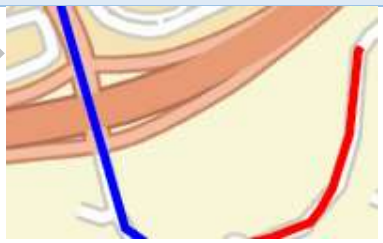
Figure 5-3 Section 1 Sifting Process step 2

5.1.1 Preliminary Route Assessment

A Preliminary Route Assessment process was then performed to identify routes that were circuitous in nature or would clearly 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 5-2 Route 1 Preliminary Route Assessment

Road Names	Comments	Map
St Michael's Drive, City Gate Park / Mahon Point Shopping Centre Access Road.	Any routes using these links would have routes which are circuitous in nature and would lead to longer journey times when compared to the more direct adjacent option. This route would also require buses to pass through a higher number of junctions and make more turning movements. For these reasons, this route option is not considered further.	
L99484/Jacob's Island	It was also determined that dedicated bus facilities would not be required along the length of the L99484 as delay's to buses would not be expected here; as such the terminus was curtailed to the roundabout on the L99484.	

The outcome of the Preliminary Route Assessment can be seen in Figure 5-4 Section 2 Preliminary Assessment Outcomebelow. The links shown in red have failed those shown in blue have passed.

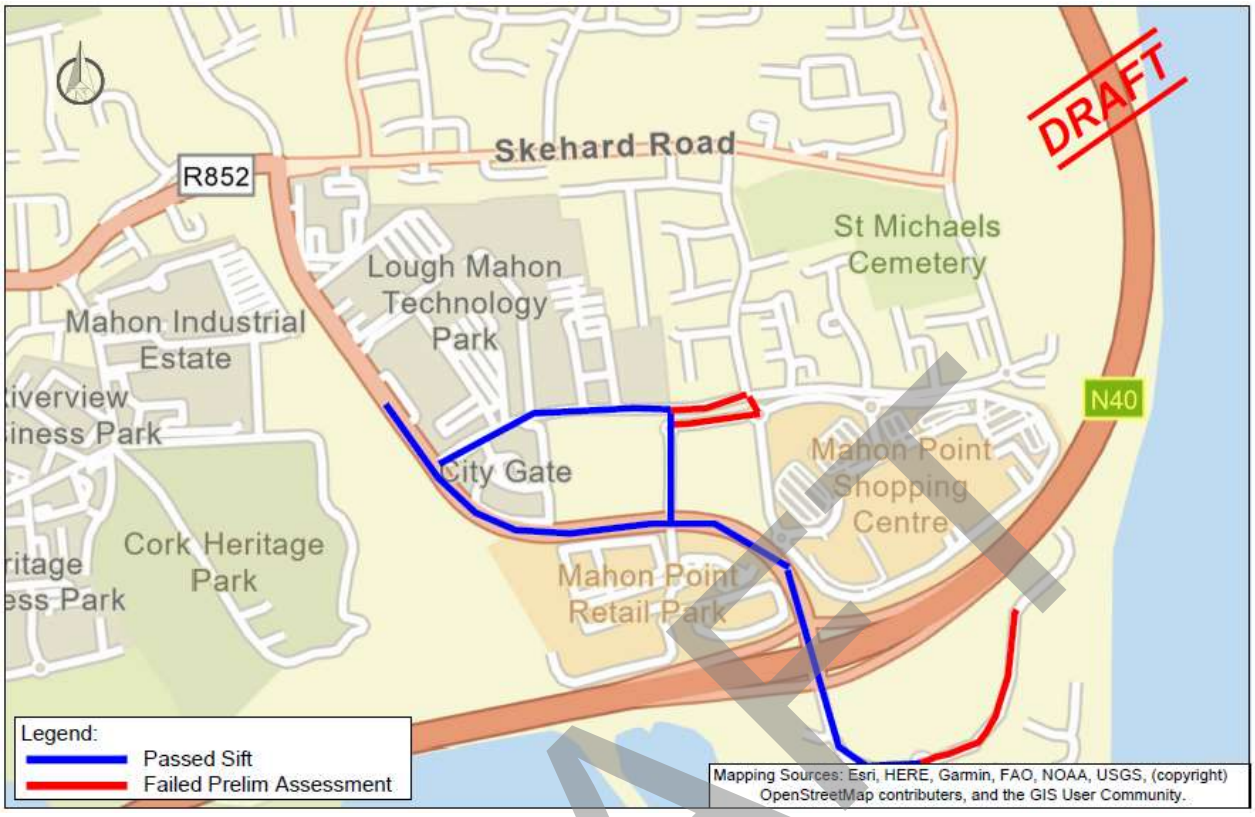


Figure 5-4 Section 2 Preliminary Assessment Outcome

5.1.2 Sifting Conclusion

Figure 5.5 shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

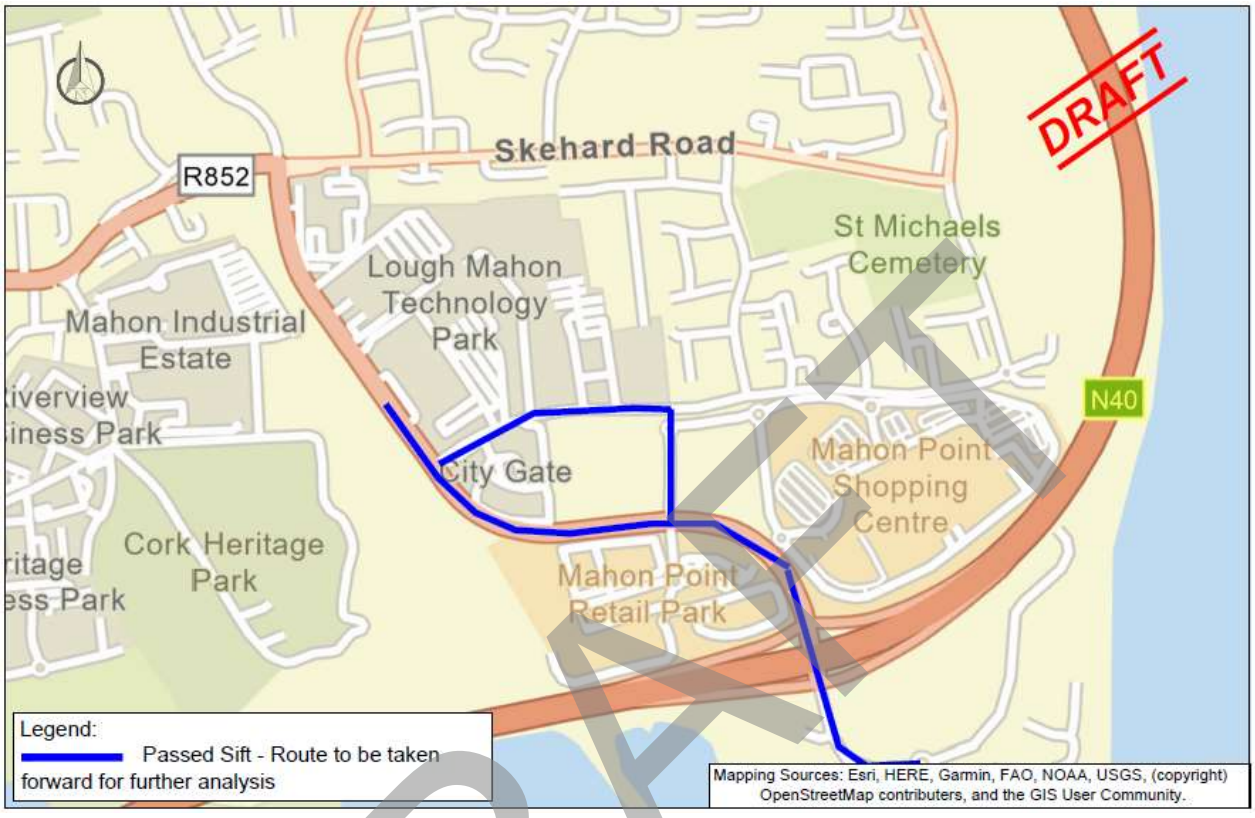


Figure 5-5 Section 1 Route Options Remaining After Stage 1 Assessment

5.2 Section 2 Sifting

This chapter outlines the 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 5-16.

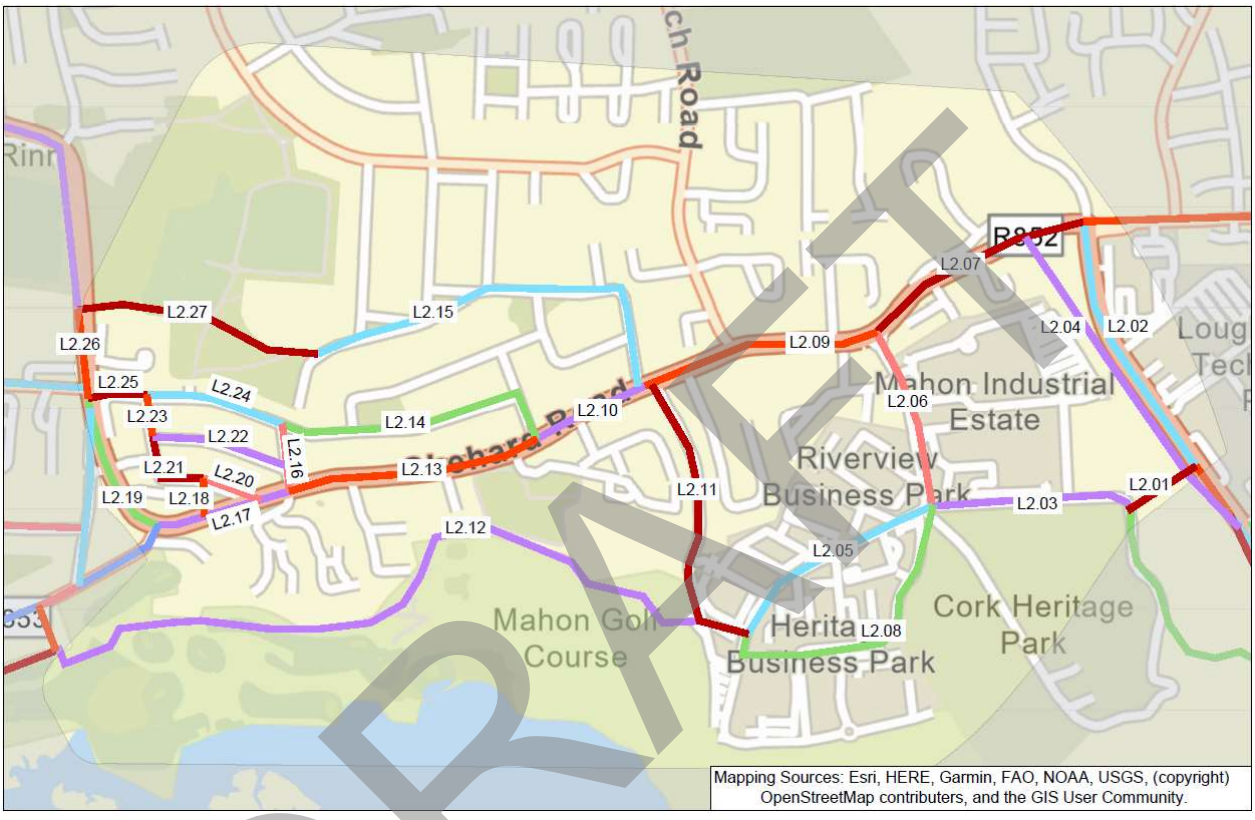


Figure 5-6 Section 2 Route Options

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

Table 5-3 Section 2 Route Option Assessment Stage 1

Link No.	Road Characteristics	Comments	Pass / Fail
L2.01	Amenity Area	New Link Road linking Mahon Link Road (R852) at Telus International with Bessborough Castle Access Road at the Sacred Heart Convent. This is a new link through an overgrown strip of land. This would require the new bus corridor to pass over the existing Passage Green Road which is generally in a deep cutting. This would require the removal of trees. This is considered a viable route option for this CBC.	Pass

L2.02	Urban & Regional	Mahon Link Road (R852) from access to Telus International Ireland to the junction with Skehard Road (R852). This road consists of two lanes of traffic, one in each direction with additional turning lanes at its junction with Skehard Road. It has an average 15.5m of available width between boundaries but large sections are fronted by verges, open space and private car parks. It is bounded by the Passage West greenway on its western side. There are no bus lanes in both directions on the northern half of this link and cycle lane on both sides of the road on the southern half of the link. There is potential to widen this road to include a bus lane in each direction using the existing grass verges. This may also require setting back boundary walls and private land take in places. This is considered a viable route option for this CBC.	Pass
L2.03	Access Road	Bessborough Castle Access Road from the Secret Heart Convent to a mini roundabout on Bessboro Road. There is one lane in each direction. This is lightly trafficked road which provides access to the Bessborough Sacred Heart Covent and other properties. It has a 10.0m width between boundaries along the side of the convent. There are no bus lanes or cycle lanes along this road. There are a series of speed ramps. There is potential to widen this road to include a bus lane on both sides using grass verges and overgrown hedge row, this would require some land take. This is considered a viable route option for this CBC.	Pass
L2.04	Green Route	New bus corridor along a green route from Saint Michaels Drive to Skehard Road. Currently this is a green route along a disused railway line in a deep cutting and runs parallel with the Mahon Link Road. It forms part of the Passage West to Monahan Road green route as destinated in the CCNP. There is a circa 3.0m wide shared surface which accommodates cyclists and pedestrians. This is an amenity area and is defined as an area of High Landscape Value in the City Development Plan. Widening this green route to provide two bus lanes is not considered feasible due to level differences requiring to cut into significant embankments, and the removal of excessive number of trees. This is not considered a viable route option for this CBC.	Fail

L 2.05	Access Road	Bessboro Road from the mini-roundabout to the access to Clover Hill Lane. One traffic lane in each direction. Unregulated roadside parking occurs during business hours due to limited private car park spaces. The available width between roadside boundaries is circa 13.0m. There are no bus lanes or cycle lanes along this road. The provision of two dedicated bus lanes would require setting back private boundaries encroaching on private green space or private car parks. This is considered a viable route option for this CBC.	Pass
L 2.06	Commercial & Residential Access Road	Bessboro Road from the mini-roundabout to the junction with Skehard Road (R852). One traffic lane in each direction. The available width between roadside boundaries is circa 12.5m. There are no bus lanes or cycle lanes along this road. Provision of two dedicated bus lanes would require encroaching on green space, setting back private commercial boundary walls and the removal of trees. This is considered a viable route option for this CBC.	Pass
L 2.07	Urban & Regional	Skehard Road (R852), from the junction with Mahon Link Road to the junction with Bessboro Road. This section consists of one lane of traffic in either direction, with additional turning lanes at its junctions. A central lane provides for alternate right turn lanes for the side roads. This link is bounded by grass verges, open spaces and private front gardens. Where boundary walls exist, a minimum of 15.0m exists between walls. There are no bus lanes along this link. A shorth length of right turn lane dedicated to buses and cyclists with bus priority to turn onto Mahon Link Road was installed in 2019 as part of the 'Skehard Road Realignment and Renewal Project'. As part of this same project, a 110m long section of cycle track on both sides of the road was installed from Mahon Link Road as far the Maxol Filling Station. There are plans to extend this scheme in the future. There is potential to widen the road to facilitate a bus lane on both sides where grass verges and open space permit. This would also require setting back boundary walls and some private land take. This is considered a viable route option for this CBC.	Pass

L 2.08	Estate Access Roads	Heritage Business Park Access Road from mini-roundabout to the junction with Clover Hill Lane. This link requires the linking of two separate access roads of two commercial / industrial estates providing access to multiple buildings and their associated service yards and car parks. There are no bus or cycle facilities along this link. Due to the close proximity of a building, the level difference between the access road and the adjacent greenway and the removal of a significant number of private car park spaces, there is limited scope to widen this access further to accommodate bus lanes. This is not considered a viable route option for this CBC.	Fail
L 2.09	Urban & Regional	Skehard Road (R852), from the junction with Bessboro Road to the junction with Church Road (R853). This section consists of one lane of traffic in either direction, with a central lane which provides for alternate right turn lanes for the intermediate side roads. The available road width varies with a minimum of 15.0m between walls. There are no bus lanes along this link. There is a west (or city) bound cycle lane along its southern side. There are plans to extend the 'Skehard Road Realignment and Renewal Project' to include this link in the future with improved cycle and bus facilities. There is potential to widen the road to facilitate a bus lane on both sides. This would require setting back boundary walls and some private land take. This is considered a viable route option for this CBC.	Pass
L 2.10	Urban & Regional with roadside parking bays	Skehard Road (R852), from the junction with Woodvale Road to the junction with Ashleigh Rise. This section consists of one lane of traffic in each direction with additional turning lanes at its junction with Church Road. It contains driveway access and on-street parking bays. The available road width varies with a minimum of 14.0m between walls. As part of the recent 'Skehard Road Realignment and Renewal Project', a west (out) bound bus lane shared with cyclists and an east (city) bound cycle lane was installed along the entire length of this link. There is potential to install an east (city) bound bus lane along its southern side using grass verges. This would not require setting back boundary walls. This is considered a viable route option for this CBC.	Pass

L 2.11	Laneway	Clover Hill Lane from the junction with Skehard Road (R852) to the junction with Bessboro Road. This section consists of 4.0m wide laneway, generally bounded by private walls. It provides limited direct access to properties. There are no bus of cycle facilities along this link. There is limited potential to widen this lane without substantial land take. This is not considered a viable route option for this CBC.	Fail
L 2.12	Amenity Area	Northern boundary of the Mahon Golf Course from Clover Hill Lane to the western end of the golf course. This link would require the construction of a new bus corridor along the northern boundary of Mahon Golf Course. This route would require considerable land take, cause severe disruption to the golf club, have a negative impact environmentally and require the removal of a significant number of trees. This is not considered a viable route option for this CBC.	Fail
L 2.13	Urban & Regional with roadside parking bays	Skehard Road (R852), from the junction with Ashleigh Rise to the junction with Silverdale Drive. This section consists of one lane of traffic in each direction with an additional turning lane at its junction with Silverdale Drive. It contains driveway access and roadside parking bays. The available road width varies with a typical width of 19.0m between walls. As part of the recent 'Skehard Road Realignment and Renewal Project', a west (out) bound bus lane shared with cyclists and an east (city) bound cycle lane was installed along the entire length of this link. There is potential to install an east (city) bound bus lane along its southern side using grass verges. This would not require setting back boundary walls but may require removal of some of the on-street parking bays. This is considered a viable route option for this CBC.	Pass
L 2.14	Residential Estate Roads with roadside parking	Ashleigh Rise and Ashleigh Gardens from the junction with Skehard Road (R852) to the junction with Silverdale Drive. This section consists of one lane of traffic in each direction, with no road markings and with both driveway and roadside parking. The available road width is circa 10.5m between front garden walls. This is an estate road with no bus and cycle facilities.	Fail

		There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 2.15	Residential Estate Roads with roadside parking	Woodvale Road from the junction with Skehard Road (R852) to Beaumont Primary School. This section consists of one lane of traffic in both directions along an estate road with speed ramps, with no road markings and with both driveway and roadside parking. The available road width is circa 10.0m between front garden walls. There are no bus and cycle facilities. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 2.16	Residential Estate Roads with roadside parking	Silverdale Drive from the junction with Skehard Road (R852) to the junction with Silverdale Avenue. This 100m long section consists of one lane of traffic in each direction with no road markings, with both driveway and roadside parking. The available road width is circa 11.0m between front garden walls. This is an estate road with no bus and cycle facilities. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 2.17	Urban & Regional	Skehard Road (R852), from the junction with Silverdale Drive to the junction with Well Road (R853). This section consists of one lane of traffic in both directions, with additional turning lanes at both junctions. The road is bound by verges, open space and private gardens. The available road width varies with a width of 17.5m between boundary walls at a pinch point. There is a west (out) bound bus lane shared with cyclists and an east (city) bound cycle lane along the entire length of this link. There is potential to install an east (city) bound bus lane along its southern side using grass verges and open green space. It may be necessary to setback the roadside	Pass

		boundary of one dwelling or install a bus priority signal linked to the close by signalised junction with well road located 50m west of the pinch point. This is considered a viable route option for this CBC.	
L 2.18	Residential Estate Road with roadside parking	Silverdale Grove (N-S) from Skehard Road to its junction with Silverdale Grove (E-W). This is a 50m long cul-de-sac estate road which abuts the boundary along Skehard Road. It has driveway and roadside parking. An open green area exists along the eastern side with no width restraints. There are no bus and cycle facilities along this link. There is potential to install bus lanes along this link by forming a new junction off Skehard Road and by reducing the green space. This would require removing the residential on-street parking as well as the demolition of a boundary wall and the opening up of a residential cul-de-sac to bus traffic. This is considered a viable route option for this CBC.	Pass
L 2.19	Urban & Regional	Churchyard Lane (R852), from the junction with Well Road (R853) to the junction with Ballinlough Road. This section consists of one lane of traffic in each direction, with an additional turning lanes at its junction with Well Road. The available road width varies with a minimum wall to wall width of 16.5m between walls. The west (out) bound bus lane shared with cyclists that extends into most of Skehard Road starts at the approach to junction with Well Road and an east (city) bound cycle lane ends after this junction. There is potential to install two bus lanes along its southern side using grass verges and open green space. It may be necessary to setback roadside boundaries with private land take. This is considered a viable route option for this CBC.	Pass
L 2.20	Residential Estate Road with roadside parking	Silverdale Grove (E) from Skehard Road to the junction with Silverdale Grove (S). This is a 55m long cul-de-sac estate road which abuts the boundary along Skehard Road. It has driveway and roadside parking. A open green area exists along the southern side with no width restraints. There are no bus and cycle facilities along this link. There is potential to install bus lanes along this link by forming a new junction off Skehard Road and by reducing the green space. This would require removing the	Pass

		residential on-street parking as well as the demolition of a boundary wall and the opening up of a residential cul-de-sac to bus traffic. This is not considered a viable route option for this CBC.	
L 2.21	Residential Estate Road with roadside parking	Silverdale Grove (W) from Silverdale Grove (S) to the junction with Silverdale Road. This is a single carriageway estate road. It has driveway and road side parking. It is generally bounded by front garden walls with a typical available width of 10.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 2.22	Residential Estate Road with roadside parking	Silverdale Road from Silverdale Grove to Silverdale Drive. This is a single carriageway estate road. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 10.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 2.23	Residential Estate Road with roadside parking	Silverdale Walk from its junction with Silverdale Road to the junction with Silverdale Avenue. This is a single carriageway estate road. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 10.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 2.24	Residential Estate Road with roadside parking	Silverdale Avenue from its junction with Silverdale Drive to the junction with Silverdale Walk. This is a single carriageway estate road. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 10.5m.	Fail

		There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 2.25	Residential Estate Road with roadside parking	Silverdale Avenue from its junction with Silverdale Walk to Churchyard Lane (R852). This is a single carriageway estate road. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 11.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This would require creating a new junction with Churchyard Lane. This is not considered a viable route option for this CBC.	Fail
L 2.26	Urban & Regional	Churchyard Lane (R852), from the junction with Ballinlough Road to the access Cork Constitution FC at Temple Hill. This section consists of one lane of traffic in each direction. The available road width varies with a typical width of circa 20.0m between walls. There are no bus or cycle facilities on the link. There is potential to install two bus lanes along both sides using grass verges and open green space without any private land take. Widening may require the removal of a number of trees within the verges. This is considered a viable route option for this CBC.	Pass
L 2.27	Amenity Area	New Link Road through Beaumont Park from Beaumnt National School to Churchyard Lane (R852). This link would require the construction of a new bus corridor through Beaumont Park along a pedestrian pathway and in between a reservoir site and Ballinlough Pitch and Put Club. It would also require the removal of a section of car park. This route would have a considerable impact on the park which is a valuable amenity area and an important ecological habitat. This is not considered a viable route option for this CBC.	Fail

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

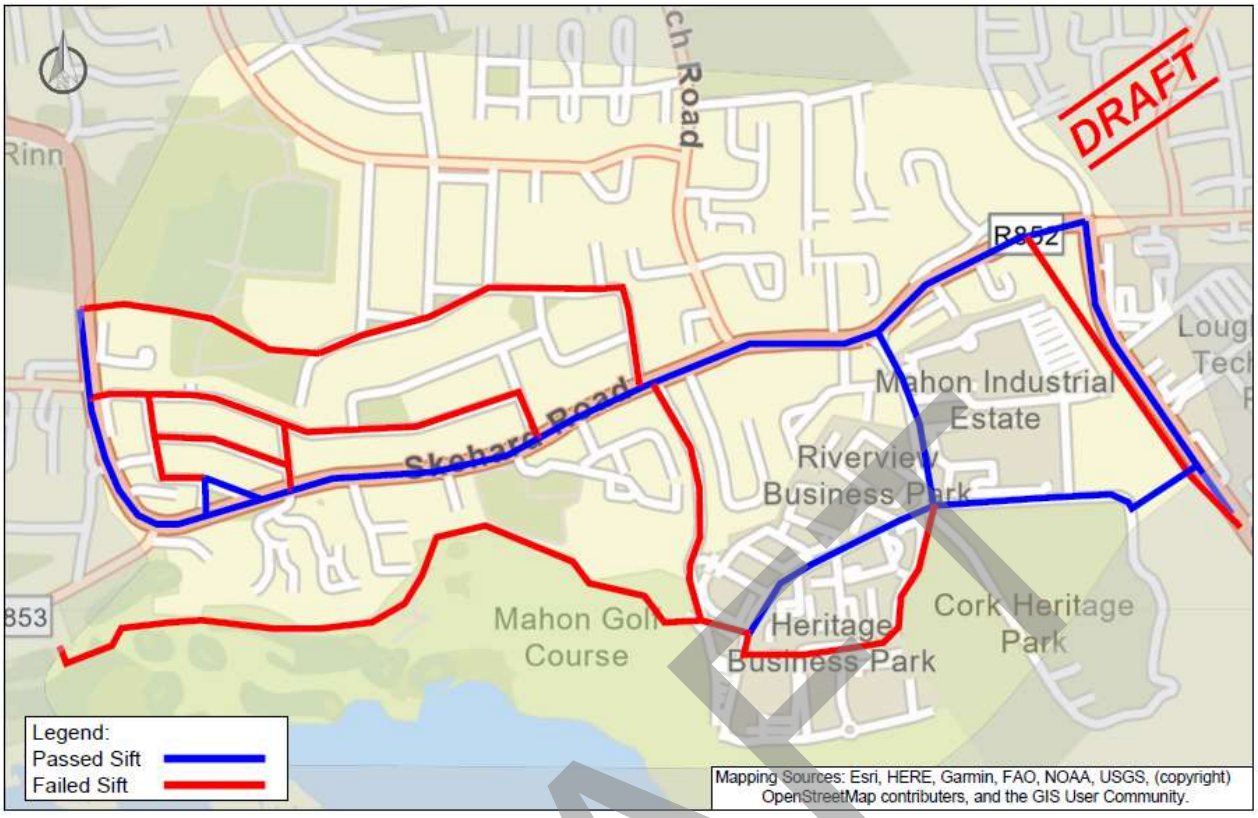


Figure 5-7 Section 2 Sifting Process Step 1

5.2.1 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.

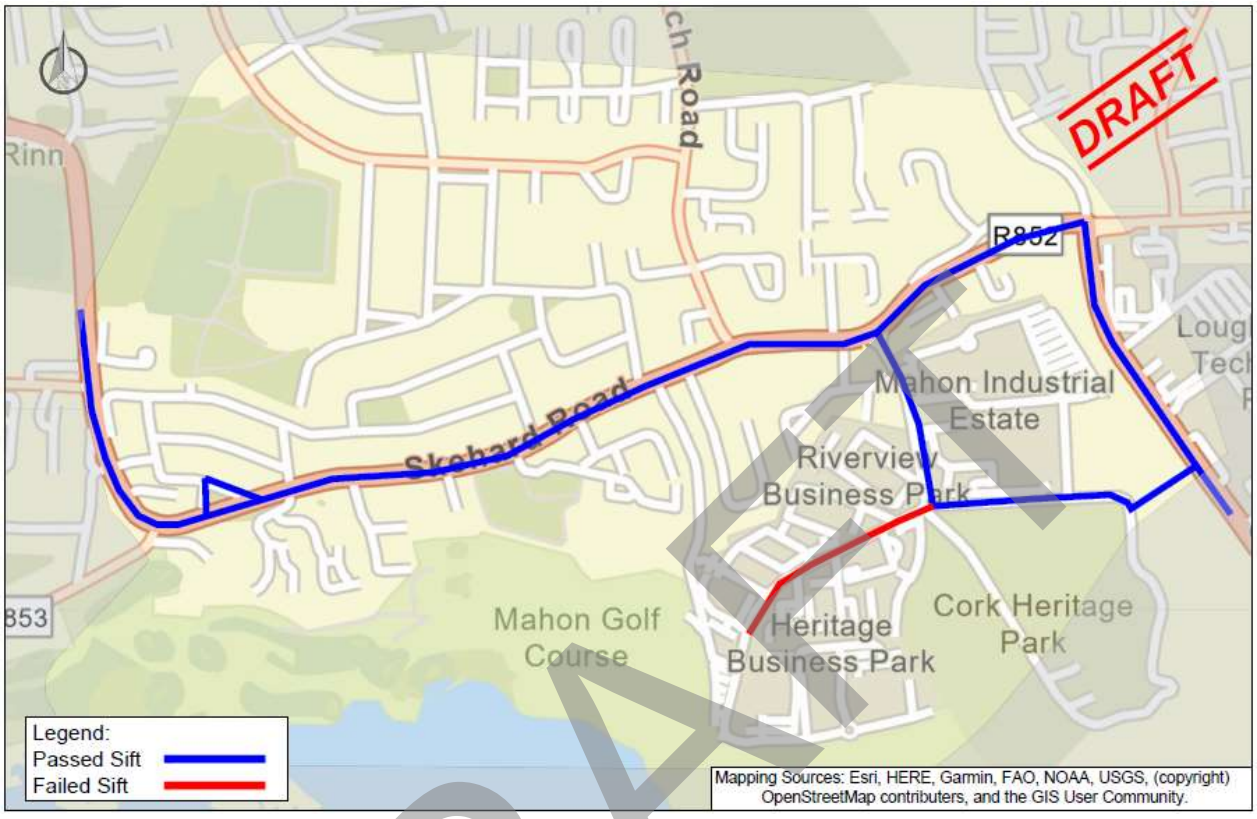


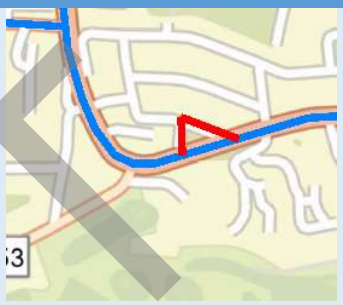
Figure 5-8 Section 1 Sifting Process Step 2

5.2.2 Preliminary Route Assessment

A Preliminary Route Assessment process was then performed to identify routes that were circuitous in nature or would clearly 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 5-4 Route 1 Preliminary Route Assessment

Road Names	Comments	Map
Silver Grove E-W and N-S.	Any routes using these links would have routes which are circuitous in nature and would lead to longer journey times when compared to the more direct adjacent option on Skehard Road. This route would also require buses to pass through a higher number of junctions and make more turning movements. For these reasons, this route option is not considered further.	

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

Figure 5-9 Section 2 Preliminary Assessment Outcome

5.2.3 Sifting Conclusion

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

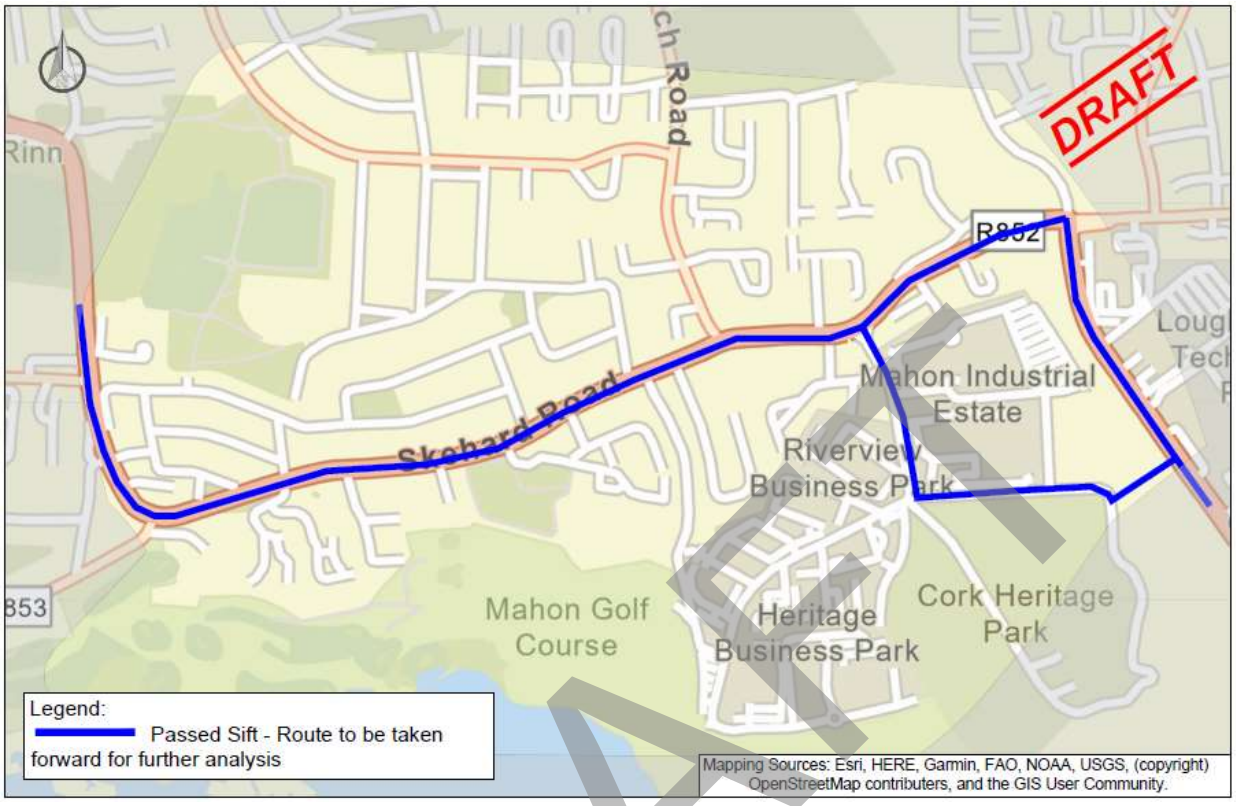


Figure 5-10 Section 2 Sifting Process Step 2

5.3 Section 3 Sifting

This chapter outlines the sifting process for Section 3 of the Study Area.

All roads within Section 3 of the study area are assessed on a high level for their ability to form part of the STC route. Route options are ruled out at this stage if they can clearly not form part of 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.

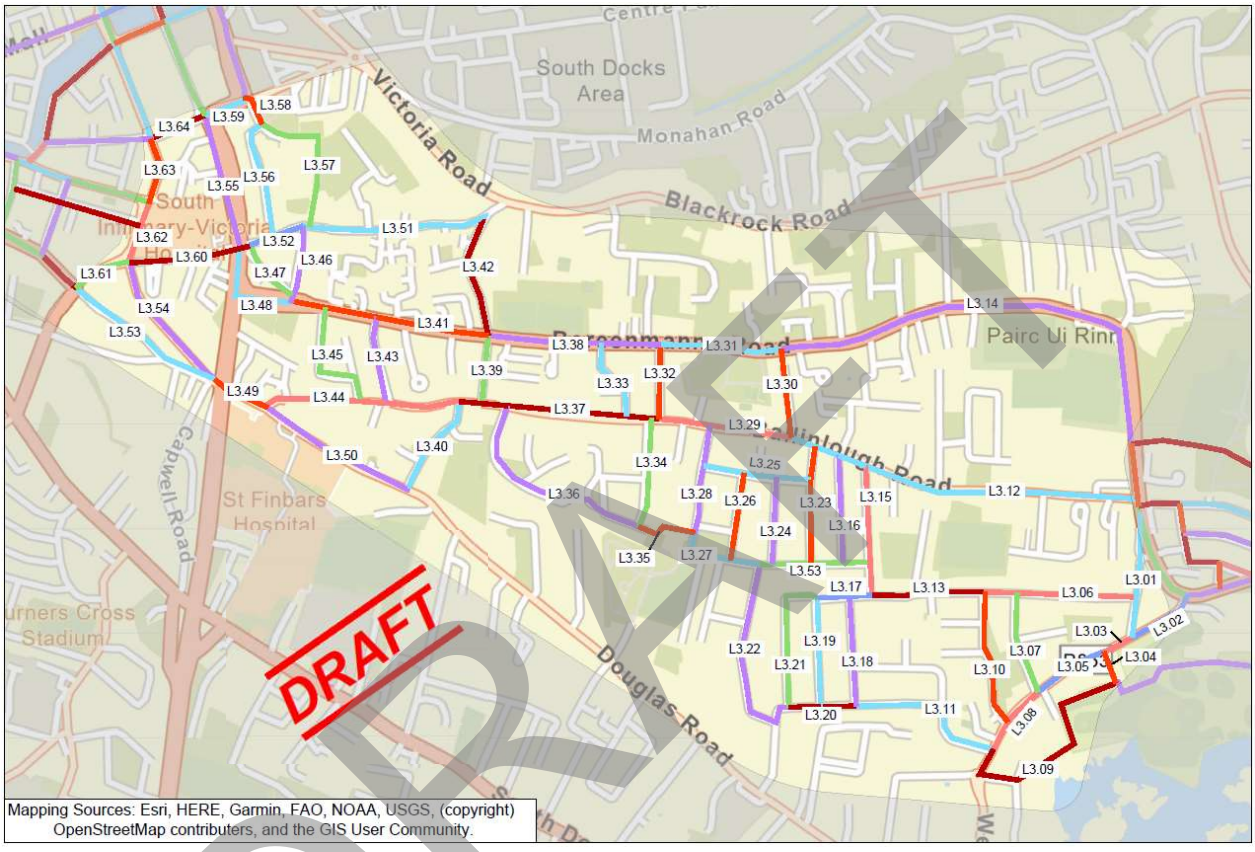


Figure 5-11 Section 3 Route Options

Table 5-5 Section 2 Route Option Assessment Stage 1

Link No.	Road Characteristics	Comments	Pass / Fail
L 3.01	Residential, Commercial with roadside parking	Churchyard Lane (Link Road) from its junction with Well Road (R853) to Churchyard Lane (R852). This is a build-up single carriageway link road. It has driveway and roadside parking. It is bounded by front garden walls and buildings with a minimum available width of 6.0m. There are no bus and cycle facilities along this link. There is no potential to install bus lanes along this link without the need to set-back boundary walls and substantial private land take. This would require removing the on-street parking and creating a new junction with Churchyard Lane (R852). This is not considered a viable route option for this CBC.	Fail
L 3.02	Urban, Regional and Residential	Well Road (R853) from its junction with Churchyard Lane (Link Road) to the junction with Churchyard Lane / Skehard Road (R852). This is a single carriageway road with an additional turning lane at its junction with Skehard Road. It has one driveway access. There is a grass verge and is bounded by Mahon Golf Course along its southern side. It has a varying width between boundaries with a typical available width of 13.5m. There are no bus and cycle facilities along this link. There is potential to install bus lanes but would require some private land take. This is considered a viable route option for this CBC.	Pass
L 3.03	Urban, Regional and Residential	Well Road (R853) from its junction with Churchyard Lane (Link Road) to an access to a private site located 80m to west. This is a single carriageway road with driveway access. It has a varying width between boundaries with a typical available width of 13.5m. There are no bus and cycle facilities along this link. There is potential to install bus lanes but would require some private land take. This is considered a viable route option for this CBC.	Pass

L 3.04	Private Site	New link from Well Road to the western end of the Mahon Golf Course. This short 70m long link is through a private site currently used as a parking area immediately west of Mahon Golf Course. This link is located fully within private land and would require the removal of the small parking area. This is not considered a viable route option for this CBC.	Fail
L 3.05	Urban, Regional with roadside parking	Well Road (R853) from its junction with Ardmahon Estate to the access to a private site 170m to the east. This is a single carriageway road with driveway parking. It has a varying width between boundaries with a minimum available width of 9.0m. There are no bus and cycle facilities along this link. Road widening to provide bus lanes would require the setting back of boundaries and substantial private land take. This is not considered a viable route option for this CBC.	Fail
L 3.06	Residential Estate Road with roadside parking	Ardmahon Estate (E – W) from its junction with Churchyard Lane (Link Road) to Lake Lawn. This is a single carriageway unmarked estate road with speed ramps. It has grass verges on both sides. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 11.0m. There are no bus and cycle facilities along this link. Road widening to provide bus lanes would require the setting back of boundaries and substantial private land take. This is not considered a viable route option for this CBC.	Fail
L 3.07	Residential Estate Road with roadside parking	Ardmahon Estate (N – S) from its junction with Ardmahon Estate (E – W) to Well Road (R853). This is a single carriageway unmarked estate link road. It has grass verges on both sides with a green area located midway. It has driveway and roadside parking. The available width varies with a typical width of 11.5m between front garden walls. There are no bus and cycle facilities along this link. Road widening to provide bus lanes would require the setting back of boundaries and substantial private land take. This would require removing the on-street parking. This is not considered a viable route option for this CBC.	Fail

L 3.08	Urban, Regional and Residential	Well Road (R853) from its junction with Ardmahon Estate to the junction with Hettyfield. This is a single carriageway road with driveway parking. It has a varying width between boundaries with a minimum available width of 9.0m with no grass verges. There are no bus and cycle facilities along this link. Road widening to provide bus lanes would require the setting back of boundaries and substantial private land take. This is not considered a viable route option for this CBC.	Fail
L 3.09	Amenity Site	Well Road (R853) from its junction with Hettyfield, along Douglas Hall Lawn and along the western side of the waterfront as far as the western end of Mahon Golf Course. This link would require widening of all existing roads and the construction of a new road along the waterfront. This route would require land take and the removal of trees. This route would pass through an area destinated by the EPA as the Cork Harbour SPA and therefore will be ruled out at this stage for any further consideration. This is not considered a viable route option for this CBC.	Fail
L 3.10	Residential Estate Road with roadside parking	Lank Lawn from its junction with Well Road (R853) to the junction with Ardmahon Estate. This is a single carriageway unmarked estate link road with speed ramps. It has a grass verge along its eastern side. It has driveway and roadside parking. The available width varies with short sections of restrictive width between boundaries measuring width of 11.5m between garden boundaries. There are no bus and cycle facilities along this link. There is potential to install bus lanes along this link but this would require setting back boundaries and private land take in places and/or using reduce bus corridor width with bus priority at northern end. This would require removing the on-street parking. This is considered a viable route option for this CBC.	Pass
L 3.11	Residential Estate Road with roadside parking	Eglantine Park and Hettyfield estates roads from junction with Well Road to the junction with Hettyfield Park. This is a single carriageway unmarked estate road. It has speed ramps with no grass verges. It has driveway and roadside parking. It has a typical available width of 9.0m between garden walls. There are no bus and cycle facilities along this link.	Fail

		There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 3.12	Urban, Residential with roadside parking	Ballinlough Road from its Junction with Churchyard Lane to its junction with Oakfield Lawn. This section consists of one lane of traffic in both directions. It has roadside parking with driveway access and no grass verges. The available road width varies with a minimum width of circa 5.0m (which includes a 1.0m wide footpath on one side only) between boundary walls. There are no bus or cycle lanes on the link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. It would also require the purchase of some properties. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.13	Residential Estate Road with roadside parking	Lake Lawn (E – W) and South Lodge from its junction with Somerton Park to Lake Lawn (N – S). This is a single carriageway unmarked estate road with speed ramps. It has no grass verges on either side. It has driveway and road side parking. It is entirely bounded by front garden walls with a typical available width of 9.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.14	Urban, Regional with roadside parking	Boreenmanna Road (R852) and Churchyard Lane (R852), from the access with Cork Constitution FC (Temple Hill) and Maxol filling station beside Ballinlough Park. This section consists of one lane of traffic in either direction. It has roadside parking with intermittent grass verges. The available road width varies with a minimum width of circa 15.0m between boundary walls at a pinch point near Maxol filling station.	Pass

		There are no bus lanes on the link. It has a shorth section of east (out) bound cycle track. There is potential to install two bus lanes along both sides by removing the grass verges and roadside parking without any private land take. Widening would require the removal of a number of trees within the verges. This is considered a viable route option for this CBC.	
L 3.15	Residential Estate Road with roadside parking	South Lodge (Somerton Park) from its junction with Ballinlough Road to the junction with Lake Lawn (South Lodge). This is a single carriageway unmarked estate road. It has no grass verges. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.16	Residential Estate Road with roadside parking	Sundrive Park from its junction with Somerton Road to its junction with Ballinlough Road. This is a single carriageway unmarked estate road. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.17	Residential Estate Road with roadside parking	South Lodge from its junction with Somerton Park to the junction with Browningstown Park East. This is a single carriageway unmarked estate road. It has no grass verges. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 9.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking.	Fail

		This is not considered a viable route option for this CBC.	
L 3.18	Residential Estate Road with roadside parking	Hettyfield Park from its junction with South Lodge to the junction with Eglantine Park. This is a single carriageway unmarked estate link road. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.19	Residential Estate Road with roadside parking	Browningstown Park East from its junction with South Lodge to the junction with Eglantine Park. This is a single carriageway unmarked estate link road. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.20	Residential Estate Road with roadside parking	Eglantine Park from its junction with Hettyfield Park and its junction with Browningstown Park West. This is a single carriageway unmarked estate link road with speed ramps. It has a no grass verges on either side. It has driveway and roadside parking. It has a typical available width of 8.0m between garden walls. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail

L 3.21	Residential Estate Road with roadside parking	Browningstown Park West from its junction with Eglantine Park and its junction with Browningstown Park East. This is a single carriageway unmarked estate link road. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.22	Residential Estate Road with roadside parking	Ardfallen Estate from its junction with Eglantine Park and its junction with Somerton Road / Nursery Drive. This is a single carriageway unmarked estate link road with speed ramps. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.0m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.23	Residential Estate Road with roadside parking	Belmont Park from its junction with Ballinlough Road and the junction with Somerton Road. This is a single carriageway unmarked estate link road. It has no grass verges. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.2m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.24	Residential Estate Road with roadside parking	Belmont Avenue from its junction with Sunnyside and the junction with Somerton Road. This is a single carriageway unmarked estate link road. It has no grass verges. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 9.5m.	Fail

		There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 3.25	Residential Estate Road with roadside parking	Sunnyside estate road from its junction with Beechwood Park and the junction with Belmont Park. This is a single carriageway unmarked estate link road. It has no grass verges on either side. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 8.1m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.26	Residential Estate Road with roadside parking	Beechwood Park from its junction with Sunnyside and the junction with Somerton/Nursery Drive. This is a single carriageway unmarked estate link road. It has no grass verges. It fronts a green open space at its junction with Nursery Drive. It has driveway and road side parking. It is generally bounded by front garden walls with a typical available width of 9.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.27	Residential Estate Road with roadside parking	Beechwood Park and Nursery Drive from its junction with Ardfallen Estate and the junction with Beachmont Park (E – W) This is a single carriageway unmarked estate link road. It is bounded by both green space and private gardens It provides driveway access and road side parking. Where it is bounded by garden walls it has a minimum available width of 10.8m. There are no bus and cycle facilities ma along this link. There is potential to install bus lanes along this link using the existing green spaces, this would require setting-back	Pass

		some boundary walls in places and private land take. This would require removing the on-street parking in places. This is considered a viable route option for this CBC.	
L 3.28	Residential Estate Road with roadside parking	Beechwood Park (N – S) from its junction with Beechwood Park (E – W) and the junction with Ballinlough Road. This is a single carriageway unmarked estate link road. It has no grass verges. It has driveway and road side parking. It is bounded by front garden walls with a typical available width of 10.5m. There are no bus and cycle facilities along this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.29	Urban, Residential with roadside parking	Ballinlough Road from its Junction with Oakfield Lawn to its junction with Willow Lawn. This section consists of one lane of traffic in both directions. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 9.0m between boundary walls. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.30	Urban, Residential with roadside parking	Oakfield Lawn from its junction with Ballinlough Road and onto a new junction with Boreenmanna Road via the Maxol filling station access. This is a cul-de-sac estate road consisting of one lane of traffic in each direction. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 9.0m between boundary walls. Land take from the petrol station would be required to open up this cul-de-sac as a through route. There are no bus or cycle lanes on the link.	Pass

		Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	
L 3.31	Urban, Regional with roadside parking	Boreenmanna Road (R852) from the Maxol filling station to the junction with Willow Lawn. This section consists of one lane of traffic in either direction. It has roadside parking and driveway access with intermittent grass verges. The available road width varies with a minimum width of circa 16.0m between boundary walls. It is bounded on its southern side by Ballinlough Park. There are no bus or cycle lanes on the link. There is potential to install two bus lanes along both sides by removing the grass verges and roadside parking without any private land take. Widening would require the removal of a number of trees within the verges. This is considered a viable route option for this CBC.	Pass
L 3.32	Urban, Residential with roadside parking	Willow Lawn from its junction with Ballinlough Road and the junction with Boreenmanna Road. This is an estate link road consisting of one lane of traffic in each direction. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 8.5m between boundary walls. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.33	Urban, Residential with roadside parking	Dunmore Lawn from its junction with Ballinlough Road and the junction with Boreenmanna Road. This is a estate link road consists of one lane of traffic in both directions. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 7.5m between boundary walls. There are	Fail

		properties close to the road in places and the road has two turns as well as a steep slope. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered a viable route option for this CBC.	
L 3.34	Urban, Residential with roadside parking	Pic du Jer Park (N – S) from its junction with Ballinlough Road to the junction with Pic du Jer Park (E – W). This section consists of one lane of traffic in either direction. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 8.0m between boundary walls. There are no bus or cycle lanes on the link. There is no potential to install two bus lanes along both sides without private land take and removal of all roadside parking. This is not considered a viable route option for this CBC.	Fail
L 3.35	Residential and Educational	Pic du Jer Park from its cul-de-sac at its southern end through private land to a new junction with Beechwood Park. This 100m link would require extending a cul-de-sac estate road through a private garden and through a car parking area and access road for St. Anthony's Boys National School. There are no bus or cycle lanes on the link. There is no potential to install a bus corridor without substantial private land take and removal of private parking. This is not considered a viable route option for this CBC.	Fail
L 3.36	Urban, Residential with roadside parking	Knockrea Lawn and Pic du Jer Park (E – W) from its junction with Ballinlough Road to the junction with Pic du Jer Close. This section consists of two estate roads with one lane of traffic in each direction linked by a 3.0m wide walkway which runs between two dwellings which connects these two estate roads. It has roadside parking with driveway access and no grass verges. Two green open spaces bound both roads. It has a typical available width of circa 10.7m and 8.4m between boundary walls on each estate roads. There are no bus or cycle lanes on the link.	Fail

		There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 3.37	Urban, Residential with roadside parking	Ballinlough Road from its Junction with Willow Lawn to its junction with Bellair Estate. This section consists of one lane of traffic in each direction. It has roadside parking with driveway access and no grass verges. It has a typical available width of circa 8.0m between boundary walls. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.38	Urban, Regional with roadside parking	Boreenmanna Road (R852) from its junction with Victoria Avenue to the junction with Willow Lawn. This section consists of one lane of traffic in either direction with an additional turning lane at its junction with Victoria Avenue. It has roadside parking and driveway access with intermittent grass verges. It has typical available width of circa 16.0m between boundary walls. There are no bus or cycle lanes on this link. There is potential to install two bus lanes along both sides by removing the grass verges and roadside parking without any private land take. Widening would require the removal of a number of trees within the verges. This is considered a viable route option for this CBC.	Pass
L 3.39	Urban, Residential with roadside parking	Wallace's Avenue from its junction with Ballinlough Road to the junction with Boreenmanna Road. This is a estate link road with one lane of traffic in either direction. It has roadside parking and no grass verges. It has a typical available width of circa 9.0m between boundary walls. The terraced houses have front gardens without driveways and so rely on on-street parking. There are no bus or cycle lanes on the link.	Fail

		Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible.	
L 3.40	Urban, Regional & Residential with roadside parking	Bellair Estate from its junction with Ballinlough Road to the junction with Douglas Road. This is an estate link road with one lane of traffic in both directions. It has driveway and roadside parking with no grass verges. It has a typical available width of circa 9.0m between boundary walls. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.41	Urban, Regional with roadside parking	Boreenmanna Road (R852) from its junction with Victoria Avenue to the junction with Rockboro Avenue. This section consists of one lane of traffic in either direction with an additional turning lane at its junction with Victoria Avenue. It has roadside parking and driveway access with no grass verges. It has typical available width of circa 16.0m between boundary walls. There are no bus or cycle lanes on this link. There is potential to install two bus lanes along both sides by removing the roadside parking without any private land take. This is considered a viable route option for this CBC.	Pass
L 3.42	Urban, Regional with roadside parking	Victoria Avenue from its junction with Old Blackrock Road and the junction with Boreenmanna Road. This section consists of one lane of traffic in either direction. It has roadside parking and driveway access with no grass verges. It has typical available width of circa 8.7m between boundary walls.ma There are no bus or cycle lanes on this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking.	Fail

		This is not considered a viable route option for this CBC.	
L 3.43	Urban, Residential with roadside parking	Bernadette Way from its junction with Ballinlough Road to the junction with Boreenmanna Road. This is an estate link road with one lane of traffic in each direction. It has roadside parking and driveways with no grass verges. It has a typical available width of circa 8.8m between boundary walls. There are no bus or cycle lanes on the link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.44	Urban, Residential with roadside parking	Ballinlough Road from its Junction with Bellair Estate to its junction with Douglas Road. This section consists of one lane of one-way traffic west (out) bound. It has roadside parking with driveway access and no grass verges. There is a footpath on one side of the road only which is less than 1m wide. It has a typical available width of circa 5.5m between boundary walls. The terraced houses have front gardens without driveways and so rely on on-street parking. There are no bus or cycle lanes on the link. There is no potential to install two bus lanes along both sides without substantial private land take including the purchase of several properties and removal of all roadside parking. This is not considered a viable route option for this CBC.	Fail
L 3.45	Urban, Residential with roadside parking	Castlegreina Park and Carrigeen Park (S) from its junction with Boreenmanna Road and the junction with Ballinlough Road. This is an estate link road with one lane of traffic in each direction. It has roadside parking and driveways with no grass verges. It has a typical available width of circa 8.4m between boundary walls. There are no bus or cycle lanes on the link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking.	Fail

		This is not considered a viable route option for this CBC.	
L 3.46	Urban, Residential with roadside parking	Rockboro Avenue from its junction with Boreenmanna Road and its junction with Old Blackrock Road. This is a estate link road with one lane of traffic in each direction. It has roadside parking and driveways and no grass verges. It has a typical available width of circa 8.3m between boundary walls. There are no bus or cycle lanes on the link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.47	Urban with roadside parking	Boreenmanna Road (Link Road) from its junction with Rockboro Avenue to the junction with Old Blackrock Road. This section consists of one lane of traffic in either direction. It has roadside parking bays with no grass verges. It has typical available width of circa 7.0m between boundary walls. Concurrent two-way flow is difficult beside the parking bays. There are no bus or cycle lanes on this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.48	Urban, Regional & National	Boreenmanna Road (R852) and the South City Link Road (N27) from its junction with Rockboro Avenue as far as then Old Blackrock Road overpass. This section of Boreenmanna Road contains multiple lanes of traffic and forms a signalised T-junction with the N27. There is significant open space on both sides of the Boreenmanna Road which has a short-landscaped median. This is no width constraint on this section of the Boreenmanna Road but widening would require the removal of trees. The N27 has two lanes of traffic in each direction with a 1.0m wide raised concrete median and no hard shoulders. The available width between boundary walls along the N27 is circa 16.0m. There are no bus or cycle lanes on this link.	Pass

		There is potential to install two bus lanes along both sides Boreenmanna Road without any private land take. There is no potential to widen the N27 along this section. This is considered a viable route option for this CBC.	
L 3.49	Urban & Regional with roadside parking	Douglas Road (R610) from its junction with Ballinlough Road to the junction with Southern Road/High Street. This section consists of one lane of traffic in either direction. It has roadside parking bays but no driveway access and no grass verges. It has typical available width of circa 9.5m between boundary walls. There is also a 12.0m wide physical constraint as it overpasses the N27. There are no bus or cycle lanes on this link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.50	Urban, Regional & Residential with roadside parking	Douglas Road (R610) from its junction with Ballinlough Road to the junction with Bellair Estate. This is a regional road with one lane of traffic in either direction and with an additional turning lane at its junction with Bellair Estate. Is have roadside parking and no grass verges. It has an intermittent outbound cycle lane which the road width allows. It has a typical available width of circa 9.0m between boundary walls with an 8.0m wide pinch point. There are no bus or cycle lanes on the link. Road widening to provide bus lanes is not possible without the removal of all on-street parking and substantial land take including the purchase of properties. This is not considered feasible. It may be possible to provide some bus priority by introducing traffic restrictions. As there are limited route options in this area this link will be brought forward for further consideration.	Pass
L 3.51	Urban, Regional with roadside parking	Old Blackrock Road from its junction with Rockboro Avenue and the junction with Victoria Avenue. This section consists of one lane of traffic in either direction. It has roadside parking and driveway access with no grass verges. It has a minimum available width of circa 6.7 between boundary walls.	Fail

		There are no bus or cycle lanes on this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	
L 3.52	Urban, Regional with roadside parking	Old Blackrock Road from its junction with Rockboro Avenue and the junction with Boreenmanna Road (Link Road). This section consists of one lane of traffic in either direction. It has roadside parking and driveway access with no grass verges. It has a minimum available width of circa 9.5 between boundary walls. There are no bus or cycle lanes on this link. There is limited potential to install bus lanes along this link and would require substantial setting back of front garden boundary wall on both sides of the link and the removal of all the roadside residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.53		Common with Route 10 Link No. **L 3.22**	
L 3.54		Common with Route 10 Link No. **L 3.23**	
L 3.55		Common with Route 10 Link No. **L 3.24**	
L 3.56	Urban, Residential, Commercial with roadside parking	Rockboro Road and Gasworks Road from its junction with Old Blackrock Road to the junction with a local access road (at Shalom Park). Rockboro Road is a one-way street from Old Blackrock Road as far as its junction with Gasworks Road where it becomes two way. It has some roadside parking. Rockboro Road is bounded by terrace houses fronting directly onto the street and has a typical available width of 8.5m between boundary walls. There are no bus or cycle lanes along this link. There is no potential to install two bus lanes along this link due to lack of space between properties measuring 6.0m along its one-way section and the on-street residential parking. This is not considered a viable route option for this CBC.	Fail
L 3.57	Urban, Commercial Estate	Unnamed Local Access Road from its junction with Rock Borough Road to its end near Old Blackrock Road.	Fail

		This access road runs adjacent to Gas Network Ireland Headquarters. It is one lane in each direction and is bounded by grass verges, car parks and storage yards. It has no road parking and has a minimum available width of 9.5m at a pinch-point. There are no bus or cycle lanes on this road. There is limited potential to form a new junction linking it with Old Black Road due to the large level difference. This is not considered a viable route option for this CBC.	
L 3.58	Urban, Commercial Estate	Gasworks Road from its junction with Old Blackrock Road to the junction with a local access road for Gas Networks Ireland Headquarters. It has a traffic lane in both directions and has a typical available width of 9.5m between boundary walls. It is bounded along its western side by Shalom Park and by a commercial premises on its western side. There are no bus or cycle lanes along this link. There is potential to install two bus lanes along this link by widening into the public park. This is considered a viable route option for this CBC.	Pass
L 3.59		Common with Route 1 Link No. **L 2.41**	
L 3.60	Urban & Commercial	Old Blackrock Road from its junction with Boreenmanna Road to the junction with Southern Road. This is a two-way street with one lane in each direction. It is used for regulated on street parking for approximately the middle 50% of its length. It is bounded by buildings and front gardens along either side. It has a typical available width of 11m. It has a cycle lane on the Southern side of the road in the 100m running up to the junction with Southern Road. There are no bus lanes. There is limited potential to provide bus lanes along this link due to lack of space between buildings. This is not considered a viable route option for this CBC.	Fail
L 3.61		Common with Route 10 Link No. **L 3.28**	
L 3.62		Common with Route 10 Link No. **L 3.29**	
L 3.63		Common with Route 1 Link No. **L 3.35**	
L 3.64		Common with Route 1 Link No. **L 2.67**	

The outcome of this sifting assessment is shown in Figure 5-12 Section 3 Sifting Process Step 1below.

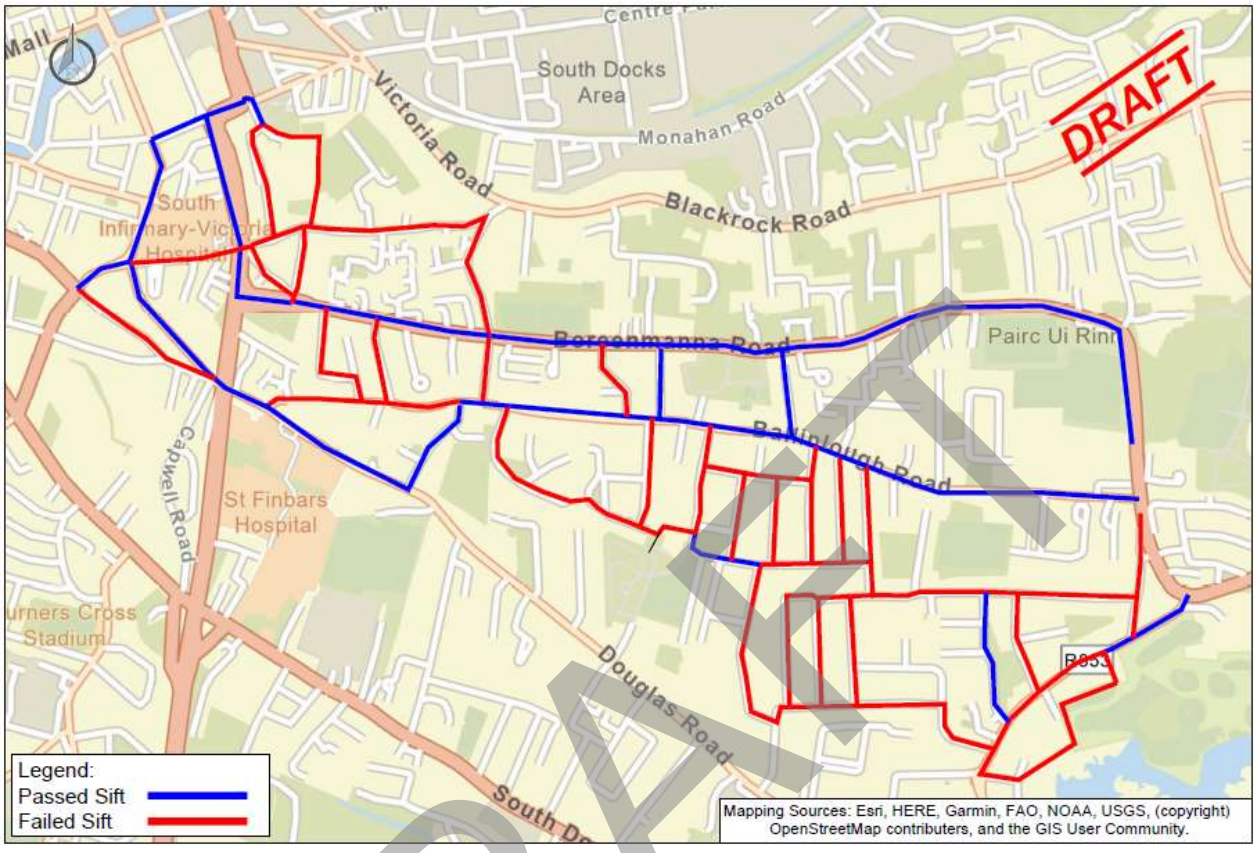


Figure 5-12 Section 3 Sifting Process Step 1

5.3.1 Removal of Disconnected Links

Based on Figure 5-12 Section 3 Sifting Process Step 1, 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.

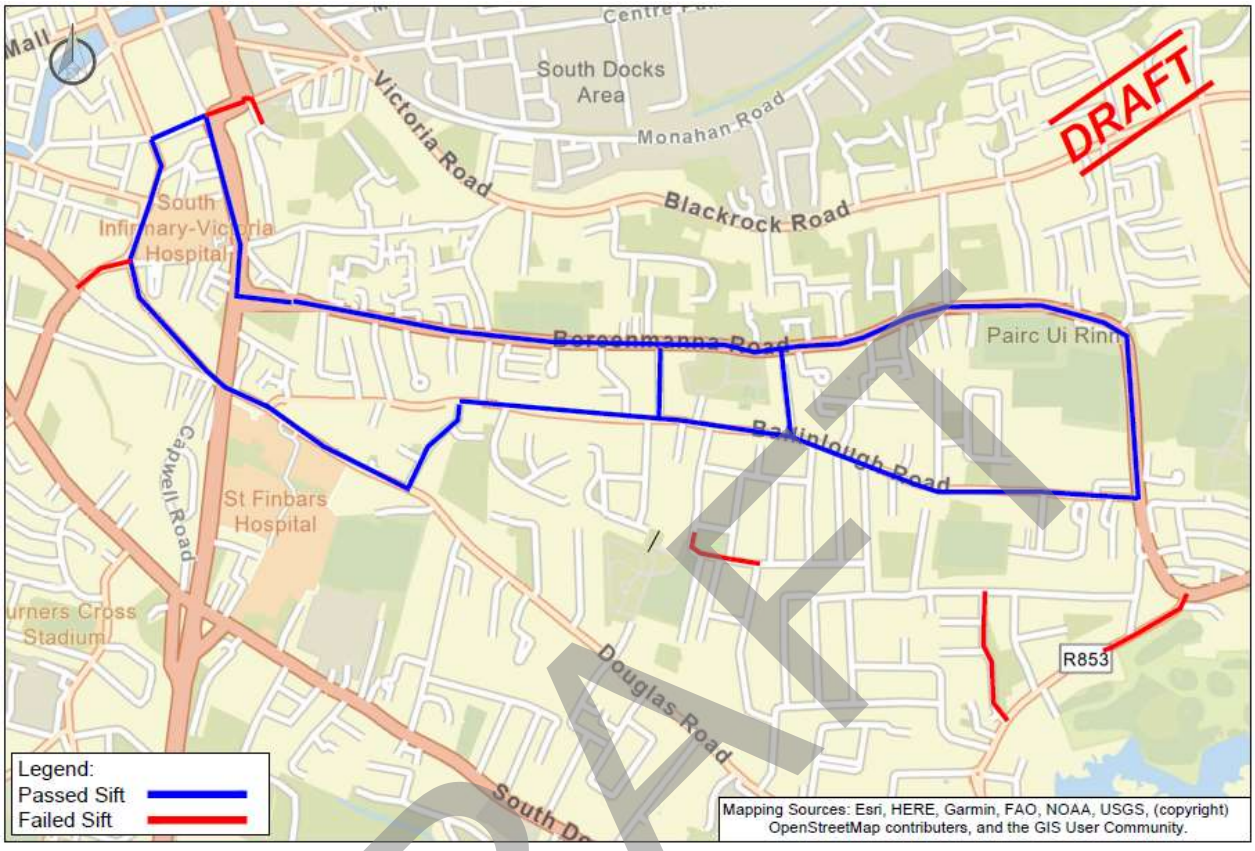


Figure 5-13 Section 3 Sifting Process Step 2

5.3.2 Preliminary Route Assessment

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

No such routes were identified in Section 3 of STC 11, therefore the conclusion of the sift can be seen below.

5.3.3 Sifting Conclusion

Figure 5-144 below shows the final spiders web of links that will be bought forward to route option creation and MCA analysis.

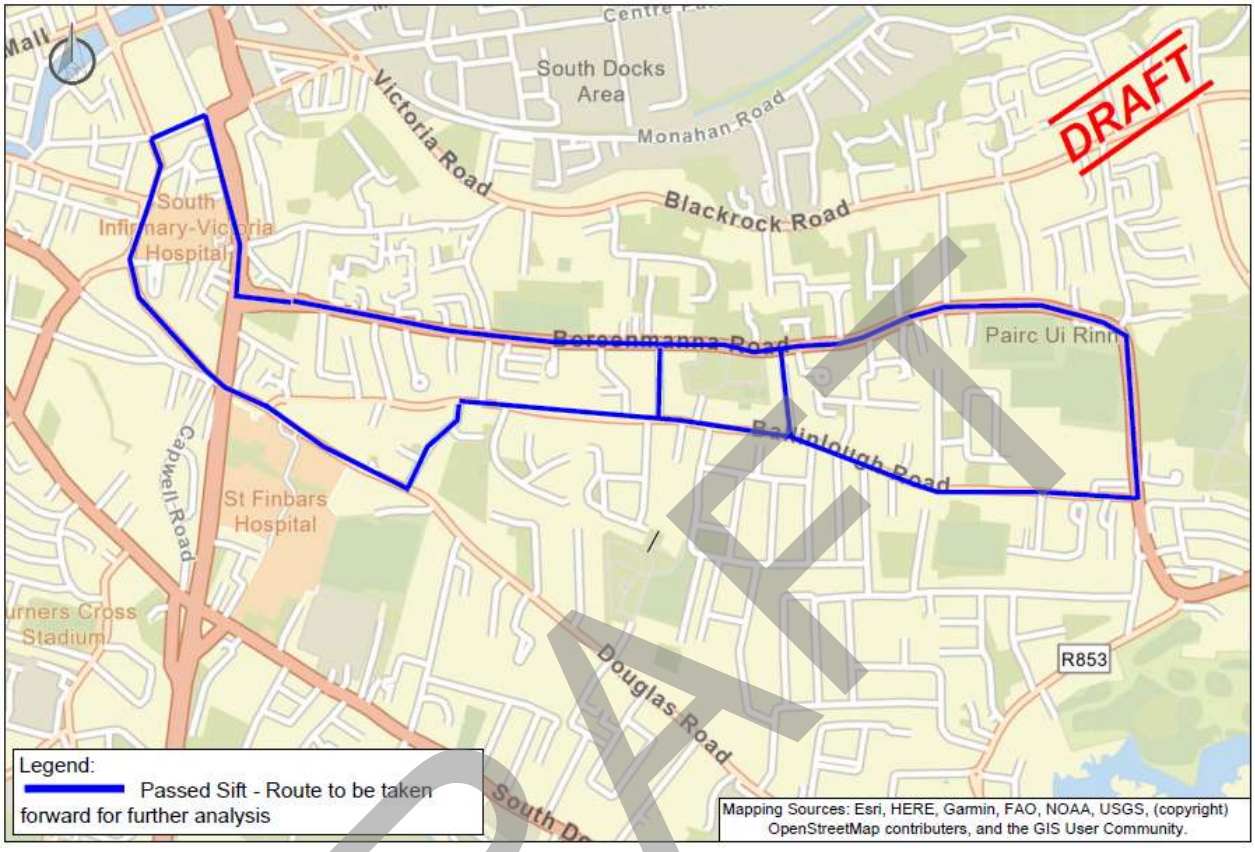


Figure 5-14

5.4 Overall Sifting Outcome For Sections 1 to 3

Below Figure 5-15 shows the “spiders web” of all route options considered.

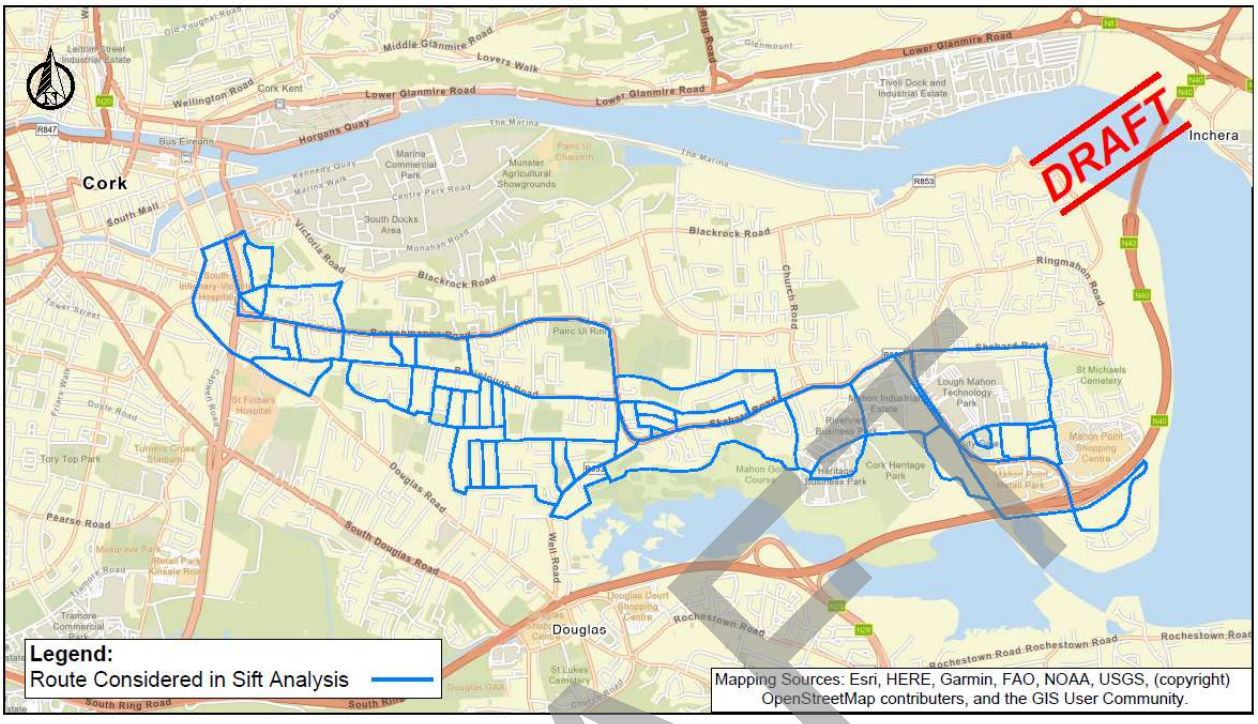


Figure 5-15

Below Figure 5-16 shows the overall spiders web of options for the full study area post sifting.

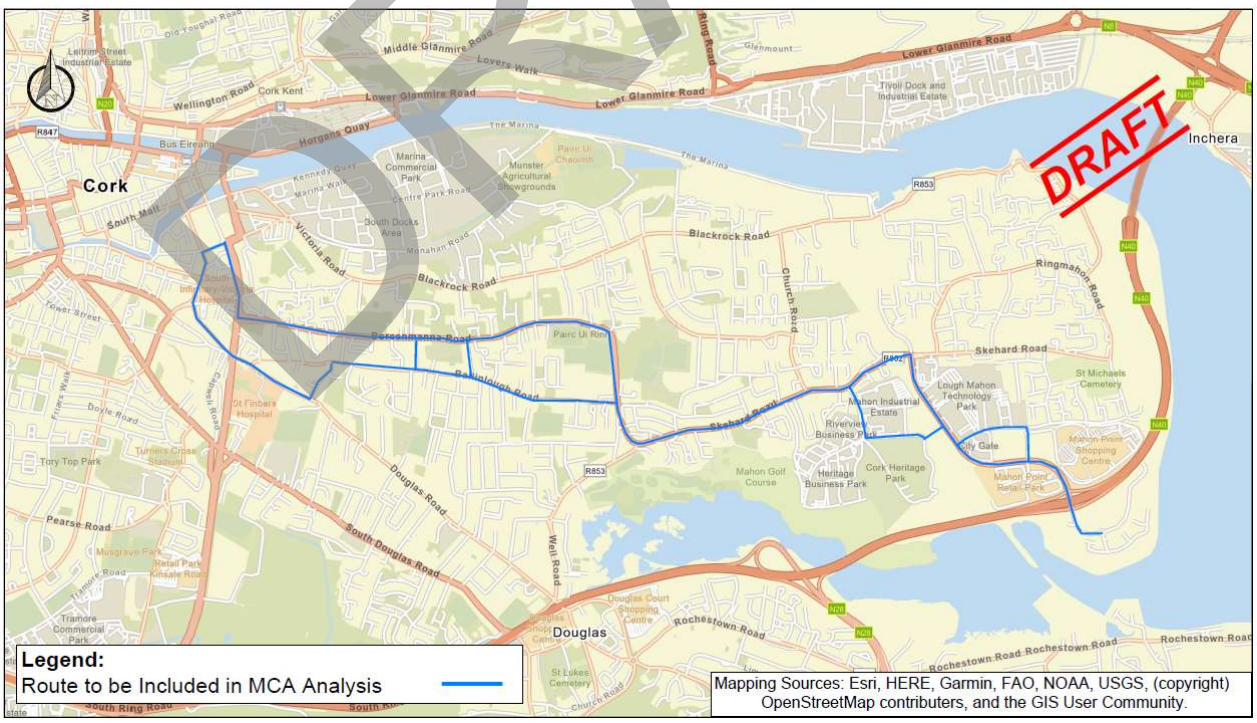


Figure 5-16

6. Stage 2 MCA Assessment – Section 1

6.1 Section 1: Jacobs Island/Mahon

6.1.1 Introduction and Route Description

Following the Stage 1 sifting process, three possible options for routing buses were identified using the remaining links in Section 1. Upon further assessment (preliminary route assessment), one of the options was circuitous and is not taken forward for the MCA as detailed previously. The two remaining viable route options for Section 1, are as follows:

- Route Option 1: Using Jacobs Island (L99484) and the R852 Loughmahon Link Road
- Route Option 2: Using Jacobs Island (L99484), the R852 Loughmahon Link Road, the existing access to Mahon Point Shopping Centre, a new link to the north to connect to St. Michael's Drive, and then re-joining Loughmahon Link Road.

Both routes start at the existing roundabout junction of the L99484, Longshore Avenue and Longshore Drive on Jacobs Island. This roundabout junction is approx. 250m southeast of the Mahon Interchange Bridge on Jacobs Island with the route finishing approx. 100m northwest of the St. Michaels Dive/Loughmahon Link Road junction. See Figure 6-1.

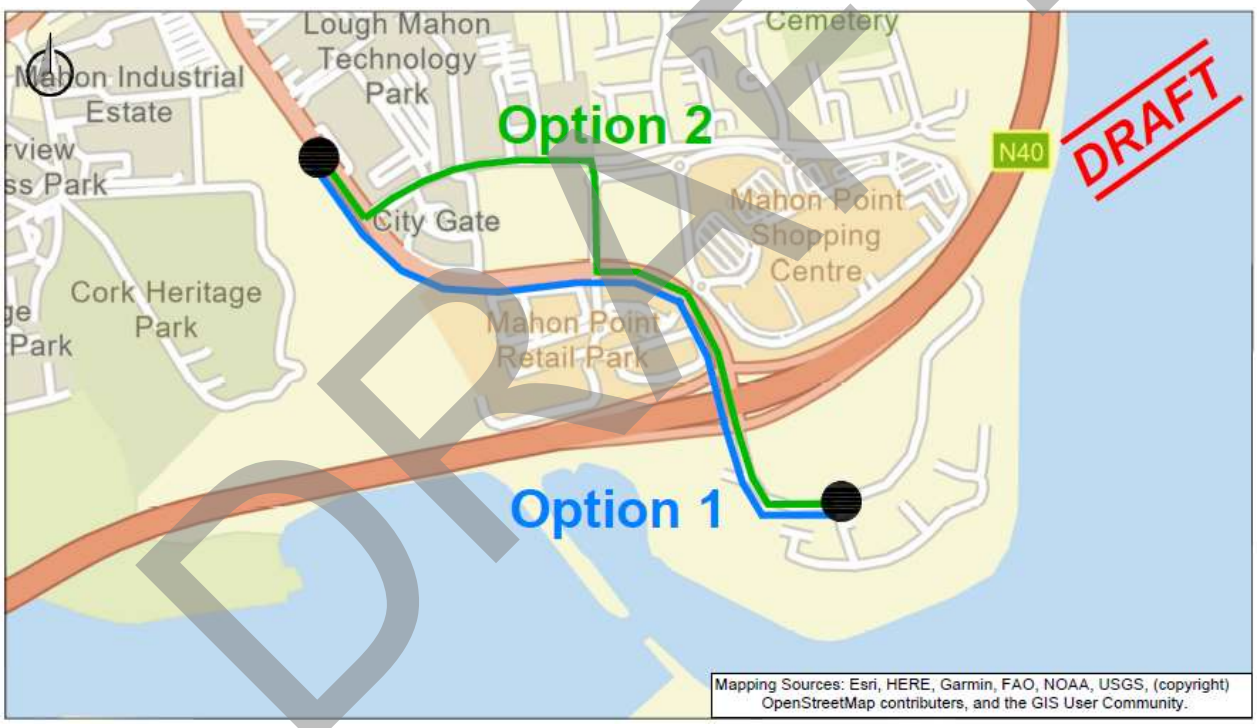


Figure 6-1 Section 1 (Jacobs Island/Mahon) Route Options

6.1.2 Route Option 1

Indicative Scheme Design

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

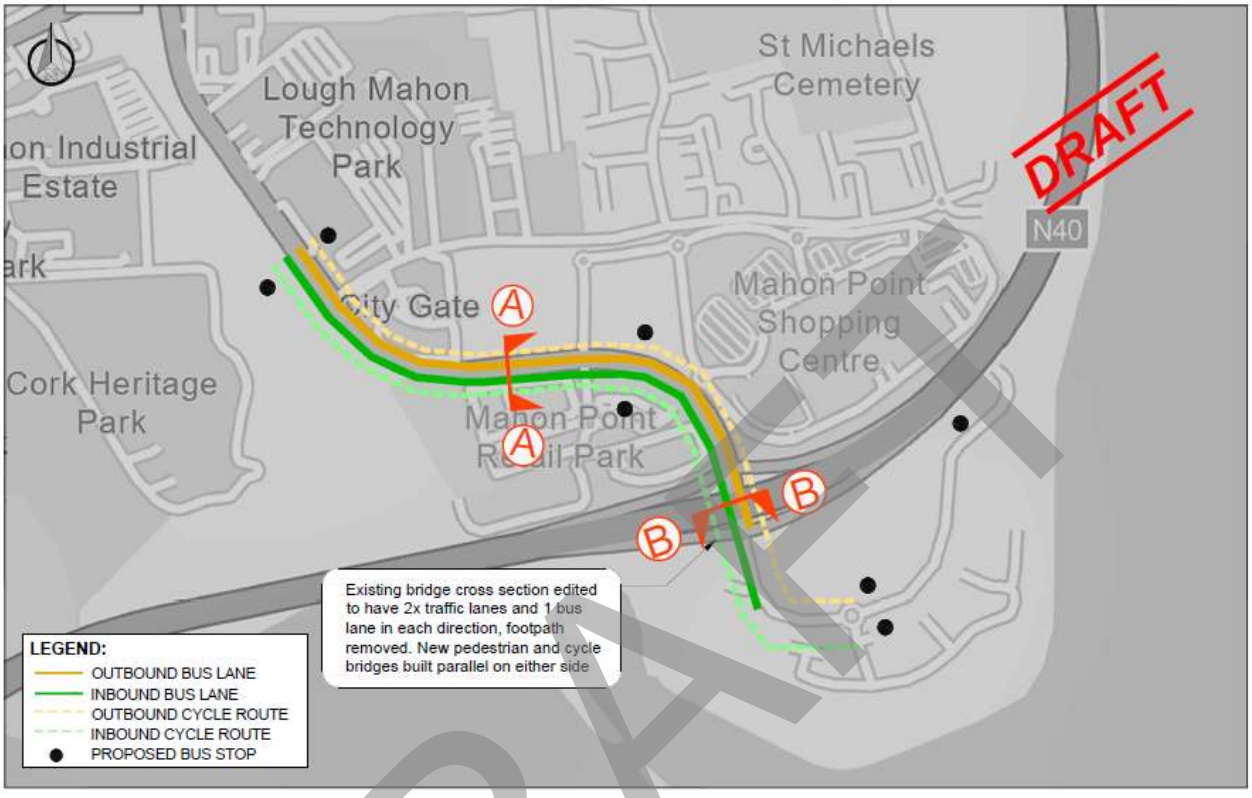


Figure 6-2 Option 1 Indicative Scheme Design

Route for Buses:

The route starts on the L99484 in Jacobs Island, the dedicated inbound bus lane would commence approx. 250m southeast of the Mahon Interchange Bridge to allow busses to avoid queueing traffic on approach to the traffic signals. There is no dedicated outbound bus lane on Jacobs Island; buses will be given priority at the outbound signals on the Mahon Interchange Bridge to enable buses to get ahead of general traffic.

Minor widening would be required on the L99484 on Jacobs Island and in general, widening along the length of the Loughmahon Link Road would be required to accommodate both dedicated bus lanes and cycle tracks.

Route for Cyclists:

A new dedicated route for cyclists would be provided along the length of the corridor and would follow the same route as the buses. Two new parallel bridges would be built on either side of the existing Mahon Interchange Bridge to accommodate pedestrians and cyclists. Relocating pedestrians off the current bridge frees up space to allow bus lanes to be included on the existing bridge without reducing the number of lanes available for general traffic.

The existing cross-section of Loughmahon Link Road and Jacobs Island would have to be widened to accommodate dedicated cycle tracks. As such, by amending the existing cross-section through road widening and reallocation of road space, a dedicated route for cyclists would be achievable.

Bus Stops:

This area of Mahon has several trip attractors such as Mahon Point Shopping Centre and Retail Park, along with other commercial and residential areas. As such, two bus stops would be provided on the outbound lane and two on the inbound lane; the bus stops are strategically located to service the different areas along the route. There are existing bus stops on Longshore Avenue on Jacobs Island, close to where the route terminates.

A cross-section on Loughmahon Ring Road (R852) is presented in Figure 6-3, and a cross section of the Mahon Interchange Bridge is presented in Figure 6-4.

Typical Cross Sections

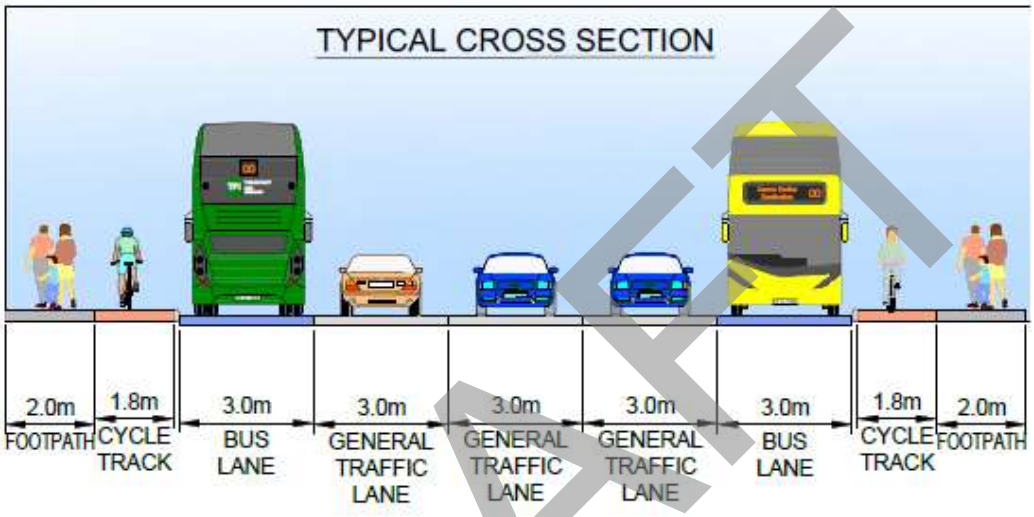


Figure 6-3 Cross Section A-A

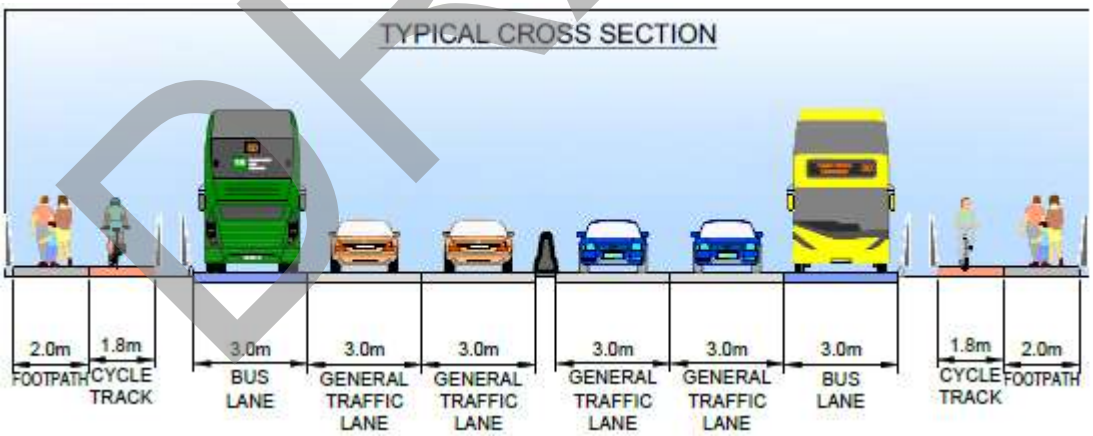


Figure 6-4 Cross Section B-B

6.1.3 Route Option 2

Indicative Scheme Design

Figure 6-5 illustrates the indicative scheme design for Route Option 2 as well as the location of an indicative cross-section.

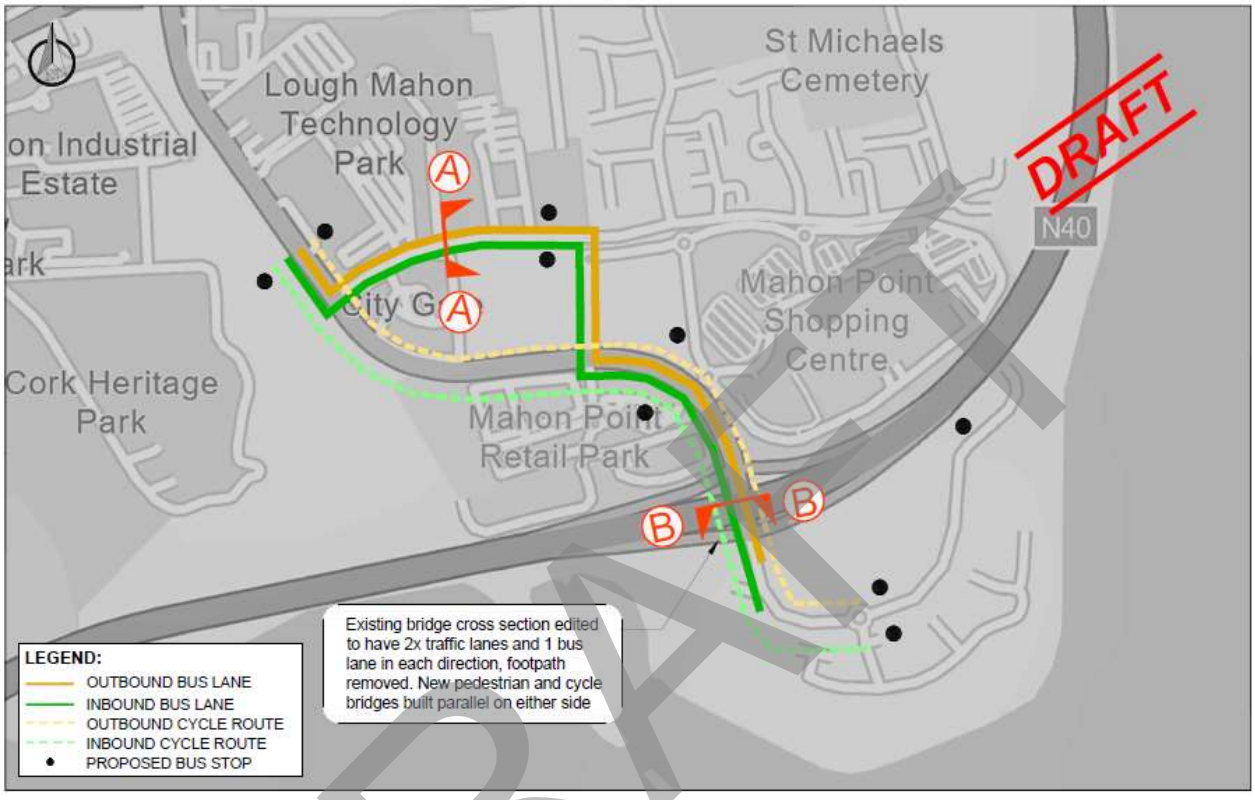


Figure 6-5 Option 1 Indicative Scheme Design

Route for Buses:

The inbound bus lane would use Jacobs Island, Loughmahon Link Road, Mahon Point Access Road and St. Michaels Drive before re-joining Loughmahon Link Road. The outbound bus lane would be the reverse of this. A new connection would be provided between Mahon Point Access Road and St. Michaels Drive.

The route starts on the L99484 in Jacobs Island, the dedicated inbound bus lane would commence approx. 250m southeast of the Mahon Interchange Bridge to allow busses to avoid queueing traffic on approach to the traffic signals. There is no dedicated outbound bus lane on Jacobs Island; buses will be given priority at the outbound signals on the Mahon Interchange Bridge to enable buses to get ahead of general traffic.

Minor widening would be required on the L99484 on Jacobs Island and in general, widening along the Loughmahon Link Road, Mahon SC Access Road and St. Michaels drive would be required to accommodate the dedicated bus lanes.

Route for Cyclists:

A new dedicated route for cyclists would be provided along the length of the corridor and would follow the same route as the bus until the Mahon Point SC Access. At this point the cycle facilities would continue along the Loughmahon Link Road.

Two new parallel bridges would be built on either side of the existing Mahon Interchange Bridge to accommodate pedestrians and cyclists. Relocating pedestrians off the current bridge frees up space that allow bus lanes to be included on the existing bridge without reducing the number of lanes available for general traffic.

The existing cross-section of Loughmahon Link Road and Jacobs Island would have to be widened to accommodate both cycle tracks and bus facilities. Where the cycle facilities continue on Loughmahon Link Road without the dedicated bus lanes, no widening would be necessary. As such, by amending the existing cross-section through road widening and reallocation of road space, a dedicated route for cyclists would be achievable.

Bus Stops:
This area of Mahon has several trip attractors such as Mahon Point Shopping Centre and Retail Park, along with other commercial and residential areas. As such, three bus stops would be provided on the outbound lane and three on the inbound lane. There are existing bus stops on Longshore Avenue on Jacobs Island, close to where the route terminates.

A cross-section on St. Michaels Drive is presented in Figure 6-6, and a cross section of the Mahon Interchange Bridge is presented in Figure 6-7.

Typical Cross Sections

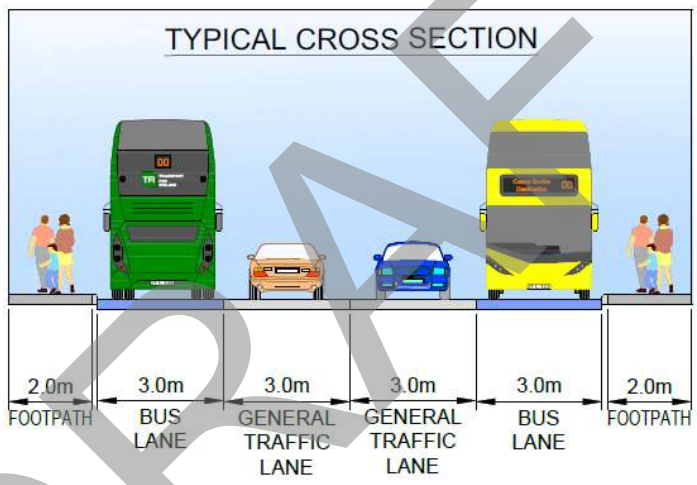


Figure 6-6 A-A

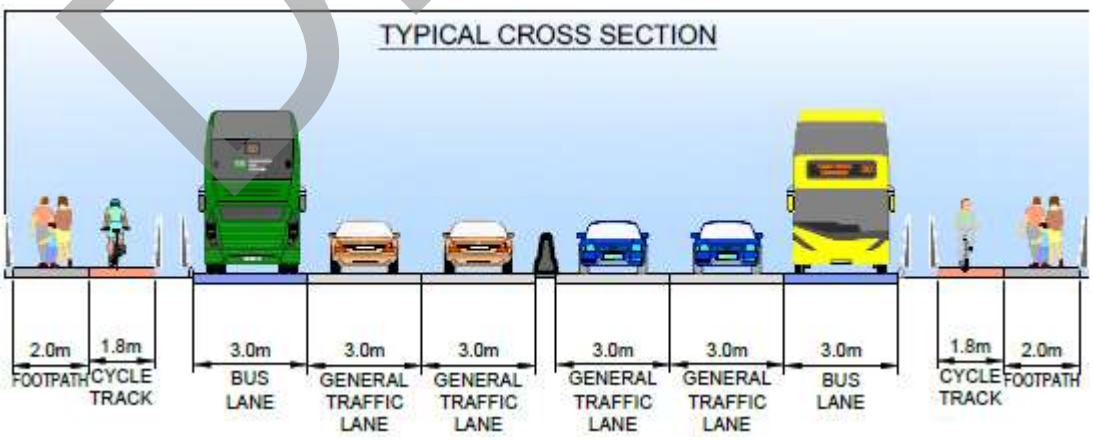


Figure 6-7 B-B

6.1.4 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for Section 1 of Route 11 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)

Set 1			
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**
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' route option 1 has some advantages over route option 2 as there is less private land take associated with option 1. Both options require new bridge structures on both sides of the Mahon Interchange Bridge to cater for pedestrians and cyclists. Option 2 would also require a new link to be created linking the Mahon Shopping Centre Access Road with St. Michaels Drive. Additionally, option 2 is less direct, therefore the average journey time increases compared to option 1 as there is an additional junction to navigate, increasing the average journey time.

Regarding 'Integration', option 1 performs slightly better overall, particularly under the sub-criterion 'Land Use Integration'. Both route options service proposed strategic housing development in the area, however,

route option 1 fully aligns with the proposals in CMATS and the Mahon Local Area Plan. Route option 2 does not fully align with the objectives of the area policies.

Options scores slightly better when compared to each other under the 'Accessibility and Social Inclusion' criterion. In terms of 'Safety' option 1 scores as slightly preferable when compared to option 2, this is due to needing a lower number of junctions and turning movements.

Regarding 'Environment', route option 1 requires the removal of less trees and there is a high likelihood of replanting trees on this route. Given that route option 2 is longer, would require greater land take and require a new link between the Mahon Point Access Road and St. Michaels Drive, it is expected that more earthworks would be required for option 2. For this reason, Option 1 has a lower environmental impact and performs better for this criterion than option 2.

6.1.5 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

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

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

- It is a more direct route with a shorter journey time and increased reliability.
- It fully aligns with the objectives and policies of CMATS and the Mahon Local Area Plan.
- It would result in the removal of less trees and reduced earthworks compared to Option 2.

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

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

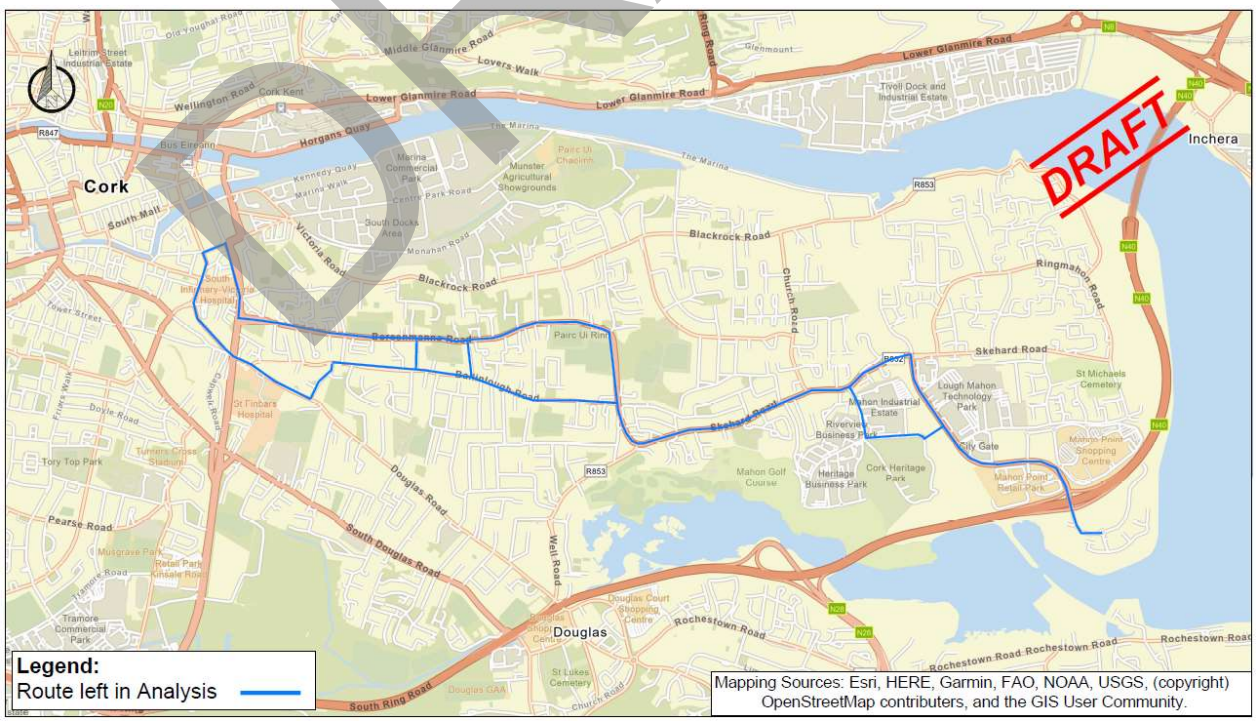


Figure 6-8

7. Stage 2 MCA Assessment - Section 2

7.1 Section 2: Mahon/Beaumont/Ballinlough

Following the Stage 1 sifting process, two viable routes from Mahon to Beaumont/Ballinlough were identified. Both routes start approx. 100m north of the R852/St. Michaels Drive junction and end at the junction of Churchyard Lane/Ballinlough Road. The two viable route options for Section 2 are as follows:

- Route Option 1: Using Loughmahon Link Road, Skehard Road and Churchyard Lane.
- Route Option 2: Using a new link road and structure linking the R852 with Bessboro Castle Access Road, Bessboro Road, Skehard Road and Churchyard Lane.

The options within this 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.

Figure 7-1 Section 2 (Mahon/Beaumont) Route Options

7.1.1 Route Option 1

Indicative Scheme Design

Figure 7-2 illustrates the indicative scheme design for Route Option 1 as well as the location of an indicative cross-section.

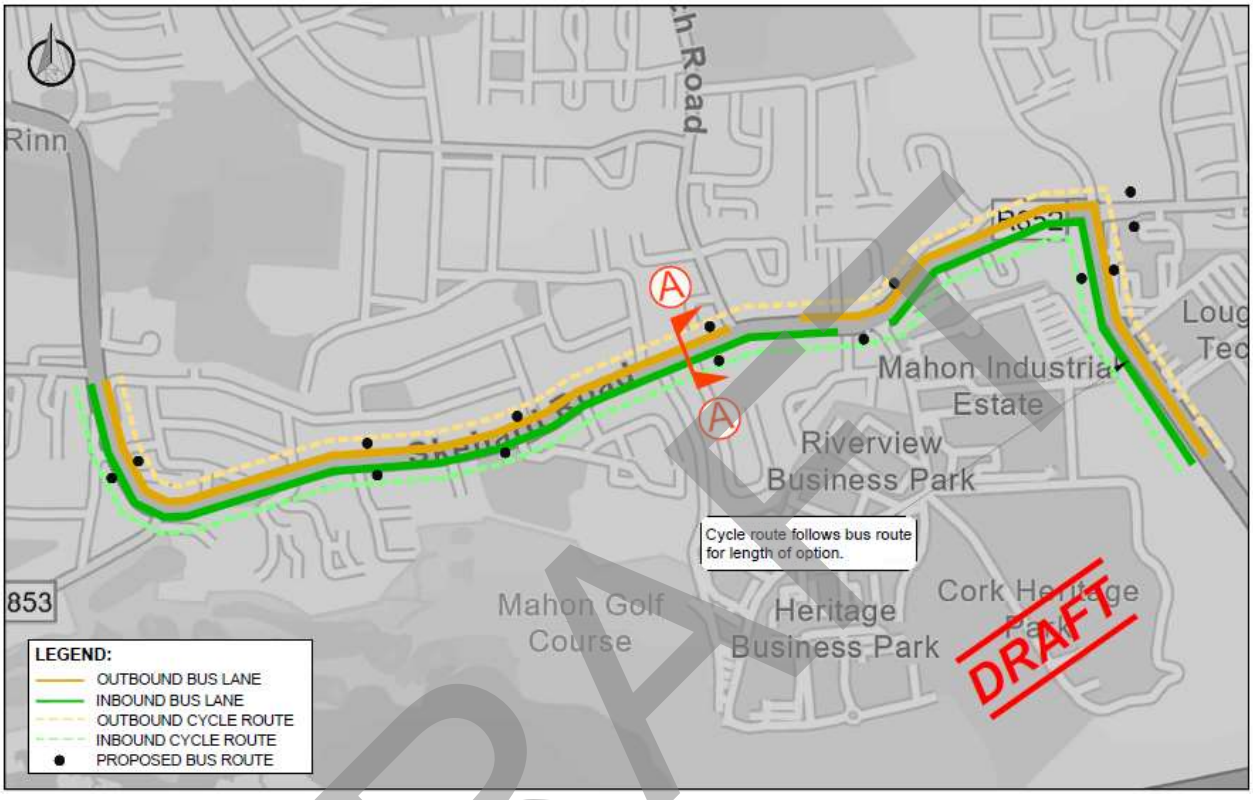


Figure 7-2 Option 1 Indicative Scheme Design

Route for Buses:

The route would follow Loughmahon Link Road, Skehard Road and Churchyard Lane with dedicated bus lanes provided for the whole length of the route. Road widening and some private and public land take would be required on Loughmahon Link Road, Skehard Road and Churchyard Lane to provide the inbound and outbound bus lanes.

A recent scheme on Skehard Road 'Skehard Road Realignment and Renewal Project' has created some dedicated facilities for bus priority and cyclists. This scheme would align with the existing scheme, where feasible, however, this scheme does not create dedicated inbound and outbound bus and cycle facilities for the entirety of the route on Skehard Road; as such changes to the cross-section within the existing boundary would be required to accommodate the dedicated facilities in both directions.

Route for Cyclists:
The cycle route would follow the same route as the dedicated bus corridor along Loughmahon Link Road, Skehard Road and Churchyard Lane. Some widening would be required along small sections of these routes to accommodate the cycle and bus facilities. There are some existing cycle facilities on Skehard Road which have recently been completed as part of the 'Skehard Road Realignment and Renewal Project' which the scheme aligns with, where feasible, however changes to the cross-section within the existing boundary would be required to accommodate the dedicated cycle facilities in both directions.

Bus Stops:
A total of six bus stops in each direction would be provided along this route, as shown in Figure 7-2 Option 1 Indicative Scheme Design. This provides the same level of service that is currently on the route.

Cross Sections

A cross-section of Skehard Road is presented in Figure 7-3 A-A which illustrates the dedicated bus and cycle facilities.

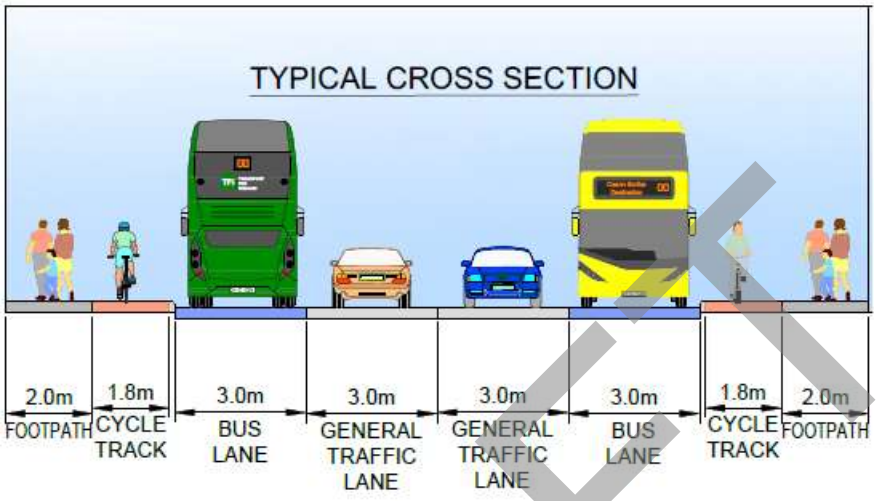


Figure 7-3 A-A

7.1.2 Route Option 2

Indicative Scheme Design

Figure 7-4 illustrates the indicative scheme design for Route Option 2 as well as the location of an indicative cross-section.

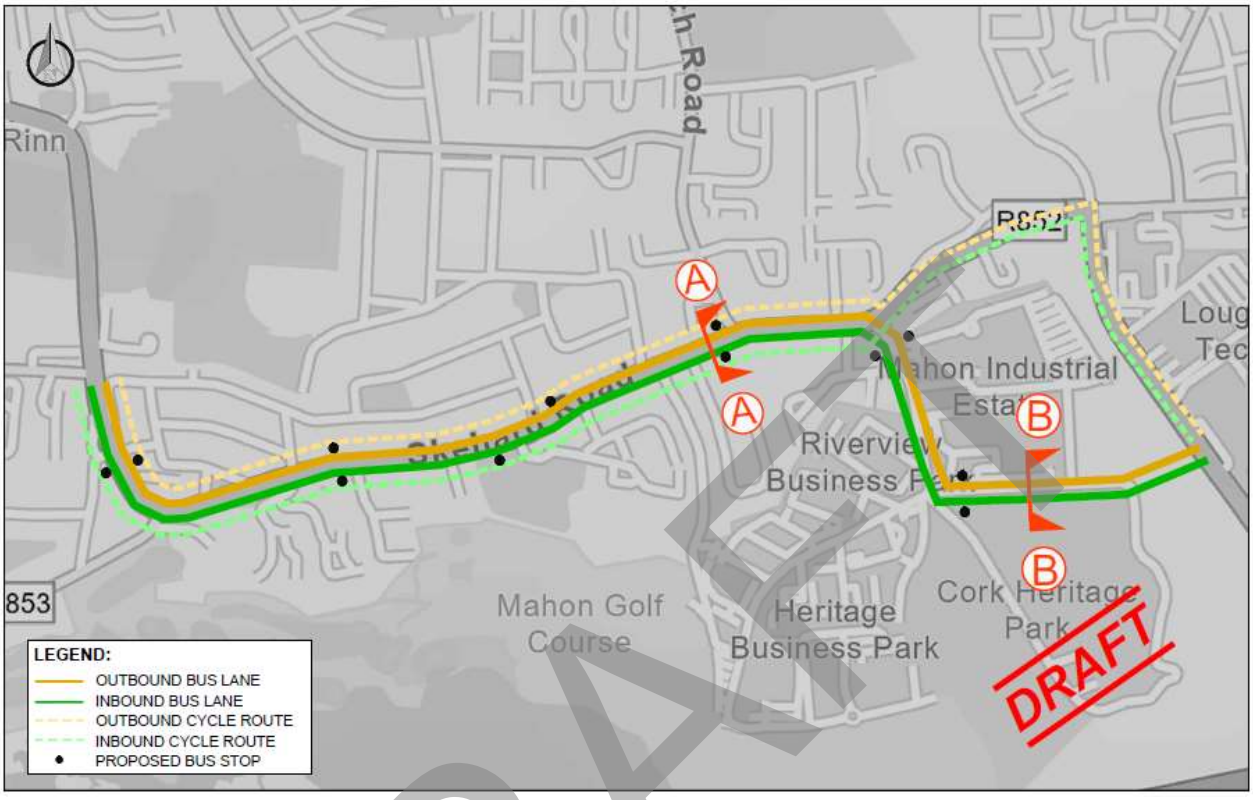


Figure 7-4 Option 2 Indicative Scheme Design

Route for Buses:

This route option would create a new road linking Loughmahon Link Road to Bessboro Castle Access Road. Inbound buses would divert off Loughmahon Link Road onto the new link road. This new link would require a bridge structure over the existing Passage/Blackrock Greenway to Bessboro Castle Access Road. Bessboro Road would require road widening to accommodate dedicated bus lanes. From Bessboro Road, the route would use Skehard Road and Churchyard Lane.

A recent scheme on Skehard Road 'Skehard Road Realignment and Renewal Project' has created some dedicated facilities for bus priority and cyclists. This scheme would align with the existing scheme, where feasible, however, this scheme does not create dedicated inbound and outbound bus and cycle facilities for the entirety of the route on Skehard Road; as such changes to the cross-section within the existing boundary would be required to accommodate the dedicated facilities in both directions.

Route for Cyclists:
The cycle route would continue to use Loughmahon Link Road, Skehard Road and Churchyard Lane. The existing road widths would be sufficient to accommodate the cycle tracks on Loughmahon Link Road. Where the bus and cycle facilities are provided on the same route, road widening would be required to accommodate the cycle and bus facilities. There are some existing cycle facilities on Skehard Road which have recently been completed as part of the 'Skehard Road Realignment and Renewal Project' which the scheme aligns with, where feasible, however changes to the cross-section within the existing boundary would be required to accommodate the dedicated cycle facilities in both directions.

Bus Stops:
A total of six bus stops on the outbound lane and six on the inbound lane would be provided along this route, as shown in Figure 7-4 Option 2 Indicative Scheme Design.

Cross Sections

A cross-section (A-A) of the proposed scheme Skehard Road is presented in Figure 7-5 which includes both dedicated cycle and bus facilities. Figure 7-6 illustrates a cross-section of the dedicated bus facilities on Bessboro Castle Access Road.

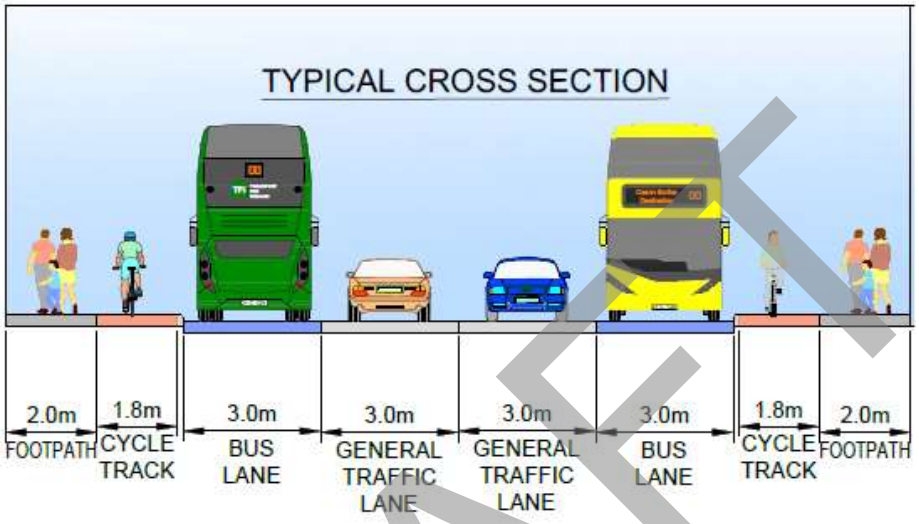


Figure 7-5 A-A

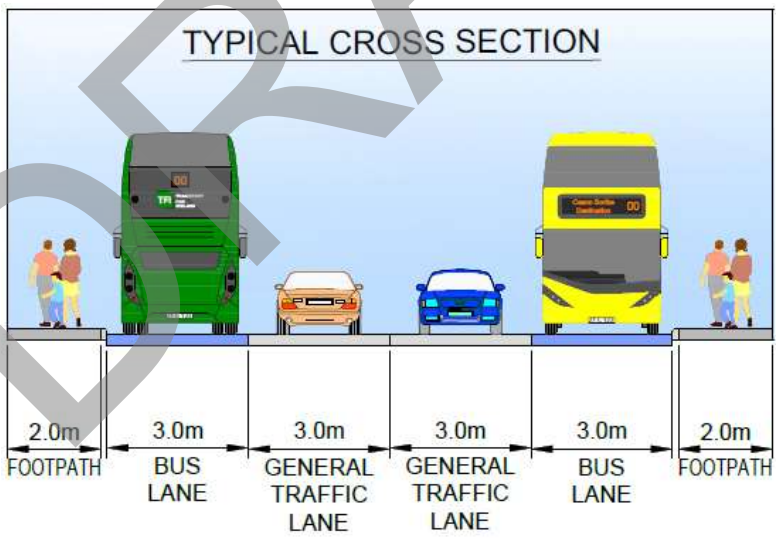


Figure 7-6 B-B

7.1.3 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Route 11 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 1**	**Route 2**
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' route option 1 has some advantages over route option 2 as there is less private land take associated with option 1 and option 2 requires a new bridge structure over the existing greenway, linking the R582 to the Bessboro Castle Access Road.

Regarding 'Integration', option 2 performs slightly better overall, particularly under the sub-criterion 'Land Use Integration' and 'Transport Integration'. Route option 2 would directly service a proposed strategic housing development in the area and it create an additional bus route as buses already run on Skehard road; both options fully align with the proposals in CMATS and the Mahon Local Area Plan.

Both route options were neutral when compared to each other under the 'Accessibility and Social Inclusion' criterion. In terms of 'Safety' option 1 scores as slightly preferable when compared to option 2, this is due to needing a lower number of junctions and turning movements.

Regarding 'Environment', route option 1 has significant advantages over option 2. Route option 1 requires the removal of fewer trees and does not require a new structure which would result in additional earthworks. Given that route option 2 creates a new route, it would result in the road being closer to sensitive noise receptors, and less land take is required as option 1 generally falls within existing boundaries. For this reason, option 1 has a lower environmental impact and performs better for this criterion than option 2.

7.1.4 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)

Set 2		
Assessment Criteria	**Route 1**	**Route 2**
Economy		
Integration		
Accessibility and Social Inclusion		
Safety		
Environment		

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

- It would cost significantly less, and
- It has less environmental impacts

Route 1 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:

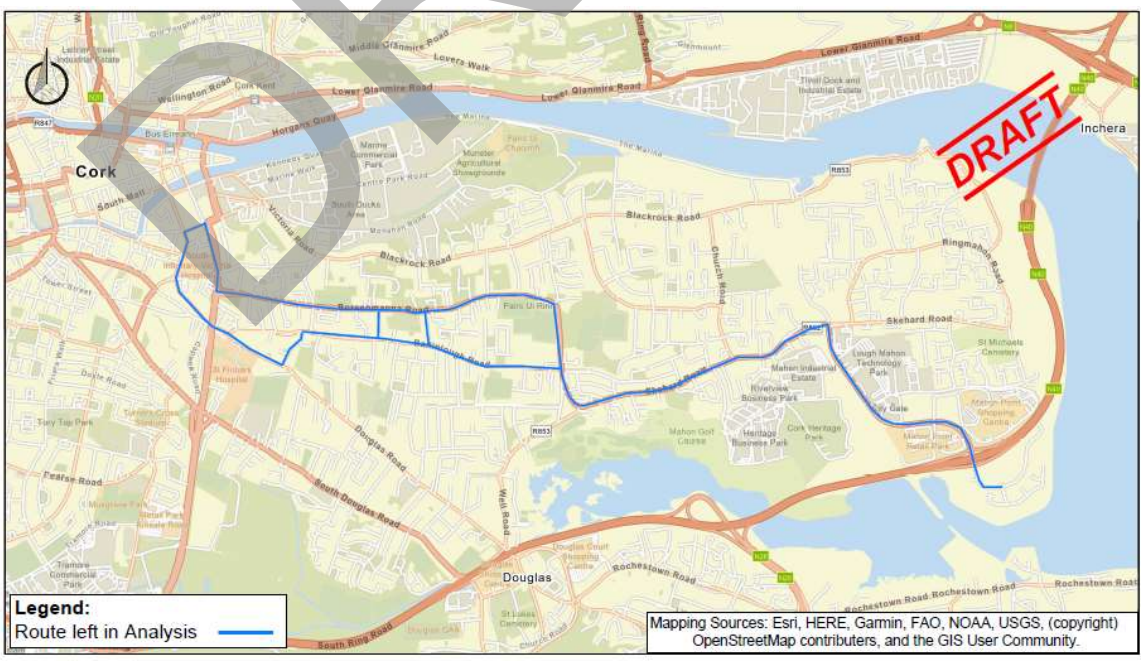


Figure 7-7

8. Stage 2 MCA Assessment - Section 3

8.1 Section 3: Beaumont/Ballinlough/City Centre

8.1.1 Introduction and Route Description

Following the Stage 1 sifting process a set of 5 possible routes were created to determine the optimal route from Beaumont, through Ballinlough towards the city centre. The 5 routes include:

- Route Option 1: Using Churchyard Lane, Boreenmanna Road and the N27
- Route Option 2: Using Ballinlough Road, Bellair Estate and the R610 (tying in with STC I)
- Route Option 3: Using Ballinlough Road and a one-way inbound/outbound system on Wallaces Avenue and Willow Lawn, Boreenmanna Road and the N27.
- Route Option 4: Using Ballinlough Road, Willow Lawn, Boreenmanna Road and the N27.
- Route Option 5: Using Ballinlough Road, Wallace's Avenue, Boreenmanna Road and the N27.

All of these routes start at the junction of Churchyard Lane/Ballinlough Road and finish at the junction of N27/Eglinton Street. The route was subsequently curtailed at the junction of N27/Boreenmanna route where it joins STC H, however, for the purposes of the assessment the route terminates at the N27/Eglinton Street junction. There is only a minor difference between Options 4 and 5 which follow very similar routes.

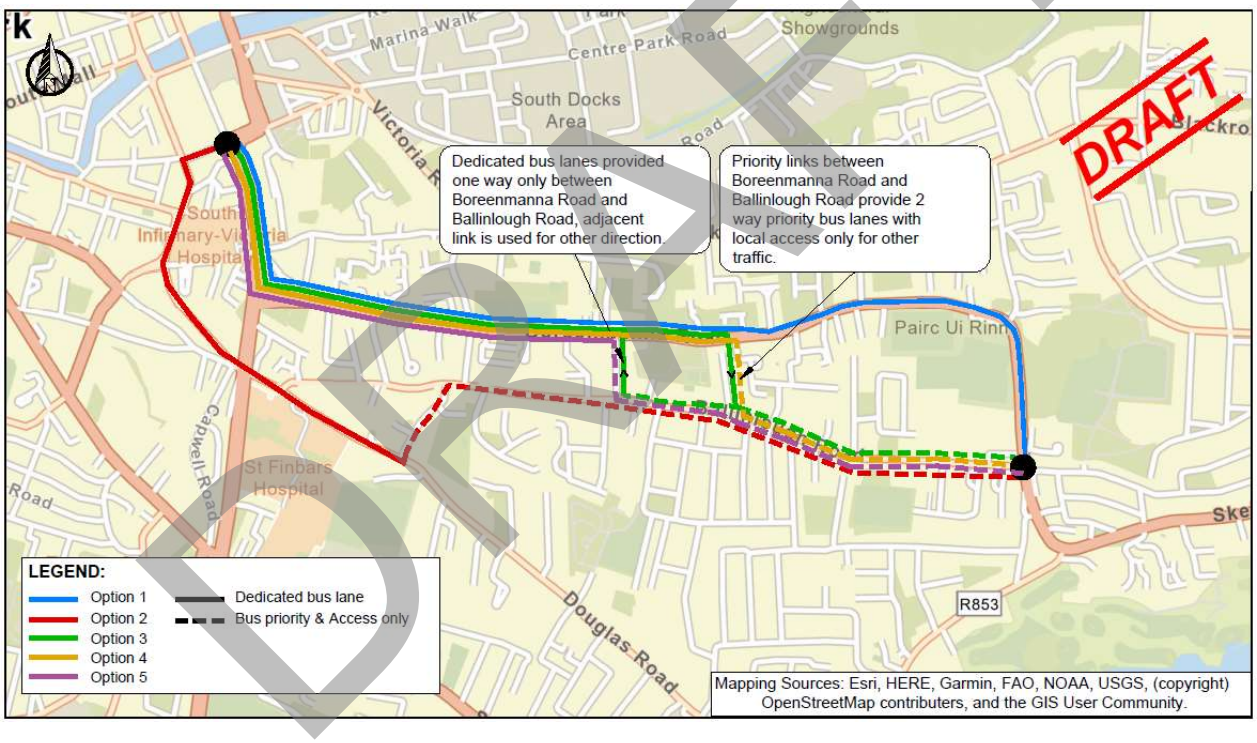


Figure 8-1 Section 3 (Beaumont/Ballinlough) Route Options

8.1.2 Route Option 1:

Indicative Scheme Design

Figure 8-2 illustrates the indicative scheme design for Route Option 1 as well as the location of an indicative cross-section.

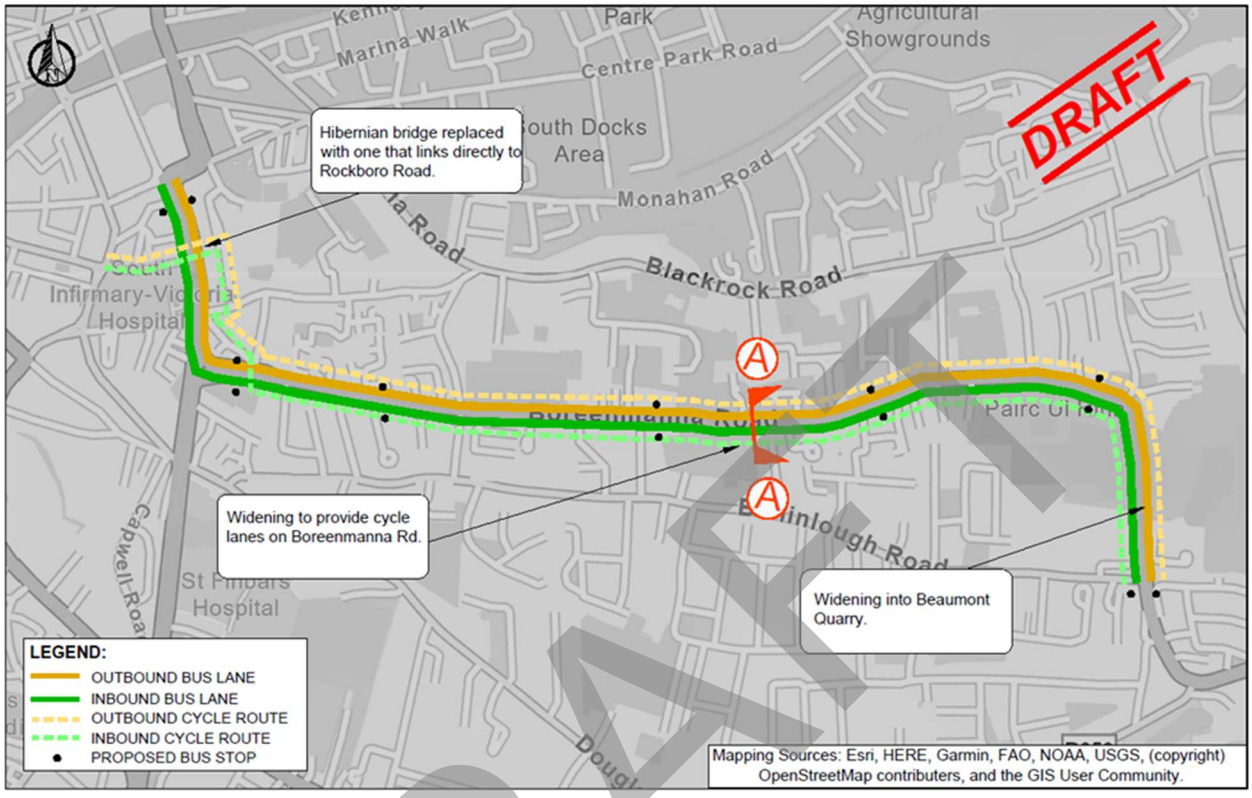


Figure 8-2 Option 1 Indicative Scheme Design

Route for Buses:

This route option would provide dedicated bus lanes on Churchyard Road and Boreenmanna Road. It would join STC H at the N27 which provides a dedicated inbound bus lane and a partial outbound bus lane between the junctions with Eglinton Street and Boreenmanna Road. Widening into the old Beaumont Quarry would be required on Churchyard Lane to obtain sufficient width for the dedicated bus lanes. Some land take would be required along Boreenmanna Road to accommodate both the bus and cycle facilities. The removal of on-street parking would also be required on Boreenmanna Road.

Route for Cyclists:

New cycle tracks on either side of the road would be constructed alongside the bus route on Churchyard Lane and on Boreenmanna Road. When turning off Boreenmanna Road cyclists would use Rockboro Avenue, Old Blackrock Road and Rockboro Road to access the Hibernian Bridge. The existing Hibernia Bridge would be replaced with a new bridge to provide appropriate widths for pedestrians and cyclists and would link directly to Rockboro Road.

Bus Stops:

Seven inbound and seven outbound bus stops are proposed for this route, as shown in Figure 8-2.

Cross Sections

A cross-section of Boreenmanna Road, which includes proposed dedicated bus and cycle facilities is presented in Figure 8-3.

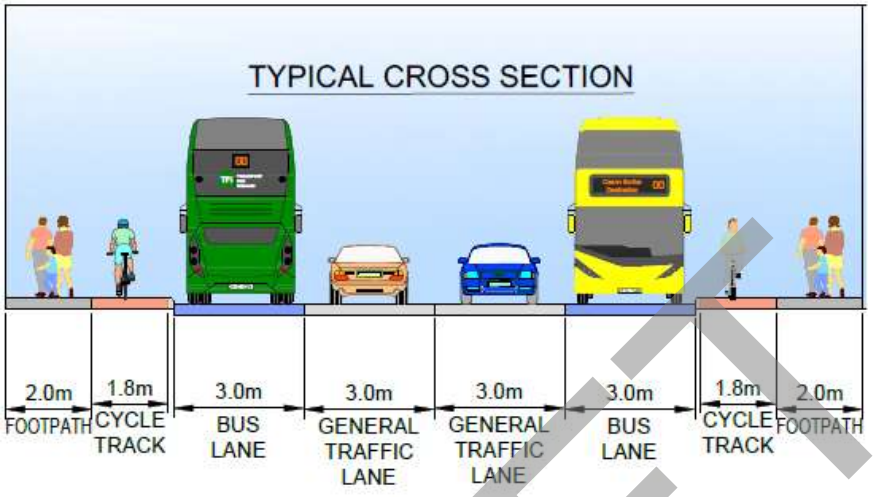


Figure 8-3 A-A

8.1.3 Route Option 2:

Indicative Scheme Design

Figure 8-4 illustrates the indicative scheme design for Route Option 2 as well as the location of the indicative cross-sections.

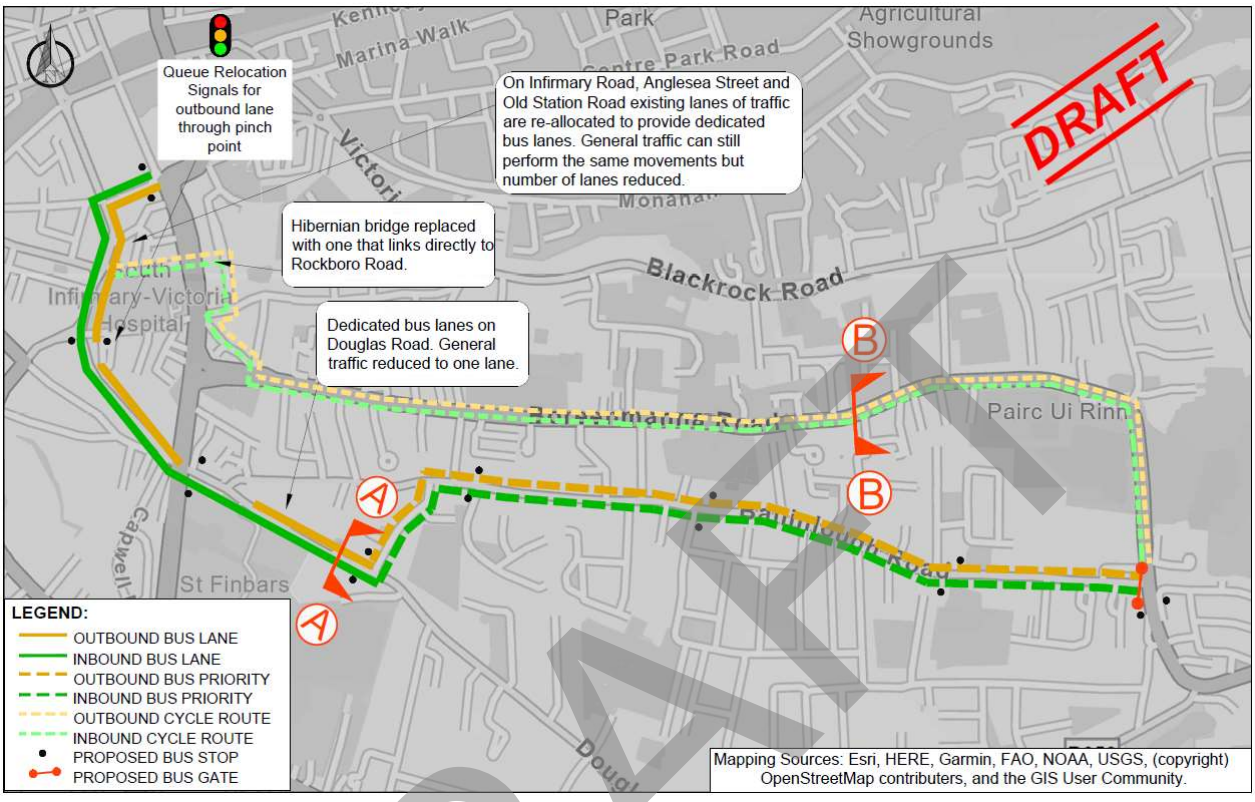


Figure 8-4 Option 2 indicative Scheme Design

Route for Buses:

This route option would provide bus priority on Ballinlough Road and Bellair Estate for inbound and outbound buses by introducing a bus gate at the junction of Ballinlough Road/Churchyard Lane; this would prevent general traffic from using it as a through route. No alterations to the existing road cross-section would be made. Local access would be maintained on Ballinlough Road.

Douglas Road would be made one-way outbound only for general traffic to free up road space which would be reallocated to provide bus lanes and cycle tracks; some road widening would be required to provide the dedicated bus and cycle facilities. Land take would be required from some properties along the length of Douglas Road to achieve this. On one section of Douglas Road, between the junction with High Street and St. Finbarr's Hospital, the outbound dedicated bus lane would be dropped and a 'virtual bus lane' would be created for this short stretch by using signal priority controls for outbound buses at the junction of Douglas Road/High Street.

This section of STC J overlaps with STC I. As such, the proposals are cognisant of proposals for STC I on Douglas Road (R610).

Route for Cyclists:
New cycle tracks on either side of the road would be constructed on Churchyard Lane and on Boreenmanna Road. When turning off Boreenmanna Road cyclists would use Rockboro Avenue, Old Blackrock Road and Rockboro Road to access Hibernian Bridge. The existing Hibernian Bridge would be replaced with a new bridge to provide appropriate widths for pedestrians and cyclists and would link directly to Rockboro Road.

Bus Stops:

Seven inbound and seven outbound bus stops are proposed to serve inbound and outbound buses on this route, as shown in Figure 8-4.

A cross-section (A-A) of Douglas Road is presented in Figure 8-5 and an indicative cross-section (B-B) of the proposed cycle track on Boreenmanna Road is presented in Figure 8-6.

Cross Sections

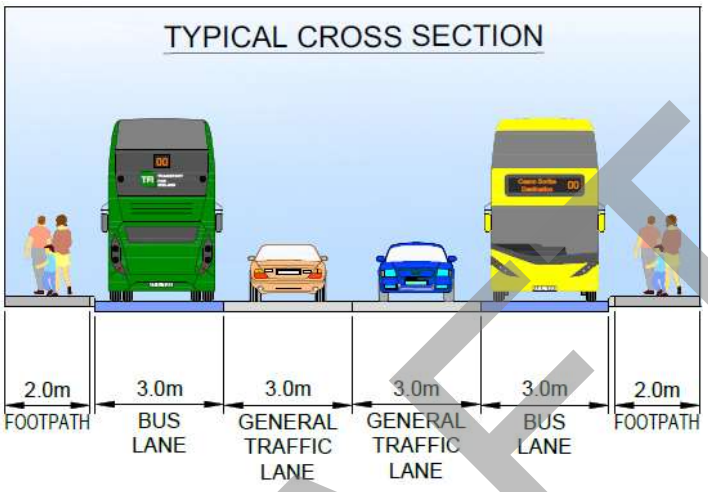


Figure 8-5 A-A

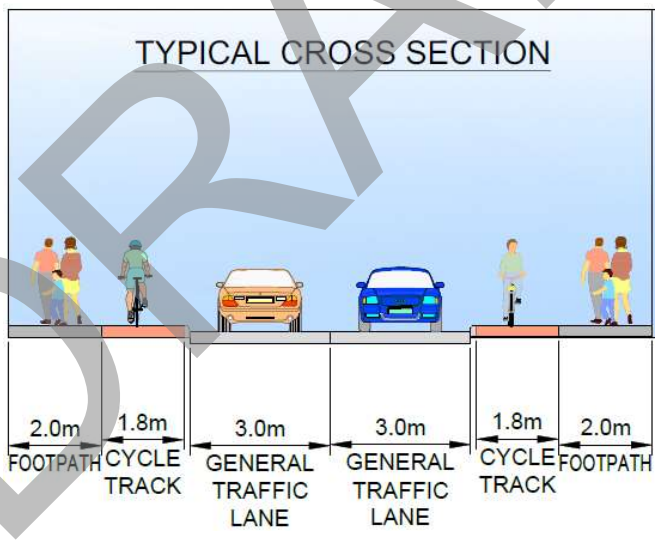


Figure 8-6 B-B

8.1.4 Route Option 3:

Indicative Scheme Design

Figure 8-7 illustrates the indicative scheme design for Route Option 2 as well as the location of the indicative cross-sections.

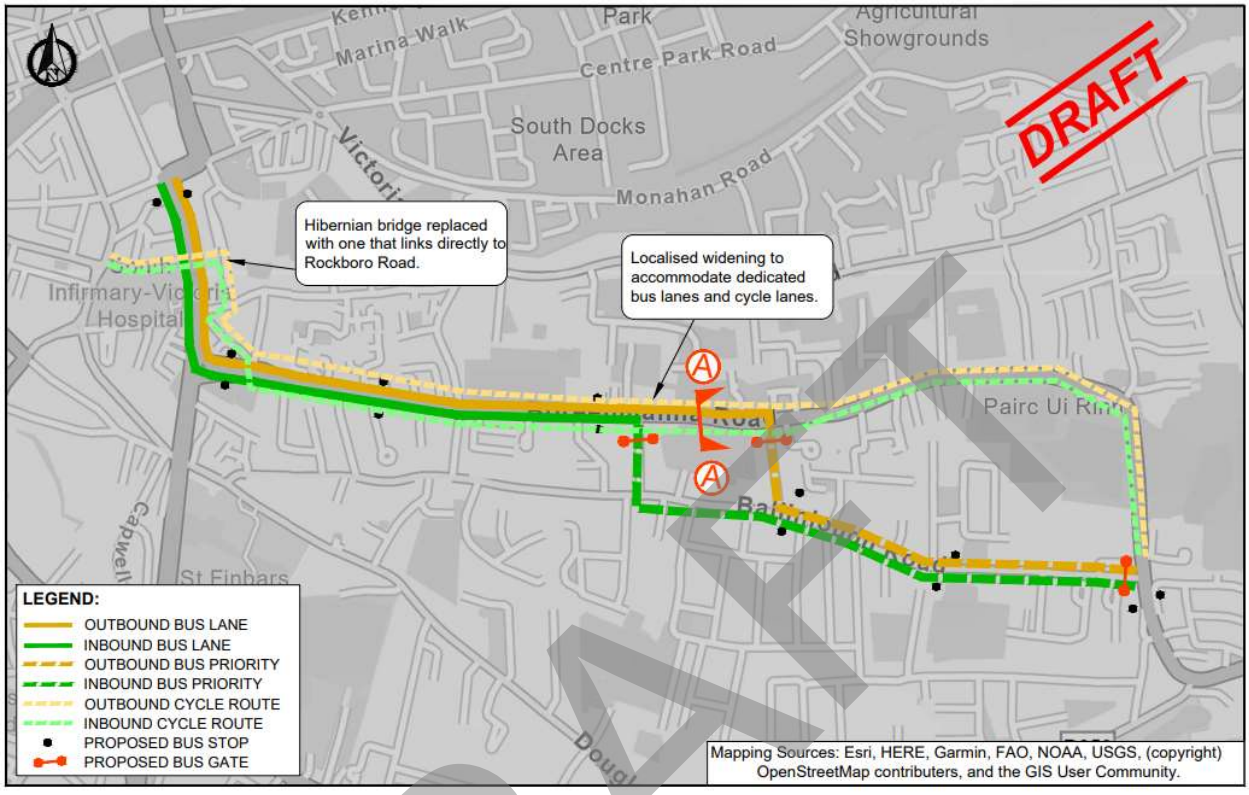


Figure 8-7 Option 3 inidcative Scheme Design

Route for Buses:

This route option would provide bus priority on Ballinlough Road for inbound and outbound buses by the introduction of three bus gates. The route diverts north from Ballinlough Road to Boreenmanna Road, via Willow Lawn for inbound buses. Outbound buses travel south off Boreenmanna Road via Oakfield Lawn, where a new link would need to be created. Bus gates would be provided at the following junctions to prevent through traffic and restrict vehicles to local access only.

- Churchyard Lane/Ballinlough Road
- Boreenmanna Road/Willow Lawn
- Boreenmanna Road/Oakfield Lawn

No changes to the existing cross-sections of Ballinlough Road, Oakfield Lawn and Willow Lawn would be required. A new link would need to be created linking Oakfield Lawn to Boreenmanna Road. On Boreenmanna Road, some local widening would be required to facilitate the dedicated bus lanes and cycle facilities and some private land take and the removal of on-street parking would be required. On the N27, the scheme would tie in with the proposed STC H which would provide a dedicated inbound bus lane and a partial outbound bus lane between the junctions with Eglinton Street and Boreenmanna Road.

Route for Cyclists:
New cycle tracks on either side of the road would be constructed alongside the bus route on Churchyard Lane and on Boreenmanna Road. When turning off Boreenmanna Road cyclists would use Rockboro Avenue, Old Blackrock Road and Rockboro Road until Hibernian Bridge. The existing Hibernian Bridge

would be replaced with a new bridge to provide appropriate widths for pedestrians and cyclists and would link directly to Rockboro Road.

Bus Stops:

Seven inbound and seven outbound bus stops are proposed to serve inbound and outbound buses on this route, as shown in Figure 8-7.

Cross Sections

A cross-section (A-A) of Boreenmanna Road is presented in Figure 8-8 which illustrates the dedicated bus and cycle facilities.

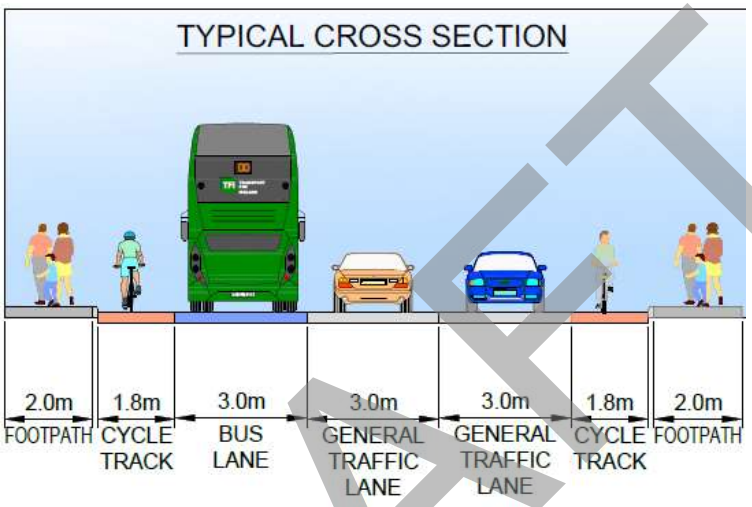


Figure 8-8 A-A

8.1.5 Route 11 Option 4

Indicative Scheme Design

Figure 8-9 illustrates the indicative scheme design for Route Option 2 as well as the location of the indicative cross-sections.

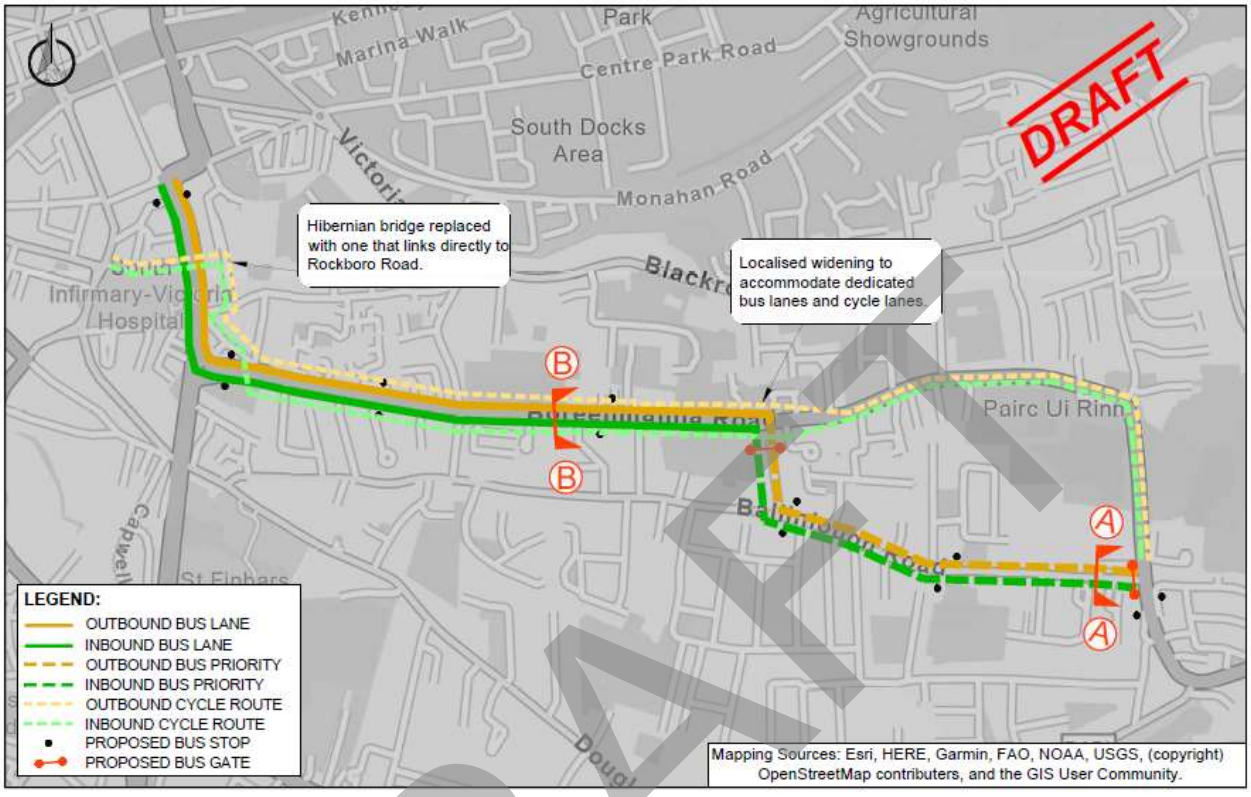


Figure 8-9 Option 4 Indicative Scheme Design

Route for Buses:

This route option would provide bus priority on Ballinlough Road and Oakfield Lawn for inbound and outbound buses through the introduction of two bus gates. The route diverts north from Ballinlough Road to Boreenmanna Road, via Oakfield Lawn for inbound buses. In the opposite direction, outbound buses travel south off Boreenmanna Road via Oakfield Lawn. Bus gates would be provided at the following junctions to prevent through traffic and restrict vehicles to local access only.

- Churchyard Lane/Ballinlough Road
- Boreenmanna Road/Oakfield Lawn

No changes to the existing cross-sections of Ballinlough Road and Oakfield Lawn would be required as priority would be provided with the reduction of through traffic; however, a new link would be required joining Oakfield Lawn and Boreenmanna Road. On Boreenmanna Road, some local widening would be required to facilitate the dedicated bus lanes and cycle facilities; this would result in some private land take and the removal of on-street parking. On the N27, the scheme would tie in with the proposed STC H which would provide a dedicated inbound bus lane and a partial outbound bus lane between the junctions with Eglinton Street and Boreenmanna Road.

Route for Cyclists:

New cycle tracks on either side of the road would be constructed on Churchyard Lane and on Boreenmanna Road. When turning off Boreenmanna Road cyclists would use Rockboro Avenue, Old Blackrock Road and

Rockboro Road to access Hibernian Bridge. The existing Hibernian Bridge would be replaced with a new bridge to provide appropriate widths for pedestrians and cyclists and would link directly to Rockboro Road.

Bus Stops:

Seven inbound and seven outbound bus stops are proposed to serve inbound and outbound buses on this route, as shown in Figure 8-9.

Cross Sections

A cross-section (A-A) of Boreenmanna Road is presented in Figure 8-10 which illustrates the dedicated bus and cycle facilities. Cross-section (B-B) in Figure 8-11 illustrates the proposed dedicated bus facilities only on Boreenmanna Road.

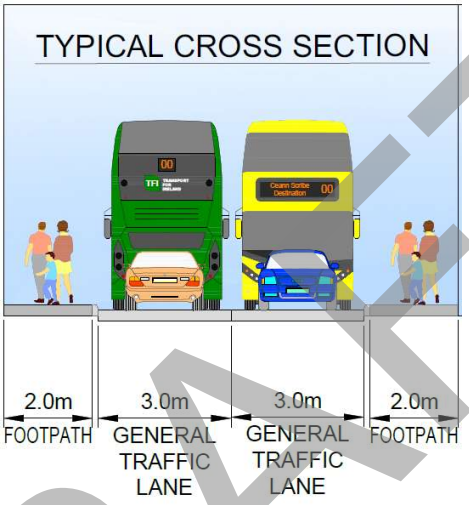


Figure 8-10 A-A

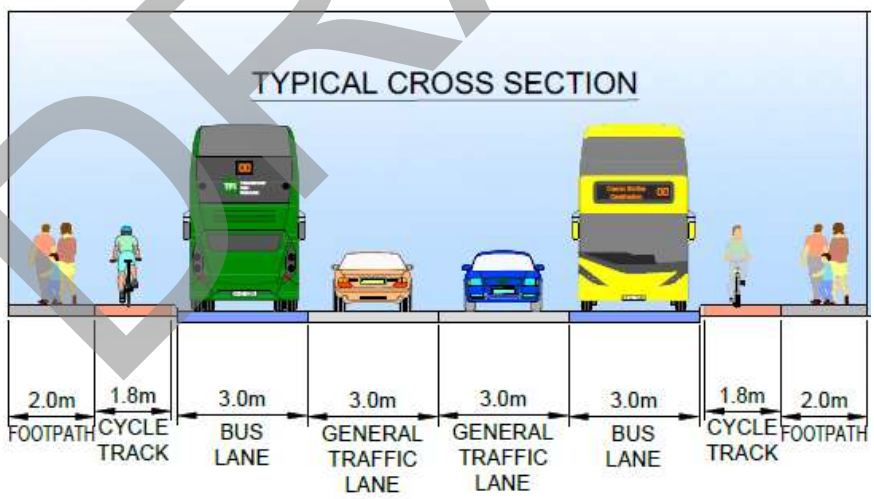


Figure 8-11 B-B

8.1.6 Route 11 Option 5

Indicative Scheme Design

Figure 8-12 illustrates the indicative scheme design for Route Option 2 as well as the location of the indicative cross-sections.

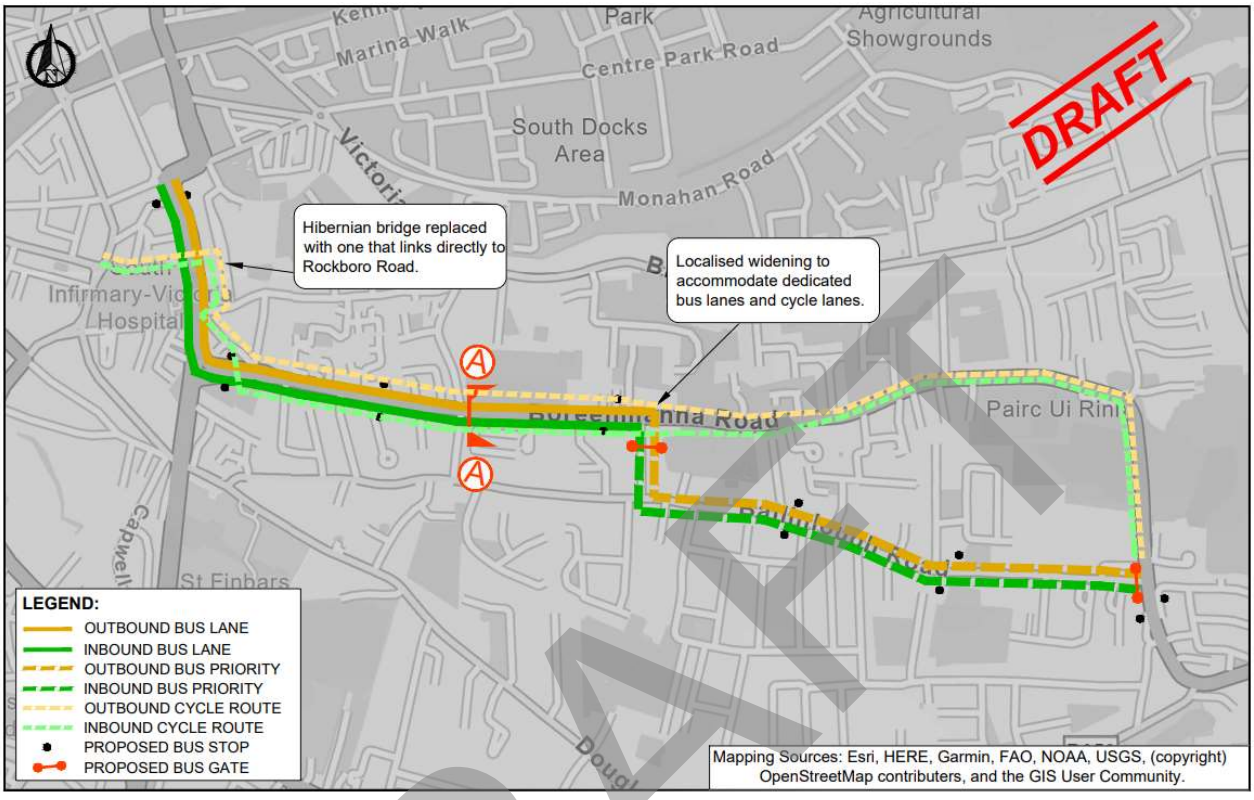


Figure 8-12 Option 5 Indicative Scheme Design

Route for Buses:

The route diverts north from Ballinlough Road to Boreenmanna Road, via Willow Lawn for inbound buses. Oppositely, outbound buses travel south off Boreenmanna Road via Willow Lawn. Bus gates would be provided at the following junctions to prevent through traffic and restrict vehicles to local access only.

- Churchyard Lane/Ballinlough Road and
- Boreenmanna Road/Willow Lawn

No changes to the existing cross-sections of Ballinlough Road and Willow Lawn would be required, as priority would be provided with the reduction of through traffic. On Boreenmanna Road, some local widening would be required to facilitate the dedicated bus lanes and cycle facilities; this would result in some private land take and the removal of on-street parking. On the N27, the scheme would tie in with the proposed STC H which would provide a dedicated inbound bus lane and a partial outbound bus lane between the junctions with Eglinton Street and Boreenmanna Road.

Route for Cyclists:

New cycle tracks on either side of the road would be constructed on Churchyard Lane and on Boreenmanna Road. When turning off Boreenmanna Road cyclists would use Rockboro Avenue, Old Blackrock Road and Rockboro Road to access Hibernian Bridge. The existing Hibernian Bridge would be replaced with a new bridge to provide appropriate widths for pedestrians and cyclists and would link directly to Rockboro Road.

Bus Stops:
Seven inbound and seven outbound bus stops are proposed to serve inbound and outbound buses on this route, as shown in Figure 8-12.

Cross Sections
A cross-section (A-A) of Boreenmanna Road is presented in Figure 8-13 which illustrates the proposed dedicated bus facilities only on Boreenmanna Road.

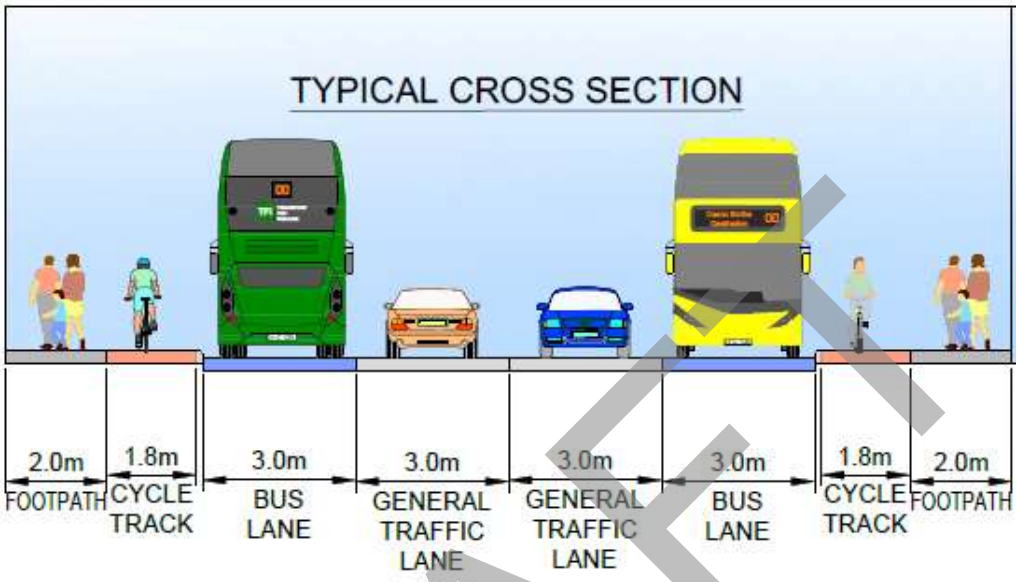


Figure 8-13 A-A

8.1.7 Route Options Assessment

Details of the 'Stage 2' route options assessment undertaken for Section 3 of Route 11 STC are presented in Appendix A.

A summary of the ranking of route options against the scheme sub-criteria is presented in Table 8-1**Error! Reference source not found.** below.

Table 8-1

Set 3						
Assessment Criteria	**Sub-Criteria**	**Route 1**	**Route 2**	**Route 3**	**Route 4**	**Route 5**
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 1 performs best overall, predominantly as this option provides dedicated bus lanes for the whole route, providing better journey times and reliability compared to the other options. Options 4 and 5 score best for capital cost due to requiring less works as much of these routes remain unchanged. However, option 1 scores better as it would provide a better level of service.

Regarding 'Integration' option 1 performs best. This is because for transport integration option 1 doesn't impact general traffic movement. All other options use bus gates which impact on general traffic movement. Additionally, route 1 fully aligns with the policies in CMATS; all other options do not fully align with CMATS.

In terms of 'Accessibility and Social Inclusion', options 1 and 2 score the best as they pick up the most key trip attractors. Option 1 serves GAA grounds, rugby grounds, two public open spaces, as well as residential, commercial and healthcare facilities. Under 'Deprived Geographical Areas', option 2 services more areas which are classified as 'marginally below average', compared to the other routes.

Regarding 'Road Safety', option 1 has less turning movements and interfaces with less junctions so perform better for this criterion.

In terms of 'Environment', option 1 performs the worst as it would result in the most land take and tree removal compared to the other routes. The other options perform better as much of the route uses existing corridors without creating dedicated bus facilities.

8.1.8 Conclusion

A summary of the assessment and a relative ranking of each of the 5 assessment criteria is shown below in Table 8-2 Route Options Assessment Summary.

Table 8-2 Route Options Assessment Summary

Set 3					
Assessment Criteria	Route 1	Route 2	Route 3	Route 4	Route 5
Economy					
Integration					
Accessibility and Social Inclusion					
Safety					
Environment					

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

- It has the best average journey time and journey time reliability.
- It performs well in terms of road safety.
- It doesn't impact general traffic and
- It fully aligns with CMATS

The negative impacts on the environmental criteria, particularly those relating to the impact on Beaumount Quarry will need to be further investigated and mitigated at the next design stage.

Route Option 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.

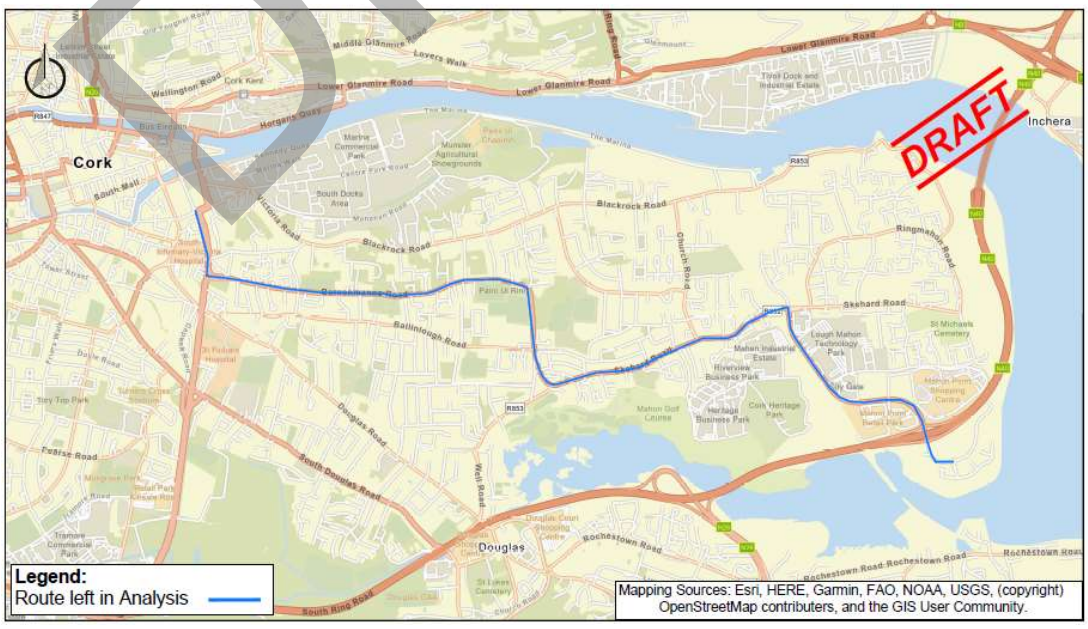


Figure 8-14

9. Proposed Scheme

9.1 Introduction

Chapters 5, 6, 7 and 8 of this report present an appraisal of all route options considered for the study area. 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.

9.2 Emerging Preferred Route

The Emerging Preferred Route is presented in Figure 9-1 below:

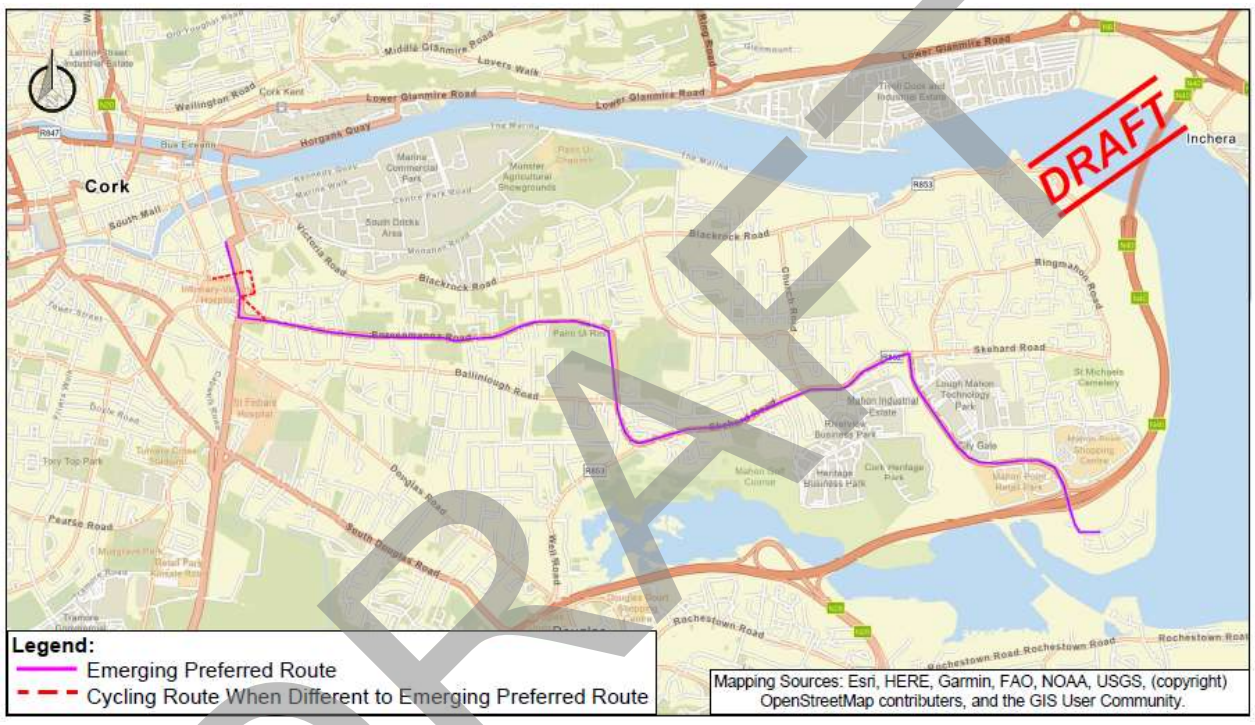


Figure 9-1

9.2.1 Jacobs Island to City Centre Overview

The Mahon to City Sustainable Transport Corridor (STC 11) approaches the city from Jacob's Island and makes its way inbound (towards the city) on the Loughmahon Link Road (R852) as far as the junction with Skehard Road.

From this point (near the Central Statistics Office) the STC continues inbound to the city on Skehard Road, Churchyard Lane and Boreenmanna Road, before joining the Sustainable Transport Corridor H – Airport to City at the junction with the South City Link Road (N27). Along Skehard Road there is also a cycle connection to Sustainable Transport Corridor K at the junction with Well Road.

The cycle route follows the bus route for most of its length but diverges from the bus route at the junction of Boreenmanna Road and Rockboro Avenue. From here it is proposed that cyclists use the quiet streets of Rockboro Avenue, Old Blackrock Road and Rockboro Road. A new, wider pedestrian and cyclist bridge is proposed to link Rockboro Road to Hibernian Road. The cycle route then joins with Sustainable Transport Corridor I on Anglesea Street, to continue into the city centre.

The following paragraphs will describe each section of STC 11 in more detail, identifying the measures proposed so that sustainable transport is prioritised.

9.3 Concept Scheme Design

9.3.1 Jacob's Island to CSO

The route starts at the existing roundabout on Jacob's Island. An inbound bus lane and segregated cycle lanes in both directions are proposed on approach to the bridge over the South Ring Road (N40). Two new bridges are proposed, one either side of this existing bridge, to provide dedicated cycliing and pedestrian facilities. Relocating pedestrians off the current bridge frees up space that allow bus lanes to be included on the existing bridge without reducing the number of lanes available for traffic. Bus lanes and segreagted cycle lanes are proposed in both directions on Loughmahon Link Road (R852) as far as the junction with Skehard Road. Some widening into green spaces either side of the road is likley to be required in places to achieve this.

Table 9-1 Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Mahon Interchange Bridge, over the South Ring Road (N40)	Two new pedestrian and cyclist bridges built either side of the existing bridge and upgrade of the two junctions either end of the bridge to provide bus priority and prioritise pedestrian and cycle movements.
Jacob's Island and Loughmahon Road	Continuous segregated cycle lanes on both sides of the road.
Loughmahon Road/Mahon Retail Park Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design. Direct crossings for pedestrians provided on all arms of the junciton and waiting times reduced.
Skehard Road/Loughmahon Road Junction	Junction upgraded to provide bus priority and prioritising pedestrian and cycle friendly design.

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 Jacob's Island.
- Lands of private property on Loughmahon Link Road (R852).

9.3.2 CSO to Skehard Road, Churchyard Lane and Boreenmanna Road

Bus and cycle lanes are provided in both directions along these roads, some road widening and removal of on-street parking spaces would be required to achieve this. Land take would be required from private properties for some sections of this route. One lane in each direction is maintained for general traffic and there are no new restrictions for general traffic proposed. The route ends at the South Link Road (N27) where it joins the Sustainable Transport Corridor H – Airport to City.

The cycle route diverges from the bus route before the South Link Road onto Rockboro Avenue, Old Blackrock Road and Rockboro Road, to avoid travelling along the South Link Road where cycle lanes could not be accommodated. A new, wider pedestrian and cyclist bridge would be constructed passing over the

South Ring Road to link Rockboro Road to Hibernian Road and the existing narrow bridge would be dismantled. It is proposed to restrict traffic on Rockboro Road to local access only to create a safer environment for pedestrians and cyclists. The cycle route joins with Sustainable Transport Corridor I on Anglesea Street, to continue into the city centre. Along Skehard Road there is also a cycle connection to Sustainable Transport Corridor K at the junction with Well Road.

Table 9-2 Proposed Enhancements to Urban Spaces and Pedestrian/Cycle Environment

Location	Proposed Enhancements
Skehard Road, Churchyard Lane and Boreenmanna Road	Bus stop and pedestrian crossing locations rationalised to facilitate easy access to bus stops and generally improved permeability for pedestrians. Pedestrian crossings at junctions upgraded so that pedestrians can cross each arm in a single movement Continuous segregated cycle lanes on both sides of the road.
Hibernian Footbridge	The existing narrow Hibernian pedestrian and cycle bridge would be replaced with a new, wider, and more accessible bridge.
Rockboro Road	Through traffic removed from Rockboro Road to provide a safer environment for pedestrians and cyclists. Urban realm and mobility improvements will create a safe, attractive route for pedestrians and cyclists.
Hibernian Road	Urban realm and mobility improvements will create a safe, attractive route for pedestrians and cyclists.

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 Boreenmanna Road
- Lands of private property on Churchyard Lane
- Lands of private property on Skehard Road

9.4 Summary

9.4.1 Infrastructure Provision

The emerging preferred route measures approximately 6.5 km in total. Along the emerging preferred route there are some existing bus lanes and bus provision, particularly on Skehard Road where dedicated bus and cycle facilities have been providing through a recent scheme; however, much of the route does not have dedicated bus facilities.

The emerging preferred route would provide dedicated bus lanes for the whole length of the emerging preferred route except for approx. 50m gap in the inbound and outbound direction on Skehard Road, where priority is achieved with signals, creating a “virtual bus lane”. Similarly on the outbound route on Jacobs Island, bus priority is provided through the signals on the Mahon Interchange bridge. A short stretch of approx. 60m on Boreenmanna Road will provide a ‘virtual bus lane’ due to width constraints.

In addition, improvements to cycle infrastructure along the emerging preferred route would increase the overall provision to 6.5km (100%) in each direction, with an off-route cycle provision provided for the sections where there is not enough room to have cycle facilities directly next to the STC.

9.4.2 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 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. The current off-peak journey times average between 15 and 20 minutes, identified using the PM inbound peak.

The following graphs show the existing journey time and bus speed data for the section of the Bus Éireann 215 route relevant to this scheme which provides the best available data for the emerging preferred route which provides data from Jacobs Island to St. Finbarr's Hospital. 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.

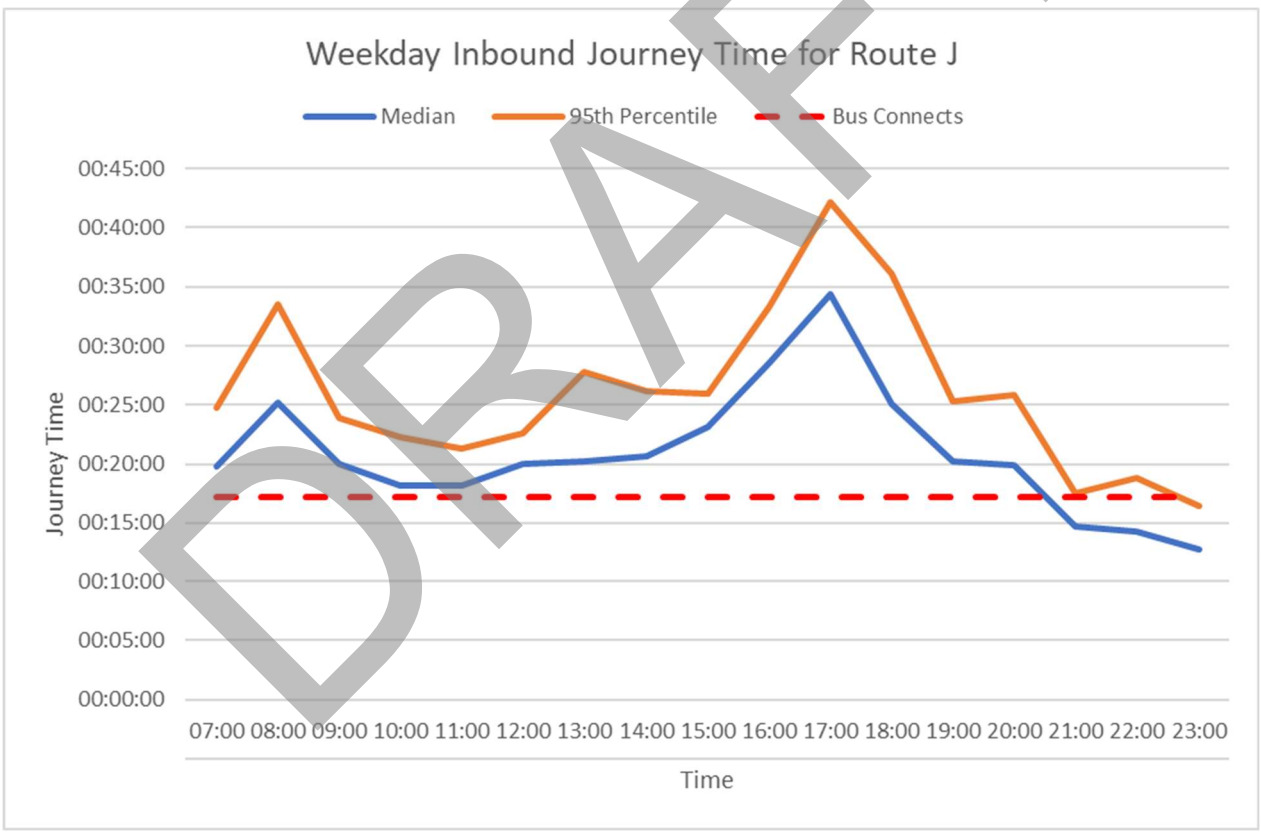


Figure 9-2

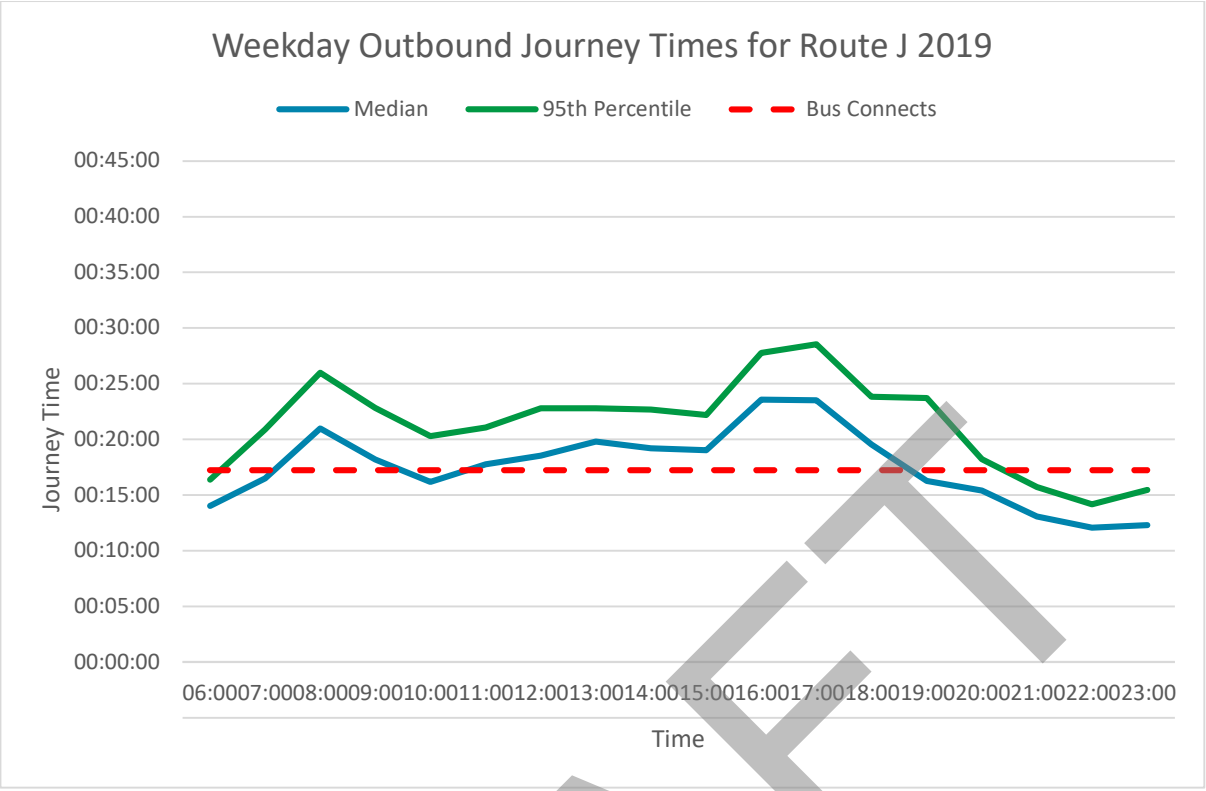


Figure 9-3

Based on the above, a conclusion can be drawn that by improving the provision of bus lanes along the route the risk of turbulence to buses would be significantly reduced, allowing the buses to move along the route quicker and with more consistent and reliable journey times. The graphs presented in Figure 9-2 and Figure 9-3 show the current issues with journey time reliability along the route. From the data, journey times can be seen to vary by as much as 100% when comparing average peak and off-peak journey times.

As such, the journey times outside of the peak 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 15-20 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.

10. Next Steps

This report has identified an emerging preferred route for the bus infrastructure along this Sustainable Transport Corridor for which a concept design has been developed.

The next project stage (the development of a Preliminary Design) will further refine and update the initial concept design along the route. Further account will be taken of likely public transport service levels, particularly the bus service patterns and any changes to the overall bus network which may arise from the 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 public consultation process will be undertaken, with inputs and feedback received 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.