BusConnects Infrastructure Cork

Volume A
Draft Emerging Preferred Options Report
Orbital Route

National Transport Authority

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
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Volume A Feasibility and Options Assessment Report

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Glossary of Technical Terms

Sustainable Transport Corridor (STC) – A series of roads or streets where it is proposed to provide enhanced walking, cycling and bus infrastructure which will enable and deliver efficient, safe, and integrated sustainable movement along this corridor.

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

Signal controlled priority - Signal control priority uses traffic signals to enable buses to get priority ahead of other traffic. It is only effective for short distances. This typically arises where the bus lane cannot continue due to obstructions on the roadway. An example might be where a road narrows due to existing buildings or structures that cannot be demolished to make space for a bus lane. It works by traffic signal controls where the bus lane and general traffic lane must merge ahead and share the road space for a short distance until the bus lane recommences downstream. The general traffic will be held at the signal to allow the bus pass through the narrow section first and when the bus has passed, the general traffic will then be allowed through the lights.

Traffic management – relates to proposals for sections of the Sustainable Transport Corridor that involves signal control priority or bus gates.

Greenway – A greenway is a predominantly traffic free path, designated for use by pedestrians, cyclists, and other non-motorised users such as wheelchair users, and push buggies. These routes should meet satisfactory standards of width, gradient, and surface condition to ensure that they support users of all abilities.

Cycle track – A cycle track is a separate section of the road dedicated for cycling only. This space will generally be segregated from other vehicular traffic by a physical kerb. Where it is not physically possible to have segregated cycle tracks there will be the option of quiet roads and shared cycling on reduced speed roads for cyclists.

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

Protected junctions - Refers to junctions, which provide physical kerb buildouts to protect cyclists through the junction. The provision of protected junctions for cyclists is a critical factor in managing conflict and providing safe junctions for all road users. As such, this is the preferred layout, where practicable, for signalised junctions.

Quietway – Where the width of a road or street cannot accommodate dedicated infrastructure for cyclists without significant impact on bus priority, alternative cycle routes are explored for short distances. These options may include directing cyclists along streets with relatively low volumes of vehicular traffic. They are called ‘Quietways’ and are only proposed where the traffic regime with respect to speed and volume is suitable for cyclists to share the traffic lane with vehicular traffic. The ‘Quietway’ treatment will involve appropriate signage for both the general road users and cyclists.

Executive Summary

Introduction

This report presents a Feasibility and Options Assessment Report for the Orbital Sustainable Transport Corridor (STC) which has been undertaken as part of the BusConnects Infrastructure Cork project.

Project 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.
- 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.

Study Area

The Orbital STC study area covers Hollyhill, Blackpool, Mayfield, Tivoli, Jack Lynch Tunnel, Mahon Point, Douglas, Blackash Park and Ride and Cork University Hospital as illustrated in Figure 1.1. The study area lies within the administrative area of Cork City Council.

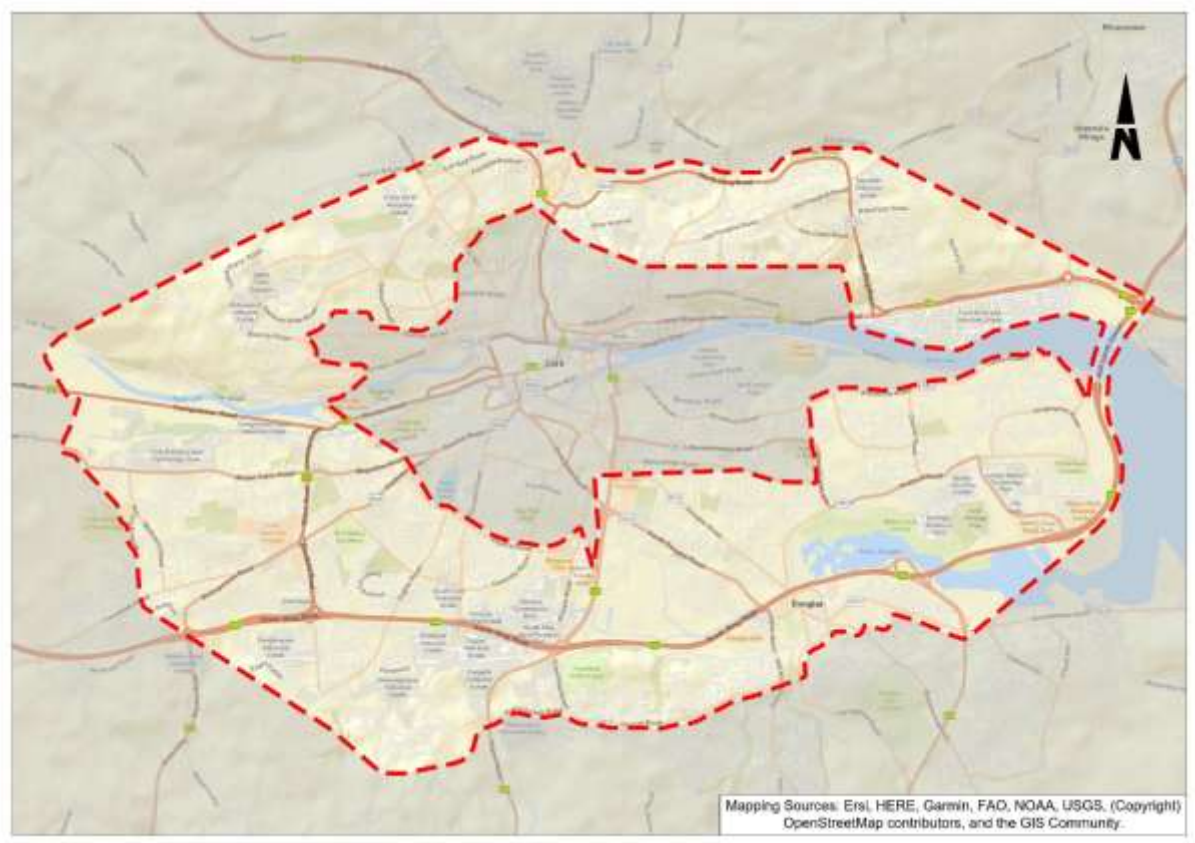


Figure 1.1 Study Area

Assessment Methodology

The assessment process involved two stages. At Stage 1 all feasible route options or links underwent a high-level 'sifting' process to assess their suitability to provide for a STC. 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 could not clearly form part of a 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. Route options were 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). The Multi-Criteria Analysis considered Economy, Integration, Accessibility and Social Inclusion, Safety and Environment for each route option. Each route option was comparatively assessed against sub-criteria under each of these main criteria to identify the Emerging Preferred Route Option.

Emerging Preferred Route

The emerging preferred route for the Orbital STC travels on Wilton Road through Dennehys Cross and Victoria Cross. The route travels along Sunday's Well, Shanakiel Road and Blarney Road to connect with Hollyhill. The route is proposed to travel along Kilmore Road Lower, Knocknaheeny Avenue, travelling along Mount Agnes Road before turning on to Fair Hill. From here, the route travels along Knockpogue Avenue and then Popham's Road to connect with Blackpool Shopping Centre via Brothers Delaney Road. The route will continue via North City Link Road, Glen Avenue, Old Youghal Road to the North Ring Road. The route continues via Lower Glanmire Road, travelling through Jack Lynch tunnel, onto Mahon Link Road and Skehard road and connecting to Douglas via the Well Road. The route continues along Carrigaline Road to connect with Grange Road via a new bridge over Ballybrack Woods

(Mangala Valley). The route continues along the Kinsale Road (Airport Road) travelling through the Kinsale Road Roundabout to Tramore Road, Connolly Road, Clashduv Road, Summerstown Road to Wilton Road.

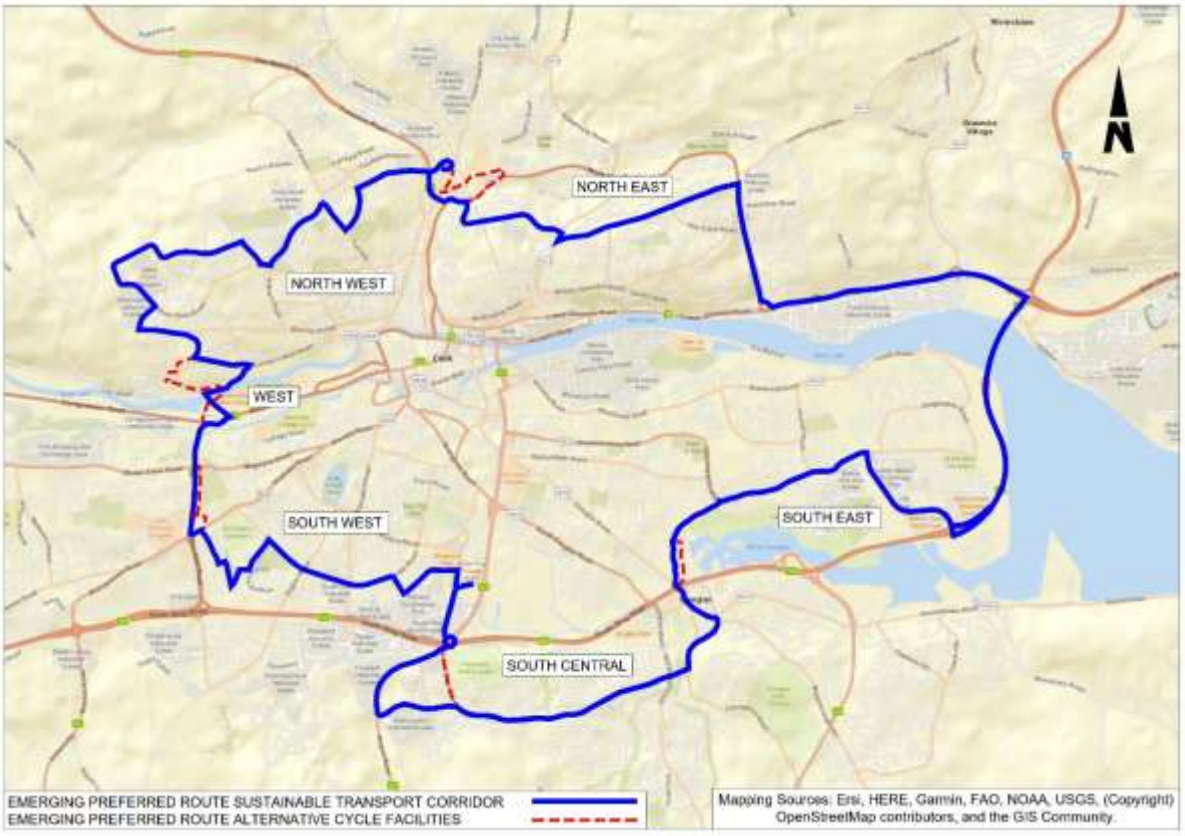


Figure 1.2 Emerging Preferred Route

Next Steps

This report has identified an emerging preferred route for the bus infrastructure along this STC for which a concept design has been developed. A public consultation process will be undertaken to provide an opportunity for feedback and input into this concept stage of the schemes.

The extent of the Orbital STC included in the first phase of the BusConnects Implementation Cork project is outlined in Figure 1.3 Sunday's Well to Hollyhill and Figure 1.4 Kinsale Road to Douglas and Well Road Cycle Scheme.

Figure 1.3 STC L Sunday's Well to Hollyhill

STC L Sunday's Well to Hollyhill

The Sunday's Well to Hollyhill Sustainable Transport Corridor (STC L) commences on the Western Road close to the pedestrian access to Mardyke Walk and travels over the Thomas Davis Bridge to connect with Sunday's Well Road. The STC proceeds on Shanakiel Road to connect with Blarney Road and Harbour View Road. Sunday's Well Road and Shanakiel Road are physically constrained, and it is not possible to provide dedicated bus lanes. Priority will be provided for buses through traffic signals at the junction of Sunday's Well and Western Road and the junction of Sunday's Well Road and Shanakiel Road. On Blarney Road and Harbour View Road dedicated bus lanes and cycle tracks are proposed in both directions.

Connectivity for cyclists includes a proposal for a new bridge over the River Lee in the vicinity of the Mardyke Sports Grounds. The cycle route is proposed to travel along a 'quietway' on Rose Hill Upper. From Rose Hill Upper the cycle route connects to Shanakiel Road through the residential development site at St Kevin's. This route provides a better gradient for cyclists and avoids the most constrained sections of Sunday's Well and Shanakiel Road.

STC K Kinsale Road to Douglas and Well Road Cycle Scheme

The Kinsale Road to Douglas Sustainable Transport Corridor (STC K) commences close to the Bull McCabe pub on the eastern side of the Ballycurreen Road junction with the Kinsale Road (N27). The STC proceeds on Ballycurren Road to Grange Road. Along this section of the STC a footpath, bus lane, and general traffic lane is provided in both directions.

Cyclists take an alternative route to buses commencing instead at the Frankfield Road and Kinsale Road junction and heading north along the Frankfield Road. It is proposed to provide a footpath, cycle track, and general traffic lane in each direction for this section. At the junction of Ballycurreen Road and Grange Road the STCs for cyclists and buses merge and travel east along the Grange Road. The STC proceeds east from the junction of Ballycurreen Road and Grange Road where it travels along Grange Road to Donnybrook Hill. On Grange Road it is proposed to provide a footpath, cycle track bus lane and general traffic lane in each direction.

At the junction of Grange Road and Donnybrook Hill a new bridge is proposed over the Mangala Valley to connect with Carrigaline Road. The STC proceeds north along the Carrigaline Road to connect with Douglas at the Fingerpost Roundabout. Priority for buses is provided along the entire route consisting of dedicated bus lanes in both directions.

The Well Road Cycle scheme is proposed to provide walking and cycling connectivity between Douglas and Skehard Road. A 'quietway' cycle route is proposed along Douglas Hall and Riverbank. A 'quietway' involves cyclist sharing the traffic lane with general traffic which is relatively low in volume. The proposal will require a reorganisation of existing access arrangements at Douglas Wells Apartments to facilitate pedestrians and cyclists travelling between Riverbank and Douglas Hall Lawn. Cycle tracks are proposed between the roundabout on Well Road at Douglas Hall Lawn and Skehard Road.

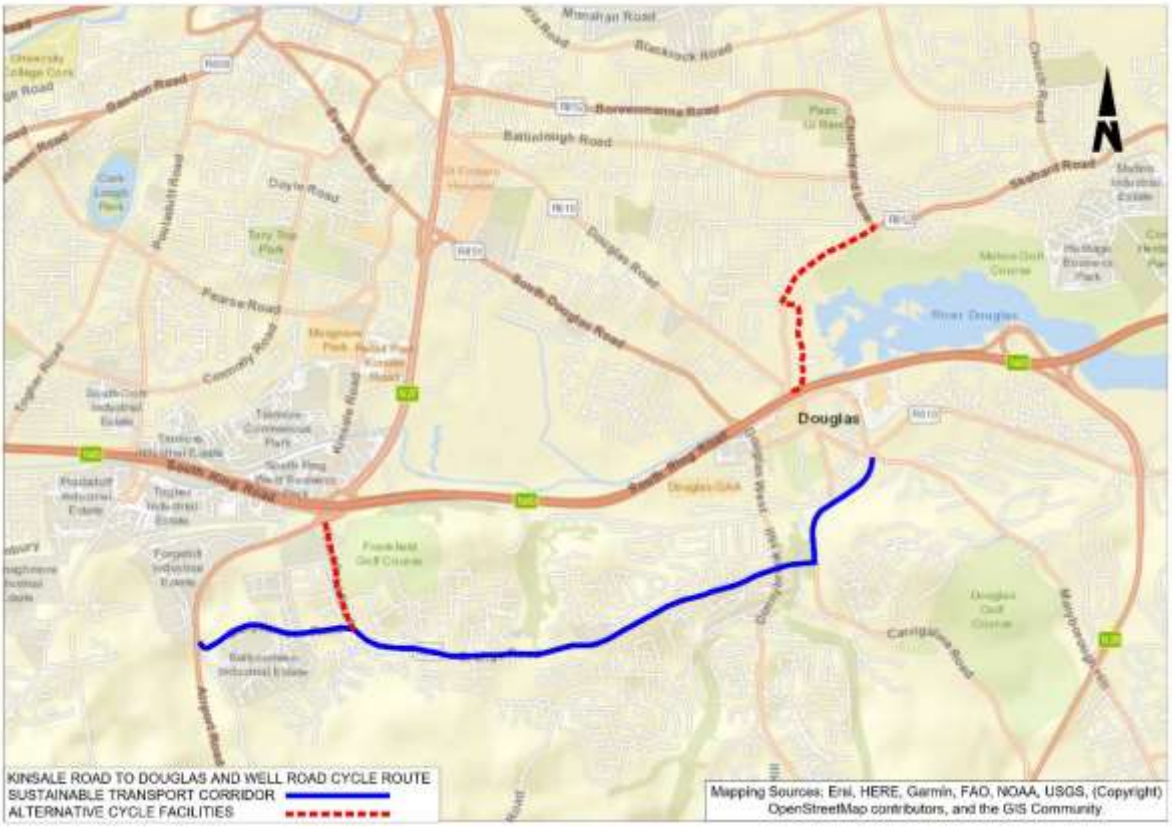


Figure 1.4 STC K Kinsale Road to Douglas and Well Road Cycle Scheme

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

1. Introduction

1.1 Background

BusConnects is a programme of transport investment in Ireland's metropolitan areas. It is developed and managed by the National Transport Authority and funded by Project Ireland 2040.

The purpose of this Feasibility and Options Assessment Report is to identify an Emerging Preferred Route for the Orbital Sustainable Transport Corridor (STC) as outlined in the Cork Metropolitan Area Transport Study 2040 (published by NTA 2020).

The Cork Metropolitan Area Transport Study outlines a comprehensive network of high frequency bus services will be delivered with dedicated bus priority measures, providing radial and orbital services connecting key residential, employment, education, retail, health, and leisure locations. This will mean enhanced bus priority removing current delays, making bus a more attractive option for travel.

1.2 Report Structure

This report is structured as follows:

- Chapter 2 outlines the transport context in which the Orbital STC was developed.
- Chapter 3 the sector areas are identified, and scheme specific constraints and opportunities are identified. The integration of the scheme with existing and planned public transport networks is outlined.
- Chapter 4 the assessment methodology for identify the Emerging Preferred Route is outlined.
- Chapters 5 – 8 detail the selection process for each Sector of the assessment methodology.
- Chapter 9 presents the overall conclusions of the options assessment process and identifies the Emerging Preferred Route.
- Chapter 10 outlines the 'next steps' in the delivery of the project.

2. Transport Context

2.1 Introduction

This chapter outlines the transport context within which the Orbital STC is being developed. It also outlines the relevant planned developments within the study area which have been considered as part of this feasibility and option assessment stage.

2.2 National Sustainable Mobility Policy 2022

The National Sustainable Mobility Policy sets outs a framework to 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in greenhouse gas emissions by 2030. Transport is responsible for around 18% of our greenhouse gas emissions and the National Sustainable Mobility outlines it is vital that by 2030 the infrastructure, services and measures are put in place that enable and encourage more people to make the switch to more sustainable modes of travel.

The National Sustainable Mobility Policy is accompanied by an action plan to 2025 which contains actions to improve and expand sustainable mobility options across the country by providing safe, green, accessible, and efficient alternatives to car journeys. It also includes demand management and behavioural change measures to manage daily travel demand more efficiently and to reduce the journeys taken by private car.

The National Sustainable Mobility Policy outlines:

'Implementation of public transport projects such as BusConnects…will significantly increase the capacity and range of our public transport network and ensure that future increases in travel demand can be facilitated by greener, high-capacity public transport.'

2.3 National Investment Framework for Transport in Ireland 2021

The National Investment Framework for Transport in Ireland (NIFTI) is the Department of Transport's high-level strategic framework to support the consideration and prioritisation of future investment in land transport. NIFTI outlines transport planning will prioritise sustainable modes and sets out a hierarchy of travel modes. The framework encourages the use of active travel and public transport ahead of solutions reliant on private transport. Maintenance or optimisation of existing assets, including through demand management, is also preferred to extensive enhancements or outright new infrastructure. This is reflected in the intervention hierarchy and modal hierarchy outlined in NIFTI.

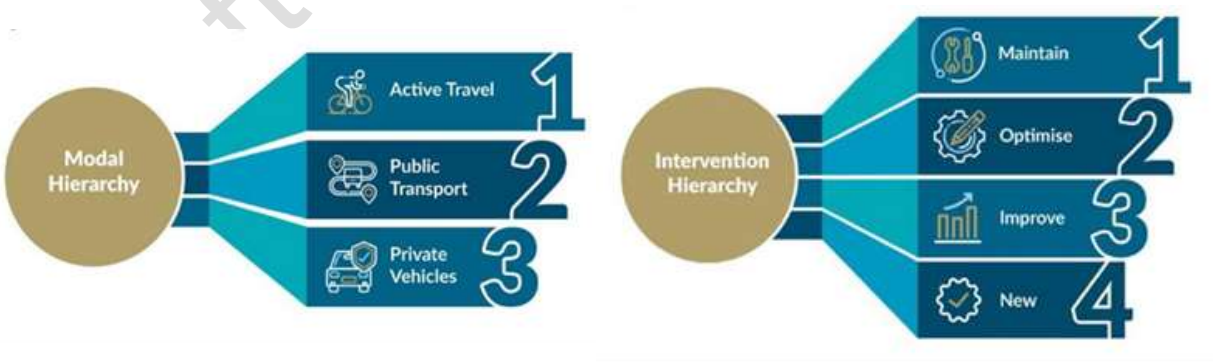


Figure 2.1 Modal and Intervention Hierarchy from NIFTI

The BusConnects Infrastructure Cork project aligns with NIFTI as it will deliver the infrastructure to support the use of active travel and public transport. Furthermore, the emphasis within the BusConnects Infrastructure Cork project is on optimisation (through road space reallocation) and improving of the existing road network rather than on outright new infrastructure.

2.4 Climate Action Plan 2021

The Climate Action Plan 2021 details the government's long-term strategy to halve greenhouse emissions by 2030 and reach net zero by 2050. The Climate Action Plan aims for a 51 per cent reduction in transport emissions by 2030, with a particular focus on demand management, sustainable mobility and shifting trips from fossil fuel-powered cars to walking, cycling and public transport. Among the targets and measures contained in the Plan are:

- Increase in daily public transport and active mode trips by 500,000 (+14%).
- Reduction in internal combustion engine vehicle kilometres by 10%.

According to the Climate Action Plan, achieving these targets requires "*continued and enhanced investment in walking, cycling and public transport infrastructure and services across the country (…) on a scale not previously seen*", and a focus on "*reliable*" and "*realistic*" sustainable mobility options to enable this shift.

The BusConnects Infrastructure Cork project aligns with the objectives of the Climate Action Plan and the national targets for reduction in emissions. The project aims 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.

2.5 Cork Metropolitan Area Transport Study 2040

The Cork Metropolitan Area Transport Study 2040 was published by the NTA in conjunction with Cork City Council and Cork County Council in 2020. The study outlines a strategy to deliver an accessible, integrated transport network that enables the sustainable growth of the Cork Metropolitan Area as a dynamic, connected and internationally competitive European city region as envisaged by the National Planning Framework 2040. The study outlines:

'…. the enhanced BusConnects network will comprise of a significantly increased bus network, bus priority and 220 new double decker vehicles. In total, the network will comprise of 200km of cross-city routes, 50km of orbital routes and 150km of radial routes and will provide interchange with the Cork Suburban Rail Network, Light Rail Network and the proposed Park and Ride services located around the Strategic Road Network.'

With respect to cycling the Study identifies a primary, secondary, inter-urban and greenway cycle network with a view to providing a coherent, safe, and attractive cycle network that will support a shift from the private car to cycling for employment and education trips as well as provide a strong basis for increasing leisure and tourist cycling.

The bus and cycle networks identified in CMATS were noted as being subject to regular review to reflect evolving demand patterns and changing needs.

2.6 Integrated Implementation Plan 2019 - 2024

At a national level the National Transport Authority has responsibility for securing the provision of public passenger land transport services. It has the function of providing public transport infrastructure and cycling infrastructure across the State including bus stops, bus shelters, bus stations and bus fleets, as well as cycling facilities and schemes to promote cycling.

An Integrated Implementation Plan 2019 – 2024 was published by the National Transport Authority in 2019 and sets out a transport investment programme. In relation to BusConnects Cork the plan identifies:

'…it is intended to provide for segregated cycle facilities on all Core Bus Corridors in each metropolitan area.'

2.7 Cork City Development Plan 2022 - 2028

The development plan process is currently underway for the preparation of a new Cork City Development Plan 2022- 2028. Following the first stage of public consultation (Issues Paper),

Cork City Council has prepared the Draft Cork City Development Plan 2022-2028. The Draft Plan builds on a series of strategic themes including compact growth, a city of neighbourhoods and communities, sustainable and active travel, enhanced built and natural heritage, a strong and diverse economy, a resilient city, a healthy, inclusive, and diverse City, a connected City, a City of learning and culture.

Strategic employment sites within the study area as identified in Section 7.40 of the Draft Plan include Tivoli. Additional lands identified for strategic employment within the study area include Clogheen Business Park Extension, South Link Industrial Estate, Fairhill, Holyhill, and Tivoli.

Nationally significant urban regeneration opportunities include the Tivoli Docks, City Docks whose regeneration is inextricably linked to the delivery of compact growth in line with the population and employment growth targets set out for Cork City up to 2040. The Plan outlines a residential density strategy that seeks to achieve a more compact form of urban development in Cork City that promotes resource efficiency.

The strategy outlined provides for interventions in how the City moves with new dedicated walking/cycling routes, a high frequency bus service, the development of a light rail network, the expansion of commuter rail and investment in local route improvements including new orbital routes.

Section 4.46 Draft Cork City Development Plan 2022-2028 outlines:

'The enhanced BusConnects network will comprise of a significantly increased bus network, bus priority routes and around 220 new double decker vehicles. The BusConnects programme represents an opportunity to overhaul the public bus service across Cork. This process has commenced, and the NTA has commissioned the redesign of the bus network. In addition, it will involve improvements on the core corridors and the provision of additional park and ride facilities. In addition to these infrastructural improvements, BusConnects will involve continued operational improvements, such as improvements in relation to ticketing, real-time information and passenger facilities, all of which are designed to improve the reliability and frequency of the service, thereby enhancing the appeal of public transport in the city.'

The Orbital Route is outlined as connecting Hollyhill, Blackpool, Mayfield, Tivoli, Jack Lynch Tunnel, Mahon Point, Douglas, Blackash Park and Ride and Cork University Hospital.

Objective 4.1 relates to CMATS:

'Cork City Council will work in cooperation with the NTA, TII and Cork County Council to fully implement the Cork Metropolitan Area Transport Strategy subject to detailed engineering design and environmental considerations, including the projects and programmes in relation to walking, cycling, public transport, BusConnects, suburban rail, light rail park and rides and roads infrastructure.'

2.8 Project 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.
- 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.

3. Study Area

3.1 Introduction

This Chapter outlines the study area for the Orbital STC. Physical constraints and opportunities within the study area are identified and the potential for integration with existing and planned transport networks is considered along with compatibility with other road users.

3.2 Study Area Sectors

The Orbital STC study area covers Hollyhill, Blackpool, Mayfield, Tivoli, Jack Lynch Tunnel, Mahon Point, Douglas, Blackash Park and Ride and Cork University Hospital as illustrated in Figure 3.1. The study area lies within the administrative area of Cork City Council.

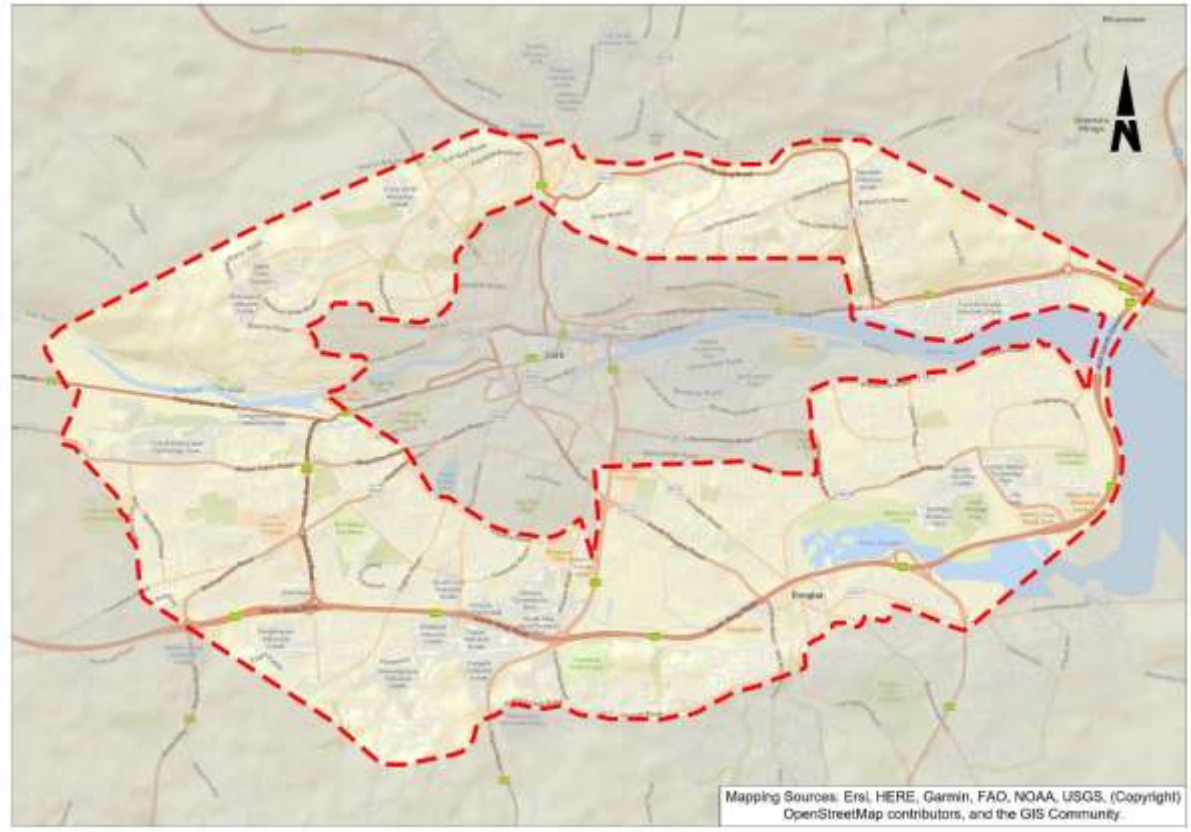


Figure 3.1. Study Area

The study area was divided into smaller sector areas to facilitate assessment. These areas are called South East, South Central, South West, West, North West, and North East as shown in Figure 3.2.

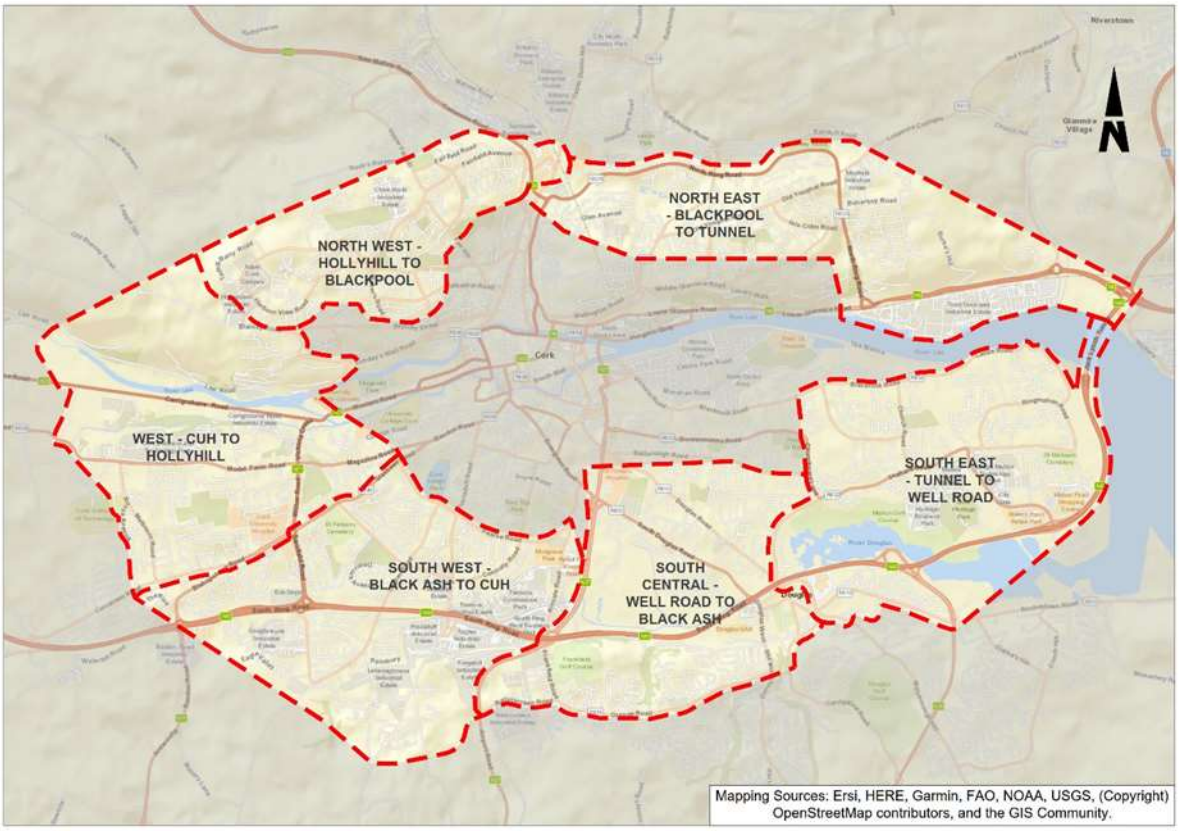


Figure 3.2 Study Area Sectors

3.3 Physical Constraints and Opportunities

Within the study area there are several features in the natural and built environment which either constrain options or provide opportunities for enhanced integration. These are considered within the assessment process and include the following:

- River Lee, the Lower Harbour, and the Jack Lynch Tunnel.
- Topography particularly on the North of the City.
- Strategic planned 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/sub-urban roads and street networks.
- Planned new road and bridge developments.
- Ten-T Roads Network (N40, M28, M8).

3.4 Integration with Existing and Proposed Public Transport Network

An important function of any orbital public transport service is to improve interchange with other modes of transport including existing and planned services. Route options have been developed to facilitate integration with existing and planned public transport services which include:

- Existing public transport infrastructure such as heavy rail and bus routes.
- Public transport proposals including Ballincollig to Mahon Light Rail Corridor.
- Strategic Park and Ride site within the Study Area identified in CMATS at Dunkettle.

3.5 Compatibility with other Road Users

Provision for cyclists and pedestrians is a key component of the scheme as reflected in the project objectives. It is proposed to provide cycle facilities as identified in CMATS. Pedestrian connectivity to key trip generating locations is considered in the assessment of the route options. Where possible segregated facilities are proposed for pedestrians and cyclists. In locations where it is not possible to achieve this, facilities are proposed along a suitable alternative route.

Accessibility by private vehicles will be retained however to accommodate the reallocation of space for pedestrians, cyclists, and public transport users there will inevitably be rerouting and a reduction in capacity for private vehicles. This reduction in capacity for private vehicles is offset by the increased total trip capacity across the transport network.

3.6 Bus Journey Time Reliability

Section 2.8 identified the objective to enhance the capacity and potential of the public transport system by improving bus speeds, reliability, and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements. This will shorten bus journey times and make them more reliable.

Reliability is an important characteristic of the quality of service provided by the public transport system. It is important to both the passenger and bus operator. For the passenger adherence to schedule results in decreased wait time, makes transferring easier, and supports certainty in arrival time at the destination. In addition to its importance to passengers, reliability in operations improves productivity and reduces costs for bus operators. This is due to removing the need to build slack time into timetables to absorb deviations from the schedule. This leads to better use of both equipment and personnel.

4. Assessment Methodology

4.1 Introduction

This chapter outlines the assessment methodology adopted to determine the Emerging Preferred Route for the Orbital STC.

4.2 Assessment Methodology

The assessment methodology involved two stages:

- Stage 1 Options Assessment consists of a sifting exercise. This involves the development of a 'spiders web' of route options and an assessment at a relatively high level of their ability to deliver the project objectives.
- Stage 2 Options Assessment involves a comparison of each viable route option using a multi-criteria analysis to determine the Emerging Preferred Route.

The assessment methodology is outlined in Figure 4.1 below.

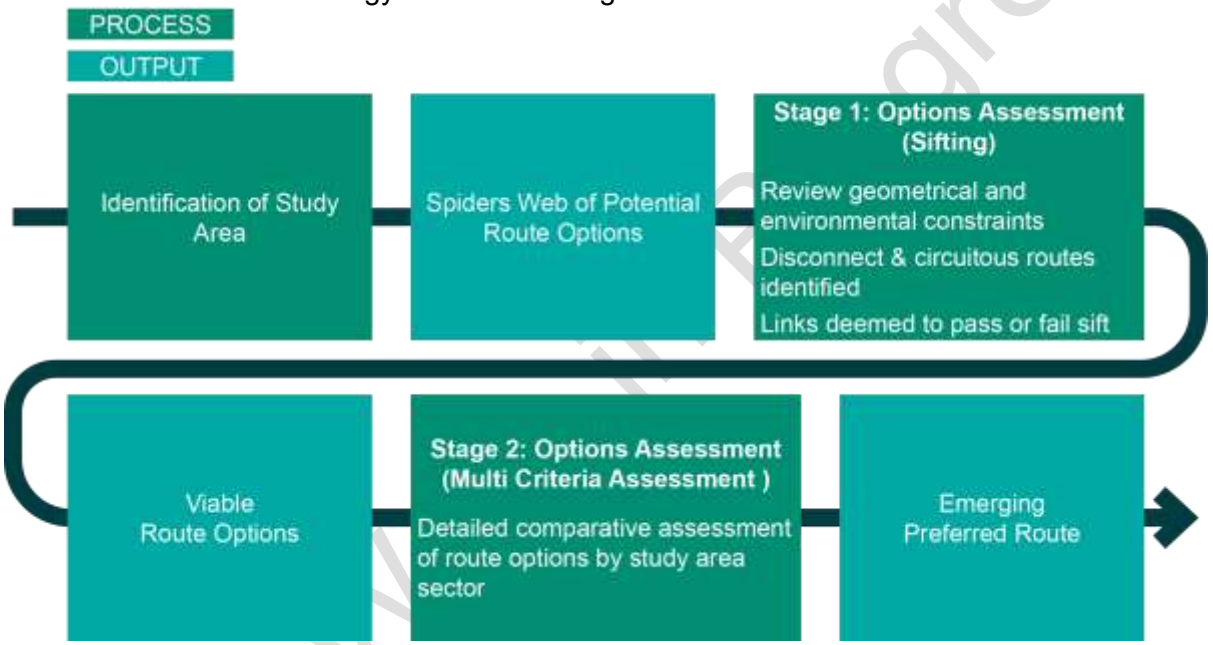


Figure 4.1 Assessment Process

4.3 Stage 1 Options Assessment - Sifting Stage

4.3.1. Spiders Web Development

An initial 'spiders-web' of potential links that could possibly accommodate a STC service was identified for each study area section. Links identified also took cognisance of the physical constraints and opportunities present and the ability to integrate with other public transport modes. Of relevance in developing the spiders web was the potential for the road or route sections to facilitate reliable bus journey times.

Any road carrying an existing 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 look forward so 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 an understanding of the existing physical conditions/ constraints within the study

area. 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.

The sifting process focused on engineering constraints identifying geometrical constraints, high level environmental constraints and population/employment densities. Road links that provided the opportunities to meet the project objectives were brought forward for Stage 2 Options Assessment.

4.3.3. Removal of Dead End, Disconnected, or Overly Circuitous Links

Links that were dead ends, disconnected, or overly circuitous were discounted. This established the links that would be available to provide route options for Stage 2 Options Assessment.

4.4 Stage 2 Options Assessment

All route options that progressed to this stage were compared against one another using a detailed multi-criteria analysis in accordance with the Department of Transport Document "Common Appraisal Framework for Transport Projects and Programmes".

Each scheme was comparatively assessed against the study objectives using the KPIs and method of measurements identified below. The scheme options were then ranked accordingly to identify the Emerging Preferred Route Option.

In accordance with the Department of Transport "Guidelines on a Common Appraisal Framework for Transport Projects", 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 outlined in Table 4.1.

Table 4.1. Assessment Criteria

Assessment Criteria		Sub-Criteria
1	Economy	1.a. Capital Cost
		1.b Average Journey Time
		1.c Journey Time Reliability and Consistency
2	Integration	2.a Land Use Integration
		2.b Residential Population and Employment Catchments
		2.c. Transport Network Integration
		2.d Cyclists Integration
		2.e Pedestrian Integration
3	Accessibility and Social Inclusion	3.a Key Trip Attractors
		3.b Deprived Geographic Areas
4.	Safety	4.a Road Safety
5.	Environment	5.a Archaeological, Architectural and Cultural Heritage
		5.b Biodiversity
		5.c Soils and Geology
		5.d Water Resources
		5.e Landscape and Visual
		5.f Noise, Vibration and Air
		5.g Land Use and the Built Environment

4.4.1 Economy

1.a. Capital Cost

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

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. Moderate works have been assumed where the existing road corridor will be reconfigured to provide the bus priority measures and minor road widening. Major works have been assumed where significant road widening, and land take is required.

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. Additional costs will be added for significant items relevant to each scheme i.e. significant structures.

Table 4.2. Link Cost Rates per KM

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). • Minor property boundary reinstatement works (walls, gates, 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). • Significant pavement full depth construction.	€3,000,000

Category	Construction Works	Cost Rate per KM
	• Kerbs footways and paved areas. • Road markings. • Signage. • Road lighting. • Accommodation Works, bespoke design solution for each driveway to accommodate new levels. • Landscaping works (top soiling, fence, trees relocation, hedges, road margins re-grading etc). • Property boundary reinstatement works (walls, gates, driveways landscaping etc).	

The length of the route requiring either the minor, moderate or major works category is calculated and multiplied by the relevant cost rate to derive the cost estimate for the route.

Table 4.3. Junction Cost Rates

Category	Construction Works	Cost
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.	€1,400,000

Category	Construction Works	Cost
	• Property boundary reinstatement works (walls, gates, driveways landscaping etc).	

Land Acquisition Costs

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 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.

1.b Average Bus Journey Time

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 an assumed speed unless they are delayed.
- Dwell time of 10 - 60 seconds per stop depending on usage.
- Delay of 15 – 120 seconds per junction depending on type and level of priority achievable.
- Delays where no bus priority is provided, and buses are required to share congested lanes with general traffic. The length of delays is based on queue length information and automatic vehicle location date where available.

1.c Bus Journey Time Reliability and Consistency

Reliable bus journey times provide 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.

4.4.2 Integration

2.a Land Use Integration

This criterion assesses how a scheme would integrate with any future planned developments in the catchment area and 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.

2.b Residential Population and Employment Catchments

The current residential and employment population within a particular walking route distance of each of the STC stops is calculated to determine the number of potential users for each scheme option. To assess the potential population and employment catchments the walking distance from bus stop locations along each route was analysed using the network analyst

module of ArcGIS to create walk time isochrones from each stop. The distances to the stops correlate to walk times of five-, ten-, and fifteen-minute intervals and were estimated based on an average walking speed of 5kph.

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.

2.c Transport Network Integration

Under this criterion, integration with the wider transport network is assessed and compared for each scheme. 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 duplicates a route with another public transport route over a significant distance this was interpreted as a disadvantage under this criterion.

The anticipated traffic impact expected to be incurred by motorists using private vehicles because 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, with an emphasis placed on protecting the vehicular capacity of TEN-T routes.

2.d Cyclist Integration

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

2.e Pedestrian Integration

The compatibility of a scheme with the objectives of the Walking Strategy in CMATS is examined and the level of service of practically achievable pedestrian facilities is assessed.

4.4.3 Accessibility and Social Inclusion

3.a Key Trip Attractors

This assessment criterion identifies key trip attractors located within appropriate walk catchments which would generate significant demand for bus services but would not otherwise be picked up by either the employment or residential catchment analysis. For the purposes of this assessment, the following land-uses have been considered as key trip attractors:

- Education (schools and universities).
- Commercial centres (shopping centres, and town centres).
- Healthcare (hospitals).
- Leisure (sport stadiums, theatres, and cinemas) and
- Employment (business parks, and large office developments).
- Services for people with special needs (e.g. Cope Foundation).

3.b Deprived Geographic Areas

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

RAPID is a government initiative to target the most disadvantaged urban areas and provincial towns in the country and sought to improve the lives of the residents of its communities through among other things, improving the delivery of public services through integration and coordination. There are four defined RAPID areas in Cork.

The Pobal HP Deprivation Index is a method of measuring the relative affluence or disadvantage of a particular geographical area using various datasets from the 2016 census. The Pobal HP Deprivation Index was examined by small area to determine which routes better served deprived areas.

4.4.4 Safety

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

4.4.5 Environment

5.a Archaeological, Architectural and Cultural Heritage

Effects on archaeological 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.

Potential impacts of each scheme on Recorded Monuments and Protected Structures (RMPs) along each route are assessed and compared. Potential impacts on Sites of Archaeological or Cultural Heritage, Architectural Conservation Areas and on buildings listed on the National Inventory of Architectural Heritage are also assessed and compared under this criterion.

5.b Biodiversity

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. The potential for planting replacement trees along each route option is also assessed under this criterion.

5.c Soils and Geology

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.

5.d Water Resources

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.

5.e Landscape and Visual

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).
- Landscape and visual objectives within Cork City Development Plan.
- Landscape preservation zones.

- Areas of high landscape value.
- Designated walkways/recreation routes.
- Tree preservation/protection objectives.

5.f Noise, Vibration and Air

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

5.g Land Use and the Built Environment

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, reallocation of road space, severance of land, removal of parking or loading spaces, or changes to access arrangements.

4.4.6 Options Assessment

Scheme options were assessed for each assessment criterion and compared relative to each other on a five-point scale, from having significant advantages, some advantages, some disadvantages to significant disadvantages over other route options. Schemes could also be considered neutral when no apparent advantages or disadvantages were identified across all scheme options. Each route is given a comparative score (advantage/disadvantage) on a 5-point scale for each of the criteria listed in Table 4.4. below.

Table 4.4 Comparative Assessment

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 over the other options

Note: Where all options are considered comparatively equal, they are assessed as neutral.

5. West Sector

5.1 Introduction

This chapter outlines the options assessment process for the West Sector (Cork University Hospital to Hollyhill). The study area for the West Sector was developed to include the main trip generators, existing and proposed roads between Wilton and Hollyhill. The study area is shown below in Figure 5.1.

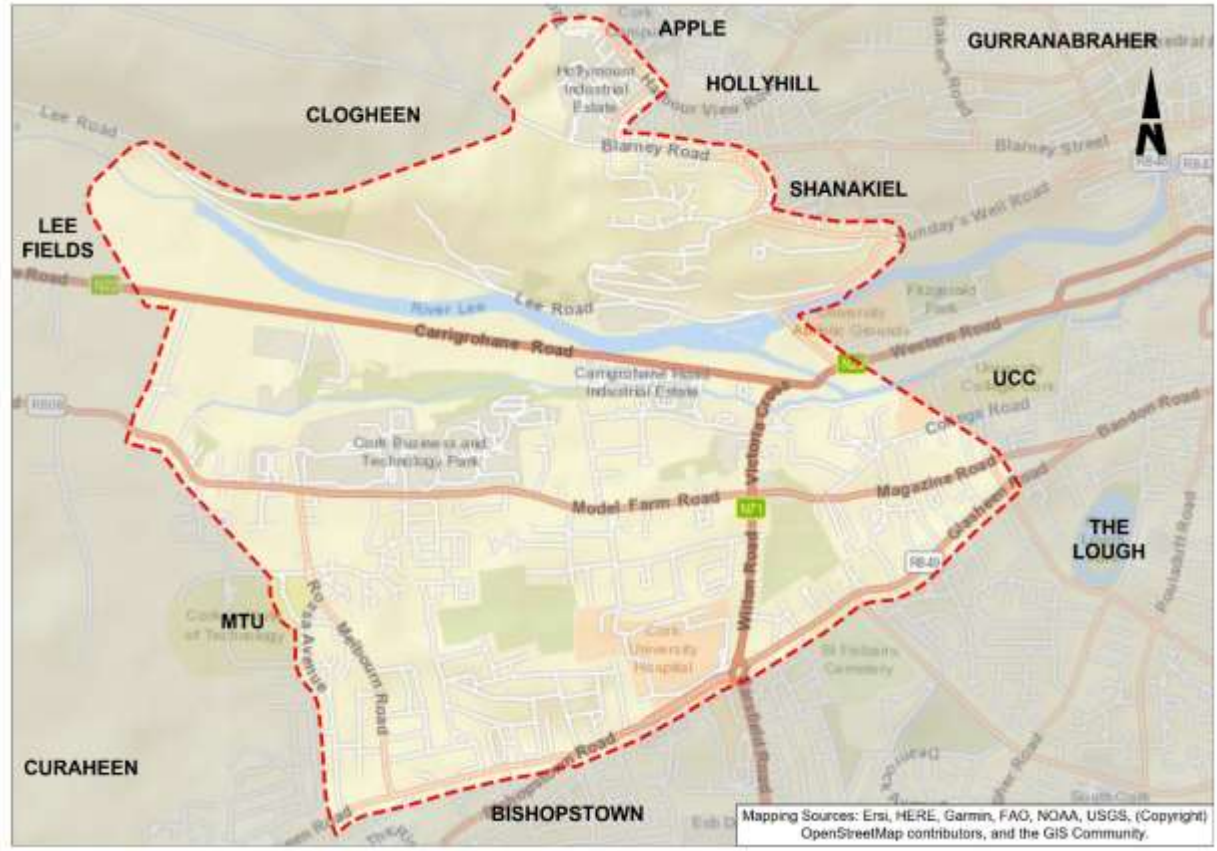


Figure 5.1 West Sector Study Area

The West sector is divided into sections as shown in Figure 5.2 below so that options can be presented. Section 1 covers the area from Hollyhill to Carrigrohane Road and the western side of Model Farm Road. Section 2 covers the area from Victoria Cross, Dennehy's Cross to Wilton Road Roundabout and includes the area to the west to include the Melbourne Road.

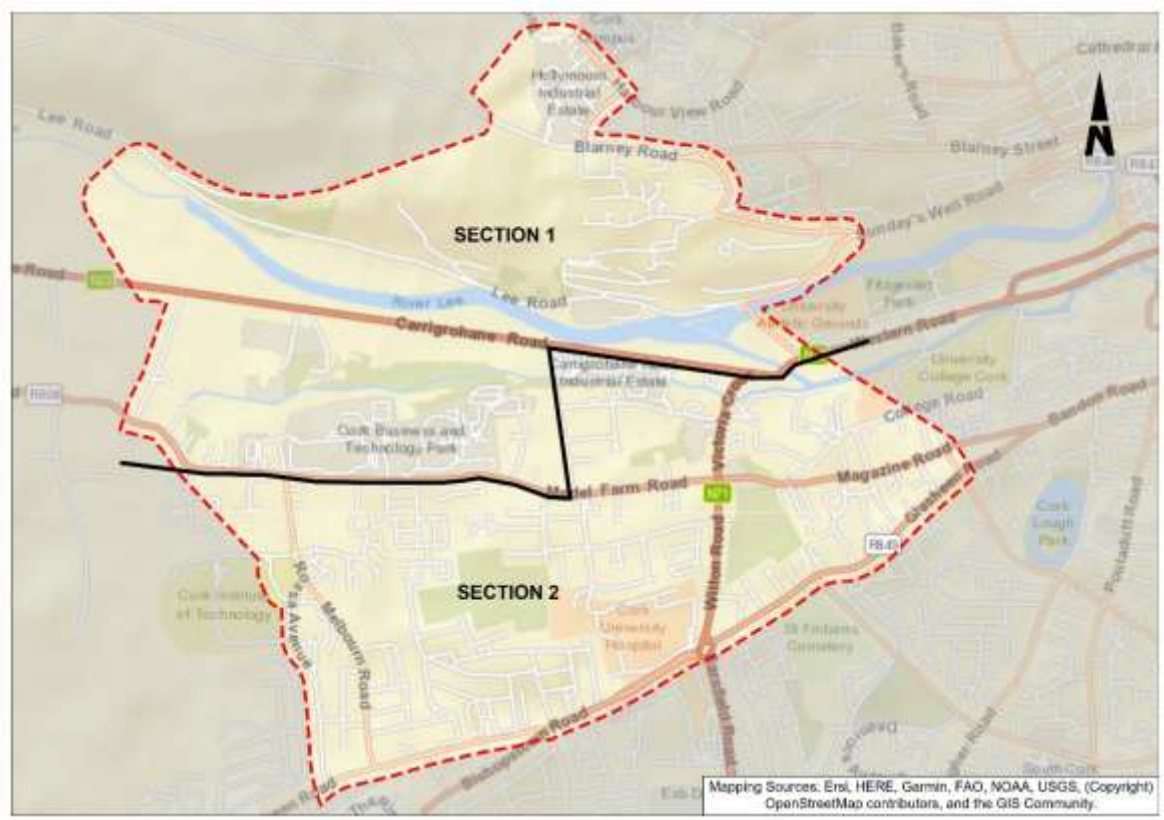


Figure 5.2 Study Area Sections

5.2 Stage 1 Options – Section 1

Links within the West Section that are subject to Stage 1 options assessment are shown in Figure 5.3. A potential alignment of the Northern Distributor Road is shown in a dotted blue line. This includes a new bridge crossing over the River Lee.

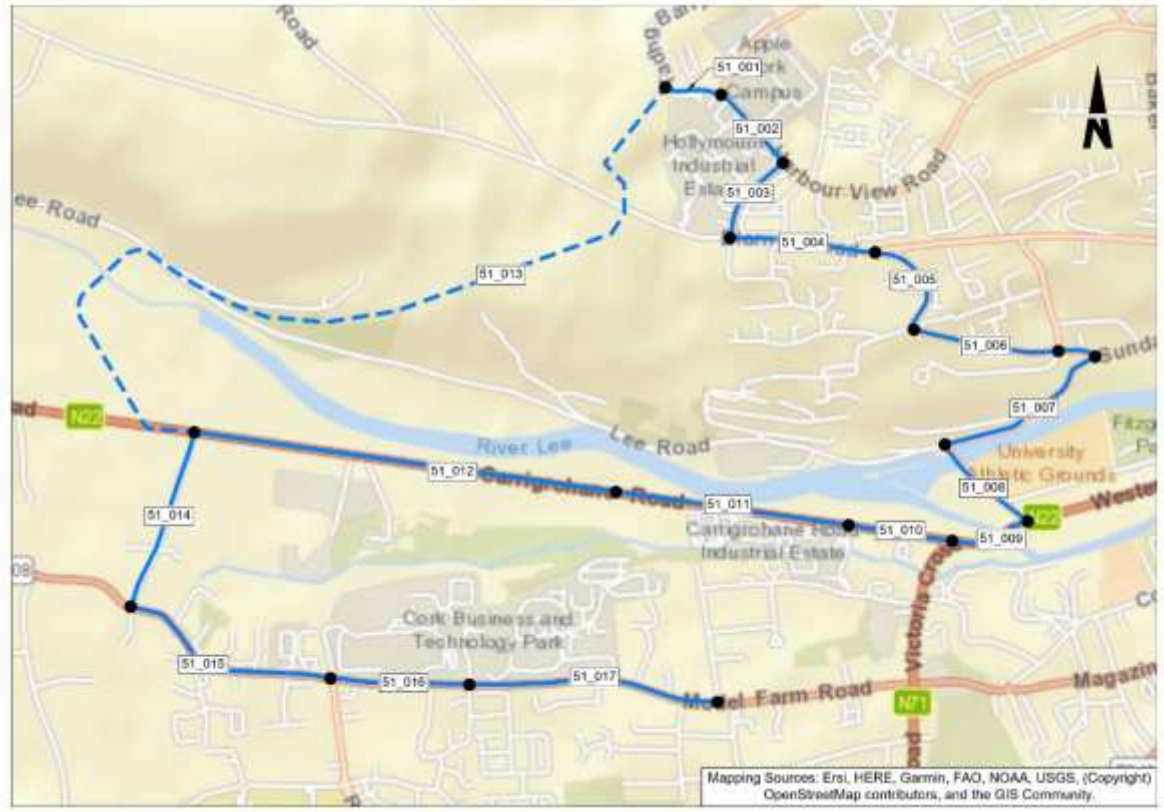


Figure 5.3 West Section 1 Links

The Stage 1 assessment for Section 1 is provided in Appendix A.1.

5.3 Stage 1 Options – Section 2

Links that were subject to Stage 1 options assessment within Section 2 are shown in Figure 5.4.

Figure 5.4 West Section 2 Links

The Stage 1 assessment for Section 2 is provided in Appendix A.2. The outcome of the assessment can be seen in Figure 5.5 below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

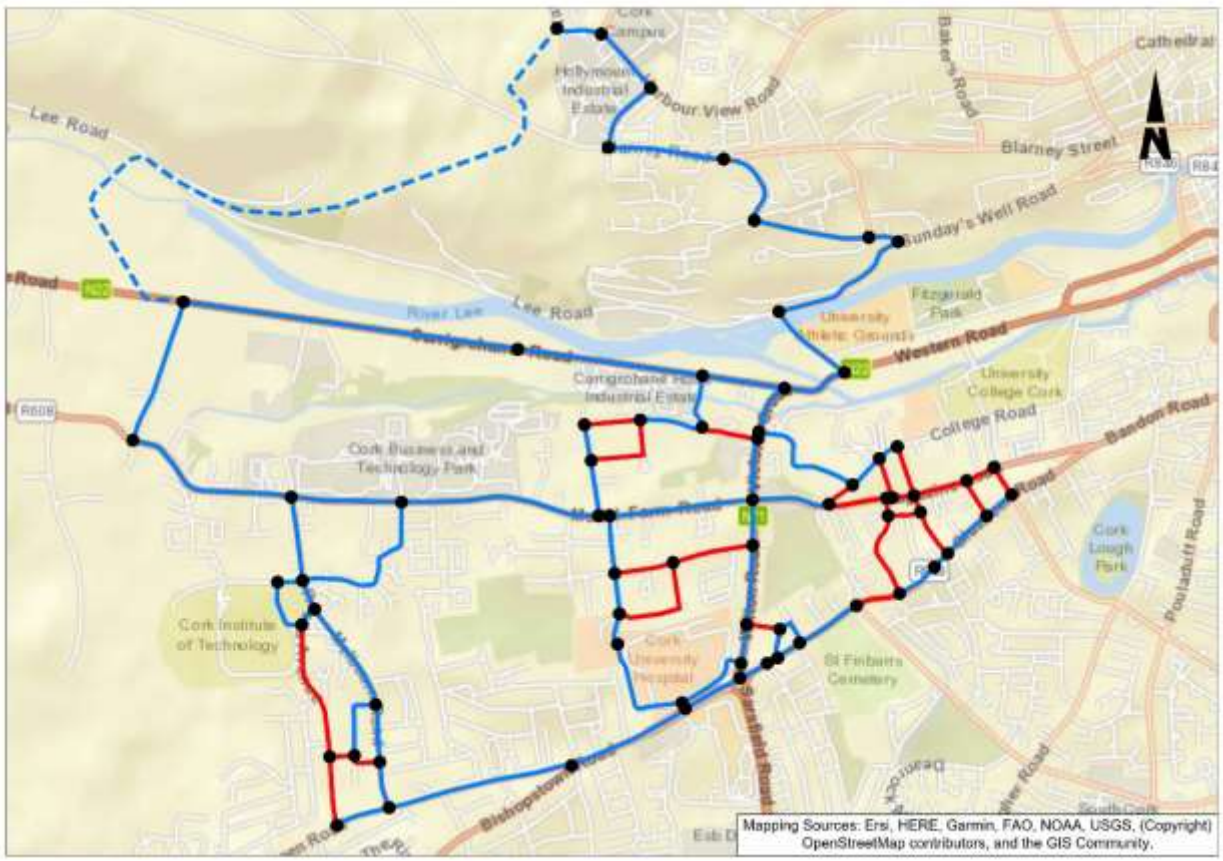


Figure 5.5 Sifting Assessment

A preliminary route assessment process was then performed to identify routes that were circuitous in nature, dead ends or disconnected such could then be removed. A summary of the preliminary route assessment process is presented in the table below.

Table 5.1 Preliminary Route Assessments

Road Names	Comments	Map
Carrigrohane Road	All route options using these links are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	
Leesdale, Greenfields, Parkway Drive, Kenley Close, MTU internal Road	All route options using these links are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

CUH Internal Road	All route options using this link are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Dead end links or disconnected or overly circuitous links are shown in red in Figure 5.6.

Figure 5.6 Removal of Dead Ends, Disconnected or Overly Circuitous Links

Figure 5.7 below shows the final spiders web of links that will be bought forward for Stage 2 assessment.

Figure 5.7 Spiders Web for Stage 2 Assessment

5.4 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 5.8:

- Option 1: (A, D, G)
- Option 2: (A, B, C, D, G)
- Option 3: (A, B, E, F, C, D, G)
- Option 4: (A, B, E, F, G)
- Option 5: (A, B, C, F, G)
- Option 6 (A, D, C, F, G)

Figure 5.8 Links for Stage 2 Assessment

Route Option 1

Route Description

Route Option 1 is presented in Figure 5.9.

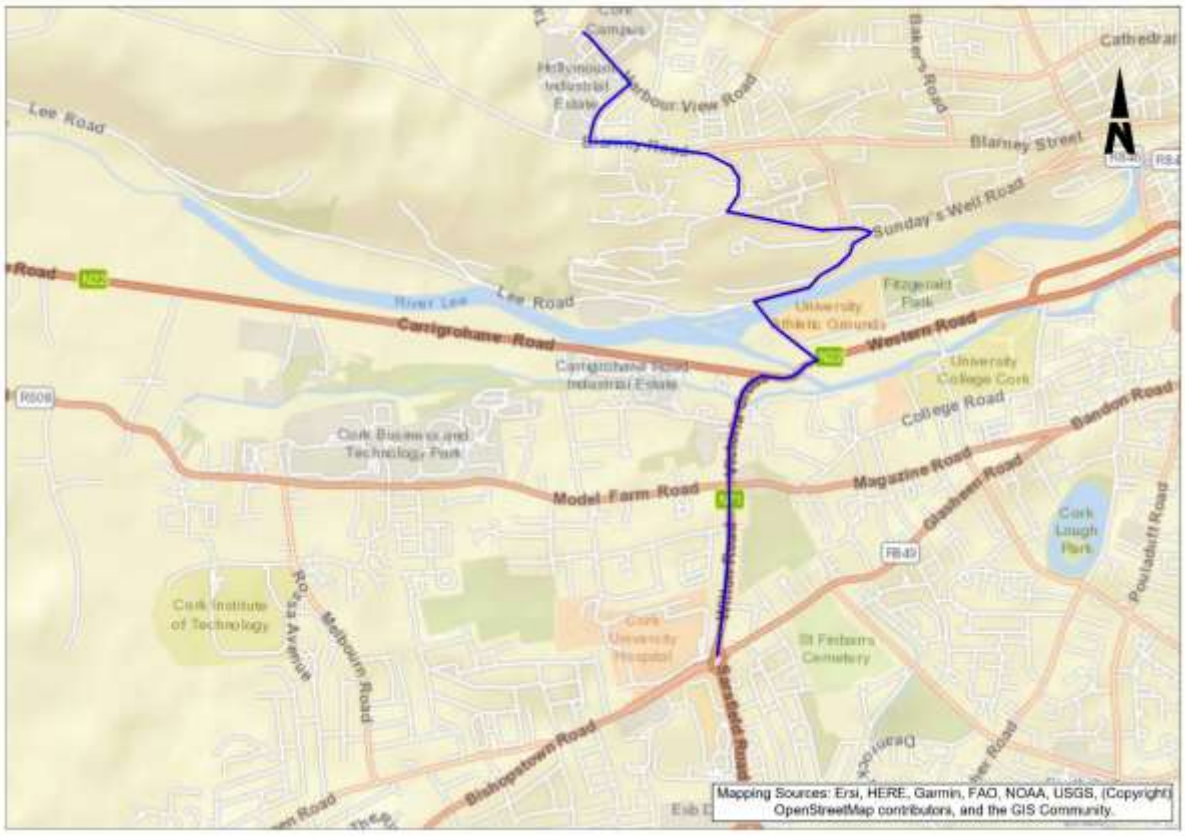


Figure 5.9 Route Option 1 (shown in blue line)

Southbound: For Route Option 1 the bus travels along Harbour View Road to the junction with Blarney Road where it turns left. The bus then continues on Blarney Road eastbound until it vears right onto Shanakiel Road travelling southwest until the junction with Sunday's Well Road. The bus then turns right along Sunday's Well Road before turning left at the junction with Lee Road across the bridge onto Western Road. The bus then turns right at the junction of Western Road and Victoria Cross Road. From here the bus travels south to the Wilton Roundabout via Wilton Road.

Northbound: The northbound route follows the same route as the southbound routing.

Indicative Scheme Design

Figure 5.10 illustrates the indicative scheme design for Route Option 1 as well as locations of indicative cross-sections.

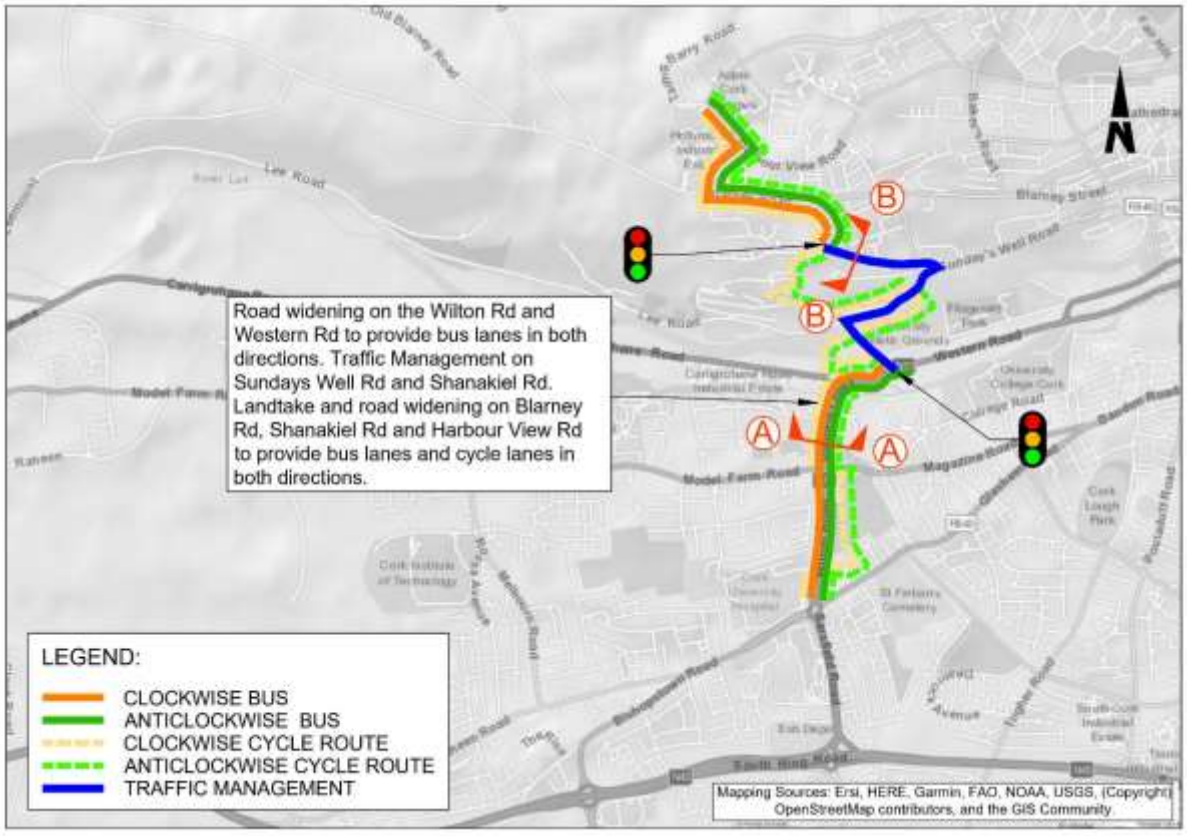


Figure 5.10 Route Option 1 Indicative Scheme Design

Bus lanes will be provided in both directions from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue and from the junction of Victoria Cross Road and Western Road to the Wilton Roundabout. Where bus lanes can not be provided between Shanakiel Road / Beech Tree Avenue junction and Western Road / Victoria Cross Road junction advanced signals for busses will be provided to give priority for busses through the junctions.

Segregated cycle lanes will be provided from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue. A quiteway cycle route through St Kevins Residential Development and Rose Hill Upper will connect cyclists to a proposed cycle and pedestrian bridge between Sunday's Well road and The Mardyke. Cyclists will connect to the segregated cycle lanes at Victoria Cross via the existing Lee Fields Greenway.

At Dennehy's Cross, cyclists will travel southbound via a new off road pedestrian and cycle route along the western boundary of the Presentation Brothers Sports Fields before connecting back to the Wilton Road and the Glasheen Road via Liam Lynch.

A cross-section of Wilton Road is presented in Figure 5.11.

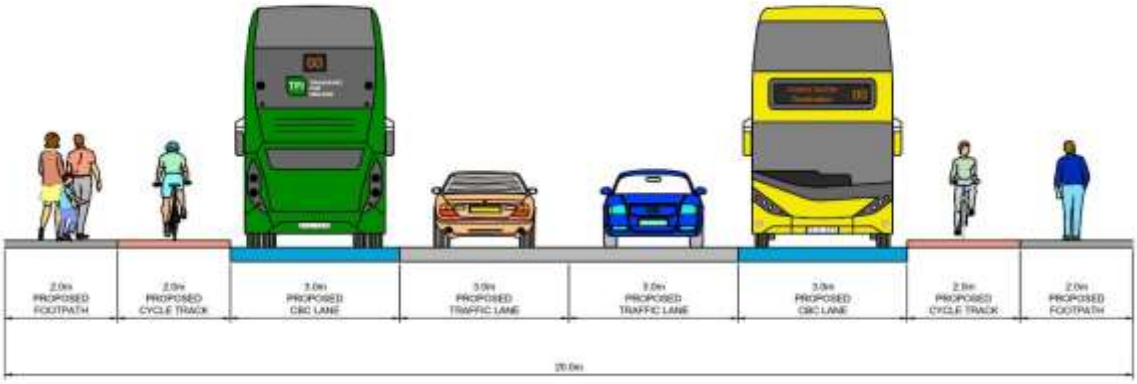


Figure 5.11 Typical Full Priority Cross Section (A - A)

A cross-section of Shanakiel Road is presented in Figure 5.12.

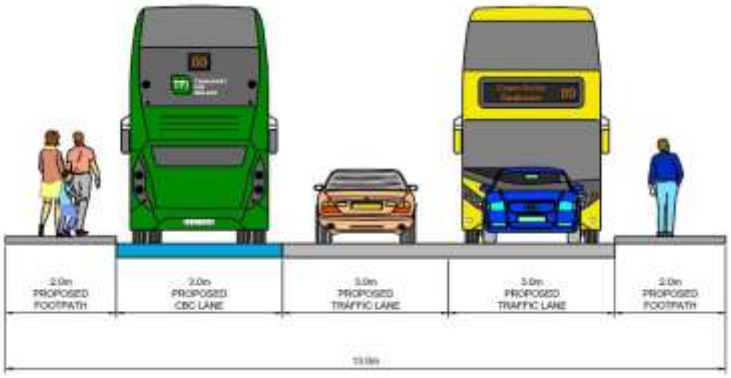


Figure 5.12 Typical Single Bus Lane Cross Section (B - B)

Between the Wilton Road Roundabout and Dennehys Cross the existing gradients to properties adjoining Wilton Road are a constraint to the cross section that it is possible to provide on Wilton Road. For this reason a number of alternative cycle routes where considered to provide for cycling between the Wilton Road Roundabout and Dennehys Corss on the Wilton Road.

Route Option 2

Route Description

Route Option 2 is presented in Figure 5.13.

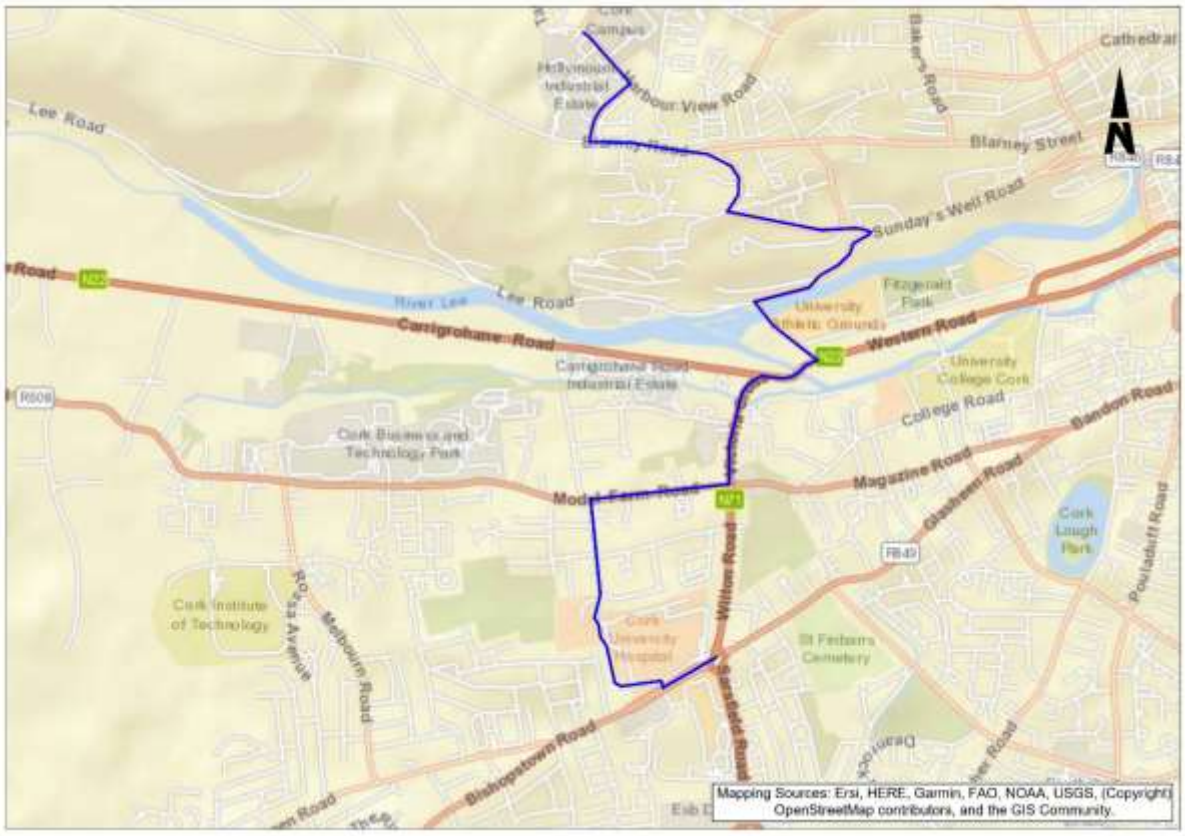


Figure 5.13 Route Option 2 (shown in blue line)

Southbound: Route Option 2 commences at the entrance to Apple Hollyhill off Harbour View Road, from here the bus travels along the Harbour View Road to the junction with Blarney Road where it turns left. The bus then continues on Blarney Road eastbound until it vears right onto Shanakiel Road travelling southwest until the junction with Sunday's Well Road. The bus then turns right along Sunday's Well Road before turning left at the junction with Lee Road across the bridge onto Western Road.

The bus then turns right at the junction of Western Road and Victoria Cross Road. From here the bus travels south to Dennehy's Cross where it turns right onto the Model Farm Road. At the junction of the Model Farm Road and Bishopstown Avenue the bus turns left along Bishopstown Avenue to the northern entrance to the CUH car park.

Bus only through traffic will be permitted through the hospital internal roads to the Bishopstown Road / CUH junction. The bus will turn left at the junction and travel via Bishopstown Road to the Wilton Roundabout junction.

Northbound: The northbound route follows the same route as the southbound route.

Indicative Scheme Design

Figure 5.14 illustrates the indicative scheme design for Option 2 as well as locations of indicative cross-sections.

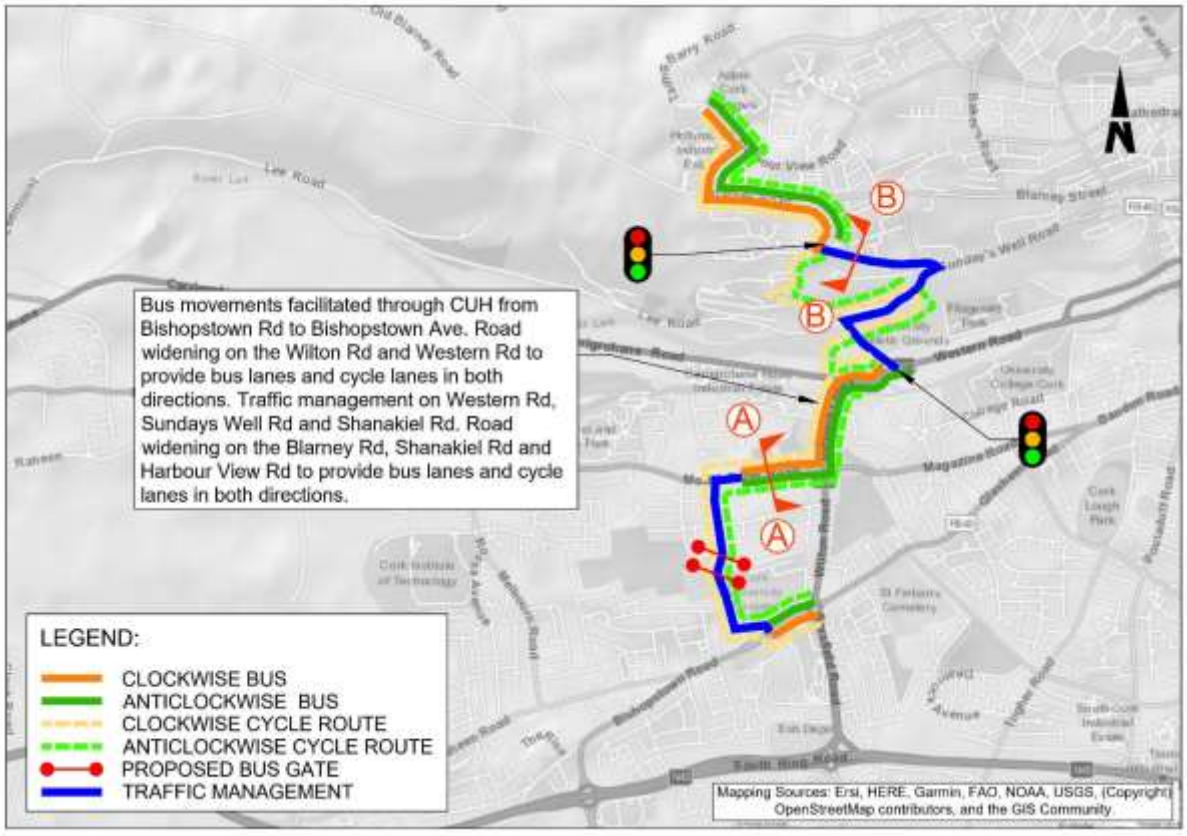


Figure 5.14 Route Option 2 Indicative Scheme Design

Bus lanes will be provided in both directions from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue, from the junction of Victoria Cross Road and Western Road to the junction of Model Farm Road and Bishopstown Road.

Where bus lanes are not possible between Shanakiel Road / Beech Tree Avenue junction and Western Road / Victoria Cross Road junction traffic signals will provide bus priority through the junctions. A bus gate will be provided within CUH to prioritise bus through traffic.

Segregated cycle lanes will be provided from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue. A quiteway cycle route through St Kevins Residential Development and Rose Hill Upper will connect cyclists to a proposed cycle and pedestrian bridge between Sunday's Well road and the Mardyke.

A cross-section of Model Farm Road is presented in Figure 5.15.

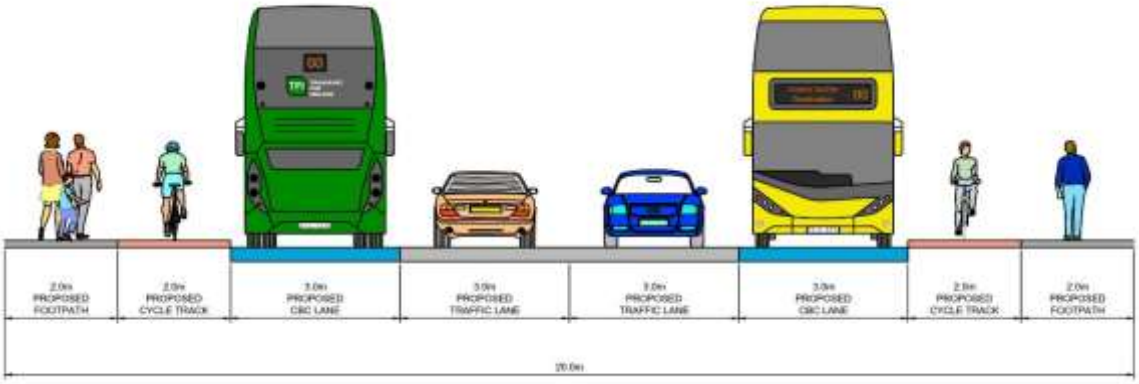


Figure 5.15 Typical Full Priority Cross Section (A - A)

A cross-section of Shanakiel Road is presented in Figure 5.16.

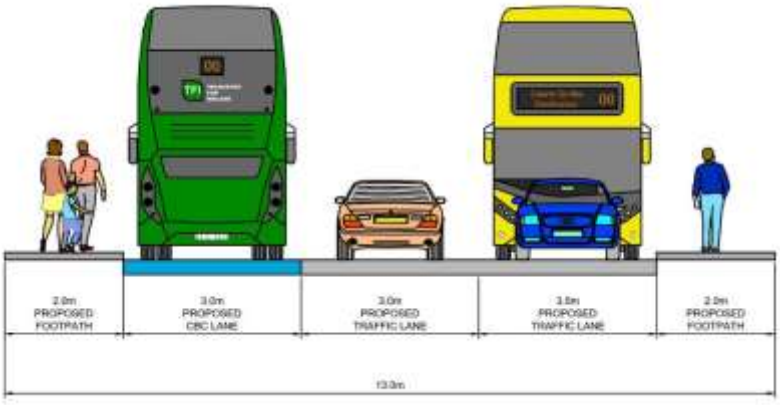


Figure 5.16 Typical Single Bus Lane Cross Section (B – B)

Route Option 3

Route Description

Route Option 3 is presented in Figure 5.17.

Figure 5.17 Route Option 3 (shown in blue line)

Southbound: Route Option 3 commences at the entrance to Apple Hollyhill off Harbour View Road, from here the bus travels along Harbour View Road to the junction with Blarney Road where it turns left. The bus then continues on Blarney Road eastbound until it vears right onto Shanakiel Road travelling southwest until the junction with Sunday's Well Road. The bus then turns right along Sunday's Well Road before turning left at the junction with Lee Road across the bridge onto Western Road.

The bus then turns right at the junction of Western Road and Victoria Cross Road. From here the bus travels south to Dennehy's Cross where it turns right onto Model Farm Road. At the junction of the Model Farm Road and Rossa Avenue the bus turns left along Rossa Avenue to the junction of Melbourn Road and Curraheen Road. The bus then turns left and travels eastbound to the Wilton Roundabout junction via Curraheen Road and Bishopstown Road.

Northbound: The northbound route follows the same route as the southbound route.

Indicative Scheme Design

Figure 5.18 illustrates the indicative scheme design for route Option 3 as well as locations of indicative cross-sections.

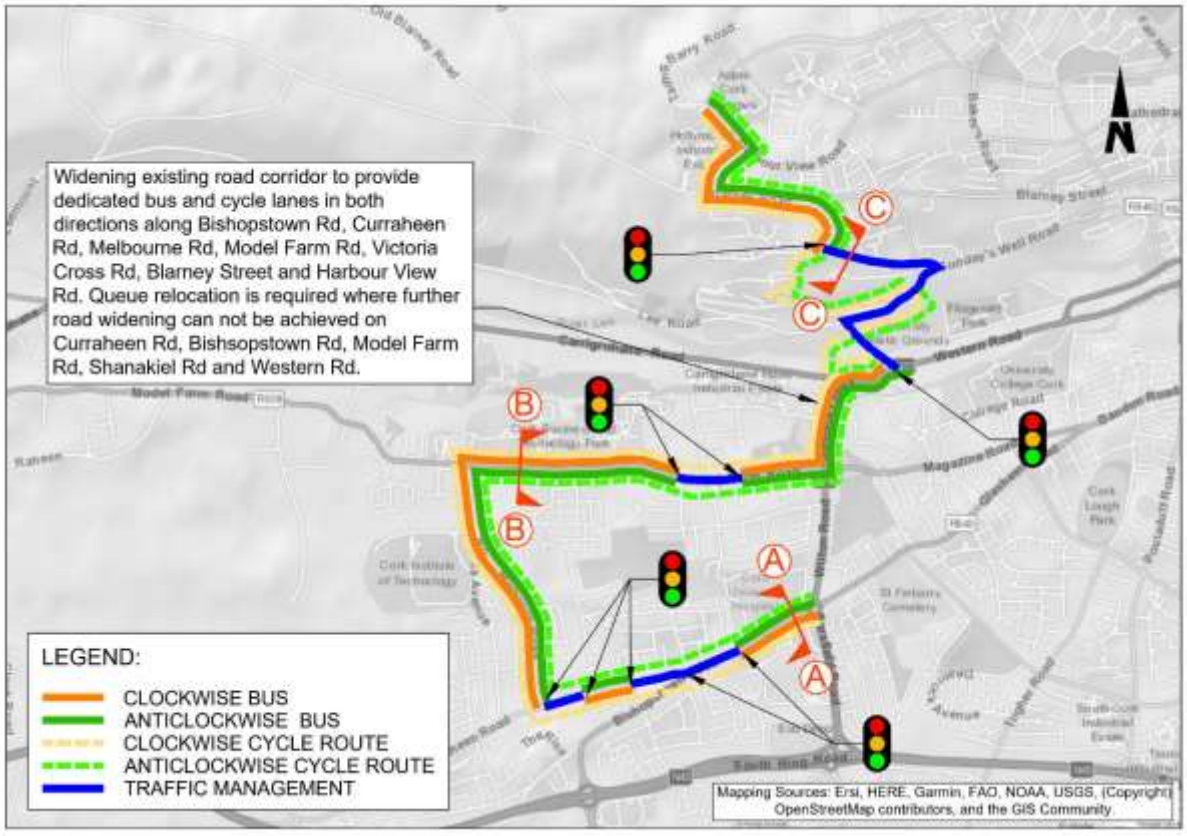


Figure 5.18 Route Option 3 Indicative Scheme Design

Bus lanes will be provided in both directions from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue, from the junction of Victoria Cross Road and Western Road to the junction of Melbourn Road and Curraheen Road.

Where bus lanes cannot be provided (due to signficant topographical constraints) between Shanakiel Road / Beech Tree Avenue junction and Western Road / Victoria Cross Road junction traffic signals will be provided to provide bus priority through the junctions. A short section of traffic management on Model Farm Road is required to ensure bus priority through a pinch point on the road. A series of traffic management interventions with traffic signals are required on Curraheen Road and Bishopstown Road to provide bus priority between the Melbourn Road and Curraheen Road junction and the Wilton Road Roundabout.

Cycle tracks will be provided from Harbour View Road to the junction of Shanakiel Road and Beech Tree Avenue. A quiteway cycle route through St Kevins Residential Development and Rose Hill Upper will connect cyclists to a proposed cycle and pedestrian bridge between Sunday's Well road and The Mardyke. Cyclists will connect to the cycle tracks at Victoria Cross via the existing Lee Fields Greenway.

Cycle tracks will be provided for the remainder of the route from Victoria Cross to the Wilton Roundabout via Victoria Cross Road, Model Farm Road, Rossa Avenue, Melbourn Road, Curraheen Road and the Bishopstown Road.

A cross-section of Bishopstown Road and Model Farm Road is presented in Figure 5.19.

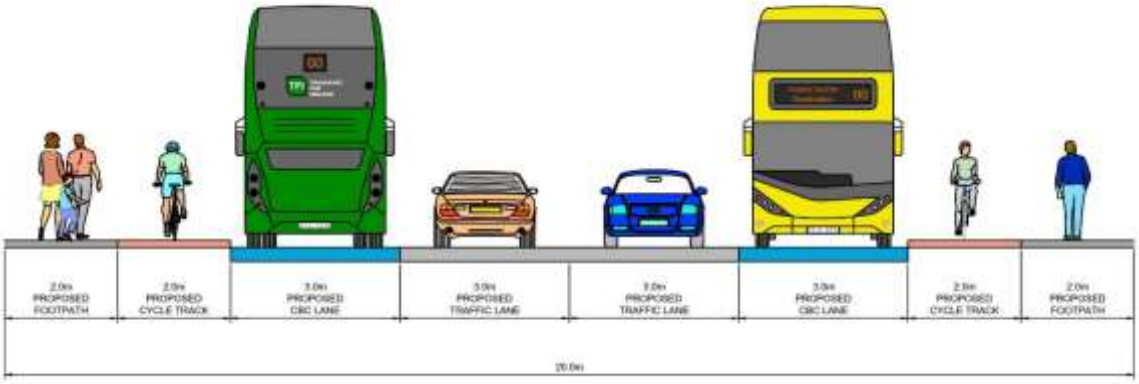


Figure 5.19 Typical Full Priority Cross Section (A – A & B - B)

A cross-section of Shanakiel Road is presented in Figure 5.20.

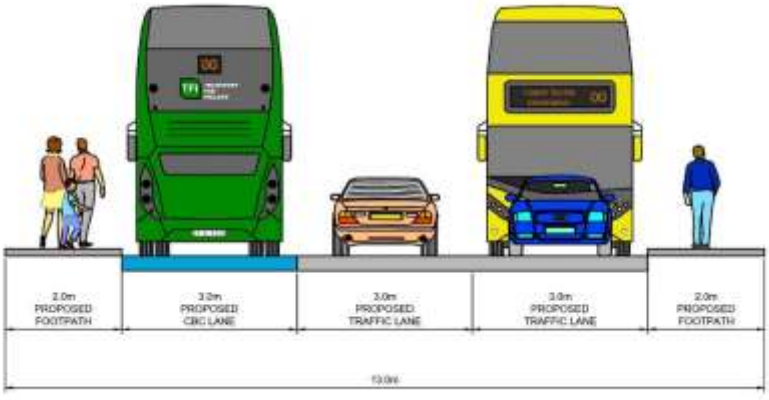


Figure 5.20 Typical Single Bus Lane Cross Section (C – C)

Route Option 4

Route Description

Route Option 4 is presented in Figure 5.21.

Figure 5.21 Route Option 4

Southbound: Route Option 4 commences at the entrance to Apple Hollyhill off Harbour View Road, from here the bus travels south along the proposed Northern Distributor Road, across the River Lee to the junction with Carrigrohane Road. The bus then turns left onto Carrigrohane Road, before turning right to get onto Model Farm Road via Inchigaggin Lane.

The bus then travels eastbound on the Model Farm Road turning right at Rossa Avenue to the junction of Melbourn Road and Curraheen Road. The bus then turns left and travels eastbound to the Wilton Roundabout junction via Curraheen Road and Bishopstown Road.

Northbound: The northbound route follows the same route as the southbound routing.

Indicative Scheme Design

Figure 5.22 illustrates the indicative scheme design for Route Option 4 as well as locations of indicative cross-sections.

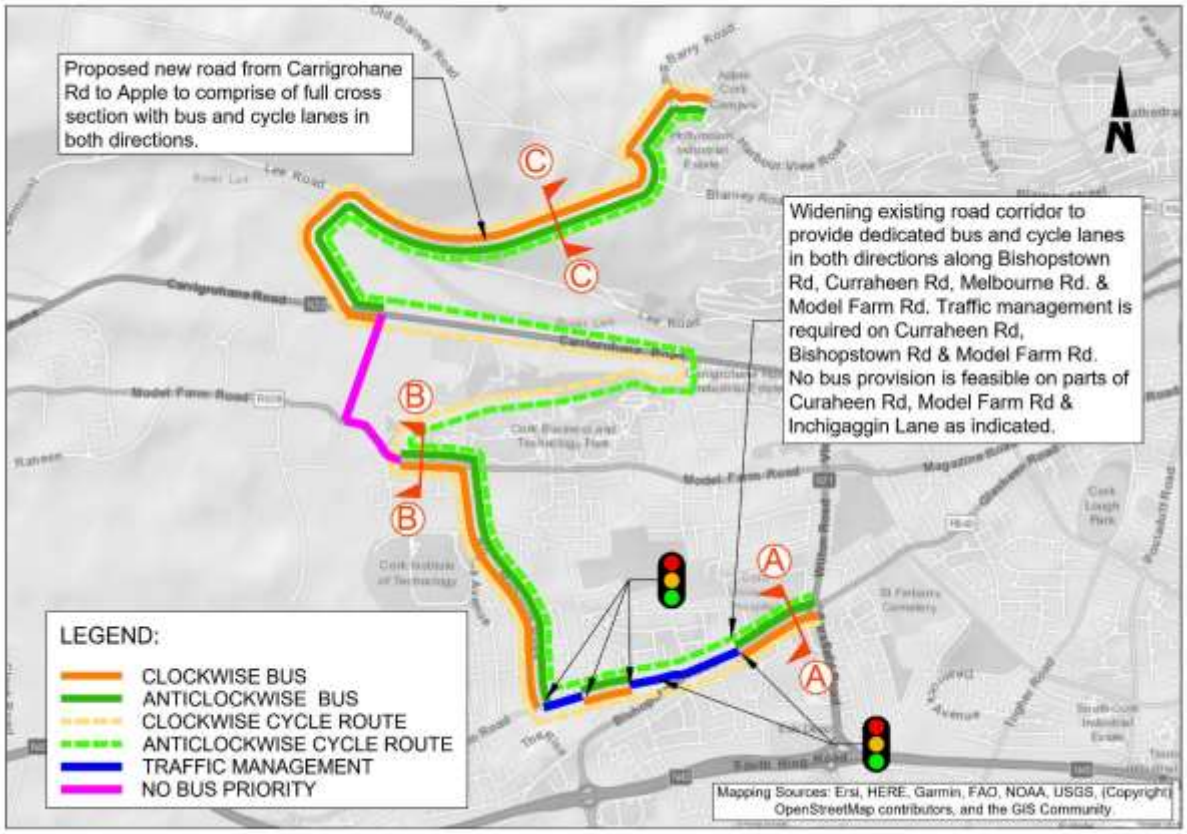


Figure 5.22 Route Option 4 Indicative Scheme Design

Bus lanes will be provided on the proposed Northern Distributor Road from Harbour View Road to Carrigrohane Road. No bus provision is proposed on Inchigaggin Lane due to constraints (landscape preservation zone) which may restrict the potential road widening. Bus lanes will be provided on Model Farm Road, Rossa Avenue and Melbourne Road.

A series of traffic management interventions with traffic signals are to be provided on the Curraheen Road and Bishopstown Road to provide bus priority between the Melbourn Road and Curraheen Road junction and Wilton Road Roundabout.

Cycle tracks will be provided on the Northern Distributor Road and Carrigrohane Road. There are no cycle lanes proposed on Inchigaggin Lane due to constraints which limit the potential for road widening. An alternative cycle route is available from the Carrigrohane Road to the Model Farm Road via the Curraheen Greenway.

Cycle tracks will be provided for the remainder of the route from Model Farm Road to the Wilton Roundabout via Model Farm Road, Rossa Avenue, Melbourn Road, Curraheen Road and the Bishopstown Road.

A typical cross-section of Bishopstown Road and Model Farm Road and the Northern Distributor Road is presented in Figure 5.23.

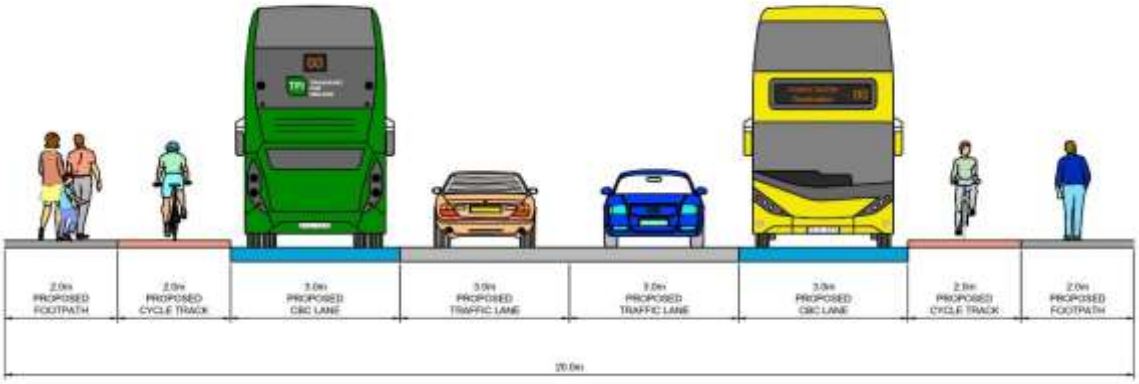


Figure 5.23 Typical Full Priority Cross Section (A - A, B - B, C - C)

Route Option 5

Route Description

Route Option 5 is presented in Figure 5.24.

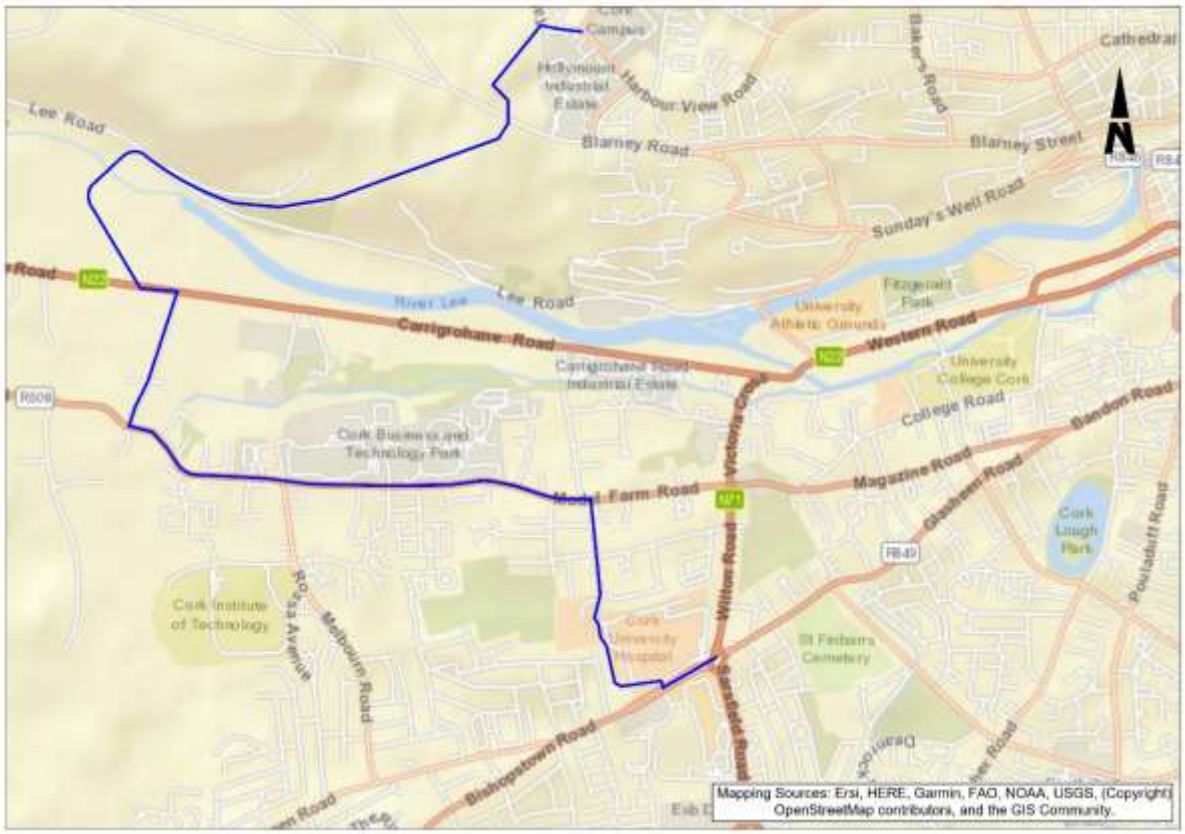


Figure 5.24 Route Option 5 (Shown in blue line)

Southbound: Route Option 5 commences at the entrance to Apple Hollyhill off Harbour View Road, from here the bus travels south along the proposed Northern Distributor Road, across the River Lee to the junction with the Carrigrohane Road. The bus then turns left onto Carrigrohane Road, before turning right to get onto Model Farm Road via Inchigaggin Lane. The bus then travels eastbound on Model Farm Road.

At the junction of Model Farm Road and Bishopstown Avenue the bus turns right along Bishopstown Avenue to the northern entrance to the CUH car park. Bus only through traffic will be permitted through the hospital internal roads to the Bishopstown Road / CUH junction. The bus will turn left at the junction and travel via Bishopstown Road to the Wilton Roundabout junction.

Northbound: The northbound route follows the same route as the southbound routing.

Indicative Scheme Design

Figure 5.25 illustrates the indicative scheme design for Route Option 5 as well as locations of indicative cross-sections.

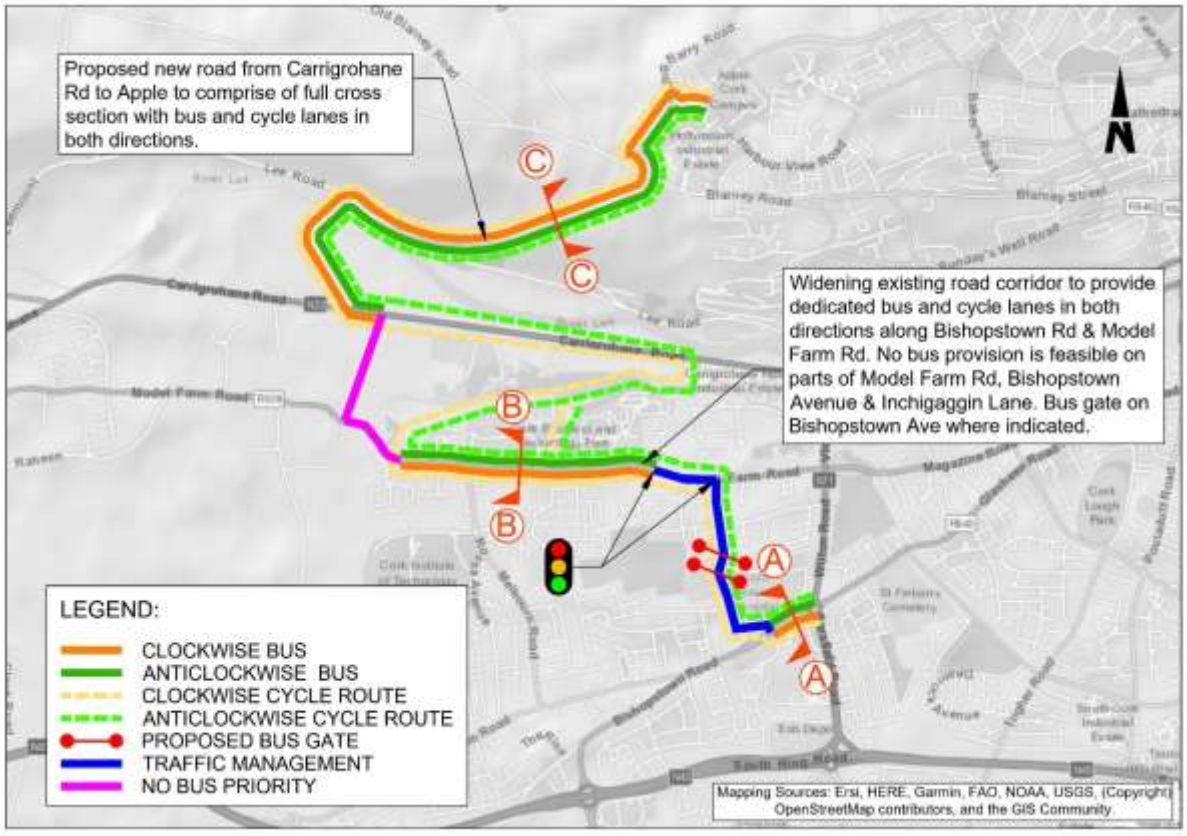


Figure 5.25 Route Option 5 Indicative Scheme Design

Bus lanes will be provided on the proposed Northern Distributor Road from Harbour View Road to Carrigrohane Road. No bus provision will be provided on Inchigaggin Lane due to constraints which limit road widening. Bus lanes will be provided on Model Farm Road with a short section of traffic management where the provision of bus lanes is restricted due to existing constraints.

A bus gate will be provided within CUH to prioritise bus through traffic. Bus lanes will be provided on Bishopstown Road between the CUH junction and the Wilton Roundabout.

Cycle tracks will be provided on the Northern Distributor Road and Carrigrohane Road. There are no cycle lanes proposed on Inchigaggin Lane due to constraints which limit the potential for road widening. An alternative cycle route is available from Carrigrohane Road to Model Farm Road via the Curraheen Greenway.

Cycle tracks will be provided along Model Farm Road and cyclists will be permitted through the CUH to connect from Model Farm Road to the Bishopstown Road.

A typical cross-section of Bishopstown Road and Model Farm Road and the Northern Distributor Road is presented in is presented in Figure 5.26.

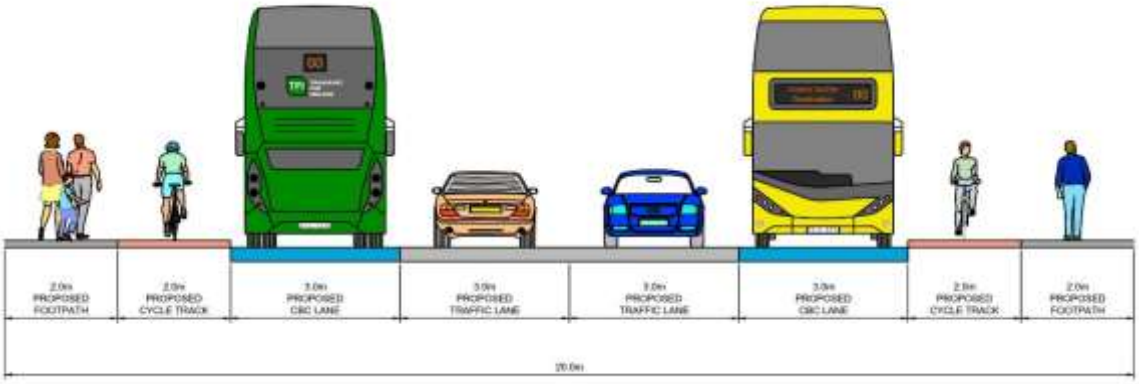


Figure 5.26 Typical Full Priority Cross Section (A – A, B – B, C – C)

Route Option 6

Route Description

Route Option 6 is presented in Figure 5.27 and described as follows.

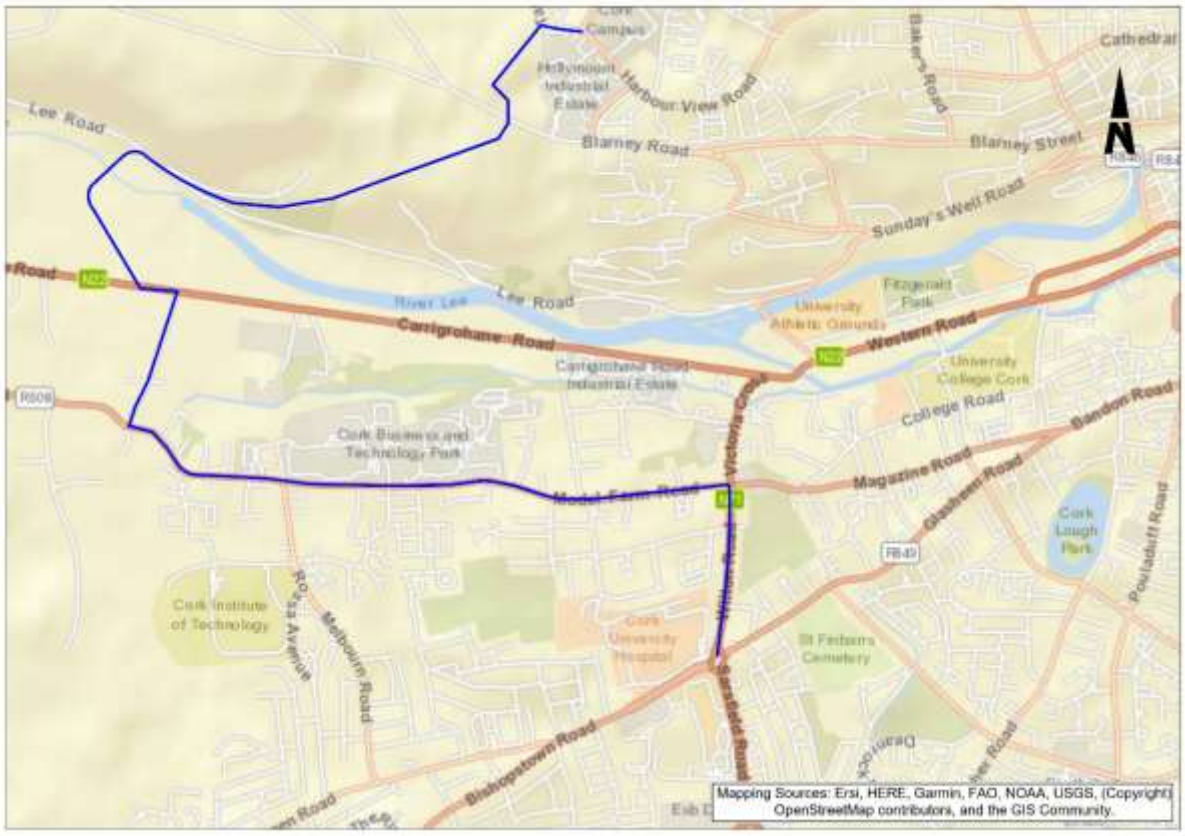


Figure 5.27 Route Option 6

Southbound: Route Option 6 commences at the entrance to Apple Hollyhill off Harbour View Road, from here the bus travels south along the proposed Northern Distributor Road, across the River Lee to the junction with Carrigrohane Road. The bus then turns left onto Carrigrohane Road, before turning right onto Model Farm Road via Inchigaggin Lane. The bus then travels eastbound on the Model Farm Road to Dennehy's Cross. At Dennehy's Cross the bus turns right onto Wilton Road to the Wilton Roundabout junction.

Northbound: The northbound route follows the same route as the southbound routing.

Indicative Scheme Design

Figure 5.28 illustrates the indicative scheme design for Route Option 6 as well as locations of indicative cross-sections.

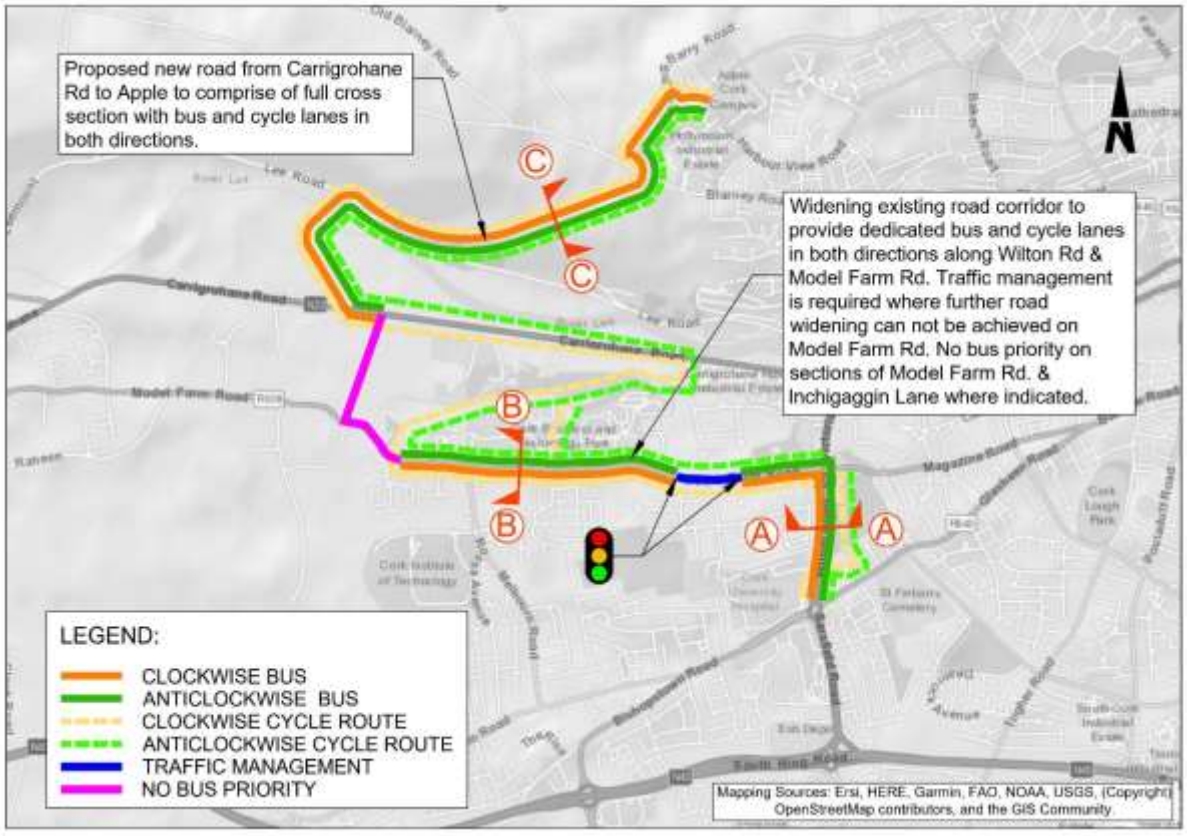


Figure 5.28 Route Option 6 Indicative Scheme Design

Bus lanes will be provided on the proposed Northern Distributor Road from Harbour View Road to Carrigrohane Road. No bus provision will be provided on Inchigaggin Lane due to constraints which limit road widening. Bus lanes will be provided on Model Farm Road with a short section of traffic management where the provision of bus lanes is restricted due to existing constraints.

Bus lanes will be provided on Wilton Road connecting Dennehy's Cross to Wilton Roundabout. Cycle tracks will be provided on the Northern Distributor Road and Carrigrohane Road. There are no cycle lanes proposed on Inchigaggin Lane due to constraints which limit the potential for road widening. An alternative cycle route is available from Carrigrohane Road to Model Farm Road via the Curraheen Greenway.

Cycle tracks will be provided along Model Farm Road and Wilton Road to Wilton Roundabout.

A cross-section of Wilton Road is presented in Figure 5.29.

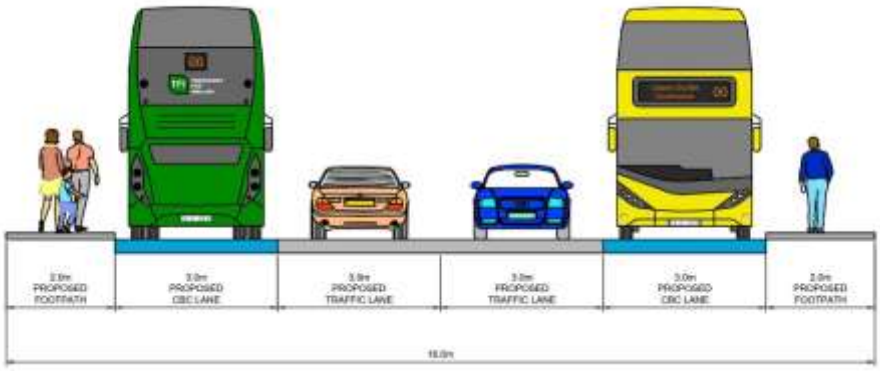


Figure 5.29 Typical Cross Section without Cycle Facilities (A - A)

A cross-section of Model Farm Road and the Northern Distributor Road is presented in Figure 5.30.

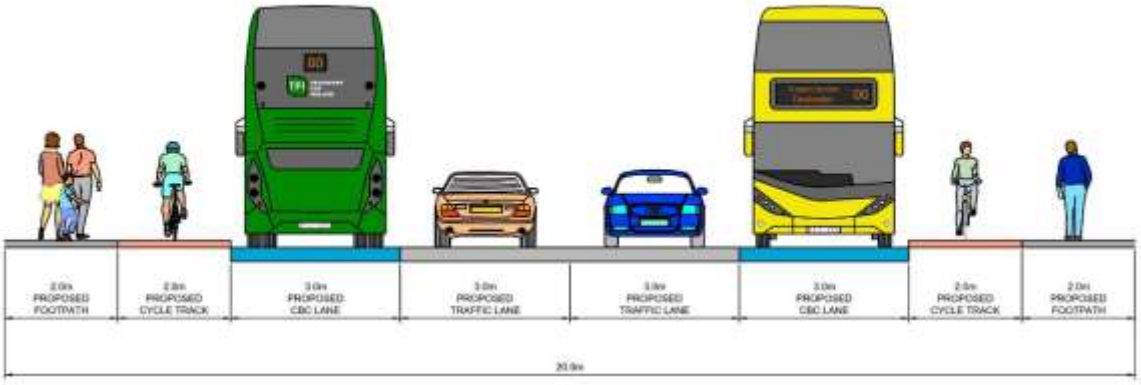


Figure 5.30 Typical Full Priority Cross Section (B – B & C – C)

5.5 Stage 2 Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Orbital STC are presented in Appendix 2.10. A summary of the ranking of route options against the scheme sub-criteria is presented in Table 5.2 below.

Table 5.2 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Economy	Capital Cost						
	Average Journey Time						
	Journey Time Reliability						
Integration	Land Use Integration						
	Residential and Employment Catchments						
	Transport Integration						
	Cyclist Integration						
	Pedestrian Integration						
Accessibility and Social Inclusion	Key Trip Attractors						
	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 Capital Cost, Option 1 and Option 2 are considered to have advantages over the other options. The main reason behind this is the construction cost of the Northern Distributor Road in the other options.

Option 1 has significant advantages in journey time. As Option 1 is the most direct route between Apple and CUH this option has the shortest journey time.

Options 1, 2 and 3 score higher in terms of integration as these three routes are using existing roads through more dense setting, picking up more catchment area. These options provide more cycle routes identified in the Cork Metropolitan Area Transport Study than Options 4, 5 and 6.

Options 1, 2 and 3 have advantages in terms of Accessibility and Social Inclusion as they provide accessibility to deprived demographic areas. Options 1,2 and 3 also connnect more key trip attractors than the other options.

Options 1, 2 and 3 have advantages in relation to the environment criterion as they mainly use existing roads. Option 1 and 2 have advantages from a soils and geology, water resources, noise, vibration and air quality as they involve existing roads. Options 4, 5 and 6 require a new vehicular bridge spanning the River Lee which has significant disadvantages from an environmental perspective.

5.6 Conclusion

A summary of the assessment is shown in Table 5.3 below.

Table 5.3 Route Options Assessment Summary (Main Criteria)

Assessment Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Economy						
Integration						
Accessibility and Social Inclusion						
Safety						
Environment						

Based on the above assessments it has been determined that Route Option 1 is the emerging preferred route option for the following reasons.

- Option 1 has significant advantages over the other options on economy. It is the shortest and most direct route so has advantages from a cost, journey time and reliability perspective.
- Option 1 has advantages from an integration perspective as it provides for integration with district centres at Wilton, Dennehys Cross and Victoria Cross. It has a larger catchment than Options 4, 5 and 6 which are more rural with a less dense population.
- Option 1 has advantages on accessibility and social inclusion criterion as it serves key trip attractors such as Cork University Hospital, Wilton Shopping Centre, Presentation College Sports Grounds, Marydyke Sports Grounds, Bons Secours Hospital, and Hollyhill Industrial Estate. Option 1 also passes through a deprived geographical area.
- Option 1 has significant advantages under the environmental criterion as it mainly uses the existing road network and therefore has advantages over the other options with respect to the potential impact on soils and geology, biodiversity and water resources.

Option 1 is identified as the emerging preferred option for this section.

6. North West Sector

6.1 Introduction

This chapter outlines the options assessment process for the North West Sector (Hollyhill to Blackpool). The North West sector travels from Hollyhill in the West to Blackpool in the east. The study area is shown below in Figure 6.1.

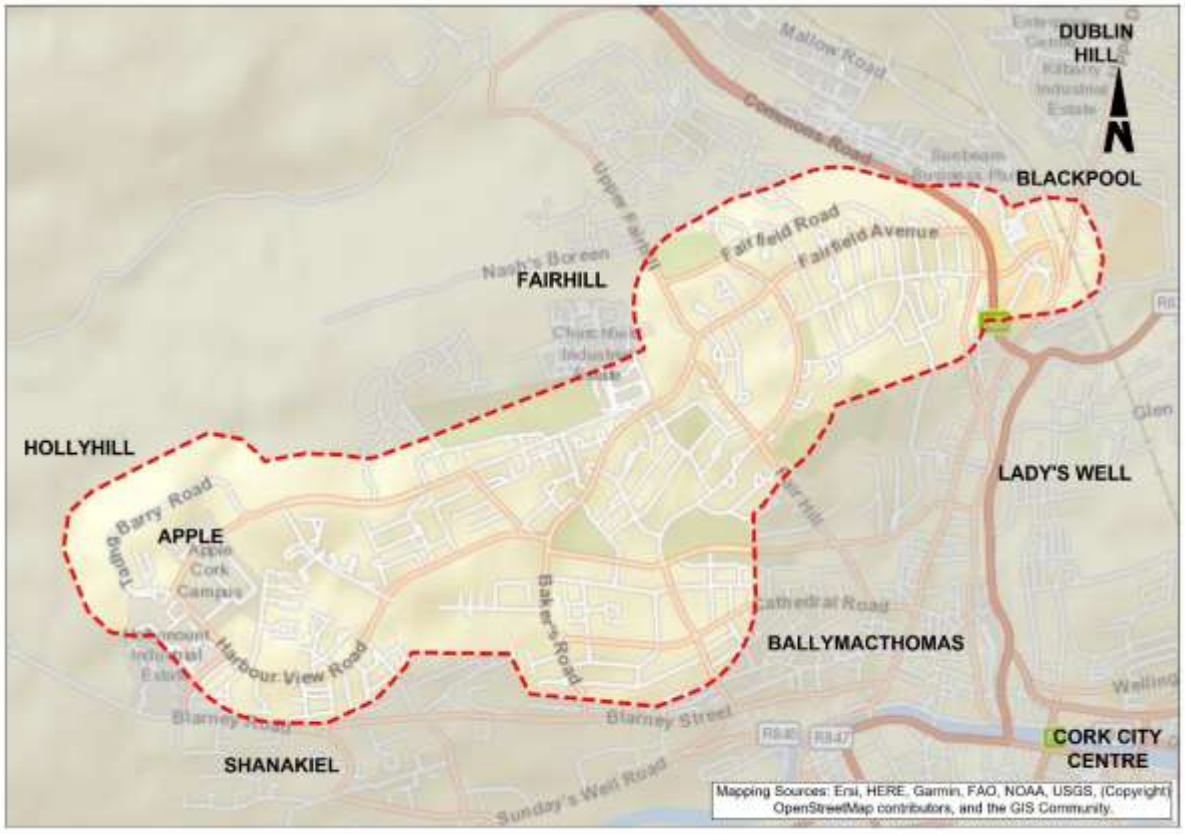


Figure 6.1 North West Sector Study Area

The North West sector is divided into sections as shown in Figure 6.2 below so that options can be presented. Section 1 covers the area from Hollyhill to Fairhill and Section 2 covers the area from Fairhill to Blackpool Shopping Centre.

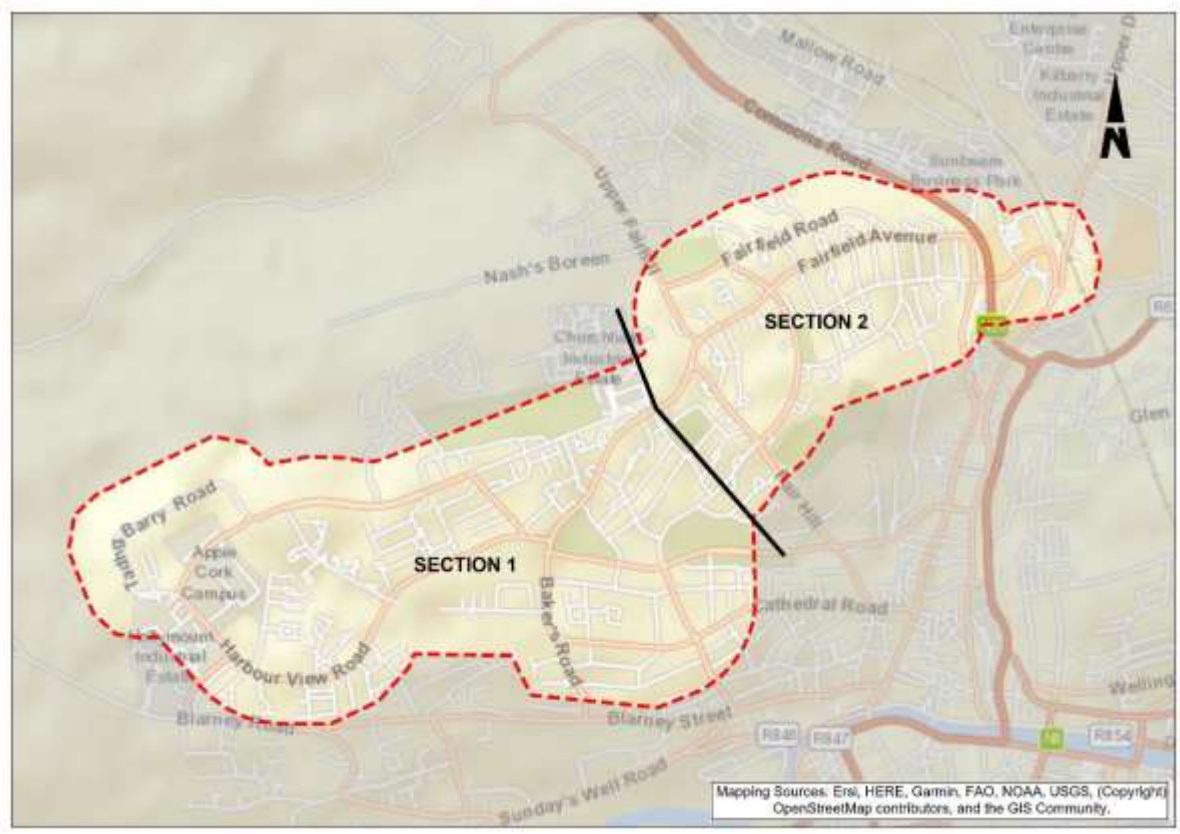


Figure 6.2 Study Area Sections

6.2 Stage 1 Options Assessment – Section 1

Links within Section 1 that are subject to Stage 1 assessment are shown in Figure 6.3.

Figure 6.3 North West Section 1 Links

The Stage 1 assessment for Section 1 is provided in Appendix A.3.

6.2 Stage 1 Options Assessment – Section 2

Links within Section 2 that are subject to Stage 1 options assessment are shown in Figure 6.4.

Figure 6.4 North West Section 2 Links

The Stage 1 assessment for Section 2 is provided in Appendix A.4. The outcome of the assessment can be seen in Figure 6.5 below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

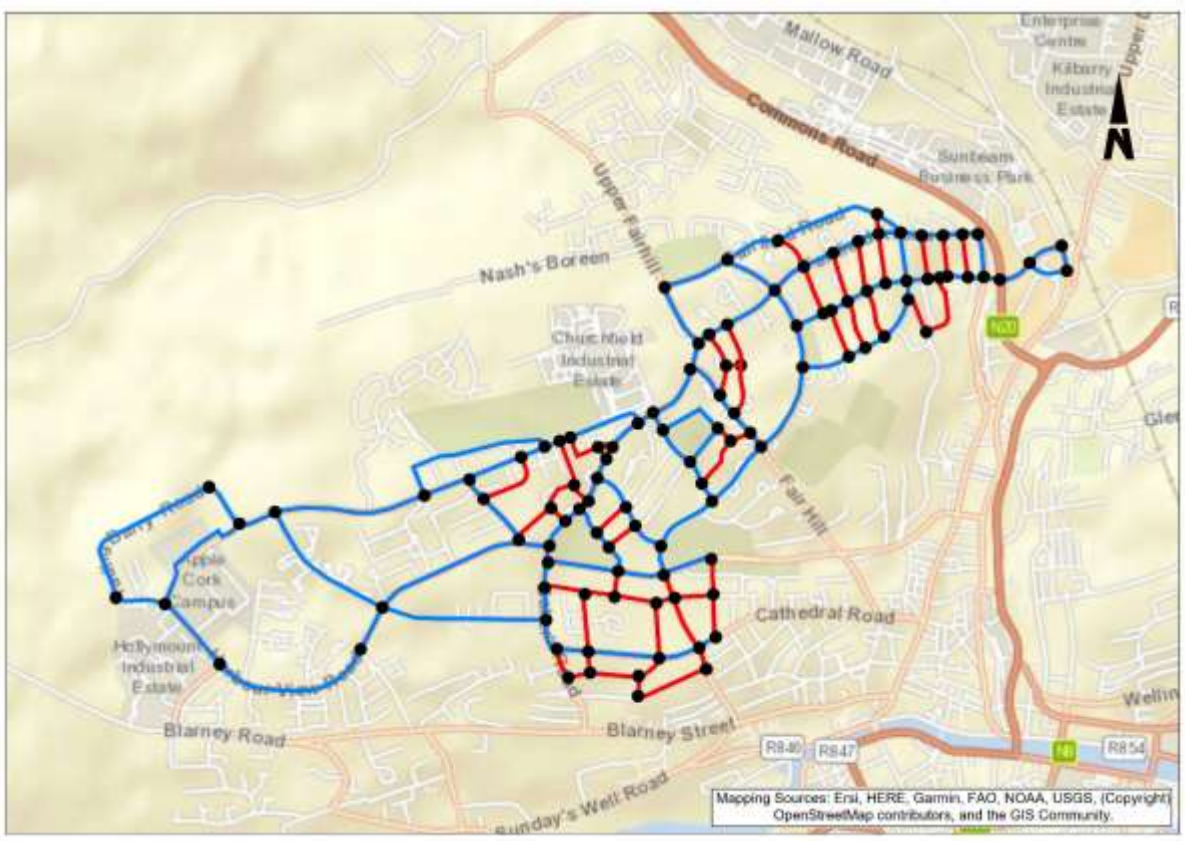


Figure 6.5 Sifting Assessment

A preliminary route assessment process was then performed to identify routes that were circuitous in nature, dead ends or disconnected such could then be removed. A summary of the preliminary route assessment process is presented in the table below.

Table 6.1 Preliminary Route Assessment

Road Names	Comments	Map
Fairfield Road	All route options using this road have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	
Dunmore Gardens	All route options using these roads have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

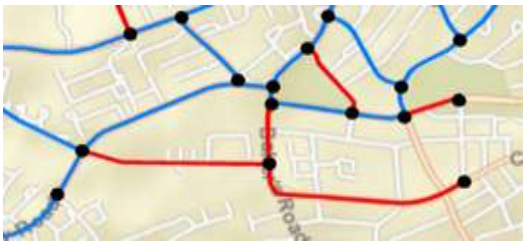
Proposed Road through St. Mary's Hospital, Baker's Road, Churchfield Way Lower.	All route options using this road have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	
Bantry Park Road, Fairhill	All route options using this road have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Figure 6.6 below shows links in red which have been identified as dead ends, disconnected or overly circuitous. The links shown in blue are to be brought forward for further assessment.

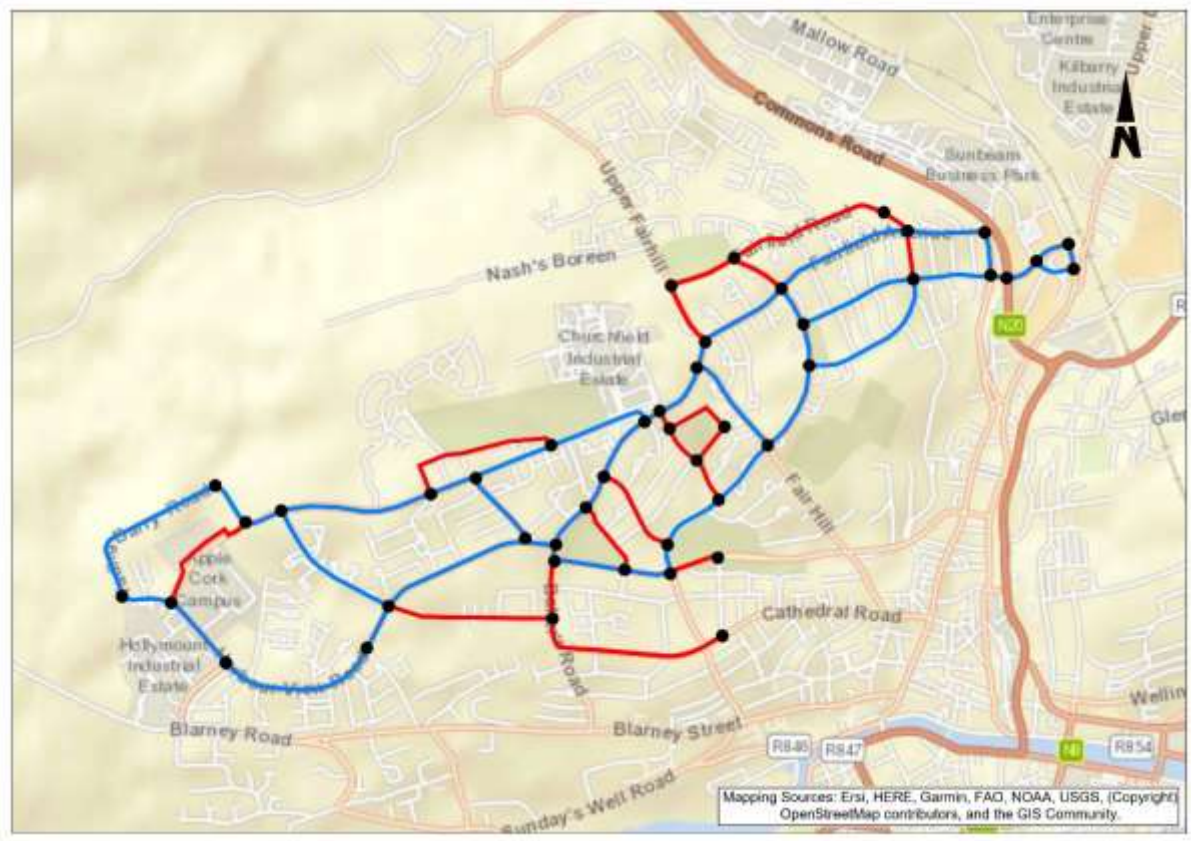


Figure 6.6 Removal of dead ends, disconnected or overly circuitous links

The figure below shows the final spiders web of links that will be bought forward for Stage 2 assessment.

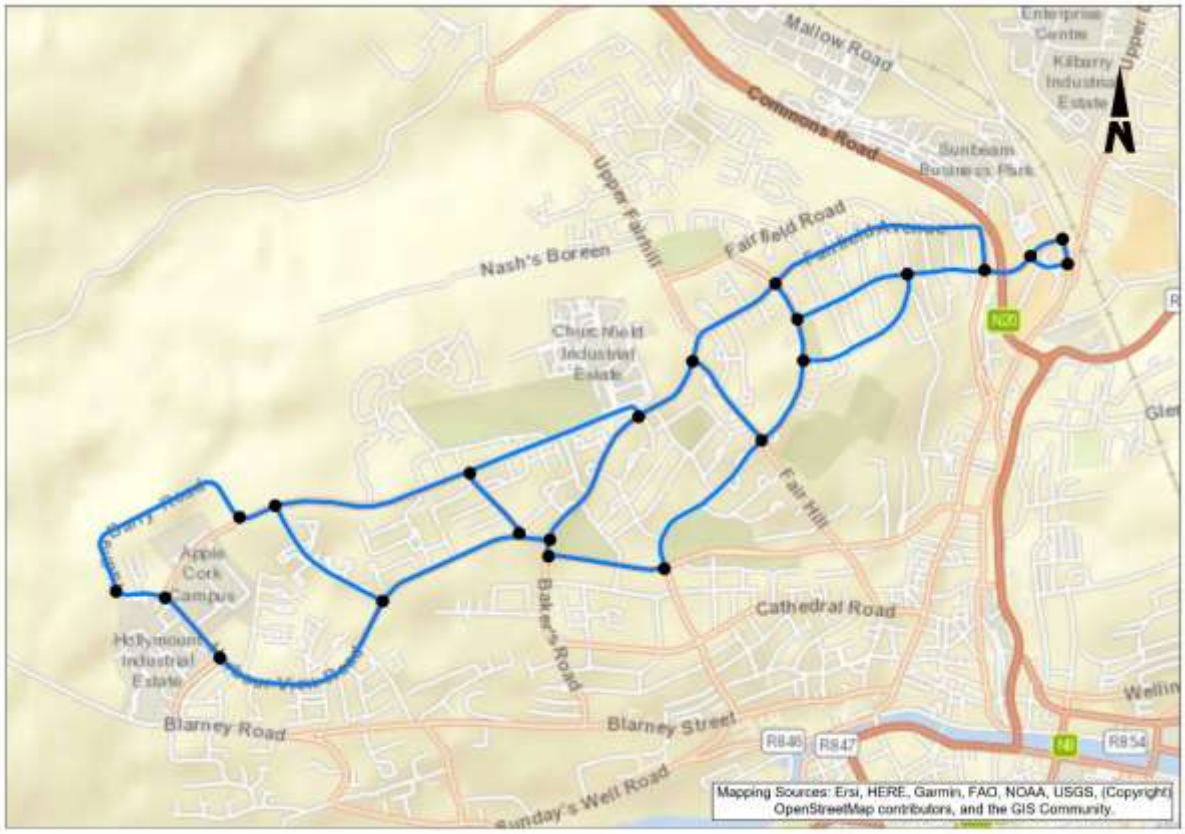


Figure 6.7 Spiders Web for Stage 2 Assessment

6.3 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 6.8. The number of route options are significant is this area so to perform a manageable assessment it is proposed to assess the route options to point G from the west and east and the route options to point J from the west and east. The best options are then brought together to undertake an end-to-end assessment:

Options from West to Point G:

- Option 1-1: (A, A1, B, C, E, F, H, G)
- Option 1-2: (A, A1, B, D, E, F, H, G)
- Option 1-3: (A, C, E, F, H, G)
- Option 1-4: (A, A1, B, D, H, G)

Options from West to Point J:

- Option 2-1: (A, C, E, F, I, J)
- Option 2-2: (A, A1, B, C, E, F, I, J)
- Option 2-3: (A, A1, B, D, E, F, I, J)

Options from East to Point G

- Option 3-1: (G, L, P, Q)
- Option 3-2: (G, L, M, O, P, Q)
- Option 3-3: (G, K, N, O, P, Q)
- Option 3-4: (G, K, N, M, O, P, Q)

Options from East to Point J:

- Option 4-1: (J, K, N, O, P, Q)
- Option 4-2: (J, K, N, M, O, P, Q)
- Option 4-3: (J, K, G, L, P, Q)
- Option 4-4: (J, K, G, L, M, O, P, Q)

Figure 6.8 Links for Stage 2 Assessment

Route Option 1-1

Route Description

Route Option 1-1 is presented in Figure 6.9 and described as follows.

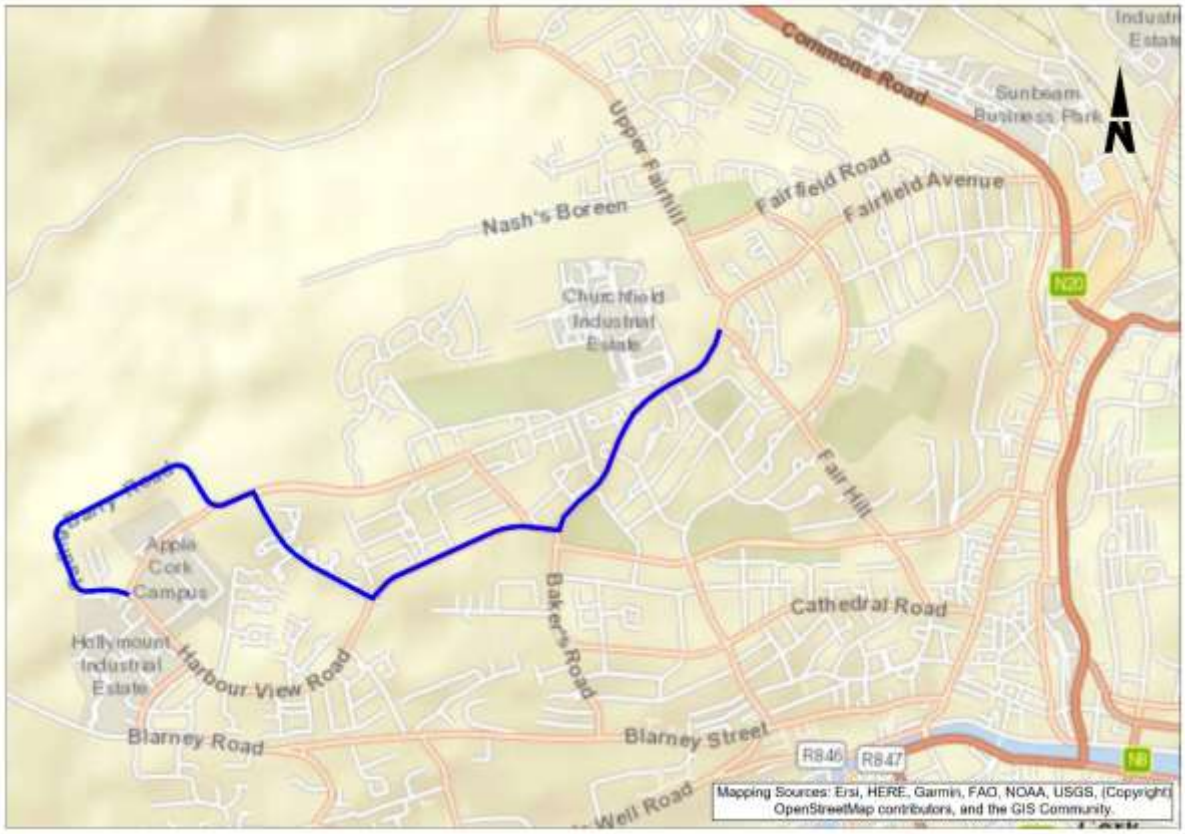


Figure 6.9 Route Option 1-1 (shown in blue)

Eastbound: Route Option 1-1 commences at the entrance to Apple on Tadhg Barry Road, from here the bus travels along St. Anthony's Park to the junction at David McCarthy Road and Courtown Drive. From here the bus travels down Courtown Drive, along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route proceeds along Churchfield Avenue to the junction at Fair Hill.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.10 illustrates the indicative scheme design for Route Option 1-1 as well as locations of indicative cross-sections.

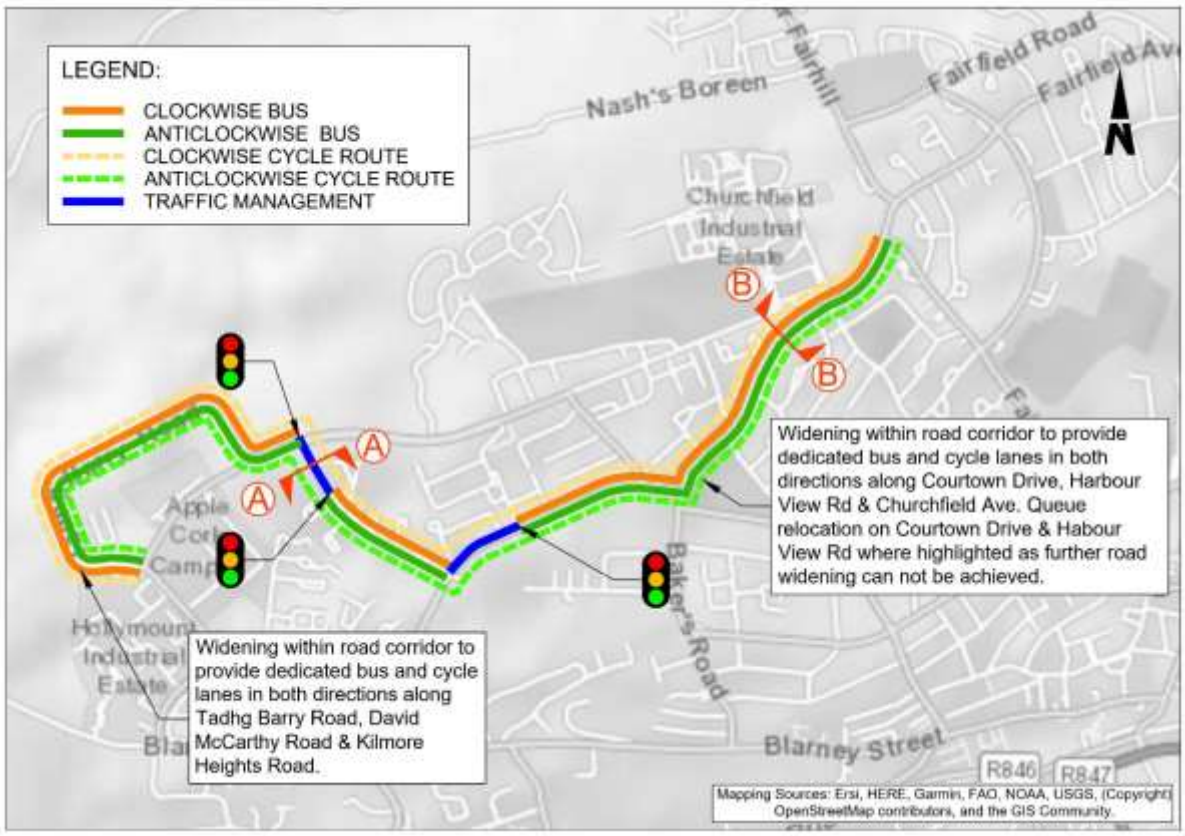


Figure 6.10 Route Option 1-1 Indicative Scheme Design

Bus lanes will be provided in both direction from the entrance of Apple on Tadgh Barry Road to the junction at David McCarthy Road and Courtown Drive to Harbour View Road proceeding then to Churchfield Avenue. Traffic signals will be provided to give bus priority through Courtown Drive and Harbour View Road. Bus lanes will then be provided, from Harbour View along Churchfield Avenue to the junction at Mount Agnes Road and Upper Fair Hill.

Cycle tracks will be provided from from David McCarthy Road, along Courtown Drive and on to Harbour View Road, Churchfield Avenue to the junction at Mount Agnes Road and Upper Fair Hill.

A cross-section of Courtown Drive is presented in Figure 6.11.

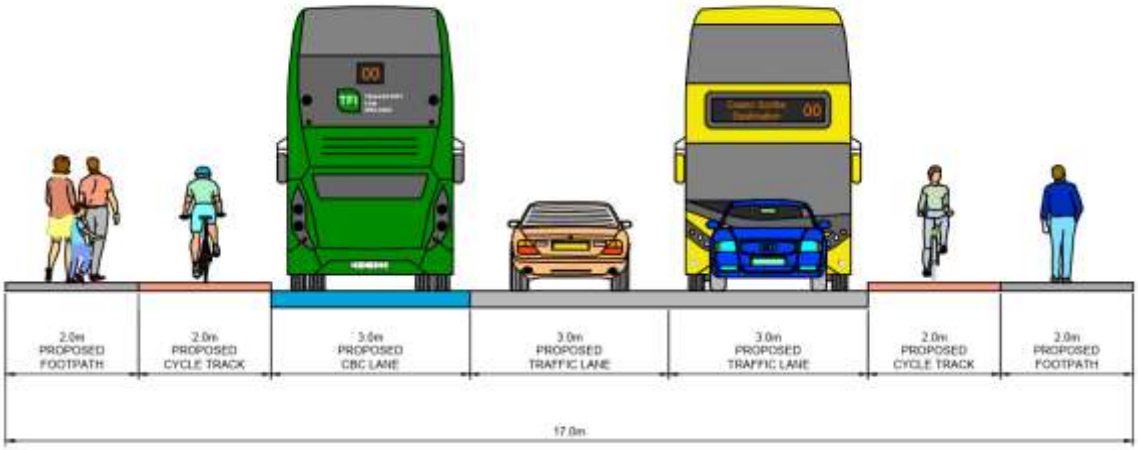


Figure 6.11 Typical Traffic Management Cross Section (A - A)

A cross-section of Churchfield Avenue is presented in Figure 6.12.

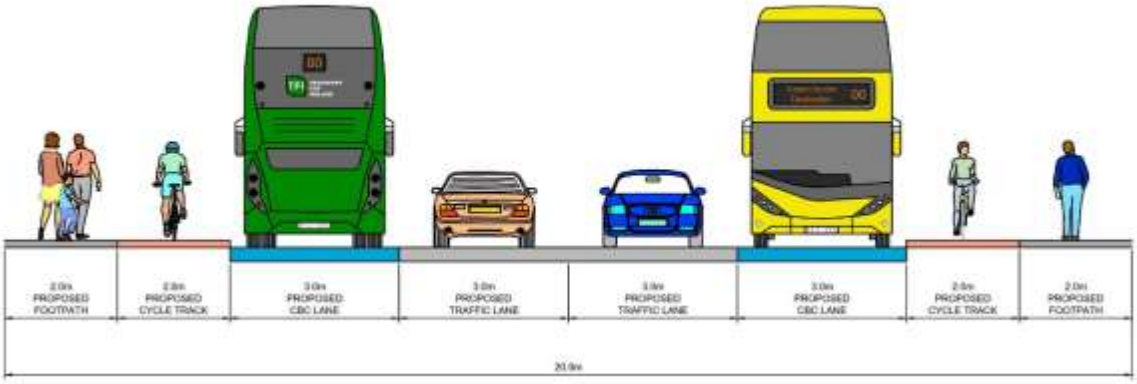


Figure 6.12 Typical Full Priority Cross Section (B - B)

Route Option 1-2

Route Description

Route Option 1-2 is presented in Figure 6.13 and described as follows.

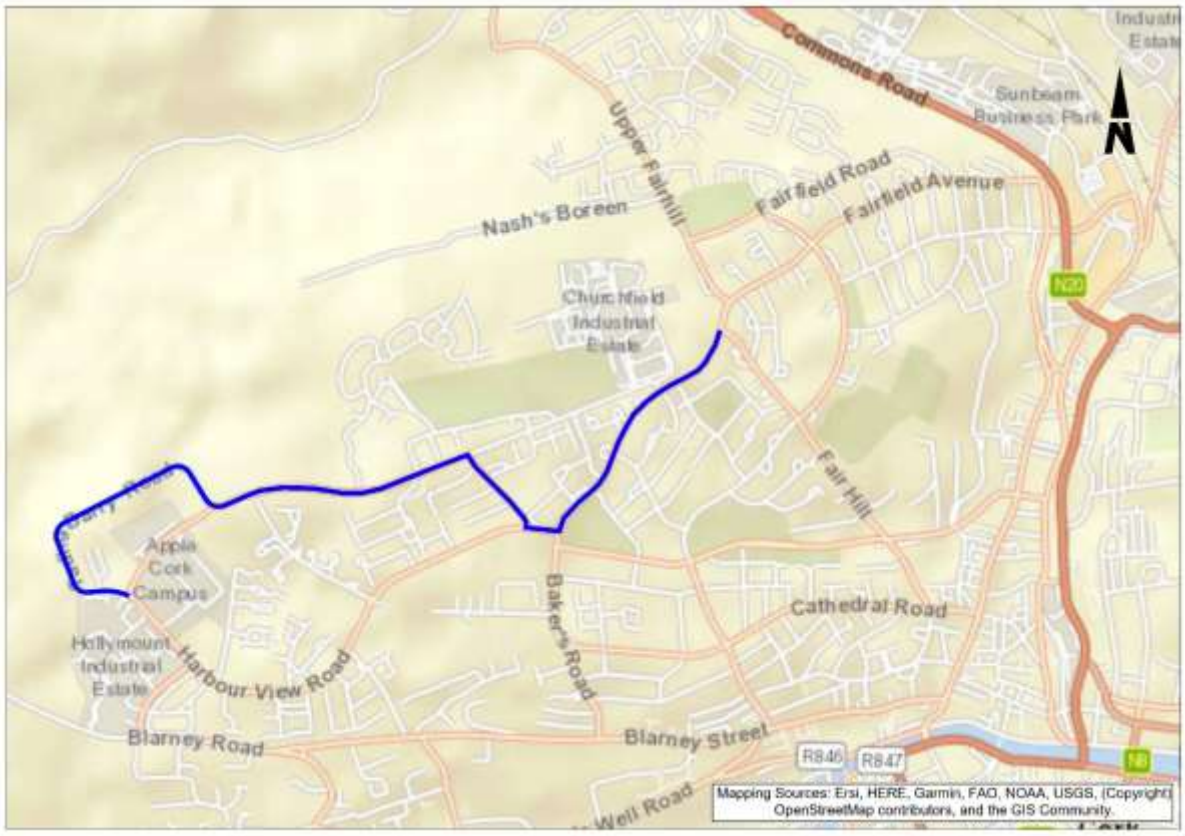


Figure 6.13 Route Option 1-2 (shown in blue)

Eastbound: Route Option 1-2 commences at the entrance to Apple on Tadhg Barry Road to David McCarthy Road & Kilmore Heights. From here the bus travels down Kilmore Heights to Knocknaheeny Avenue, and then along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route then proceeds along Churchfield Avenue to the junction at Mount Agnes Road and Upper Fair Hill.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.14 illustrates the indicative scheme design for Route Option 1-2 as well as locations of indicative cross-sections.

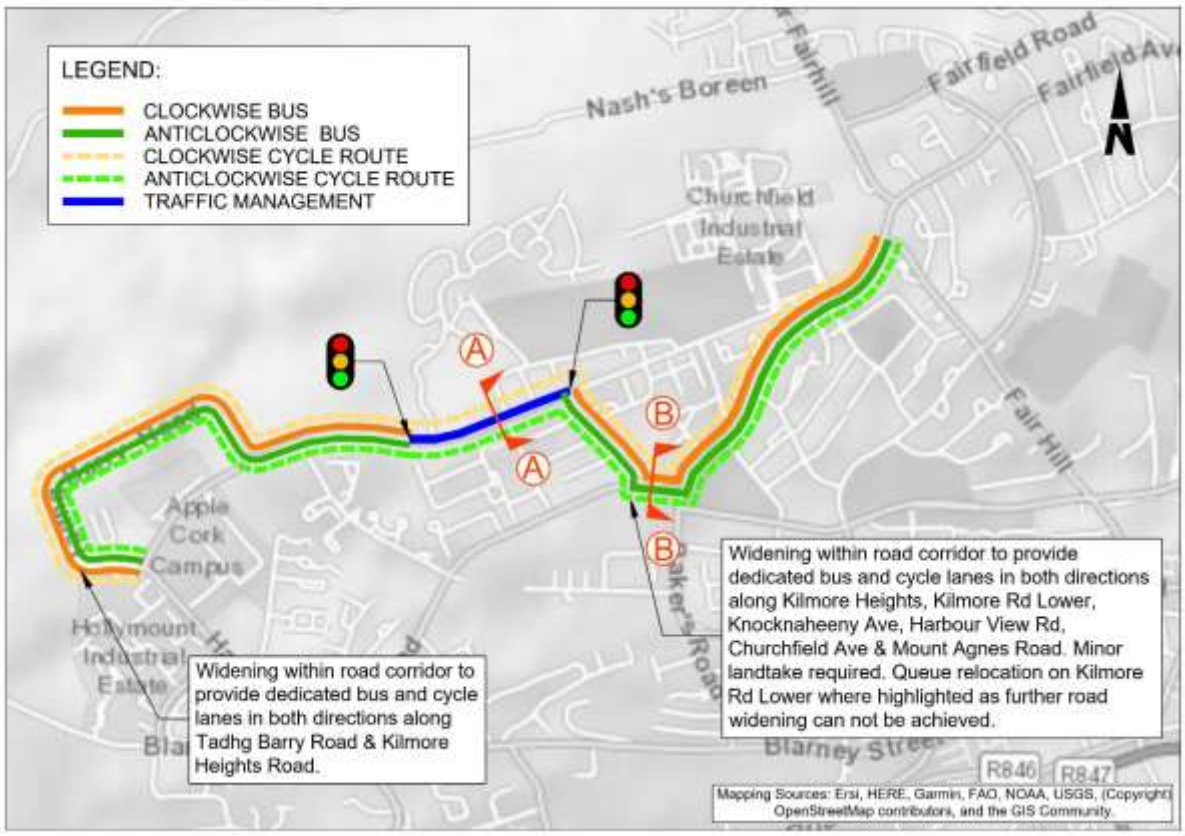


Figure 6.14 Route Option 1-2 Indicative Scheme Design

Bus lanes will be provided in both direction from the entrance of Apple on Tadgh Barry Road to David McCarthy Road, Knocknaheeny Avenue and Harbour View Road. Traffic signals will be provided to give bus priority through Kilmore Heights and Kilmore Road. Bus lanes will then be provided, from Harbour View Road, along Churchfield Avenue to the junction at Munt Agnes Road and Upper Fair Hill, in both directions.

Cycle tracks will be provided from David McCarthy Road to Harbour View Road via Knocknaheeny Avenue and Churchfield Avenue to the junction at Mount Agnes Road & Upper Fair Hill. A cross-section of Kilmore Heights & Kilmore Road is presented in Figure 6.14.

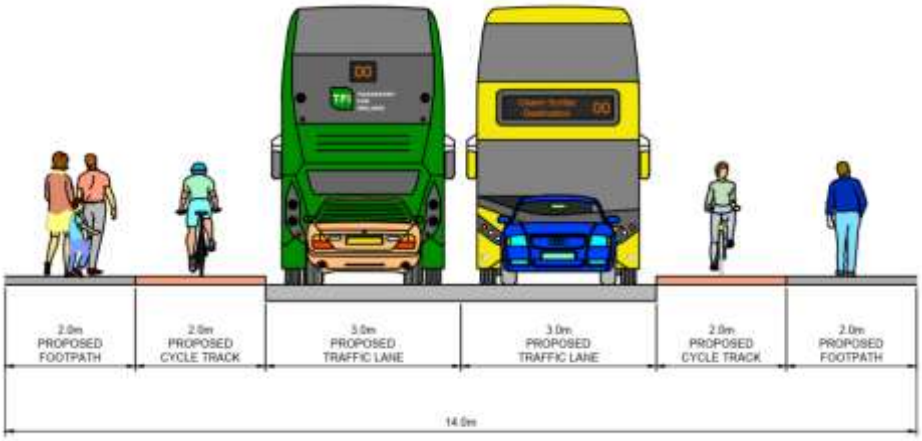


Figure 6.15 Typical Traffic Management Cross Section (A - A)

A cross-section of Harbour View Road is presented in Figure 6.16.

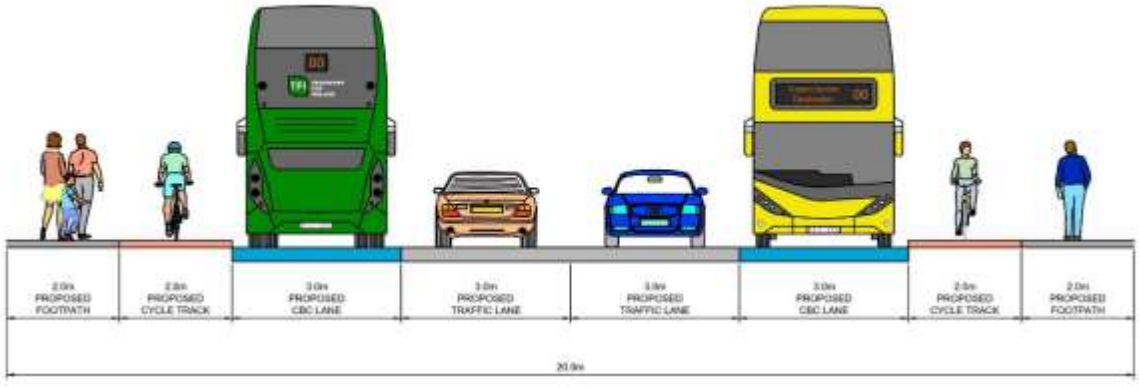


Figure 6.16 Typical Full Priority Cross Section (B - B)

Route Option 1-3

Route Description

Route Option 1-3 is presented in Figure 6.17 and described as follows.

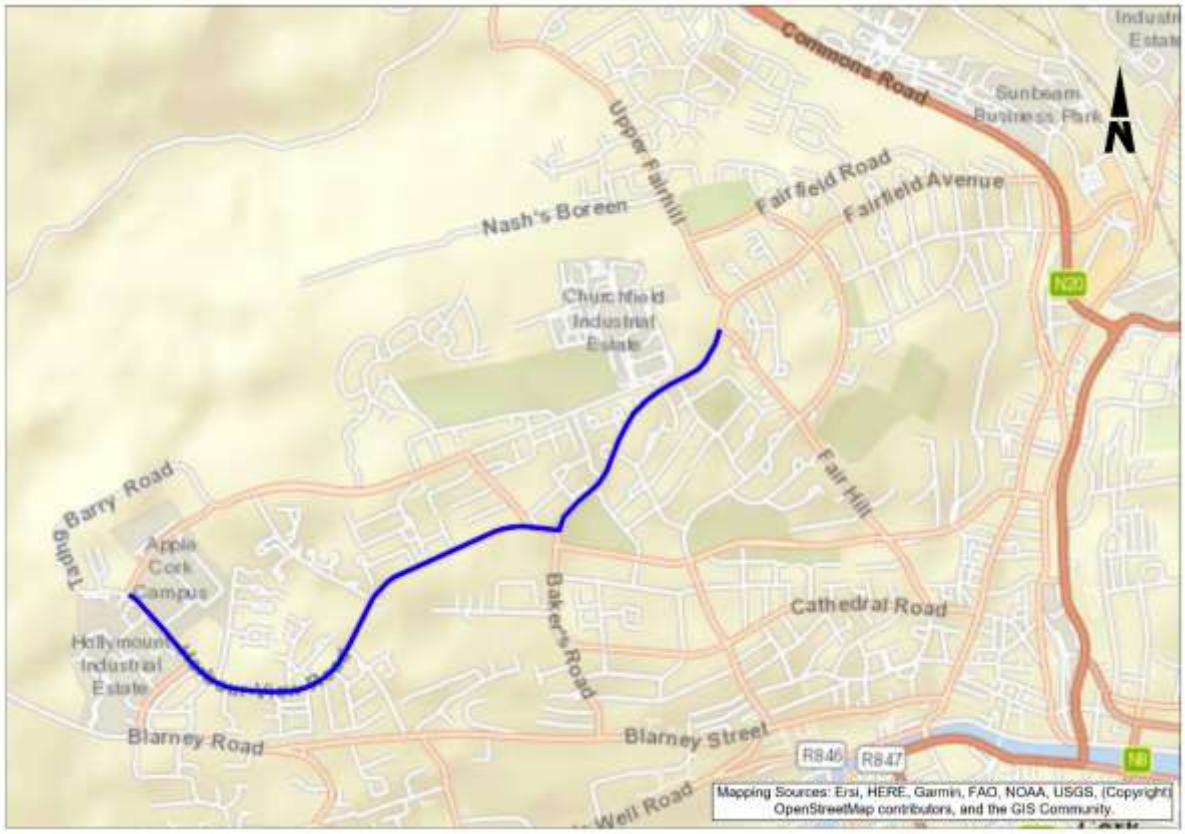


Figure 6.17 Route Option 1-3 (shown in blue)

Eastbound: Route Option 1-3 commences at the entrance to Apple on Tadhg Barry Road, from here the bus travels along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route then proceeds along Churchfield Avenue and on to the junction at Mount Agnes Road and Upper Fair Hill

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.18 illustrates the indicative scheme design for Route Option 1-3 as well as locations of indicative cross-sections.

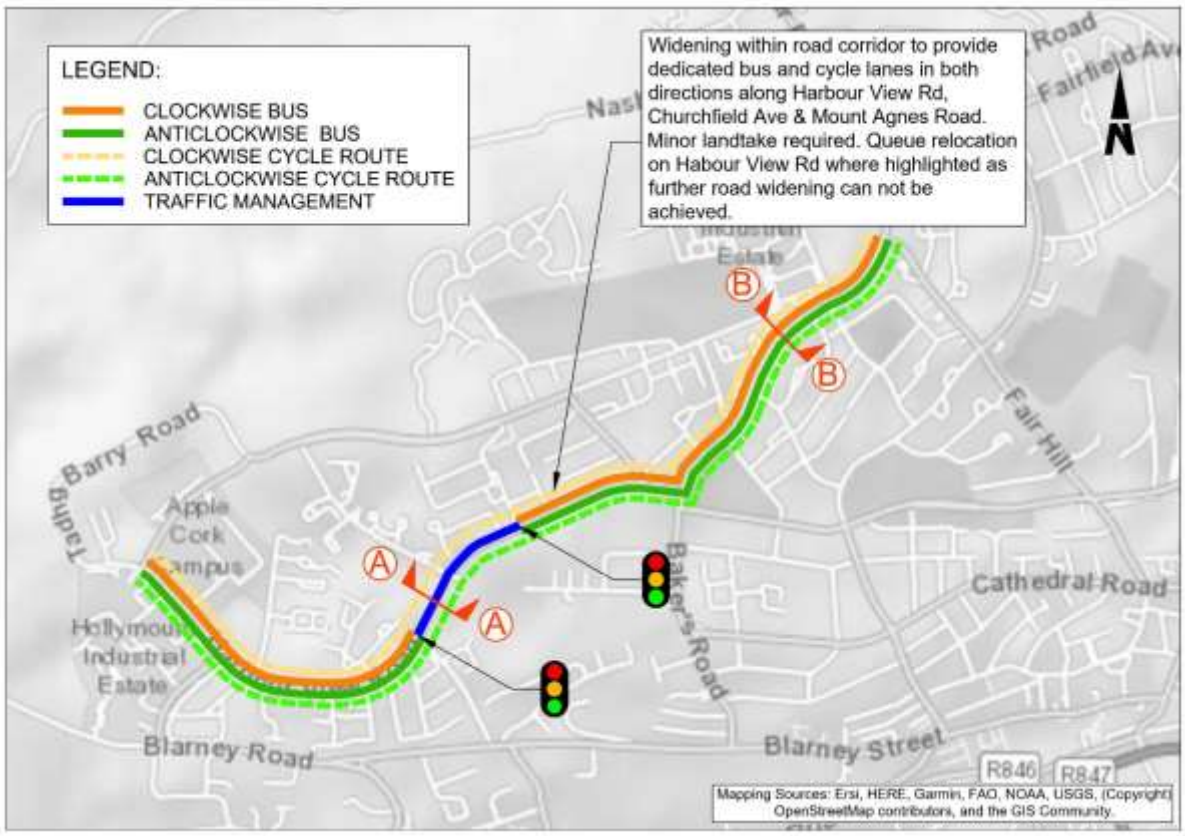


Figure 6.18 Route Option 1-3 Indicative Scheme Design

Bus lanes will be provided in both direction from the entrance to Apple on Tadhg Barry Road to the junction at Hollyhill Lane along Harbour View Road. Traffic signals will be provided to give bus priorityon Harbour View Road. Bus lanes will then be provided, from Harbour View along Churchfield Avenue to the junction at Mount Agnes Road and Upper Fair Hill

Cycle tracks will be provided from the entrance to Apple on Tadhg Barry Road along Harbour View Road, Churchfield Avenue to the junction at Mount Agnes Road and Upper Fair Hill

A cross-section of Harbour View Road is presented in Figure 6.18.

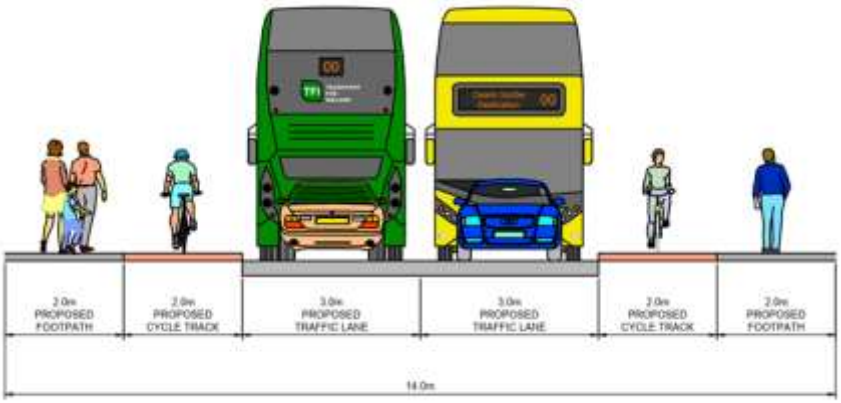


Figure 6.19 Typical Traffic Management Cross Section (A - A)

A cross-section of Churchfield Avenue is presented in Figure 6.20.

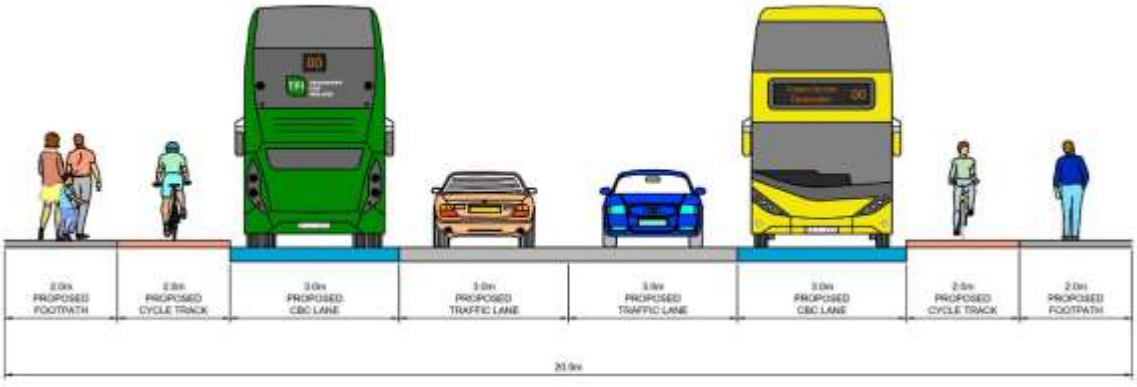


Figure 6.20 Typical Full Priority Cross Section (B - B)

Route Option 1-4

Route Description

Route Option 1-4 is presented in Figure 6.21 and described as follows.

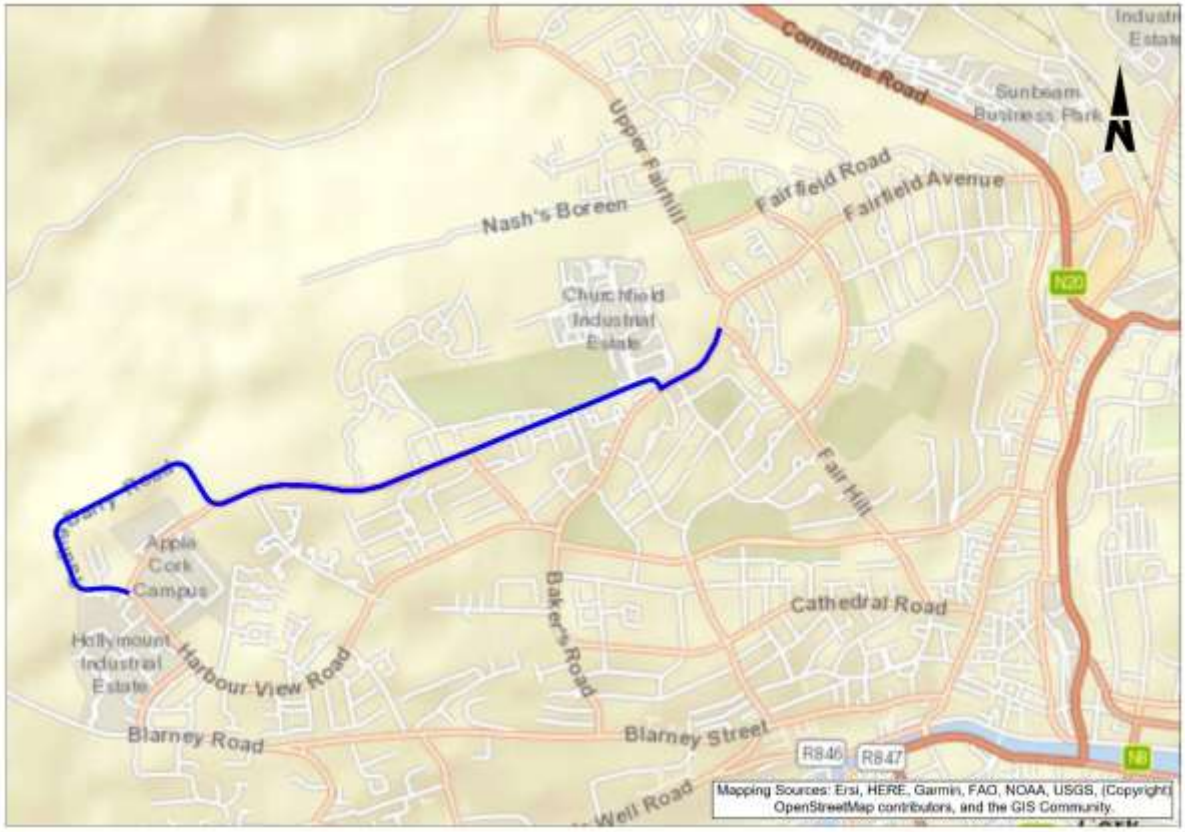


Figure 6.21 Route Option 1-4

Eastbound: Route Option 1-4 commences at the entrance to Apple on Tadhg Barry Road to David McCarthy Road and Courtown Drive. From here the bus travels along Kilmore Heights, Kilmore Road and Churchfield Road to Churchfield Avenue and Mount Agnes Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.22 illustrates the indicative scheme design for Route Option 1-4 as well as locations of indicative cross-sections.

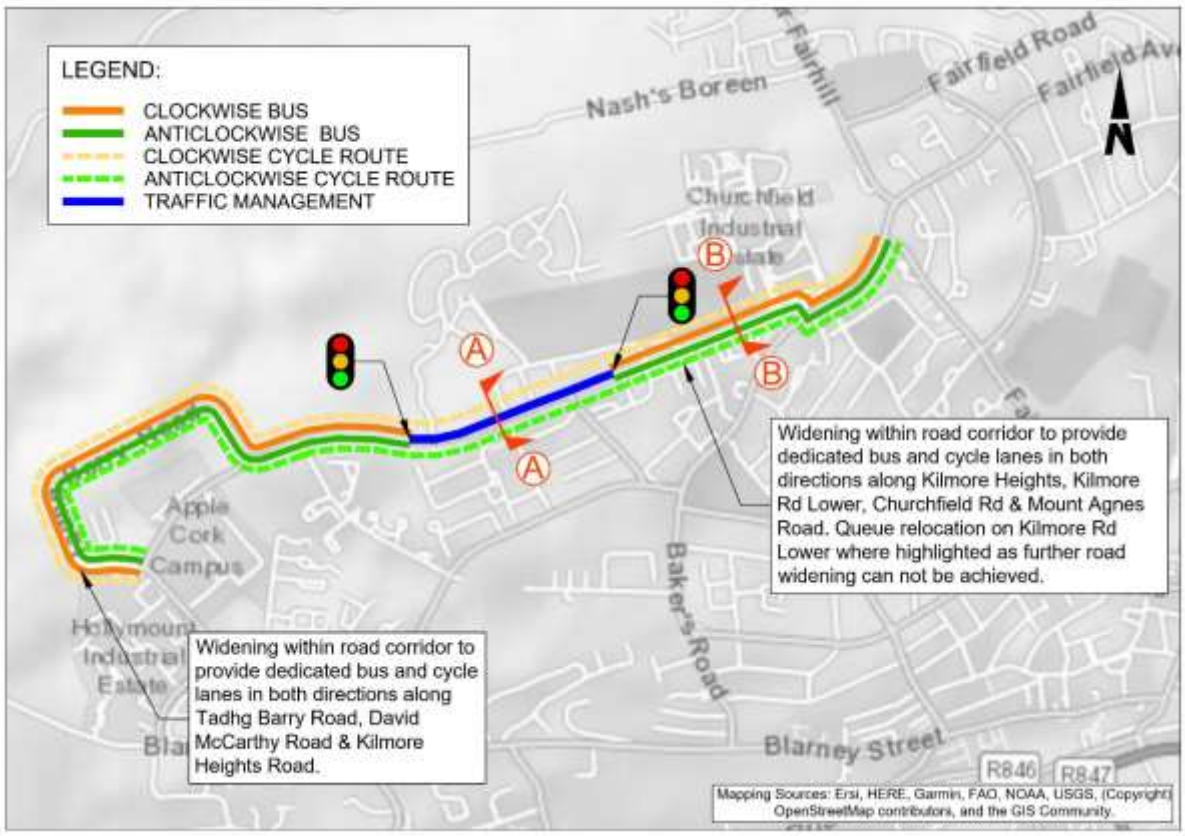


Figure 6.22 Route Option 1-4 Indicative Scheme Design

Bus lanes will be provided in both direction on Tadhg Barry Road, David McCarthy Road, Churchfield Road and Churchfield Avenue. Traffic signals will be provided to give bus priority through Kilmore Heights and Kilmore Road, where the provision of bus lanes is restricted due to existing constraints.

Cycle tracks will be provided from Tadgh Barry Road to Mount Agnes Road via Churchfield Road, Kilmore Road and Churchfield Avenue. A cross-section of Kilmore Road is presented in Figure 6.22.

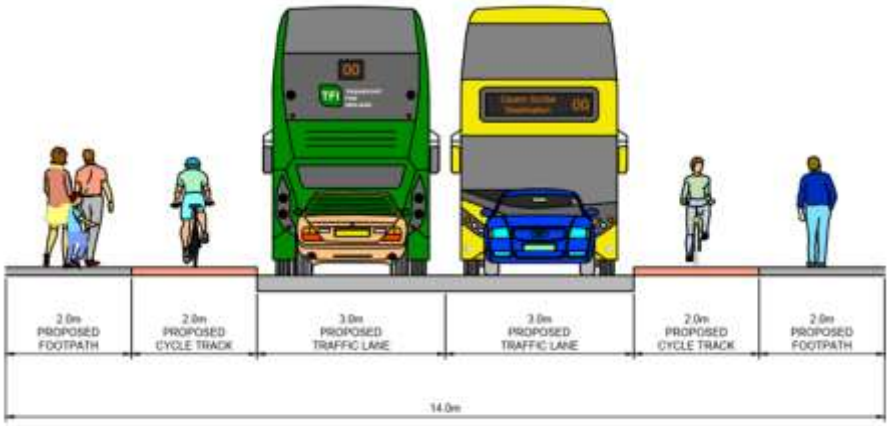


Figure 6.23 Typical Traffic Management Cross Section (A - A)

A cross-section of Churchfield Road is presented in Figure 6.24.

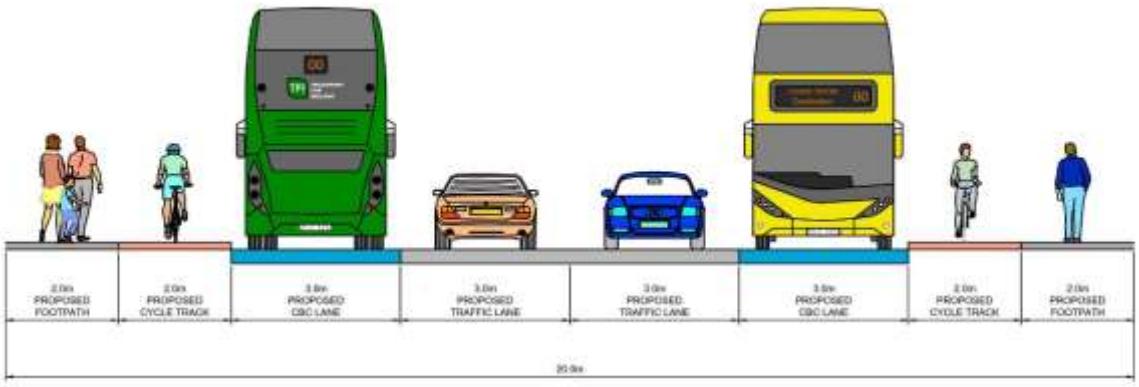


Figure 6.24 Typical Full Priority Cross Section (B – B)

Route Option 2-1

Route Description

Route Option 2-1 is presented in Figure 6.25 and described as follows.

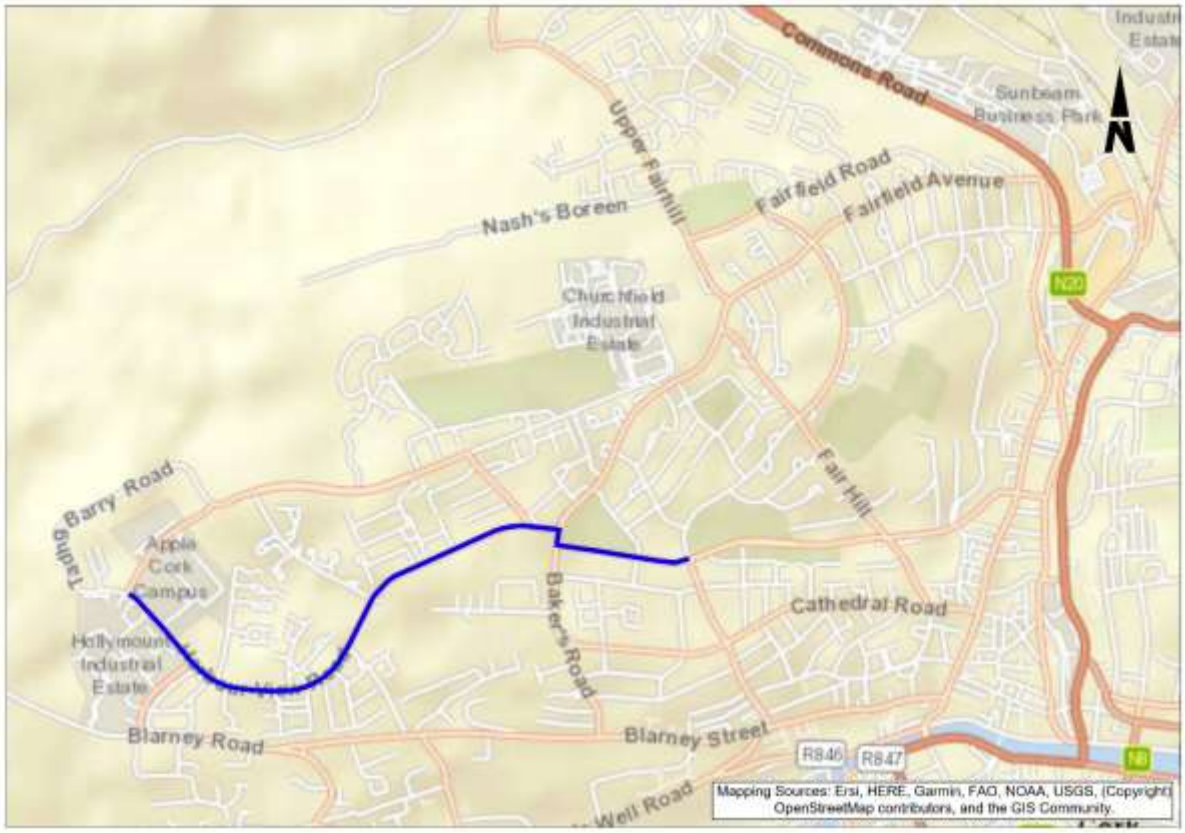


Figure 6.25 Route Option 2-1 (shown in blue)

Eastbound: Route Option 2-1 commences at the entrance to Apple on Tadhg Barry Road, from here the bus travels along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route then proceeds along St. Colmcille's Road where it turns left on to Knockfree Avenue.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.26 illustrates the indicative scheme design for Route Option 2-1 as well as locations of indicative cross-sections.

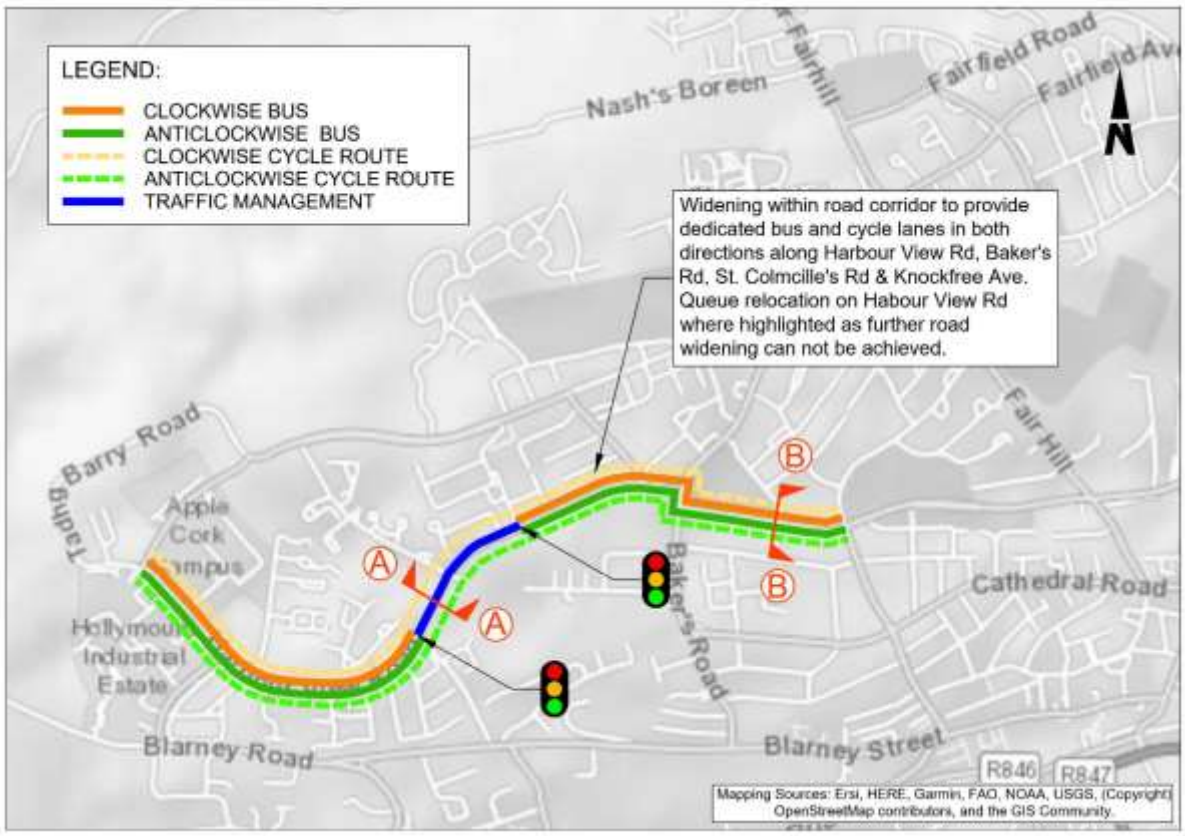


Figure 6.26 Route Option 2-1 Indicative Scheme Design

Bus lanes will be provided in both direction from the entrance to Apple on Tadhg Barry Road to the junction at Hollyhill Lane along Harbour View Road. Traffic signals will be provided to give bus priority on Harbour View Road where the provision of bus lanes is restricted due to existing constraints. Bus lanes will then be provided, from Harbour View Road to Knockfree Avenue via St. Colmcille's Road, in both directions.

Cycle tracks will be provided from the entrance to Apple on Tadhg Barry Road along Harbour View Road, Baker's Road and St. Colmcille's Road to Knockfree Avenue.

A cross-section of Harbour View Road is presented in Figure 6.27.

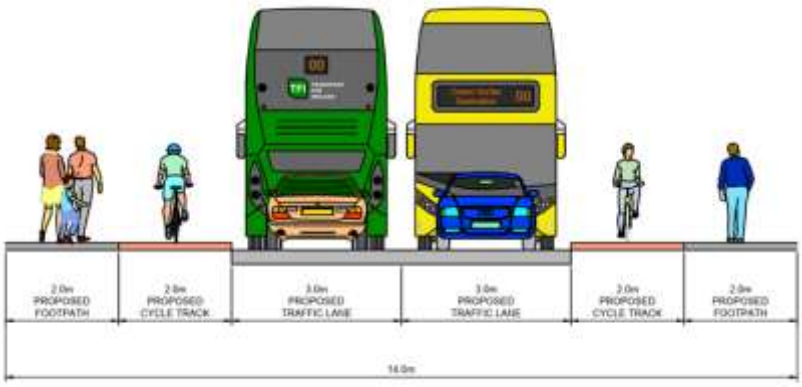


Figure 6.27 Typical Traffic Management Cross Section (A - A)

A cross-section of St. Colmcille's Road is presented in Figure 6.28.

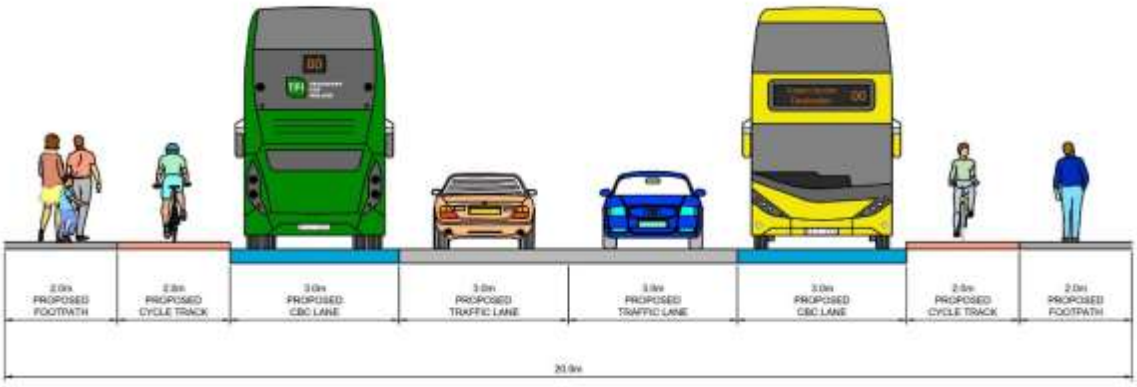


Figure 6.28 Typical Full Priority Cross Section (B – B)

Route Option 2-2

Route Description

Route Option 2-2 is presented in Figure 6.29 and described as follows.

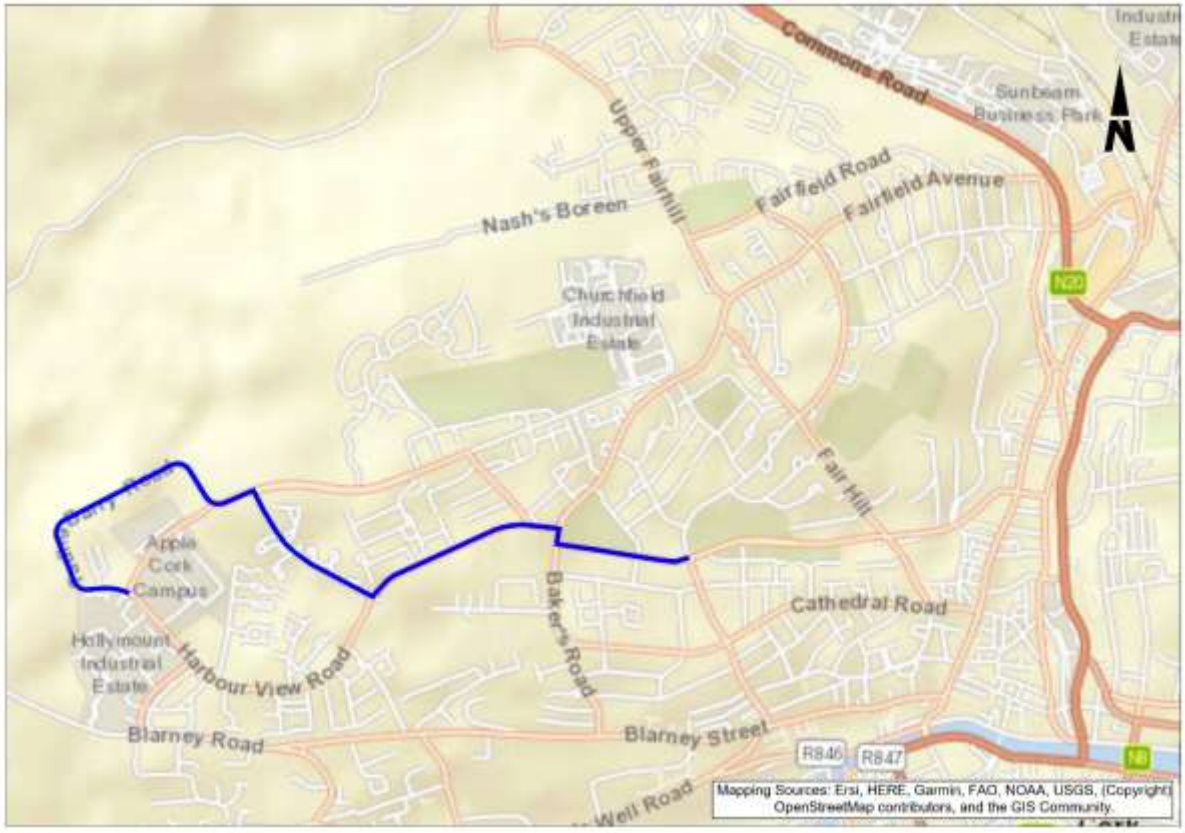


Figure 6.29 Route Option 2-2 (shown in blue)

Eastbound: Route Option 2-2 commences at the junction at Tadhg Barry Road and proceeds to David McCarthy Road and Courtown Drive. From here the bus travels down Courtown Drive, along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route then proceeds along St. Colmcille's Road where it turns left on to Knockfree Avenue.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 2-2

Indicative Scheme Design

Figure 6.30 illustrates the indicative scheme design for Route Option 2-2 as well as locations of indicative cross-sections.

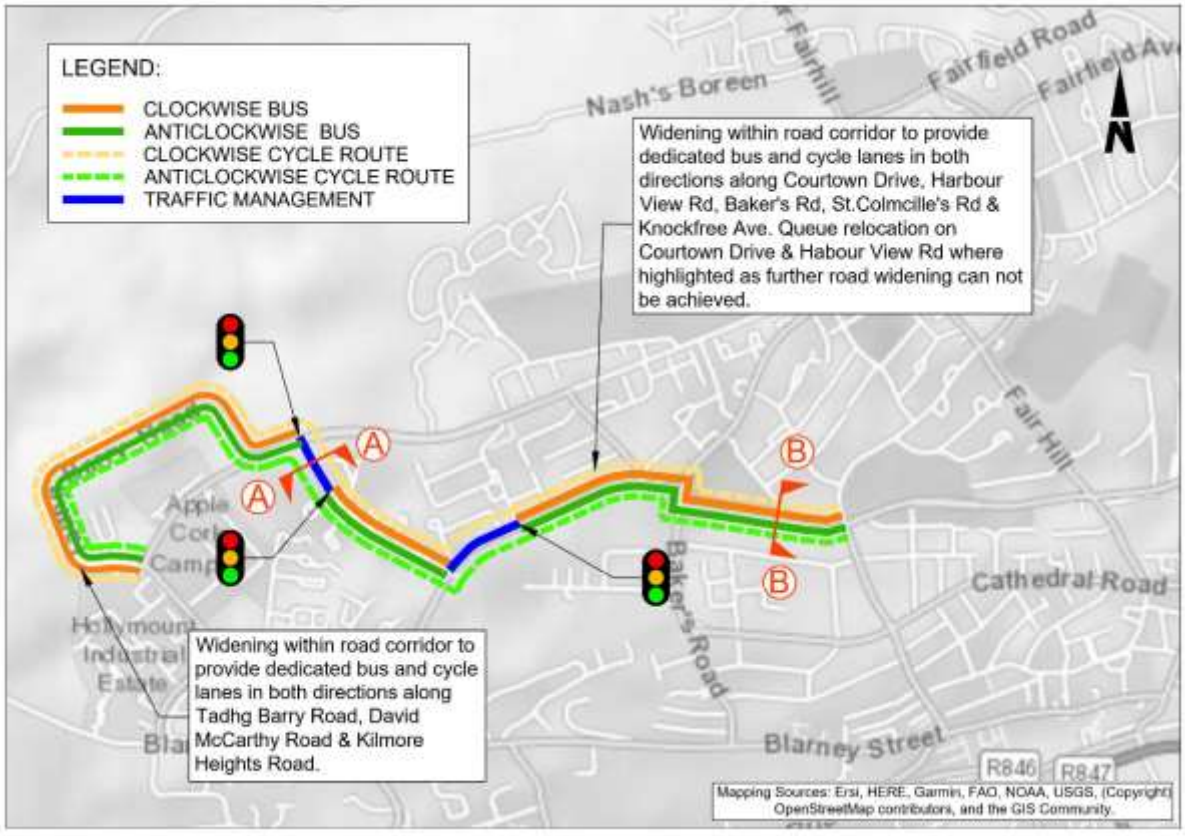


Figure 6.30 Route Option 2-2 Indicative Scheme Design

Bus lanes will be provided in both direction from Tadgh Barry Road to David McCarthy Road, along Courtown Drive and on to Harbour View Road to Churchfield Avenue. Traffic signals will be provided to give bus priority on Courtown Drive and Harbour View Road where the provision of bus lanes is restricted due to existing constraints. Bus lanes will then be provided, from Harbour View Road to Knockfree Avenue via St. Colmcille's Road, in both directions.

Cycle tracks will be provided from from David McCarthy Road, along Courtown Drive and on to Harbour View Road, Baker's Road and St. Colmcille's Road to Knockfree Avenue.

A cross-section of Courtown Drive is presented in Figure 6.31.

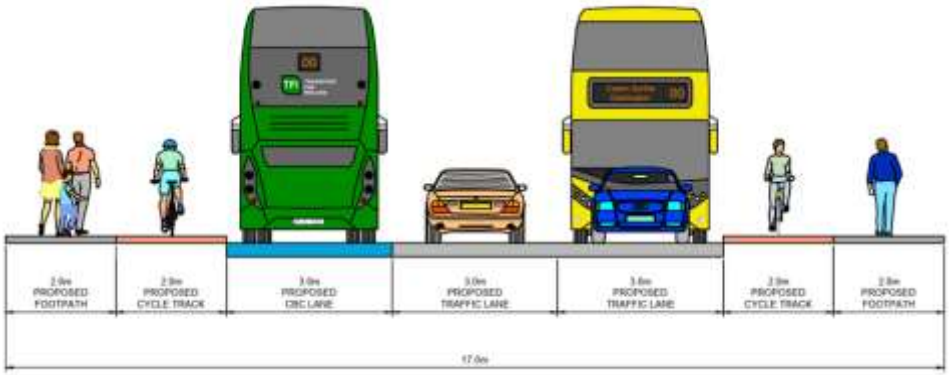


Figure 6.31 Typical Traffic Management Cross Section (A – A)

A cross-section of St. Colmcille's Road is presented in Figure 6.32.

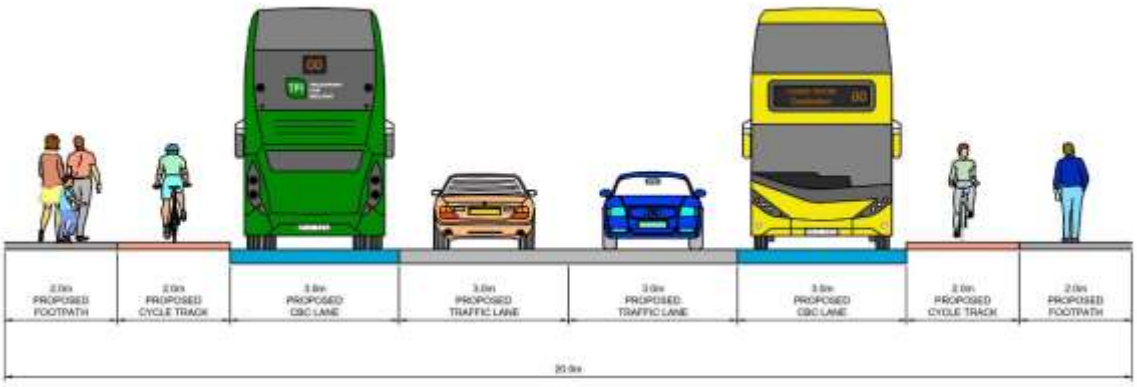


Figure 6.32 Typical Full Priority Cross Section (B - B)

Route Option 2-3

Route Description

Route Option 2-3 is presented in Figure 6.33 and described as follows.

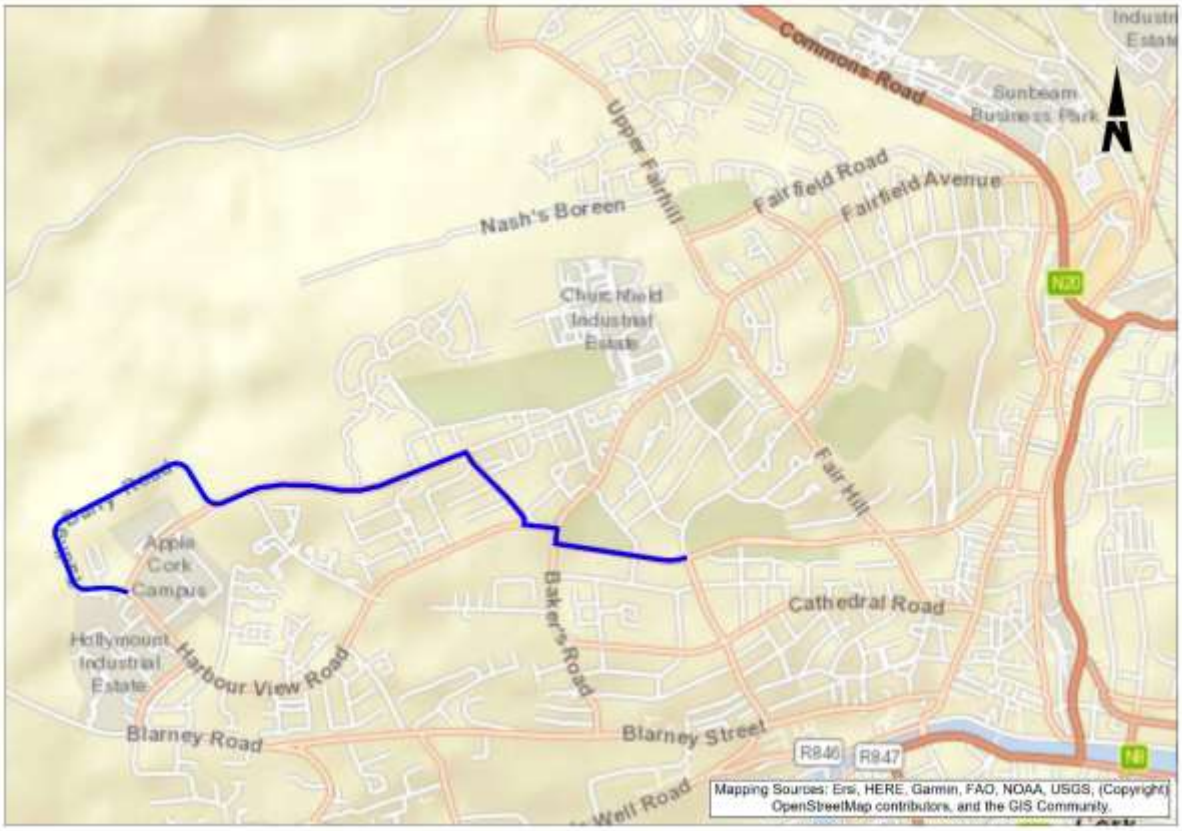


Figure 6.33 Route Option 2-3 (shown in blue)

Eastbound: Route Option 2-3 commences at Tadhg Barry Road and advances to the junction at David McCarthy Road and Courtown Drive. From here the bus travels down Kilmore Heights to Knocknaheeny Avenue, and then along Harbour View Road to the junction at Baker's Road and Churchfield Avenue. The route then proceeds along Churchfield Avenue and on to Churchfield Hill where it turns left on to Knockfree Avenue.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Indicative Scheme Design

Figure 6.34 illustrates the indicative scheme design for Route Option 2-3 as well as locations of indicative cross-sections.

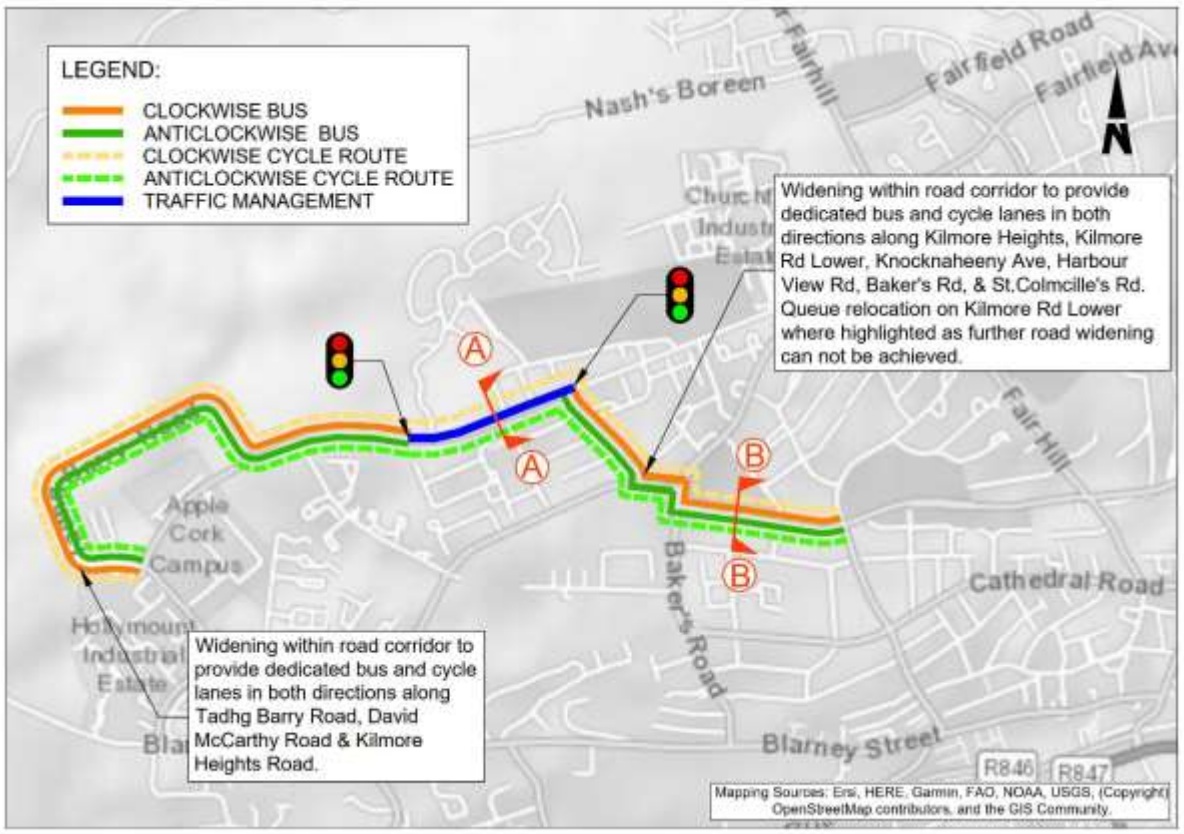


Figure 6.34 Route Option 2-3 Indicative Scheme Design

Bus lanes will be provided in both direction on Tadhg Barry Road, David McCarthy Road, Knocknaheeny Avenue and Harbour View Road. Traffic signals will be provided to give bus priority through Kilmore Heights and Kilmore Road, where the provision of bus lanes is restricted due to existing constraints. Bus lanes will then be provided, from Harbour View Road to the junction at Churchfield Hill and Knockfree Avenue via Bakers Road and St. Colmcille's Road, in both directions.

Cycle tracks will be provided from David McCarthy Road to Harbour View Road via Knocknaheeny Avenue, Bakers Road and St. Colmcille's Road to Knockfree Avenue & Churchfield Hill. A cross-section of Kilmore Heights & Kilmore Road is presented in Figure 6.35.

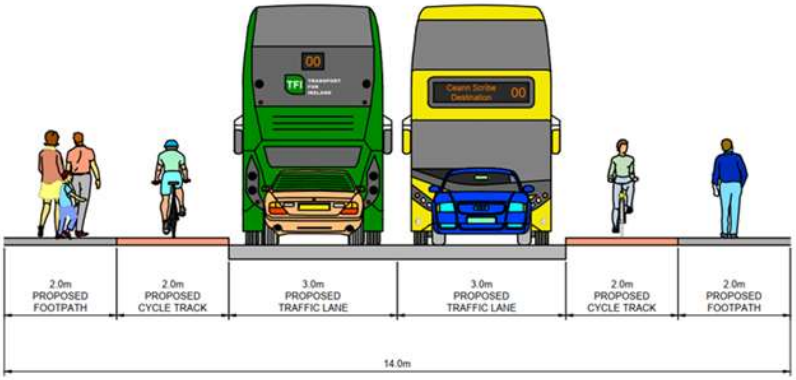


Figure 6.35 Typical Traffic Management Cross Section (A – A)

A cross-section of St. Colmcille's Road is presented in Figure 6.36.

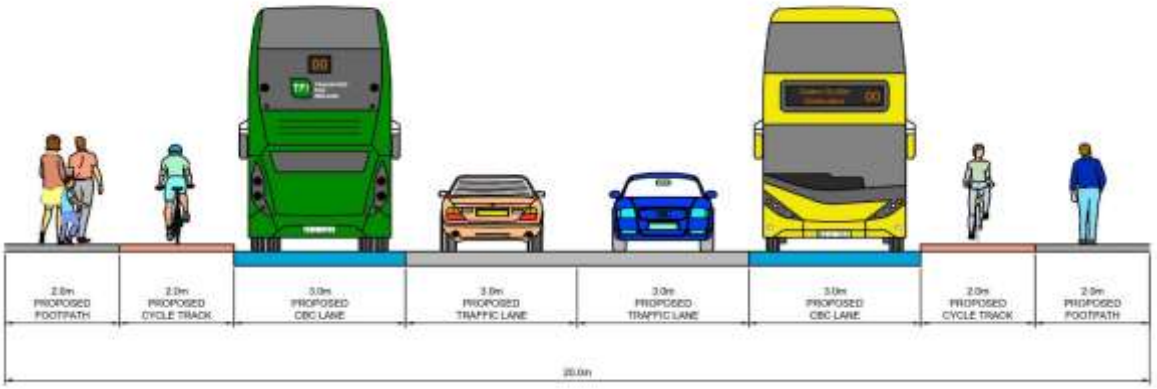


Figure 6.36 Typical Full Priority Cross Section (B - B)

Route Option 3-1

Route Description

Route Option 3-1 is presented in Figure 6.37 and described as follows.

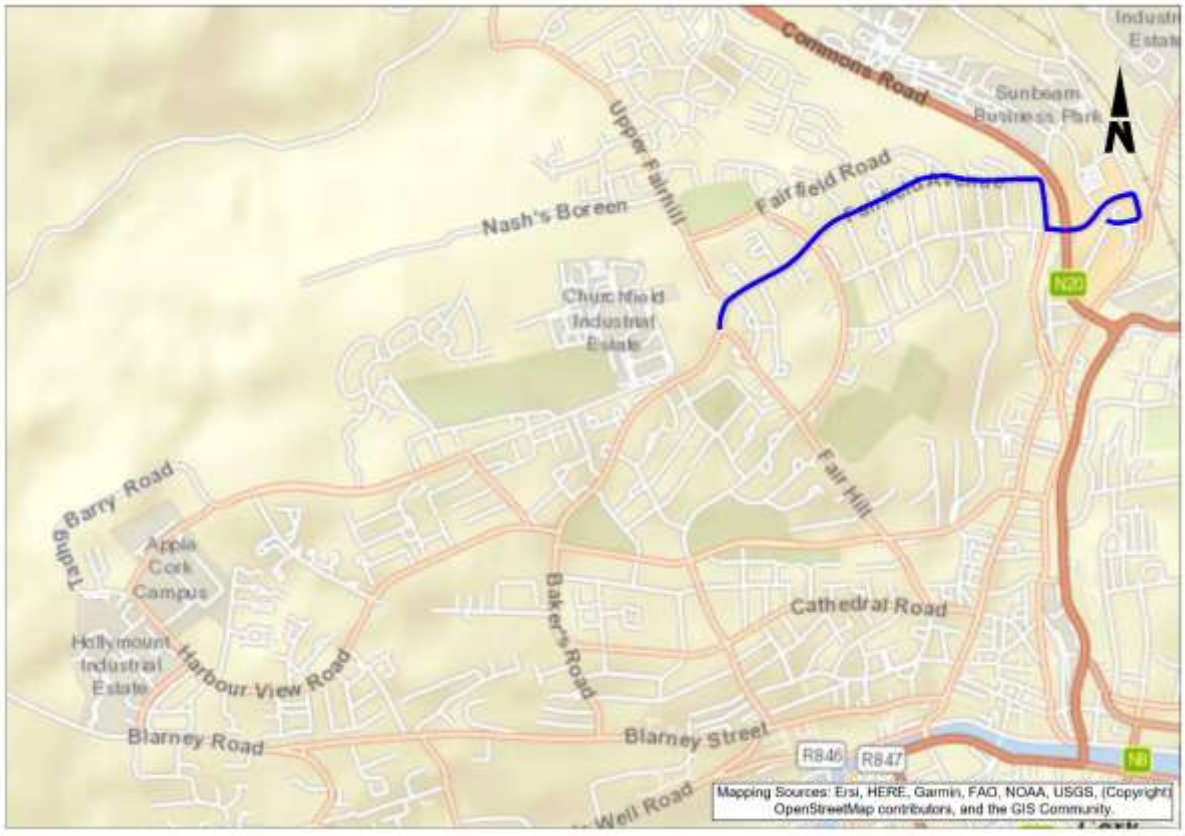


Figure 6.37 Route Option 3-1 (shown in blue)

Eastbound: Route Option 3-1 commences at the junction at Mount Agnes Road and Upper Fair Hill. From here the bus travels along Fairfield Avenue to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 3-1

Indicative Scheme Design

Figure 6.38 illustrates the indicative scheme design for Route Option 3-1 as well as locations of indicative cross-sections.

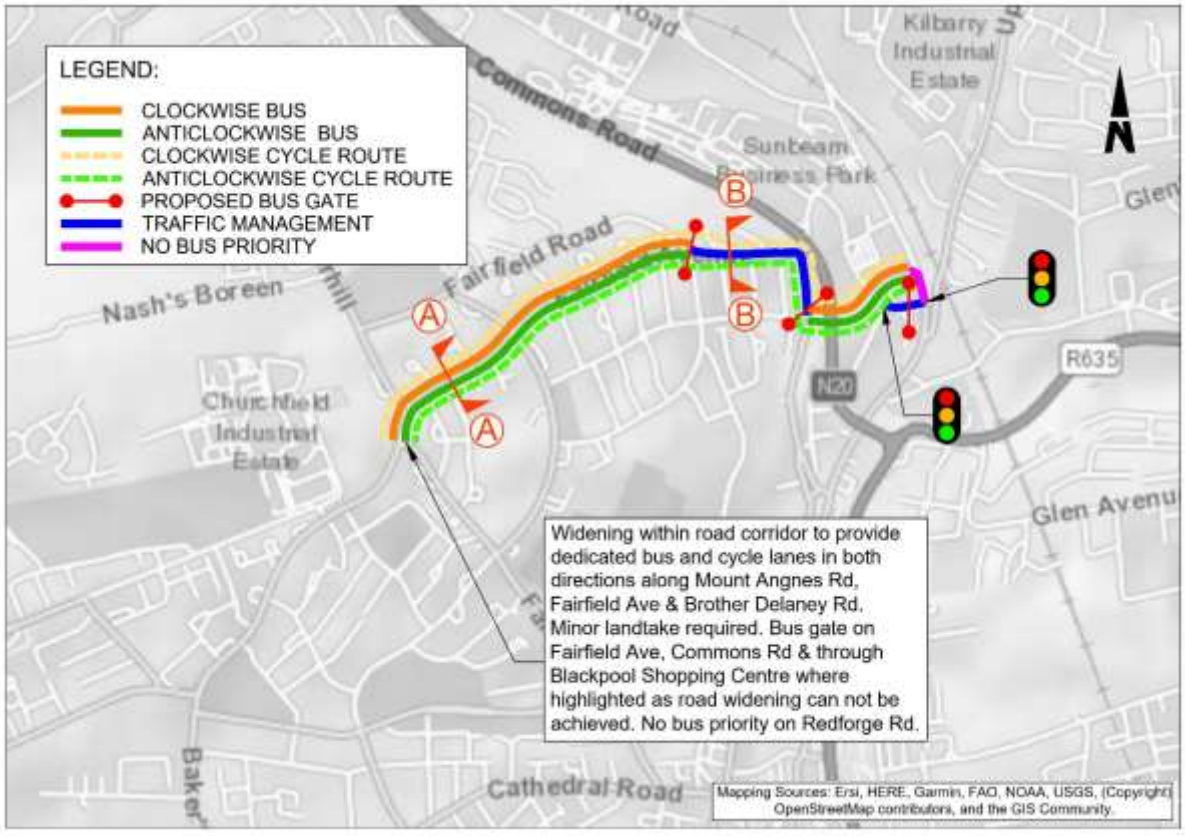


Figure 6.38 Route Option 3-1 Indicative Scheme Design

Bus lanes will be provided in both direction on Mount Agnes Road and Fairfield Avenue. Traffic signals and bus gate will be provided to give bus priority through sections of Fairfield Road and Commons Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre.

Cycle tracks will be provided from Churchfield Avenue to Blackpool Shopping Centre. A cross-section of Fairfield Road is presented in Figure 6.39.

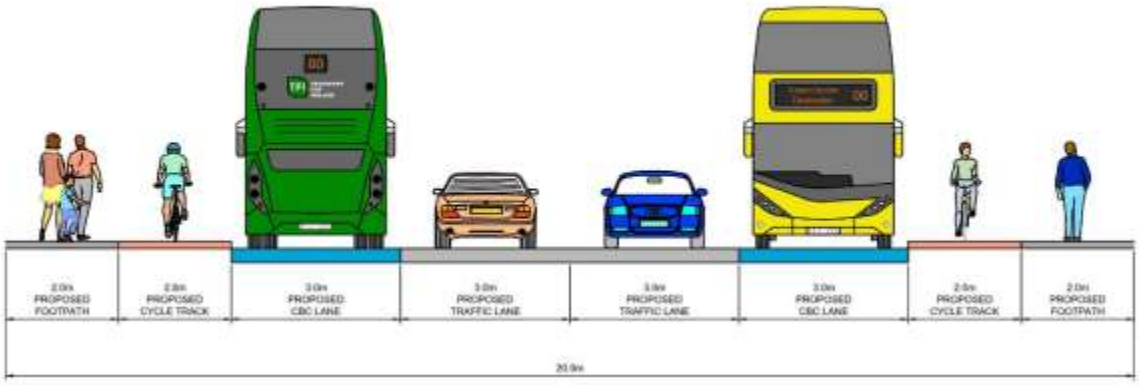


Figure 6.39 Typical Full Priority Cross Section (A – A)

A cross-section of Fairfield Road is presented in Figure 6.40.

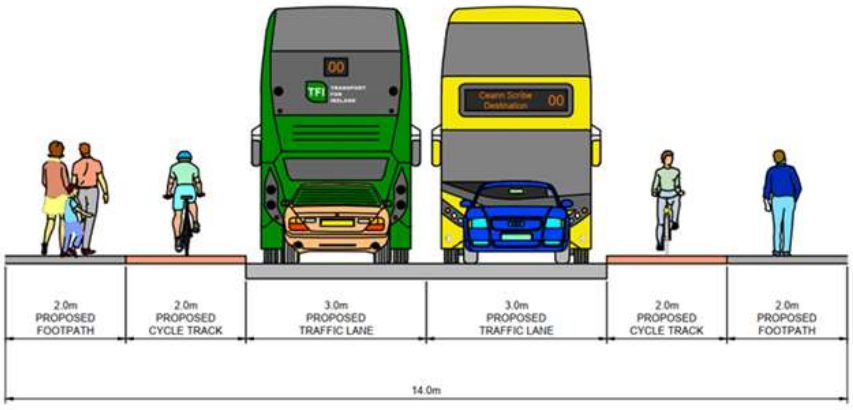


Figure 6.40 Typical Traffic Management Cross Section (B - B)

Route Option 3-2

Route Description

Route Option 3-2 is presented in Figure 6.41 and described as follows.

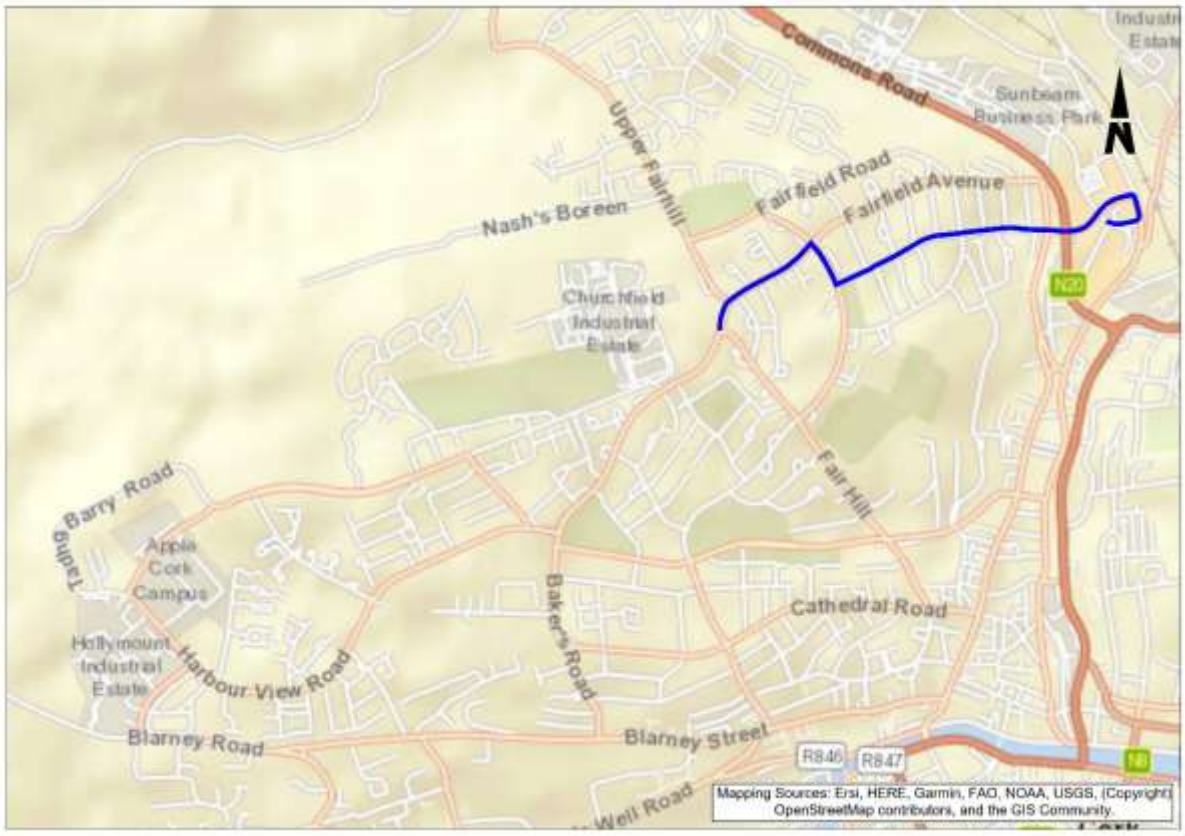


Figure 6.44 Route Option 3-2 (shown in blue)

Eastbound: Route Option 3-2 commences at the junction at Mount Agnes Road and Upper Fair Hill. From here the bus travels along Fairfield Avenue, Knockpogue Avenue, Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 3-2

Indicative Scheme Design

Figure 6.42 illustrates the indicative scheme design for Route Option 3-2 as well as locations of indicative cross-sections.

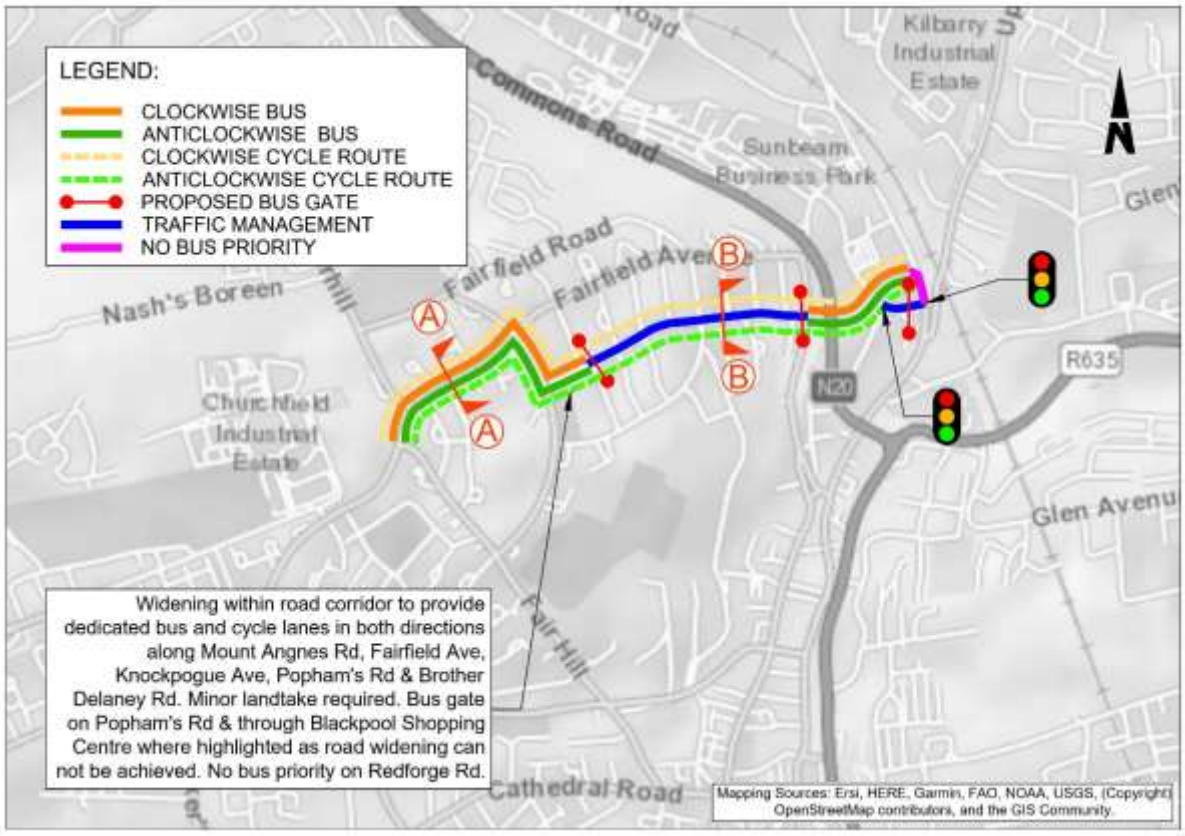


Figure 6.42 Route Option 3-2 Indicative Scheme Design **(check sections)**

Bus lanes will be provided in both direction on Mount Agnes Road, Fairfield Avenue, Knockpogue Avenue and Brothers Delaney Road. Traffic signals and bus gate will be provided to give bus priority through Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre. Segregated cycle lanes will be provided from Churchfield Avenue to Blackpool Shopping Centre.

A cross-section of Fairfield Road is presented in Figure 6.43.

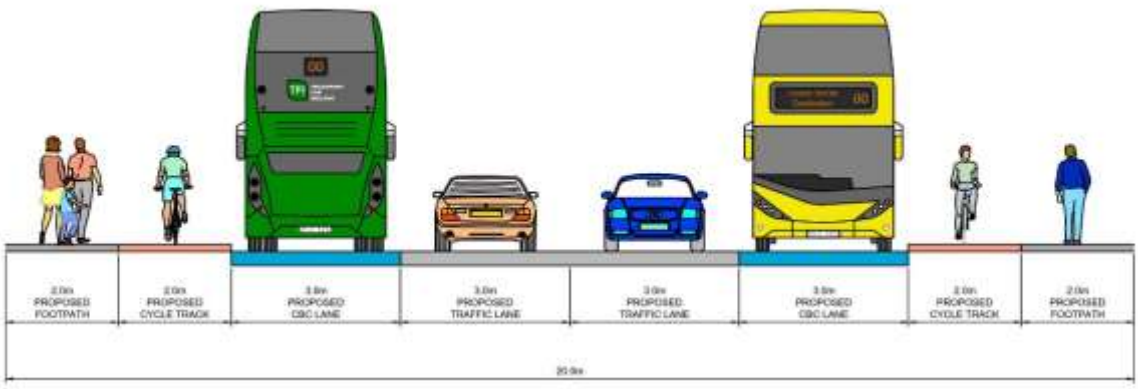


Figure 6.43 Typical Full Priority Cross Section (A – A)

A cross-section of Pophams Road is presented in Figure 6.44.

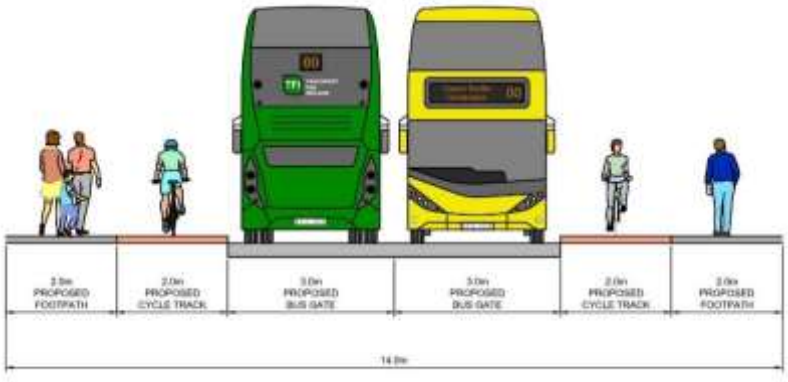


Figure 6.44 Typical Bus Gate Cross Section (B - B)

Route Option 3-3

Route Description

Route Option 3-3 is presented in Figure 6.45 and described as follows.

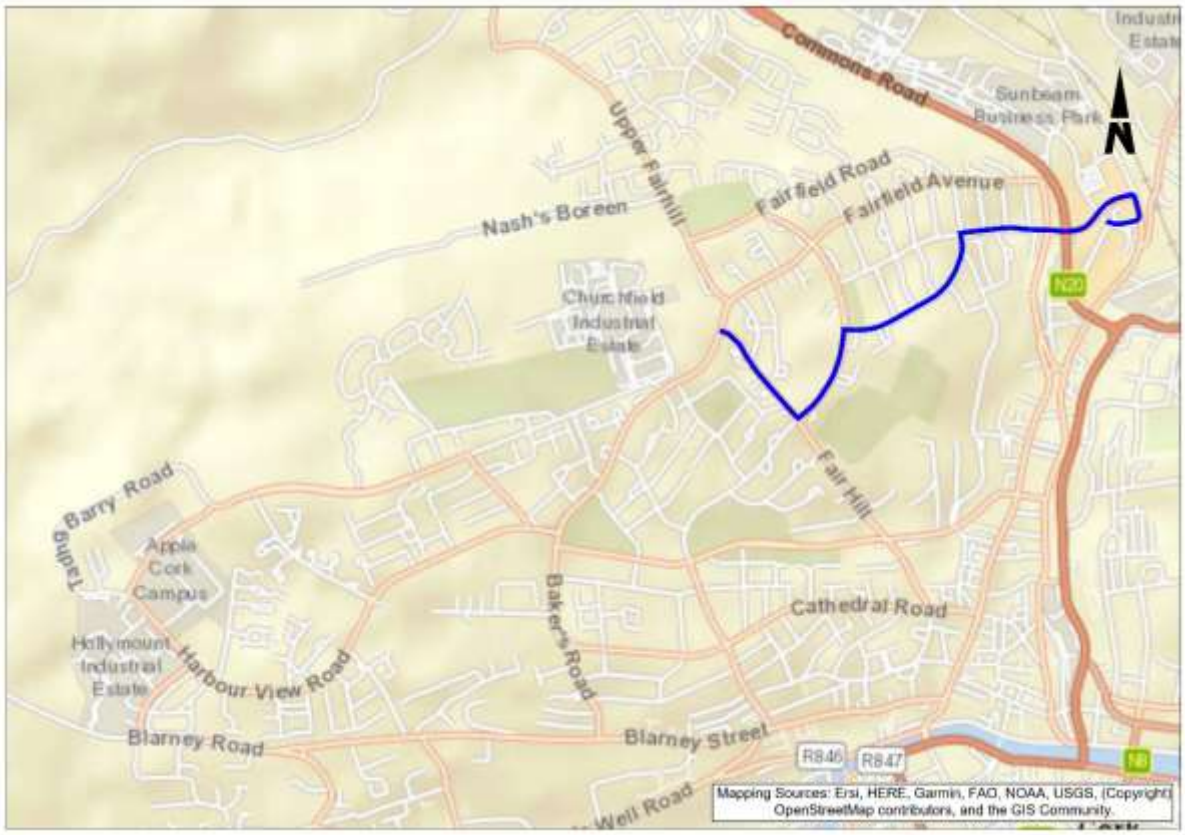


Figure 6.45 Route Option 3-3 (shown in blue)

Eastbound: Route Option 3-3 commences at the junction at Mount Agnes Road and Upper Fair Hill. From here the bus travels along Fair Hill and on to Knockpogue Avenue, Farranferris Avenue and Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 3-3

Indicative Scheme Design

Figure 6.46 illustrates the indicative scheme design for Route Option 3-3 as well as locations of indicative cross-sections.

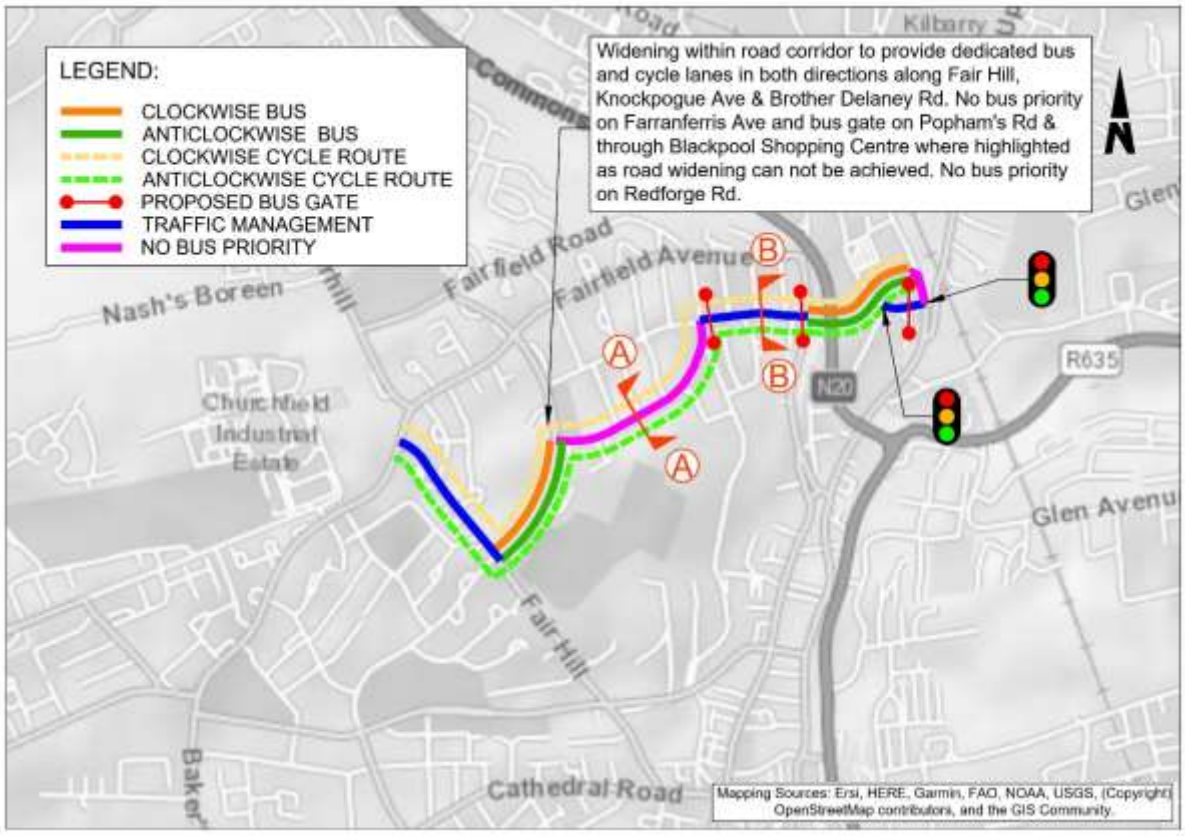


Figure 6.46 Route Option 3-3 Indicative Scheme Design

Traffic management will be required on Fair Hill as widening is not possible due to the existing constraints. Bus lanes will be provided in both direction on Knockfree Avenue, Knockpogue Avenue and Brothers Delaney Road. Traffic signals and a bus gate will be provided to give bus priority through Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Farranferris Avenue and Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre. Cycle tracks will be provided from Knockfree Avenue to Blackpool Shopping Centre. A cross-section of Knockpogue Avenue is presented in Figure 6.47.

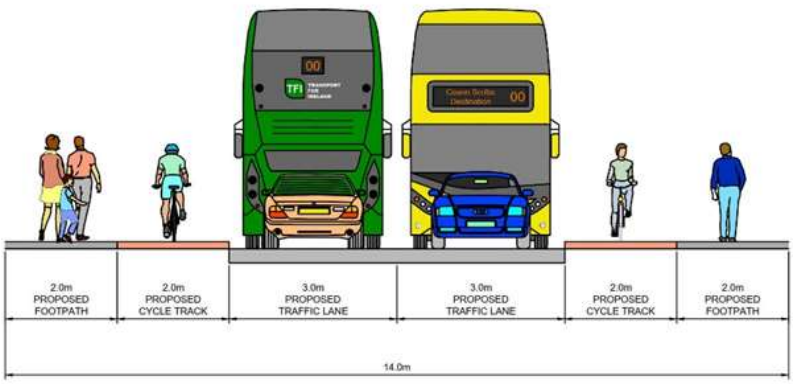


Figure 6.47 Typical No Bus Priority Cross Section (A – A)

A cross-section of Pophams Road is presented in Figure 6.48.

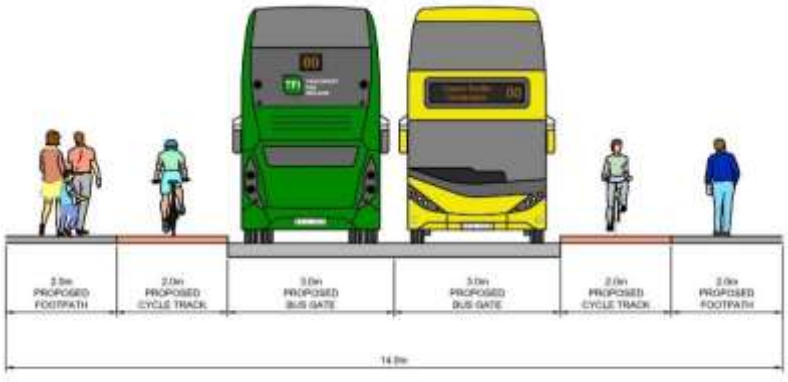


Figure 6.48 Typical Traffic Management Cross Section (B – B)

Route Option 3-4

Route Description

Route Option 3-4 is presented in Figure 6.49 and described as follows.

Figure 6.49 Route Option 3-4 (shown in blue)

Eastbound: Route Option 3-4 commences at the junction at Mount Agnes Avenue and Upper Fair Hill. From here the bus travels along Fair Hill and on to Knockpogue Avenue, Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 3-4

Indicative Scheme Design

Figure 6.50 illustrates the indicative scheme design for route Option 3-4 as well as locations of indicative cross-sections.

Figure 6.50 Route Option 3-4 Indicative Scheme Design

Traffic management will be required on Fair Hill as widening is unachievable due to the existing constraints. Bus lanes will be provided in both direction on Knockfree Avenue, Knockpogue Avenue and Brothers Delaney Road. Traffic signals and bus gate will be provided to give priority for busses through Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre.Cycle tracks will be provided from Knockfree Avenue to Blackpool Shopping Centre. A cross-section of Knockpogue Avenue is presented in Figure 6.51.

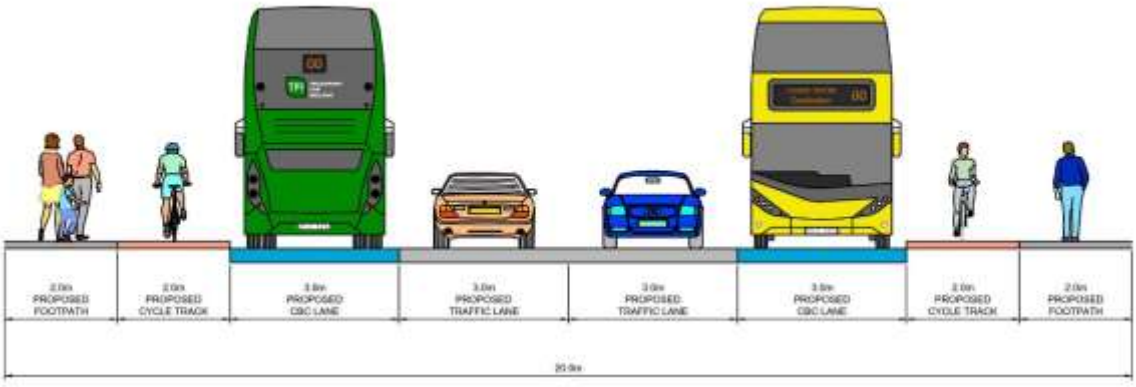


Figure 6.51 Typical Full Priority Cross Section (A – A)

A cross-section of Pophams Road is presented in Figure 6.52.

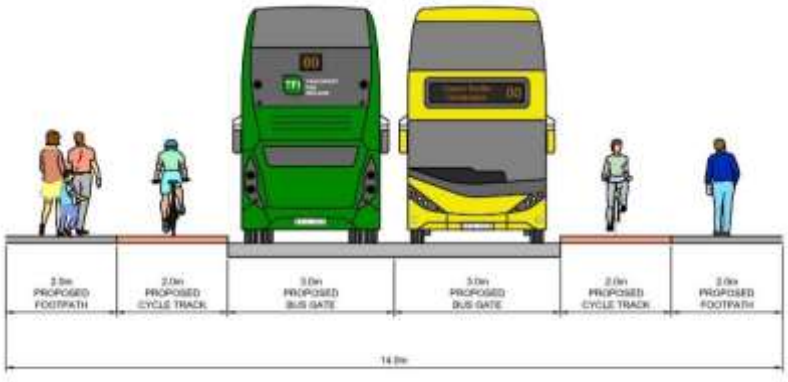


Figure 6.52 Typical Traffic Management Cross Section (B – B)

Route Option 4-1

Route Description

Route Option 4-1 is presented in Figure 6.53 and described as follows.

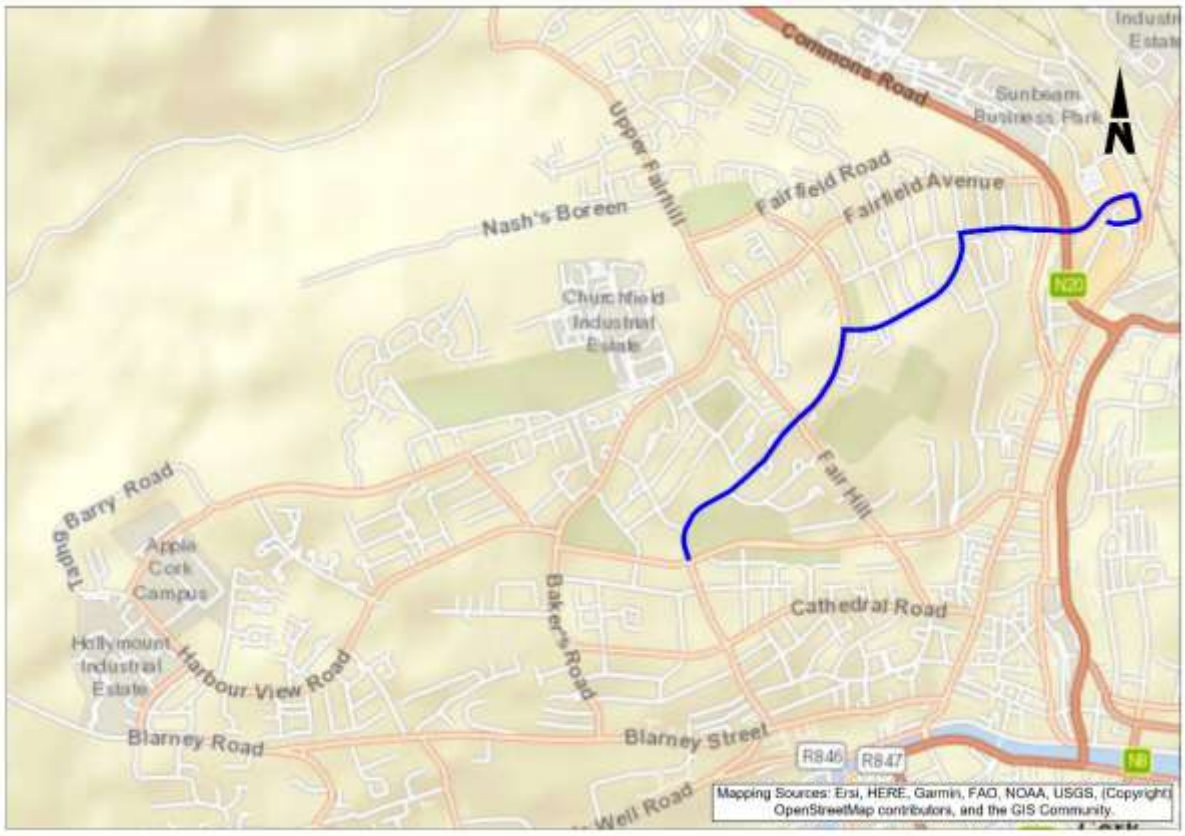


Figure 6.53 Route Option 4-1 (shown in blue)

Northbound: Route Option 4-1 commences at the junction at Knockfree Avenue and St. Colmcille's Road. From here the bus travels along Knockfree Avenue, Knockpogue Avenue, Farranferris Avenue and Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Southbound: The Southbound route follows the same route as the Northbound routing.

Route Option 4-1

Indicative Scheme Design

Figure 6.54 illustrates the indicative scheme design for Route Option 4-1 as well as locations of indicative cross-sections.

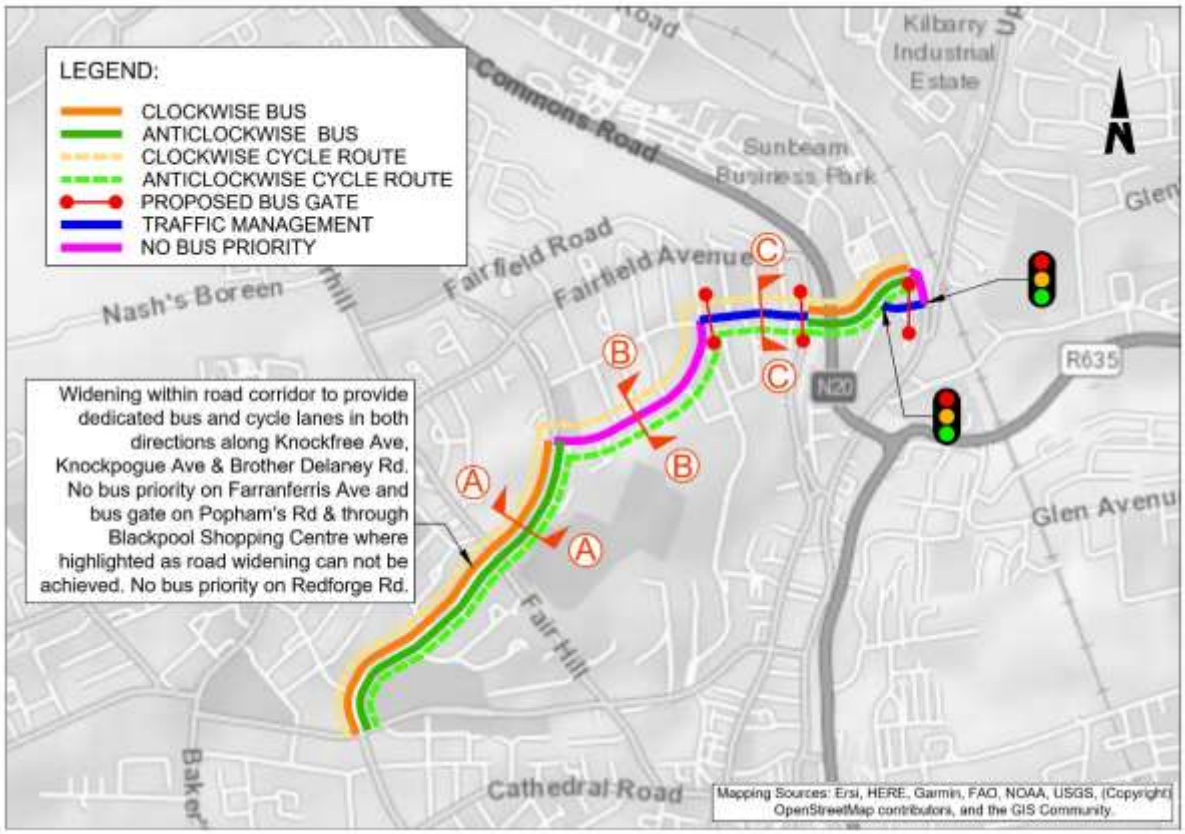


Figure 6.54 Route Option 4-1 Indicative Scheme Design

Bus lanes will be provided in both direction on Knockfree Avenue, Knockpogue Avenue and Brothers Delaney Road. Traffic signals and bus gate will be provided to give bus priority on Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Farranferris Avenue and Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre.

Cycle tracks will be provided from Knockfree Avenue to Blackpool Shopping Centre. A cross-section of Knockpogue Avenue is presented in Figure 6.55.

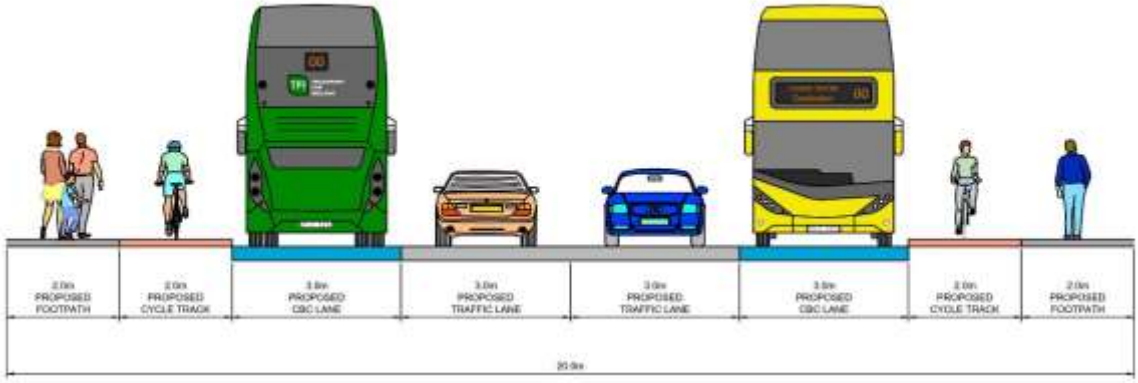


Figure 6.55 Typical Full Priority Cross Section (A - A)

A cross-section of Farranferris Avenue is presented in Figure 6.56.

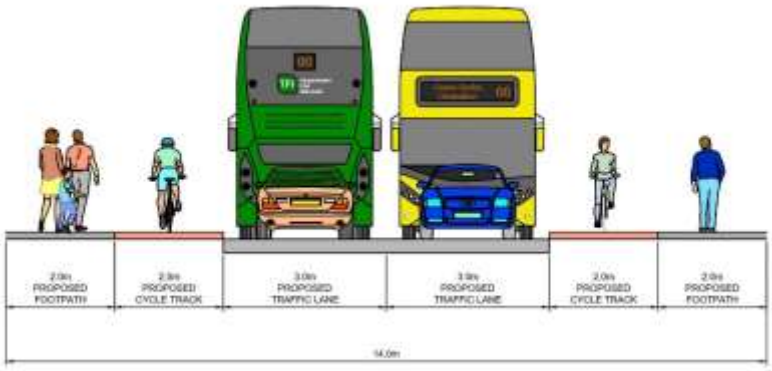


Figure 6.56 Typical No Bus Priority Cross Section (B – B)

A cross-section of Pophams Road is presented in Figure 6.57.

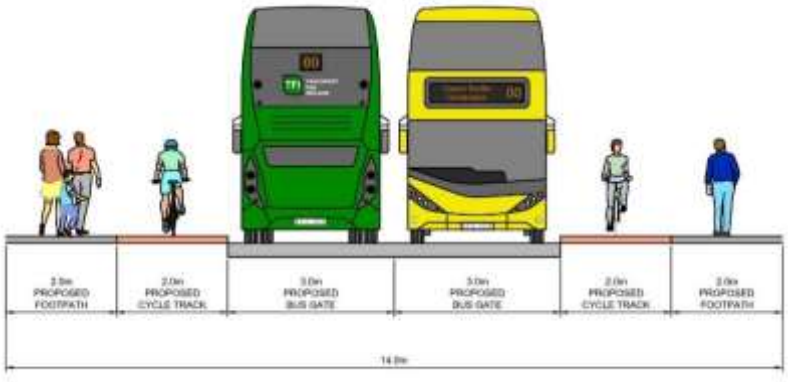


Figure 6.57 Typical Bus Gate Cross Section (C – C)

Route Option 4-2

Route Description

Route Option 4-2 is presented in Figure 6.58 and described as follows.

Figure 6.58 Route Option 4-2 (shown in blue)

Northbound: Route Option 4-2 commences at the junction at Knockfree Avenue and Fair Hill. From here the bus travels along Knockpogue Avenue and Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Southbound: The Southbound route follows the same route as the Northbound routing.

Route Option 4-2

Indicative Scheme Design

Figure 6.59 illustrates the indicative scheme design for Route Option 4-2 as well as locations of indicative cross-sections.

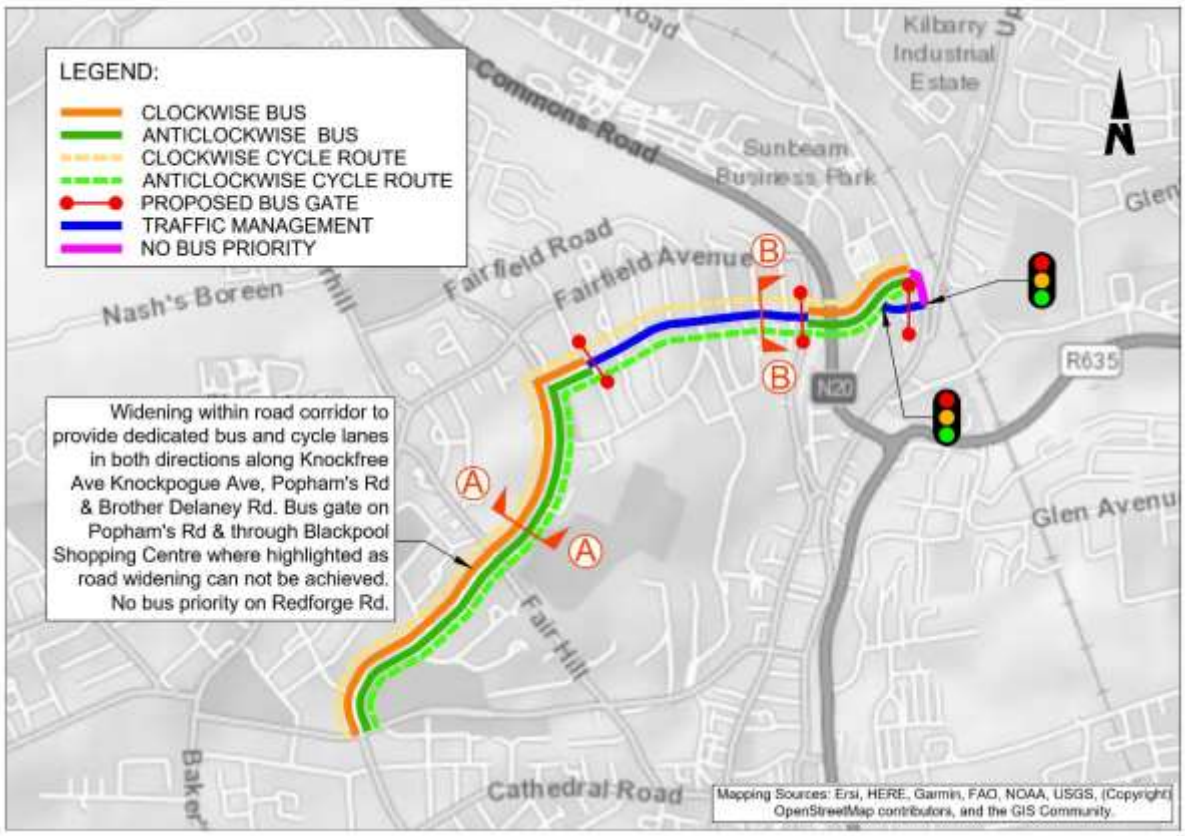


Figure 6.59 Route Option 4-2 Indicative Scheme Design

Bus lanes will be provided in both directiosn on Knockfree Avenue, Knockpogue Avenue and Brother Delaney Road. Traffic signals and a bus gate will be provided to give bus priority on Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre.Cycle tracks will be provided from Knockfree Avenue to Blackpool Shopping Centre. A cross-section of Knockpogue Avenue is presented in Figure 6.60.

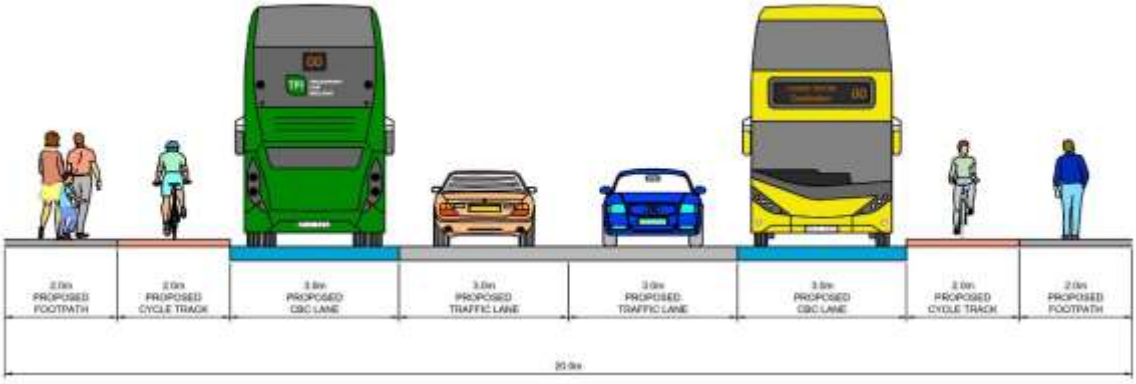


Figure 6.60 Typical Full Priority Cross Section (A – A)

A cross-section of Pophams Road is presented in Figure 6.61.

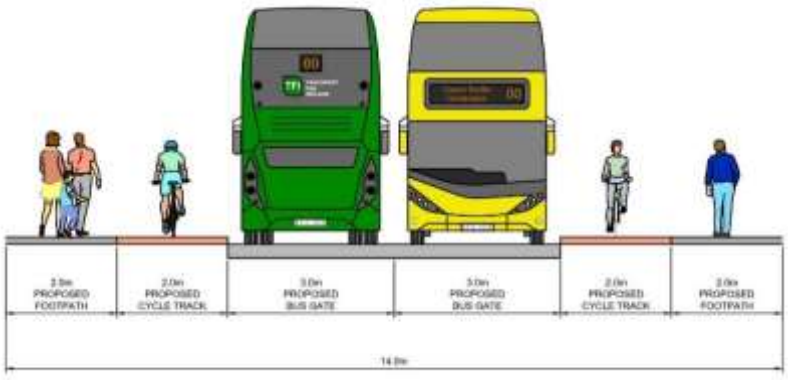


Figure 6.61 Typical Traffic Management Cross Section (B – B)

Route Option 4-3

Route Description

Route Option 4-3 is presented in Figure 6.62 and described as follows.

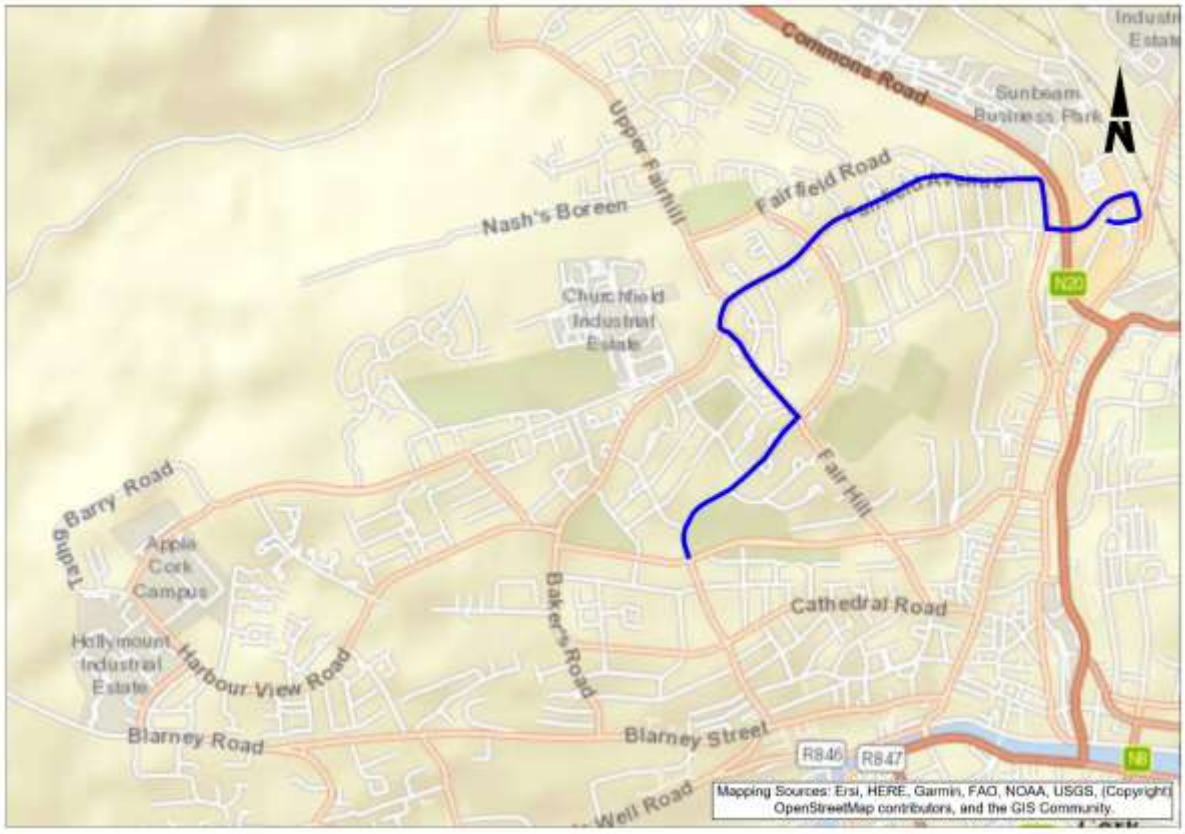


Figure 6.62 Route Option 4-3 (shown in blue)

Eastbound: Route Option 4-3 commences at the junction at St.Colmcille's Road and Knockfree Avenue. From here the bus travels along Knockfree Avenue to Fair Hill and On to Mountagnes Road and Fairfield Avenue to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Westbound: The Westbound route follows the same route as the Eastbound routing.

Route Option 4-3

Indicative Scheme Design

Figure 6.63 illustrates the indicative scheme design for Route Option 4-3 as well as locations of indicative cross-sections.

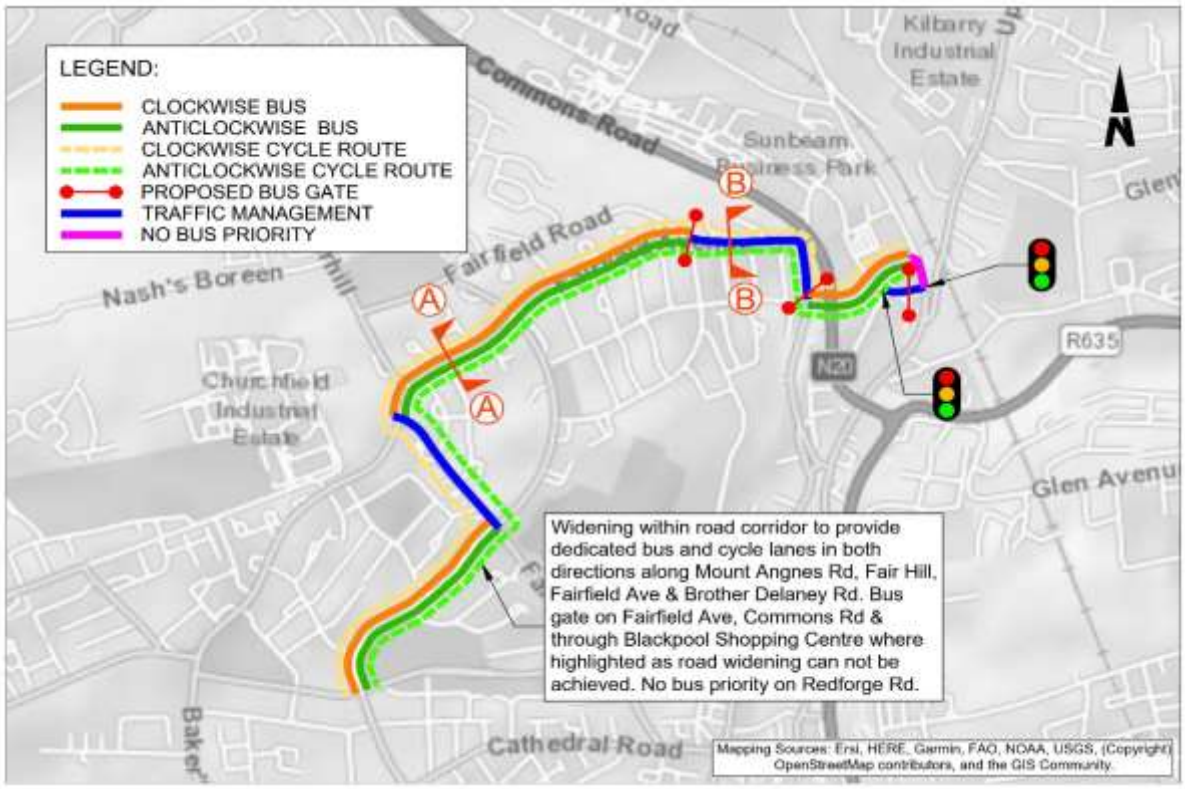


Figure 6.63 Route Option 4-3 Indicative Scheme Design

Bus lanes will be provided in both direction on Knockfree Avenue, Mount Agnes Road, Fairfield Avenue. Traffic management will be provided on Fair Hill as widening is unachievable due to the existing constraints. Traffic signals and a bus gate will be provided to give bus priority through sections of Fairfield Road and Commons Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre.

Cycle tracks will be provided from Churchfield Avenue to Blackpool Shopping Centre. A cross-section of Fairfield Road is presented in Figure 6.64.

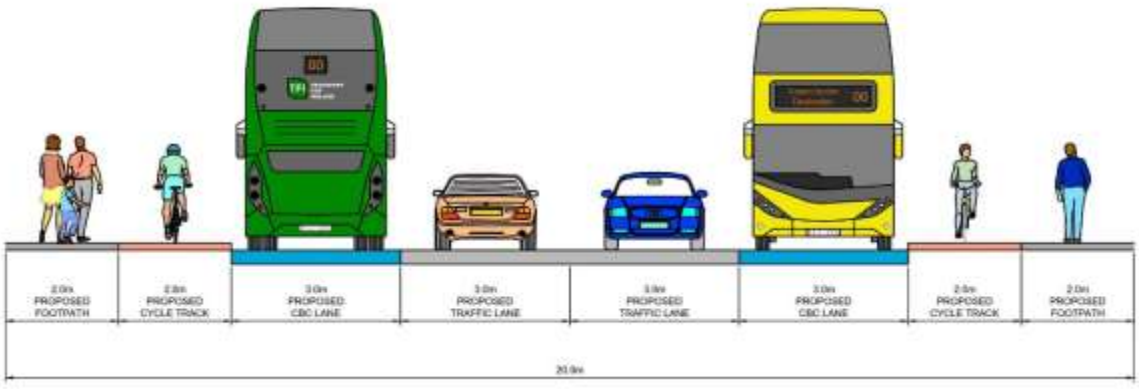


Figure 6.64 Typical Full Priority Cross Section (A – A)

A cross-section of Fairfield Road is presented in Figure 6.65.

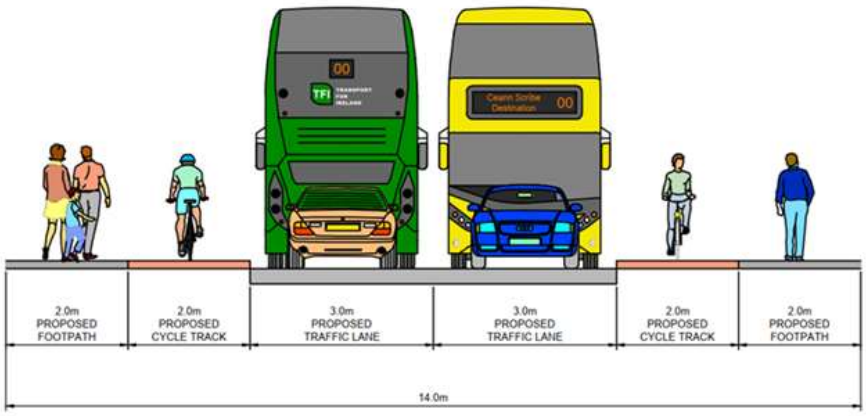


Figure 6.65 Typical Traffic Management Cross Section (B - B)

Route Option 4-4

Route Description

Route Option 4-4 is presented in Figure 6.66 and described as follows.

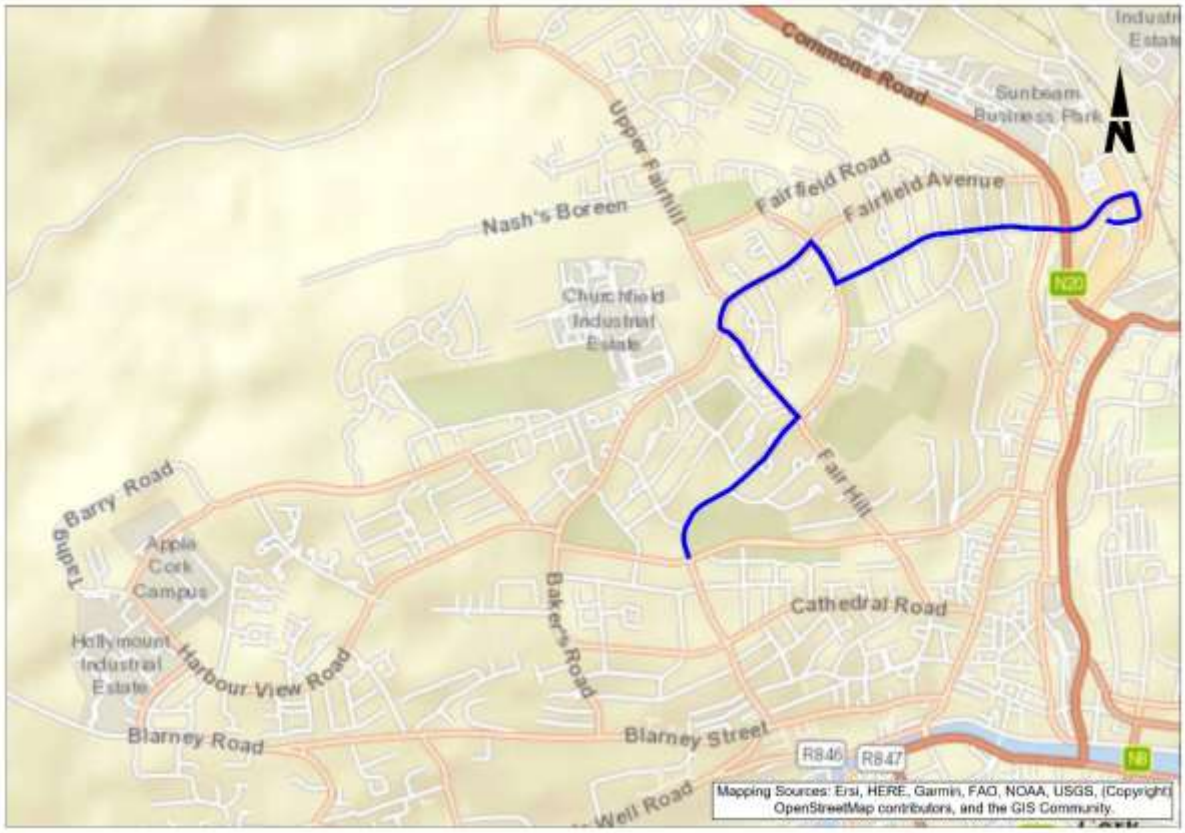


Figure 6.66 Route Option 4-4 (shown in blue)

Northbound: Route Option 4-4 commences at the junction at St. Colmcille's Road and Knockfree Avenue. From here the bus travels along Knockfree Avenue to Fair Hill and up to Mount Agnes Road. It then moves along Fairfield Avenue, Knockpogue Avenue, Pophams Road to Brothers Delaney Road and Blackpool Shopping Centre via Redforge Road.

Southbound: The Southbound route follows the same route as the Northbound routing.

Route Option 4-4

Indicative Scheme Design

Figure 6.67 illustrates the indicative scheme design for Route Option 4-4 as well as locations of indicative cross-sections.

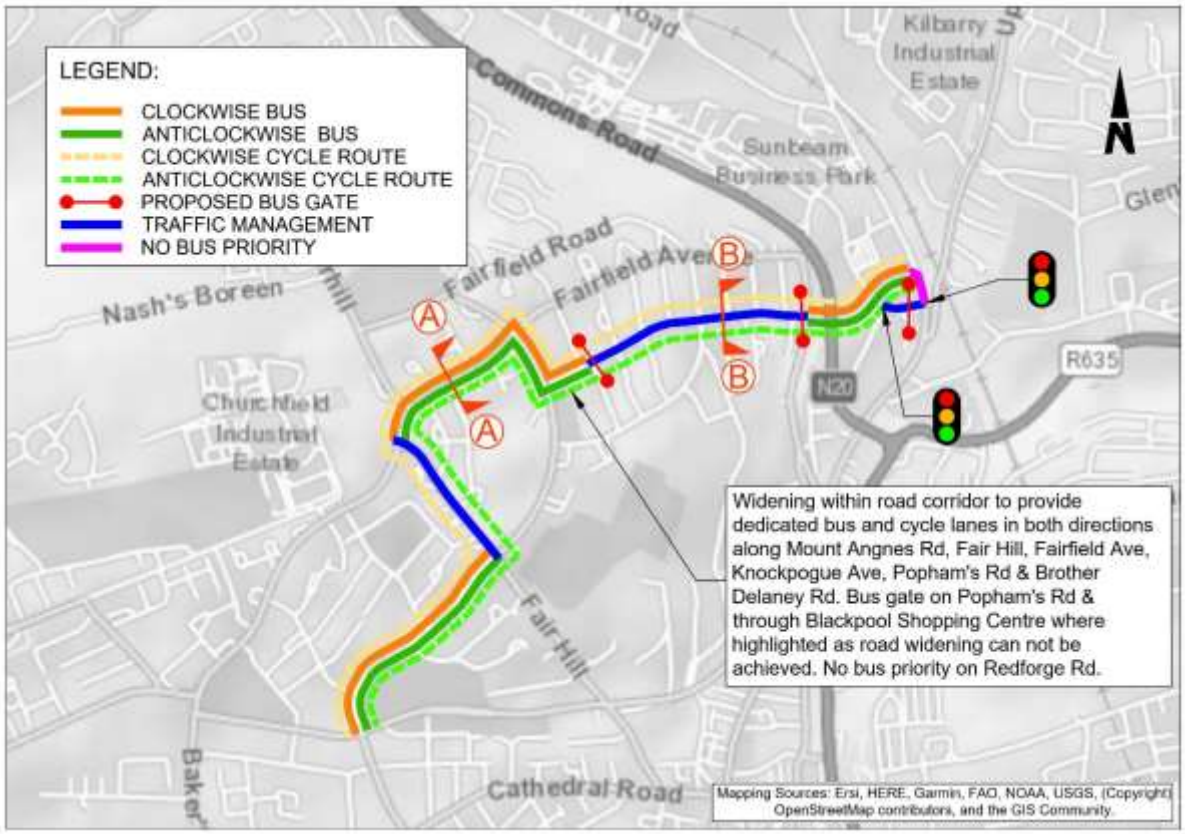


Figure 6.67 Route Option 4-4 Indicative Scheme Design

Bus lanes will be provided in both direction on Knockfree Avenue, Mount Agnes Road, Fairfield Avenue, Knockpogue Avenue and Brother Delaney Road. Traffic management will be provided on Fair Hill as widening is unachievable due to the existing constraints. Traffic signals and a bus gate will be provided to give bus priority on Pophams Road where the provision of bus lanes is restricted due to existing constraints. No bus provision will be provided on Redforge Road as it is not achievable given the existing constraints. A bus gate will also be provided through Blackpool Shopping Centre. Cycle tracks will be provided from Churchfield Avenue to Blackpool Shopping Centre. A cross-section of Fairfield Road is presented in Figure 6.68.

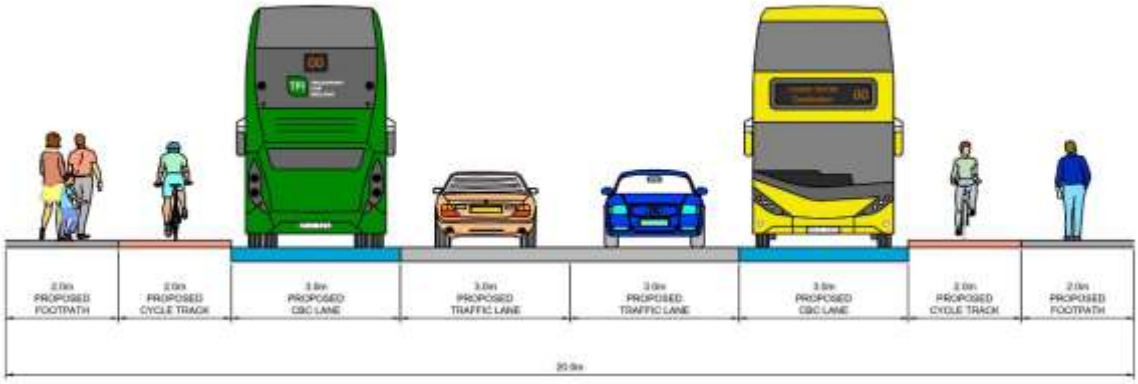


Figure 6.68 Typical Full Priority Cross Section (A – A)

A cross-section of Pophams Road is presented in Figure 6.69.

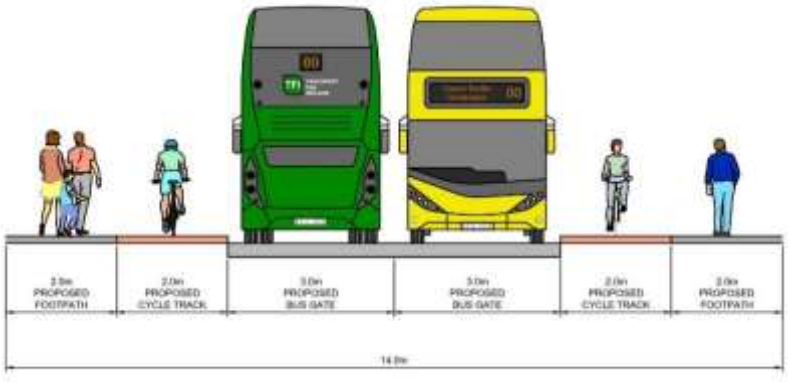


Figure 6.69 Typical Bus Gate Cross Section (B - B)

6.4 Stage 2 Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Orbital STC are presented in Appendix A. A summary of the ranking of route options against the scheme sub-criteria is presented in Table 6.3, Table 6.4, Table 6.5, and Table 6.6 below. Table 6.3 assesses options from the West to Point G.

Table 6.3 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 1-1	Option 1-2	Option 1-3	Option 1-4
Economy	Capital Cost				
	Average Journey Time				
	Journey Time Reliability				
Integration	Land Use Integration				
	Residential and Employment Catchments				
	Transport Integration				
	Cyclist Integration				
	Pedestrian Integration				
Accessibility and Social Inclusion	Key Trip Attractors				
	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				

Option 1-2 is the emerging preferred option from the West to Point G. This option has advantages from a capital cost prespective over some other options considered. This option has some advatages from a journey time reliabliity perspective as it has 79% bus lanes as well as an additional 21% of the journey having bus priority through traffic management.

Option 1-2 has higher employment and residential catchment than other options. Option 1-2 aligns with the CMATS cycle network and as such has some advantages from the perspective of cyclist integration. Option 1-2 also has advantages from a land use and built environment perspective as less parking spaces will be impacted than other options.

Table 6.4 assesses options from the West to Point J.

Table 6.4 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 2-1	Option 2-2	Option 2-3
Economy	Capital Cost			
	Average Journey Time			
	Journey Time Reliability			
Integration	Land Use Integration			
	Residential and Employment Catchments			
	Transport Integration			
	Cyclist Integration			
	Pedestrian Integration			
Accessibility and Social Inclusion	Key Trip Attractors			
	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			

Option 2-1 is the emerging preferred route option in the West to Point J section. Option 2-1 aligns with the CMATS cycle network and as such has some advantages from the perspective of cyclist integration. Option 2-1 has advantages from a trip attraction perspective. The route connect with key trip attractors such as: Apple Hollyhill Campus, Hollyhill Library, Terence MacSwiney Community College, Hollyhill Shopping Centre, St Mary's Health Campus, Knocknaheeney Learning Campus, Gerry O'Sullivan Park and Scoil Padre Pio. Option 2-1 has some safety advantages over other options as it interacts with less junctions and side-roads compared to other options.

Table 6.5 assesses options from the West to Point G.

Table 6.5 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 3-1	Option 3-2	Option 3-3	Option 3-4
Economy	Capital Cost				
	Average Journey Time				
	Journey Time Reliability				
Integration	Land Use Integration				
	Residential and Employment Catchments				
	Transport Integration				
	Cyclist Integration				
	Pedestrian Integration				
Accessibility and Social Inclusion	Key Trip Attractors				
	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				

Option 3-4 is the emerging preferred route option in the East to Point G section. Option 3-4 has significant advantages from a Trip Attractors perspective. This r oute serves key trip attractors such as: Farranree Credit Union, Farranferris Park, Scoil Aiseiri Chriost, Scoil Iosagain, North Presentation Catholic Secondary School and Blackpool Shopping Centre. This route has some safety advantages over other options as it has less junction and side-roads than other options.

Option 3-4 has some environmental advantages over other options as it has less of an impact on the existing biodiversity than other options and less of an impact on the existing land use and built environment.

Table 6.6 assesses options from the East to Point J.

Table 6.6 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 4-1	Option 4-2	Option 4-3	Option 4-4
Economy	Capital Cost				
	Average Journey Time				
	Journey Time Reliability				
Integration	Land Use Integration				
	Residential and Employment Catchments				
	Transport Integration				
	Cyclist Integration				
	Pedestrian Integration				
Accessibility and Social Inclusion	Key Trip Attractors				
	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				

Option 4-1 is the emerging preferred route option in the East to Point J section. This option has advantages from a Capital Cost prespective over some other options considered. This option has some advatages from a journey time reliabliity perspective as it has 46% bus lanes as well as an additional 30% of the journey having bus priority through traffic management.

Option 4-1 has some advantages over other options from a transport integration prespective as it has less new traffic restrictions than other options. Option 4-1 has some environmental advantages over other options as it has less of an impact on the existing biodiversity than other options and less of an impact on the existing land use and built environment.

6.5 Conclusion

An end-to-end assessment is shown in Table 6.7 below.

Table 6.7 Route Options Assessment Summary (Main Criteria)

Assessment Criteria	Option 1-2 & 3-4	Option 2-1 & 4-1
Economy		
Integration		
Accessibility and Social Inclusion		
Safety		
Environment		

A combination of Option 1-2 and Option 3-4 is the emerging preferred route option in the North West Sector. This option has significant advantages from environment perspective as it has less impact on the existing biodiversity and less impact on the land use and built environment also. Option 1-2 & 3-4 has advantages as the capital cost of the project is less and it has lower average bus journey times.

7. North East Sector

7.1 Introduction

This chapter outlines the options assessment process for the North East Sector (Blackpool to the Jack Lynch Tunnel). The study area for the North East Sector was developed to include the main trip generators, existing and proposed roads between Blackpool and the Jack lynch Tunnel. The study area includes a new development in Tivoli. The study area is shown below in Figure 7.1.

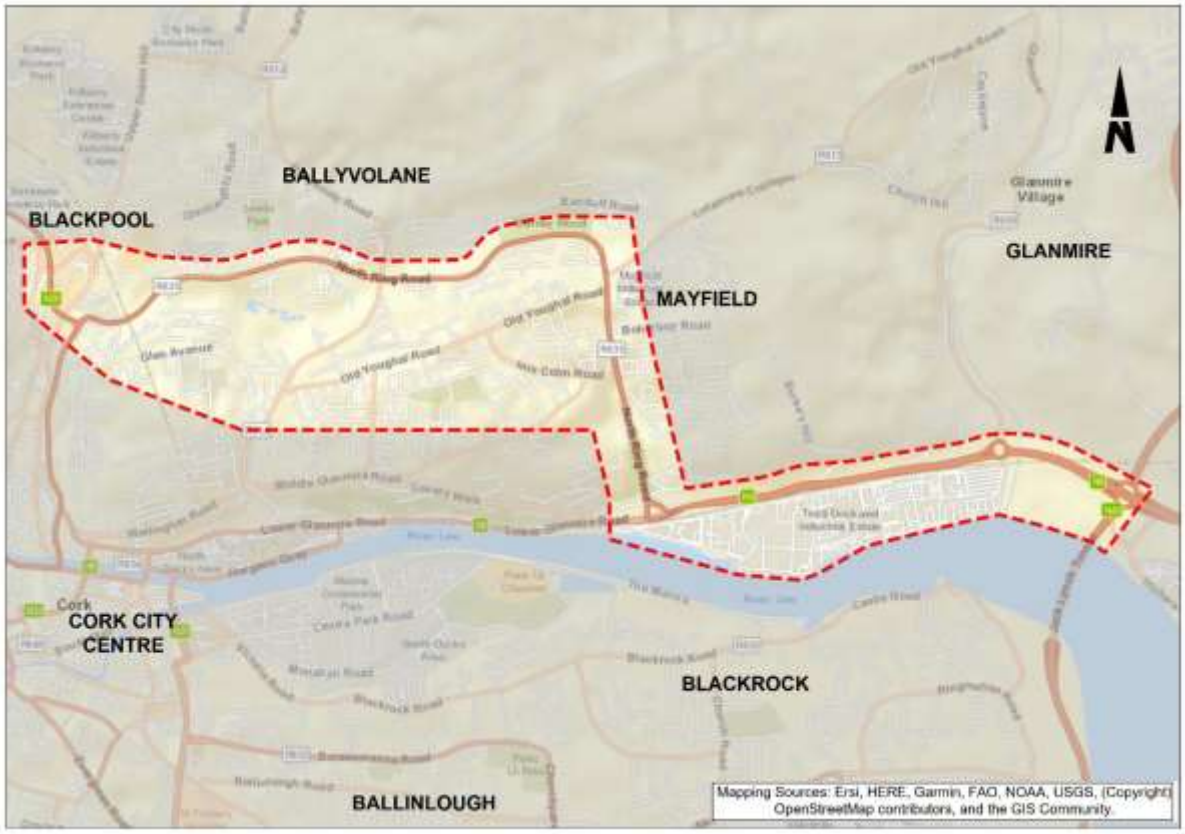


Figure 7.1 North East Sector Study Area

The North East sector is divided into sections as shown in Figure 7.2 below so that options can be presented. Section 1 covers the area from Blackpool to the junction at Colmcille Avenue & the North Ring Road. Section 2 covers the area between the junction at Colmcille Avenue & the North Ring Road and the Jack Lynch Tunnel.

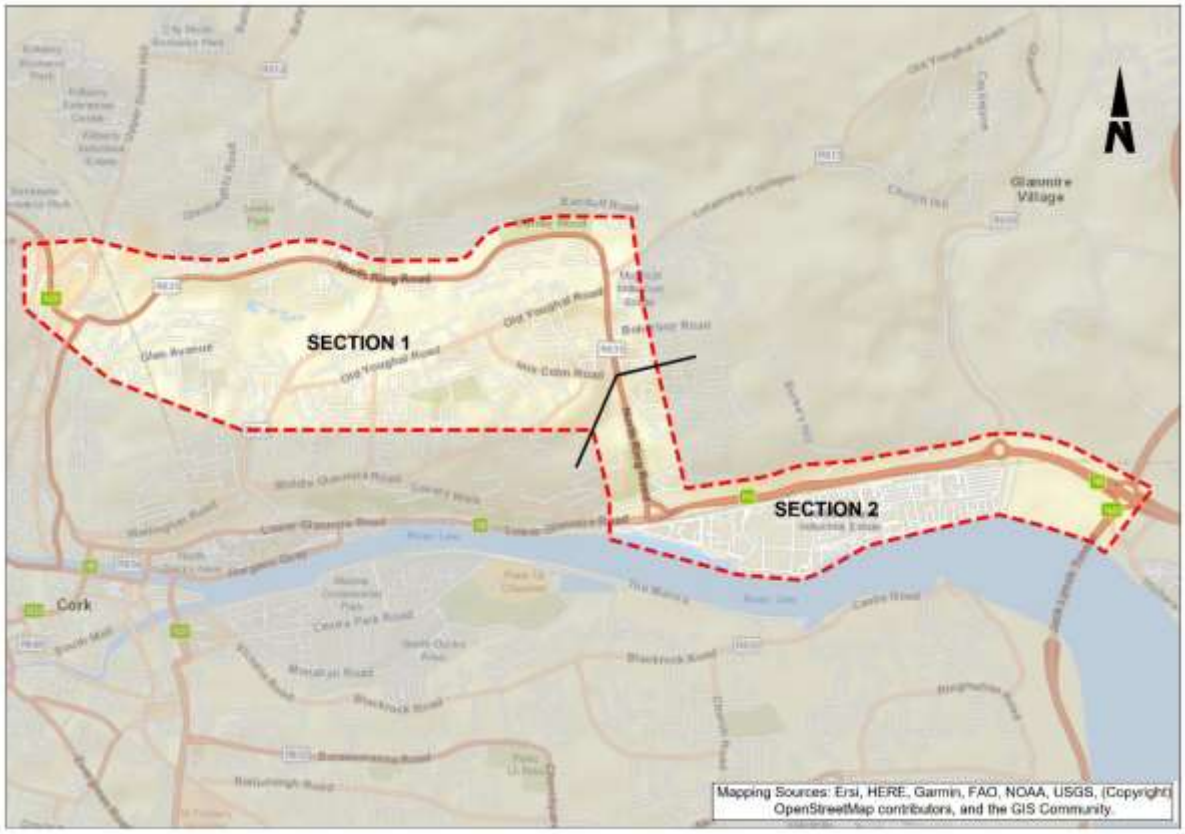


Figure 7.2 Study Area Sections

7.2 Stage 1 Options Assessment

Road links within the North East Sector that are subject to Stage 1 options assessment are shown in Figure 7.3 and Figure 7.4.

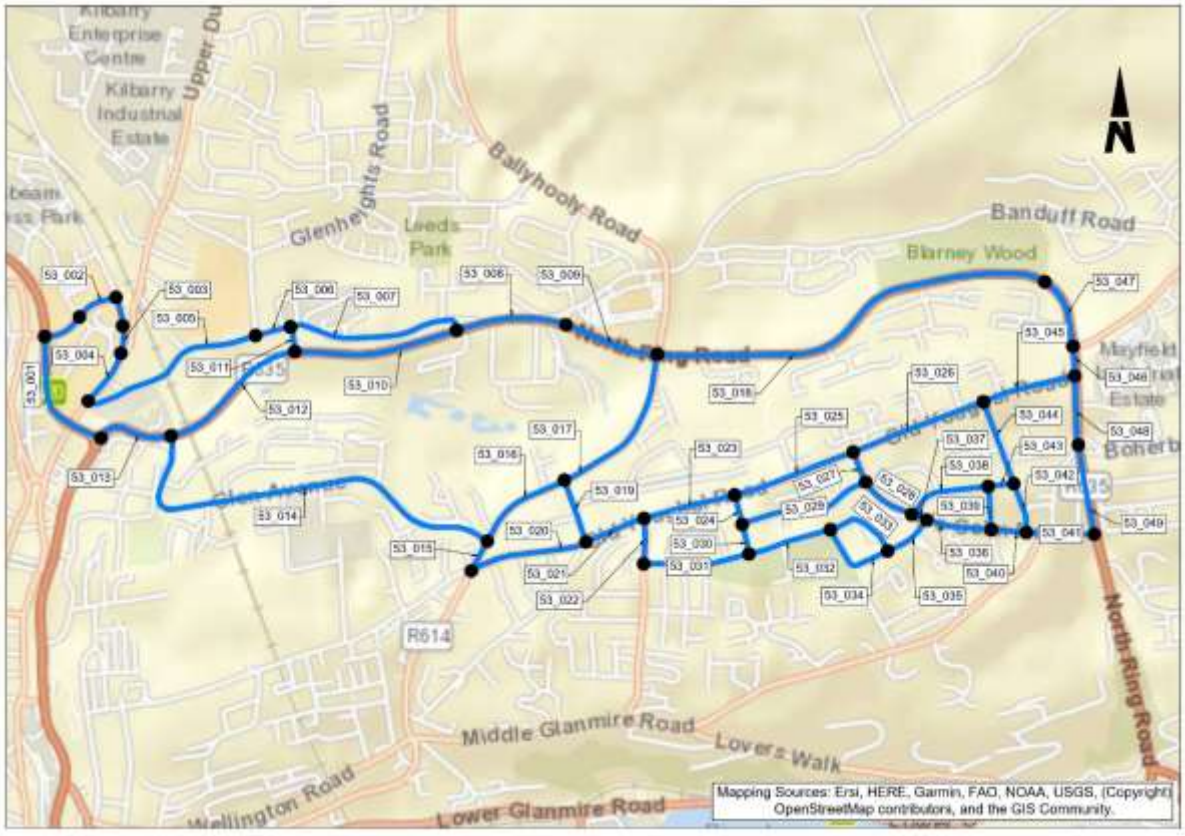


Figure 7.3 North East Options - Section 1

A summary of the North East Stage 1 - Section 1 is provided in Appendix A.5.

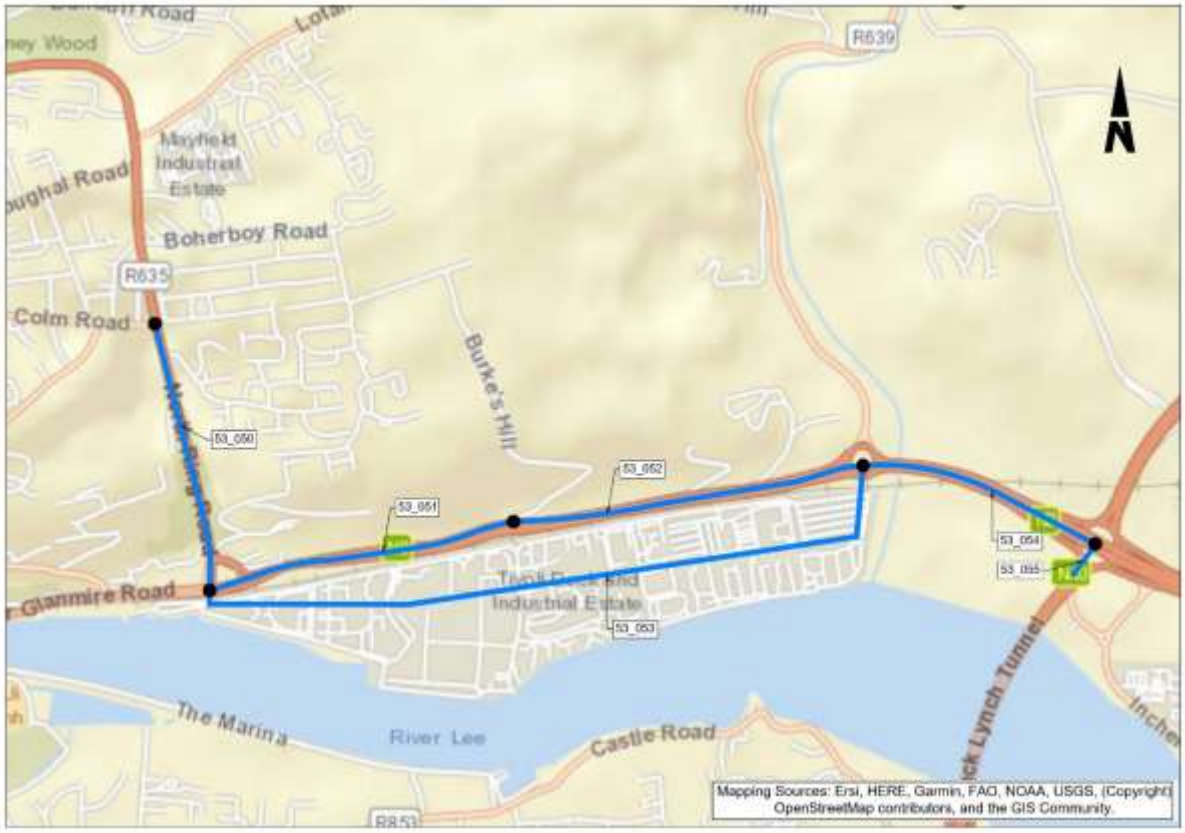


Figure 7.4 North East Options - Section 2

A summary of the North East Stage 1 - Section 2 is provided in Appendix A.6. The outcome of the assessment can be seen in the figure below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

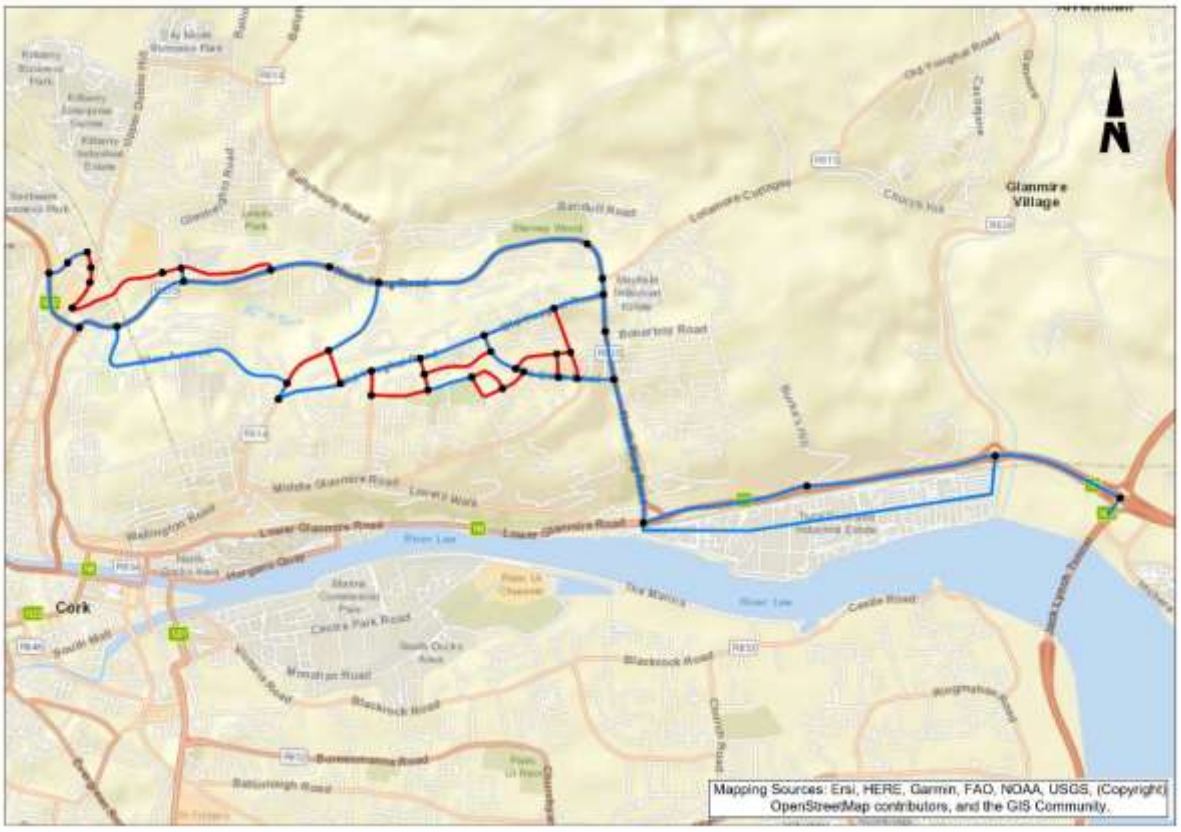


Figure 7.5 Sifting Assessment

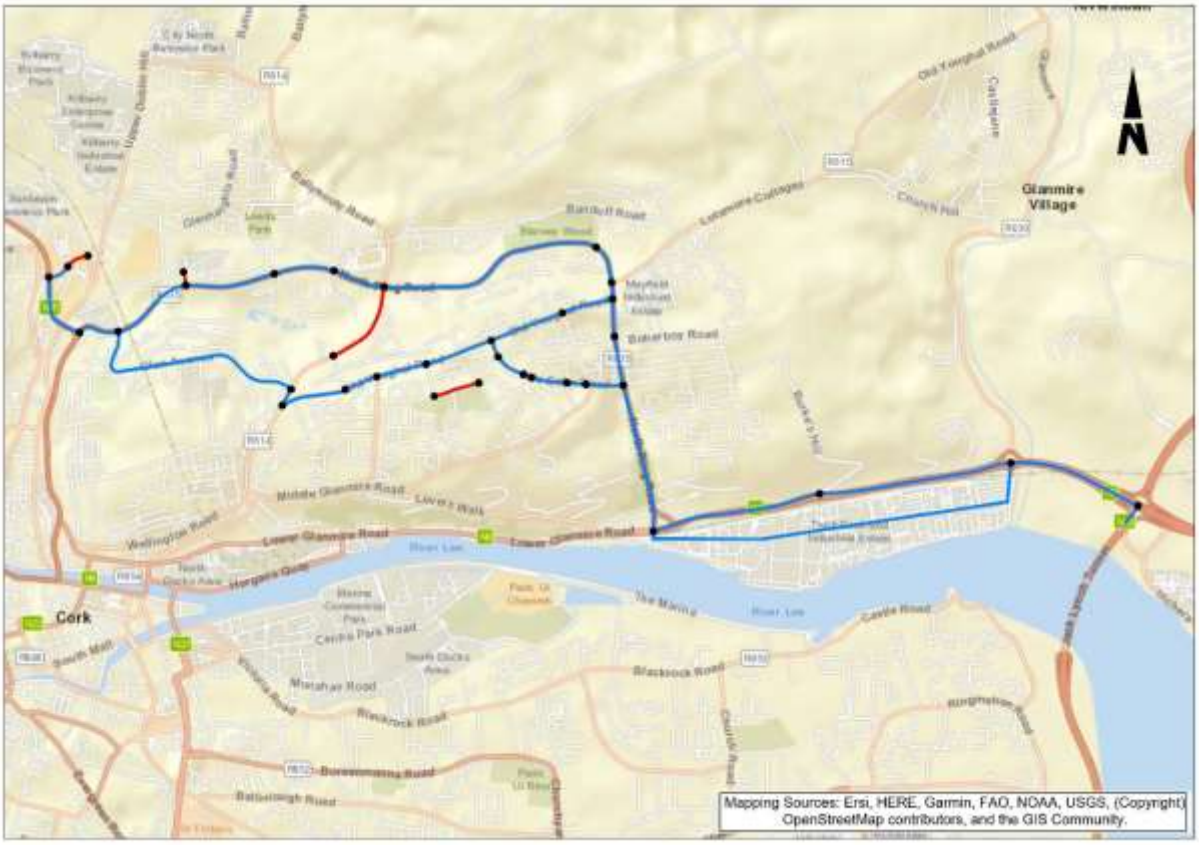


Figure 7.6 Removal of dead ends, disconnected or overly circuitous links

The figure below shows the final spiders web of links that will be bought forward for Stage 2 assessment.

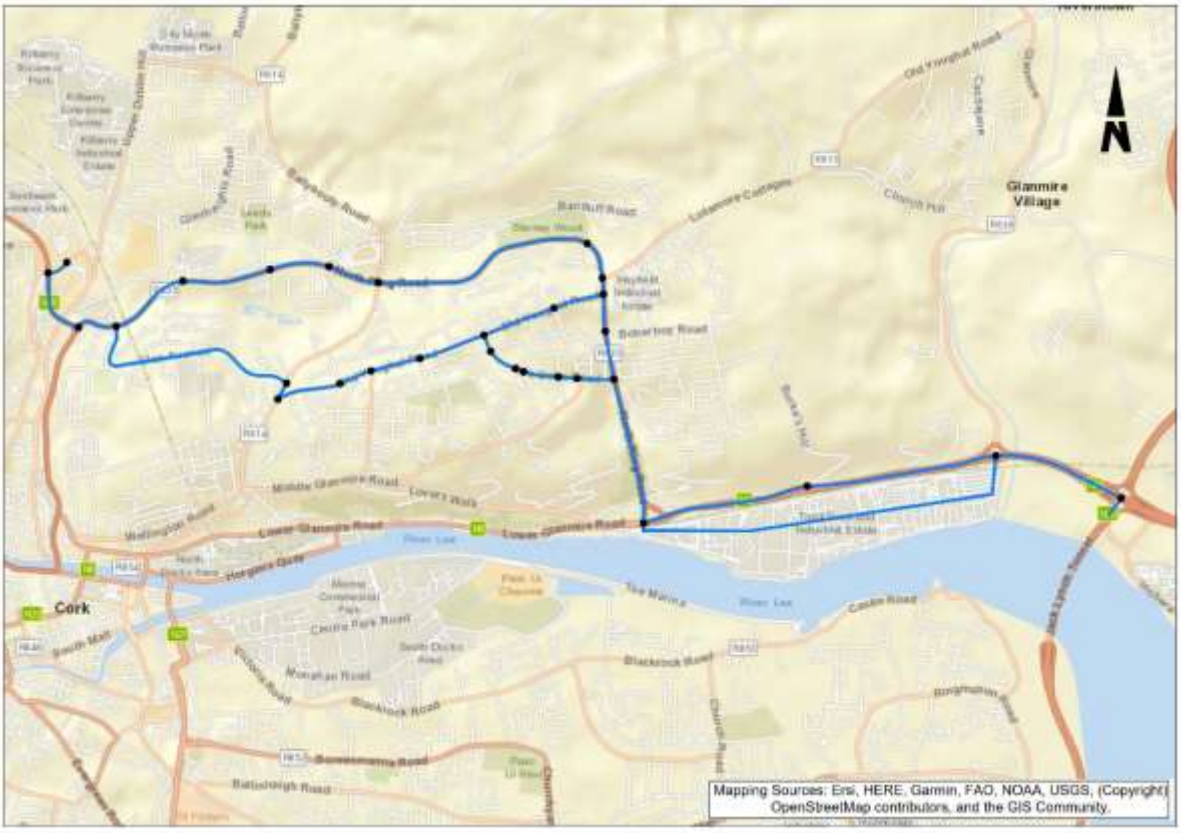


Figure 7.7 Spiders Web for Stage 2 Assessment

7.3 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 7.8:

- Option 1-1: (A, B, C, D, E, F, G)
- Option 1-2: (A, B, H, I, C, D, E, F, G)
- Option 1-3: (A, B, H, I, D, E, F, G)
- Option 2-1: (A, B, C, D, E, J, F, G)
- Option 2-2: (A, B, H, I, C, D, E, J, F, G)
- Option 2-3: (A, B, H, I, D, E, J, F, G)

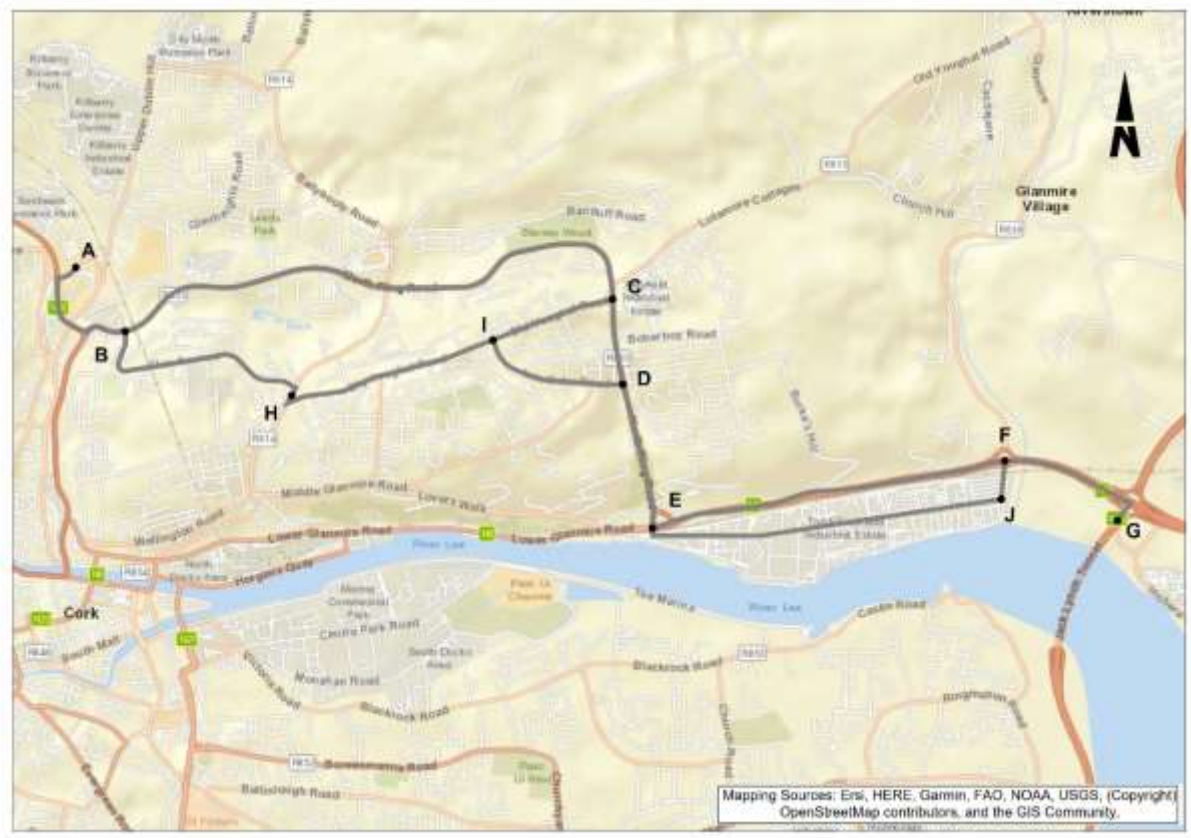


Figure 7.8 Links for Stage 2 Assessment

Route Description

Route Option 1-1 is presented in Figure 7.9 and described as follows.

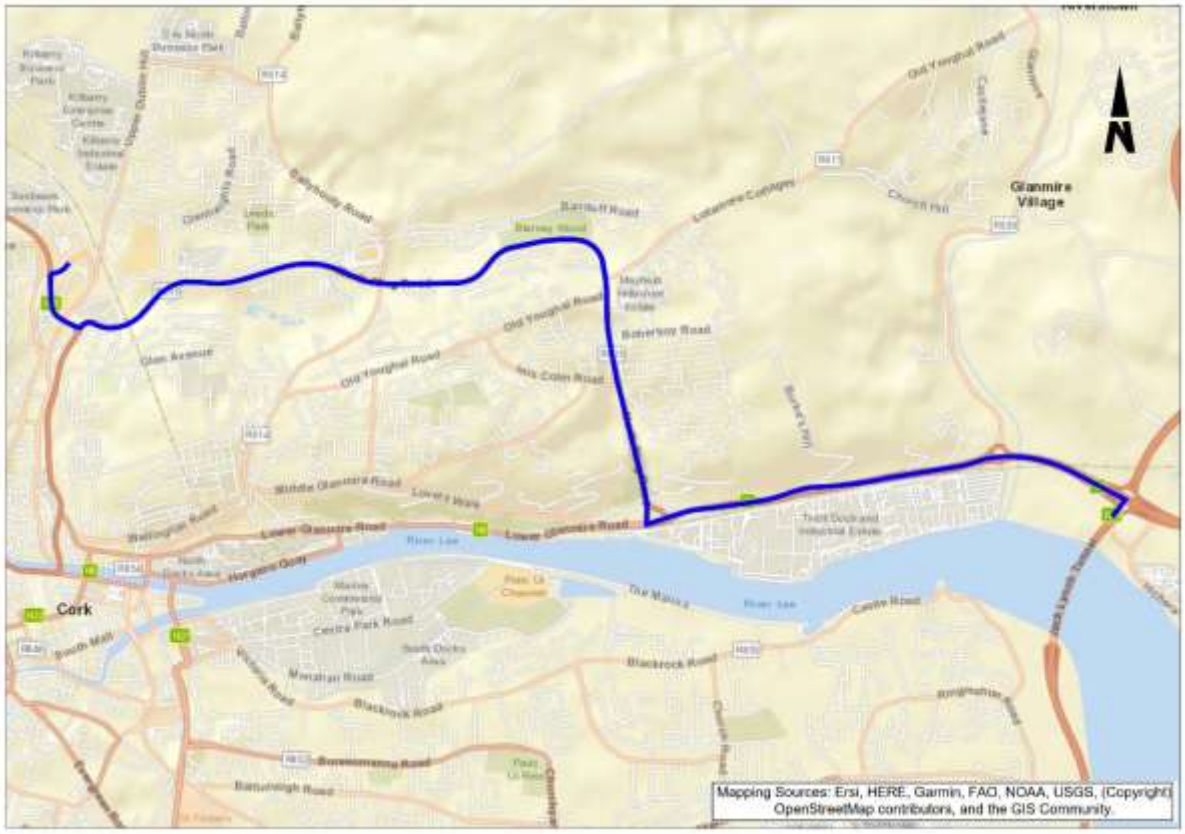


Figure 7.9 Route Option 1-1

Southbound: Route Option 1-1 commences at Blackpool Shopping Centre, from here the bus travels along the N20 to the North Ring Road. The bus then continues on the North Ring Road eastbound where it then travels south through Mayfield & Silversprings. Moving through Silversprings, on to Lower Glanmire Road via the Silversprings Interchange, the bus travels along Lower Glanmire Road to the Dunkettle Roundabout. The bus proceeds from here along the N8 dual carriageway to the Jack Lynch Tunnel.

Northbound: The northbound route would follow the same route as the southbound routing.

Route Option 1-1

Indicative Scheme Design

Figure 7.10 illustrates the indicative scheme design for Route Option 1-1 as well as locations of indicative cross-sections.

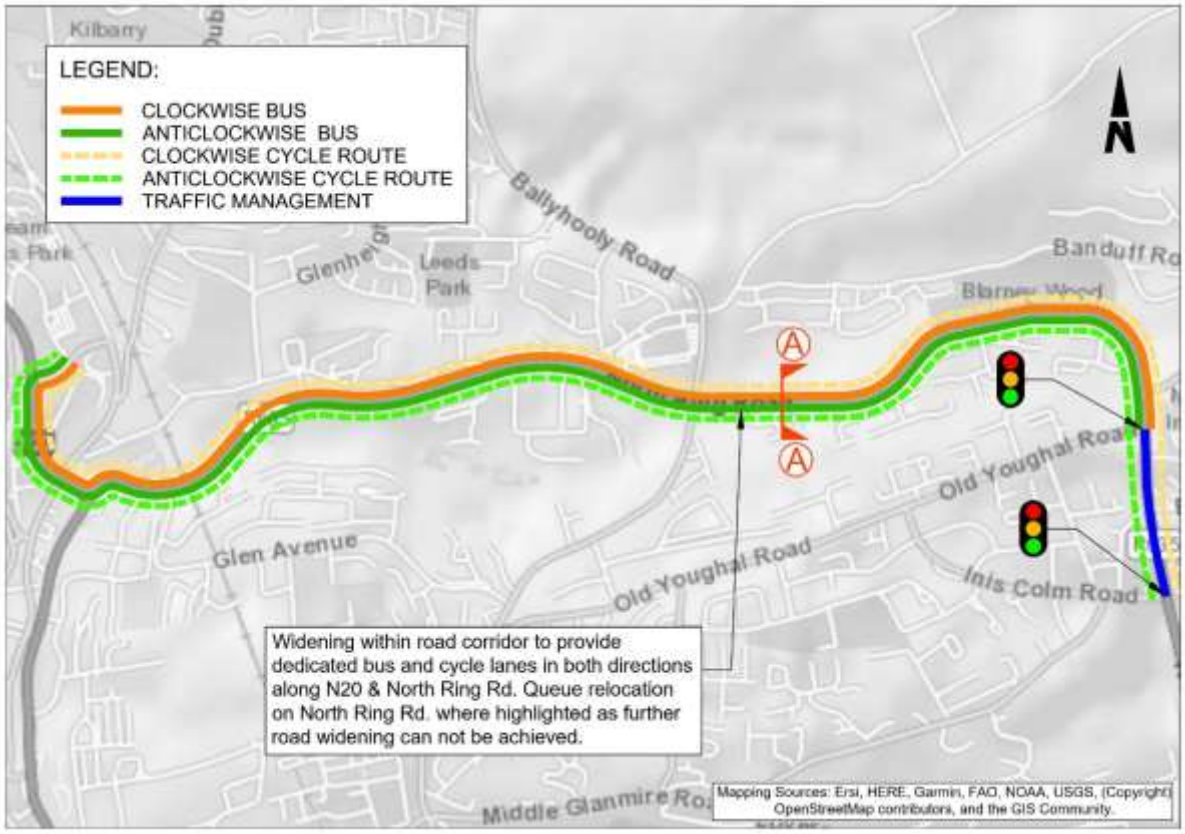


Figure 7.10 Route Option 1-1 Indicative Scheme Design

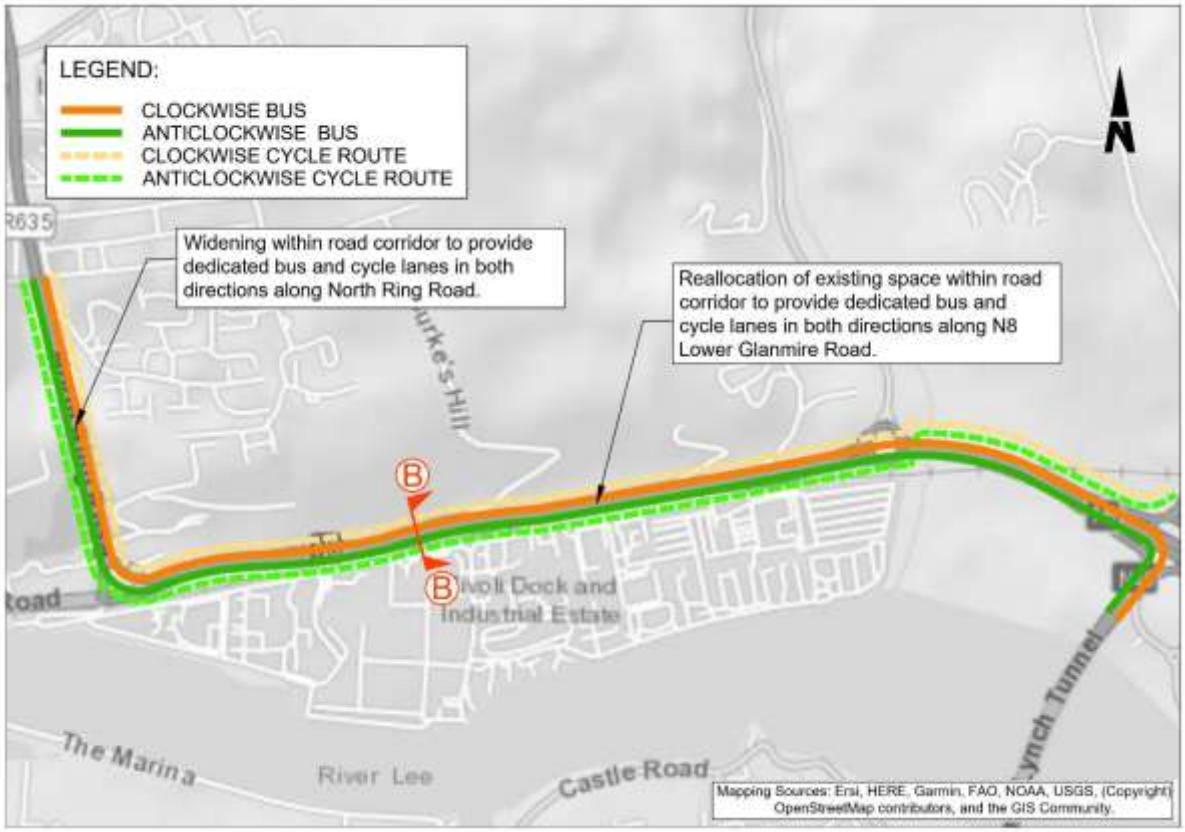


Figure 7.11 Route Option 1-1 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the junction at Old Youghal Road & North Ring Road. Between the Old Youghal Road / North Ring Road & Colmcille Avenue / North Ring Road, traffic signals will be provided to give bus priority through

the junctions. Bus lanes will be provided in both direction from Colmcille Avenue / North Ring Road junction to the Jack Lynch Tunnel.

Cycle tracks will be provided from Blackpool Shopping Centre to the junction at Colmcille Avenue & North Ring Road. Segregated cycle lanes will be provided from Colmcille Avenue / North Ring Road. They will then be provided from there to the Silversprings Interchange where the cyclists will take a quieter route through the proposed development in Tivoli Docklands. They will then re-emerge at the Dunkettle Roundabout and travel adjacent to the N8 dual carriageway. Cyclists will proceed east to merge with the strategic cycle corridor routes.

A cross-section of North Ring Road is presented in Figure 7.12.

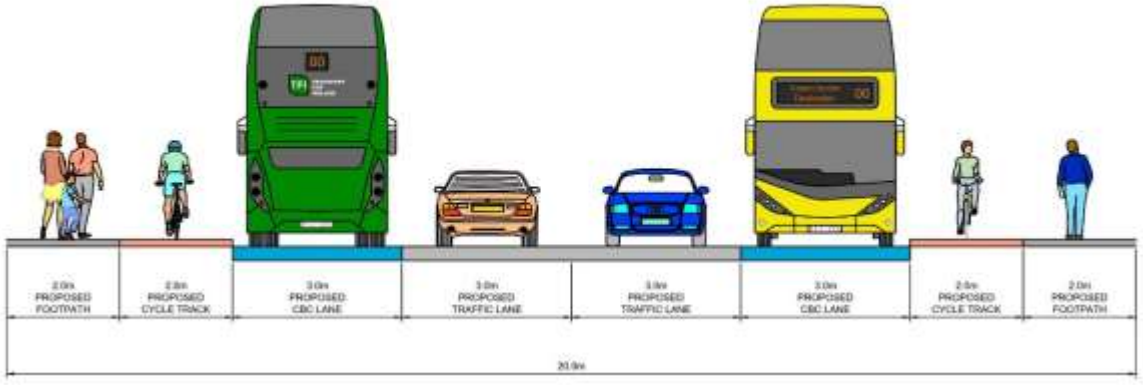


Figure 7.12 Typical Full Priority Cross Section (A - A)

A cross-section of Lower Glanmire Road is presented in Figure 7.13.

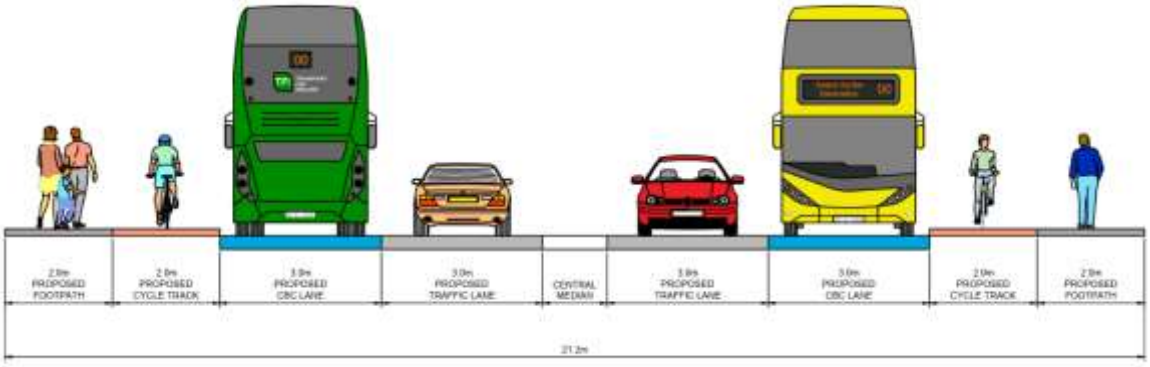


Figure 7.13 Typical Cross Section (B-B)

Route Option 1-2

Route Description

Route Option 1-2 is presented in Figure 7.14 and described as follows.

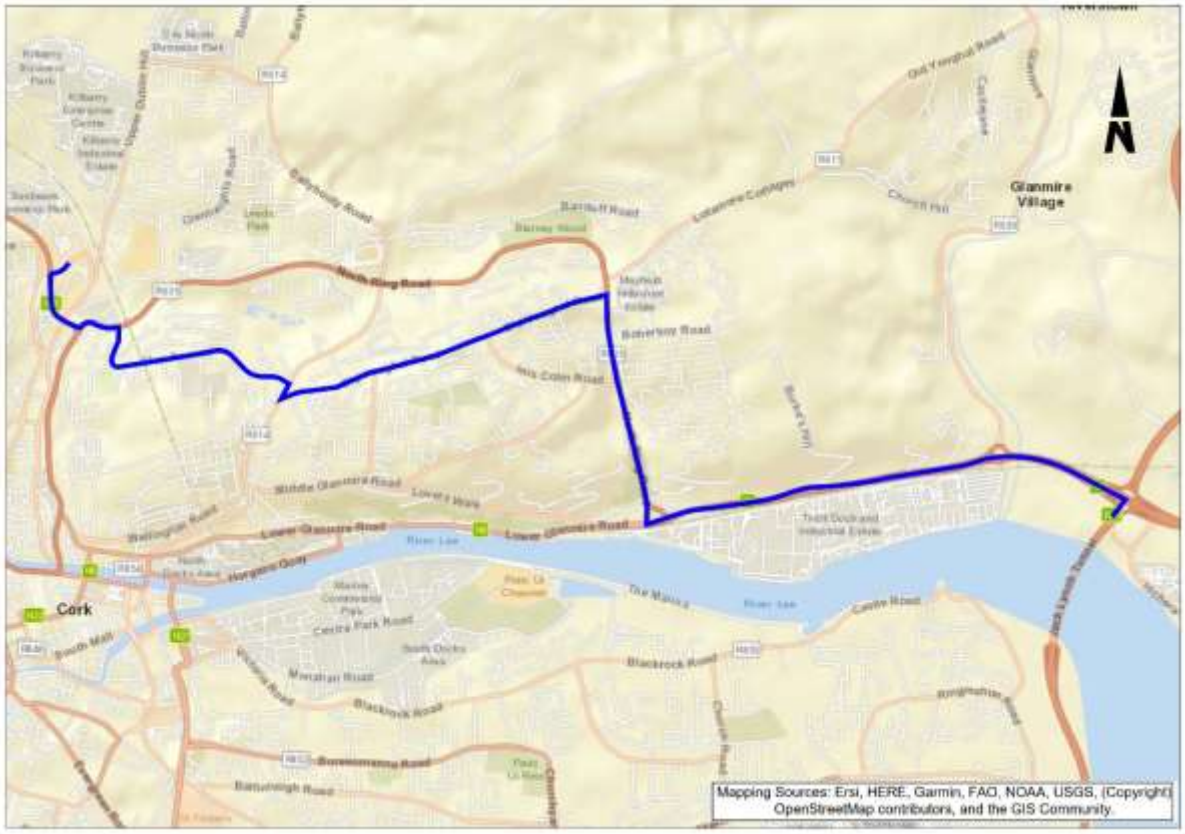


Figure 7.14 Route Option 1-2

Southbound: Route Option 1-2 commences at Blackpool Shopping Centre, from here the bus travels along the N20 to the North Ring Road. The bus then turns on to Glen Avenue and proceeds to Ballyhooly Road. From here, the bus turns on to Old Youghal Road and heads toward the North Ring Road, where it travels south through Mayfield and Silversprings. Moving through Silversprings, on to the Lower Glanmire Road via the Silversprings Interchange, the bus travels along Tivoli to the Dunkettle Roundabout. The bus proceeds from here along the Lower Glanmire Road to the Jack Lynch Tunnel.

Northbound: The northbound route would follow the same route as the southbound routing.

Indicative Scheme Design

Figure 7.15 and 7.16 illustrates the indicative scheme design for route Option 1-2 as well as locations of indicative cross-sections.

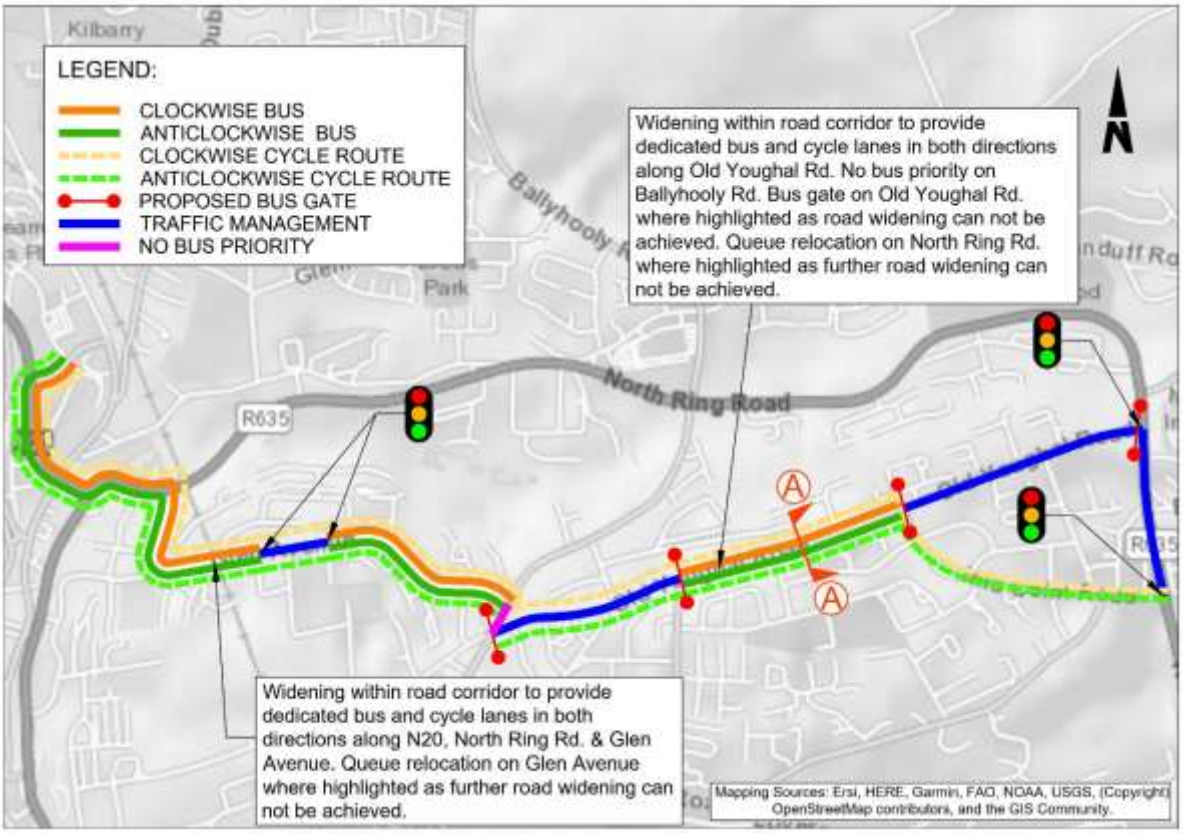


Figure 7.15 Route Option 1-2 Indicative Scheme Design

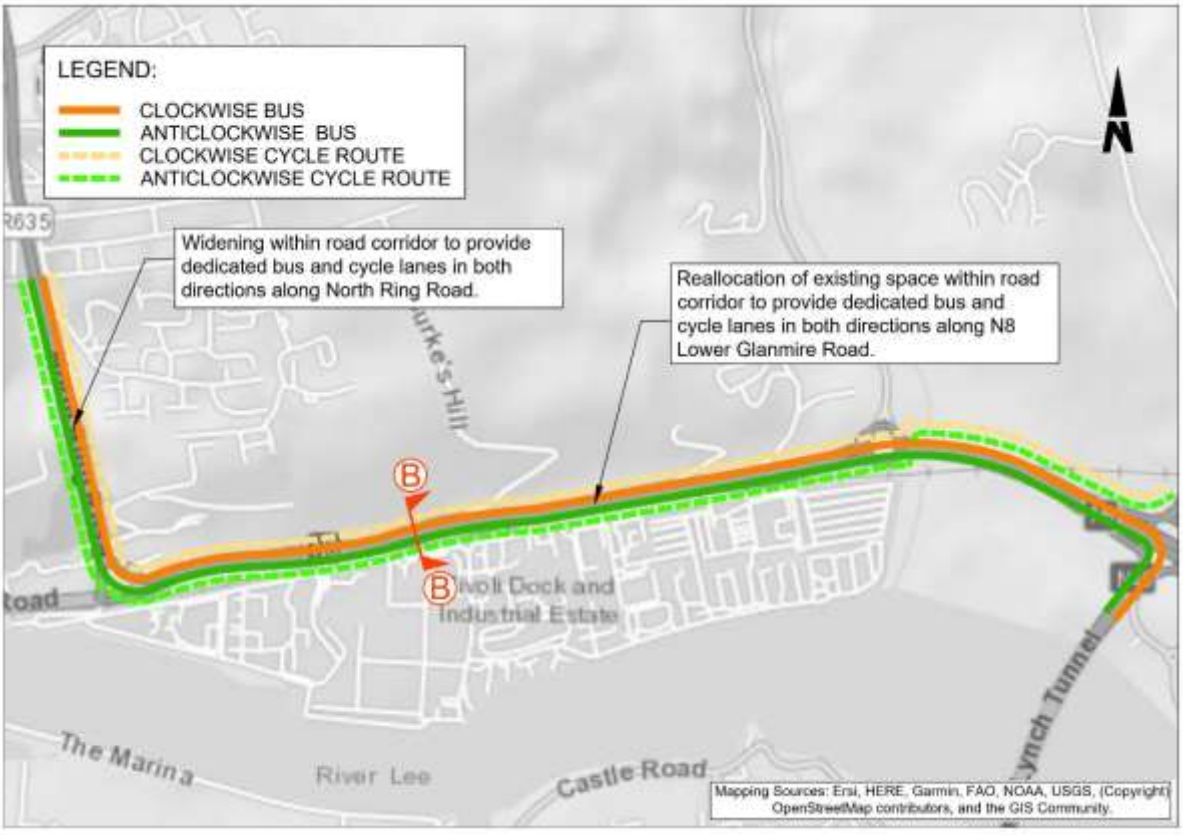


Figure 7.16 Route Option 1-2 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the Ballyhooly Road. No bus priority will be provided on Ballyhooly Road as it is unfeasible due to the proximity of houses to the existing carriageway. A bus gate will be in place on Old Youghal

Road to facilitate bus through traffic while at the same time restricting the movement of private vehicles. Bus lanes will be provided in both direction from Colmcille Avenue / North Ring Road junction to the Jack Lynch Tunnel.

Cycle tracks will be provided from Blackpool Shopping Centre to Ballyhooly Road where the cyclists will need to merge along Ballyhooly Road. Cycle tracks will continue along Old Youghal Road from Ballyhooly Road to Colmcille Avenue. Cyclists will then take a quieter route along Colmcille Avenue before re-joining the North Ring Road. From Colmcille Avenue / North Ring Road, cyclists will travel to the Silversprings Interchange and onwards via the Lower Glanmire Road.

A cross-section of Old Youghal Road is presented in Figure 7.17.

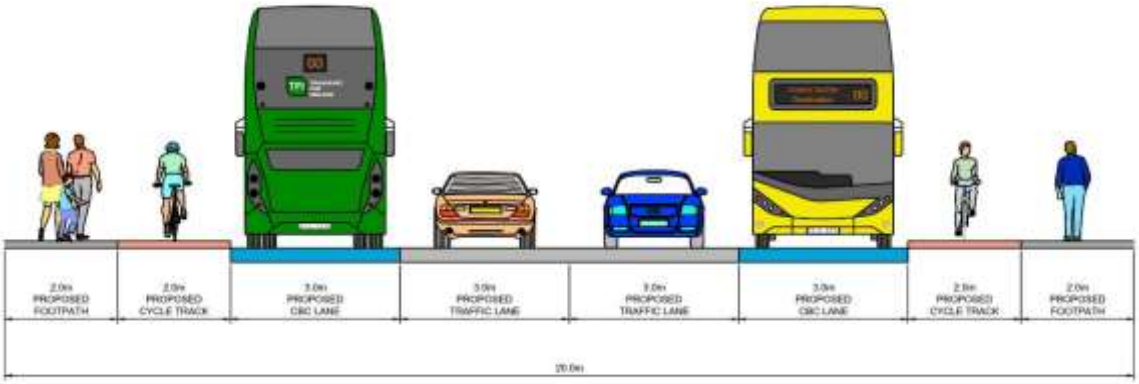


Figure 7.17 Typical Full Priority Cross Section (A-A)

A cross-section of Lower Glanmire Road is presented in Figure 7.18.

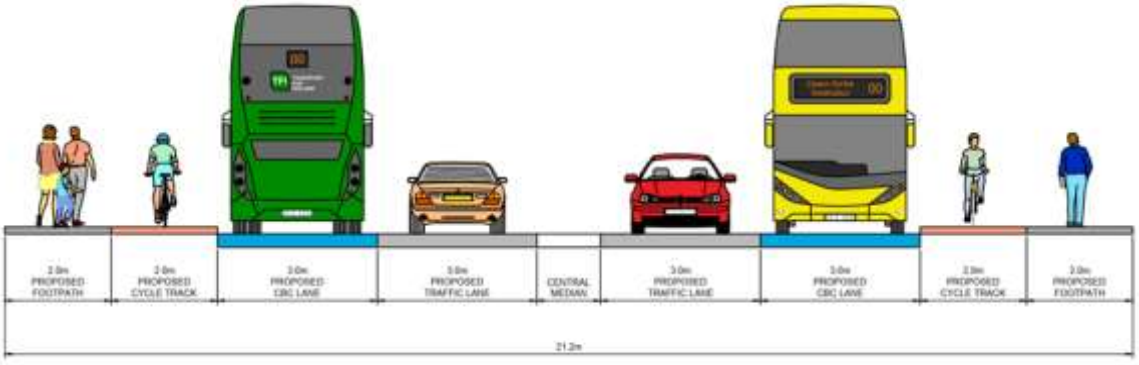


Figure 7.18 Typical Cross Section (B-B)

Route Option 1-3

Route Description

Route Option 1-3 is presented in Figure 7.19 and described as follows.

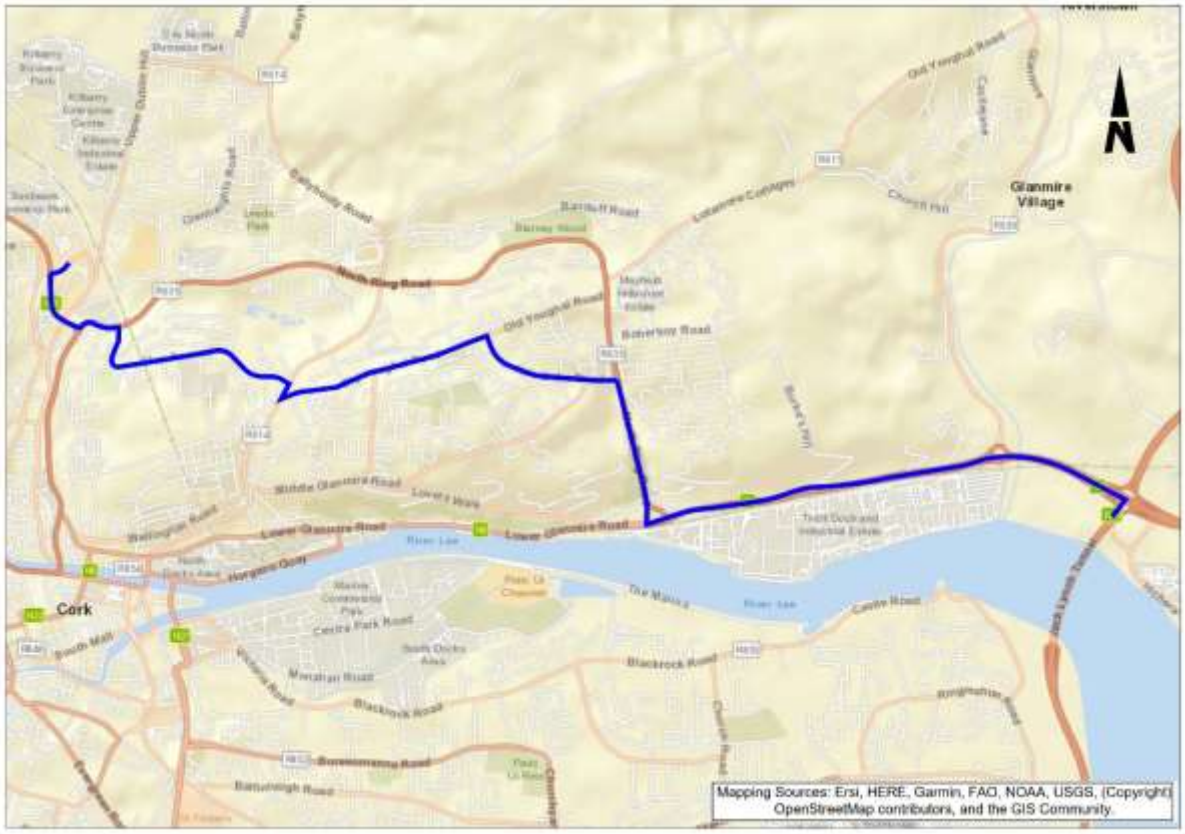


Figure 7.19 Route Option 1-3

Southbound: Route Option 1-3 commences at Blackpool Shopping Centre, from here the bus travels along the N20 to the R635 - North Ring Road. The bus then turns on to Glen Avenue and proceeds to Ballyhooly Road. From here, the bus turns on to Old Youghal Road and heads toward the R635 - North Ring Road via Colmcille Avenue, where it travels south through Mayfield and Silversprings. From here, the bus would travel southbound through Silversprings, on the Lower Glanmire Road via the Silversprings Interchange. The bus proceeds from here along the Lower Glanmire Road to the Jack Lynch Tunnel.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 1-3

Indicative Scheme Design

Figure 7.20 & 7.21 illustrates the indicative scheme design for route Option 1-3 as well as locations of indicative cross-sections.

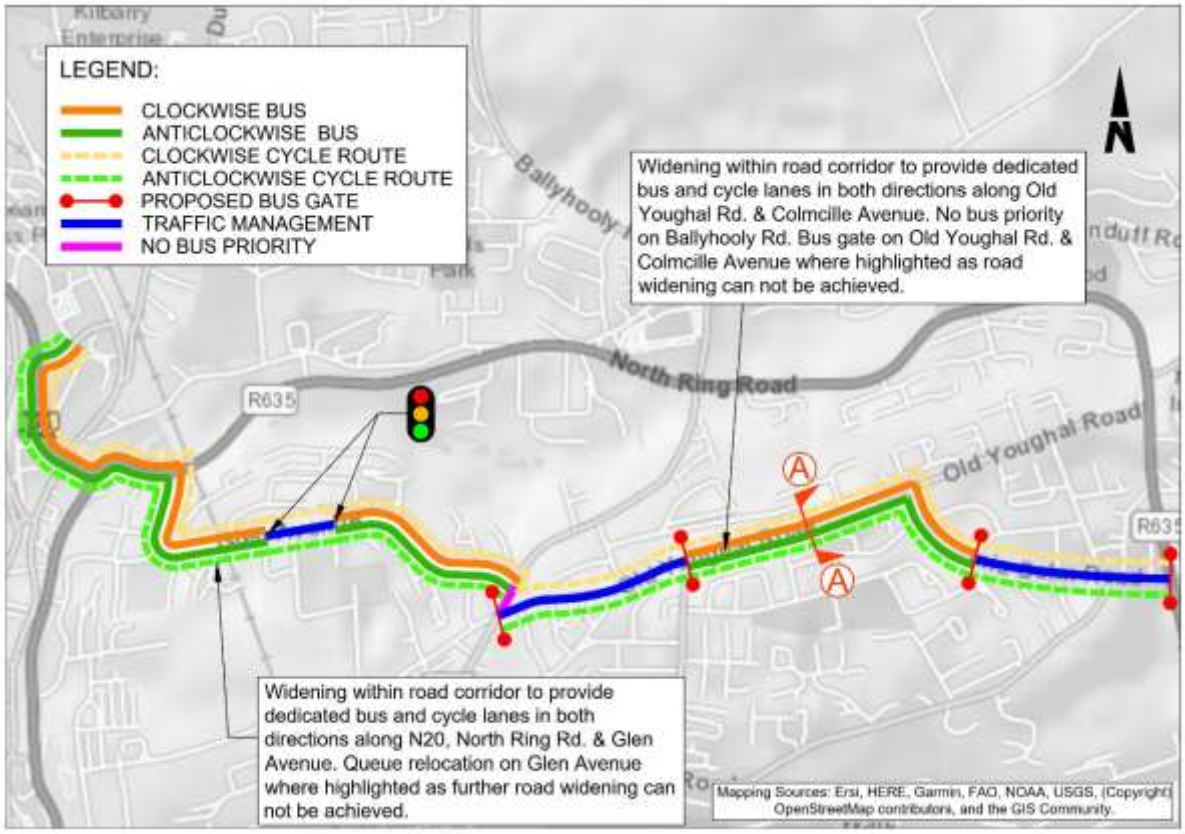


Figure 7.20 Route Option 1-3 Indicative Scheme Design

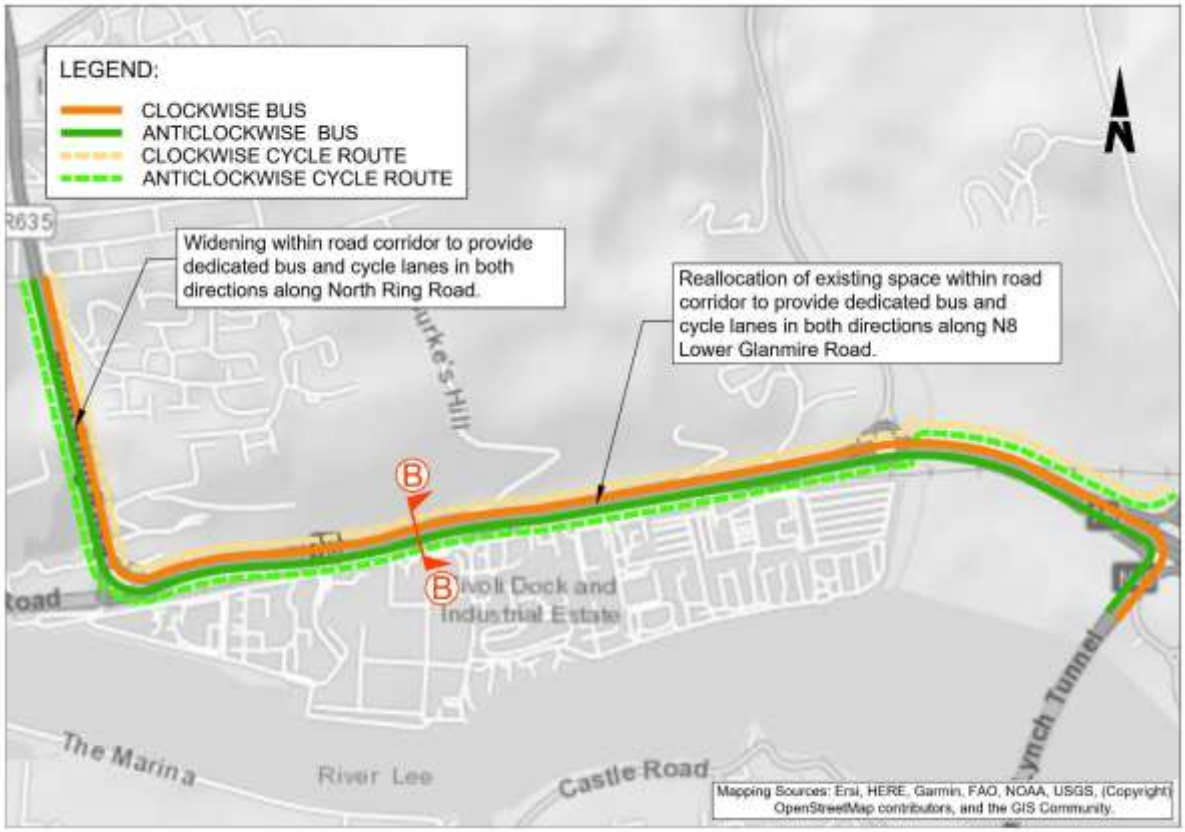


Figure 7.21 Route Option 1-3 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the Ballyhooly Road. No bus priority will be provided on Ballyhooly Road as it is unfeasible due to the proximity of house to the existing carriageway. A bus gate will be in place on Old Youghal Road

and Colmcille Avenue to facilitate bus through traffic while at the same time restricting the movement of private vehicles. Bus lanes will be provided in both direction from Colmcille Avenue / North Ring Road junction to the Jack Lynch Tunnel.

Cycle tracks will be provided from Blackpool Shopping Centre to Ballyhooly Road where the cyclists will need to merge along Ballyhooly Road. The cycle tracks will continue along Old Youghal Road from Ballyhooly Road through Colmcille Avenue and on to R635 - North Ring Road. From Colmcille Avenue / North Ring Road, cyclists will travel to the Silversprings Interchange where the cyclists will continue on the Lower Glanmire Road.

A cross-section of Old Youghal Road where the typical full bus priority cross section can be provided is presented in Figure 7.22.

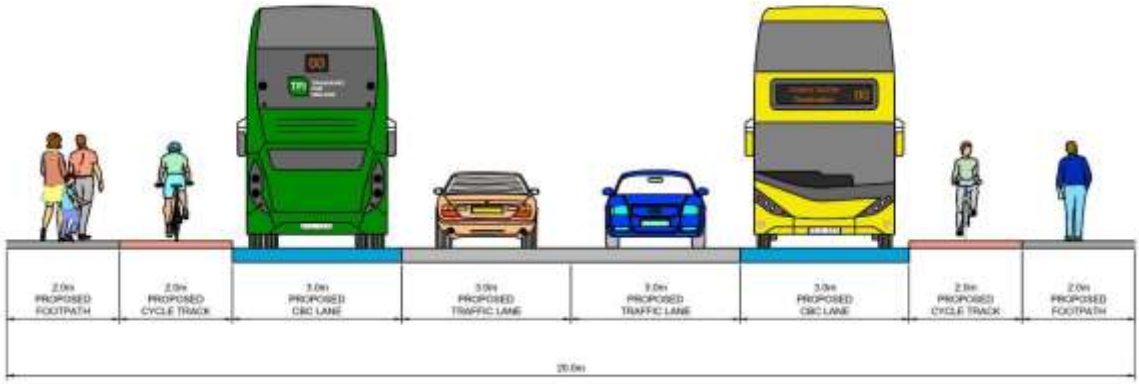


Figure 7.22 Typical Full Priority Cross Section (A-A)

A cross-section of Lower Glanmire Road is presented in Figure 7.23.

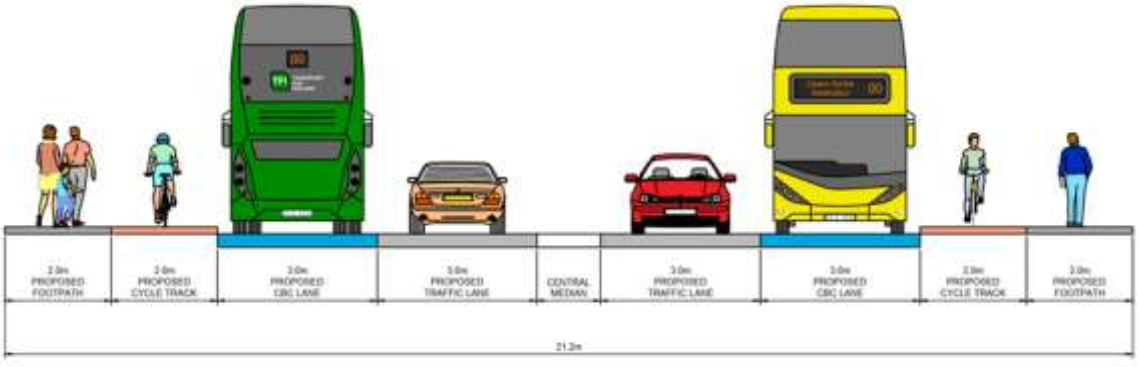


Figure 7.23 Typical Cross Section (B-B)

Route Option 2-1

Route Description

Route Option 2-1 is presented in Figure 7.24 and described as follows.

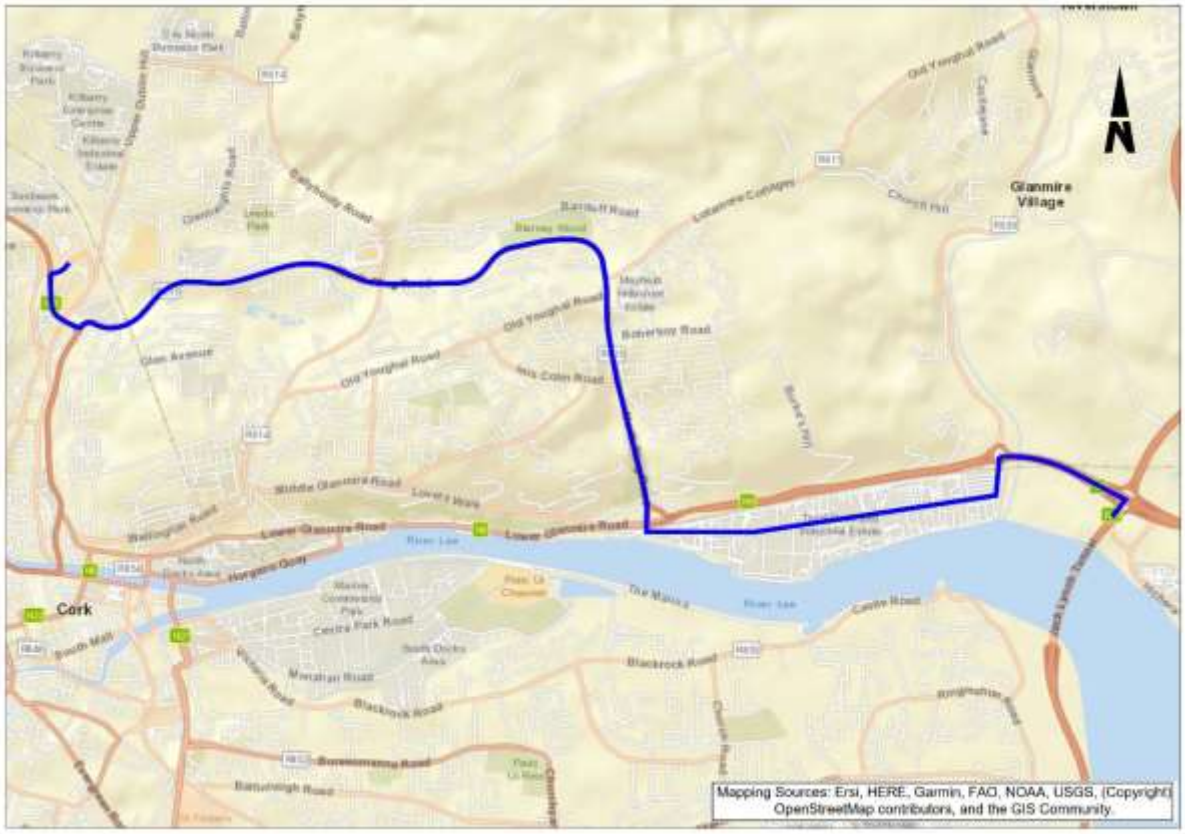


Figure 7.24 Route Option 2-1

Southbound: Route Option 2-1 commences at the at Blackpool Shopping Centre, from here the bus travels along the N20 to the North Ring Road. The bus then continues on the North Ring Road eastbound where it then travels south through Mayfield & Silversprings. From here, the bus would travel southbound through Silversprings, on to the Lower Glanmire Road via the Silversprings Interchange. From the Lower Glanmire Road, the bus travels along Tivoli to the Dunkettle Interchange.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 2-1

Indicative Scheme Design

Figure 7.25 & 7.26 illustrates the indicative scheme design for Route Option 2-1 as well as locations of indicative cross-sections.

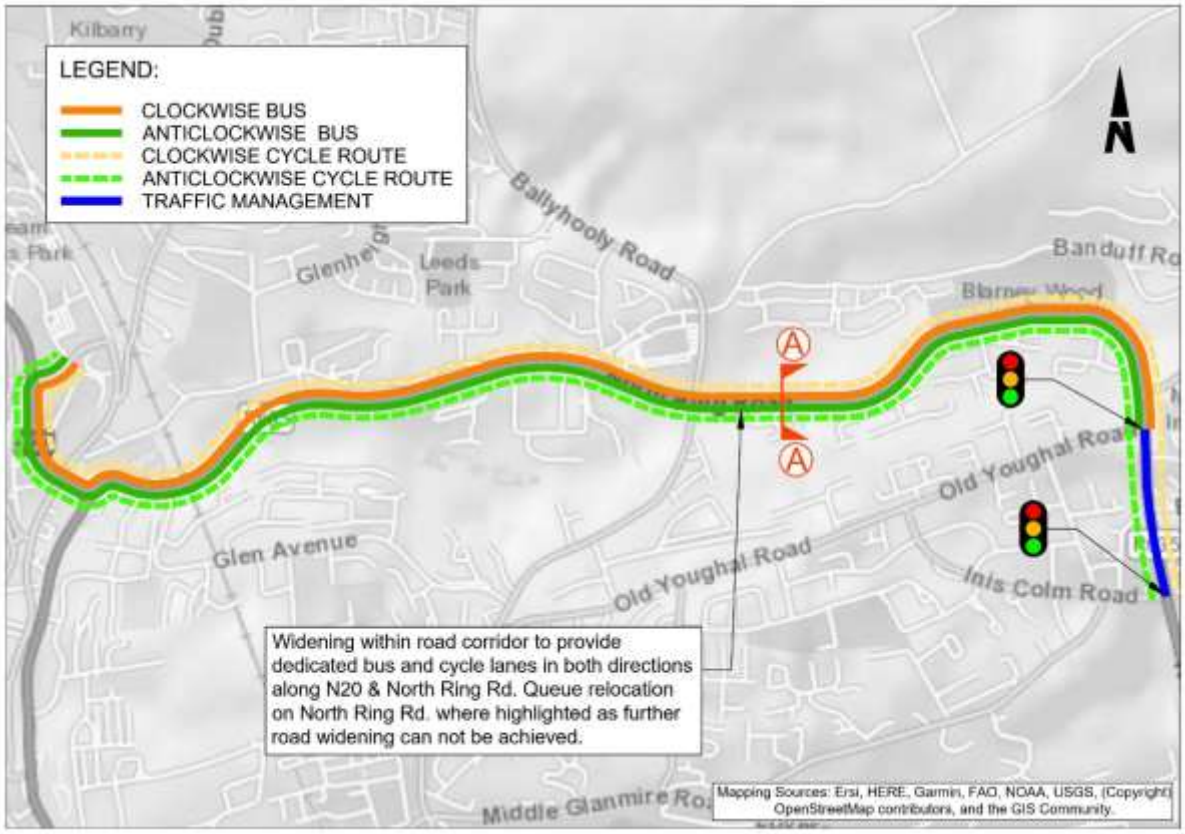


Figure 7.25 Route Option 2-1 Indicative Scheme Design

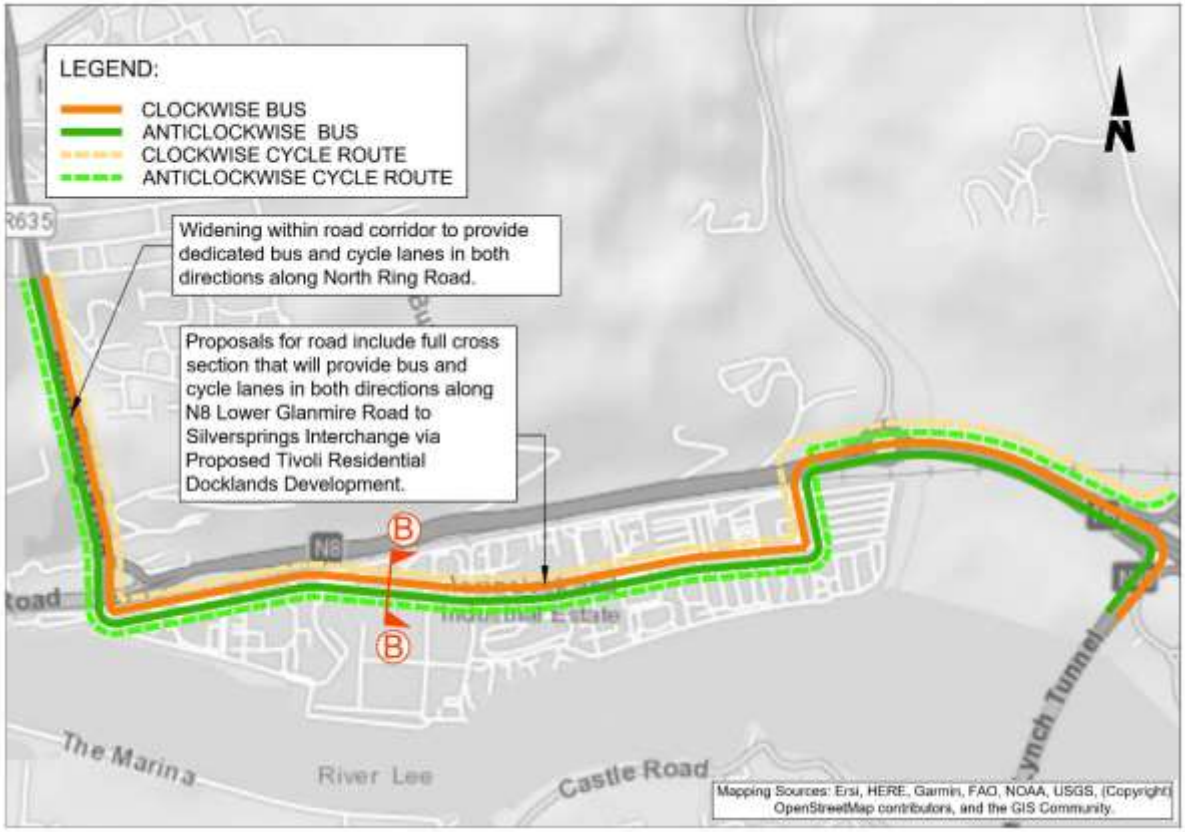


Figure 7.26 Route Option 2-1 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the junction at Old Youghal Road & North Ring Road. Where bus lanes can not be constructed between Old Youghal Road / North Ring Road & Colmcille Avenue / North Ring Road, traffic signals will be

provided give bus priority through the junctions. Bus lanes will be provided in both direction from Colmcille Avenue / North Ring Road junction to the Jack Lynch Tunnel through a proposed route in Tivoli Docklands.

Cycle tracks will be provided from Blackpool Shopping Centre to the junction at Colmcille Avenue & North Ring Road. Cycle tracks will be provided from Colmcille Avenue / North Ring Road to the Silversprings Interchange where the cyclists will take a quieter route through the proposed development in Tivoli Docklands. They will then re-emerge at the Dunkettle Roundabout and travel adjacent to the N8 dual carriageway.

A cross-section of North Ring Road and Tivoli Docklands is presented in Figure 7.27.

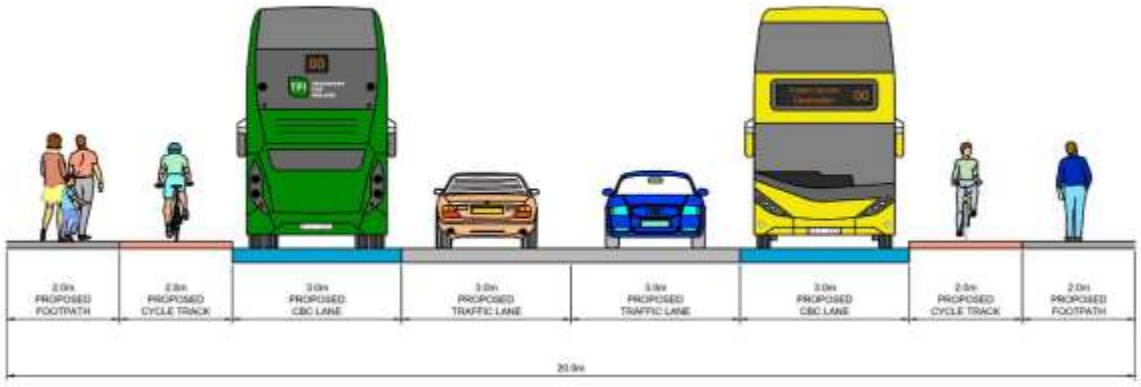


Figure 7.27 Typical Full Priority Cross Section (A-A) & (B-B)

Route Option 2-2

Route Description

Route Option 2-2 is presented in Figure 7.28 and described as follows.

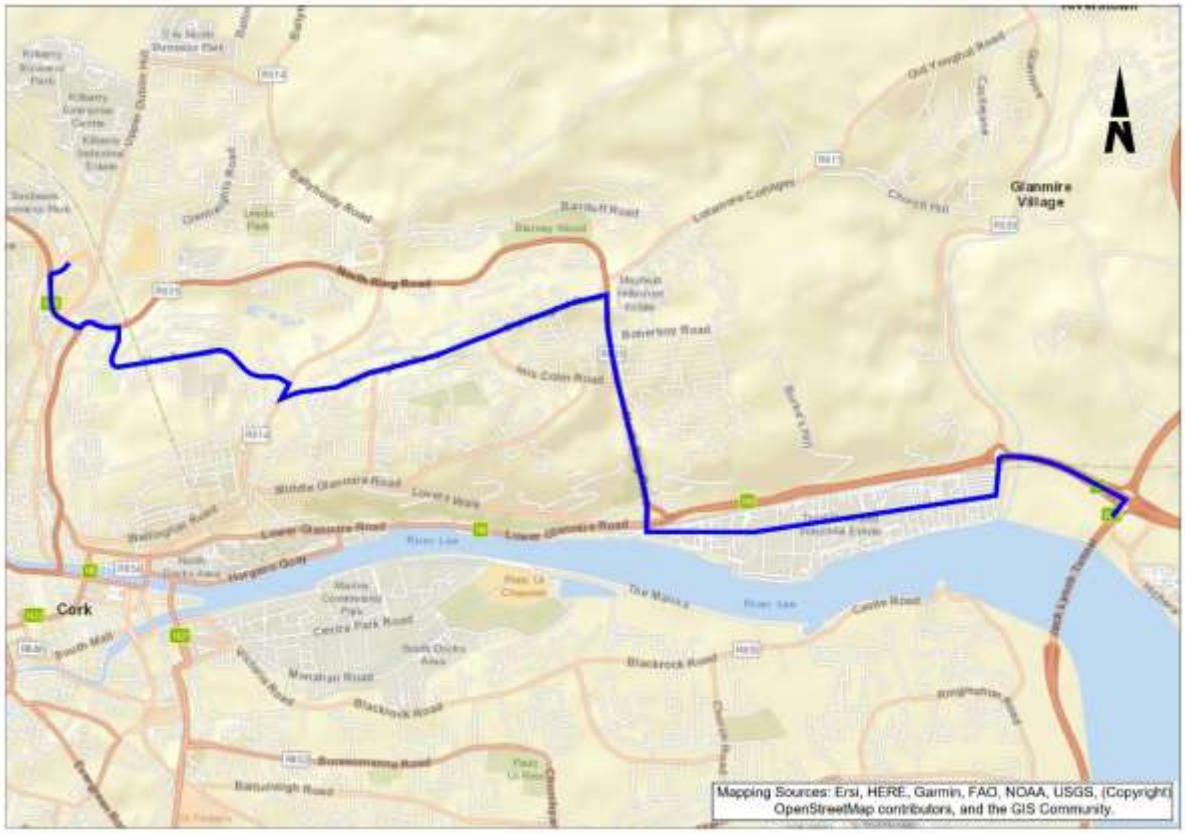


Figure 7.28 Route Option 2-2

Southbound: Route Option 2-2 commences at the junction from Colmcille Avenue and North Ring Road. From here, the bus would travel southbound through Silversprings, towards the Silversprings Interchange. It would then travel over the Silversprings Interchange through a new proposed route through Tivoli Docklands. The route would the emerge at the Dunkettle Interchange and proceed towards the Jack Lynch Tunnel.

Northbound: The northbound route would follow the same route as the southbound routing.

Route Option 2-2

Indicative Scheme Design

Figure 7.29 & Figure 7.30 illustrates the indicative scheme design for route Option 2-2 as well as locations of indicative cross-sections.

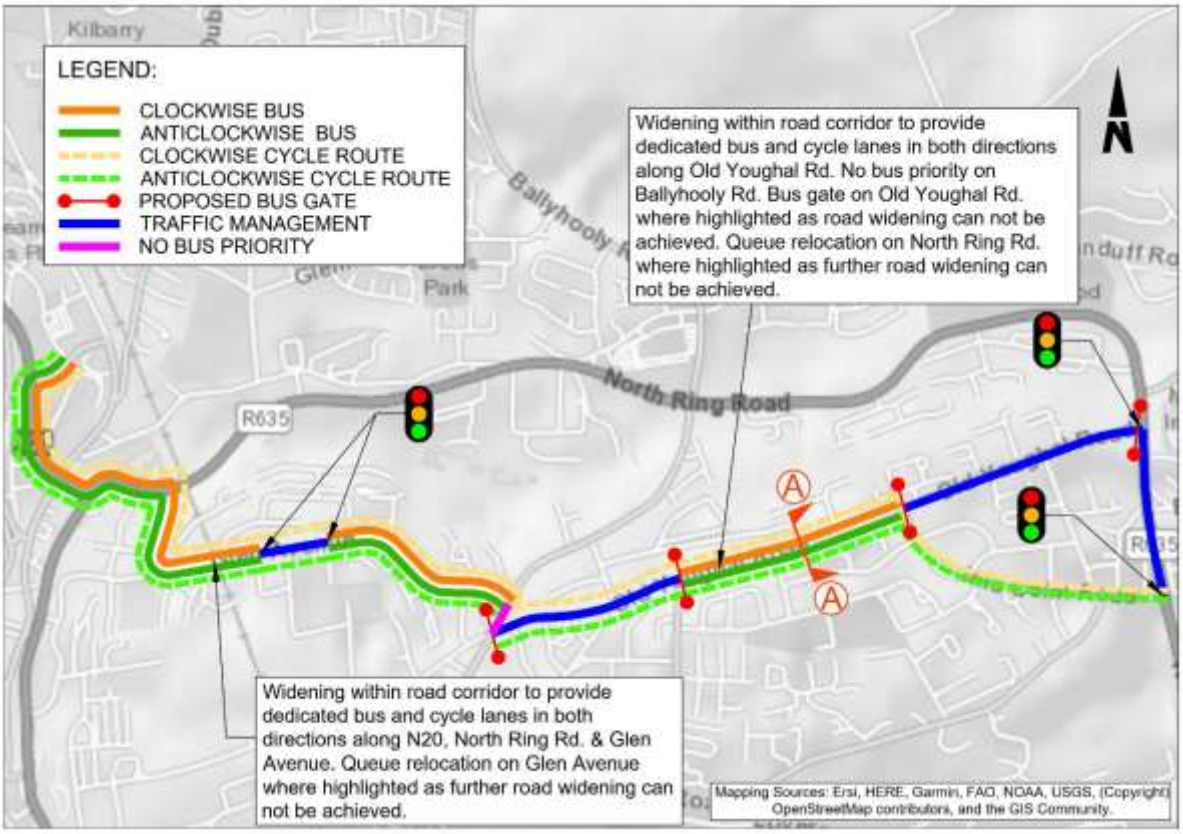


Figure 7.29 Route Option 2-2 Indicative Scheme Design

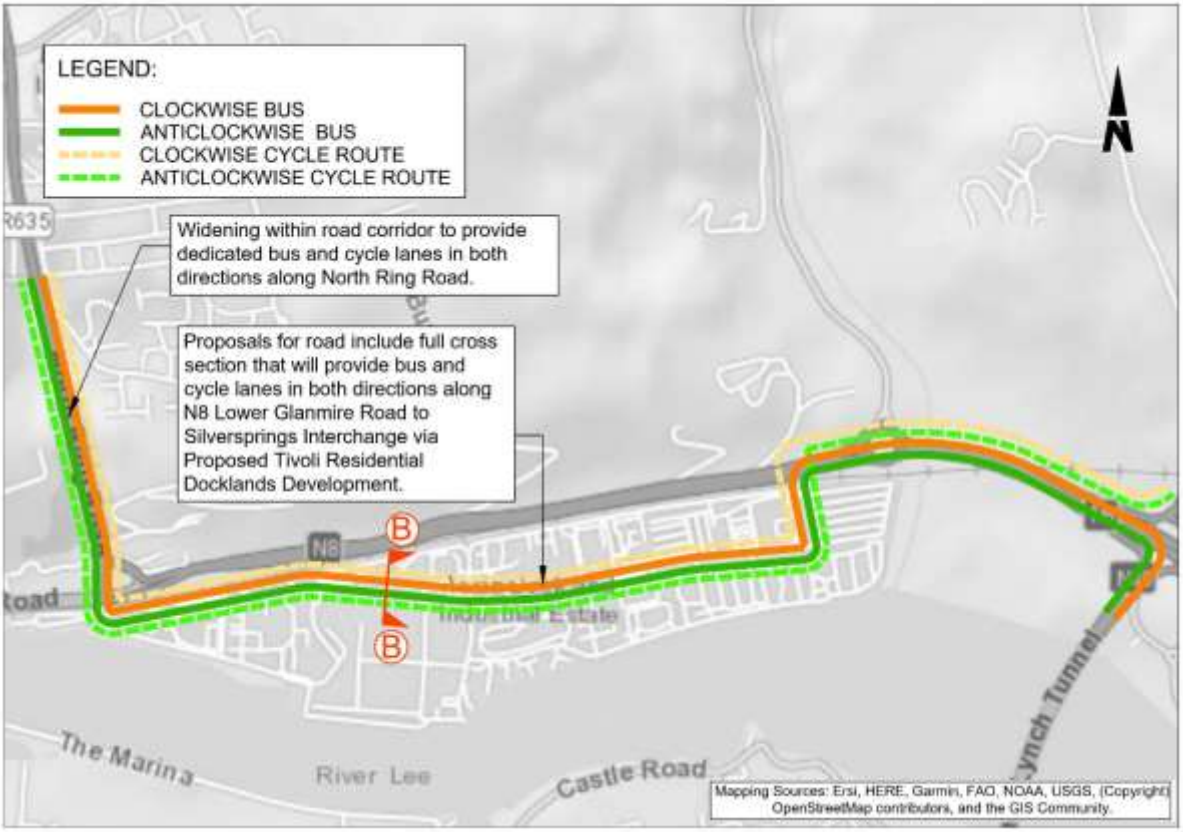


Figure 7.30 Route Option 2-2 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the Ballyhooly Road. Where bus lanes cannot be constructed between Blackpool Shopping Centre to the Ballyhooly Road, traffic signals will be provided to give bus priority through the junctions. No

bus priority will be provided on Ballyhooly Road as it is unfeasible due to the proximity of houses to the existing carriageway. A bus gate will be provided on Old Youghal Road to facilitate bus through traffic while at the same time restricting the movement of private vehicles. Bus lanes will be provided in both direction from Colmcille Avenue / R635 - North Ring Road junction to the Jack Lynch Tunnel through a proposed route in Tivoli Docklands.

Cycle tracks will be provided from Blackpool Shopping Centre to Ballyhooly Road where the cyclists will need to merge along Ballyhooly Road. The cycle tracks will continue along Old Youghal Road from Ballyhooly Road to Colmcille Avenue. Cyclists will then take a quieter route along Colmcille Avenue before re-joining on the North Ring Road. From Colmcille Avenue / R635 - North Ring Road to the Silversprings Interchange cyclists will take a quieter route through the proposed development in Tivoli Docklands. They will then re-emerge at the Dunkettle Roundabout and travel adjacent to the N8 dual carriageway.

A cross-section of the proposed Old Youghal Road and Tivoli Docklands Road in Figure 7.31.

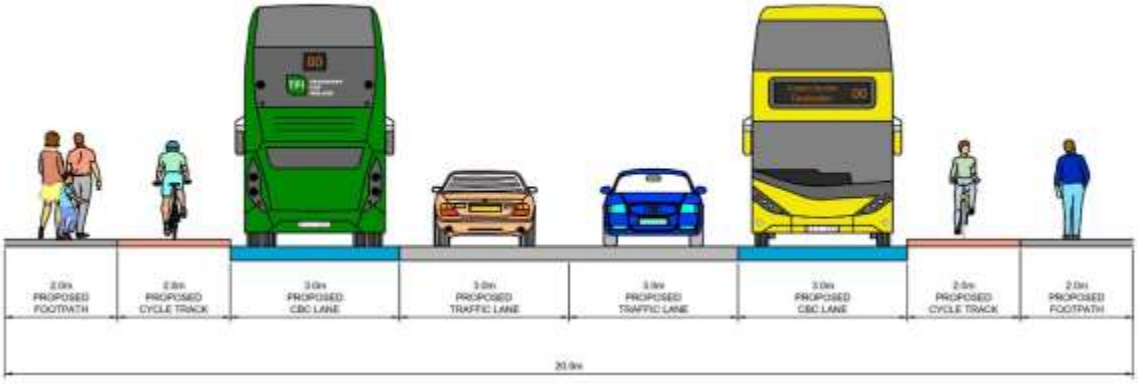


Figure 7.31 Typical Full Priority Cross Section (A-A), (B-B)

Route Option 2-3

Route Description

Route Option 2-3 is presented in Figure 7.32 and described as follows.

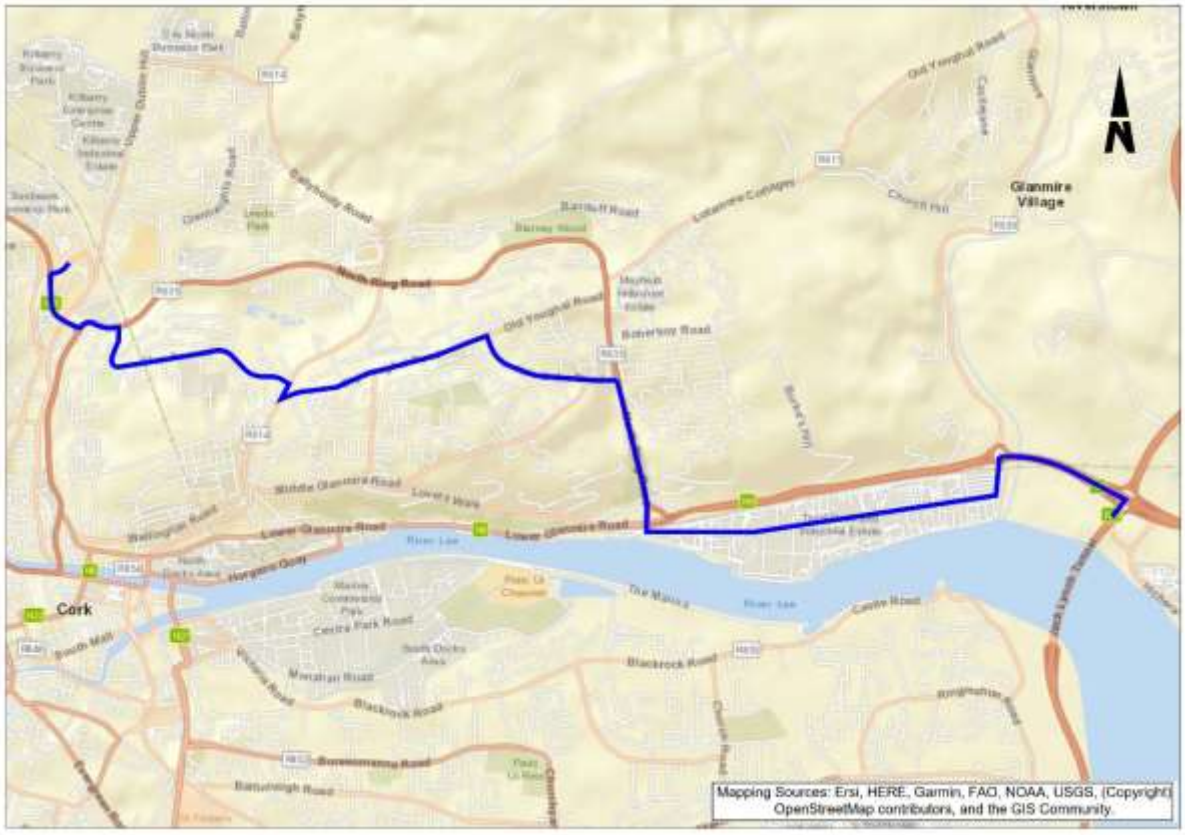


Figure 7.32 Route Option 2-3

Southbound: Route Option 2-3 commences at Blackpool Shopping Centre, from here the bus travels along the N20 to the North Ring Road. The bus then turns on to Glen Avenue and proceeds to Ballyhooly Road. The bus turns on to Old Youghal Road and heads toward the North Ring Road via Colmcille Avenue, where it travels south through Mayfield and Silversprings. It would then travel over the Silversprings Interchange through a new proposed route through Tivoli Docklands. The route would the emerge at the Dunkettle Roundabout and proceed towards the Jack Lynch Tunnel.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 2-3

Indicative Scheme Design

Figure 7.33 & 7.34 illustrates the indicative scheme design for route Option 2-3 as well as locations of indicative cross-sections.

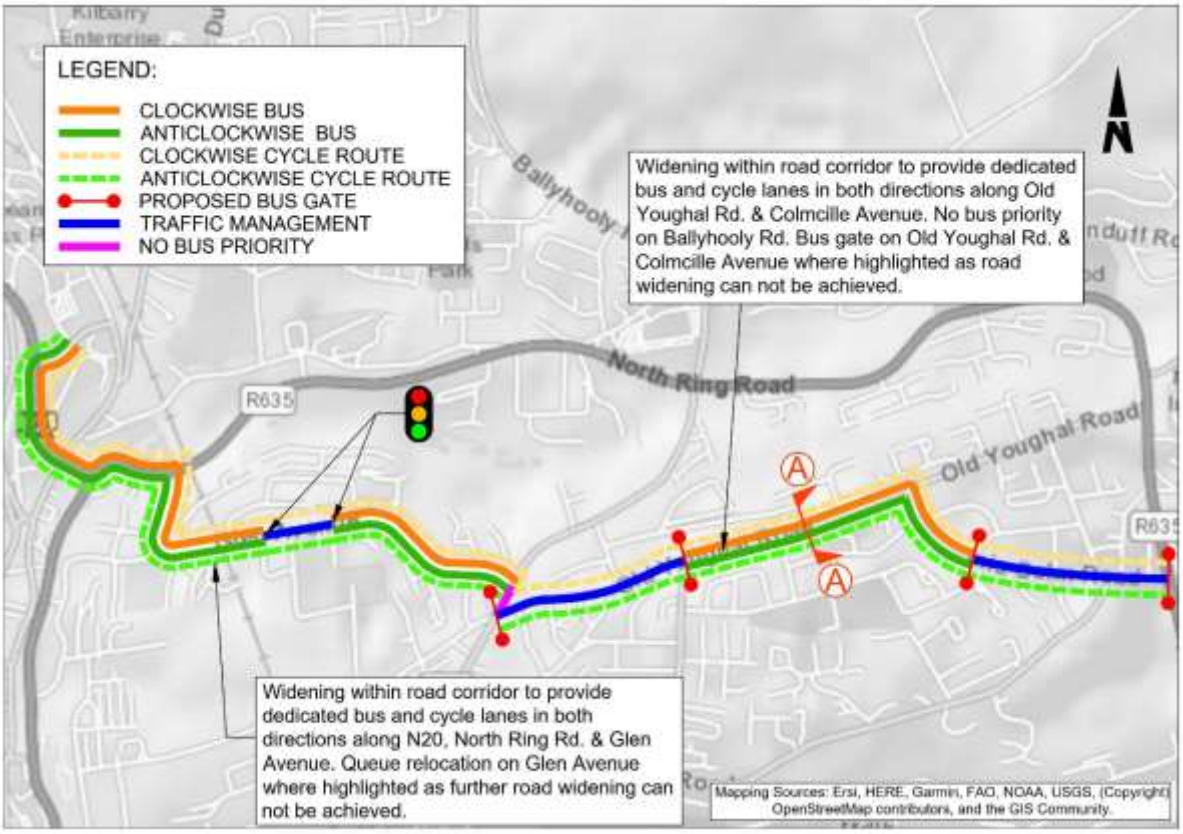


Figure 7.33 Route Option 2-3 Indicative Scheme Design

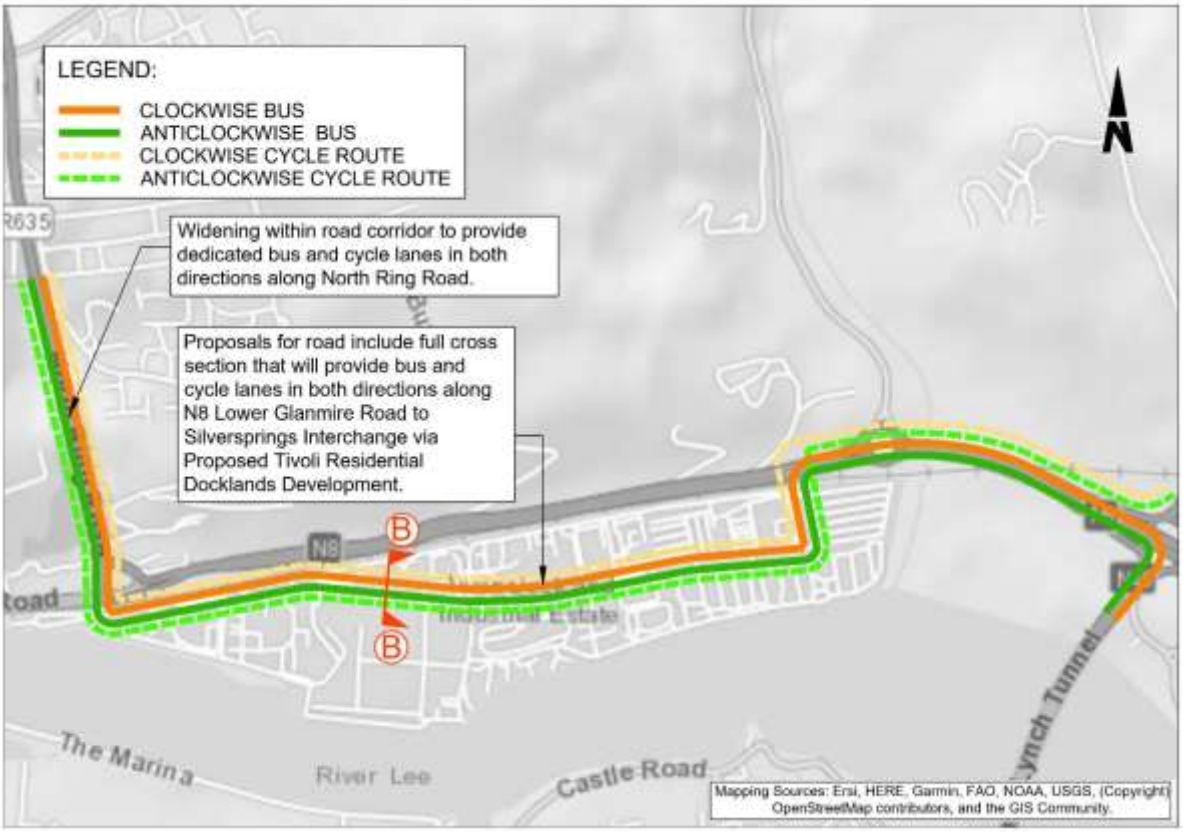


Figure 7.34 Route Option 2-3 Indicative Scheme Design

Bus lanes will be provided in both direction from Blackpool Shopping Centre to the Ballyhooly Road. Where bus lanes can not be constructed on sections between Blackpool Shopping Centre to the Ballyhooly Road, traffic signals will be provided to give bus priority through the

junctions. No bus priority will be provided on Ballyhooly Road as it is unfeasible due to the proximity of house to the existing carriageway. A bus gate will be provided on Old Youghal Road and Colmcille Avenue to facilitate bus through traffic while at the same time restricting the movement of private vehicles. Bus lanes will be provided in both direction from Colmcille Avenue / North Ring Road junction to the Jack Lynch Tunnel through a proposed route in Tivoli Docklands.

Cycle tracks will be provided from Blackpool Shopping Centre to Ballyhooly Road where the cyclists will need to merge along Ballyhooly Road. The cycle tracks will continue along Old Youghal Road from Ballyhooly Road through Colmcille Avenue and on to North Ring Road. From Colmcille Avenue / North Ring Road, cyclists will travel to the Silversprings Interchange where the cyclists will take a quieter route through the proposed development in Tivoli Docklands. They will then re-emerge at the Dunkettle Roundabout and travel adjacent to the N8 dual carriageway.

A cross-section of Old Youghal Road and Tivoli Docklands where the typical full bus priority cross section can be provided is presented in Figure 7.35.

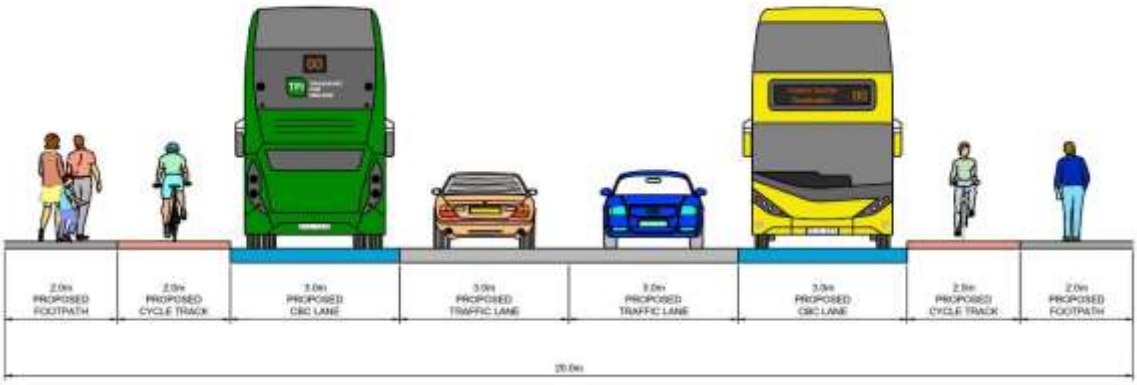


Figure 7.35 Typical Full Priority Cross Section (A-A), (B-B)

7.4 Stage 2 Options Assessment

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

Assessment Criteria	Sub -Criteria	Option 1-1	Option 1-2	Option 1-3	Option 2-1	Option 2-2	Option 2-3
Economy	Capital Cost						
	Average Journey Time						
	Journey Time Reliability						
Integration	Land Use Integration						
	Residential and Employment Catchments						
	Transport Integration						
	Cyclist Integration						
	Pedestrian Integration						
Accessibility and Social Inclusion	Key Trip Attractors						
	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	

7.5 Conclusion

A summary of the assessment is shown in Table 7.2 below

Table 7.2 Route Options Assessment Summary (Main Criteria)

Assessment Criteria	Option 1-1	Option 1-2	Option 1-3	Option 2-1	Option 2-2	Option 2-3
Economy						
Integration						
Accessibility and Social Inclusion						
Safety						
Environment						

Option 1-2 is the emerging preferred route option in the North East sector. This option has significant advantages from an integration perspective as it travels along roads that have relatively high population and employment densities. This option integrates with light industry and related uses located off Glen Avenue, neighbourhood, and related uses at Dillions Cross, neighbourhood and local centres on Old Youghal Road, neighbourhood and local centre zoning and light industry and related uses zoning at Mayfield. Elsewhere there is sustainable residential neighbourhood and new residential neighbourhood zoning along the route.

Option 1-2 has significant advantages from accessibility and social inclusion perspective. It provides accessibility to a significant number of key attractors including leisure facilities, sporting facilities, and educational facilities. This route option travels through a RAPID (Revitalising Areas through Planning, Investment and Development) designated area Blackpool/The Glen/Mayfield. As a result, this option is considered to have some advantages with respect to servicing deprived geographic areas.

Option 1-2 has advantages from an environmental perspective as it routes along existing roads therefore has advantages over the other options with respect to the potential impact on soils and geology, biodiversity, and water resources.

8. South East Sector

8.1 Introduction

This chapter outlines the options assessment process for the South East Sector (Jack Lynch Tunnel to Well Road, Douglas). The study area for the South East Sector was developed to include the main trip generators, existing and proposed roads between the Jack Lynch Tunnel and Well Road in Douglas. include the main trip generators, existing and proposed roads between Wilton and Hollyhill. The study area is shown below in Figure 8.1.

Figure 8.1 West Sector Study Area

The study area was split into three smaller sections so that options can be presented clearly in this report as shown in Figure 8.2 below:

Figure 8.2 Study Area Sections

Section 1 covers the area from the Jack Lynch Tunnel to Skehard Road and the eastern areas of Mahon and Blackrock. Section 2 covers the areas between Skehard Road and Well Road. Section 3 covers the area from the Loughmahon Road & South Ring Road interchange to Well Road including the areas in around Douglas and Rochestown.

8.2 Stage 1 Options Assessment - Section 1

Road links within the South East Sector that are subject to Stage 1 options assessment are shown in Figure 8.1. A potential alignment of the new road to Bessboro Road from Loughmahon Link Road is shown in a dotted blue line.

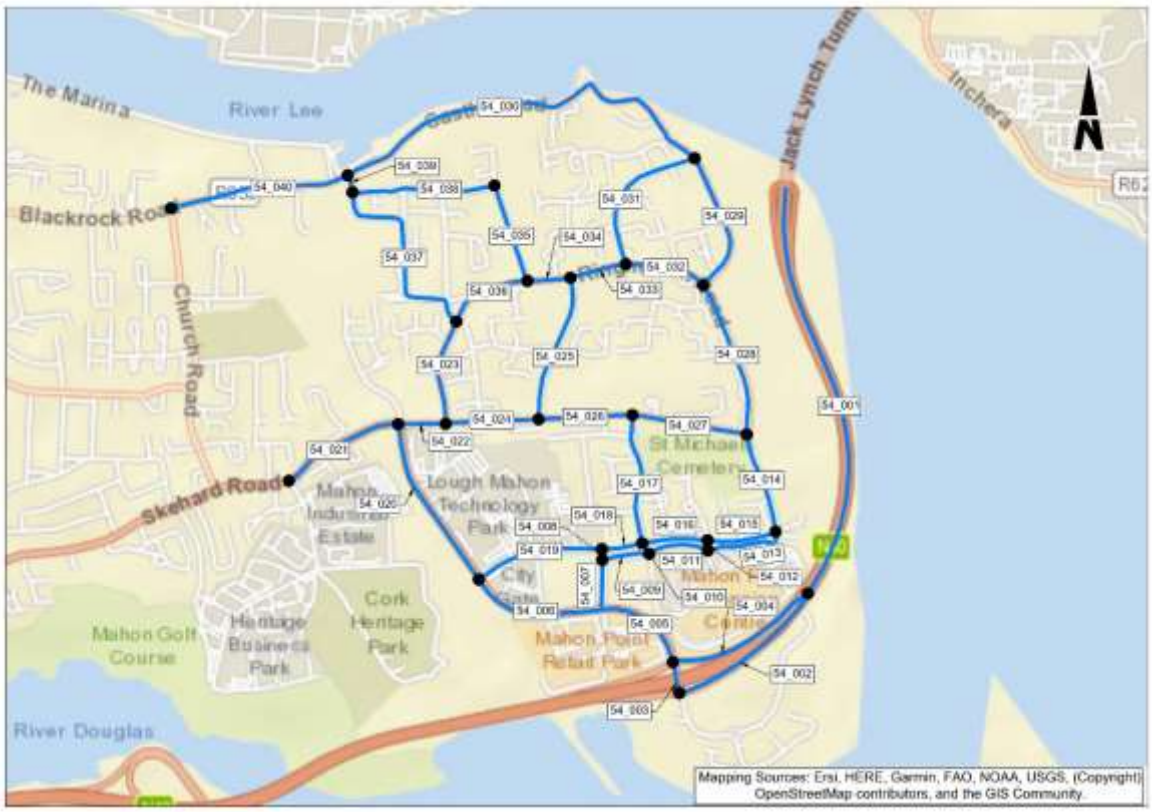


Figure 8.3 South East Section 1 Links

The Stage 1 options assessment for Section 1 is provided in Appendix A.7.

8.3 Stage 1 Options Assessment – Section 2

Links that were subject to Stage 1 options assessment within the Section 2 are shown in Figure 8.4.

Figure 8.4 South East Section 2 Links

The Stage 1 options assessment for Section 2 is provided in Appendix A.8.

8.4 Stage 1 Options Assessment – Section 3

Links that were subject to Stage 1 options assessment within Section 3 are shown in Figure 8.5.

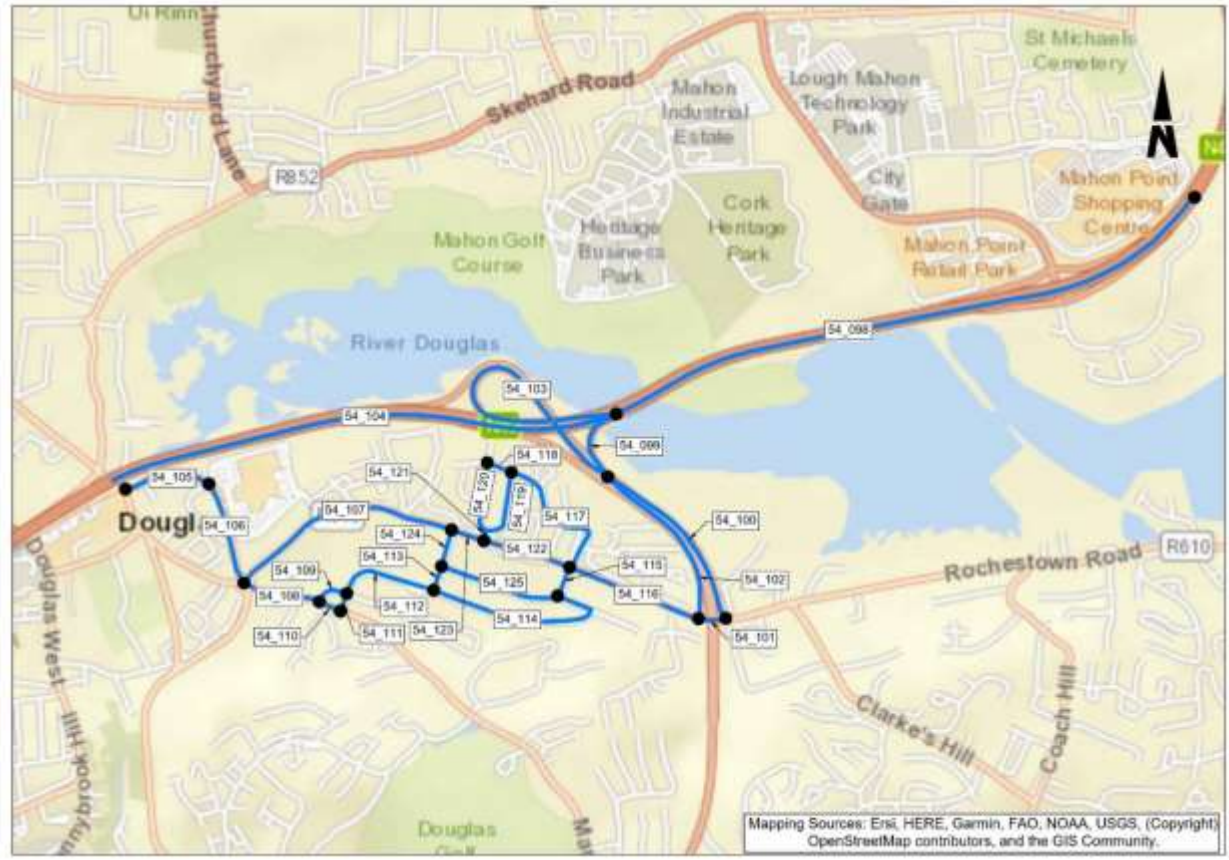


Figure 8.5 South East Section 3 Links

The Stage 1 options assessment for Section 3 is provided in Appendix A.9.

The outcome of the assessment can be seen in the figure below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

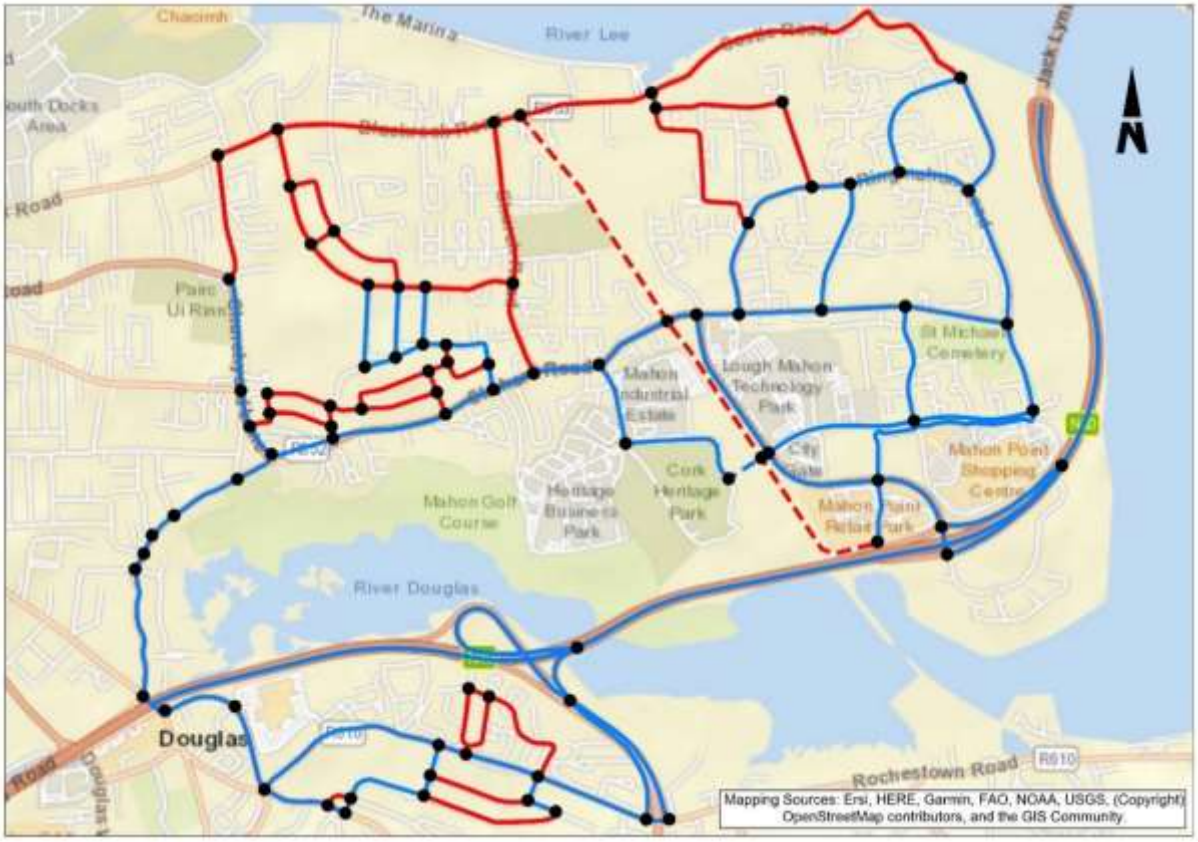


Figure 8.6 Sifting Assessment

A preliminary route assessment process was then performed to identify routes that were circuitous in nature, dead ends or disconnected such could then be removed. A summary of the preliminary route assessment process is presented in the table below.

Table 8.1. Preliminary Route Assessment

Road Names	Comments	Map
Ringmahon Road	All route options using this road have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Figure 8.7 Removal of dead ends, disconnected or overly circuitous links

The figure below shows the final spiders web of links that will be bought forward for Stage 2 assessment.

Figure 8.8 Spiders Web for Stage 2 Assessment

8.5 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 8.9:

- Option 1: (A, B, K, L, M, N, J)
- Option 2: (A, B, K, L, M, O, N, J)
- Option 3: (A, B, C, D, E, I, J)
- Option 4: (A, B, C, D, G, H, E, I, J)
- Option 5: (A, B, C, D, G, F, H, E, I, J)
- Option 6: (A, B, C, F, H, E, I, J)
- Option 7: (A, B, C, D, I, J)

Figure 8.9 Links for Stage 2 Assessment

North South Walking and Cycling Connectivity

Walking and cycling is prohibited through Jack Lynch Tunnel. Alternative facilities are proposed along the Lower Glanmire Road to connect with a new bridge crossing (Eastern Gateway Bridge) of the River Lee in the vicinity of the current 'skew bridge'. This will provide for north south walking and cycling connectivity and improve accessibility to the South Docklands. Provision for walking and cycling along the South Docklands is provided with the Passage Greenway which links from Pairc Ui Chaoimh to Mahon and Passage in the southeast.

Route Option 1

Route Description

Route Option 1 is presented in Figure 8.10 and described as follows.

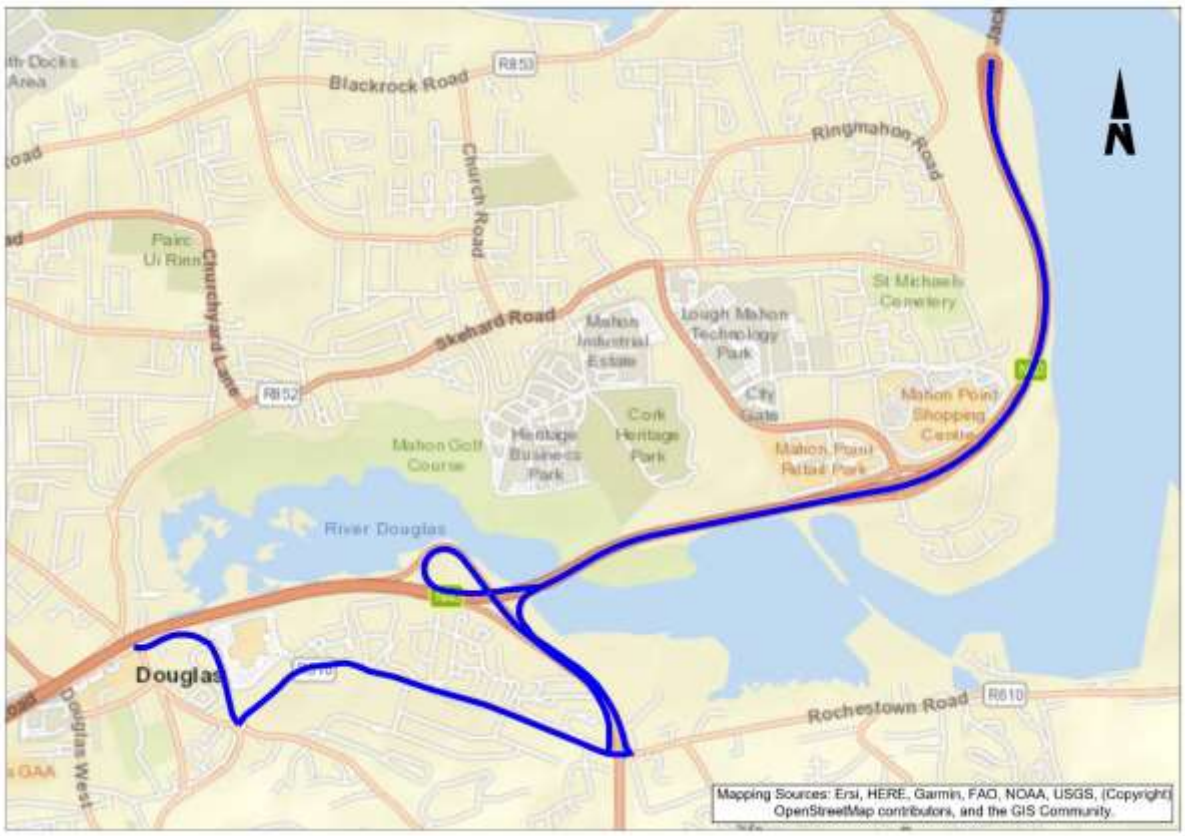


Figure 8.10 Route Option 1

Southbound: Route Option 1 commences at the of the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the roundabout at the Rochestown Road. The bus then continues on the Rochestown Road to the Fingerpost Roundabout. The route then proceeds Westbound to the Well Road, Douglas Road junction.

Northbound: The northbound route would follow the same route as the southbound routing.

Indicative Scheme Design

Figure 8.11 illustrates the indicative scheme design for Route Option 1 as well as locations of indicative cross-sections.

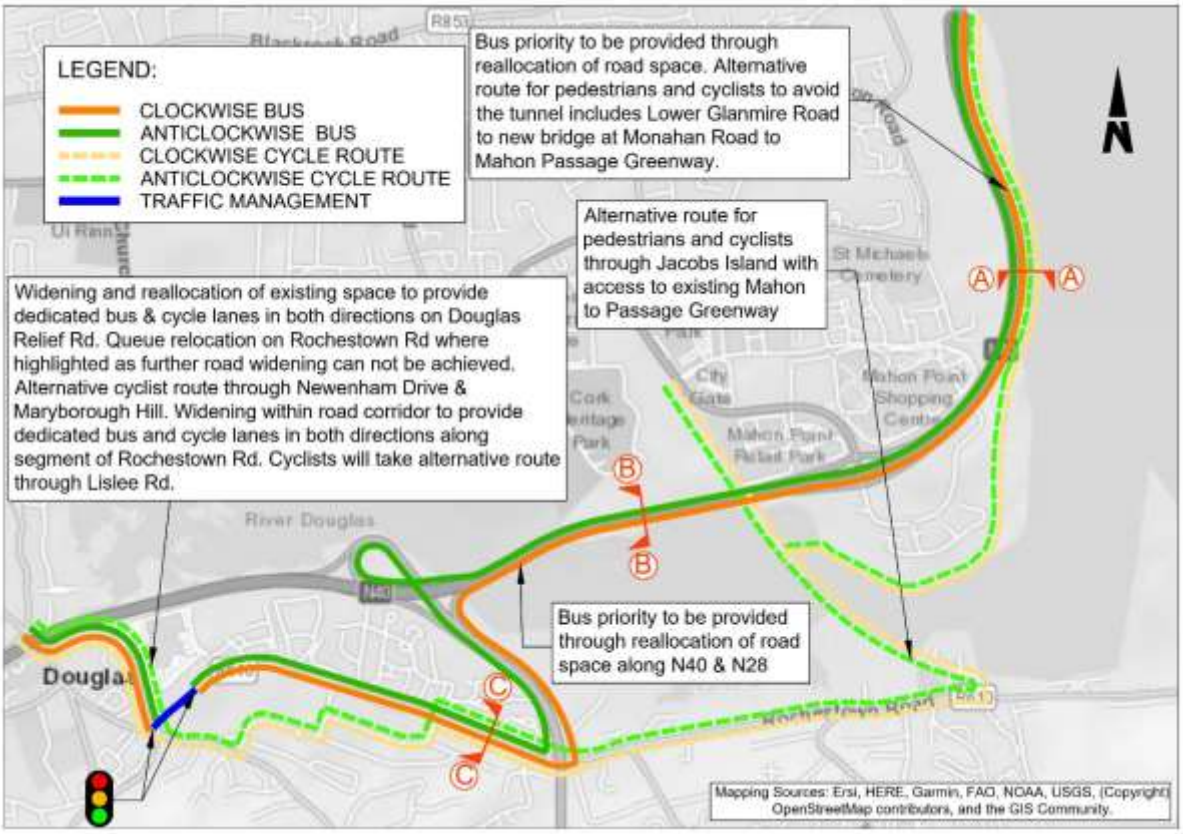


Figure 8.11 Route Option 1 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction at Well Road and Douglas Road via Rochestown Road. Where bus lanes can not be constructed between South Ring Road to the junction of at Well Road and Douglas Road via Rochestown Road traffic signals for busses will be provided to give bus priority through the junctions.

Cycle tracks will be provided along the Douglas Relief Road and parts of the Rochestown Road. A new cycle route is proposed to connect the existing Passage Mahon Greenway with the Rochestown Road. A quiteway cycle route through Perrier Drive, Liselee Road, Newenham Drive and Lime Trees Road before reconnecting cyclists to cycle tracks at the Fingerpost Roundabout.

A cross-section of South Ring Road is presented in Figure 8.12.

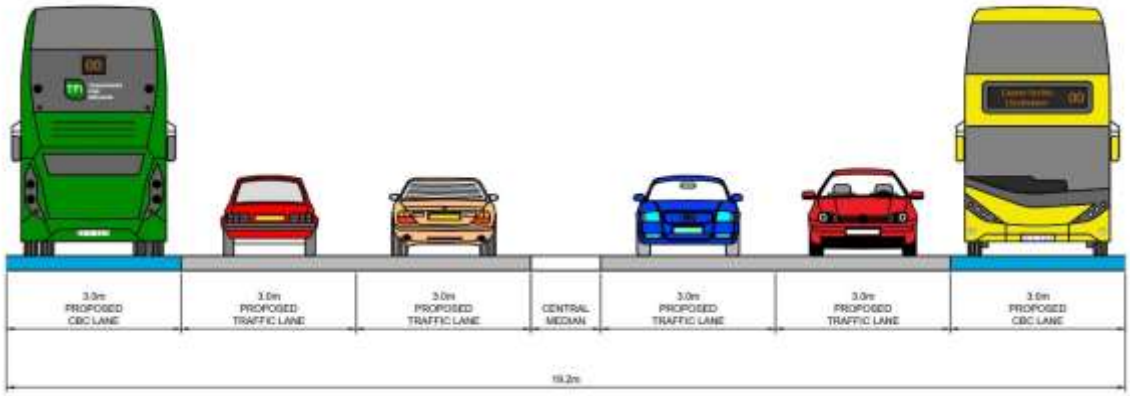


Figure 8.12 Typical National Primary Road Cross Section (A-A), (B-B)

A cross-section of Rochestown Road is presented in Figure 8.13.

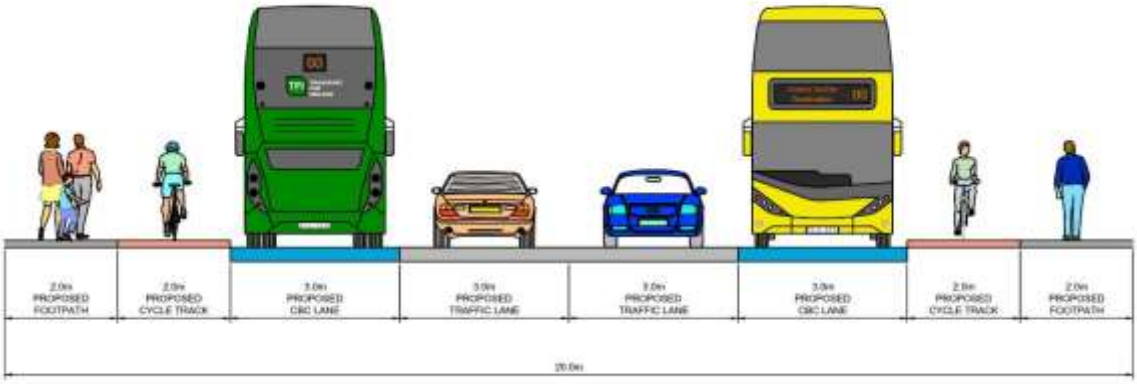


Figure 8.13 Typical Full Priority Cross Section (C-C)

Route Option 2

Route Description

Route Option 2 is presented in Figure 8.14 and described as follows.

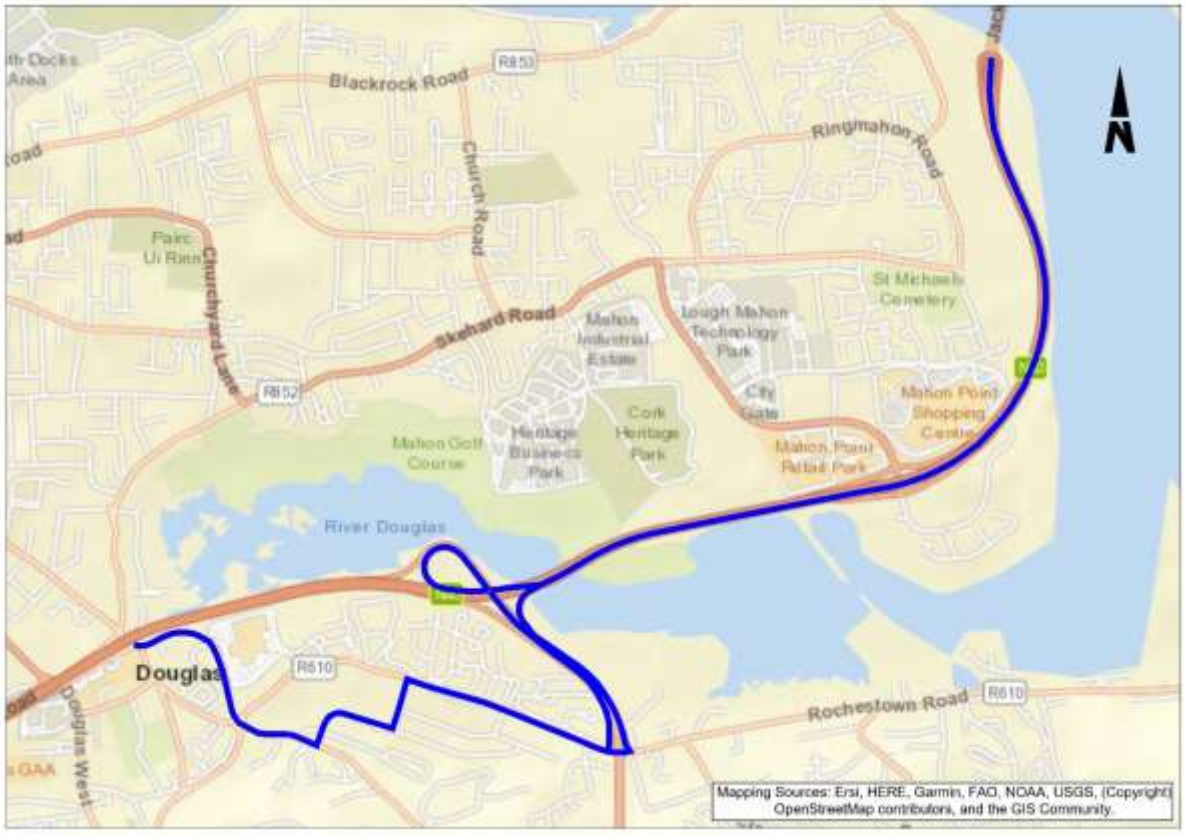


Figure 8.14 Route Option 2

Southbound: Route Option 2 commences the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the roundabout at the Rochestown Road. The bus then continues on the Rochestown Road before turning on to Newenham Drive, Lime Trees Road and Maryborough Hill and then proceeds to the Fingerpost Roundabout. The route then moves Westbound to the Well Road, Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 2 Indicative Scheme Design

Figure 8.15 illustrates the indicative scheme design for route Option 2 as well as locations of indicative cross-sections.

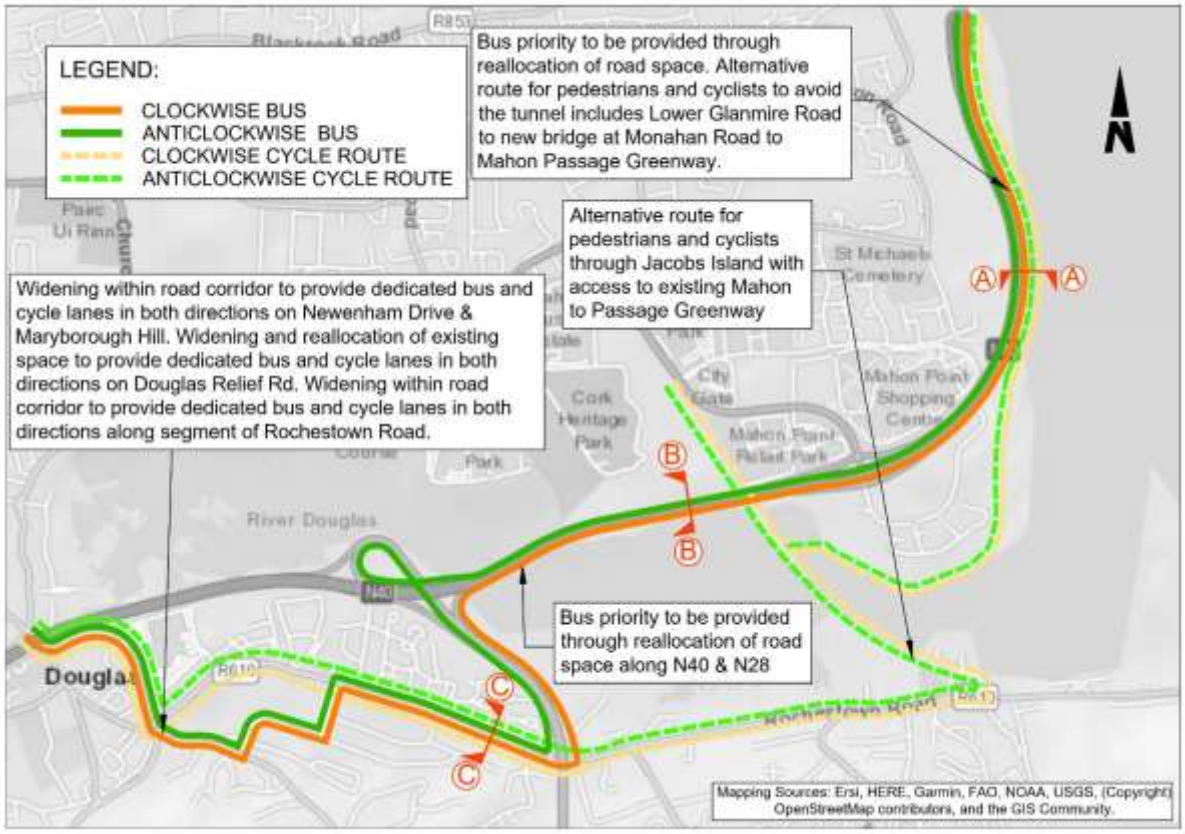


Figure 8.15 Route Option 2 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction of at Well Road and Douglas Road via Rochestown Road, Newenham Drive, Lime Trees Road and Maryborough Hill.

Cycle tracks will be provided along the Douglas Relief Road and the Rochestown Road. A new cycle route is proposed to connect the existing Passage Mahon Greenway through to the Rochestown Road.

A cross-section of South Ring Road is presented in Figure 8.16.

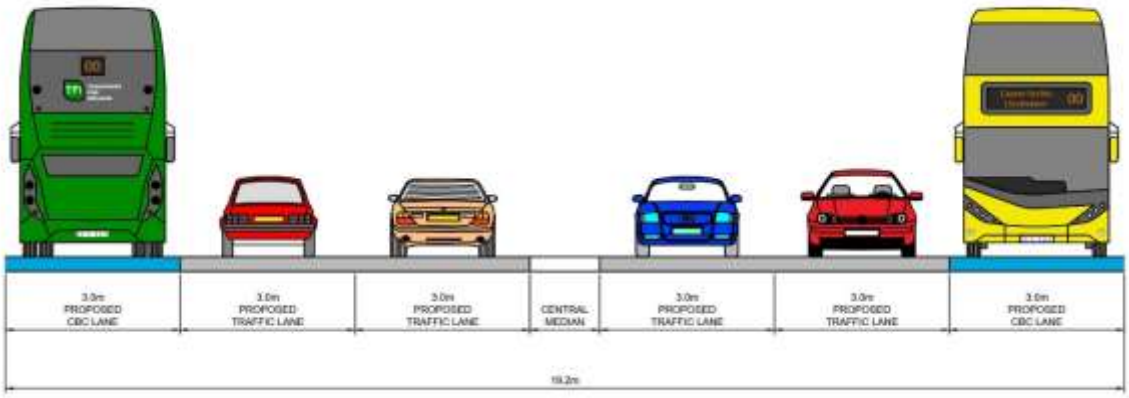


Figure 8.16 Typical National Primary Road Cross Section (A-A), (B-B)

A cross-section of Rochestown Road is presented in Figure 8.17

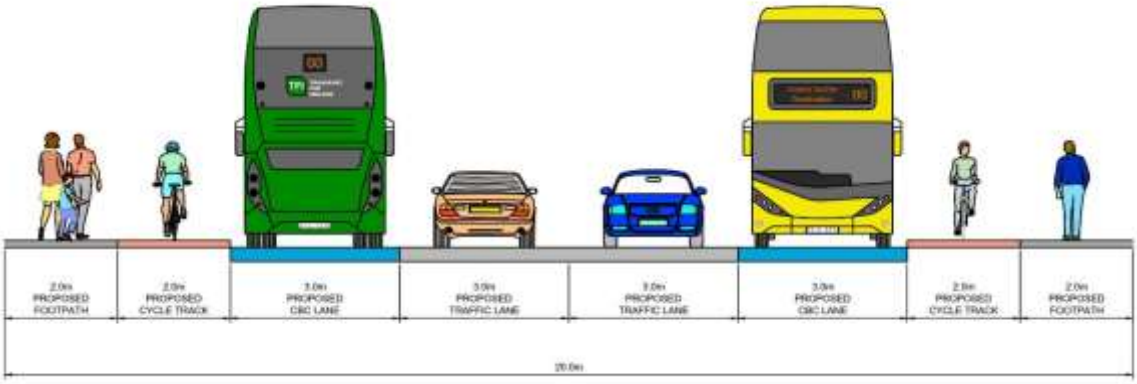


Figure 8.17 Typical Full Priority Cross Section (C-C)

Route Option 3

Route Description

Route Option 3 is presented in Figure 8.18 and described as follows.

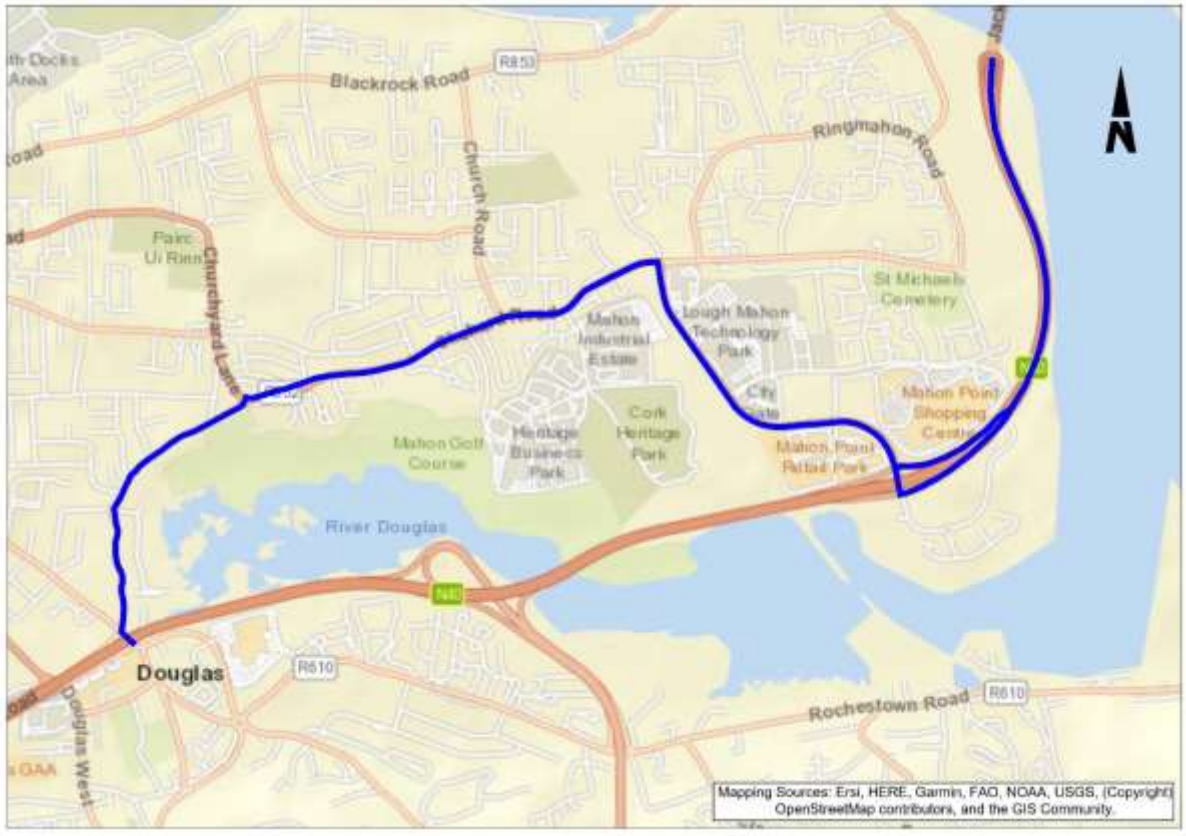


Figure 8.18 Route Option 3

Southbound: Route Option 3 commences at the of the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the Loughmahon Link Road. The bus then continues on the Loughmahon Link Road before turning on to Skehard Road and then proceeds to the junction at Churchyard Lane and Well Road. The route then moves Southbound along Well Road where it meets the Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 3 Indicative Scheme Design

Figure 8.19 illustrates the indicative scheme design for route Option 3 as well as locations of indicative cross-sections.

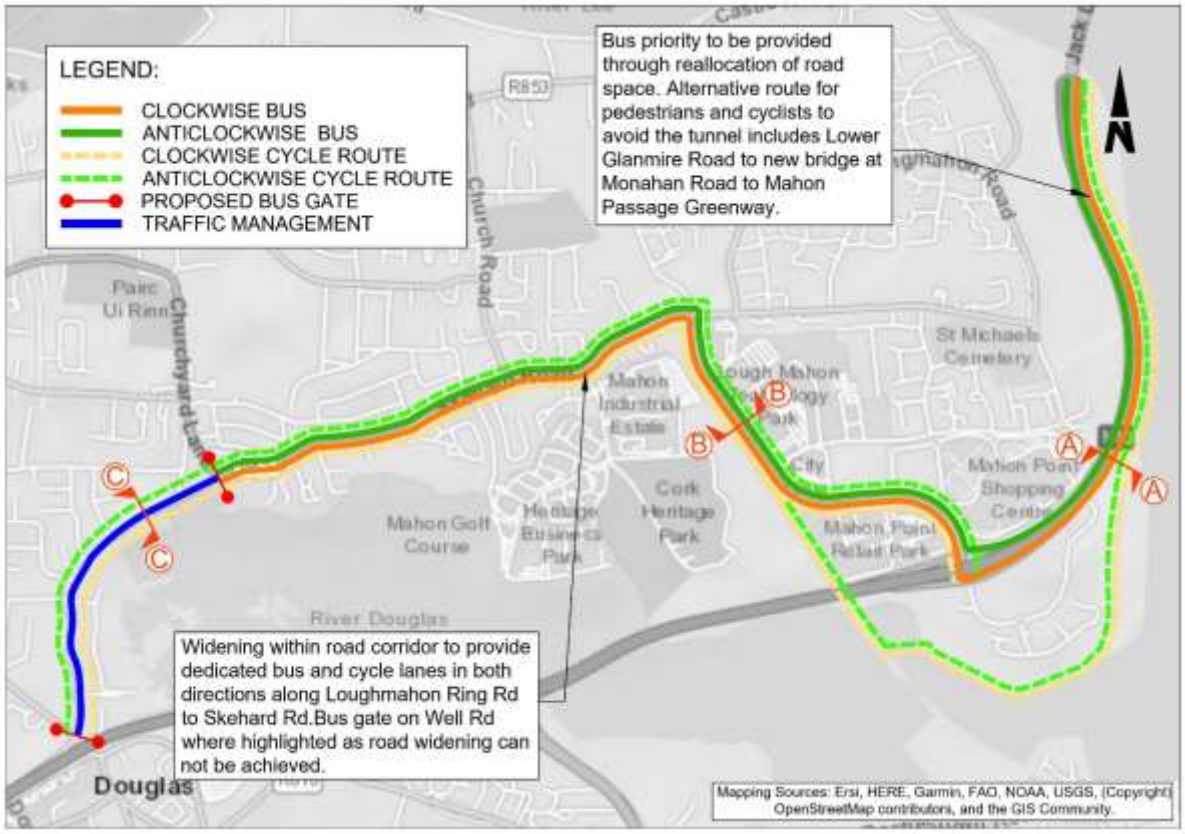


Figure 8.19 Route Option 3 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction of at Skehard Road and Well Road via the Loughmahon Link Road. On Well Road, where existing constraints prohibit widening, traffic signals will give bus priority.

Cycle tracks will be provided along the Well Road, Skehard Road and the Loughmahon Link Road. A cross-section of South Ring Road is presented in Figure 8.20.

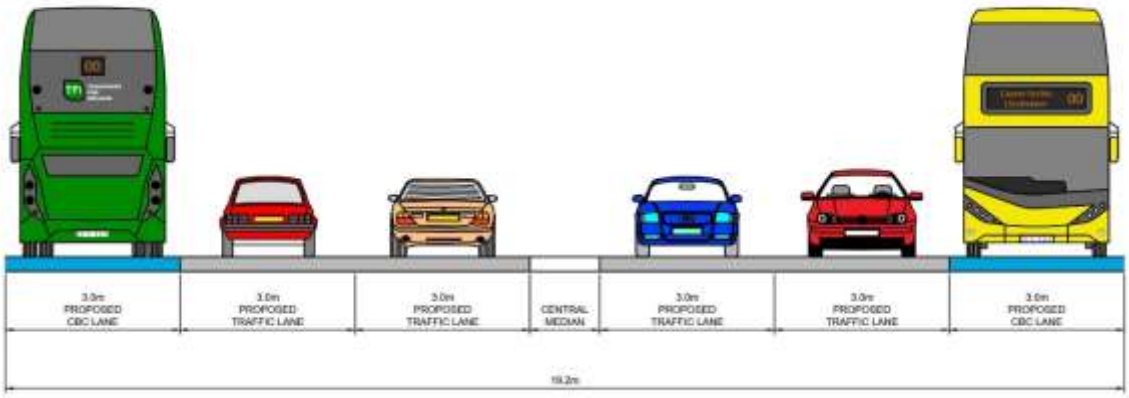


Figure 8.20 Typical National Primary Road Cross Section (A-A)

A cross-section of Loughmahon Link Road is presented in Figure 8.21

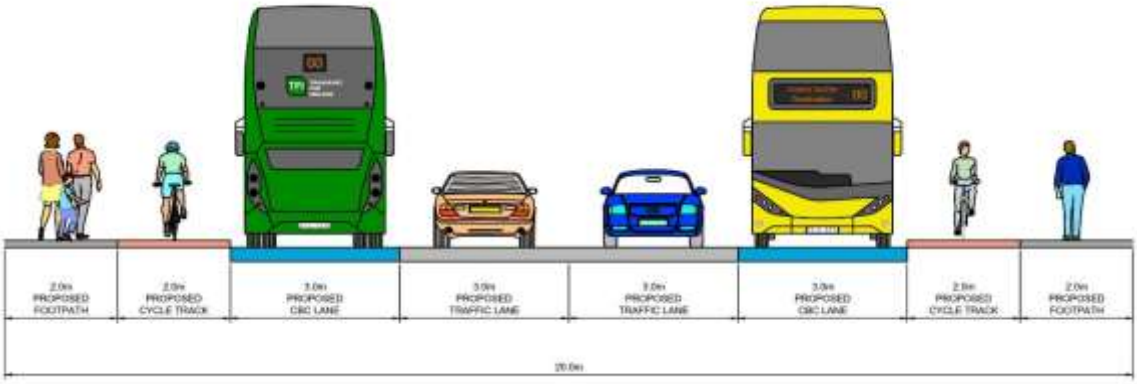


Figure 8.21 Typical Full Priority Cross Section (B-B)

A cross-section of Well Road is presented in Figure 8.22

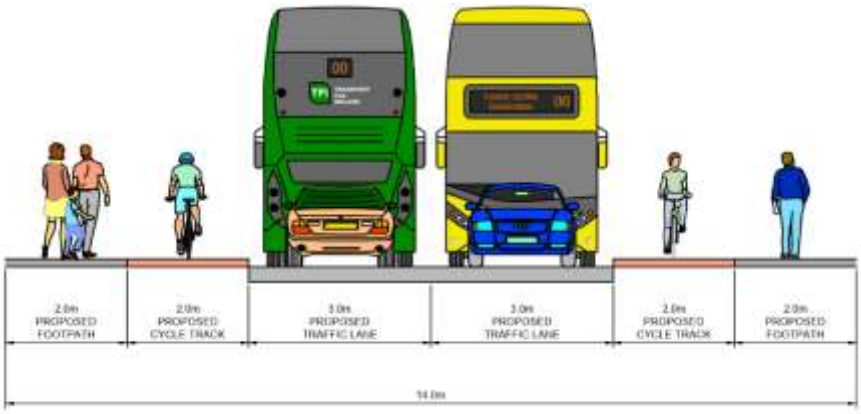


Figure 8.22 Typical Traffic Management Cross Section (C-C)

Route Option 4

Route Description

Route Option 4 is presented in Figure 8.23 and described as follows.

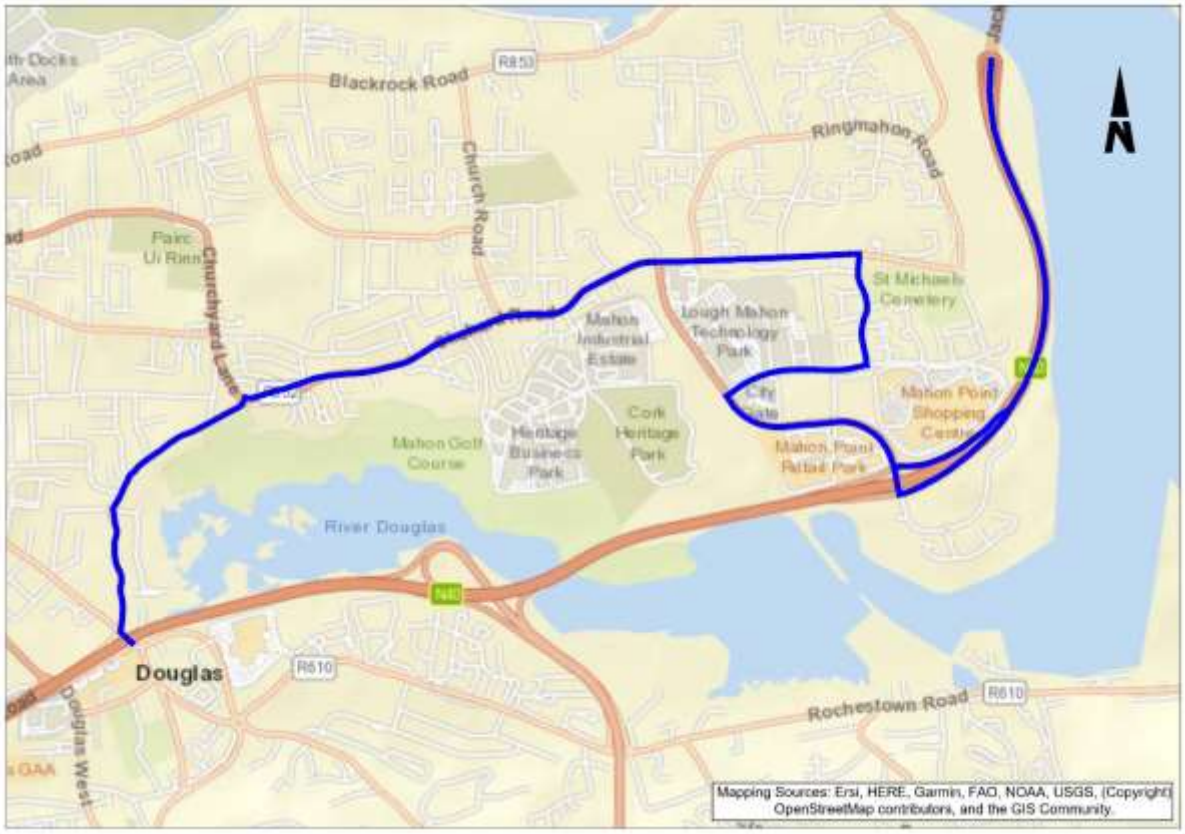


Figure 8.23 Route Option 4

Southbound: Route Option 4 would commence at the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the Loughmahon Link Road. The bus then continues turns on to St. Michael's Drive before turning on to Ballinure Avenue towards Skehard Road. The bus then proceeds along Skehard Road to the junction at Churchyard Lane and Well Road. The route then moves Southbound along Well Road where it meets the Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 4 Indicative Scheme Design

Figure 8.24 illustrates the indicative scheme design for route Option 4 as well as locations of indicative cross-sections.

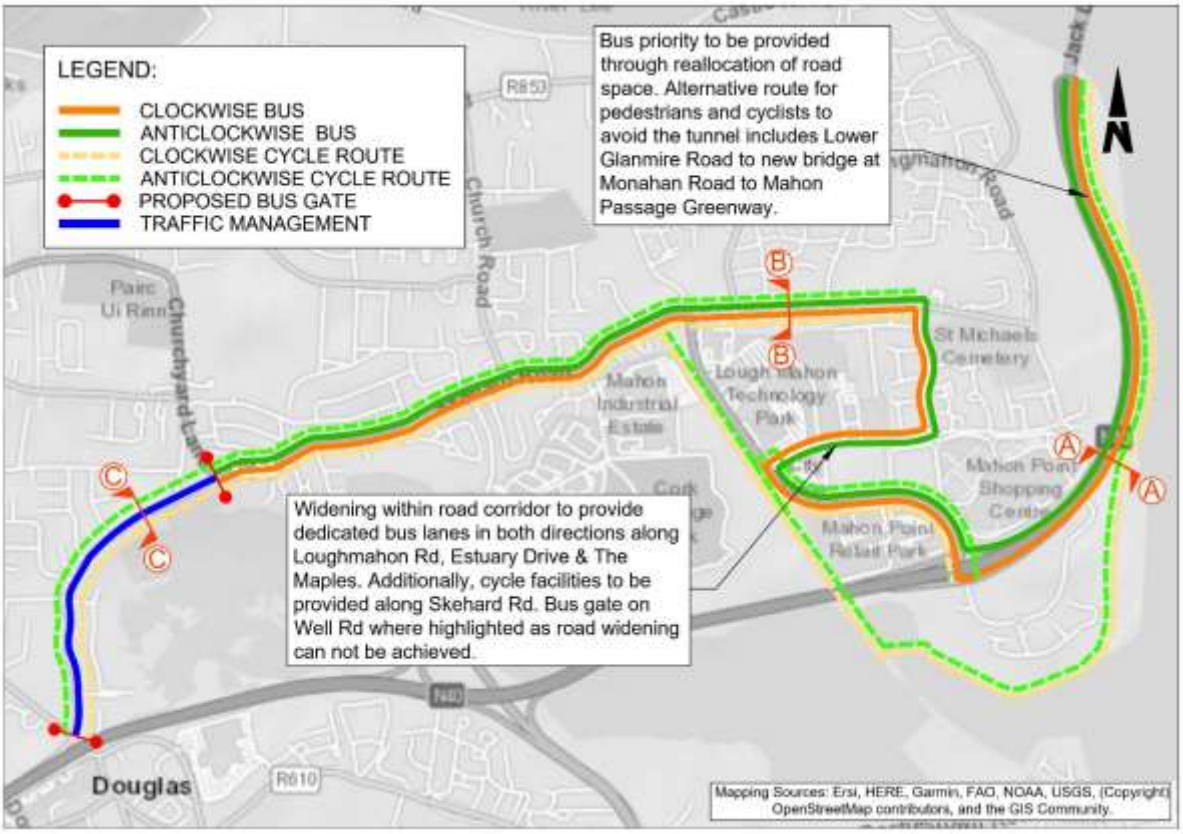


Figure 8.24 Route Option 4 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction of at Skehard Road and Well Road via the Loughmahon Link Road, St. Michael's Drive and Ballinure Avenue. On Well Road, where existing constraints prohibit widening, traffic signals for busses will be provided to give bus priority.

Cycle tracks will be provided along the Well Road, Skehard Road and the Loughmahon Link Road.

A cross-section of South Ring Road is presented in Figure 8.25.

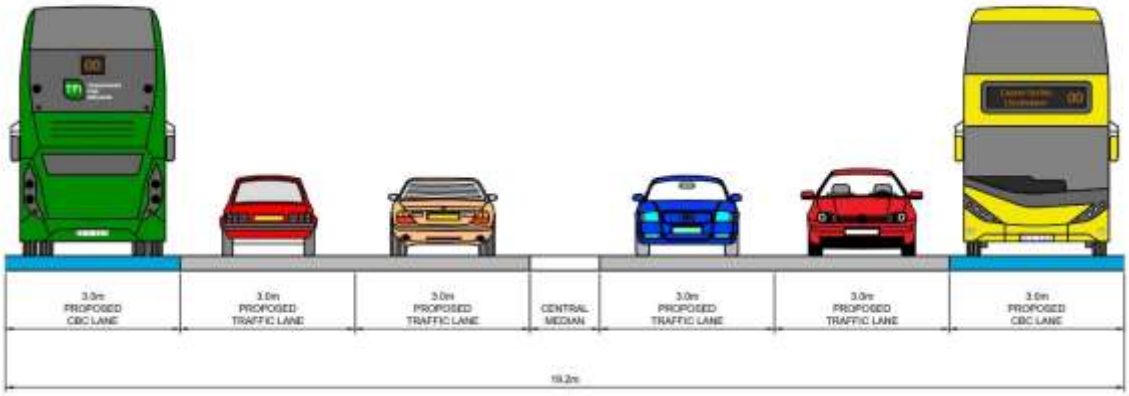


Figure 8.25 Typical National Primary Road Cross Section (A-A)

A cross-section of Skehard Road is presented in Figure 8.26

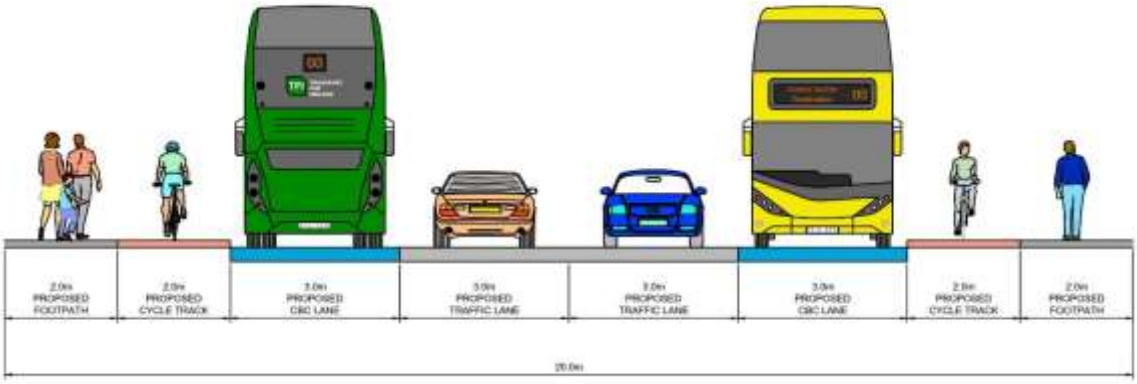


Figure 8.26 Typical Full Priority Cross Section (B-B)

A cross-section of Well Road is presented in Figure 8.27

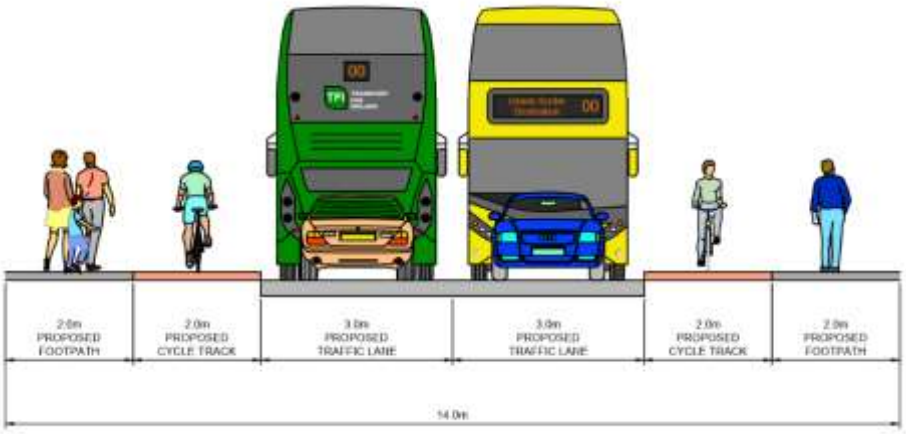


Figure 8.27 Typical Traffic Management Cross Section (C-C)

Route Option 5

Route Description

Route Option 5 is presented in Figure 8.28 and described as follows.

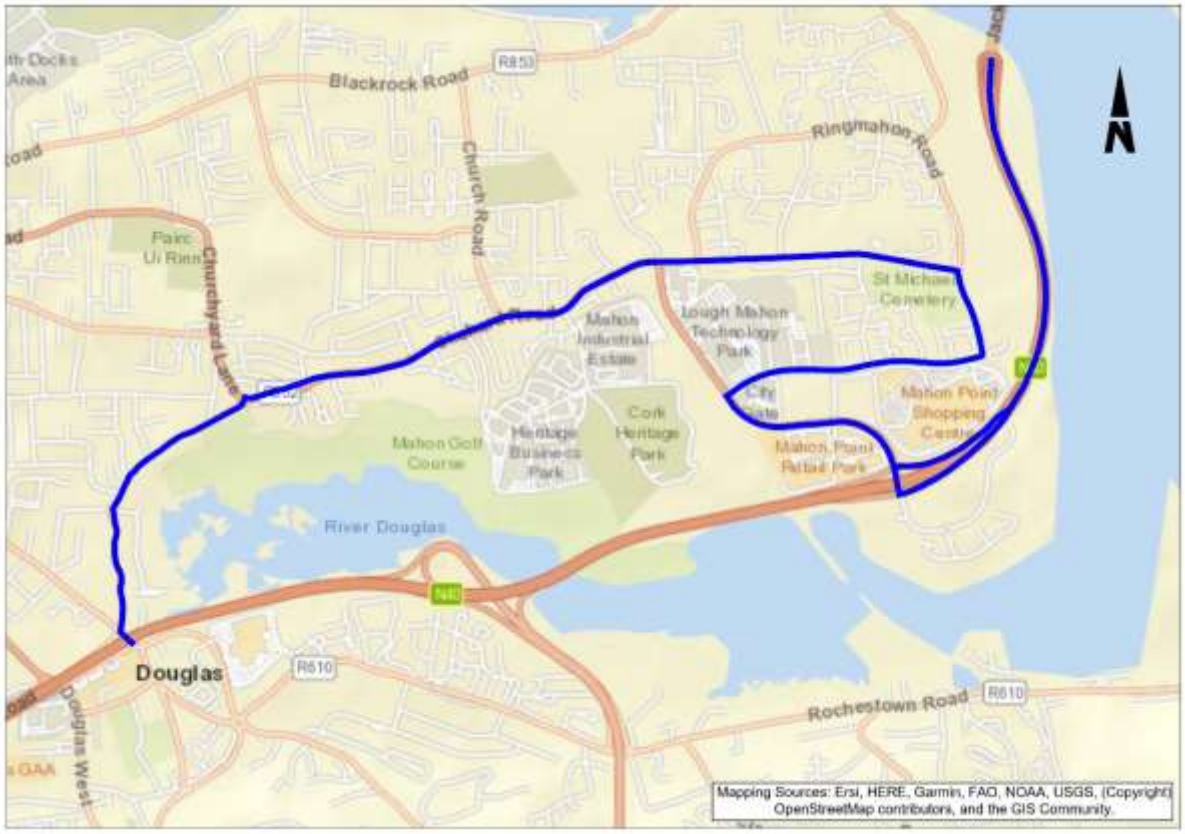


Figure 8.28 Route Option 5

Southbound: Route Option 5 commences at the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the Loughmahon Link Road. The bus then turns on to St. Michael's Drive and along Estuary Drive before turning on to Ringmahon Road and eventually on to Skehard Road. The bus then proceeds along Skehard Road, passed Loughmahon Link Road and Church Road towards the junction at Churchyard Lane and Well Road. The route then moves Southbound along Well Road where it meets the Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 5 Indicative Scheme Design

Figure 8.29 illustrates the indicative scheme design for Route Option 5 as well as locations of indicative cross-sections.

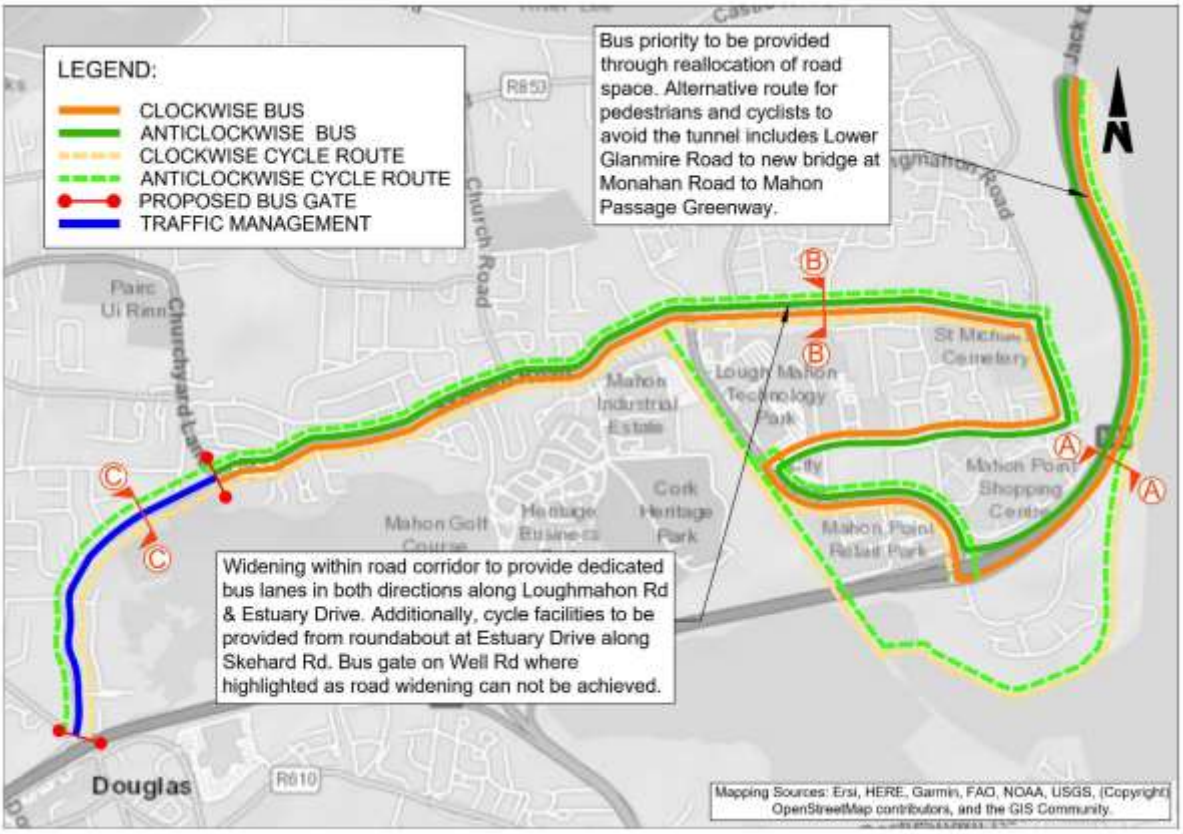


Figure 8.29 Route Option 5 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction at Skehard Road and Well Road via the Loughmahon Link Road, St. Michael's Drive and Ringmahon Road. On Well Road, where existing constraints prohibit widening, traffic signals will be provided to give bus priority.

Segregated cycle lanes will be provided along the Well Road, Skehard Road, Loughmahon Link Road and Ringmahon Road.

A cross-section of South Ring Road is presented in Figure 8.30.

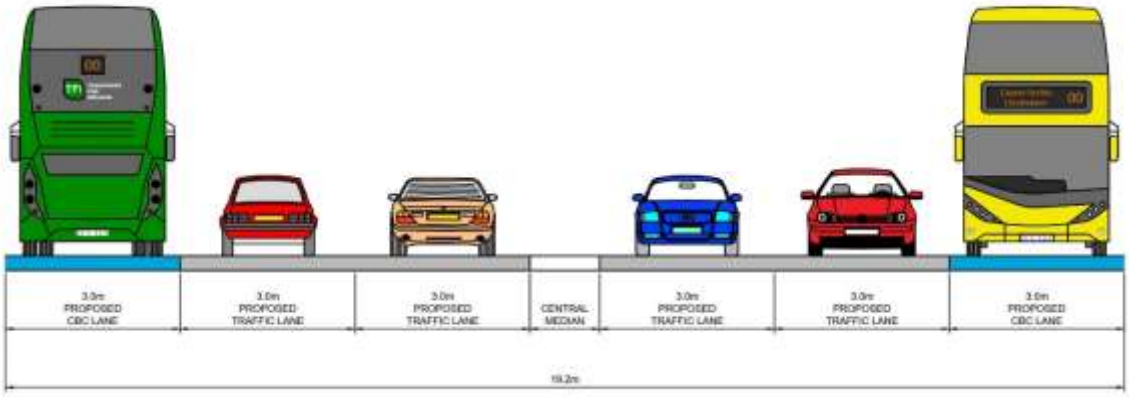


Figure 8.30 Typical National Primary Road Cross Section (A-A)

A cross-section of Skehard Road is presented in Figure 8.31.

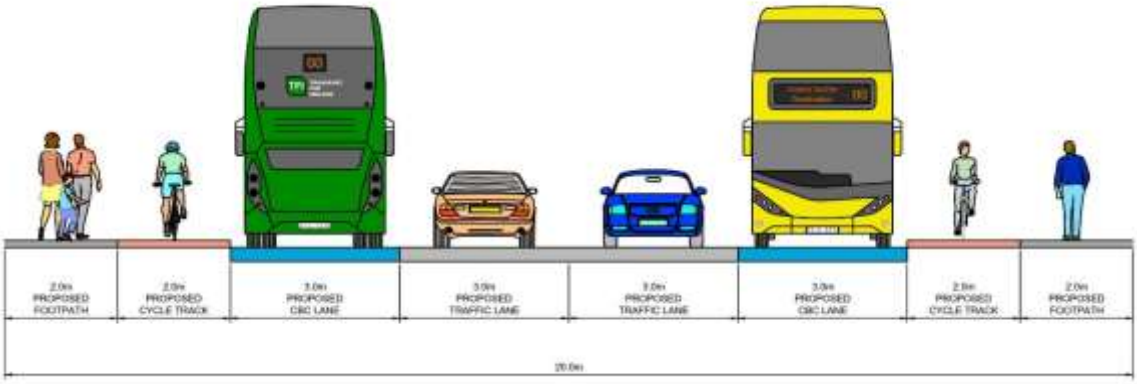


Figure 8.31 Typical Full Priority Cross Section (B-B)

A cross-section of Well Road is presented in Figure 8.32

Figure 8.32 Typical Traffic Management Cross Section (C-C)

Route Option 6

Route Description

Route Option 6 is presented in Figure 8.33 and described as follows.

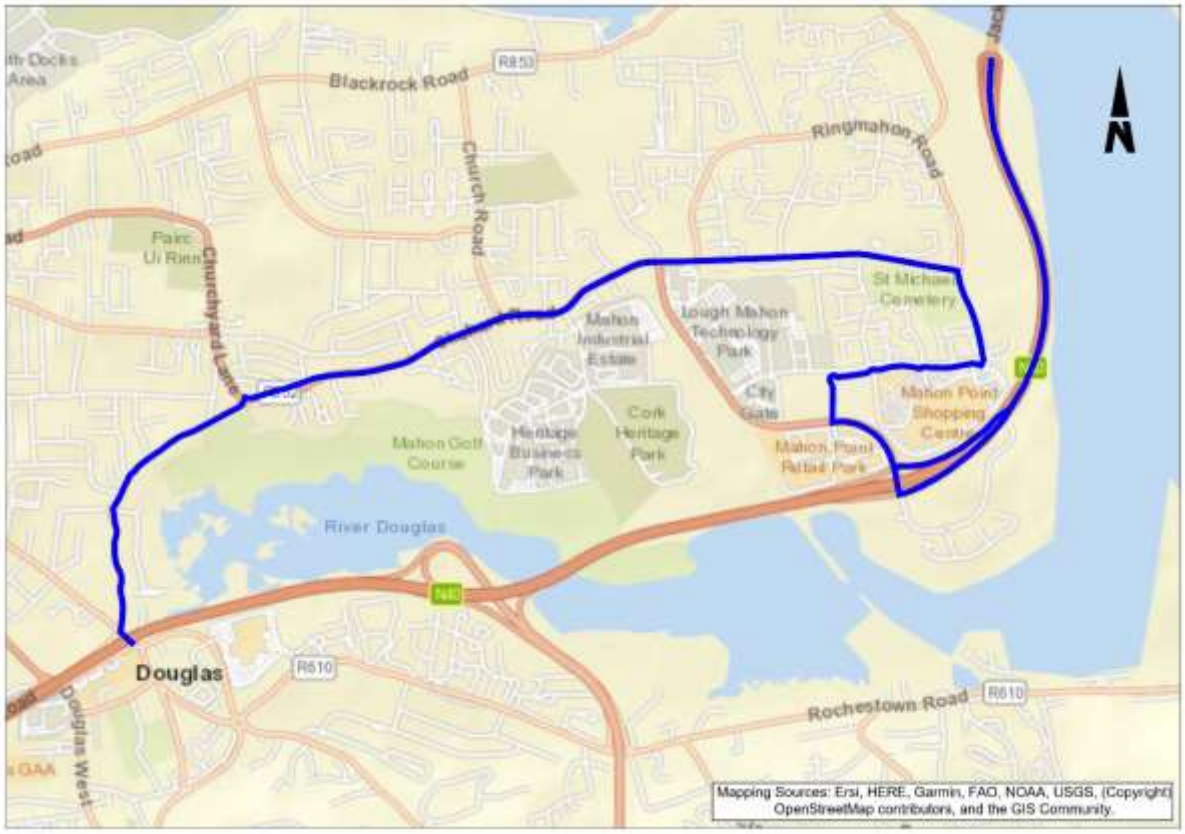


Figure 8.33 Route Option 6

Southbound: Route Option 6 commences at the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the Loughmahon Link Road. The bus then turns in to Mahon Point Shopping Centre before emerging on to Ringmahon Road and eventually turning on to Skehard Road. The bus then proceeds along Skehard Road, passed Loughmahon Link Road and Church Road towards the junction at Churchyard Lane and Well Road. The route then moves Southbound along Well Road where it meets the Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 6 Indicative Scheme Design

Figure 8.34 illustrates the indicative scheme design for Route Option 6 as well as locations of indicative cross-sections.

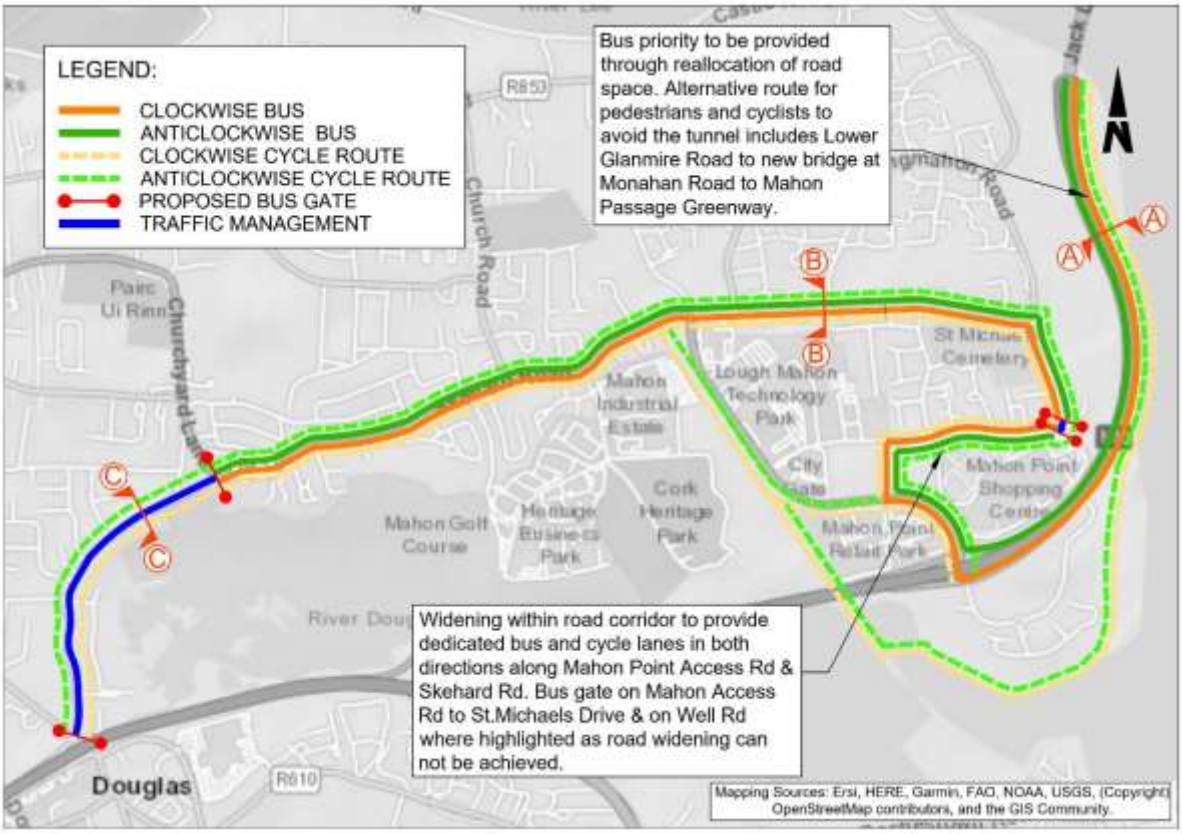


Figure 8.34 Route Option 6 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction at Skehard Road and Well Road via the Loughmahon Link Road and Ringmahon Road. A bus gate will be provided inside Mahon Point Shopping Centre where the route emerges at Ringmahon Road. On Well Road, where existing constraints prohibit widening, advanced signals for busses will be provided to give priority for busses through the road.

Cycle tracks will be provided along the Well Road, Skehard Road, Loughmahon Link Road, through Mahon Point Shopping Centre and Ringmahon Road.

A cross-section of South Ring Road is presented in Figure 8.35.

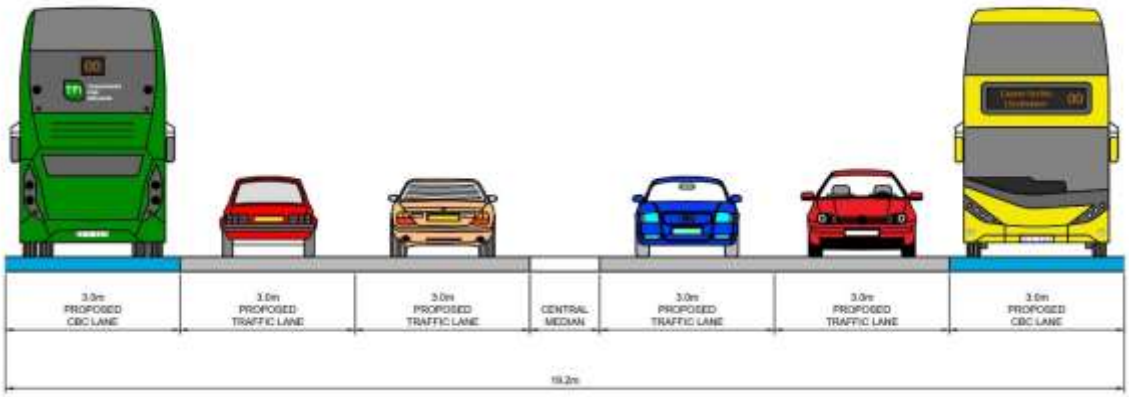


Figure 8.35 Typical National Primary Road Cross Section (A-A)

A cross-section of Skehard Road is presented in Figure 8.36

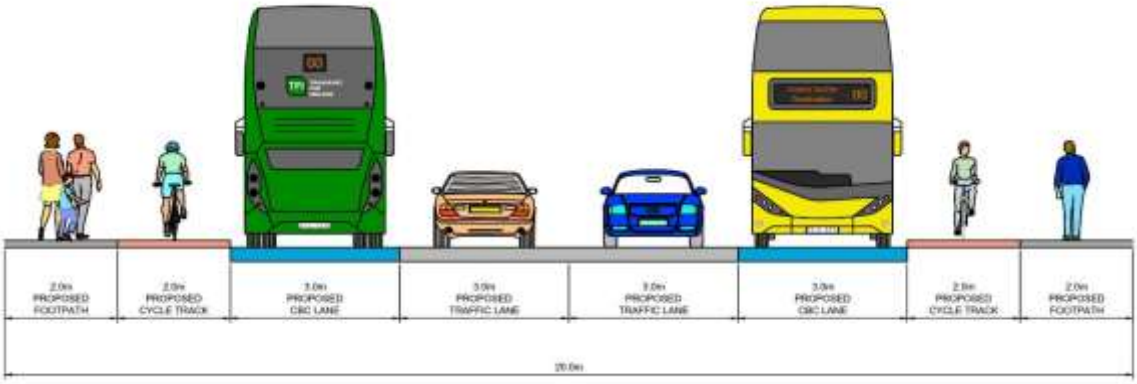


Figure 8.36 Typical Full Priority Cross Section (B-B)

A cross-section of Well Road is presented in Figure 8.37

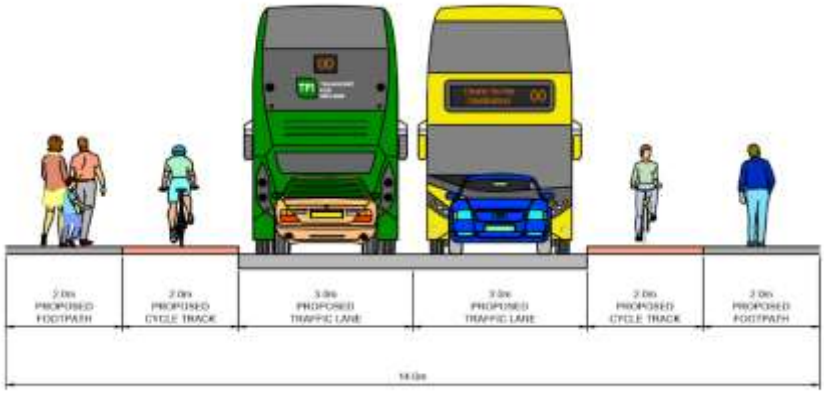


Figure 8.37 Typical Traffic Management Cross Section (C-C)

Route Option 7

Route Description

Route Option 7 is presented in Figure 8.38 and described as follows.

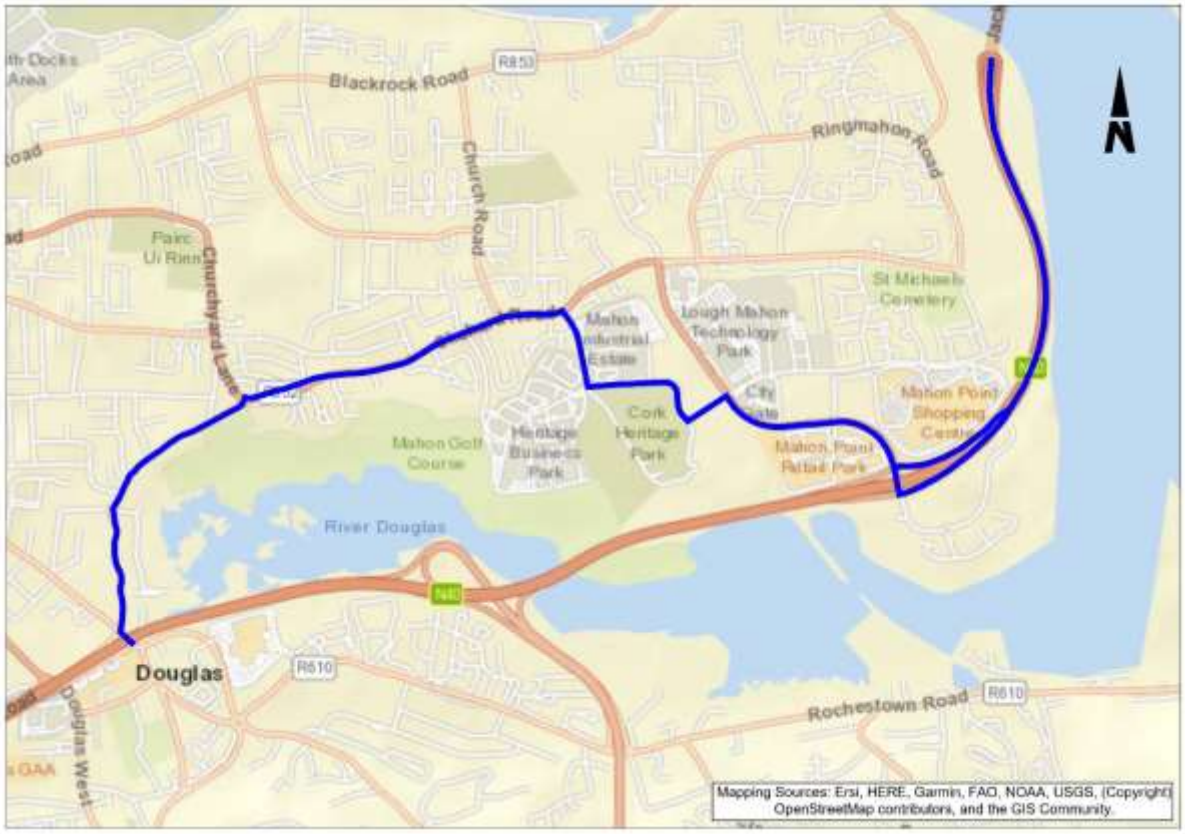


Figure 8.38 Route Option 7

Southbound: Route Option 7 commences at the Jack Lynch Tunnel on the South Ring Road, from here the bus travels along the South Ring Road to the junction at Loughmahon Link Road and St. Michael's Drive. The bus would then take a new proposed road from the junction through Bessboro Road before emerging on Skehard Road. The bus then proceeds along Skehard Road, passed Church Road towards the junction at Churchyard Lane and Well Road. The route then moves Southbound along Well Road where it meets the Douglas Road junction.

Northbound: The northbound route follows the same route as the southbound routing.

Route Option 7 Indicative Scheme Design

Figure 8.39 illustrates the indicative scheme design for route Option 7 as well as locations of indicative cross-sections.

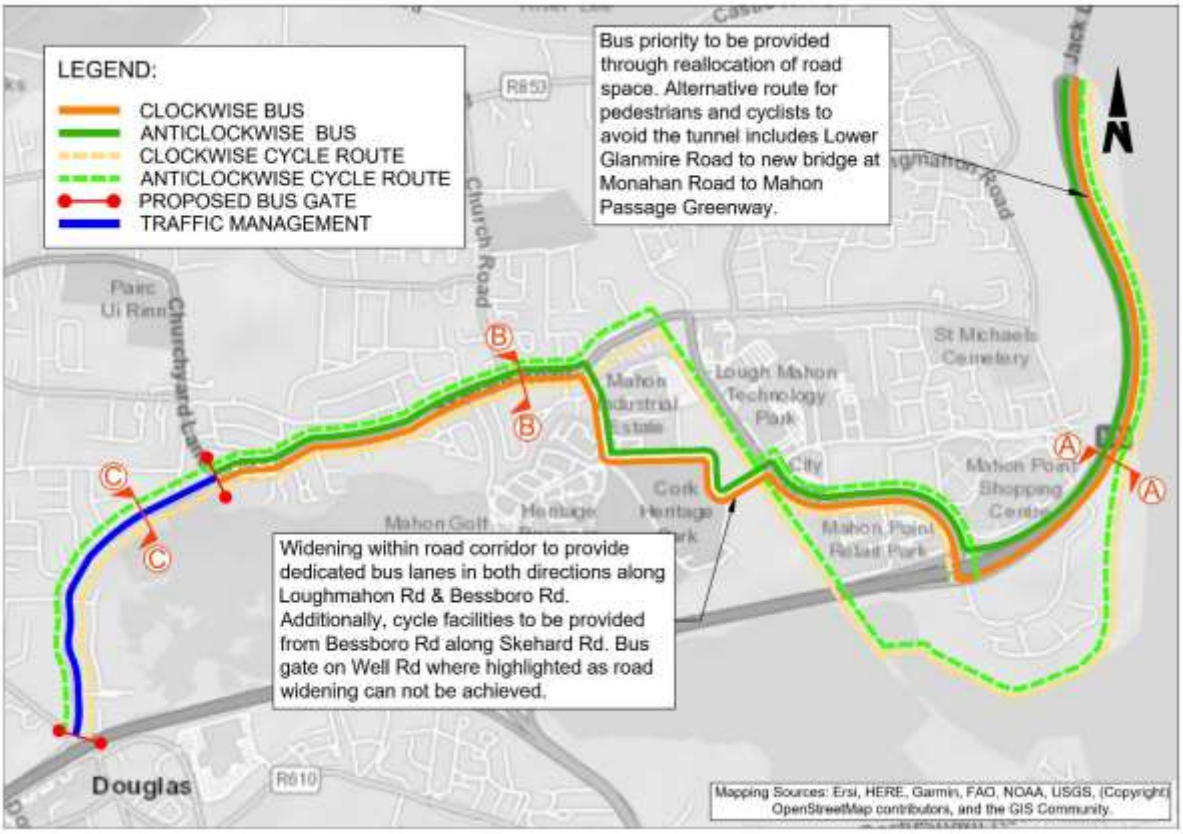


Figure 8.39 Route Option 7 Indicative Scheme Design

Bus lanes will be provided in both direction from South Ring Road to the junction at Skehard Road and Well Road via the Loughmahon Link Road, and the newly proposed road that links to Bessboro Road. On Well Road, where existing constraints prohibit widening, traffic signals will be provided to give bus priority.

Cycle tracks will be provided along the Well Road, Skehard Road and Loughmahon Link Road.

A cross-section of South Ring Road is presented in Figure 8.40.

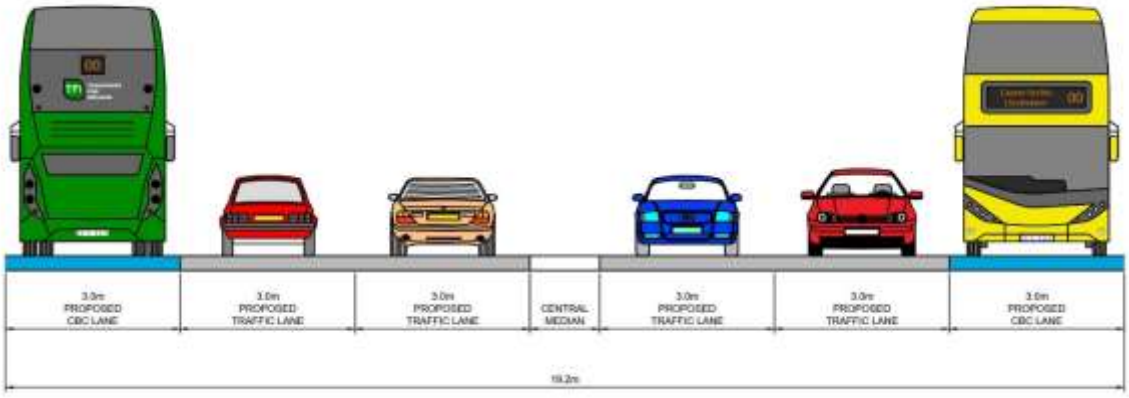


Figure 8.40 Typical National Primary Road Cross Section (A-A)

A cross-section of Skehard Road is presented in Figure 8.41

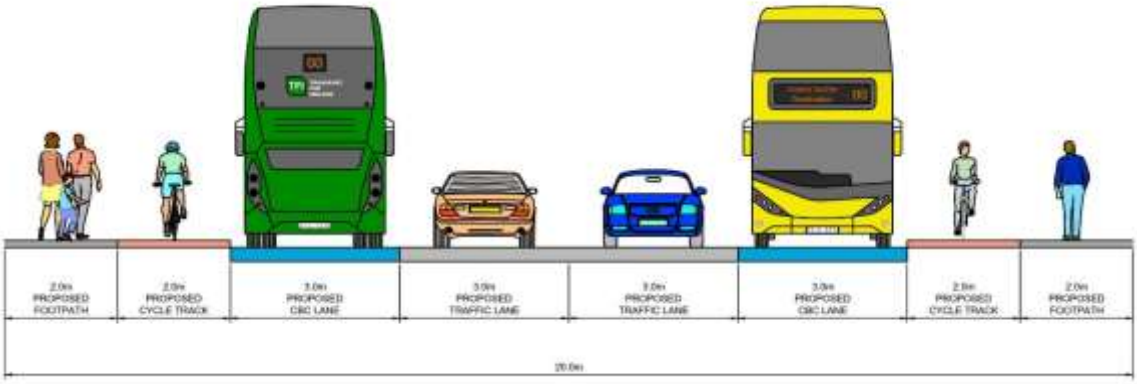


Figure 8.41 Typical Full Priority Cross Section (B-B)

A cross-section of Well Road is presented in Figure 8.42

Figure 8.42 Typical Traffic Management Cross Section (C-C)

8.6 Stage 2 Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Orbital STC are presented in Appendix A. A summary of the assessment is presented in Table 8.2 below.

Table 8.2 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Economy	Capital Cost							
	Average Journey Time							
	Journey Time Reliability							
Integration	Land Use Integration							
	Residential and Employment Catchments							
	Transport Integration							
	Cyclist Integration							
	Pedestrian Integration							
Accessibility and Social Inclusion	Key Trip Attractors							
	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							

8.7 Conclusion

A summary of the assessment is shown in Table 8.3 below.

Table 8.3 Route Options Assessment Summary (Main Criteria)

Assessment Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Economy							
Integration							
Accessibility and Social Inclusion							
Safety							
Environment							

Option 3 is the emerging preferred route option in the South East sector. This option has significant advantages from an integration perspective as it travels along roads that have relatively high population and employment densities. This option integrates with district centre zoning at Mahon Point, business and technology and mixed-use development zoning on R852 Mahon Link Road. This option integrates with Neighbourhood and Local Centres zoning on Skehard Road. This option is considered to have significant advantages from a land use integration perspective.

Option 3 has significant advantages from accessibility and social inclusion perspective. It provides accessibility to a significant number of key attractors including health facilities, sporting facilities, and educational facilities. This route option travels through a RAPID (Revitalising Areas through Planning, Investment and Development) designated area Mahon. As a result, this option is considered to have some advantages with respect to servicing deprived geographic areas.

Option 3 has advantages from an environmental perspective as it routes along existing roads therefore has advantages over the other options with respect to the potential impact on soils and geology, biodiversity, and water resources.

9. South Central Sector

9.1 Introduction

This chapter outlines the options assessment process for the South-Central Sector (Well Road to Black Ash Park & Ride). The study area for the South-Central Sector was developed to include the main trip generators, existing and proposed roads between the Well Road in Douglas and the Black Ash Park & Ride. The study area is shown below in Figure 9.1.

Figure 9.1 South Central Sector Study Area

The Study Area was divided into two smaller sections so that options can be presented clearly in this report as shown in Figure 9.2 below:

Figure 9.2 Study Area Sections

Section 1 covers the area from the Well Road to Black Ash Park & Ride to the south of the N40 that include Douglas, Grange and Frankfield. Section 2 covers the area from the Well Road to Black Ash Park & Ride to the north of the N40 that include Douglas, Ballintemple, Ballinlough and Turners Cross.

9.2 Stage 1 Options Assessment – Section 1

Links within the South-Central Sector that are subject to Stage 1 - Section 1 options assessment are shown in Figure 9.3.

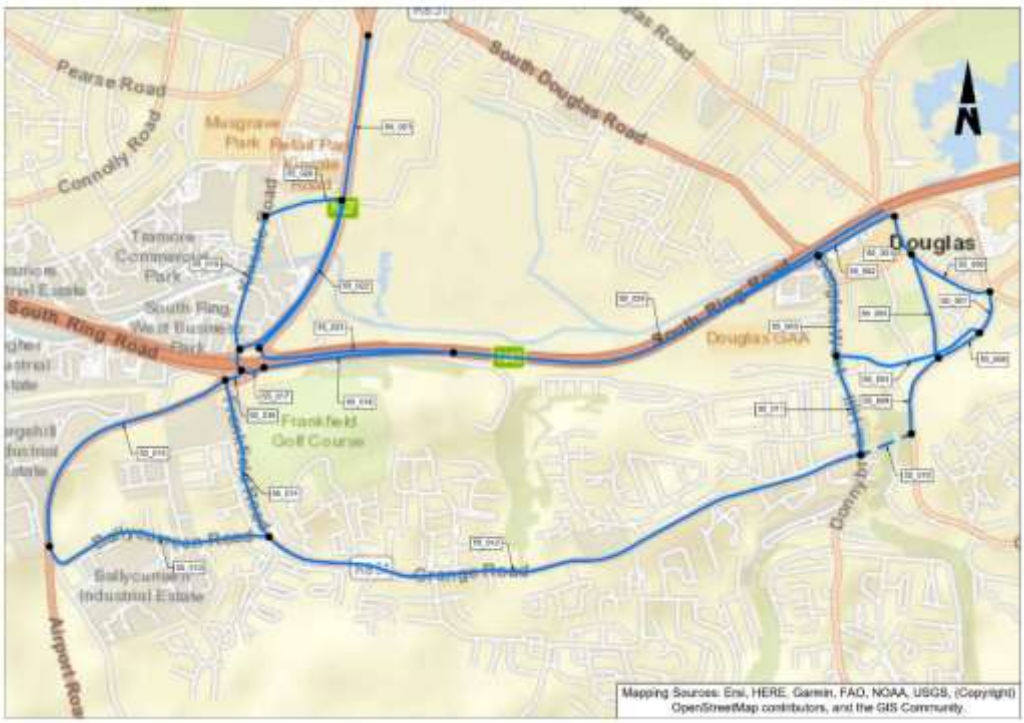


Figure 9.3 South Central Section 1 Links

The Stage 1 options assessment for Section 1 is provided in Appendix A.10.

9.3 Stage 1 Options Assessment – Section 2

Road links within the South-Central Sector that are subject to Stage 1 - Section 2 options assessment are shown in Figure 9.4.

Figure 9.4 South Central Section 2 Links

The Stage 1 options assessment for Section 2 is provided in Appendix A.11.

9.4 Stage 1 Option Assessment – Section 2

The outcome of the assessment can be seen in the figure below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

Figure 9.5 Sifting Assessment

Preliminary Route Assessment:

A preliminary route assessment process was then performed to identify routes that were circuitous in nature, dead ends or disconnected such could then be removed. A summary of the preliminary route assessment process is presented in the table below.

Table 9.1. Preliminary Route Assessment

Road Names	Comments	Map
Douglas Road	All route options using this road have routes which are circuitous in nature and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Figure 9.6 Removal of dead ends, disconnected or overly circuitous links

The figure below shows the final spiders web of links that will be bought forward for Stage 2 assessment.

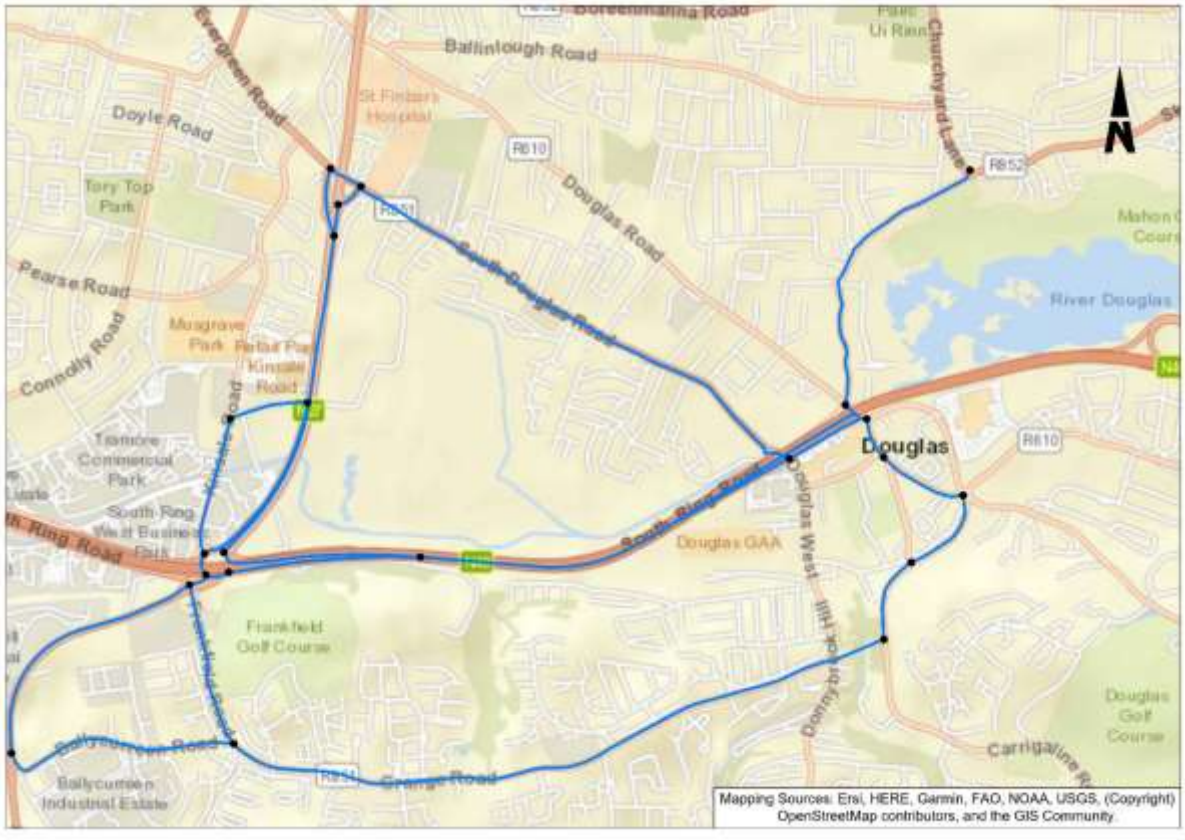


Figure 9.7 Spiders Web for Stage 2 Assessment

9.3 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 9.8:

- Option 1: (A, B, C, D, E, F)
- Option 2: (A, B, G, H, J, E, F)
- Option 3: (A, B, C, J, E, F)
- Option 4: (A, B, G, H, J, F)
- Option 5: (A, B, C, J, F)
- Option 6: (A, B, G, H, I, J, E, F)
- Option 7: (A, B, G, H, I, J, F)

Figure 9.8 Links for Stage 2 Assessment

Douglas East West Link Bridge

For Options 2, 4, 6 & 7 a new bridge (Douglas East West Link Bridge) is proposed at the junction of Grange Road and Donnybrook Hill over the Mangala Valley to connect with the Carrigaline Road. The bridge will provide a footpath, cycle track, bus lane and general traffic lane in each direction. The proposed configuration of the bridge reflects, but it is not dependent on, a proposed Southern Distributor Road, which is currently at an early stage of planning.

The proposed Douglas East West Link Bridge originated from Douglas Land Use and Transportation Study. The Cork Metropolitan Area Transport Strategy (CMATS) identified the requirement for a comprehensive, multi-modal Southern Distributor Road to address the significant shortfall in local connectivity in the Southern Environs area. The Southern Distributor Road is indicatively outlined in CMATS as extending between the proposed M28 Cork to Ringaskiddy scheme at Rochestown to the west via Grange Road and the N27 Cork

Airport Hill to Sarsfield Road located to the east of the N71. The Southern Distributor Road presents opportunities to enhance local connectivity from Frankfield and Grange to all the services and facilities available in Douglas.

Route Option 1

Route Description

Route Option 1 is presented in Figure 9.9 and described as follows.

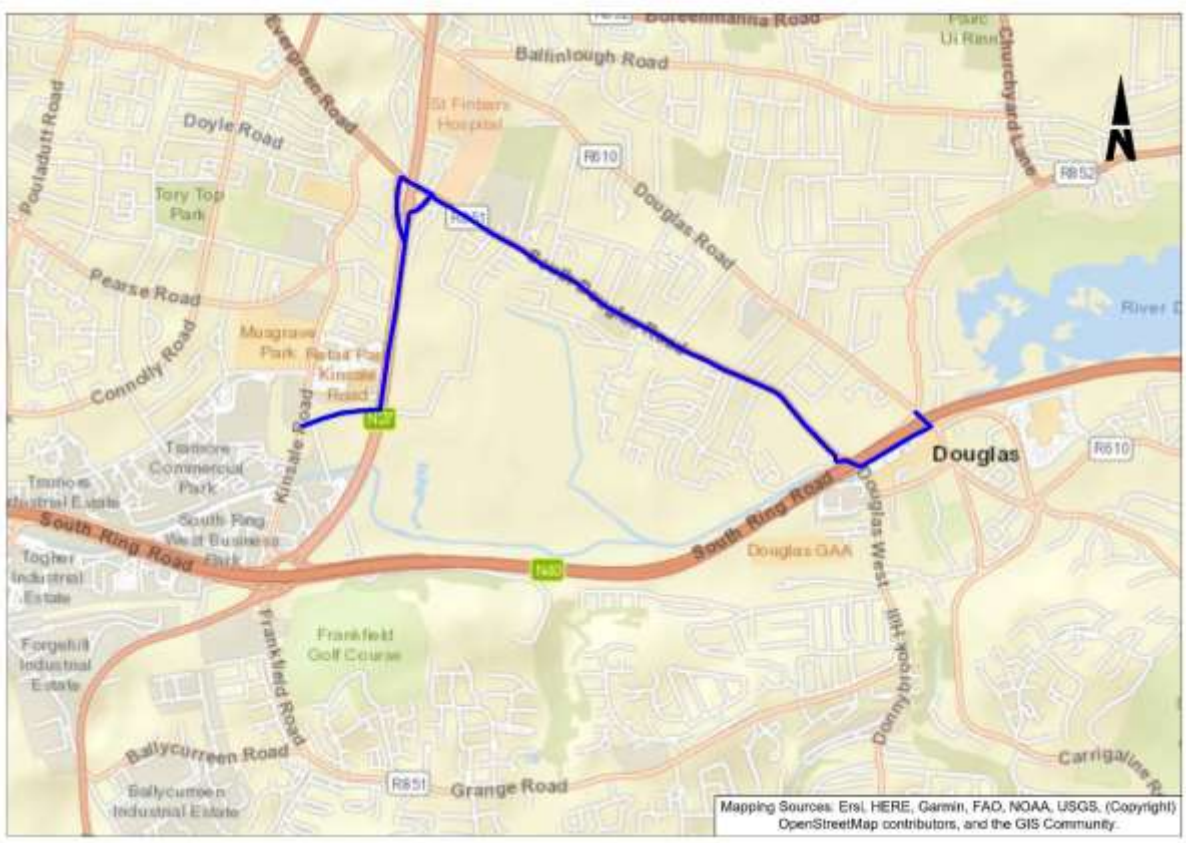


Figure 9.9 Route Option 1

Westbound: Route Option 1 commences at the south end of the Well Road, from here the bus travels along the Douglas Link Road to the junction at South Douglas Road. The bus would then travel along the South Douglas Road and proceed on to the South Link Road where it will then travel on to Mick Barry Road to the Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 1 Indicative Scheme Design

Figure 9.10 illustrates the indicative scheme design for Route Option 1 as well as locations of indicative cross-sections.

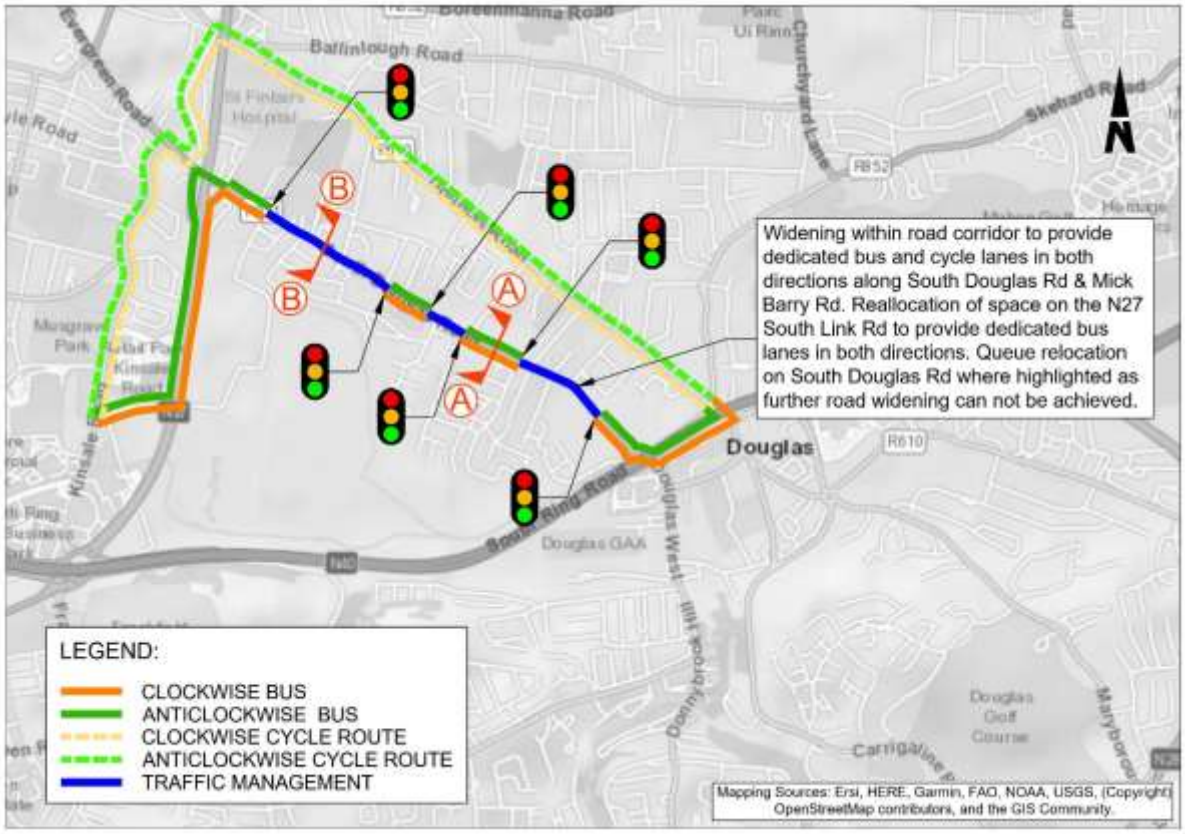


Figure 9.10 Route Option 1 Indicative Scheme Design

Bus lanes will be provided in both direction from Well Road to the South Douglas Road via the Douglas Link Road. On South Douglas Road, where existing constraints prohibit widening, traffic signals will be provided to give bus priority. Furthermore, bus lanes will be provided in both directions along the South Link Road and Mick Barry Road to Black Ash Park & Ride.

Cycle tracks will be provided on the alternative route along Douglas Road, Capwell Road, South Douglas Road, Curragh Road and Kinsale Road. A cross-section of South Douglas Road is presented in Figure 9.11.

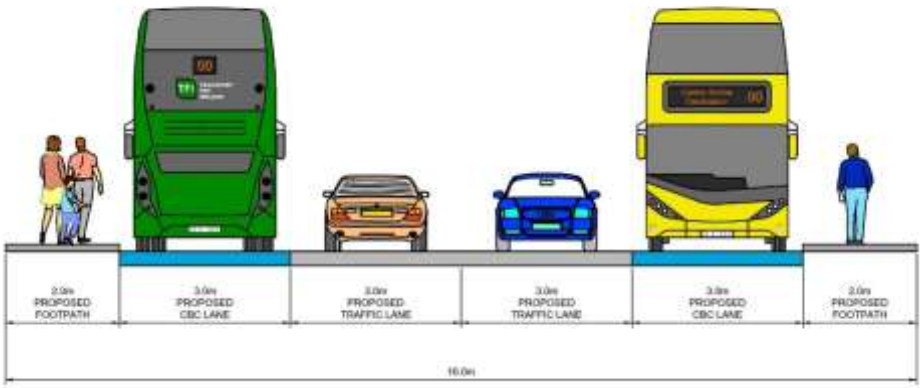


Figure 9.11 Typical Cyclist Absent Cross Section (A-A)

A cross-section of South Douglas Road is presented in Figure 9.12

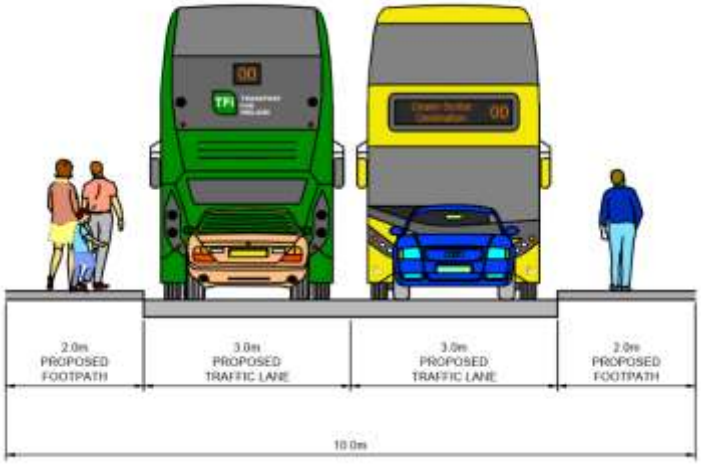


Figure 9.12 Typical Traffic Management Cross Section (B-B)

Route Option 2

Route Description

Route Option 2 is presented in Figure 9.13 and described as follows.

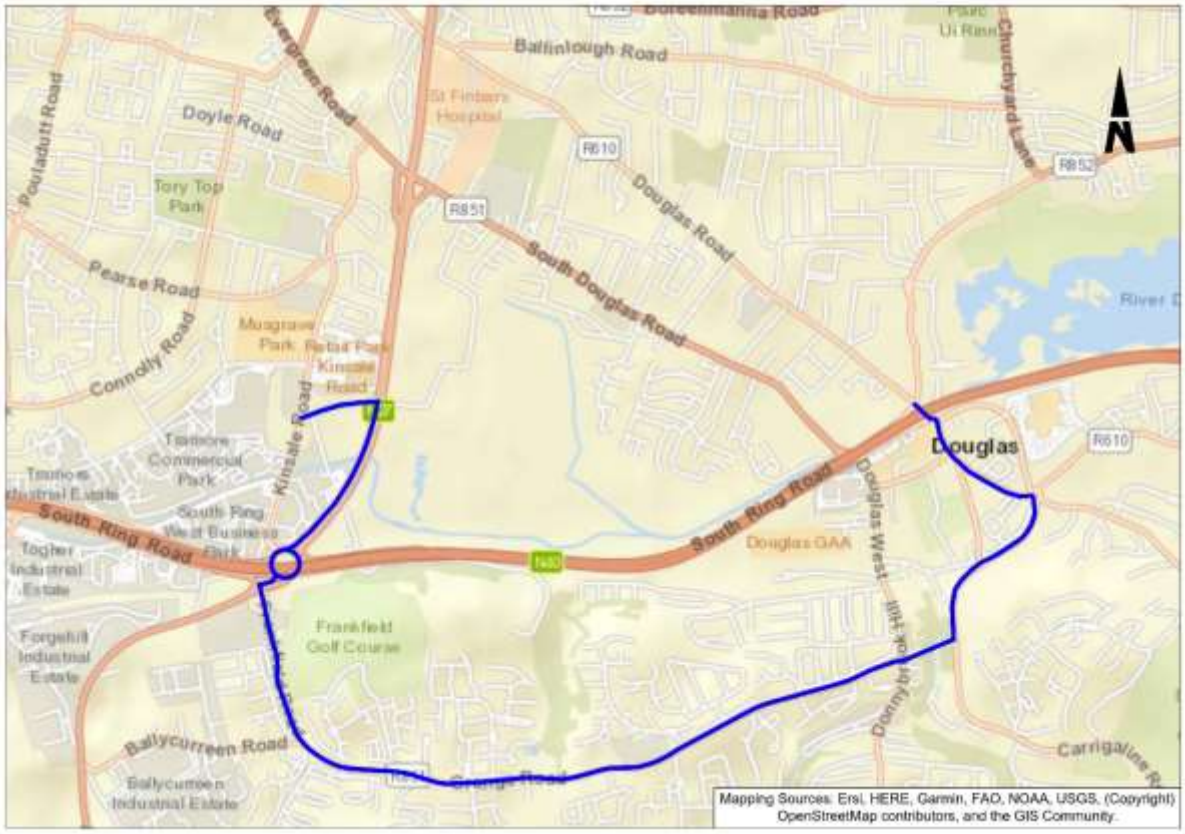


Figure 9.13 Route Option 2

Westbound: Route Option 2 commences at the south end of the Well Road, from here the bus travels through Douglas via East Douglas Street to the Fingerpost Roundabout. The bus would then travel along Carrigaline Road and proceed to the proposed new bridge traversing Ballybrack Woods where it will then travel on to Grange Road. From here, the bus would travel along Frankfield Road, through the Kinsale Road Roundabout and up the South Link Road before finally turning on to Mick Barry Road where it arrives at Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 2 Indicative Scheme Design

Figure 9.14 illustrates the indicative scheme design for Route Option 2 as well as locations of indicative cross-sections.

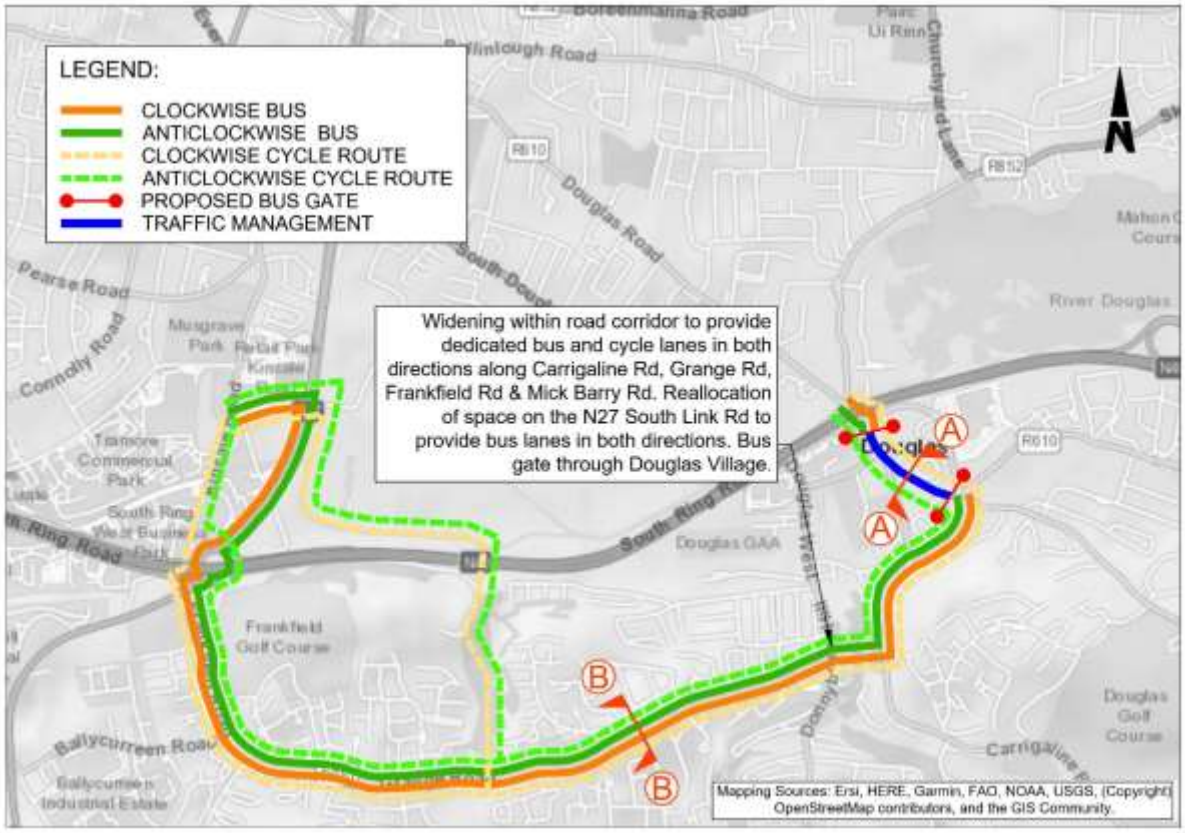


Figure 9.14 Route Option 2 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via Grange Road and South Link Road. Through Douglas, along East Douglas Street, where existing constraints prohibit widening, traffic signals and a bus gate will be provided to give bus priority for busses.

Cycle tracks will be provided from the Well Road along Douglas Road, East Douglas Street, Carrigaline Road, Grange Road, Frankfield Road and Kinsale Road. A new cycle route is proposed perpendicular to the South Ring Road from Grange Road through Tramore Valley Park and will emerge at the junction to Mick Barry Road. A cross-section of East Douglas Street is presented in Figure 9.15.

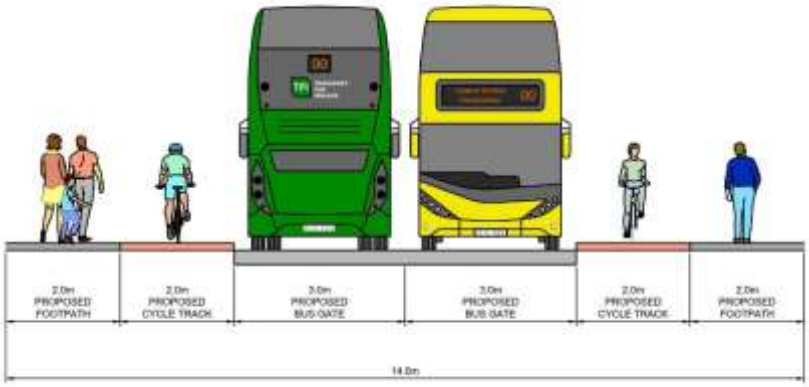


Figure 9.15 Typical Bus Gate Cross Section (A-A)

A cross-section of Grange Road is presented in Figure 9.16

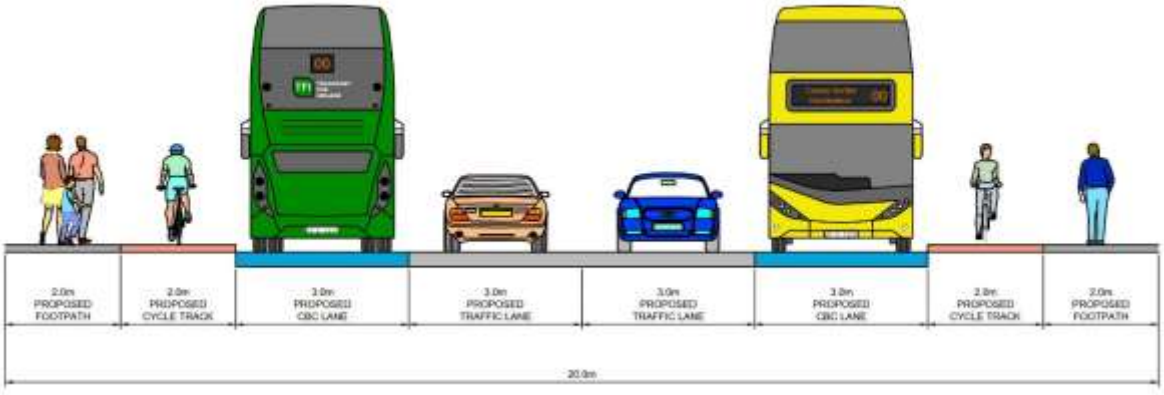


Figure 9.16 Typical Full Priority Cross Section (B-B)

Route Option 3

Route Description

Route Option 3 is presented in Figure 9.17 and described as follows.

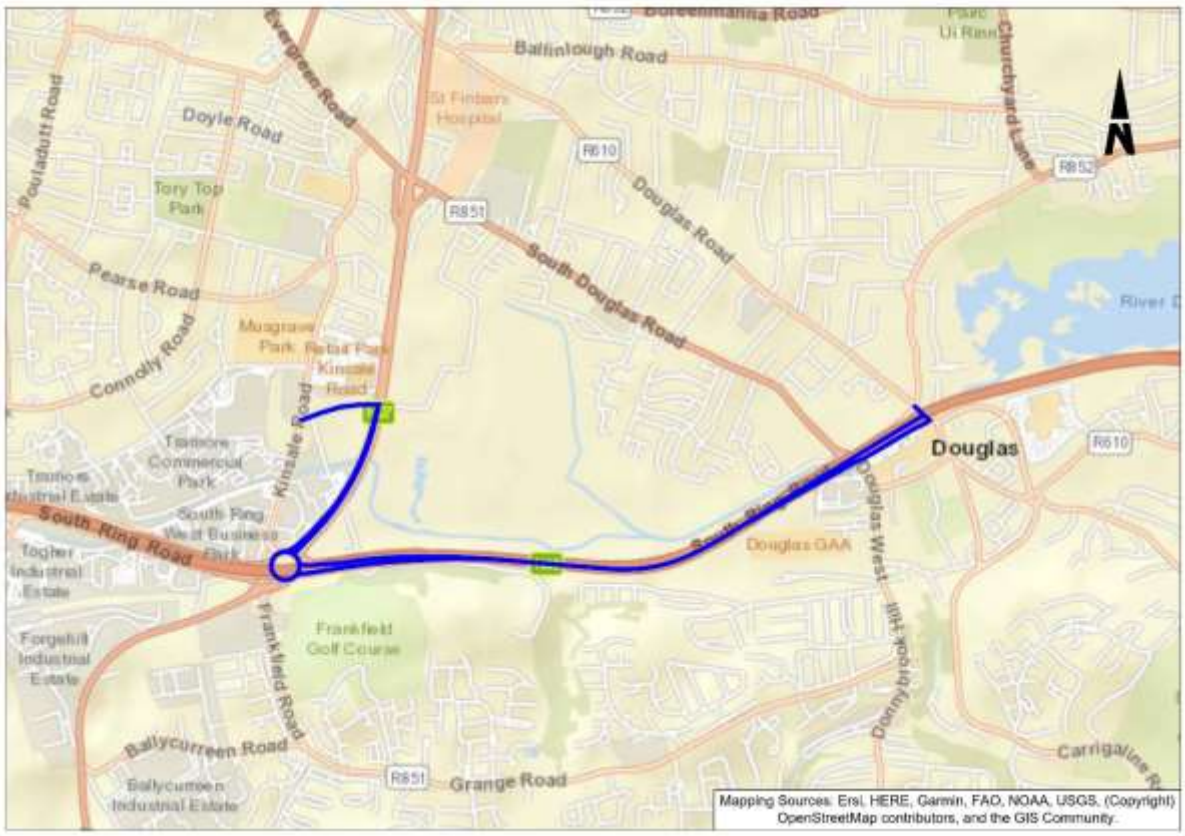


Figure 9.17 Route Option 3

Westbound: Route Option 3 commences at the south end of the Well Road, from here the bus travels along the Douglas Link Road before advancing on to the South Ring Road, where it will then proceed through the Kinsale Road Roundabout and travel along the South Link Road to Mick Barry Road and Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 3 Indicative Scheme Design

Figure 9.18 illustrates the indicative scheme design for Route Option 3 as well as locations of indicative cross-sections.

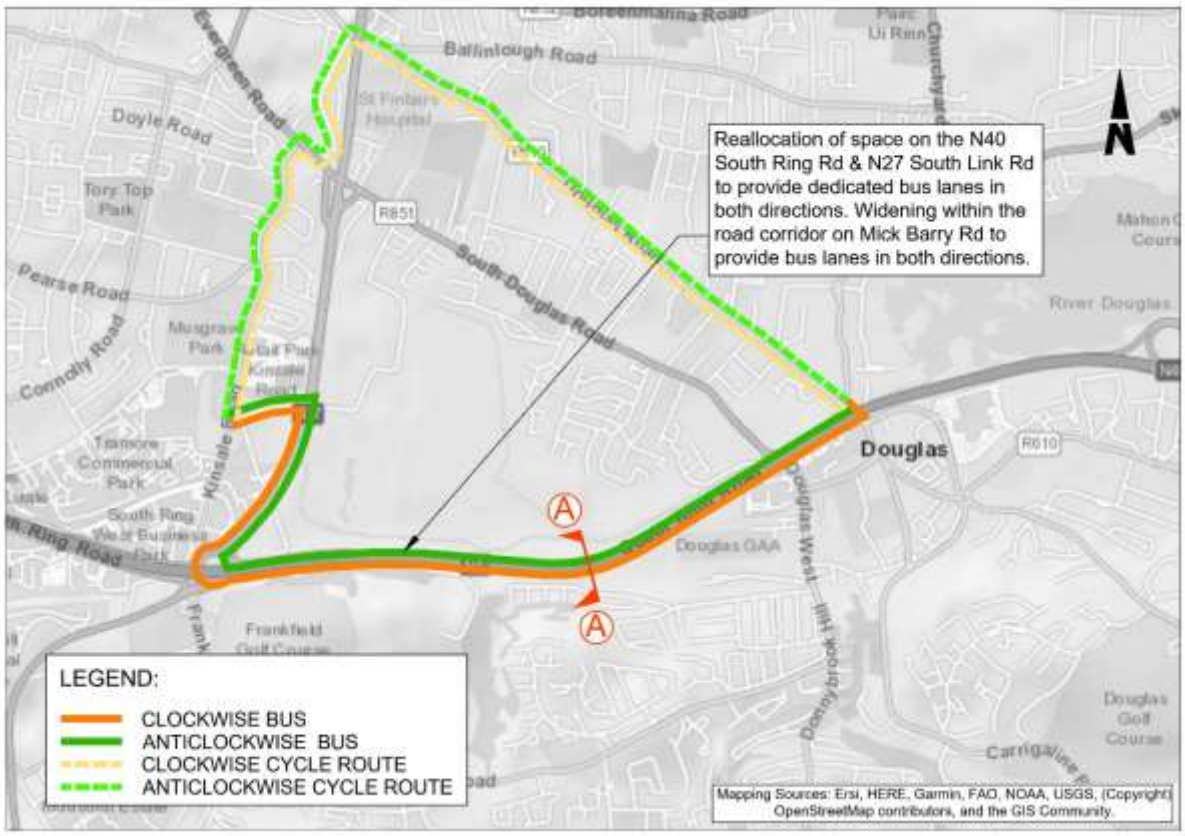


Figure 9.18 Route Option 3 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via South Ring Road and South Link Road.

Cycle tracks will be provided on the alternative route along Douglas Road, Capwell Road, South Douglas Road, Curragh Road and Kinsale Road. A cross-section of South Ring Road is presented in Figure 9.19.

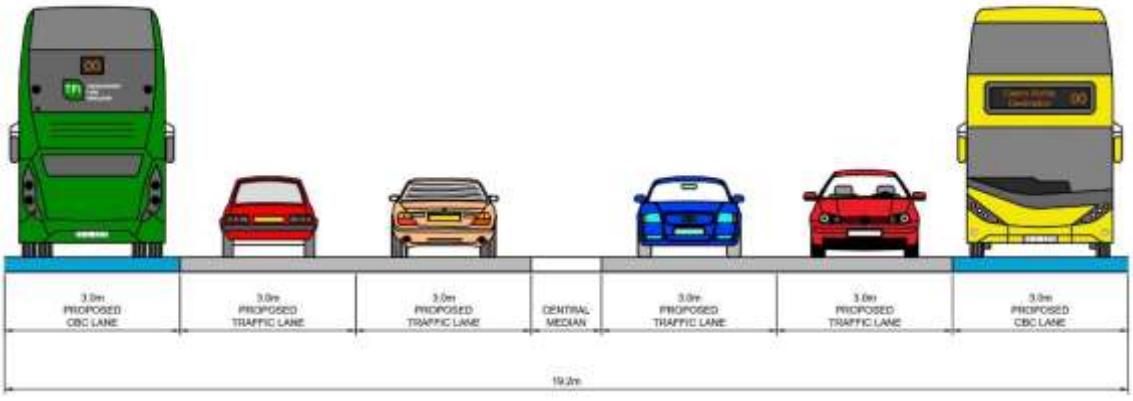


Figure 9.19 Typical National Primary Road Cross Section (A-A)

Route Option 4

Route Description

Route Option 4 is presented in Figure 9.20 and described as follows.

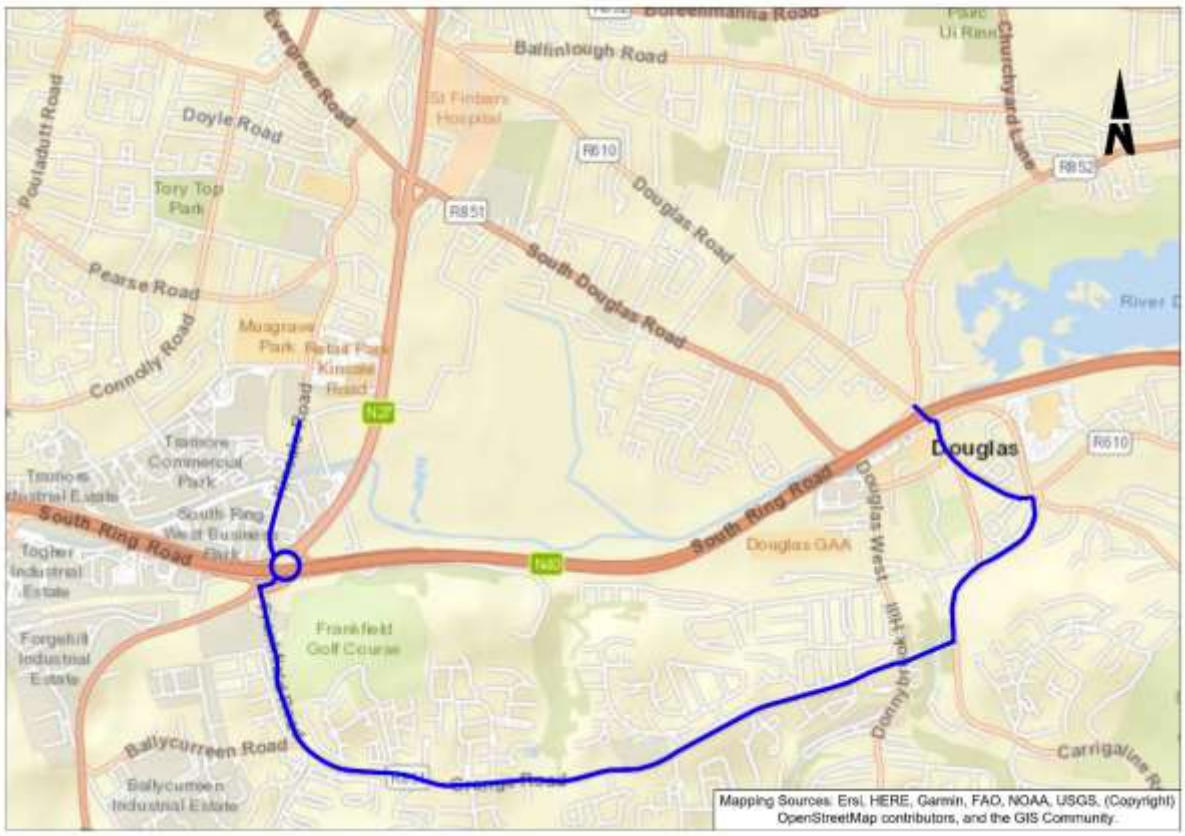


Figure 9.20 Route Option 4

Westbound: Route Option 4 commences at the south end of the Well Road, from here the bus travels through Douglas via East Douglas Street to the Fingerpost Roundabout. The bus would then travel along Carrigaline Road and proceed to the proposed new road/bridge traversing Ballybrack Woods where it will then travel on to Grange Road. From here, the bus would travel along Frankfield Road, through the Kinsale Road Roundabout and up the Kinsale Road before finally turning on to Mick Barry Road where it arrives at Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 4 Indicative Scheme Design

Figure 9.21 illustrates the indicative scheme design for Route Option 4 as well as locations of indicative cross-sections.

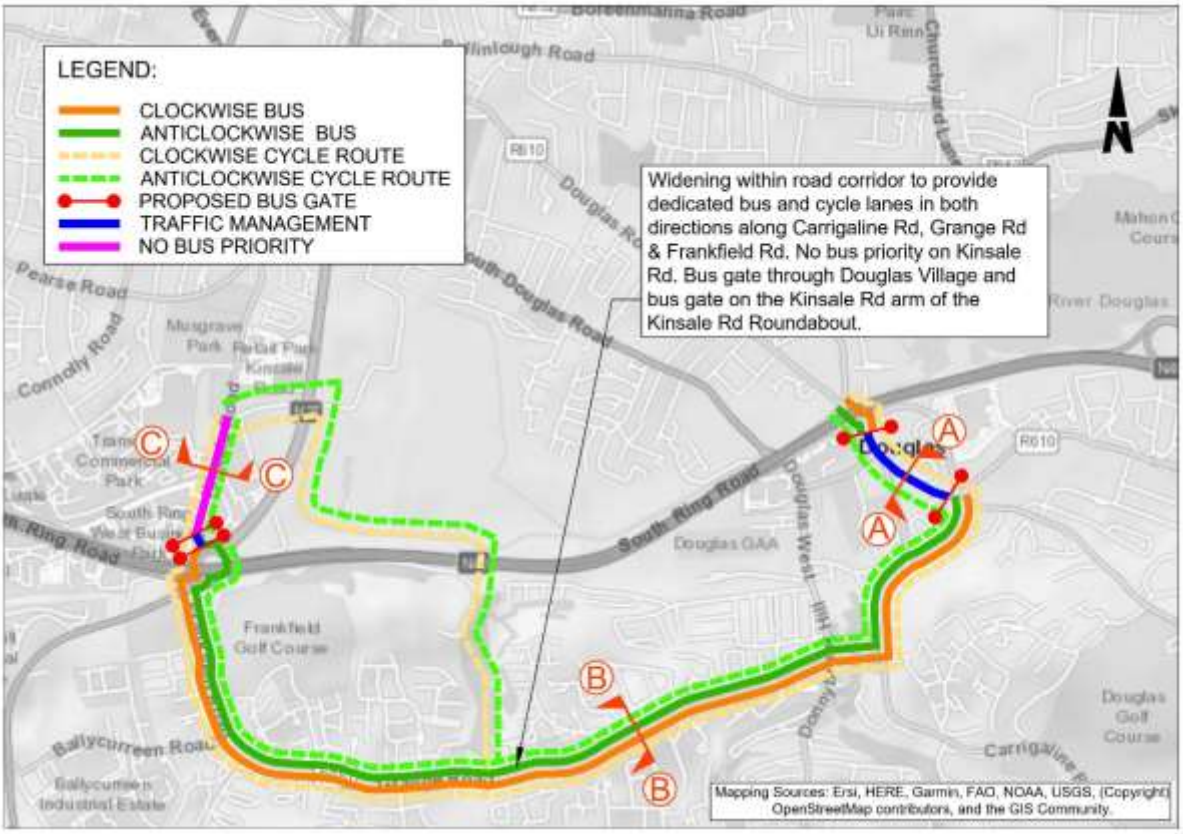


Figure 9.21 Route Option 4 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via Grange Road and South Link Road. Through Douglas, along East Douglas Street, where existing constraints prohibit widening, advanced signals and bus gate will be provided to give priority for busses through the road. A bus gate will be provided at the southern end of the Kinsale Road.

Cycle tracks will be provided from the Well Road along Douglas Road, East Douglas Street, Carrigaline Road, Grange Road, Frankfield Road and Kinsale Road. A new cycle route is proposed perpendicular to the South Ring Road from Grange Road through Tramore Valley Park and will emerge at the junction to Mick Barry Road. A cross-section of East Douglas Street is presented in Figure 9.22.

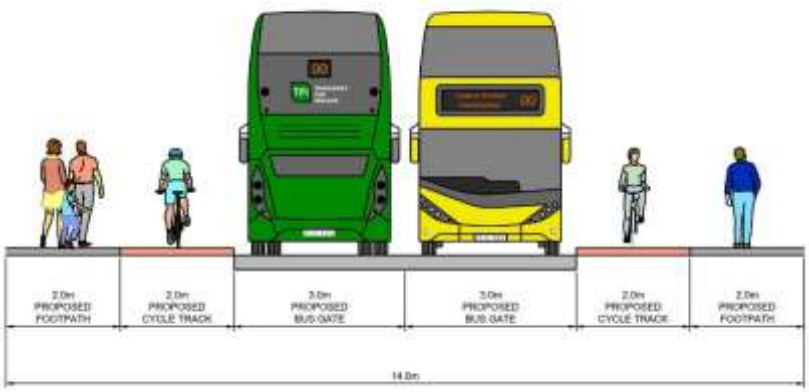


Figure 9.22 Typical Bus Gate Cross Section (A-A)

A cross-section of Grange Road is presented in Figure 9.23.

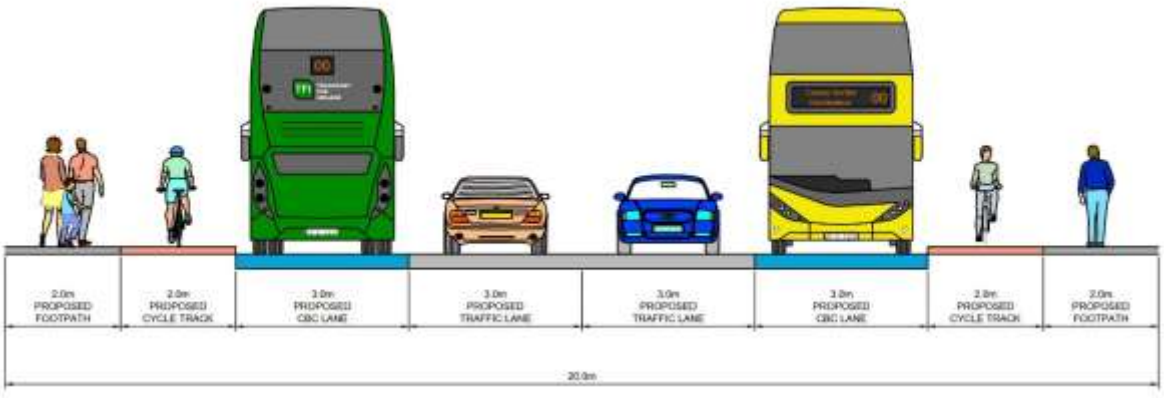


Figure 9.23 Typical Full Priority Cross Section (B-B)

A cross-section of Kinsale Road is presented in Figure 9.24.

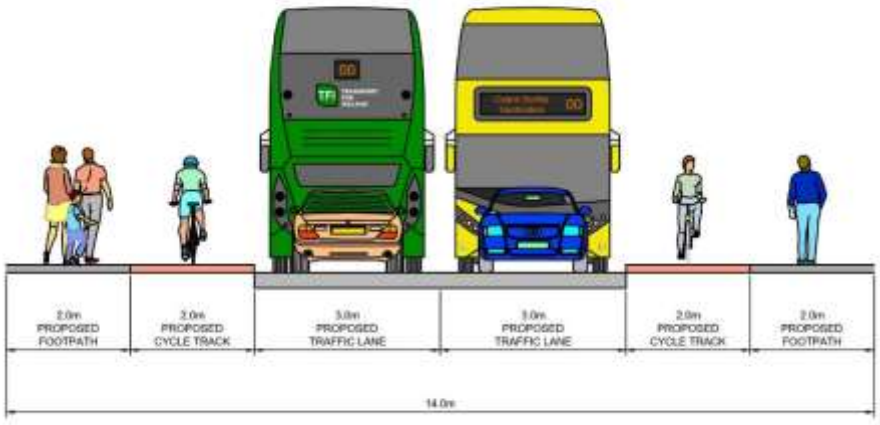


Figure 9.24 Typical Traffic Management Cross Section (C-C)

Route Option 5

Route Description

Route Option 5 is presented in Figure 9.25 and described as follows.

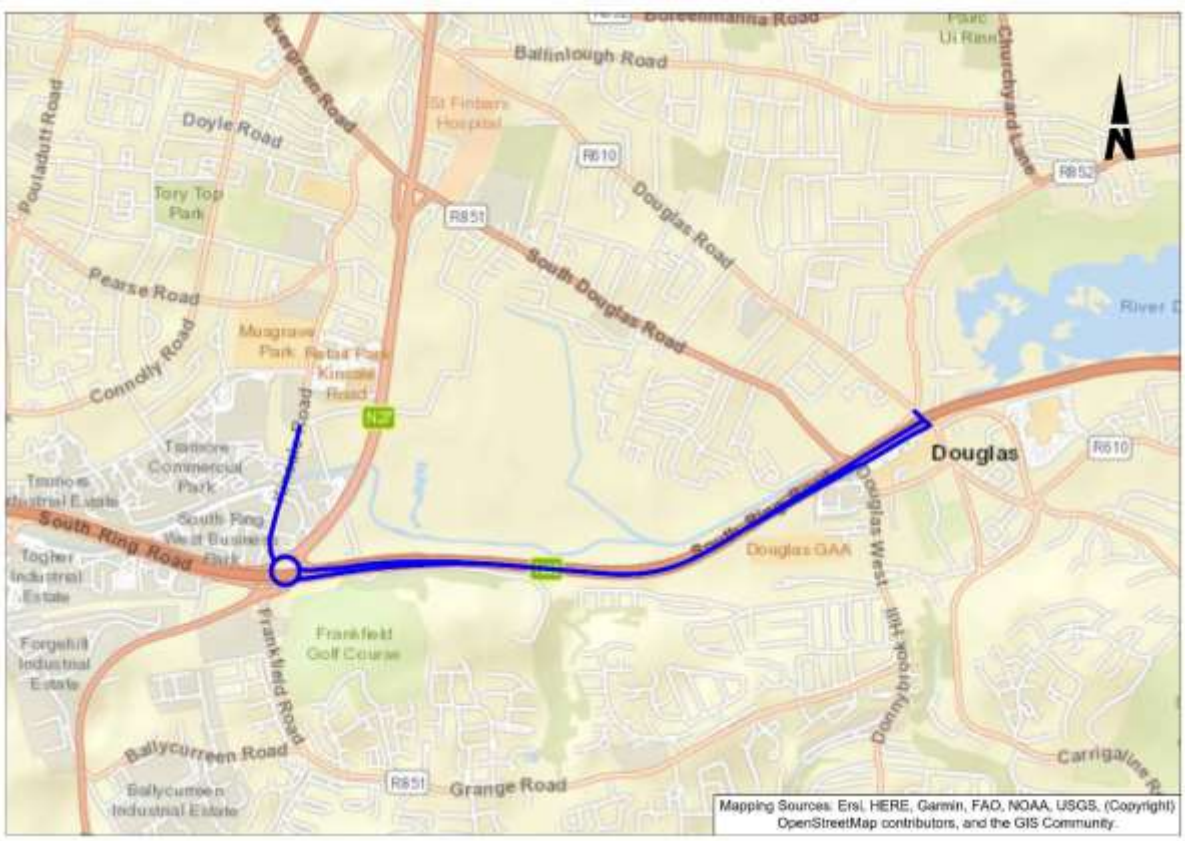


Figure 9.25 Route Option 5

Westbound: Route Option 5 commences at the south end of the Well Road, from here the bus travels along the Douglas Link Road before advancing on to the South Ring Road, where it will then proceed through the Kinsale Road Roundabout and travel along Kinsale Road to Mick Barry Road and Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 5 Indicative Scheme Design

Figure 9.26 illustrates the indicative scheme design for Route Option 5 as well as locations of indicative cross-sections.

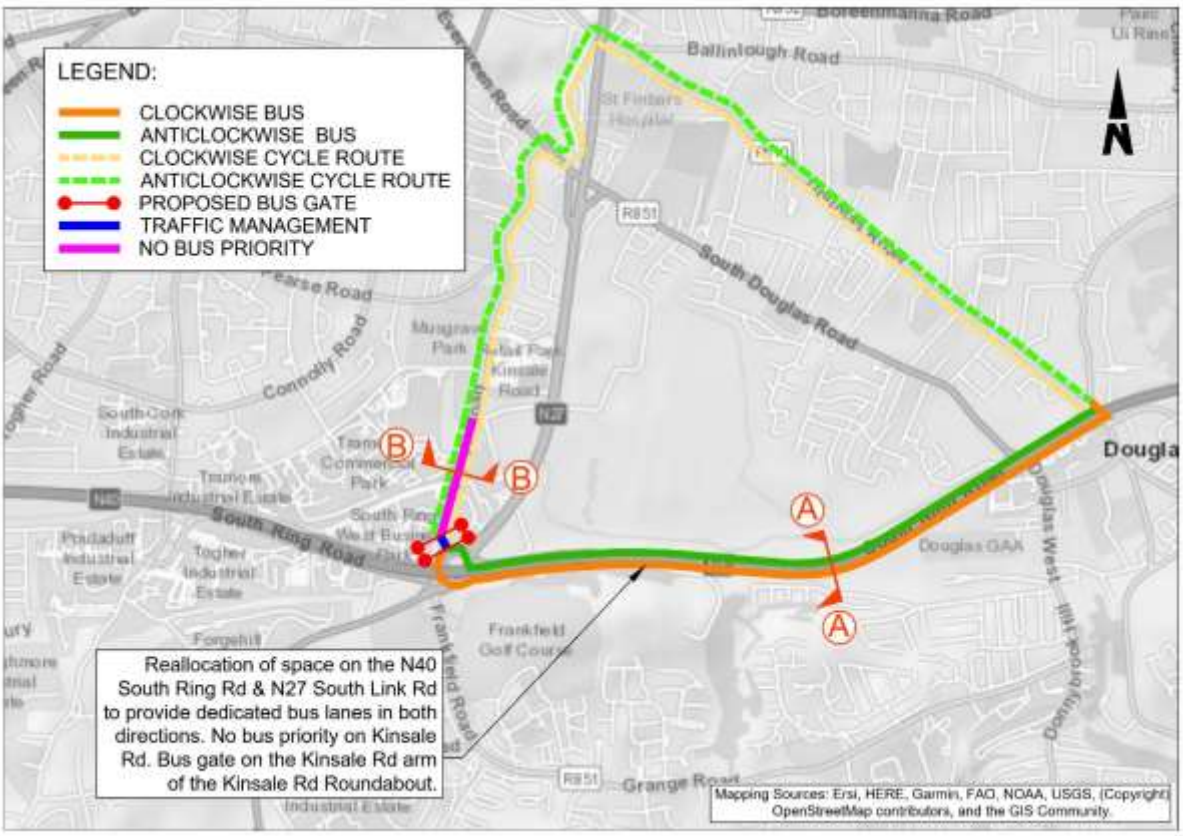


Figure 9.26 Route Option 5 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via South Ring Road. A bus gate will be provided at the southern end of the Kinsale Road.

Cycle tracks will be provided on the alternative route along Douglas Road, Capwell Road, South Douglas Road, Curragh Road and Kinsale Road. A cross-section of South Ring Road is presented in Figure 9.27.

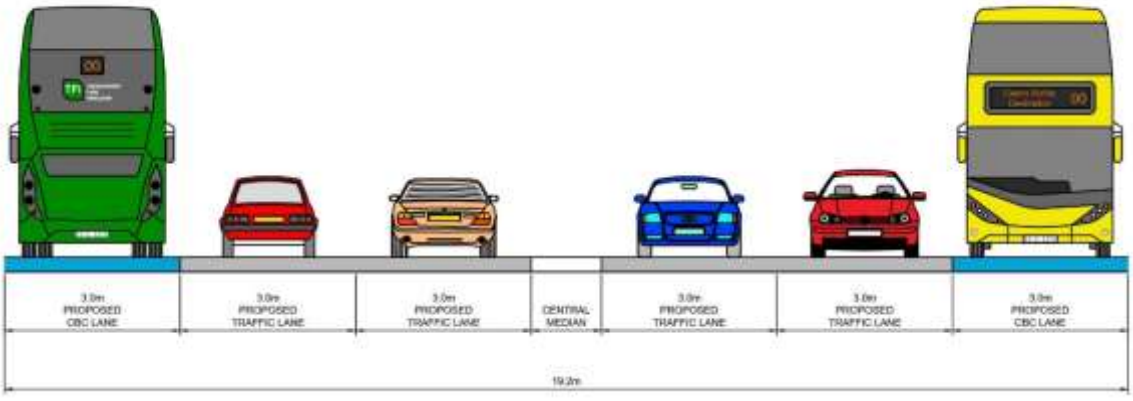


Figure 9.27 Typical National Primary Road Cross Section (A-A)

A cross-section of Kinsale Road is presented in Figure 9.28.

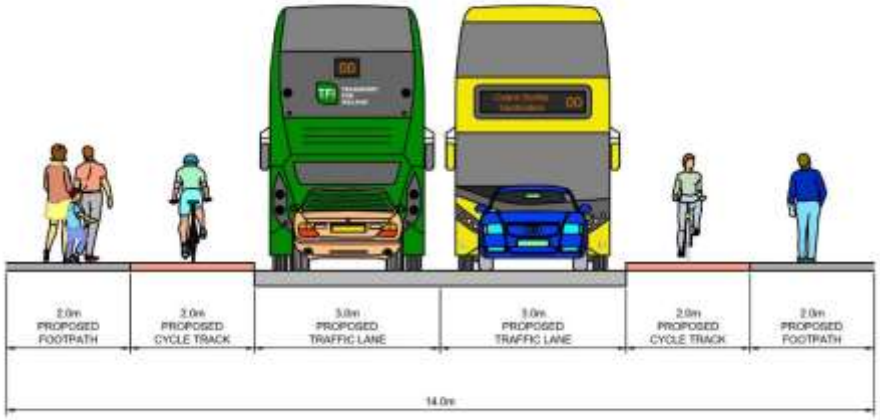


Figure 9.28 Typical No Bus Priority Cross Section (B-B)

Route Option 6

Route Description

Route Option 6 is presented in Figure 9.29 and described as follows.

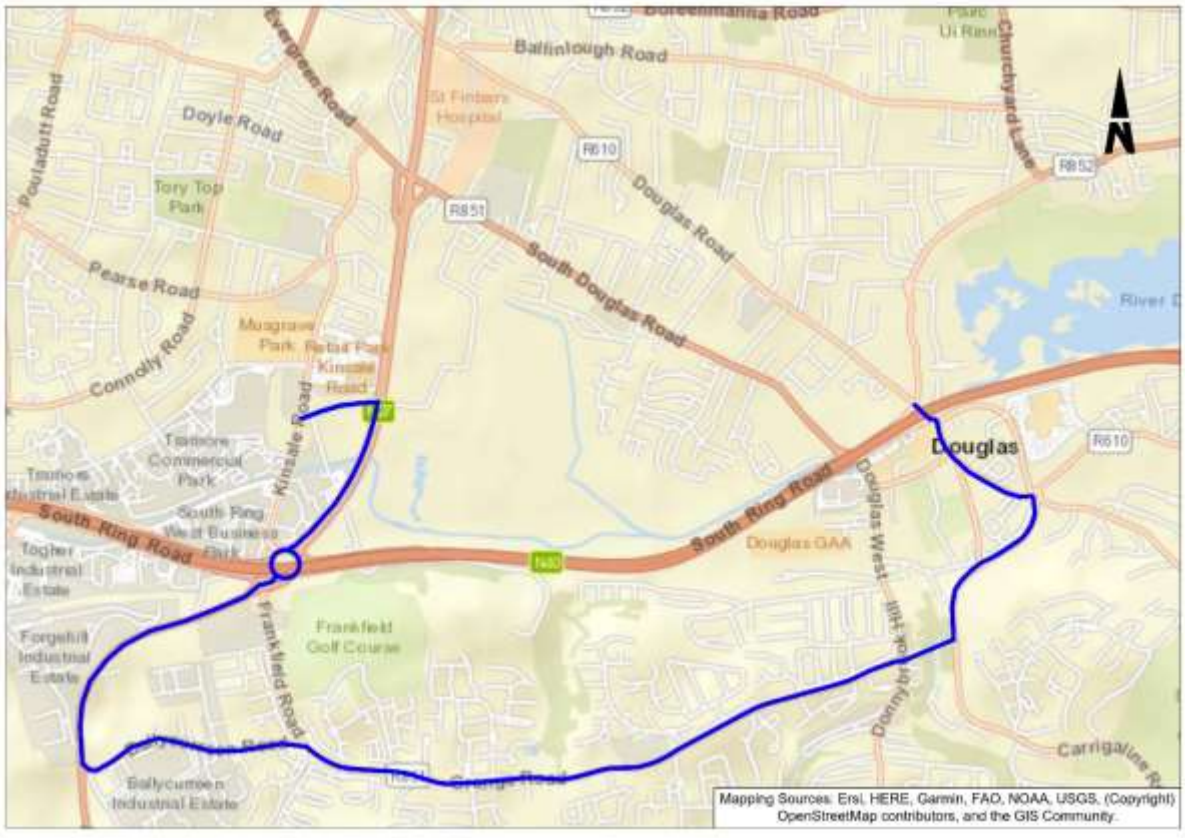


Figure 9.29 Route Option 6

Westbound: Route Option 6 commences at the south end of the Well Road, from here the bus travels through Douglas via East Douglas Street to the Fingerpost Roundabout. The bus would then travel along Carrigaline Road and proceed to the proposed new road/bridge traversing Ballybrack Woods where it will then travel on to Grange Road. From here, the bus would travel along Ballycurreen Road, then on to N27 Kinsale Road and proceed through the Kinsale Road Roundabout and up the South Link Road before finally turning on to Mick Barry Road where it arrives at Black Ash Park & Ride.

Eastbound: The eastbound route would follow the same route as the westbound routing.

Route Option 6 Indicative Scheme Design

Figure 9.30 illustrates the indicative scheme design for Route Option 6 as well as locations of indicative cross-sections.

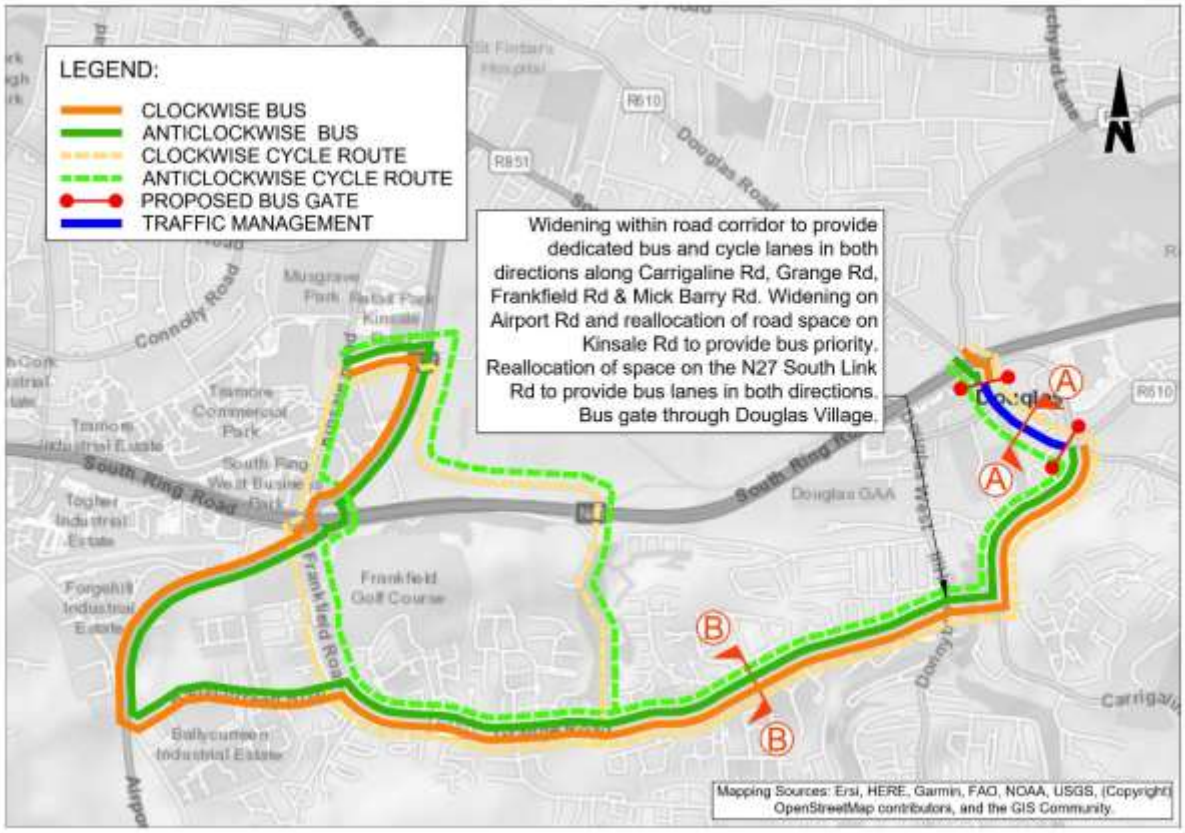


Figure 9.30 Route Option 6 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via Grange Road, Ballycurreen Road and South Link Road. Through Douglas, along East Douglas Street, where existing constraints prohibit widening, traffic signals and a bus gate will be provided to give bus priority.

Cycle tracks will be provided from the Well Road along Douglas Road, East Douglas Street, Carrigaline Road, Grange Road, Frankfield Road and Kinsale Road. A new cycle route is proposed perpendicular to the South Ring Road from Grange Road through Tramore Valley Park and will emerge at the junction to Mick Barry Road. A cross-section of East Douglas Street is presented in Figure 9.31.

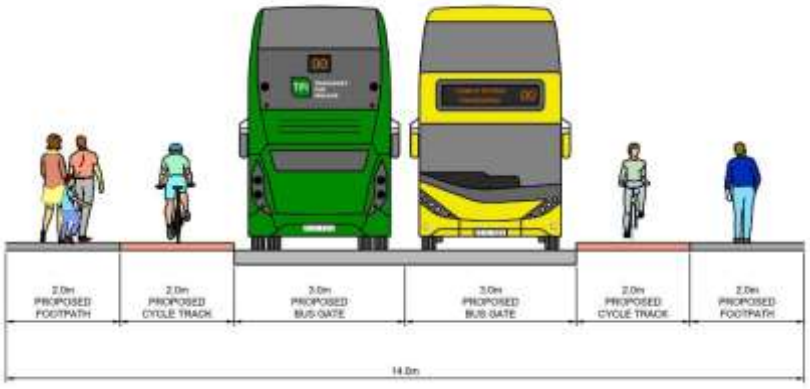


Figure 9.31 Typical Bus Gate Cross Section (A-A)

A cross-section of Grange Road is presented in Figure 9.32

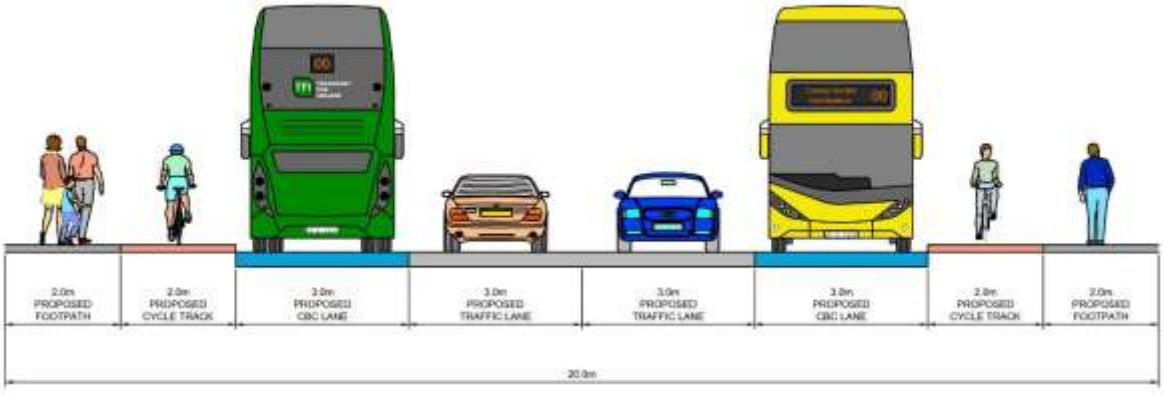


Figure 9.32 Typical Full Priority Cross Section (B-B)

Route Option 7

Route Description

Route Option 7 is presented in Figure 9.33 and described as follows.

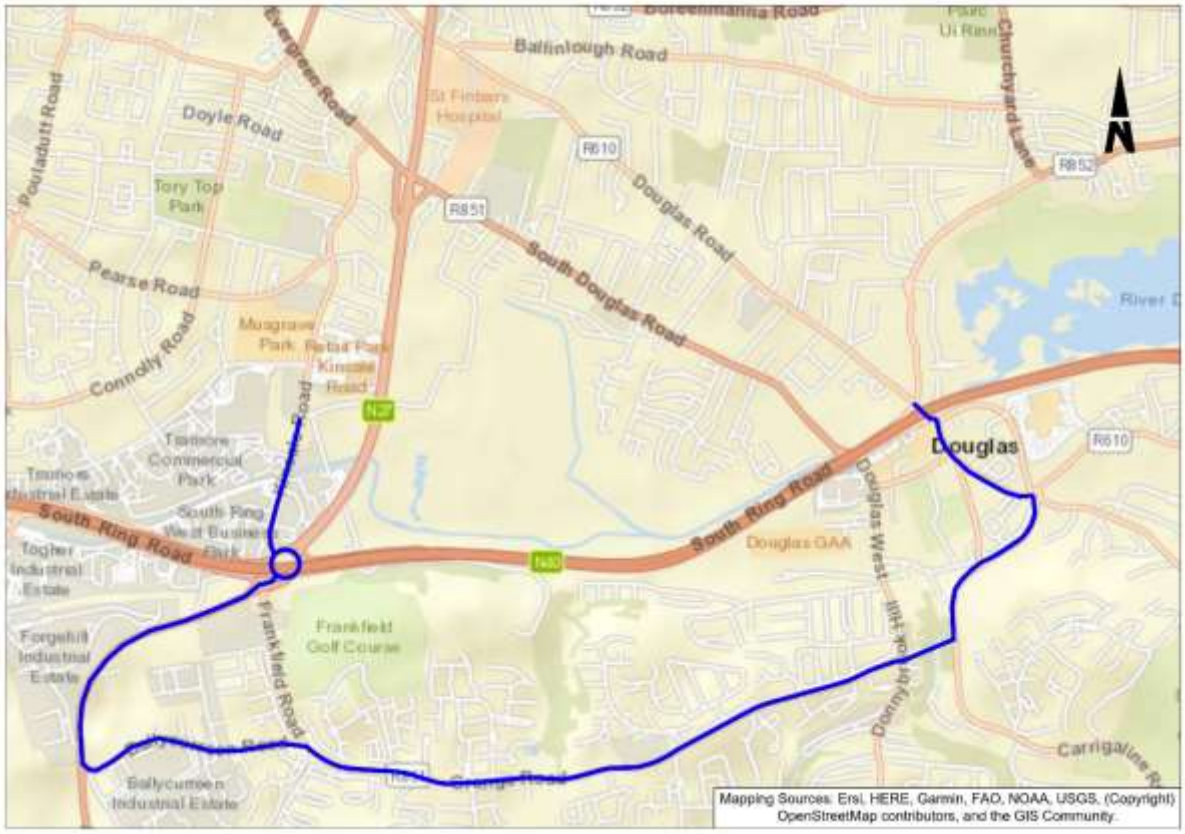


Figure 9.33 Route Option 7

Westbound: Route Option 7 commences at the south end of the Well Road, from here the bus travels through Douglas via East Douglas Street to the Fingerpost Roundabout. The bus would then travel along Carrigaline Road and proceed to the proposed new road/bridge traversing Ballybrack Woods where it will then travel on to Grange Road. From here, the bus would travel along Ballycurreen Road, then on to N27 Kinsale Road and proceed through the Kinsale Road Roundabout and up the South Link Road before finally turning on to Mick Barry Road where it arrives at Black Ash Park & Ride.

Eastbound: The eastbound route follows the same route as the westbound routing.

Route Option 7 Indicative Scheme Design

Figure 9.34 illustrates the indicative scheme design for Route Option 7 as well as locations of indicative cross-sections.

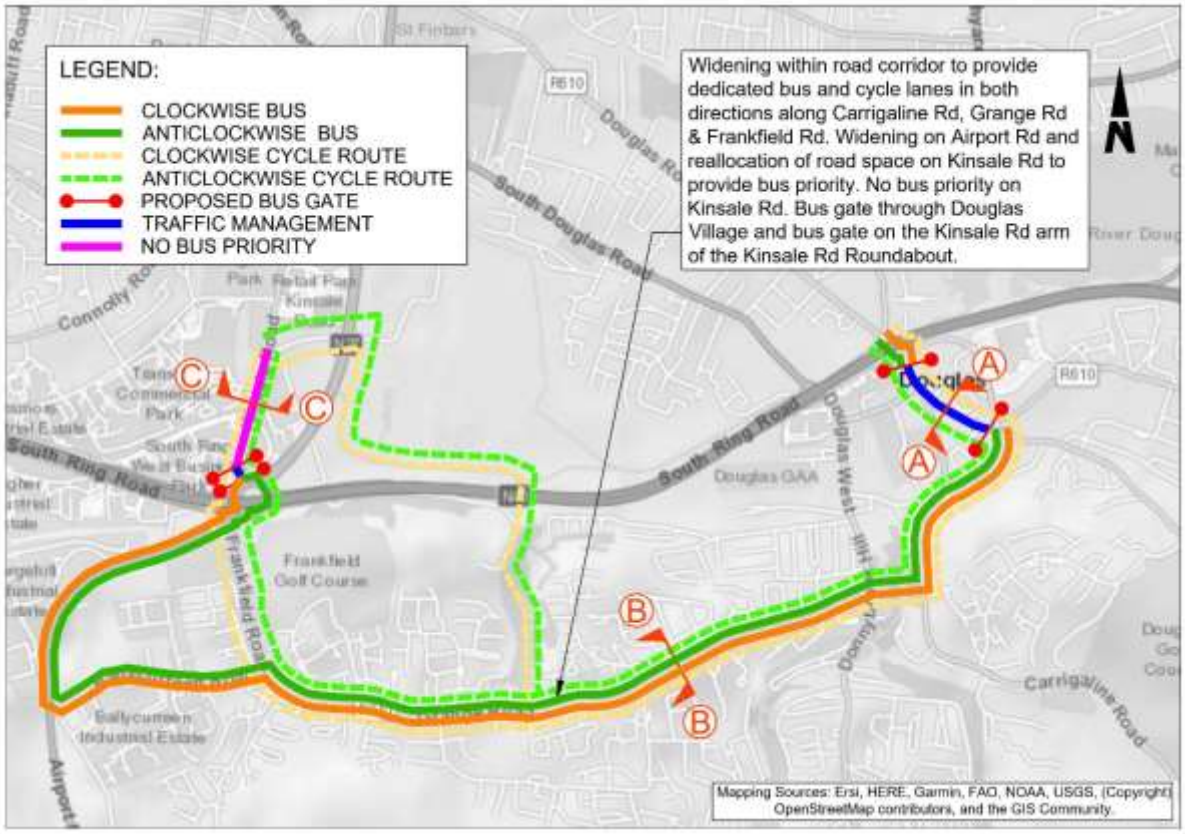


Figure 9.34 Route Option 7 Indicative Scheme Design

Bus lanes will be provided in both directions from Well Road to Black Ash Park & Ride via Grange Road, Ballycurreen Road and Kinsale Road. Through Douglas, along East Douglas Street, where existing constraints prohibit widening, traffic signals and a bus gate will be provided to give bus priority. A bus gate will be provided at the southern end of the Kinsale Road.

Cycle tracks will be provided from the Well Road along Douglas Road, East Douglas Street, Carrigaline Road, Grange Road, Frankfield Road and Kinsale Road. A new cycle route is proposed perpendicular to the South Ring Road from Grange Road through Tramore Valley Park and will emerge at the junction to Mick Barry Road. A cross-section of East Douglas Street is presented in Figure 9.35.

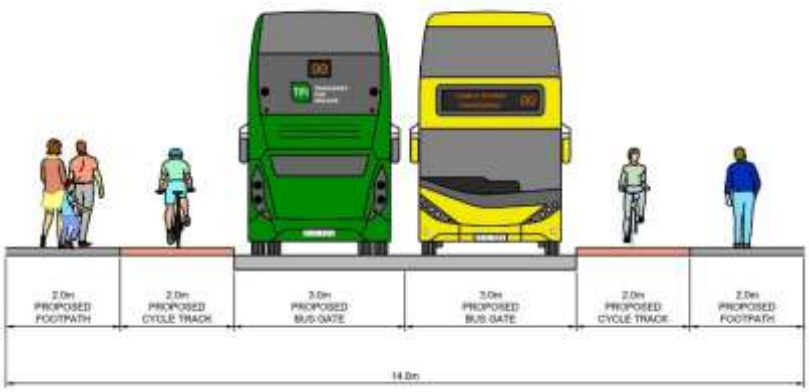


Figure 9.35 Typical Bus Gate Cross Section (A-A)

A cross-section of Grange Road is presented in Figure 9.36

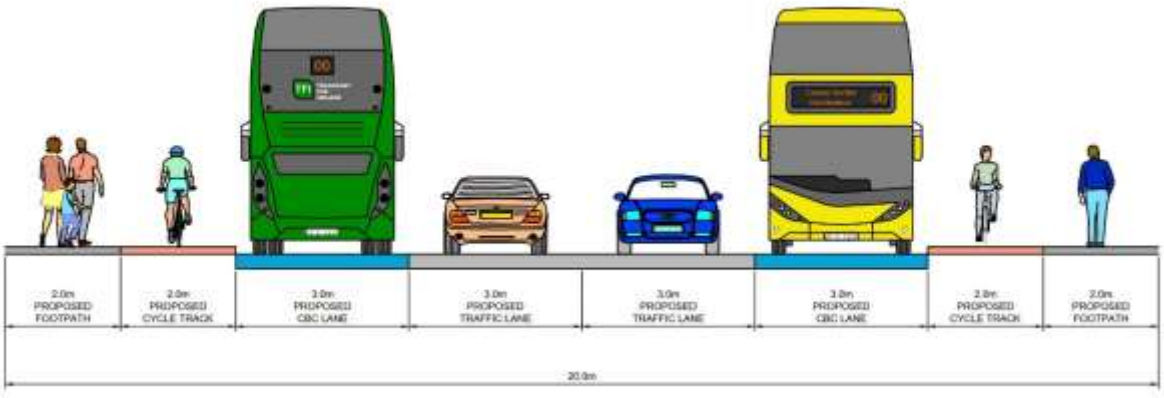


Figure 9.36 Typical Full Priority Cross Section (B-B)

A cross-section of Kinsale Road is presented in Figure 9.37

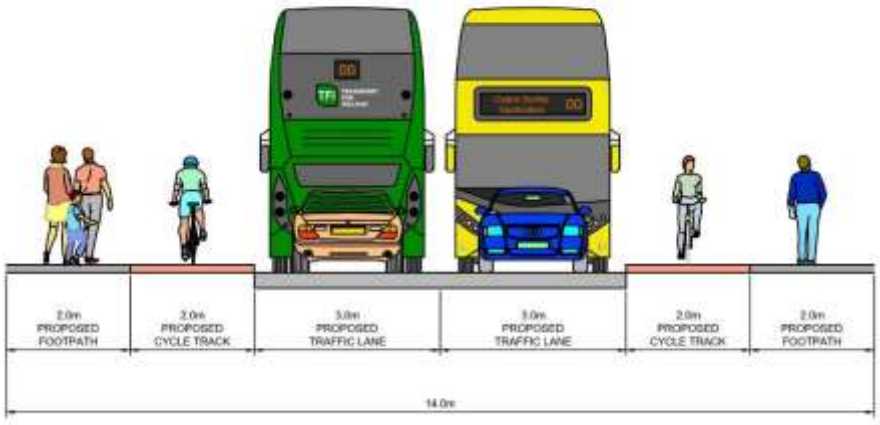


Figure 9.37 Typical No Bus Priority Cross Section (C-C)

9.4 Stage 2 Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Orbital STC are presented in Appendix A. A summary of the ranking of route options against the scheme sub-criteria is presented in Table 9.2 below.

Table 9.2 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Economy	Capital Cost							
	Average Journey Time							
	Journey Time Reliability							
Integration	Land Use Integration							
	Residential and Employment Catchments							
	Transport Integration							
	Cyclist Integration							
	Pedestrian Integration							
Accessibility and Social Inclusion	Key Trip Attractors							
	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							

9.5 Conclusion

A summary of the assessment is shown in Table 9.3 below

Table 9.3 Route Options Assessment Summary

Assessment Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Economy							
Integration							
Accessibility and Social Inclusion							
Safety							
Environment							

Option 1-7 is the emerging preferred route option in the South-Central sector. This option has significant advantages from an integration perspective as it travels along roads that have relatively high population and employment densities. This option integrates with light industry and related uses located along Grange Road and related uses on Kinsale Road & Frankfield Road. Elsewhere there is sustainable residential neighbourhood zoning along the route.

Option 1-7 has significant advantages from accessibility and social inclusion perspective. It provides accessibility to a significant number of key attractors including leisure facilities, sporting facilities, and educational facilities. This route option travels between RAPID (Revitalising Areas through Planning, Investment and Development) designated areas in Togher/Mahon/Ballyphehane, which will allow for more opportunities for people to travel between these areas. As a result, this option is considered to have some advantages with respect to servicing deprived geographic areas.

10. South West Sector

10.1 Introduction

This chapter outlines the options assessment process for the South West Sector (Black Ash to Cork University Hospital). The study area for the South West Sector was developed to include the main trip generators, existing and proposed roads between Black Ash and Wilton. The study area is shown below in Figure 10.1.

Figure 10.1 South West Sector Study Area

The South West sector is divided into two sections as shown in Figure 10.2 below so that options can be presented. Section 1 covers the area to the South of the N40 and Section 2 covers the area to the North of the N40.

Figure 10.2 Study Area Sections

10.2 Stage 1 Options – Section 1

Links within the South West Section 1 that are subject to subject to Stage 1 options assessment are shown in Figure 10.3. A potential direct link between the N27 Kinsale Road and the Togher Road, by connecting existing residential roads is shown as a dotted blue line.

Figure 10.3 South West Section 1 Links

A Stage 1 assessment for Section 1 is provided in Appendix A.12.

10.3 Stage 1 Options – Section 2

Links within the South West Section 2 that are subject to subject to Stage 1 options assessment are shown in Figure 10.4.

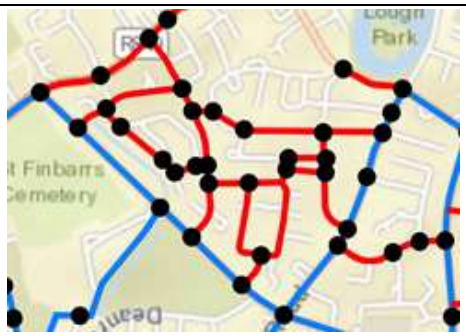
Figure 10.4 South West Section 2 Links

The Stage 1 assessment for Section 2 is provided in Appendix A.13. The outcome of the assessment can be seen in the Figure 10.5 below. Links that have passed the Stage 1 assessment are shown in blue while links that have failed are shown in red.

Figure 10.5 South West Sifting Assessment

A preliminary route assessment process was then performed to identify routes that were circuitous in nature, dead ends or disconnected such could then be removed. A summary of the preliminary route assessment process is presented in the table below.

Table 10.1 Preliminary Route Assessments

Road Names	Comments	Map
Earlwood Estate, Tara Lawn, Hillside Drive, Glendale Road	All route options using these roads have routes which are circuitous in nature through residential links and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	
Edward Walsh Road	All route options using this roads have routes which are circuitous in nature through a residential link and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Lower Friars Walk	All route options using this road have routes which are circuitous in nature through a residential link and would lead to longer journey times compared to the adjacent route options. For this reason these routes are not considered further.	

Dead ends disconnected or overly circuitous links are shown in red in Figure 10.6.

Figure 10.6 Removal of dead ends, disconected or overly circuitous links

Figure 10.7 Spiders Web for Stage 2 Assessment

10.4 Stage 2 Options Identification

Following the Stage 1 sifting process the links in this section are assembled to form viable route options as shown in Figure 10.8:

- Option 1: (A, B, C, D, H, J, K, L, O)
- Option 2: (A, B, C, D, H, J, K, M, L, O)
- Option 3: (A, B, C, D, H, J, Q, N, O)
- Option 4: (A, B, C, D, H, G, J, K, L, O)
- Option 5: (A, B, C, D, H, G, J, K, M, L, O)
- Option 6: (A, B, C, D, H, G, J, Q, N, O)
- Option 7: (A, B, C, D, F, G, J, K, L, O)
- Option 8: (A, B, C, D, F, G, J, K, L, O)
- Option 9: (A, B, C, D, F, G, J, Q, N, O)
- Option 10: (A, B, C, E, F, G, J, K, L, O)
- Option 11: (A, B, C, E, F, G, J, K, M, L, O)
- Option 12: (A, B, C, E, F, G, J, Q, N, O)
- Option 13: (A, B, C, E, I, G, J, K, L, O)
- Option 14: (A, B, C, E, I, G, J, K, M, L, O)
- Option 15: (A, B, C, E, I, G, J, Q, N, O)
- Option 16 (A, B, P, N, O)

Figure 10.8 Links for Stage 2 Assessment

Route Option 1

Route Description

Route Option 1 is presented in Figure 10.9.

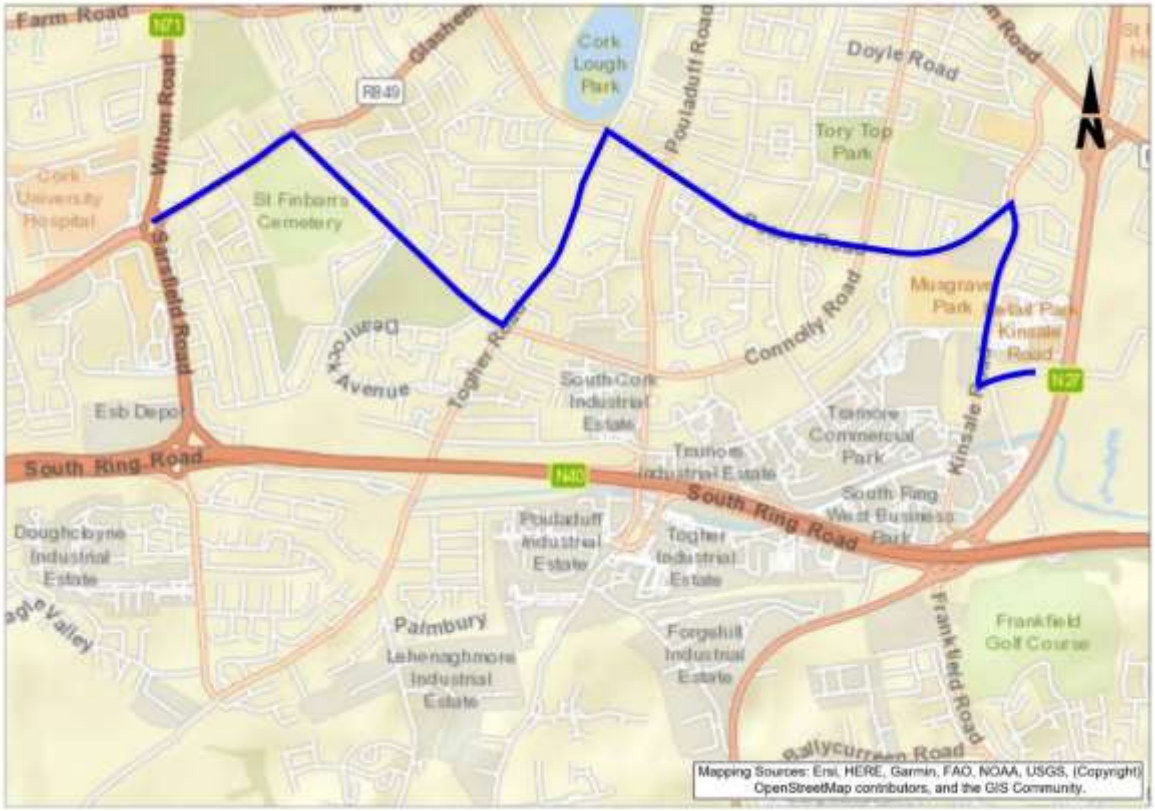


Figure 10.9 Route Option 1 (shown in blue line)

Westbound: For Route Option 1 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Togher Road. The bus then turns left onto Togher Road before turning right onto Clashduv Road travelling westbound onto Clashduv Estate. At the junction of Clashduv Estate and Glasheen Road the bus turns left onto Glasheen Road to the Wilton Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.10 illustrates the indicative scheme design for Route Option 1 as well as locations of indicative cross-sections.

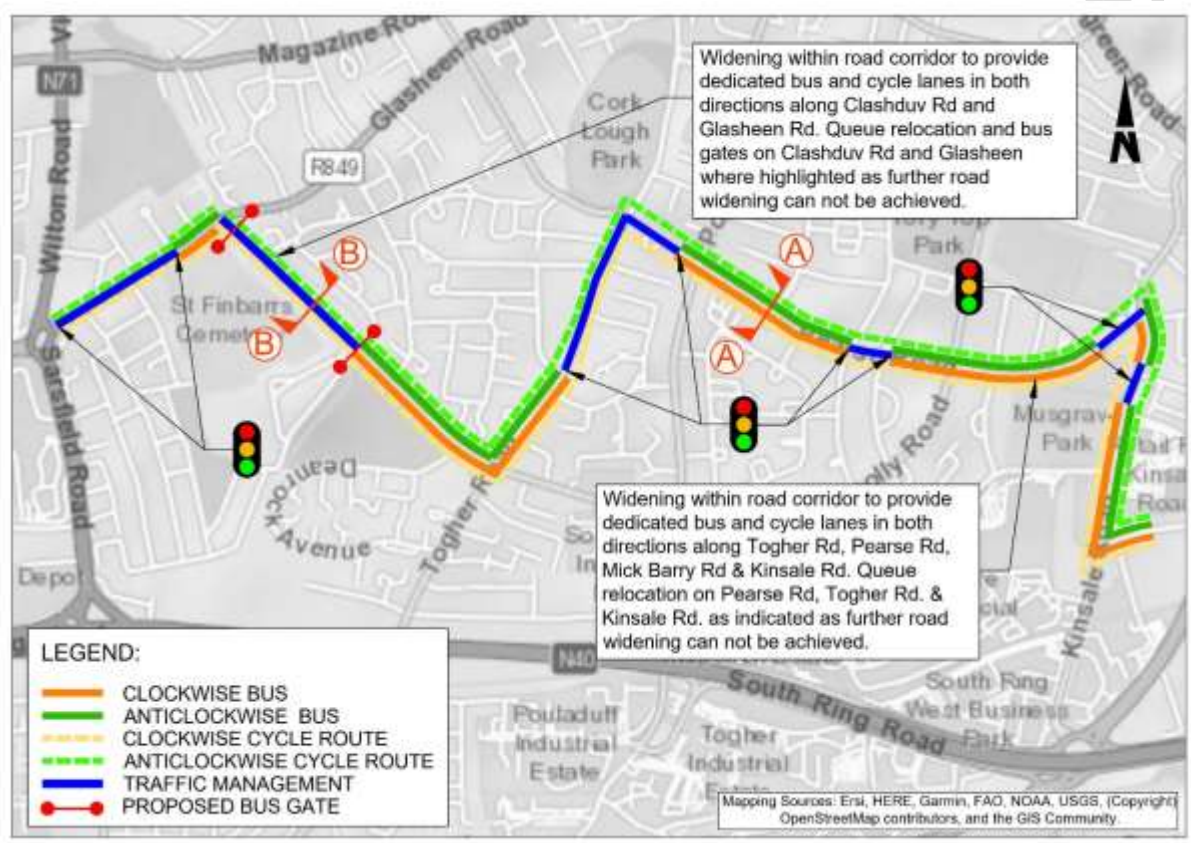


Figure 10.10 Route Option 1 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions aren't feasible and bus priority will be maintained with signalised queue relocation.

Traffic management will be provided on the Togher Road, between the junction of Edward Walsh Road and Togher Road and the junction of Pearse Road and Togher Road. Full bus priority will be provided on Togher Road from Edward Walsh Park junction and on Clashduv Road. Bus gates will be provided on Clashduv Estate restricting through traffic for private vehicles to facilitate bus priority. Traffic managment will be provided on the Glasheen Road between Wilton Roundabout and Sheares' Park to provide bus priority on the road. Cycle tracks will be provided along the same route.

A cross-section of Pearse Road is presented in Figure 10.11.

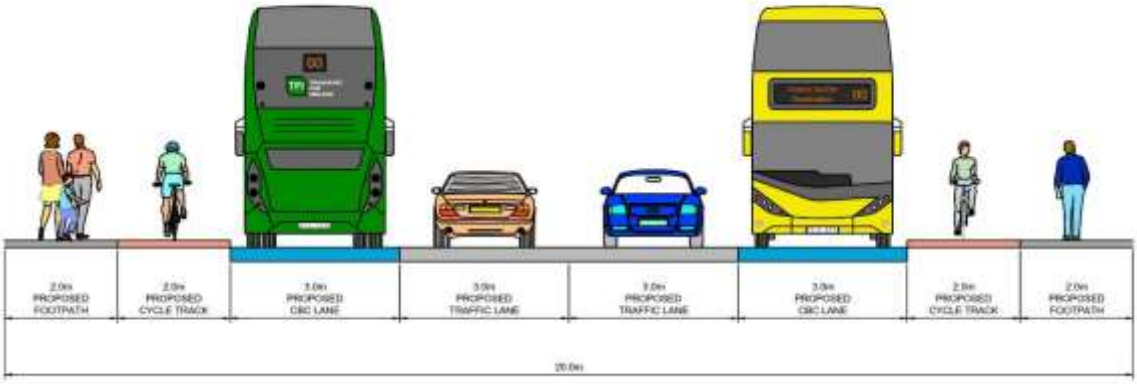


Figure 10.11 Typical Full Priority Cross Section (A-A)

A cross-section of Clashduv Estate is presented in Figure 10.12.

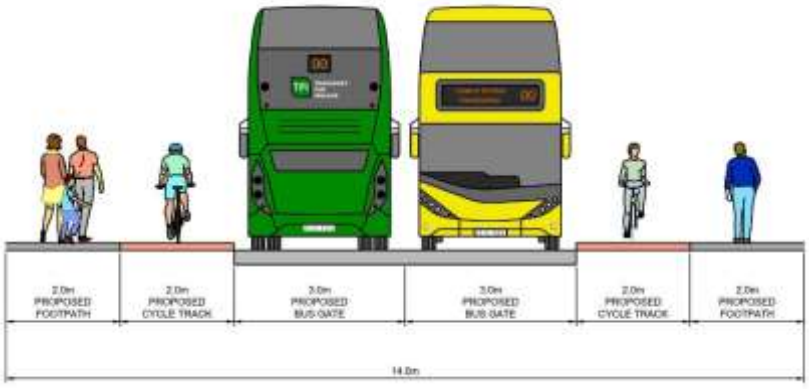


Figure 10.12 Typical Traffic Management Cross Section (B-B)

Route Option 2

Route Description

Route Option 2 is presented in Figure 10.13.

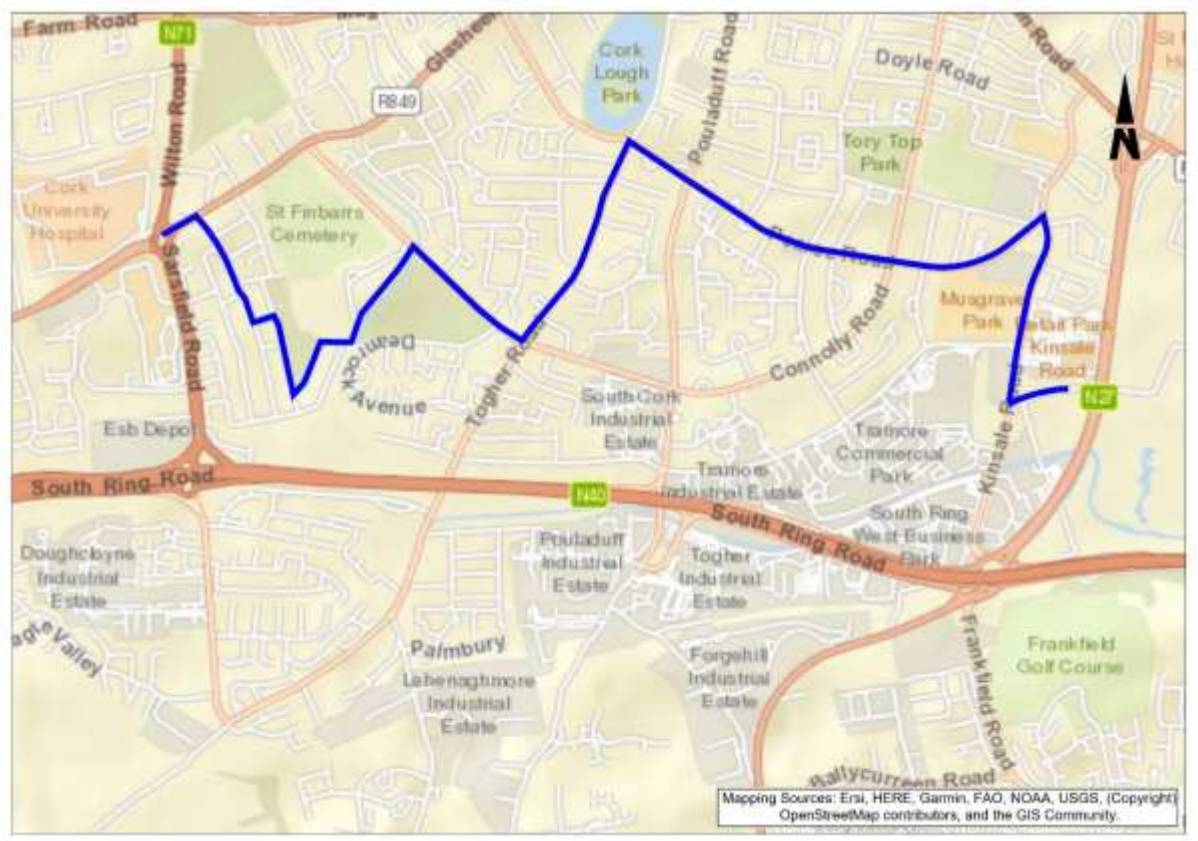


Figure 10.13 Route Option 2 (shown in blue line)

Westbound: For Route Option 2 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Togher Road. The bus then turns left onto Togher Road before turning right onto Clashduv Road travelling westbound.

At the junction of Clashduv Road and Riverview Estate the bus turns left into Riverview Estate and onto Sandymount Drive. The bus then turns right at the junction of Sandymount Drive and Summerstown Grove travelling northbound to the Glasheen road via Summerstown Road. The bus turns left on the Glasheen Road to the Wilton roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.14 illustrates the indicative scheme design for Route Option 2 as well as locations of indicative cross-sections.

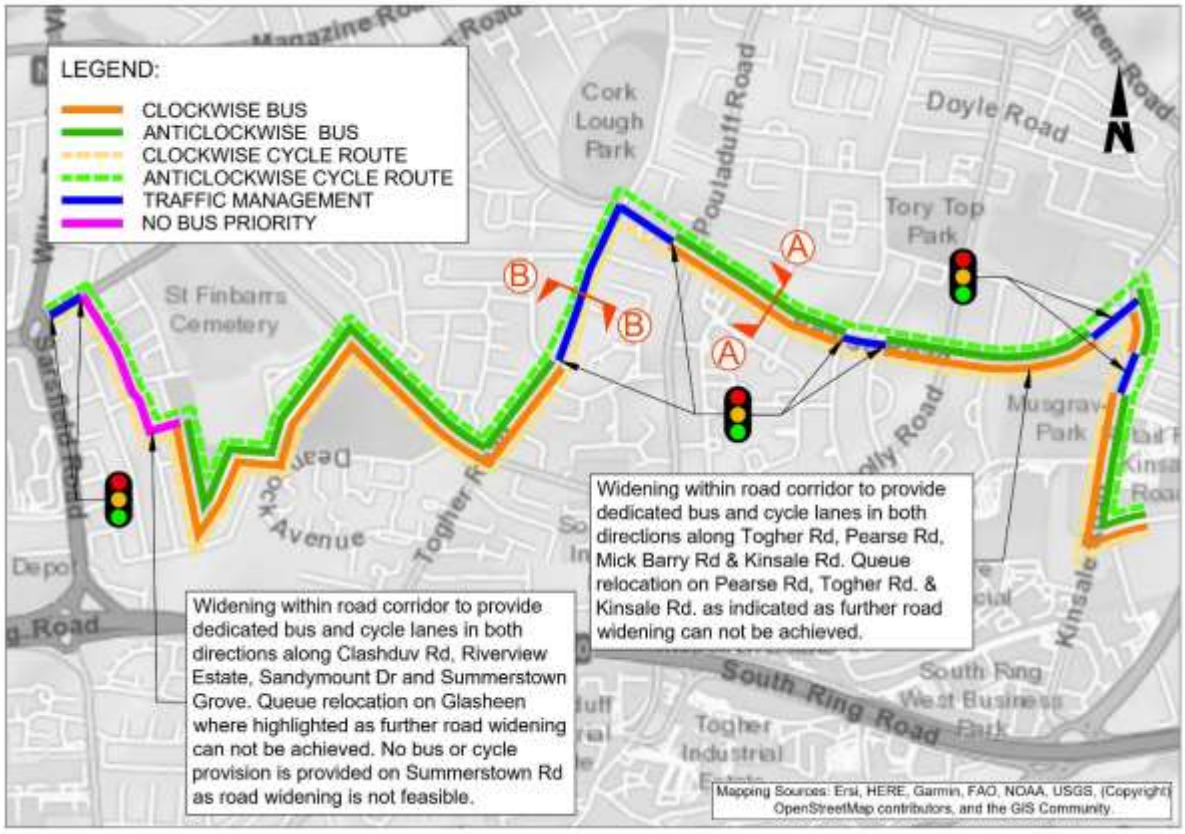


Figure 10.14 Route Option 2 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions aren't feasible and bus priority will be maintained with signalised queue relocation.

Bus priority will be provided with traffic signals on the Togher Road, between the junction of Edward Walsh Road and Togher Road and the junction of Pearse Road and Togher Road. Full bus priority will be provided on Togher Road from Edward Walsh Park junction and on Clashduv Road.

Bus lanes will be provided in both directions on Riverview Estate Road, Sandymount Drive and Summerstown Grove.

Bus priority will be provided with traffic signals on the Glasheen Road between the junction with Summerstown Road and the Wilton Roundabout.

A cycle route follows the same route as the bus route. This route will be fully segregated apart from a 450m section on Summerstown Road where road widening is not feasible. Cyclists will share with general traffic on this section of road.

A cross-section of Pearse Road is presented in Figure 10.15.

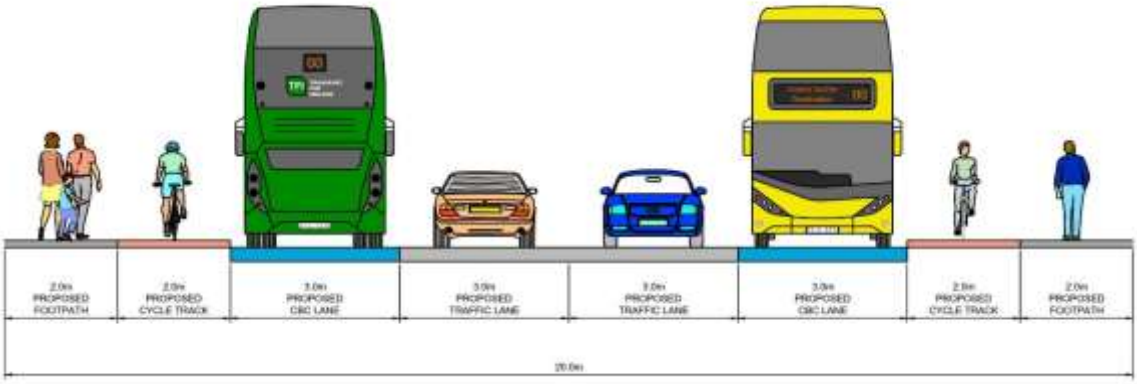


Figure 10.15 Typical Full Priority Cross Section (A-A)

A cross-section of Togher Road is presented in Figure 10.16.

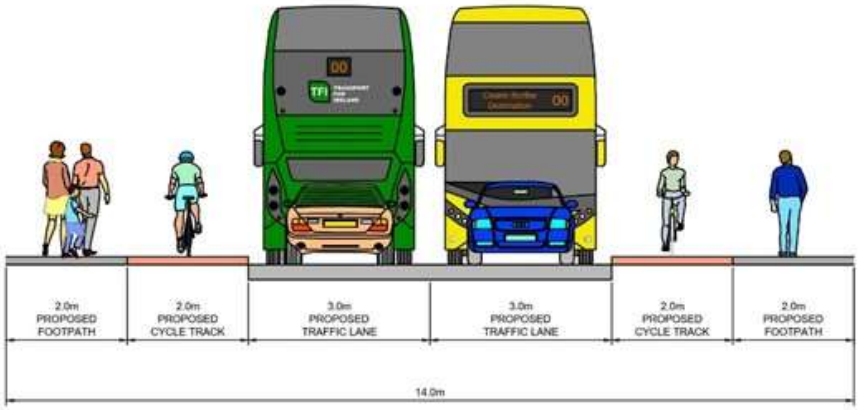


Figure 10.16 Typical Traffic Management Cross Section (B-B)

Route Option 3

Route Description

Route Option 3 is presented in Figure 10.17.

Figure 10.17 Route Option 3 (shown in blue line)

Westbound: For Route Option 3 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Togher Road.

The bus then turns left onto Togher Road until it reaches the roundabout at the junction between the Spur Hill and Togher Road. At the junction the bus would vear right onto the Spur Hill to the junction with Sarsfields Road. The bus then turns right, northbound on the Sarsfields Road to Wilton Road Roundabout junction via Sarsfields Road Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.18 illustrates the indicative scheme design for Route Option 3 as well as locations of indicative cross-sections.

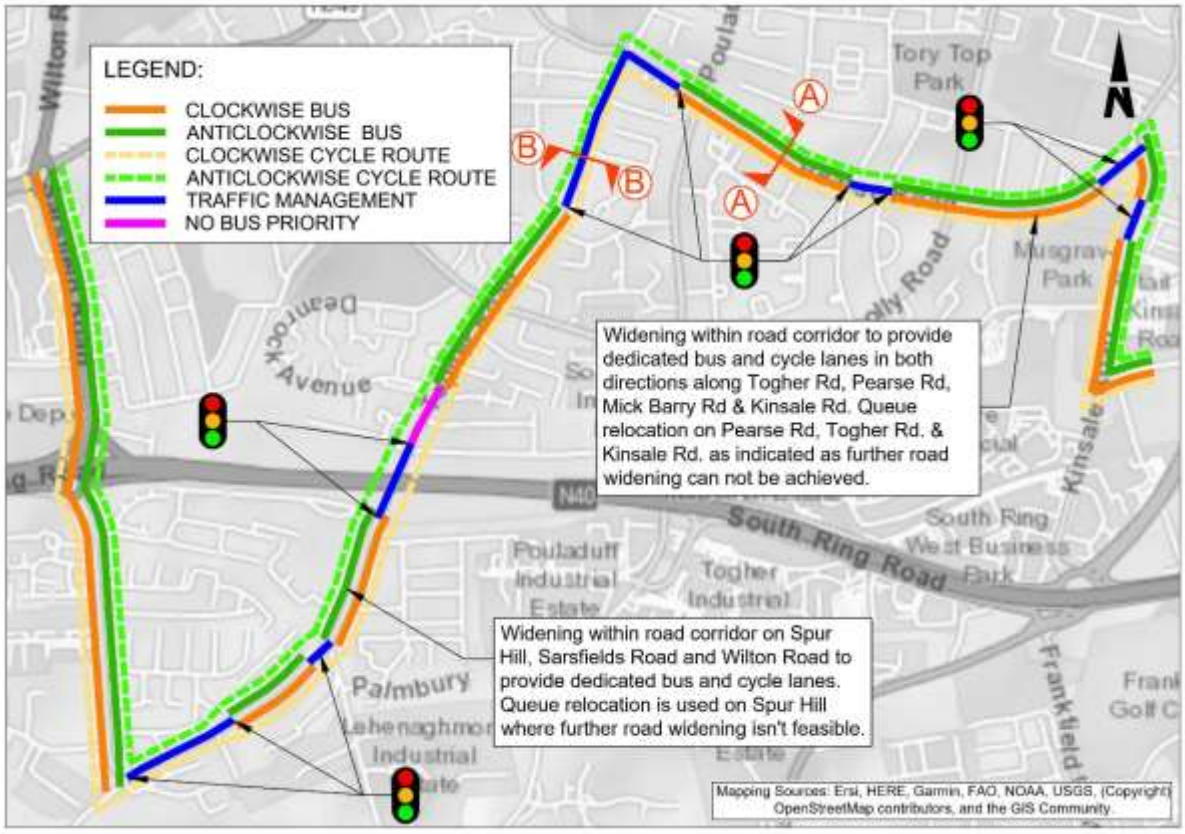


Figure 10.18 Route Option 3 Indicative Scheme Design

Bus lanes will be provided in both directions on Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions aren't feasible and bus priority will be maintained with signalised queue relocation.

Bus priority will be provided with traffic signals on Togher Road, between the junction of Edward Walsh Road and Togher Road and the junction of Pearse Road and Togher Road. Full bus priority will be provided on Togher Road from Edward Walsh Park junction to the junction with Deanrock Avenue.

From the junction of Togher Road / Deanrock Avenue to Spur Hill / Sarsfield Road junction a combination of bus lanes in both directions, traffic management and a short section with no bus provision is proposed due to the constraints along this section of the route.

Bus lanes in both directions will be provided on the Sarsfield Road from the Spur Hill junction to the Wilton Roundabout.

Cycle tracks will be provided along the same route with the exception of a short section on the Togher Road where cyclists will have to share with general traffic.

A cross-section of Pearse Road is presented in Figure 10.19.

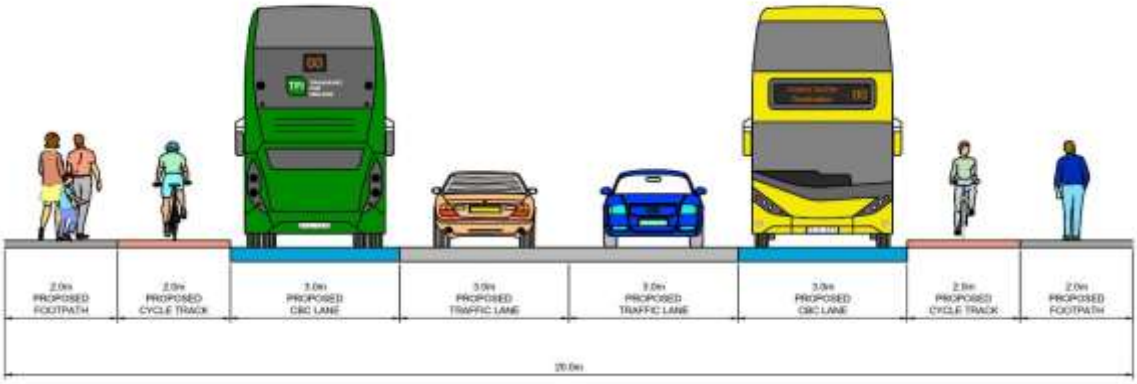


Figure 10.19 Typical Full Priority Cross Section (A-A)

A cross-section of Togher Road is presented in Figure 10.20.

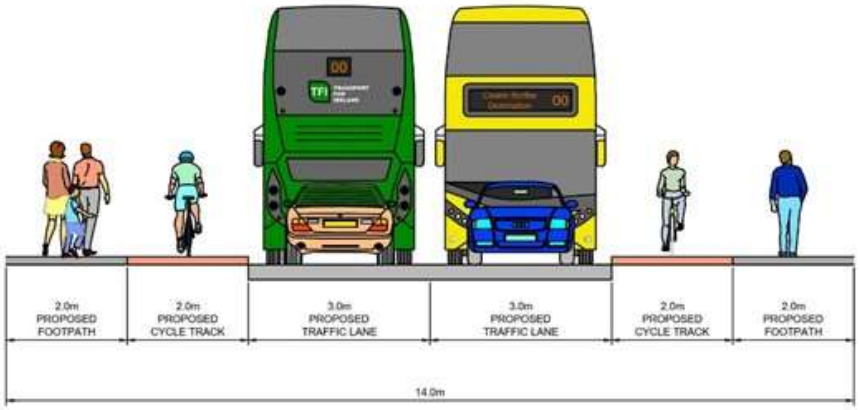


Figure 10.20 Typical Traffic Management Cross Section (B-B)

Route Option 4

Route Description

Route Option 4 is presented in Figure 10.21.

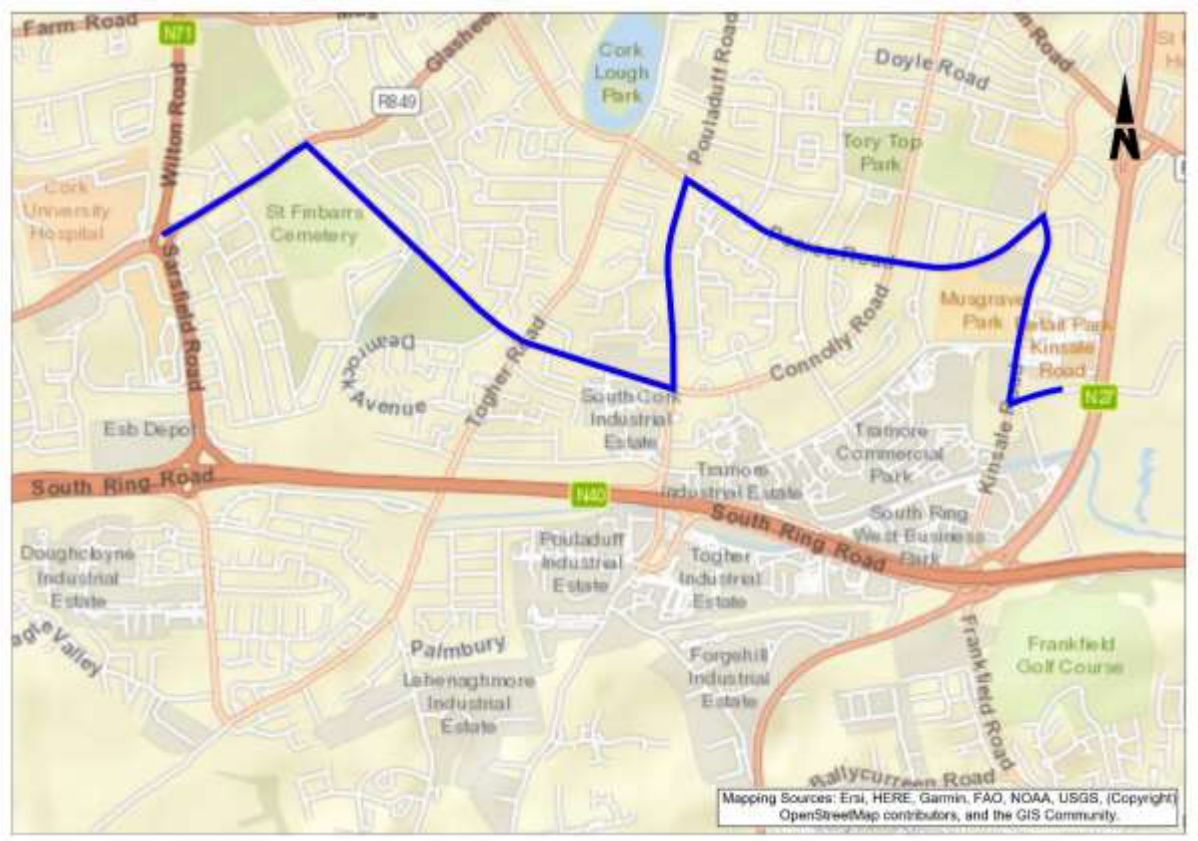


Figure 10.21 Route Option 4 (shown in blue line)

Westbound: For Route Option 4 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Pouladuff Road Lower. The bus then turns left onto Pouladuff Road Lower before turning right onto Vicar's Road travelling westbound onto Clashduv Road and Clashduv Estate. At the junction of Clashduv Estate and Glasheen Road the bus turns left onto Glasheen Road to Wilton Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.22 illustrates the indicative scheme design for Route Option 4 as well as locations of indicative cross-sections.

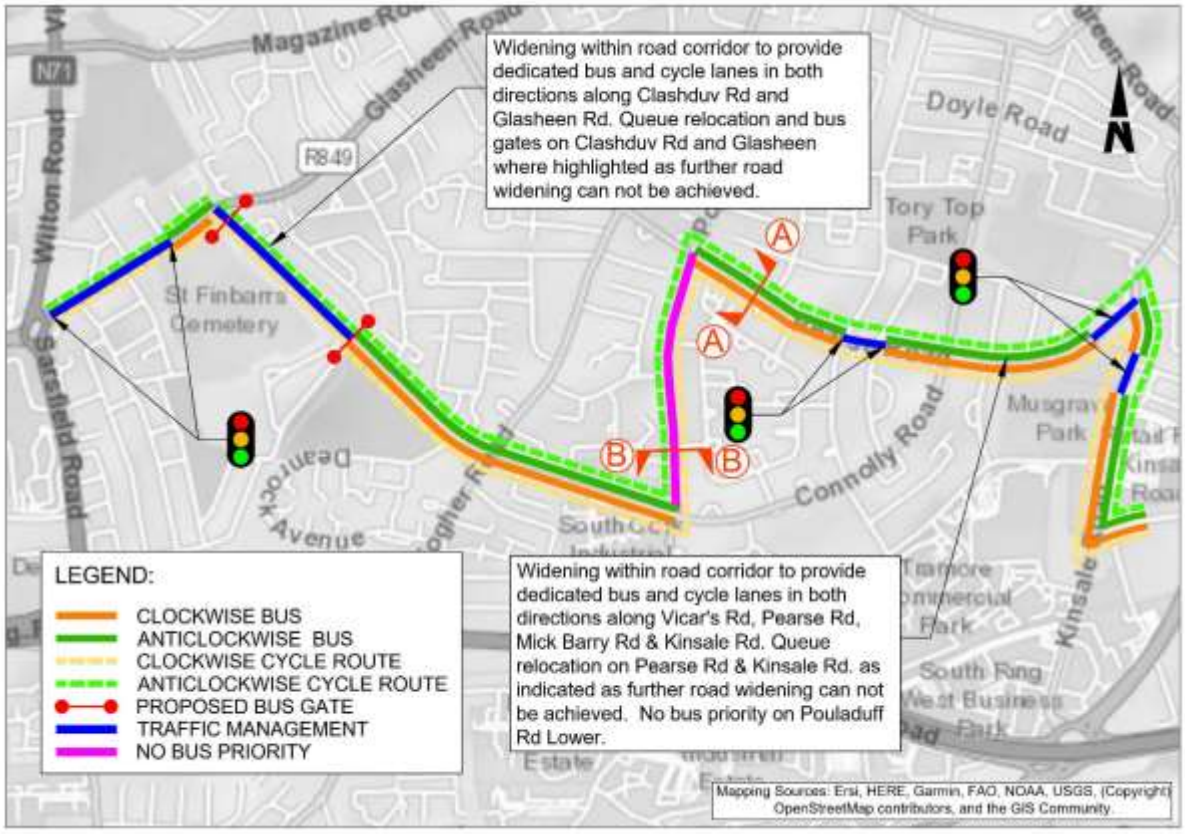


Figure 10.22 Route Option 4 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions are not feasible and bus priority will be maintained with signalised queue relocation.

Bus lanes on either side of the road will be provided on Vicar's Road and on Clashduv Road. Bus gates will be provided on Clashduv Estate restricting through traffic to private vehicles on the road to facilitate bus priority. Queue relocation will be provided on the Glasheen Road between Wilton Roundabout and Sheares' Park to provide bus priority on the road. Cycle tracks will be provided along the same route.

A cross-section of Pearse Road is presented in Figure 10.23.

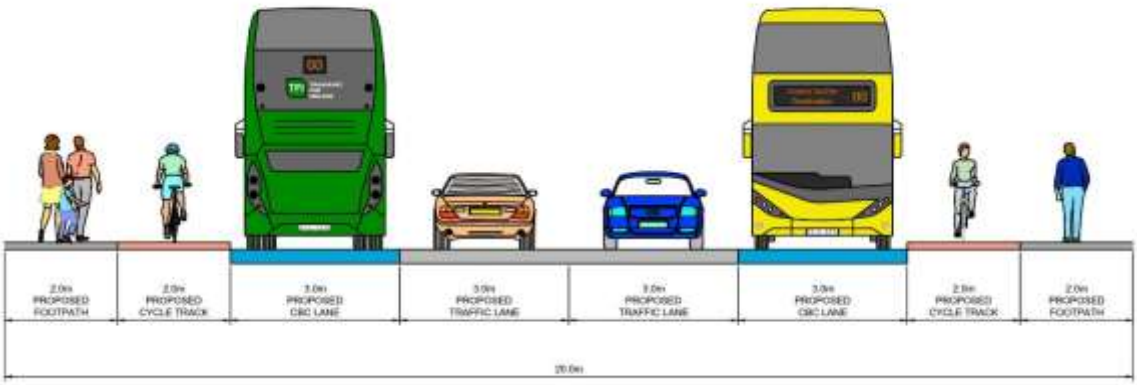


Figure 10.23 Typical Full Priority Cross Section (A-A)

A cross-section of Pouladuff Road Lower is presented in Figure 10.24.

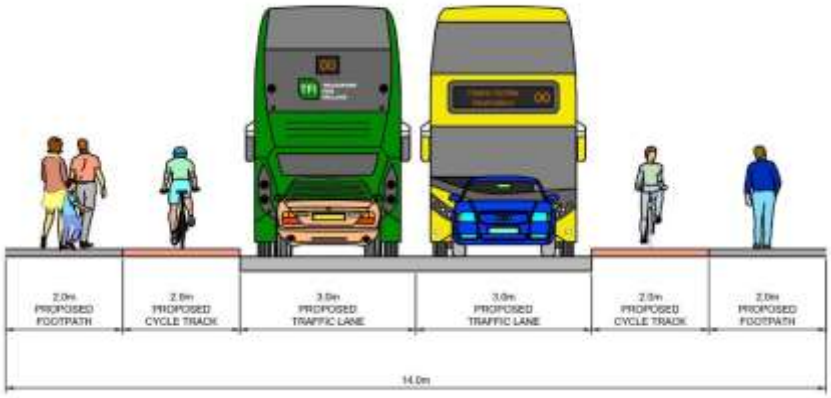


Figure 10.24 Typical No Bus Priority Cross Section (B-B)

Route Option 5

Route Description

Route Option 5 is presented in Figure 10.25.

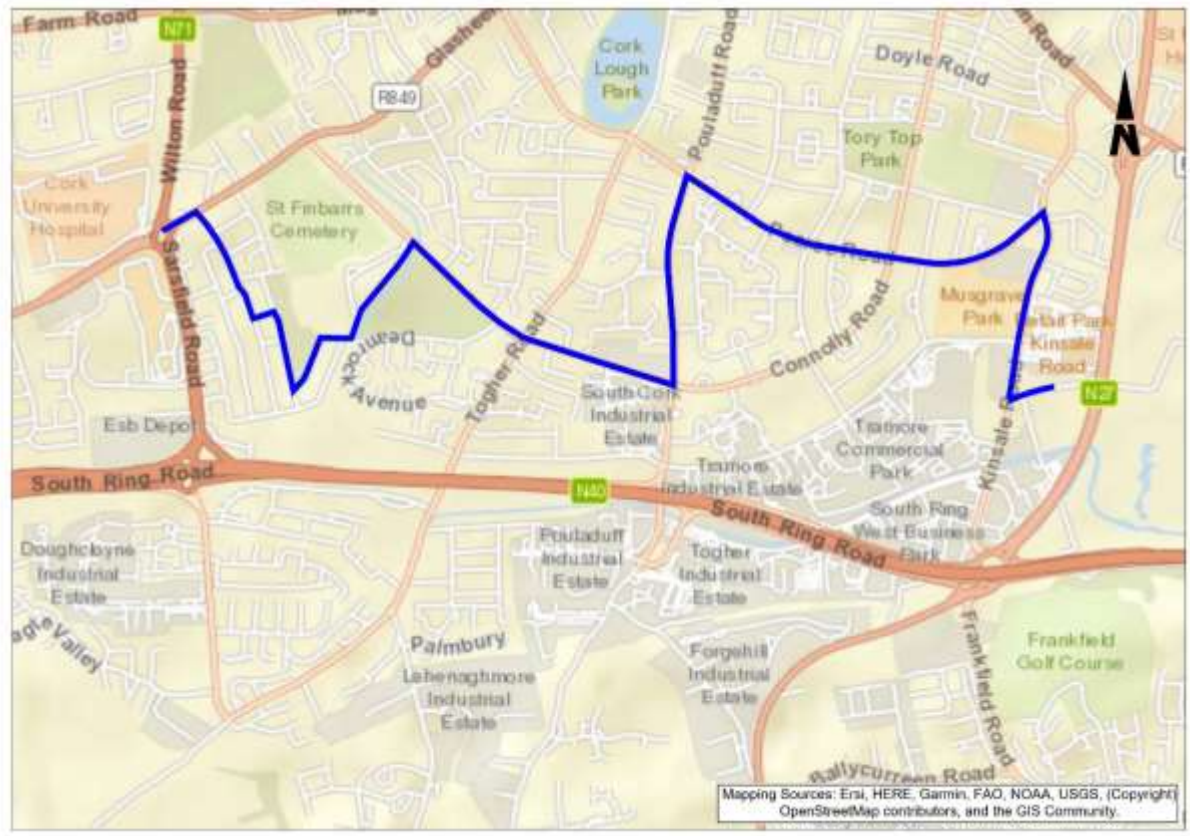


Figure 10.25 Route Option 5 (shown in blue line)

Westbound: For Route Option 5 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Pouladuff Road Lower. The bus then turns left onto Pouladuff Road Lower before turning right onto Vicar's Road travelling westbound onto Clashduv Road.

At the junction of Clashduv Road and Riverview Estate the bus turns left into Riverview Estate and onto Sandymount Drive. The bus then turns right at the junction of Sandymount Drive and Summerstown Grove travelling northbound to the Glasheen road via Summerstown Road. The bus turns left on the Glasheen Road to the Wilton roundabout.

Eastbound: The eastbound route would follow the same route as the westbound routing.

Indicative Scheme Design

Figure 10.26 illustrates the indicative scheme design for Route Option 5 as well as locations of indicative cross-sections.

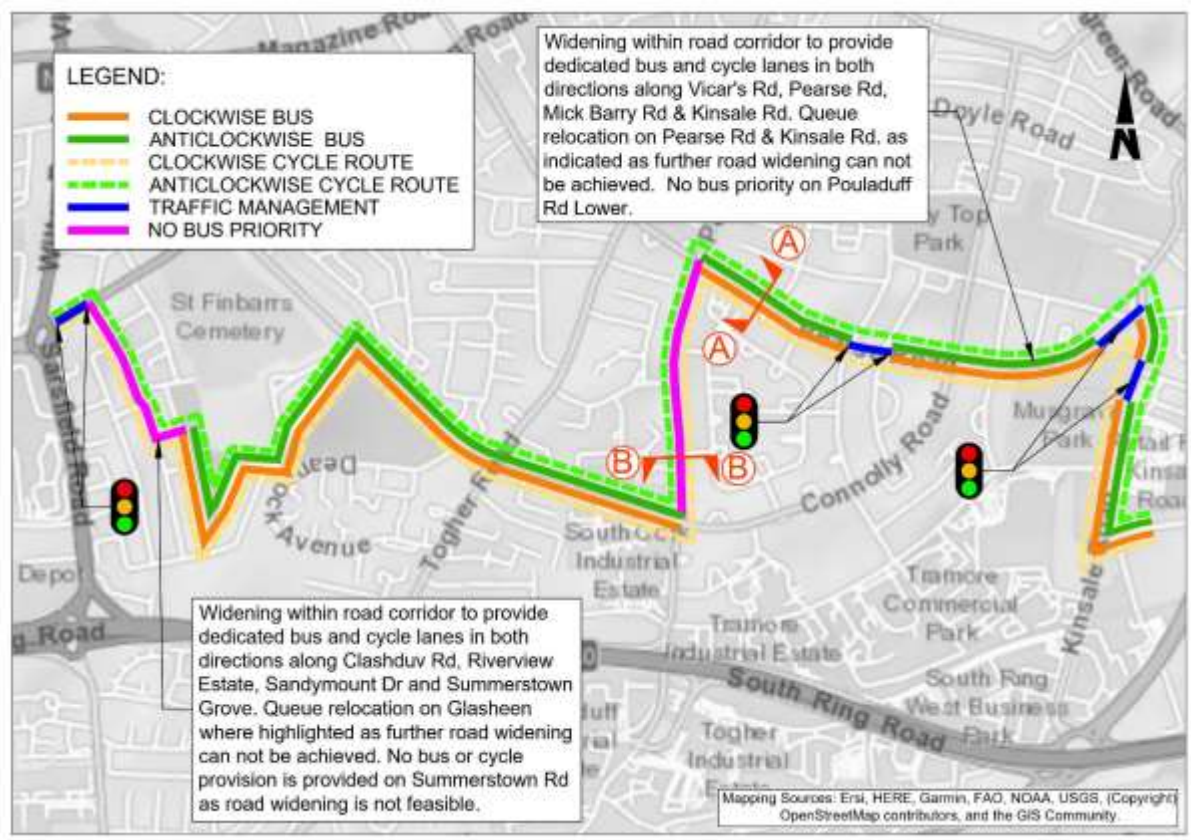


Figure 10.26 Route Option 5 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions are not feasible and bus priority will be maintained with traffic signals. Bus lanes on either side of the road will be provided on Vicar's Road and on Clashduv Road.

Bus lanes will be provided in both directions on Riverview Estate Road, Sandymount Drive and Summerstown Grove. The is no bus provision provided on Summerstown Road as widening is not feasible. Bus priority will be provided with traffic signals on the Glasheen Road between the junction with Summerstown Road and the Wilton Roundabout.

A cycle route follows the same route as the bus route. This route will be fully segregated apart from a section on Summerstown Road where road widening is not feasible. Cyclists will share with general traffic on this section of road.

A cross-section of Pearse Road is presented in Figure 10.27.

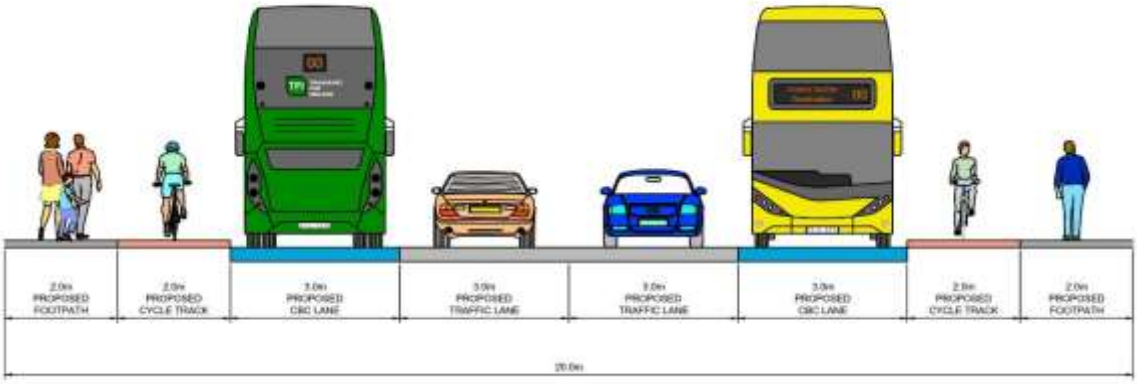


Figure 10.27 Typical Full Priority Cross Section (A-A)

A cross-section of Pouladuff Road Lower is presented in Figure 10.28.

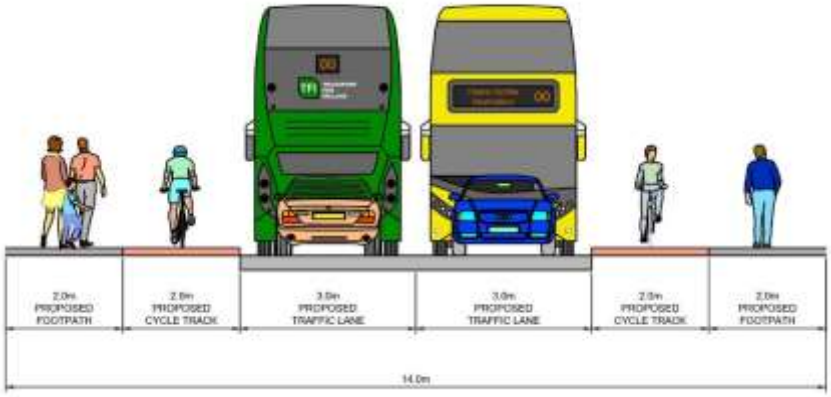


Figure 10.28 Typical No Bus Priority Cross Section (B-B)

Route Option 6

Route Description

Route Option 6 is presented in Figure 10.29.

Figure 10.29 Route Option 6 Indicative Scheme Design

Westbound: For Route Option 6 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Pouladuff Road Lower. The bus then turns left onto Pouladuff Road Lower before turning right onto Vicar's Road travelling westbound to the junction with the Clashduv Road.

The bus then turns left onto Togher Road until it reaches the roundabout at the junction between Spur Hill and Togher Road. At the junction the bus would vear right onto Spur Hill to the junction with the Sarsfields Road. The bus then travels northbound on Sarsfields Road to the Wilton Road Roundabout junction via the Sarsfields Road Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.30 illustrates the indicative scheme design for Route Option 6 as well as locations of indicative cross-sections.

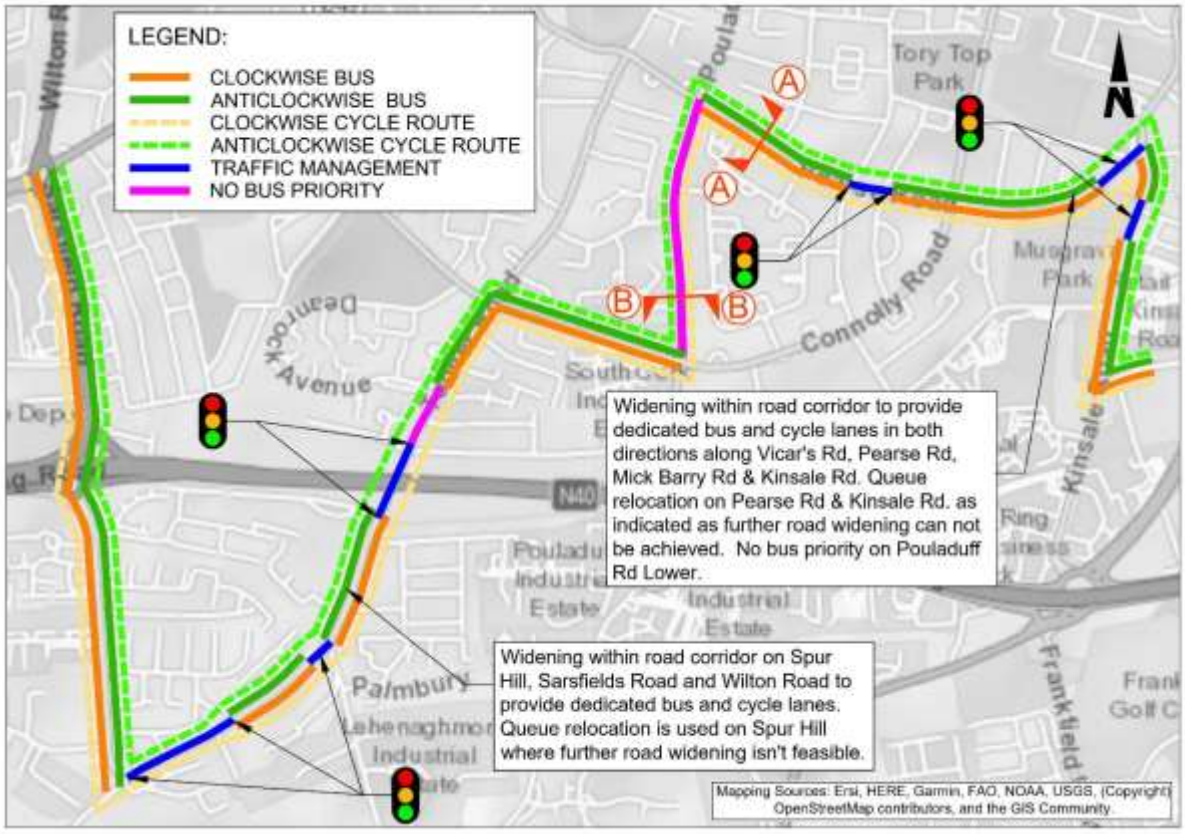


Figure 10.30 Route Option 3 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions aren't feasible and bus priority will be maintained with signalised queue relocation. Bus lanes on either side of the road will be provided on Vicar's Road and on Clashduv Road.

From the junction of Togher Road / Deanrock Avenue to Spur Hill / Sarsfield Road junction a combination of bus lanes in both directions, traffic management and a short section with no bus provision is proposed due to the constraints along this section of the route. Bus lanes in both directions will be provided on the Sarsfield Road from the Spur Hill junction to the Wilton Roundabout. Cycle tracks will be provided along the same route with the exception of a short section on the Togher Road where cyclists will have to share with general traffic.

A cross-section of Pearse Road is presented in Figure 10.31.

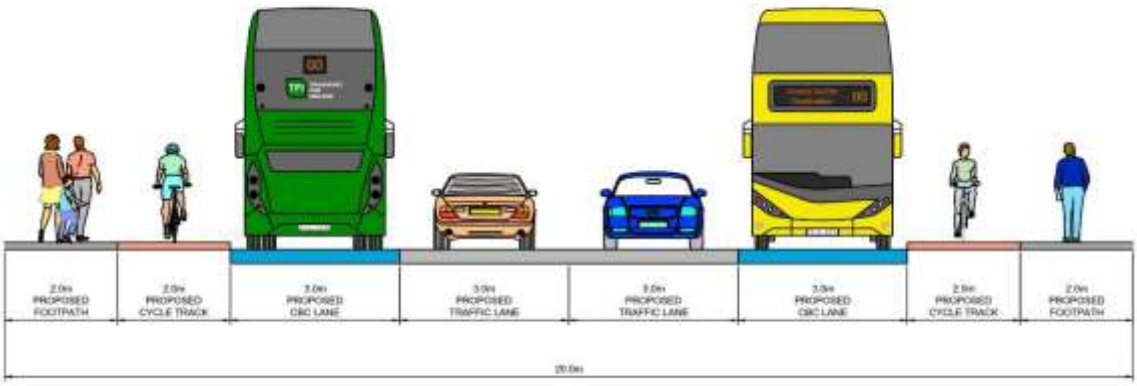


Figure 10.31 Typical Full Priority Cross Section (A-A)

A cross-section of Pouladuff Road Lower is presented in Figure 10.32.

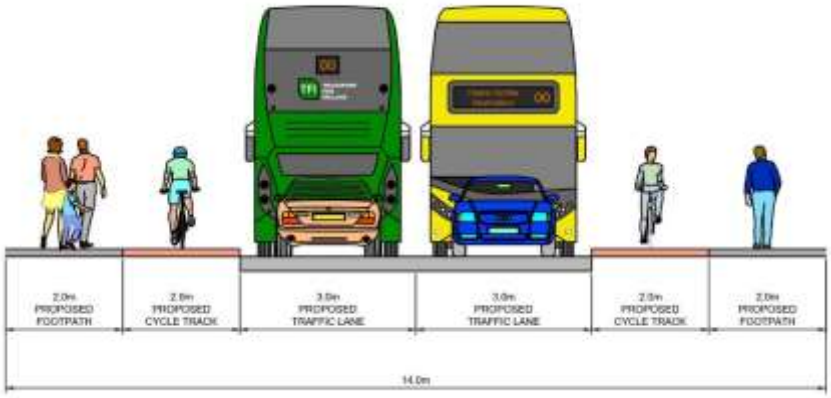


Figure 10.32 Typical No Bus Priority Cross Section (B-B)

Route Option 7

Route Description

Route Option 7 is presented in Figure 10.33.

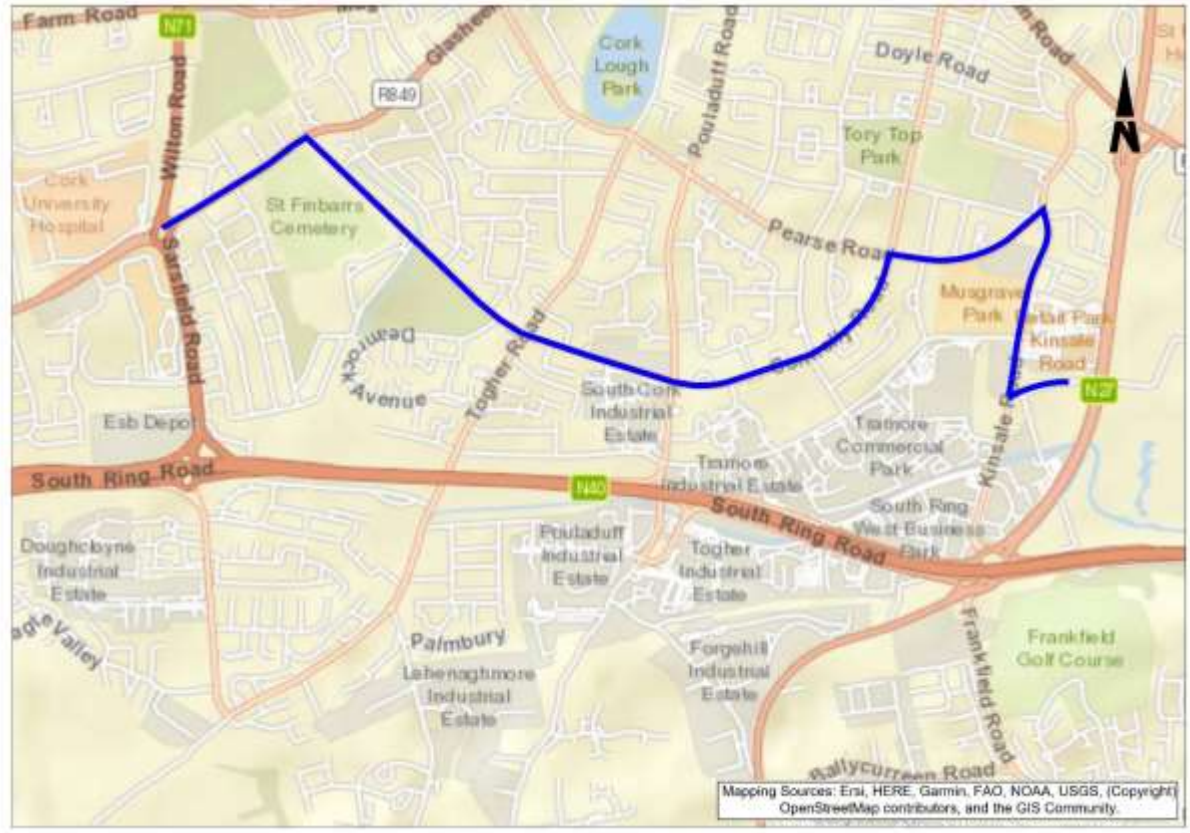


Figure 10.33 Route Option 7 (shown in blue line)

Westbound: For Route Option 7 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Connolly Road. The bus then turns left onto Connolly Road and contiues westbound to the junction of Clashduv Estate and Glasheen Road via Connolly's Road, Vicar's Road, Clashduv Road and Clashduv Estate. At the junction of Clashduv Estate and Glasheen Road, the bus turns left onto Glasheen Road to the Wilton Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.34 illustrates the indicative scheme design for Route Option 7 as well as locations of indicative cross-sections.

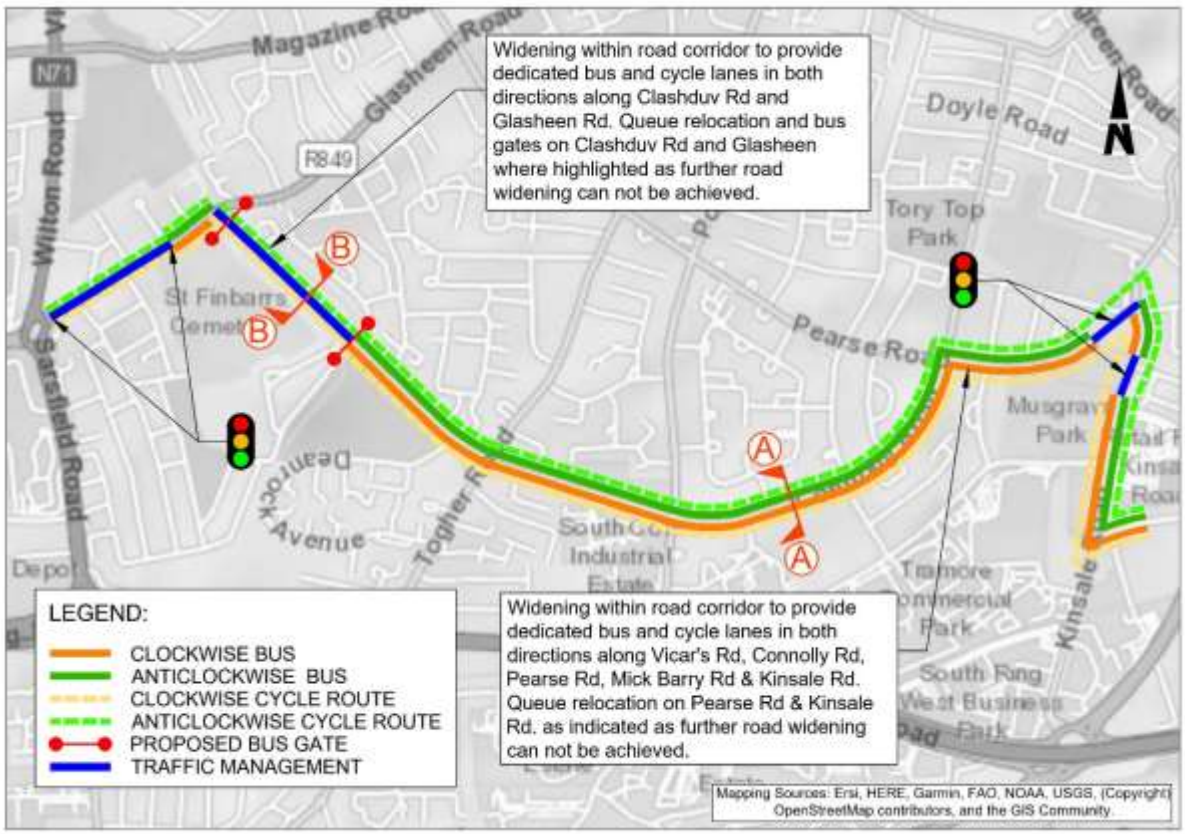


Figure 10.34 Route Option 7 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions are not feasible and bus priority will be maintained with traffic singals. Bus lanes will be provided on Connolly Road, Vicar's Road and Clashduv Road.

Bus gates will be provided on Clashduv Estate restricting through traffic to private vehicles on the road to facilitate bus priority. Queue relocation will be provided on the Glasheen Road between Wilton Roundabout and Sheares' Park to provide bus priority on the road. Cycle tracks will be provided along the same route. A cross-section of Connolly Road is presented in Figure 10.35.

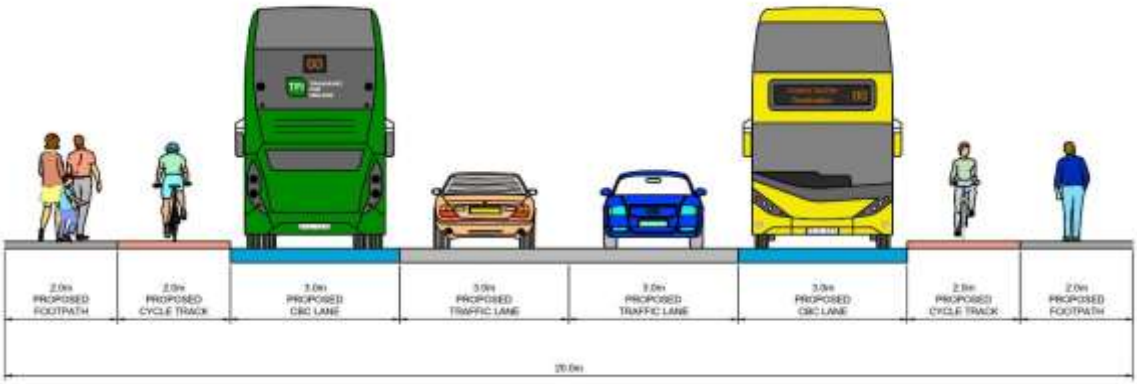


Figure 10.35 Typical Full Priority Cross Section (A-A)

A cross-section of Clashduv Estate is presented in Figure 10.36.

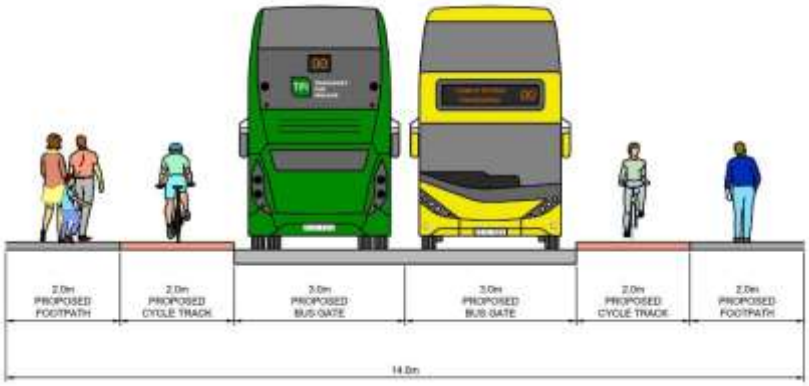


Figure 10.36 Typical Bus Gate Cross Section (B-B)

Route Option 8

Route Description

Route Option 8 is presented in Figure 10.37.

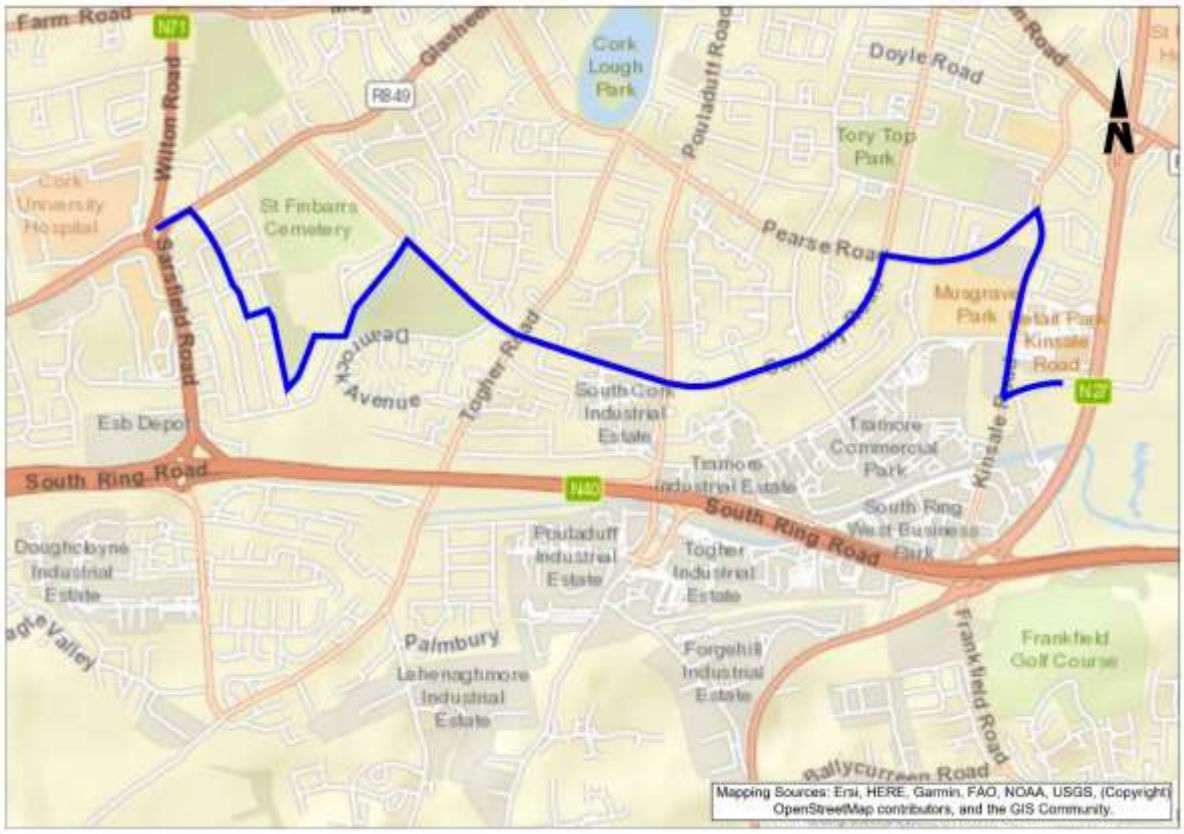


Figure 10.37 Route Option 8 (shown in blue line)

Westbound: For Route Option 8 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Connolly Road. The bus then turns left onto Connolly Road and contiues westbound to the junction of Clashduv Road and Riverview Estate via Connolly's Road, Vicar's Road and Clashduv Road. At the junction of Clashduv Road and Riverview Estate the bus turns left into Riverview Estate and onto Sandymount Drive. The bus then turns right at the junction of Sandymount Drive and Summerstown Grove travelling northbound to the Glasheen road via Summerstown Road. The bus turns left on the Glasheen Road to the Wilton roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.38 illustrates the indicative scheme design for Route Option 8 as well as locations of indicative cross-sections.

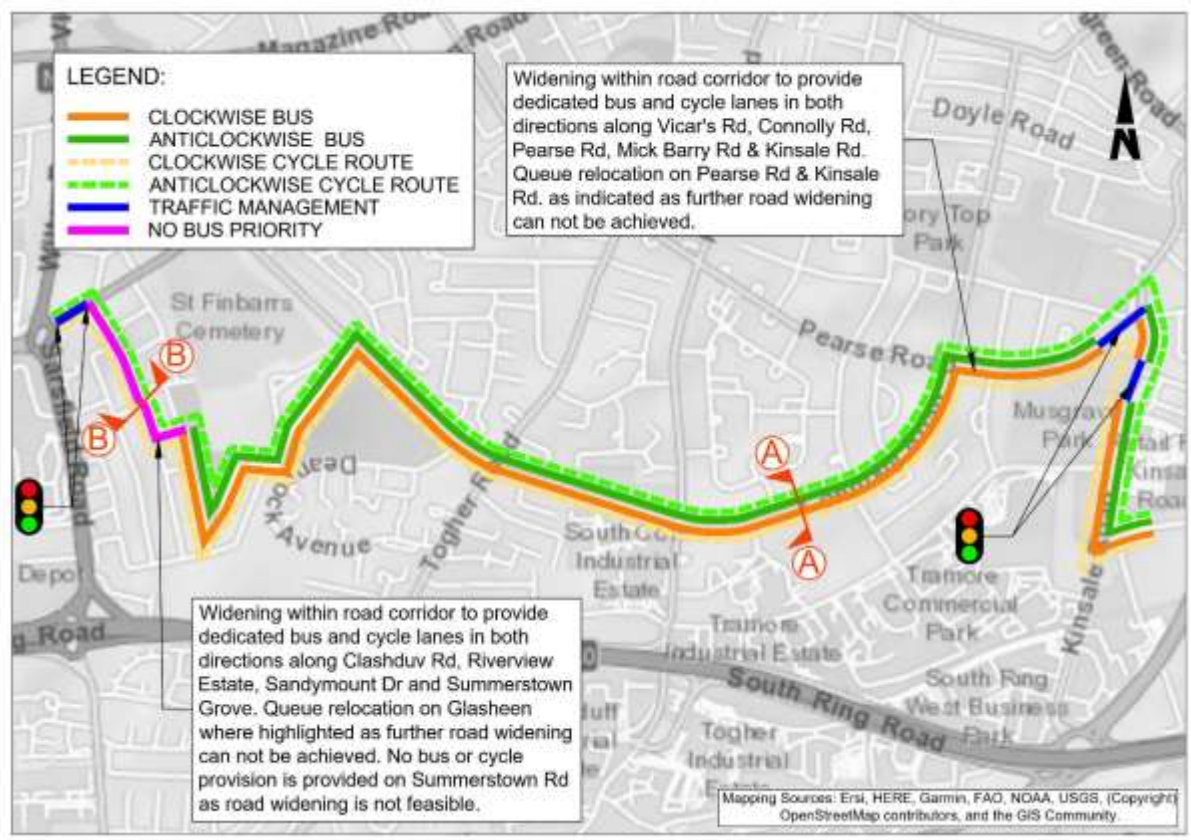


Figure 10.38 Route Option 2 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions are not feasible and bus priority will be maintained with traffic signals. Bus lanes will be provided on Connolly Road, Vicar's Road and Clashduv Road.

Bus lanes will be provided in both directions on Riverview Estate Road, Sandymount Drive and Summerstown Grove. The is no bus provision provided on Summerstown Road as widening is not feasible. Bus priority will be provided via traffic signals on the Glasheen Road between the junction with Summerstown Road and Wilton Roundabout.

The cycle route follows the same route as the bus route. This route will be fully segregated apart from a section on Summerstown Road where road widening is not feasible. Cyclists will share with general traffic on this section of road.

A cross-section of Connolly Road is presented in Figure 10.39.

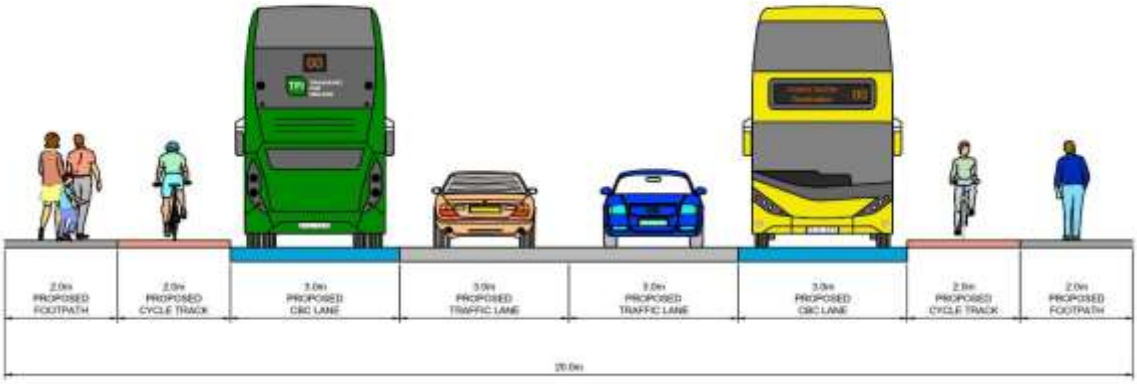


Figure 10.39 Typical Full Priority Cross Section (A-A)

A cross-section of Summerstown Road is presented in Figure 10.40.

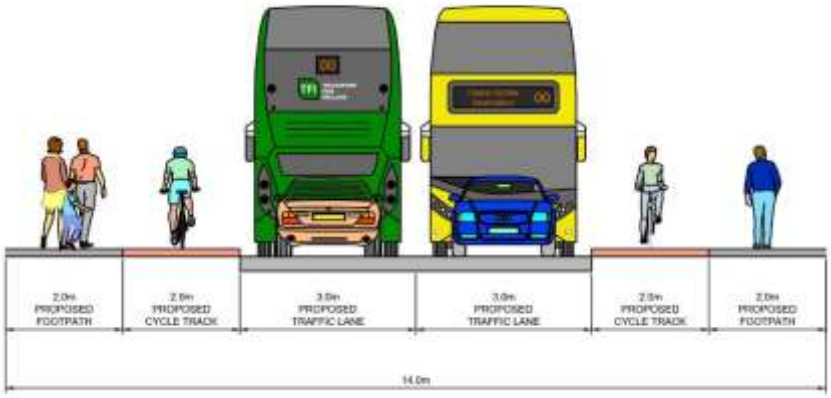


Figure 10.40 Typical No Bus Priority Cross Section (B-B)

Route Option 9

Route Description

Route Option 9 is presented in Figure 10.41.

Figure 10.41 Route Option 9 (shown in blue line)

Westbound: For Route Option 9 the bus travels on Mick Barry Road and turns right along the Kinsale Road to Cemetery Cross. At Cemetery Cross the bus turns left onto Pearse Road Westbound to the junction with Connolly Road. The bus then turns left onto Connolly Road and continues westbound to the junction of Clashduv Road and Togher Road via Connolly Road and Vicar's Road. The bus then turns left onto Togher Road until it reaches the roundabout at the junction between Spur Hill and Togher Road. At the junction the bus would vear right onto Spur Hill to the junction with the Sarsfields Road. The bus then travels northbound on Sarsfields Road to Wilton Road Roundabout junction via Sarsfields Road Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.42 illustrates the indicative scheme design for Route Option 9 as well as locations of indicative cross-sections.

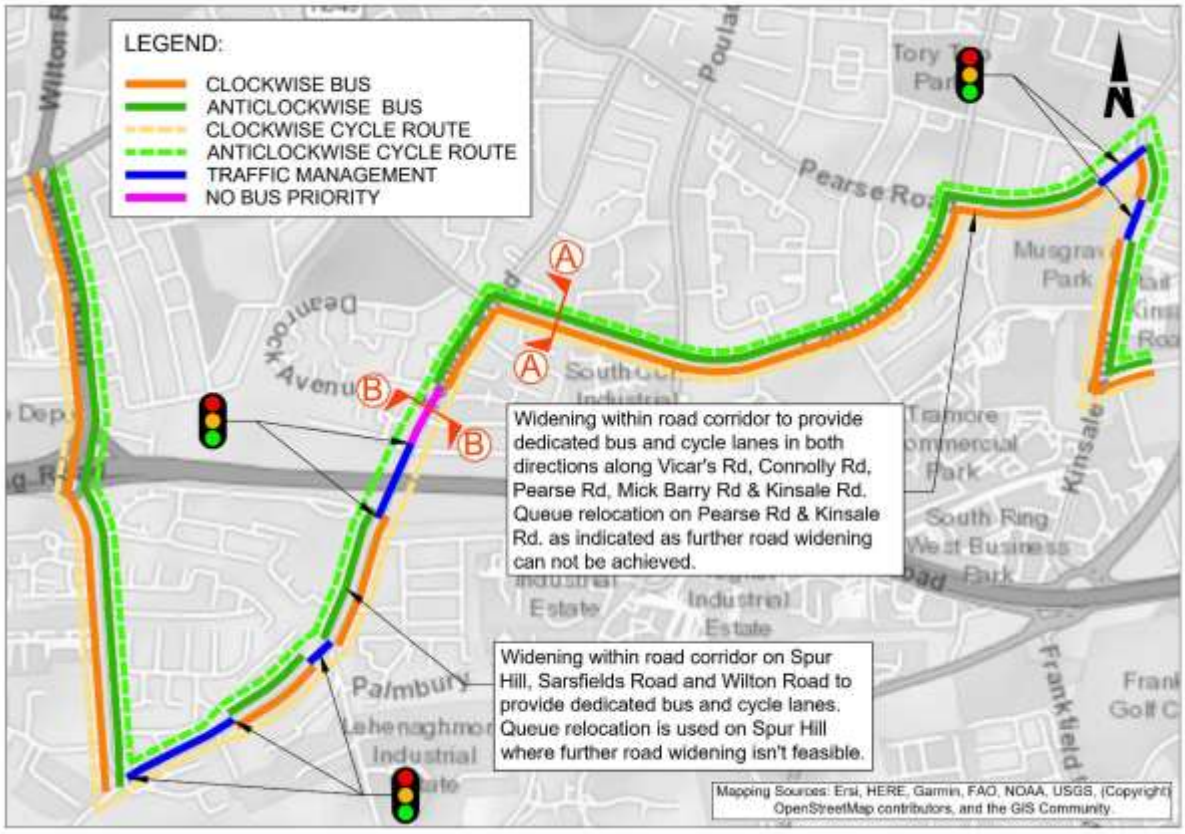


Figure 10.42 Route Option 9 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Pearse Road. There are short sections of these roads where bus lanes in both directions are not feasible and bus priority will be maintained with traffic signals.

Bus lanes will be provided on Connolly Road and Vicar's Road. From the junction of Togher Road / Vicar's Road to Spur Hill / Sarsfield Road junction a combination of bus lanes in both directions, traffic management and a short section with no bus provision is proposed due to the constraints along this section of the route. Bus lanes in both directions will be provided on the Sarsfield Road from Spur Hill junction to the Wilton Roundabout.Cycle tracks will be provided along the same route with the exception of a short section on Togher Road where cyclists will have to share with general traffic.

A cross-section of Vicar's Road is presented in Figure 10.43.

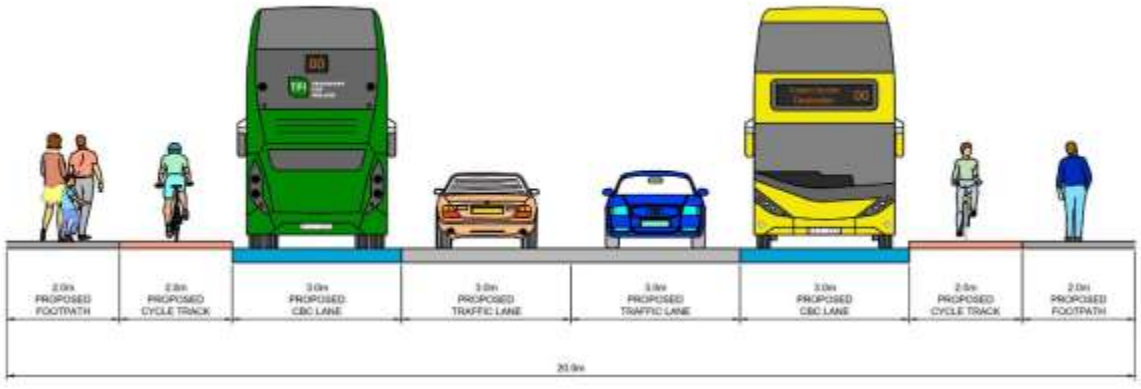


Figure 10.43 Typical Full Priority Cross Section (A-A)

A cross-section of Togher Road is presented in Figure 10.44.

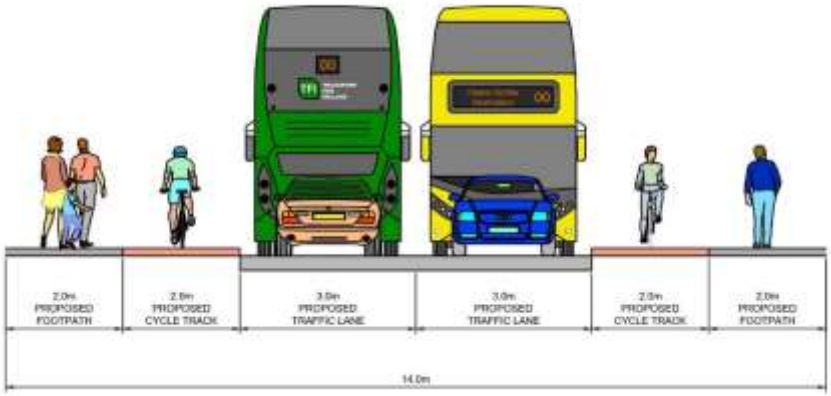


Figure 10.44 Typical No Bus Priority Cross Section (B-B)

Route Option 10

Route Description

Route Option 10 is presented in Figure 10.45.

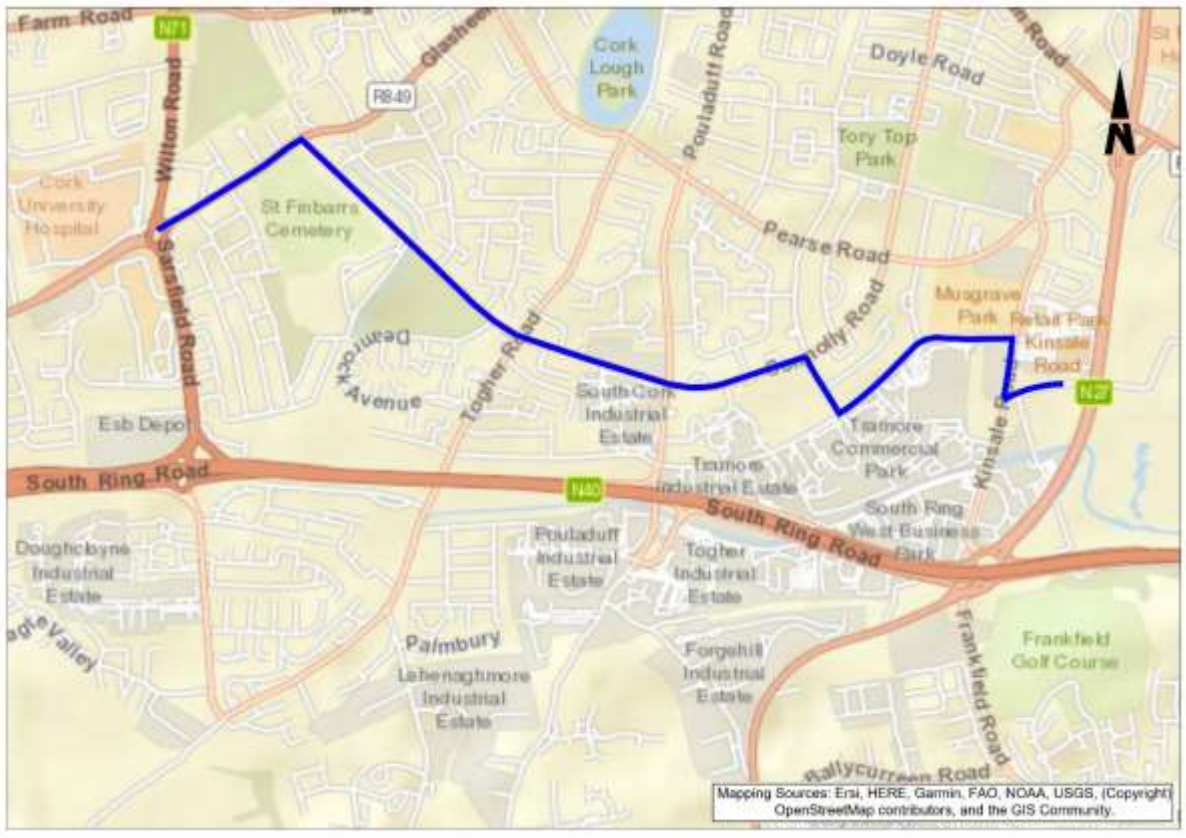


Figure 10.45 Route Option 10 (shown in blue line)

Westbound: For Route Option 10 the bus travels on Mick Barry Road and turns right along the Kinsale Road to the junction with the Tramore Road. At the junction the bus turns left onto Tramore Road to the junction of Tramore Road and Lower Friars Walk. The bus then turns right onto Lower Friars Walk before turning left, travelling westbound on Connolly Road. The bus then continues westbound to the junction of Clashduv Estate and Glasheen Road via Connolly Road, Vicars Road, Clashduv Road and Clashduv Estate. At the junction of Clashduv Estate and Glasheen Road the bus turns left onto Glasheen Road to the Wilton Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.46 illustrates the indicative scheme design for Route Option 10 as well as locations of indicative cross-sections.

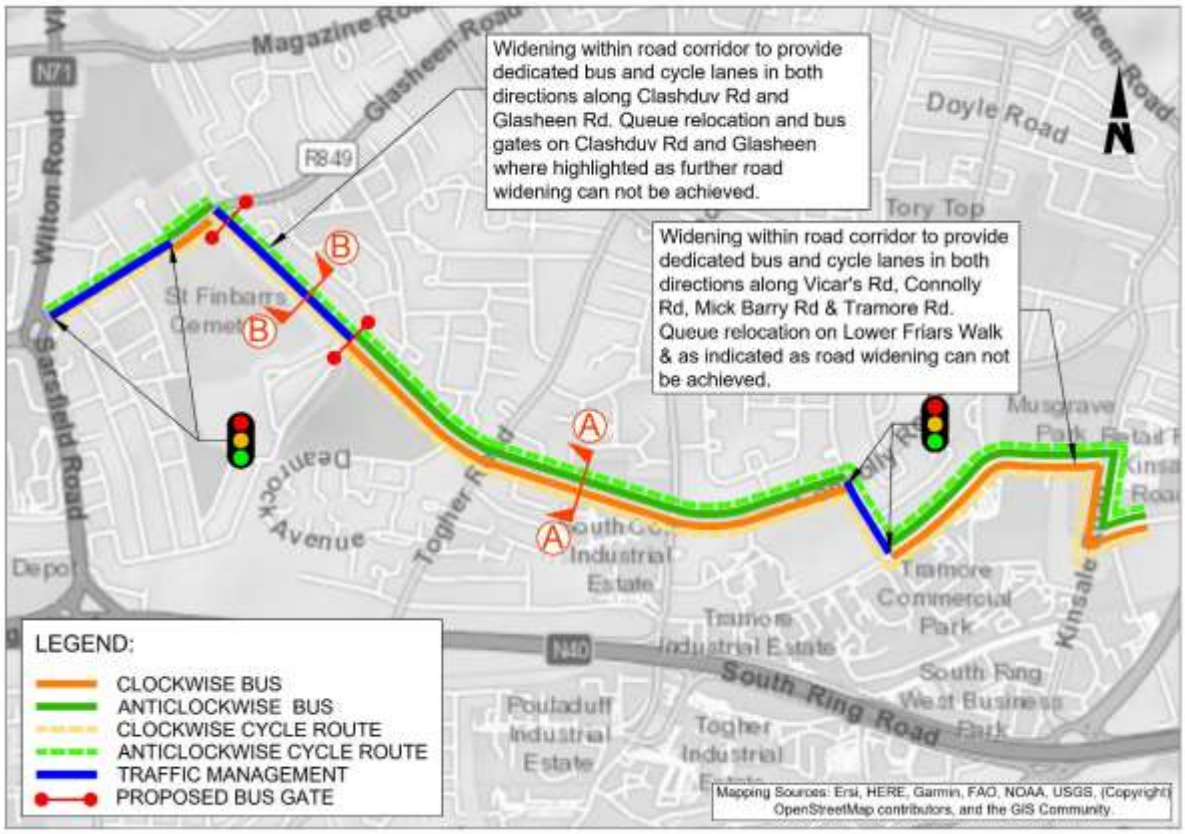


Figure 10.46 Route Option 10 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Tramore Road. Traffic signals provided on either side of Lower Friars Walk to maintain bus priority through this link.

Bus lanes are provided on Connolly Road, Vicar's Road and Clashduv Road. Bus gates will be provided on Clashduv Estate restricting through traffic to private vehicles on the road to facilitate bus priority. Traffic signals will be provided on Glasheen Road between Wilton Roundabout and Sheares' Park to provide bus priority on the road. Cycle tracks will be provided along the same route. A cross-section of Vicar's Road is presented in Figure 10.47.

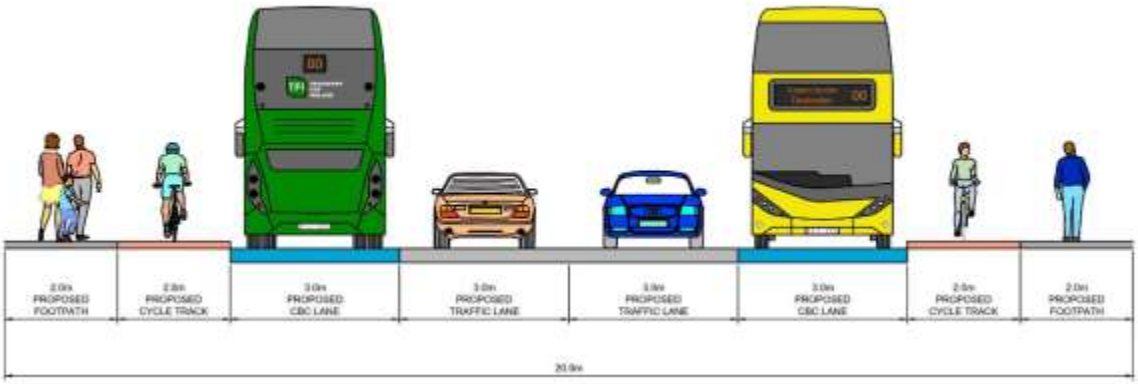


Figure 10.47 Typical Full Priority Cross Section (A-A)

A cross-section of Clashduv Estate is presented in Figure 10.48.

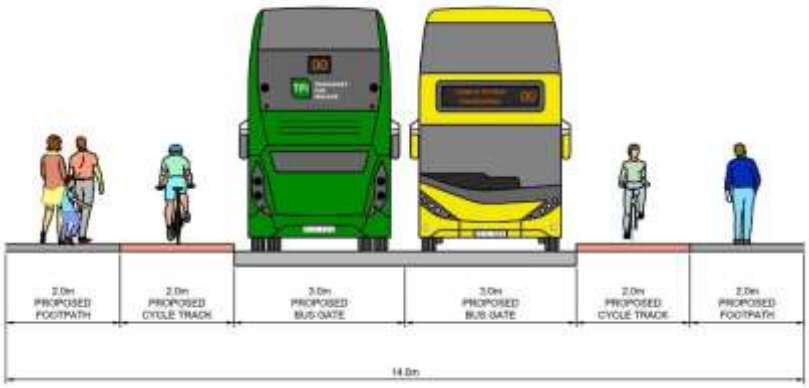


Figure 10.48 Typical Bus Gate Cross Section (B-B)

Route Option 11

Route Description

Route Option 11 is presented in Figure 10.49.

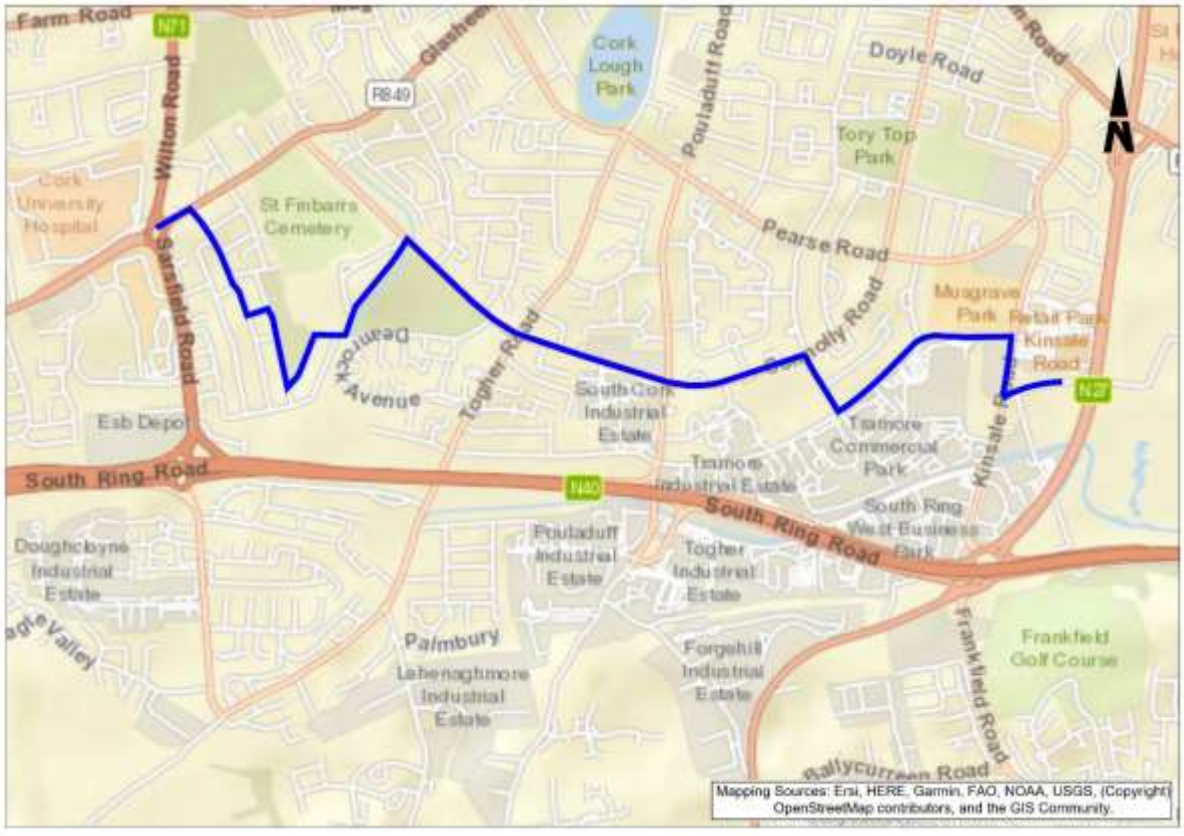


Figure 10.49 Route Option 11 (shown in blue line)

Westbound: For Route Option 11 the bus travels on Mick Barry Road and turns right along the Kinsale Road to the junction with Tramore Road. At the junction the bus turns left onto Tramore Road to the junction of Tramore Road and Lower Friars Walk. The bus then turns right onto Lower Friars Walk before turning left, travelling westbound on Connolly Road through to Clashduv Road. At the junction of Clashduv Road and Riverview Estate the bus turns left into Riverview Estate and onto Sandymount Drive. The bus then turns right at the junction of Sandymount Drive and Summerstown Grove travelling northbound to the Glasheen

road via Summerstown Road. The bus turns left on the Glasheen Road to the Wilton roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.50 illustrates the indicative scheme design for Route Option 11 as well as locations of indicative cross-sections.

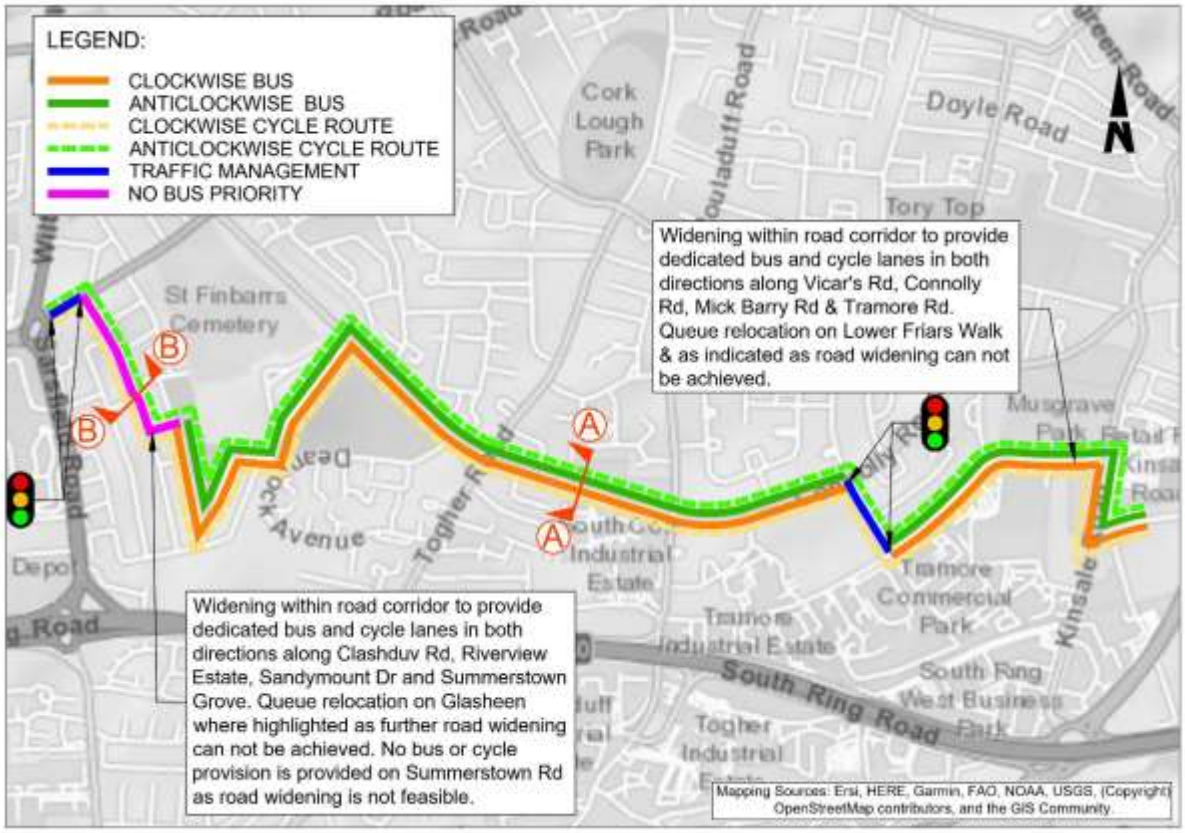


Figure 10.50 Route Option 11 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Tramore Road. Traffic signals will be provided at either side of Lower Friars Walk to maintain bus priority through this link. Bus lanes will be provided on Connolly Road, Vicar's Road and Clashduv Road.

Bus lanes will be provided in both directions on Riverview Estate Road, Sandymount Drive and Summerstown Grove. The is no bus provision provided on Summerstown Road as widening is not feasible. Traffic signals will be provided with traffic signals on the Glasheen Road between the junction with Summerstown Road and the Wilton Roundabout.

A cycle route follows the same route as the bus route. This route will be fully segregated apart from a section on Summerstown Road where road widening is not feasible. Cyclists will share with general traffic on this section of road.

A cross-section of Vicar's Road is presented in Figure 10.51.

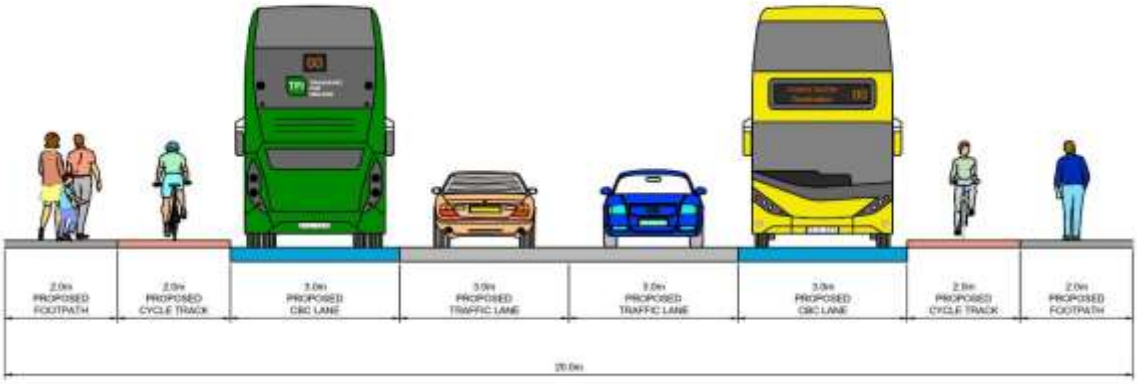


Figure 10.51 Typical Full Priority Cross Section (A-A)

A cross-section of Summerstown Road is presented in Figure 10.52.

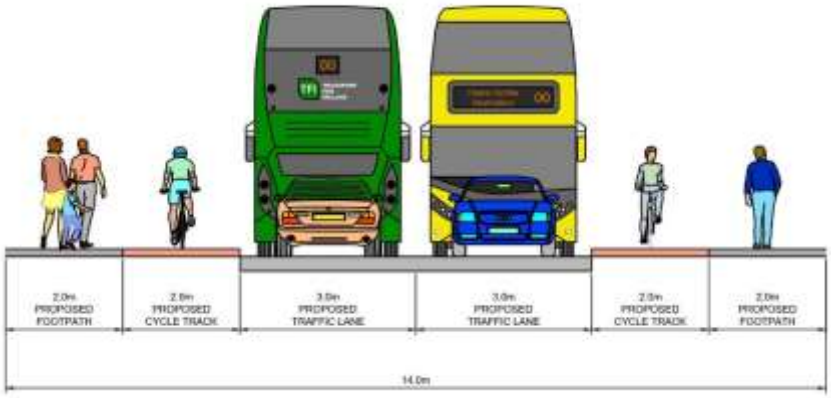


Figure 10.52 Typical No Bus Priority Cross Section (B-B)

Route Option 12

Route Description

Route Option 12 is presented in Figure 10.53.

Figure 10.53 Route Option 12 (shown in blue line)

Westbound: For Route Option 12 the bus travels on Mick Barry Road and turns right along the Kinsale Road to the junction with the Tramore Road. At the junction the bus turns left onto Tramore Road to the junction of Tramore Road and Lower Friars Walk. The bus then turns right onto Lower Friars Walk before turning left, travelling westbound on Connolly Road and Vicar's Road. The bus then turns left onto Togher Road until it reaches the roundabout at the junction between Spur Hill and Togher Road. At the junction the bus would vear right onto Spur Hill to the junction with the Sarsfields Road. The bus then turns right, northbound on the Sarsfields Road to Wilton Road Roundabout junction via Sarsfields Road Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.54 illustrates the indicative scheme design for Route Option 12 as well as locations of indicative cross-sections.

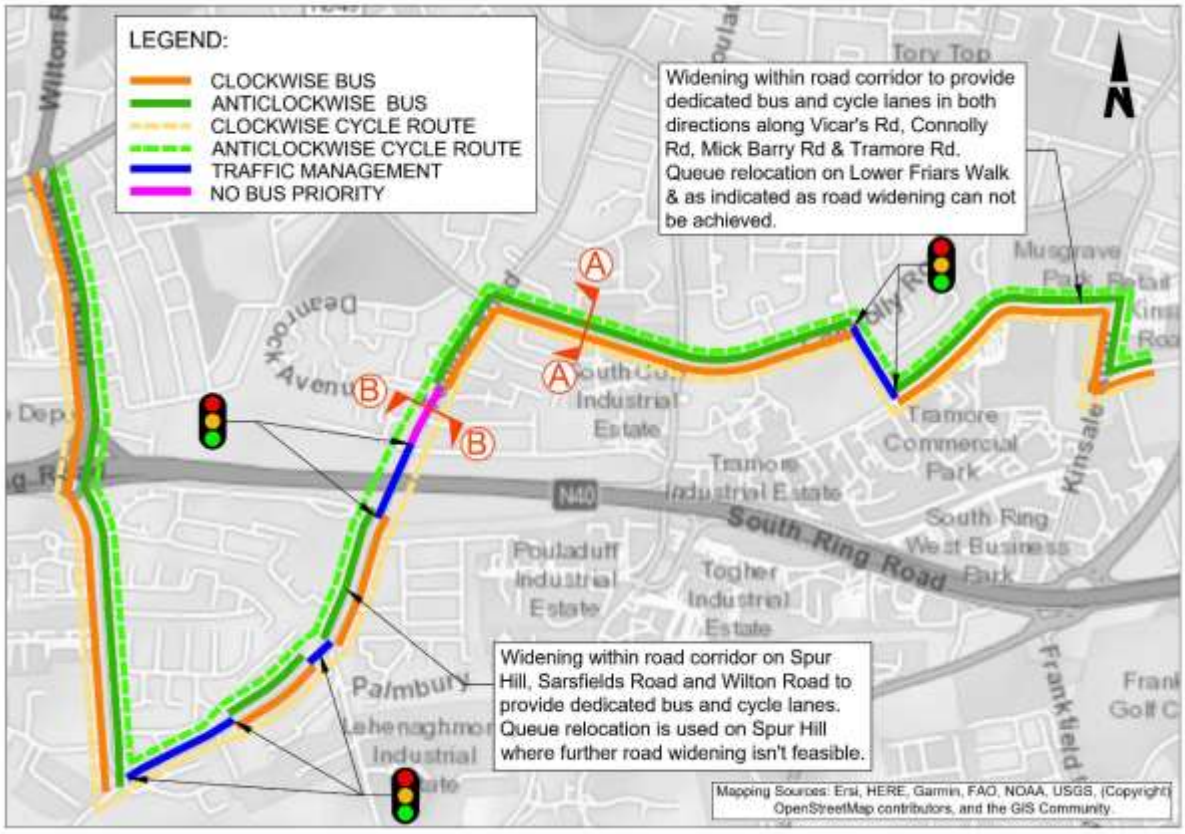


Figure 10.54 Route Option 12 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Tramore Road. Traffic signals provided on at either side of Lower Friars Walk to maintain bus priority through this link. Bus lanes will be provided on Connolly Road, Vicar's Road and Togher Road to the junction of Togher Road and Deanrock Avenue.

From the junction of Togher Road / Deanrock Avenue to Spur Hill / Sarsfield Road junction a combination of bus lanes in both directions, traffic management and a short section with no bus provision is proposed due to the constraints along this section of the route. Bus lanes in both directions will be provided on Sarsfield Road from Spur Hill junction to Wilton Roundabout. Cycle tracks will be provided along the same route with the exception of a short section on the Togher Road where cyclists will have to share with general traffic.

A cross-section of Vicar's Road is presented in Figure 10.55.

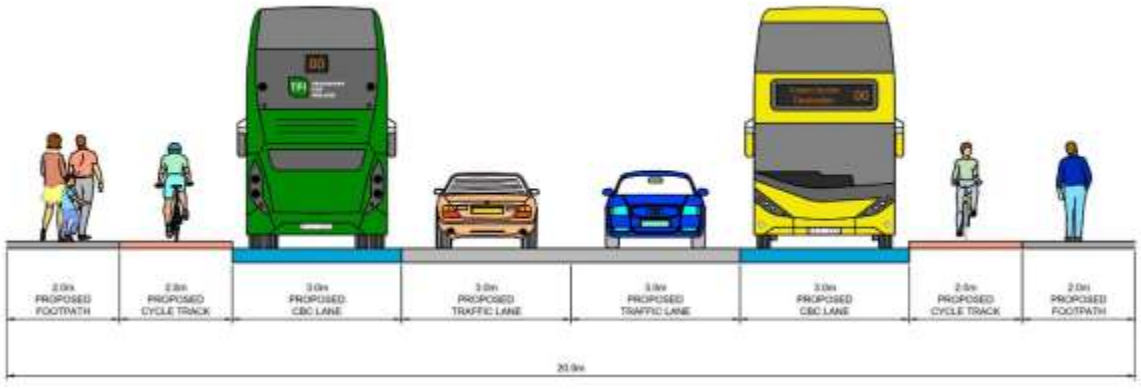


Figure 10.55 Typical Full Priority Cross Section (A-A)

A cross-section of Togher Road is presented in Figure 10.56.

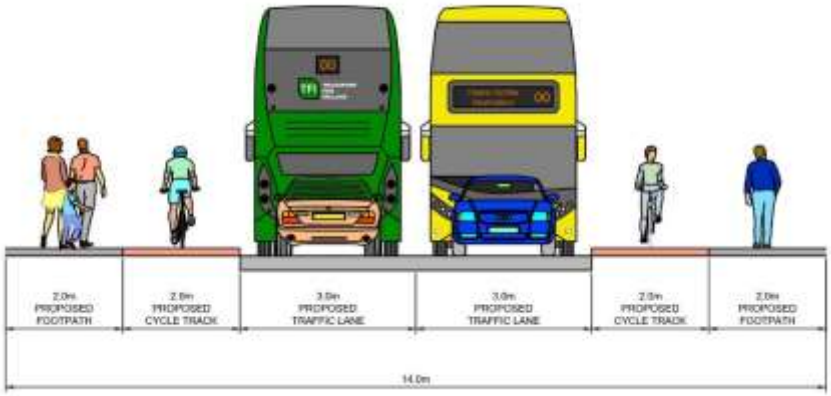


Figure 10.56 Typical No Bus Priority Cross Section (B-B)

Route Option 13

Route Description

Route Option 13 is presented in Figure 10.57.

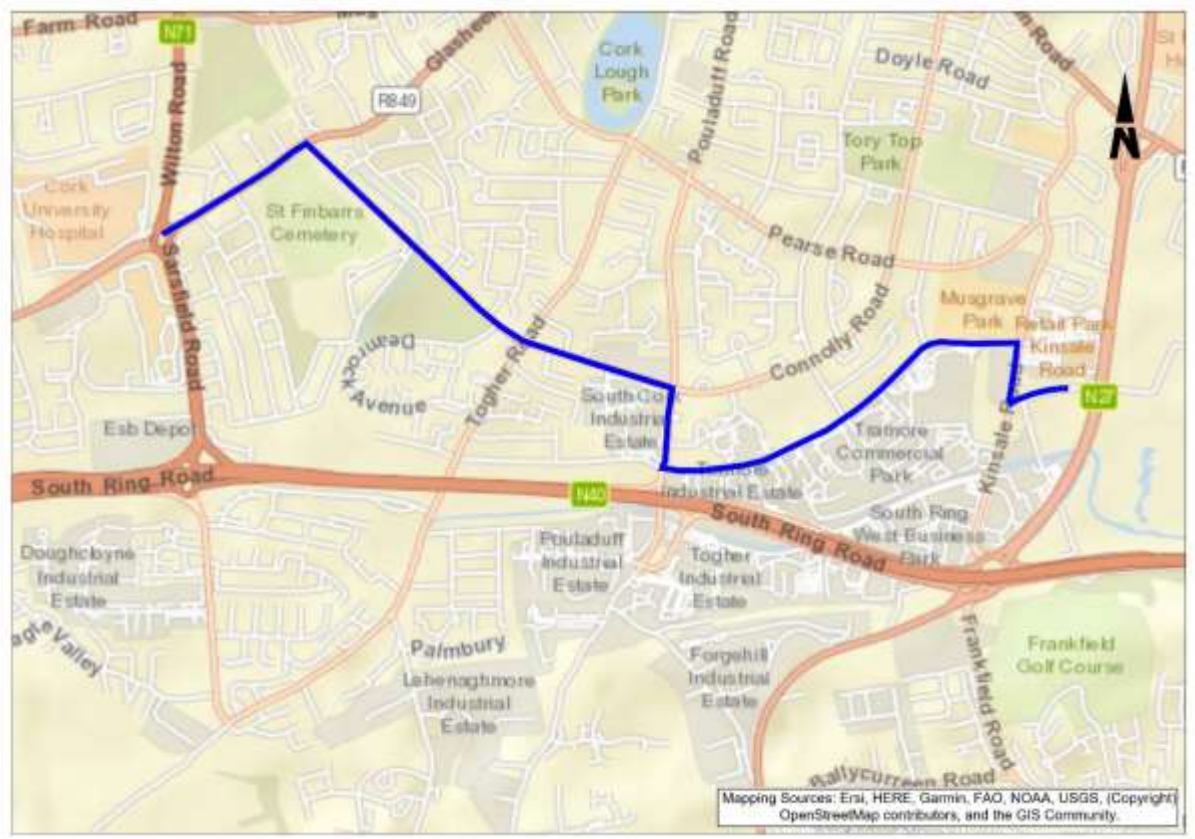


Figure 10.57 Route Option 13 (shown in blue line)

Westbound: For Route Option 13 the bus travels on Mick Barry Road and turns right along the Kinsale Road to the junction with the Tramore Road. At the junction the bus turns left onto Tramore Road to the junction of Tramore Road and Lower Pouladuff Road. The bus then turns right onto Lower Pouladuff Road before turning left, travellingwestbound on Vicar's Road.

The bus continues westbound to the junction of Clashduv Estate and Glasheen Road via Vicars Road, Clashduv Road and Clashduv Estate. At the junction of Clashduv Estate and Glasheen Road the bus turns left onto Glasheen Road to the Wilton Roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.58 illustrates the indicative scheme design for Route Option 13 as well as locations of indicative cross-sections.

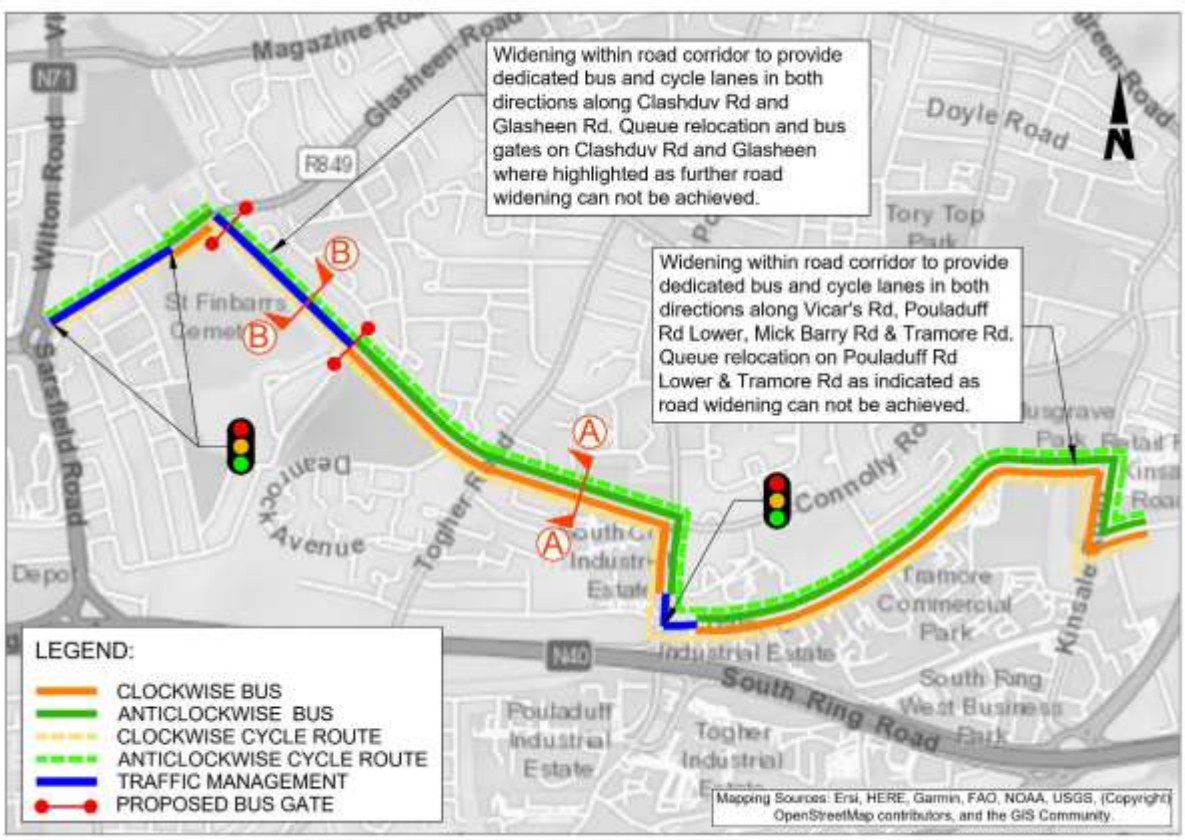


Figure 10.58 Route Option 13 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road, Tramore Road, Lower Pouladuff Road, Vicar's Road and Clashduv Road.Traffic sigals will provide bus priority at the junction of Lower Pouladuff Road and Tramore Road.

Bus gates will be provided on Clashduv Estate restricting through traffic to facilitate bus priority. Traffic signals will be provided on the Glasheen Road between Wilton Roundabout and Sheares' Park to provide bus priority on the road. Cycle tracks will be provided along the same route. A cross-section of Vicar's Road is presented in Figure 10.59.

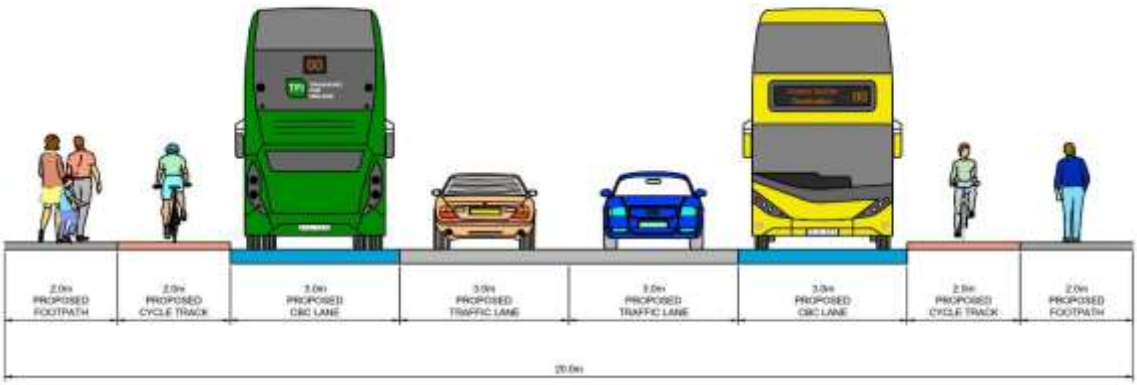


Figure 10.59 Typical Full Priority Cross Section (A-A)

A cross-section of Clashduv Estate is presented in Figure 10.60.

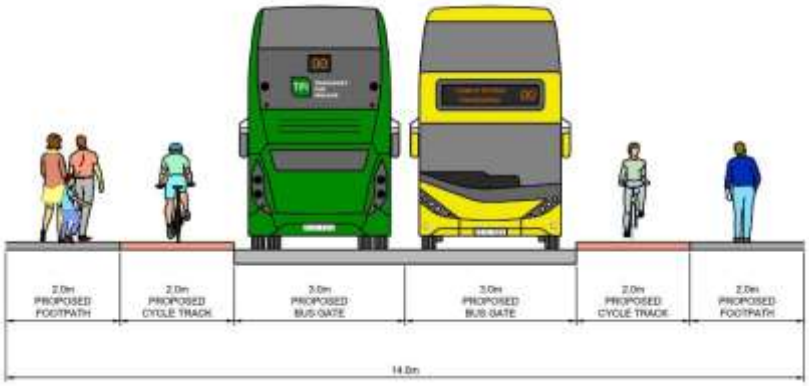


Figure 10.60 Typical Bus Gate Cross Section (B-B)

Route Option 14

Route Description

Route Option 14 is presented in Figure 10.61.

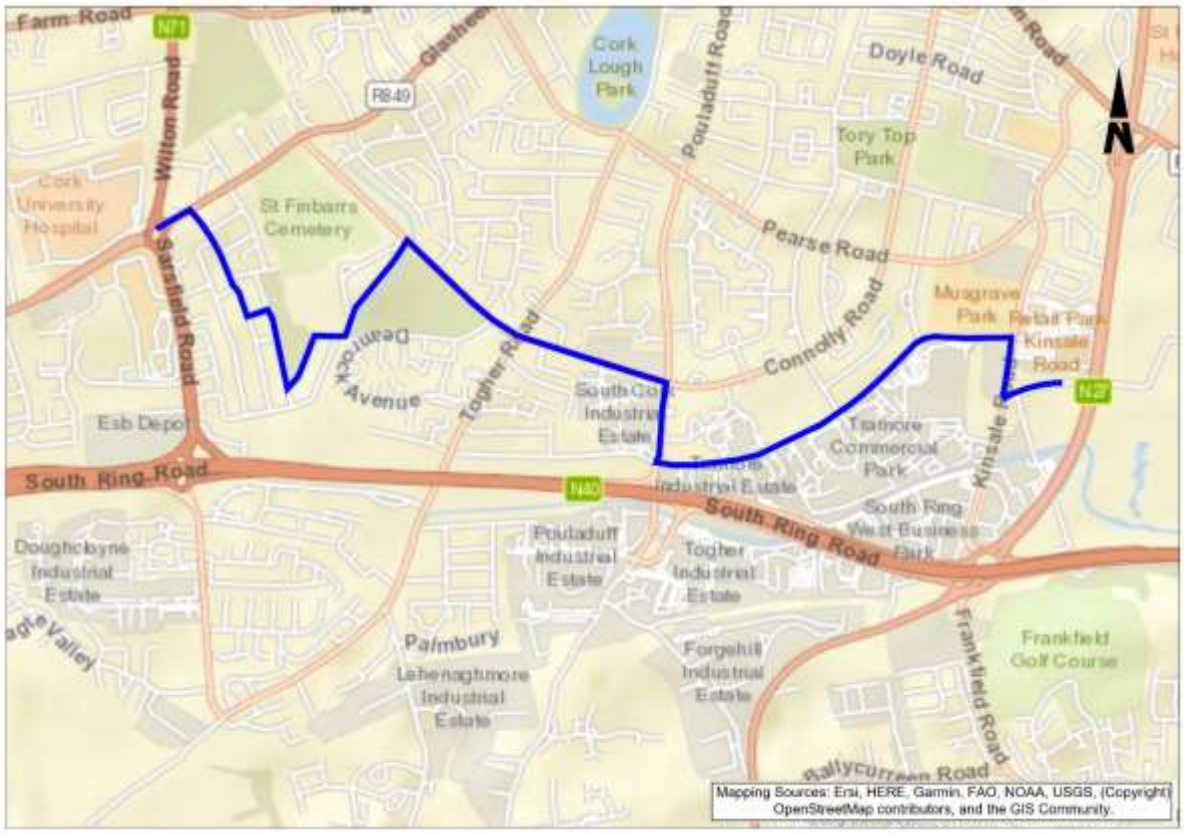


Figure 10.61 Route Option 14 (shown in blue line)

Westbound: For Route Option 14 the bus travels on Mick Barry Road and turns right along the Kinsale Road to the junction with the Tramore Road. At the junction the bus turns left onto Tramore Road to the junction of Tramore Road and Lower Pouladuff Road. The bus then turns right onto Lower Pouladuff Road before turning left, travellingwestbound on Vicar's Road. The bus continues westbound on Vicar's Road and Clashduv Road to the junction of Clashduv Road and Riverview Estate. At the junction of Clashduv Road and Riverview Estate the bus turns left into Riverview Estate and onto Sandymount Drive. The bus then turns right at the junction of Sandymount Drive and Summerstown Grove travelling northbound to the Glasheen

road via Summerstown Road. The bus turns left on the Glasheen Road to the Wilton roundabout.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.62 illustrates the indicative scheme design for Route Option 14 as well as locations of indicative cross-sections.

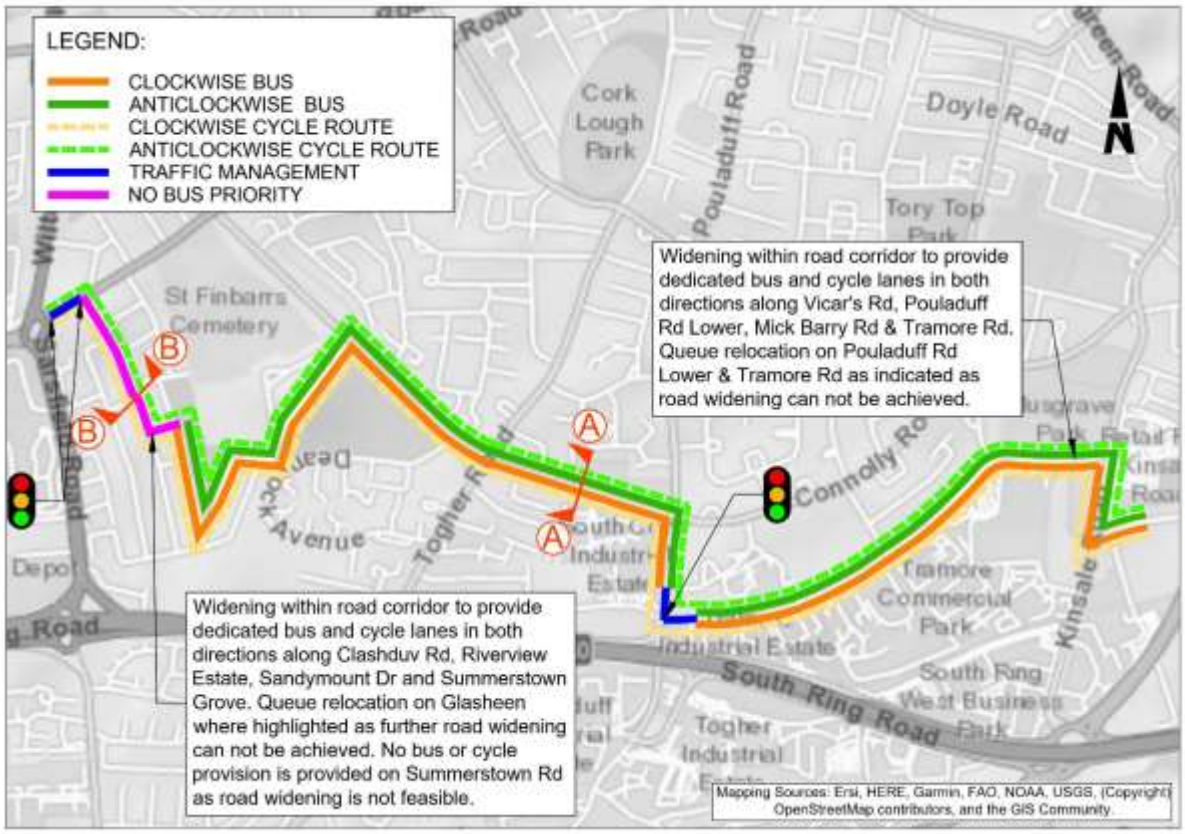


Figure 10.62 Route Option 14 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road, Tramore Road, Lower Pouladuff Road, Vicar's Road and Clashduv Road. Traffic signals will provide bus priority at the junction of Lower Pouladuff Road and Tramore Road.

Bus lanes will be provided in both directions on Riverview Estate Road, Sandymount Drive and Summerstown Grove. The is no bus provision provided on Summerstown Road as widening is not feasible. Traffic signals will provide bus priority on the Glasheen Road between the junction with Summerstown Road and the Wilton Roundabout.

The cycle route follows the same route as the bus route. This route will be fully segregated apart from a section on Summerstown Road where road widening is not feasible. Cyclists will share with general traffic on this section of road. A cross-section of Pearse Road is presented in Figure 10.63.

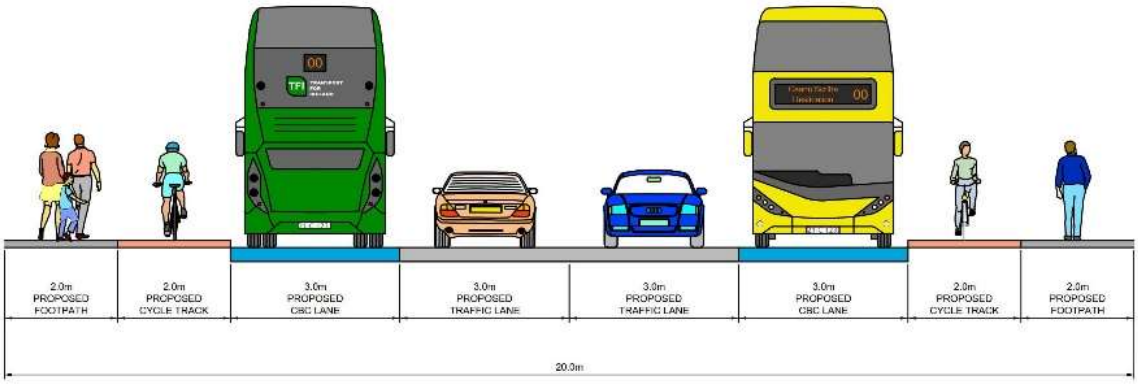


Figure 10.63 Typical Full Priority Cross Section (A-A)

A cross-section of Clashduv is presented in Figure 10.64.

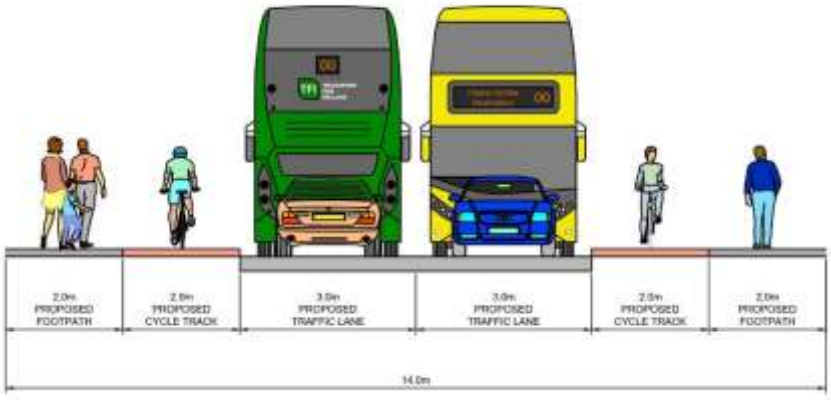


Figure 10.64 Typical No Bus Priority Cross Section (B-B)

Route Option 15

Route Description

Route Option 15 is presented in Figure 10.65.

Figure 10.65 Route Option 15 (shown in blue line)

Westbound: For Route Option 15 the bus travels on Mick Barry Road and turns right along the Kinsale Road before turning on to Tramore Road. From here, the bus heads westbound on Tramore Road towards the roundabout at Pouladuff Road. It then travels northbound toward Vicar's Road. The bus will continue Vicar's Road to Togher Road where it will travel south along Togher Road and through Spur Hill before taking the Sarsfield Road toward the Wilton Roundabout and Cork University Hospital.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.66 illustrates the indicative scheme design for Route Option 15 as well as locations of indicative cross-sections.

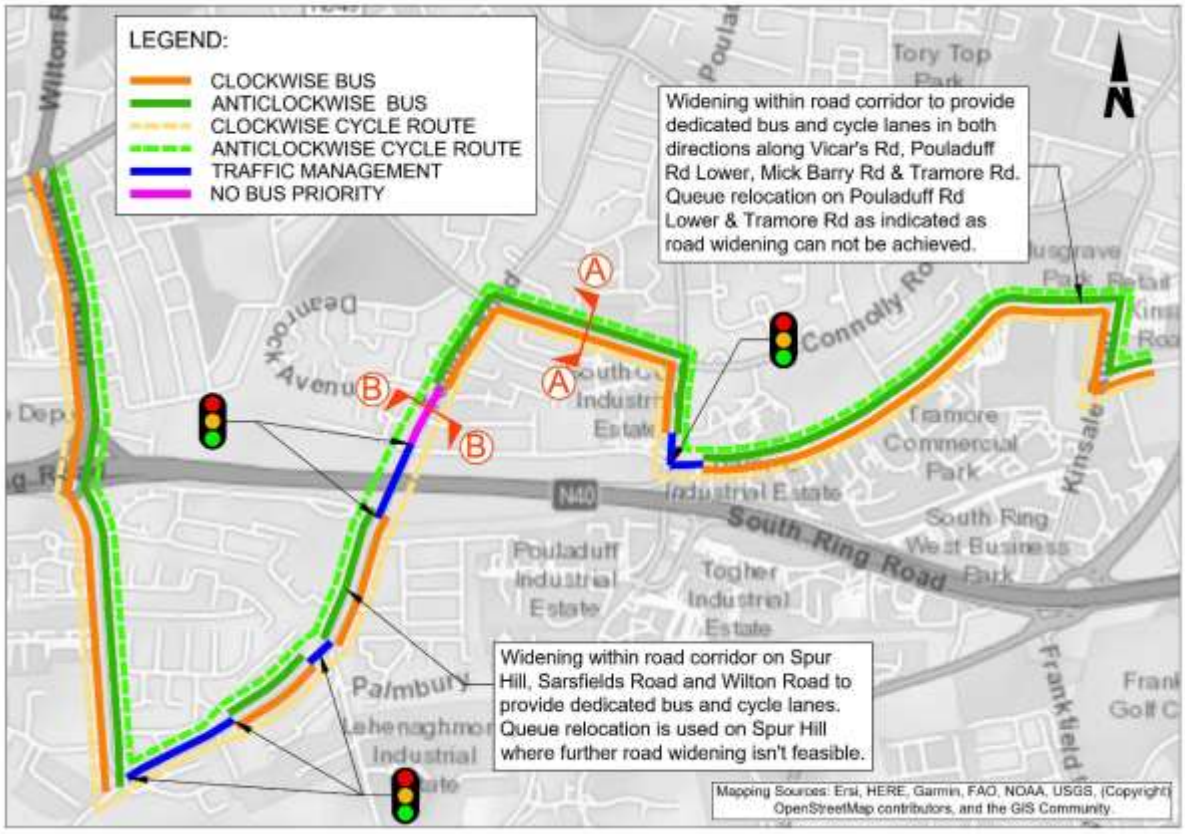


Figure 10.66 Route Option 15 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road and Tramore Road. Traffic signals will provide bus priority at Tramore Road and Pouladuff Road junction. Bus lanes are provided on Pouladuff Road, Vicar's Road, Togher Road, Spur Hill and Sarsfield Road. Where existing constraints prohibit widening on Spur Hill and Togher Road, traffic signals will provide bus priority. The southern section of Pouladuff Road does not have bus priority as existing constraints prohibit widening. Cycle tracks will be provided along the same route. A cross-section of Vicar's Road is presented in Figure 10.67.

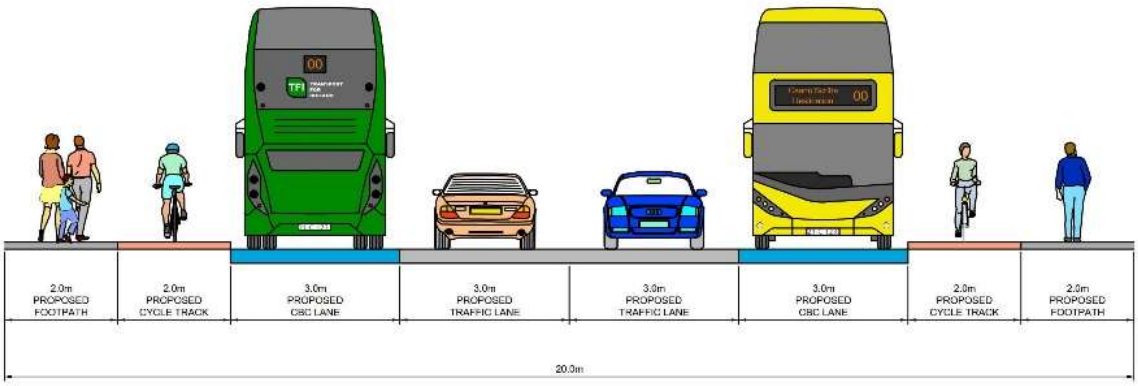


Figure 10.67 Typical Full Priority Cross Section (A-A)

A cross-section of Togher Road is presented in Figure 10.68.

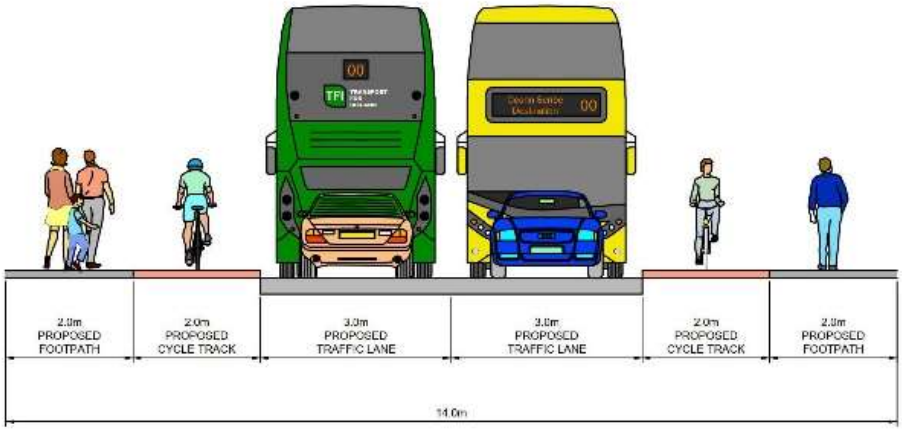


Figure 10.68 Typical No Bus Priority Cross Section (B-B)

Route Option 16

Route Description

Route Option 16 is presented in Figure 10.69.

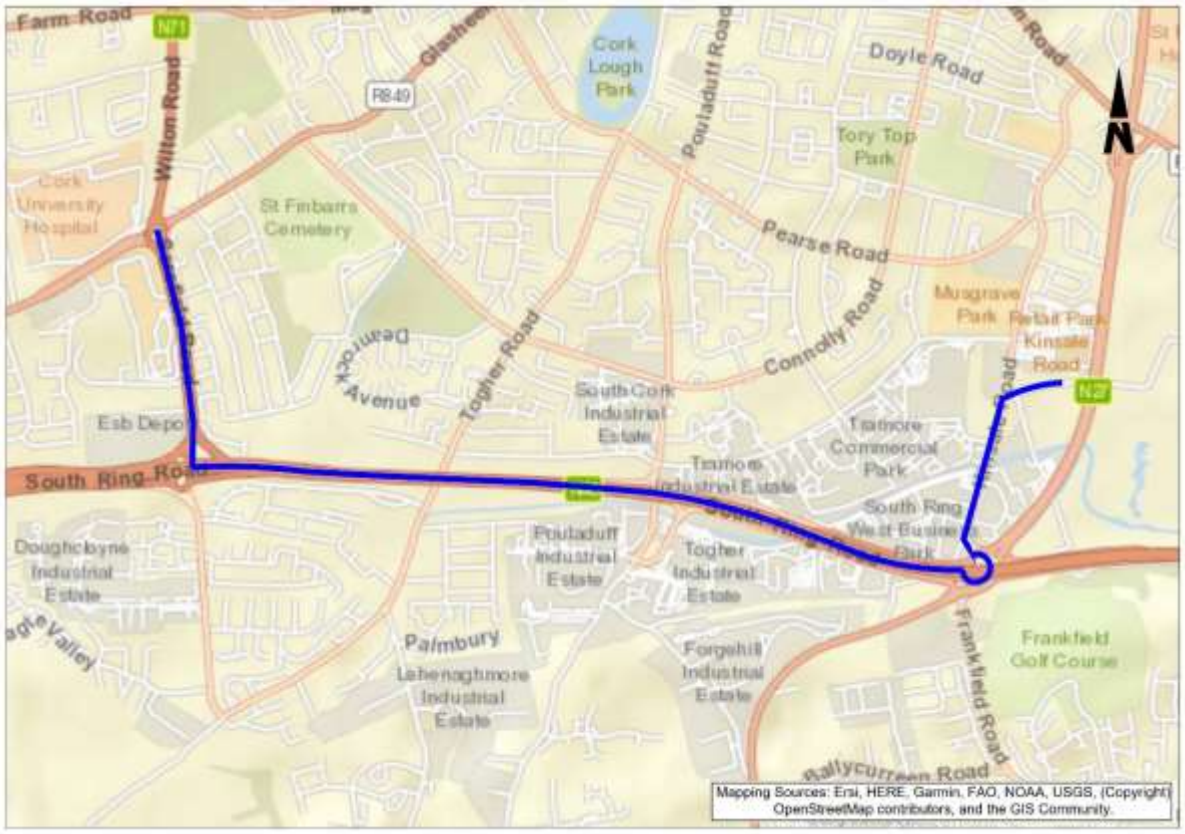


Figure 10.69 Route Option 16 (shown in blue line)

Westbound: For Route Option 16 the bus travels on Mick Barry Road and turns left along the Kinsale Road to Kinsale Road Roundabout. At Kinsale Road Roundabout the bus travels westbound on to the N40 South Ring Road towards the Sarsfield Road Roundabout. It then proceeds up Sarsfield Road to the Wilton Road Roundabout to Cork University Hospital.

Eastbound: The eastbound route follows the same route as the westbound routing.

Indicative Scheme Design

Figure 10.70 illustrates the indicative scheme design for Route Option 16 as well as locations of indicative cross-sections.

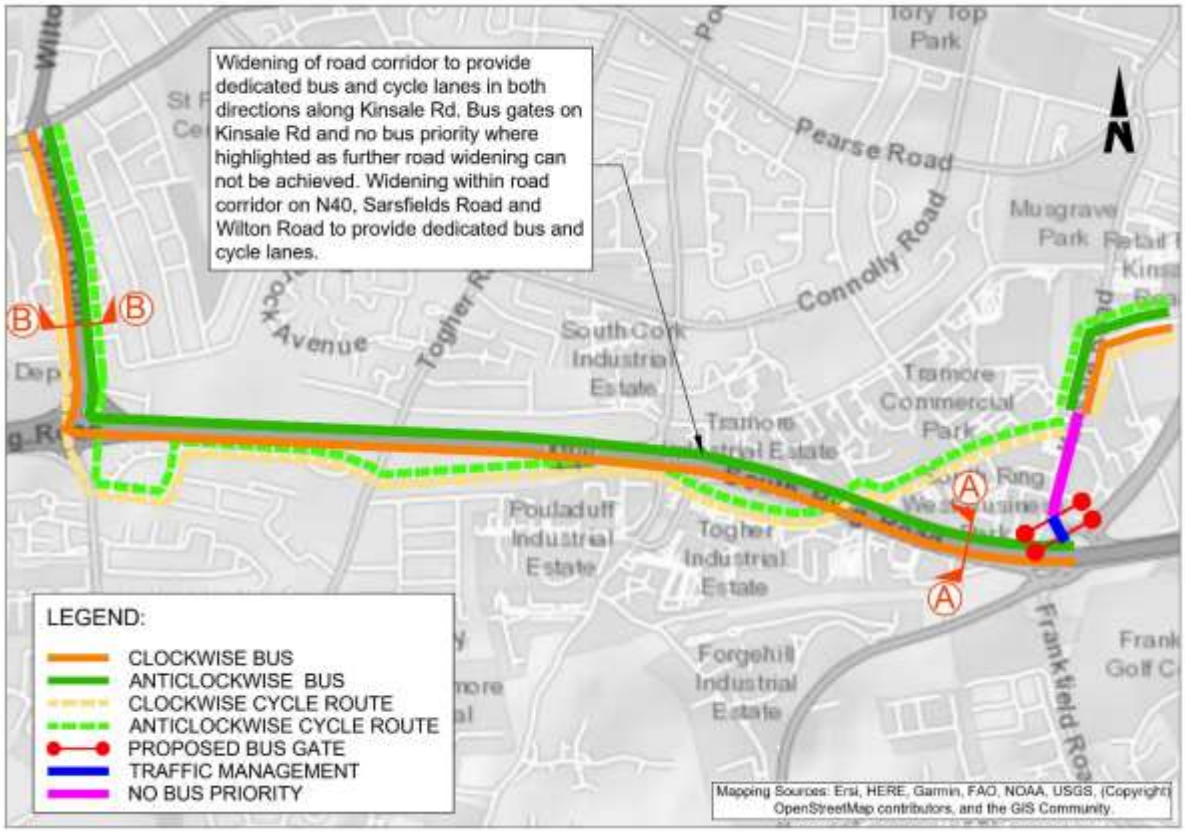


Figure 10.70 Route Option 16 Indicative Scheme Design

Bus lanes will be provided in both directions on the Mick Barry Road, Kinsale Road, South Ring Road and Sarsfield Road. There are short sections of these roads where bus lanes in both directions aren't feasible and bus priority will be maintained by way of a bus gate at the southern end of the Kinsale Road.

Cycle tracks will be provided along Mick Barry Road and Kinsale Road. A cyclist route will be provided through Tramore Commercial Park that runs under the South Ring Road, where the route will continue through Togher & Pouladuff Industrial Estate. Cycle tracks will continue through Westside Estate, Elmvale Court, The Headlands and Elm Vale to Sarsfield Road where they will continue to Wilton Road Roundabout and Cork University Hospital. A cross-section of South Ring Road is presented in Figure 10.71.

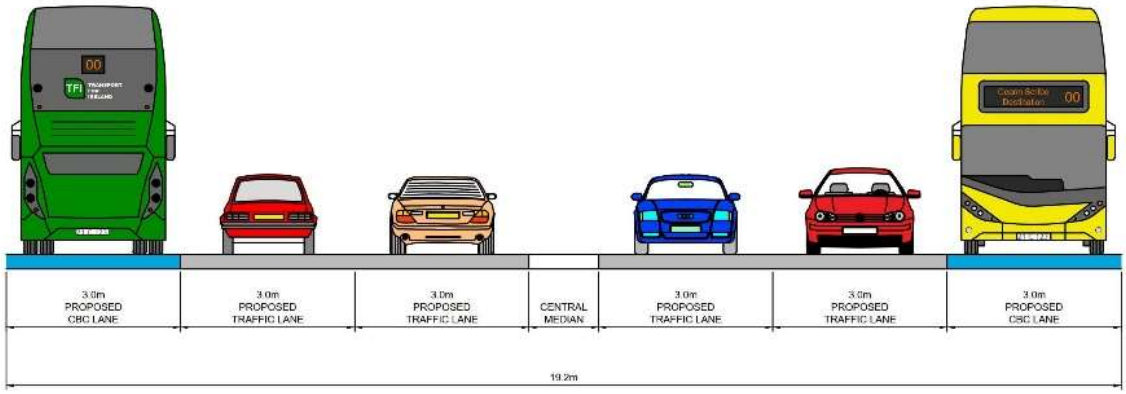


Figure 10.71 Typical National Primary Road Cross Section (A-A)

A cross-section of Sarsfield Road is presented in Figure 10.72.

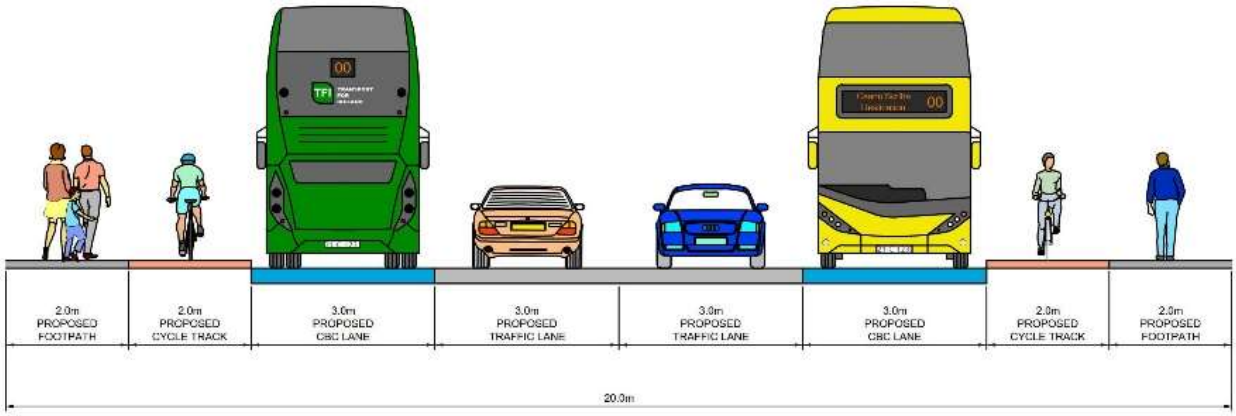


Figure 10.72 Typical Full Priority Cross Section (B-B)

10.4 Stage 2 Options Assessment

Details of the 'Stage 2' route options assessment undertaken for the Orbital STC are presented in Appendix A. A summary of the ranking of route options against the scheme sub-criteria is presented in Table 10.2 below.

Table 10.2 Route Options Assessment (Summary Sub -Criteria)

Assessment Criteria	Sub -Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	Option 12	Option 13	Option 14	Option 15	Option 16
Economy	Capital Cost																
	Average Journey Time																
	Journey Time Reliability																
Integration	Land Use Integration																
	Residential and Employment Catchments																
	Transport Integration																
	Cyclist Integration																
	Pedestrian Integration																
Accessibility and Social Inclusion	Key Trip Attractors																
	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																

10.5 Conclusion

A summary of the assessment is shown in Table 10.3 below

Table 10.3 Route Options Assessment Summary (Main Criteria)

Assessment Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	Option 12	Option 13	Option 14	Option 15	Option 16
Economy																
Integration																
Accessibility and Social Inclusion																
Safety																
Environment																

Based on the above assessments it has been determined that Route Option 11 is the emerging preferred route option for the following reasons:

- Option 11 has significant advantages over the other routes on economy as it is has a lower cost routes and provides a higher percentage of dedicated bus lanes with contributes to lower journey and times and better reliability.
- Option 11 has advantages from an integration perspective as it has a relatively strong residential and employment catchments. This option has advantages from a land use integration perspective as integrates with light industry and related uses and educational zoning located off Tramore Road and Connolly Road. This route integrates with sustainable residential neighbourhood zoning elswhere along the route.
- Option 11 has advantages on accessibility and social inclusion criterion as it connects with key trip attractors along this route include: Leisure - Musgrave Park, Clashduv Park, Ballypheane GAA Club, Education - Gaelscoil an Teaghlaigh Naofa, Morning Star National School; Health - CUH, Abbeyville Veterinary Hospital; Commercial/Retail - South Cork Industrial Estate, Tramore Industrial Estate.
- Option 11 has significant advantages under the environmental criterion as it uses the existing road network and therefore has advantages over other options with respect to the potential impact on soils and geology, biodiversity and water resources.

11. Proposed Scheme

11.1 Introduction

The Orbital BusConnects network comprises of six sectors that make up the entirety of the orbital services which are proposed to serve a multitude of key destinations outside of the City Centre including Cork University Hospital, Apple, Black Ash Park & Ride and Mahon Point. The upgraded orbital network will, support Urban Expansion Areas and interchange with radial bus services. See Figure 11.1 for overall view of the proposed sectors.

In the Northwest the route will provide connectivity with current and future residential development in and around the suburban areas between Hollyhill and Blackpool. This route will utilise the proposed Cork Northern Distributor Road (NDR) which is proposed to connect at Apple in Hollyhill and required to be multi-modal to cater for bus movements as well as segregated cycle and pedestrian infrastructure.

In the Northeast the route will cater for the north side of Cork City that comprises Tivoli Docks, Mayfield, Blackpool, and The Glen before crossing the River Lee and connecting with the City's Southern suburbs via the Jack Lynch Tunnel. In the Southeast the route will run from the Jack Lynch Tunnel through the connecting suburban areas of Mahon, Blackrock, Ballintemple and Douglas.

In the South Central area the route will run from Douglas through the connecting residential areas of Frankfield and Grange to the Black Ash Park & Ride. This route will utilise the proposed bridge over Ballybrack woods that will provide traffic relief to an already congested area, while also catering for pedestrian and cyclists' movements.

In the Southwest the route will cover the areas around Togher, Ballyphehane, The Lough, Glasheen and Wilton. In the West will cater for the areas around Bishopstown, Wilton, Dennehy's Cross, The Mardyke, Sunday's Well and Shanakiel while also providing a route from Cork University Hospital to Apple in Hollyhill.

Figure 11.1 Combined Sector Overview

11.2 Emerging Preferred Route

Northwest

The emerging preferred route for the Northwest is proposed to travel from Apple in Hollyhill, along St. Anthony's Park / David McCarthy Road, Kilmore Heights, Kilmore Road Lower before turning on to Knocknaheeny Avenue through to Harbour View Road. It will then travel along Mount Agnes Road before turning on to Fair Hill. From there, it advances to Knockpogue Avenue and to Popham's Road where it proceeds on to the junction at Fairfield Avenue and Brothers Delaney Road where it will connect with Blackpool Shopping Centre. See Figure 11.2 for the Northwest emerging preferred route.

Figure 11.2 North West Overview

Northeast

The route will continue from Blackpool Shopping Centre on to the North City Link Road and travel via Glen Avenue, Ballyhooly Road and Old Youghal Road to the North Ring Road. The route continues down on the North Ring Road and through the Silversprings Interchange and via the Lower Glanmire Road, will travel to and through the Jack Lynch tunnel. See Figure 11.3 for the Northeast emerging preferred route.

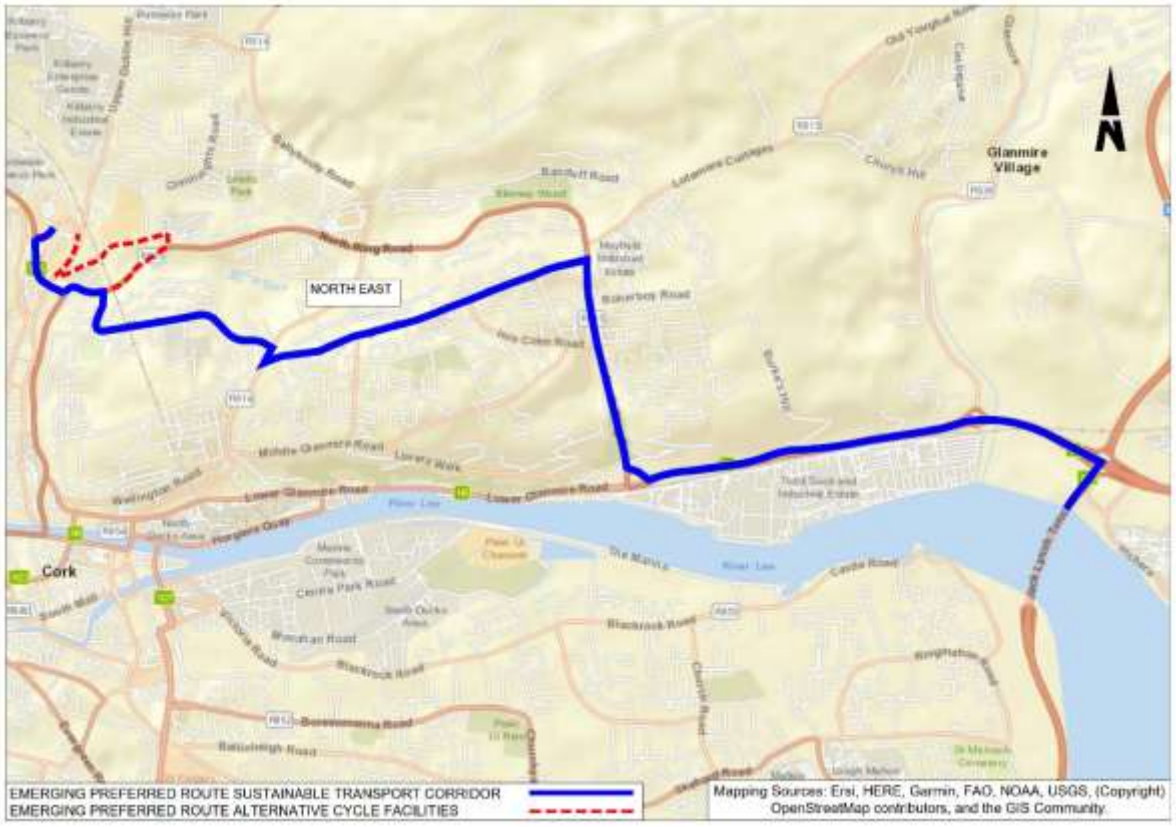


Figure 11.3 Northeast Overview

Southeast

Travelling through the Jack Lynch tunnel, the route moves on to Loughmahon Link Road and through to Skehard road. From Skehard Road the route will connect to Douglas Village via Well Road. See Figure 11.4 for the Southeast emerging preferred route.

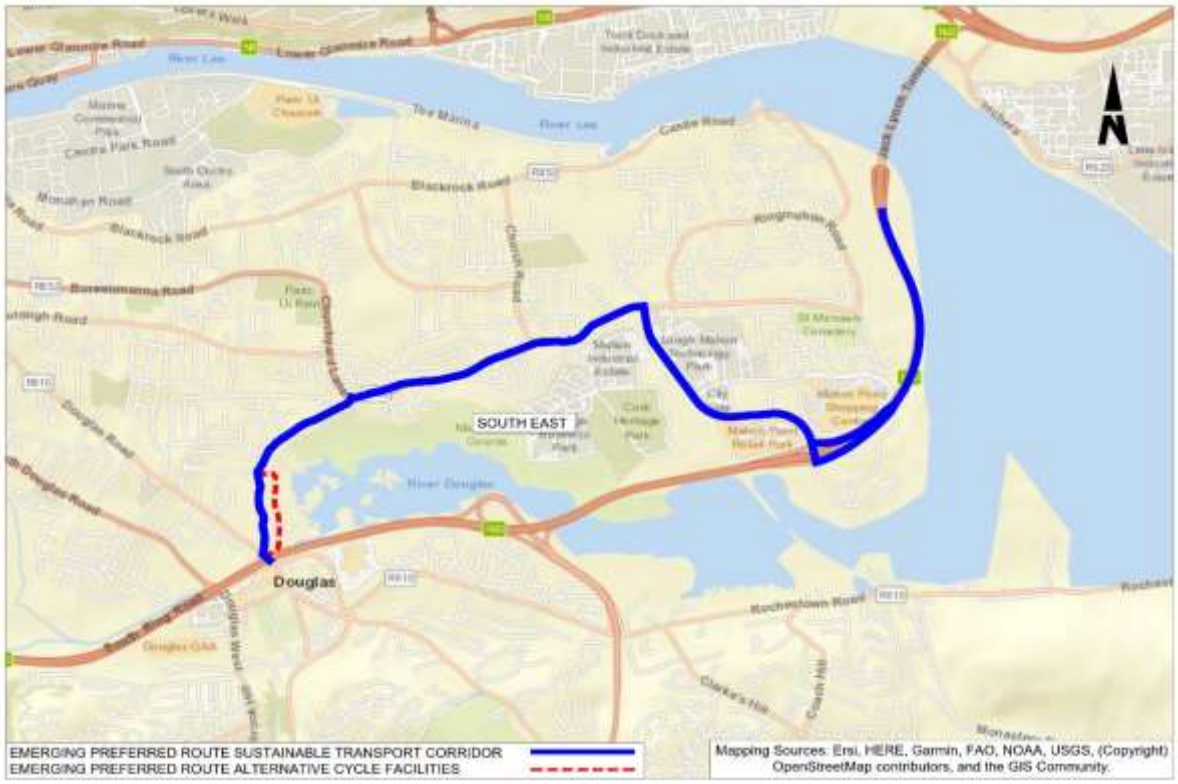


Figure 11.4 Southeast Overview

South Central

The route continues from Well Road on to Douglas Road, through Douglas Village via East Douglas Street where it will approach the Fingerpost Roundabout. At the roundabout, it will take Carrigaline Road to connect with Grange Road and Donnybrook Hill via a newly proposed bridge that traverses Ballybrack Woods (Mangala Valley). Upon reaching the junction at Donnybrook Hill and Grange Road, the route will travel along the latter through the Grange and Frankfield area, where it will proceed on to Ballycurreen Road. After Ballycurreen Road, the route will move down the Kinsale Road towards the Kinsale Road Roundabout. Upon going through the Kinsale Road Roundabout, the route will move up Kinsale Road to approach Mick Barry Road and the Black Ash Park & Ride. See Figure 11.5 for the South Central emerging preferred route.

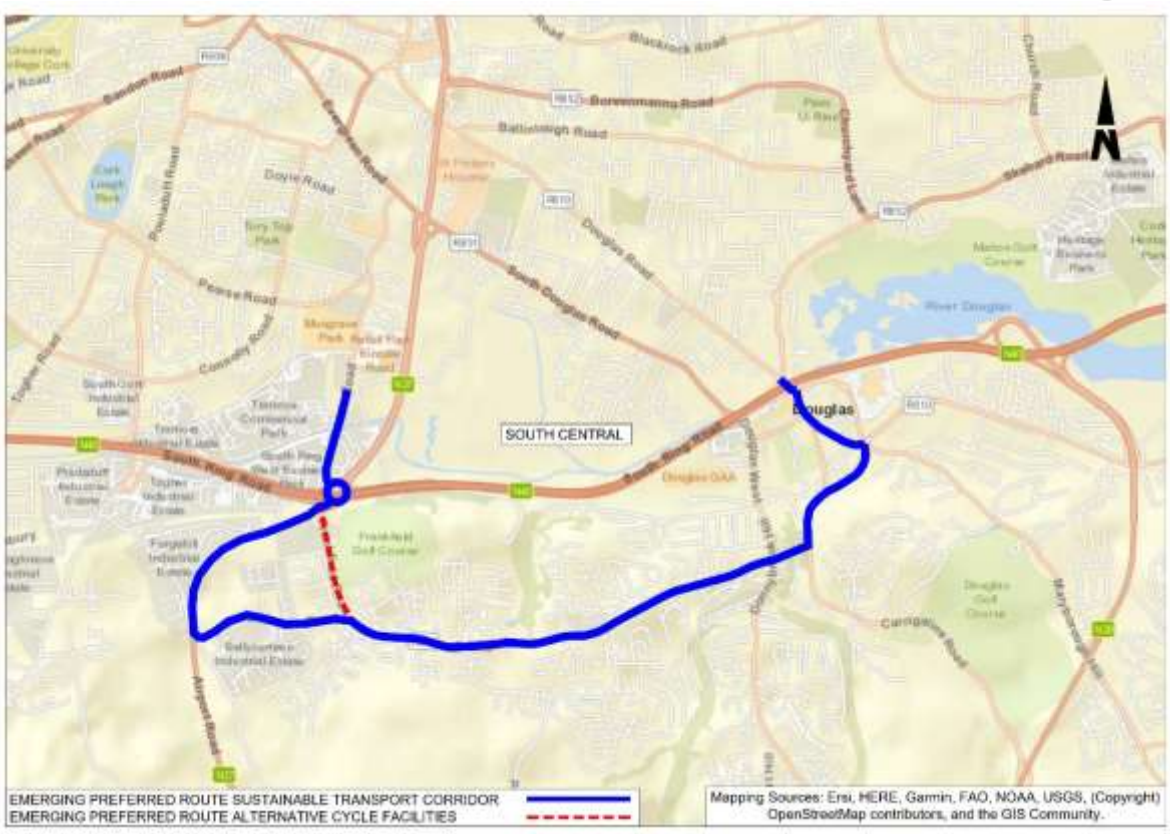


Figure 11.5 South Central

Southwest

From Mick Barry Road and the Black Ash Park & Ride, the route will take Tramore Road to Connolly Road via Lower Friars Walk. Travelling along Connolly Road, the route will proceed towards Riverview Estate via Vicar's Road and Clashduv Road. The route will progress through Riverview Estate, Sandymount Grove and Summerstown Grove before taking Summerstown Road to Glasheen Road, Wilton Roundabout and Cork University Hospital. See Figure 11.6 for the Southwest emerging preferred route.

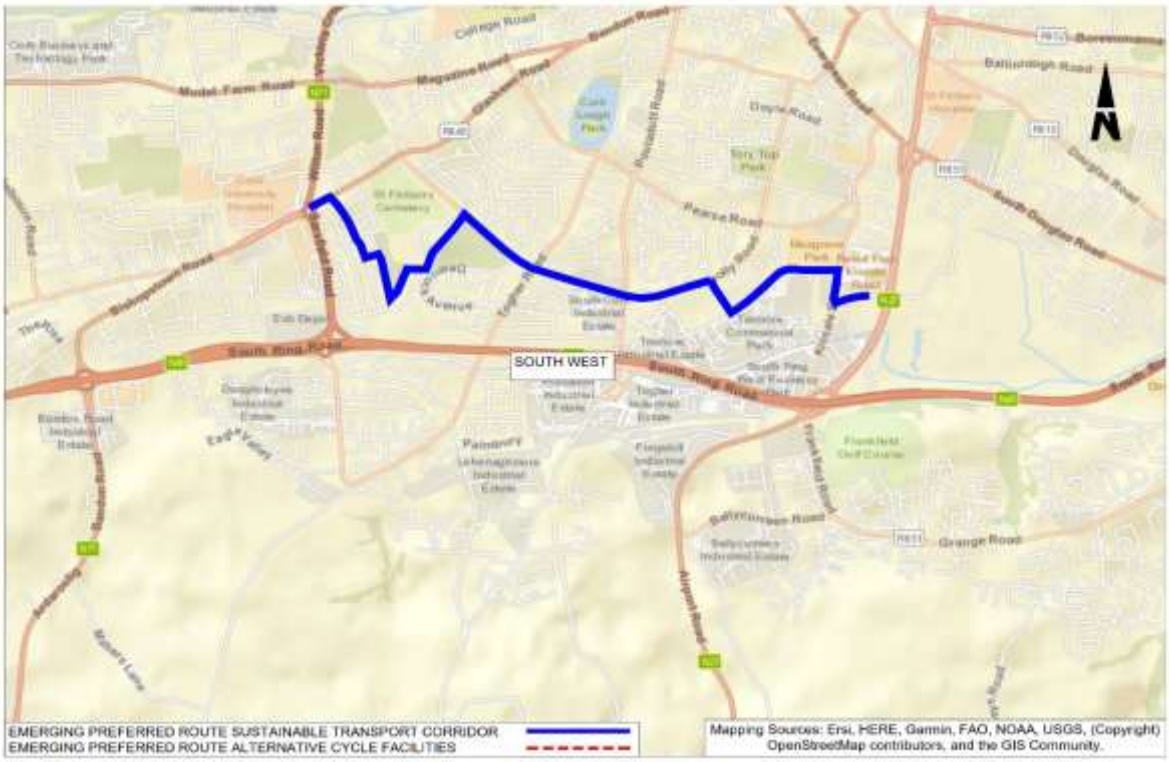


Figure 11.6 South West

West

The emerging preferred route will move from Cork University Hospital on to Wilton Road through Dennehy's Cross and Victoria Cross to Victoria Cross Road. Moving along Victoria Cross Road, the route will on to Western Road, taking Thomas Davis Bridge and Sunday's Well Road northbound to Shanakiel Road. From Shanakiel Road, it will advance to the main entrance at Apple via Harbour View Road and Tadhg Barry Road, where it will join with the Northwest route. See Figure 11.7 for the West emerging preferred route.

Figure 11.7 West

An overview of the emerging preferred route is shown in Figure 11.8 below.

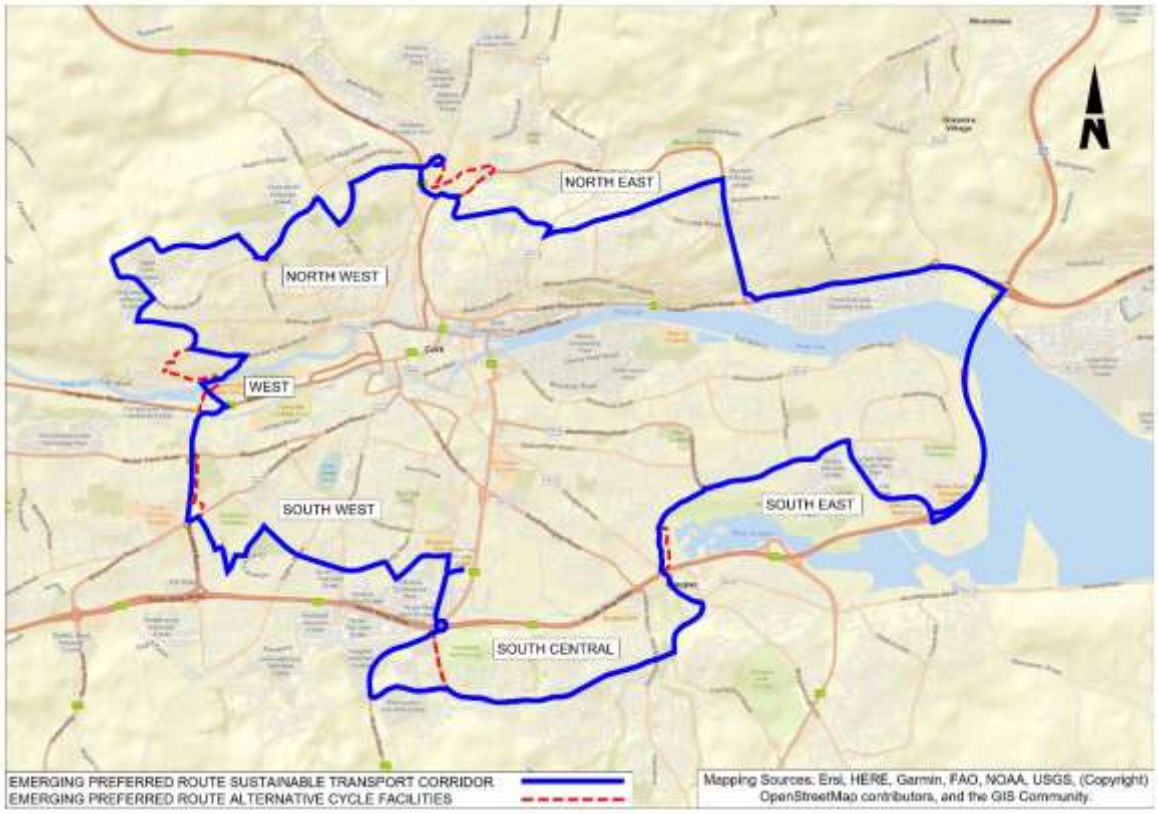


Figure 11.8 Combined Emerging Preferred Route Overview

12. Next Steps

12.1 Introduction

This report has identified an emerging preferred route for the bus infrastructure along this STC for which a concept design has been developed. A public consultation process will be undertaken to provide an opportunity for feedback and input into this concept stage of the schemes.

12.2 Extent of Orbital STC included in the first phase of BusConnects

The extent of the Orbital STC included in the first phase of the BusConnects Cork Implementation Project is outlined in Figure 12.1 Sunday's Well to Hollyhill and Figure 12.2 Kinsale Road to Douglas and Well Road Cycle Scheme.

Figure 12.1 STC L Sunday's Well to Hollyhill

STC L Sunday's Well to Hollyhill

The Sunday's Well to Hollyhill Sustainable Transport Corridor (STC L) commences on the Western Road close to pedestrian access to Mardyke Walk and travels over the Thomas Davis Bridge to connect with Sunday's Well Road. The STC proceeds on Shanakiel Road to connect with Blarney Road and Harbour View Road. Sunday's Well Road and Shanakiel Road are physically constrained, and it is not possible to provide dedicated bus lanes. Priority will be provided for buses through traffic signals at the junction of Sunday's Well and Western Road and the junction of Sunday's Well Road and Shanakiel Road. On Blarney Road and Harbour View Road dedicated bus lanes and cycle tracks are proposed in both directions.

Connectivity for cyclists includes a proposal for a new bridge over the River Lee in the vicinity of the Mardyke Sports Grounds. The cycle route is proposed to travel along a 'quietway' along Rose Hill Upper. From Rose Hill Upper the cycle route connects to Shanakiel Road through the residential development site at St Kevin's. This route provides a better gradient for cyclists and avoids the most constrained sections of Sunday's Well and Shanakiel Road.

STC K Kinsale Road to Douglas and Well Road Cycle Scheme

The Kinsale Road to Douglas Sustainable Transport Corridor (STC K) commences close to the Bull McCabe pub on the eastern side of the Ballycurreen Road junction with the Kinsale Road (N27). The STC proceeds on Ballycurren Road to Grange Road. Along this section of the STC a footpath, bus lane, and general traffic lane is provided in both directions.

Cyclists take an alternative route to buses commencing instead at the Frankfield Road and Kinsale Road junction and heading north along the Frankfield Road. It is proposed to provide a footpath, cycle track, and general traffic lane in each direction for this section. At the junction of Ballycurreen Road and Grange Road the STCs for cyclists and buses merge and travel east along the Grange Road. The STC proceeds east from the junction of Ballycurreen Road and Grange Road where it travels along Grange Road to Donnybrook Hill. On Grange Road it is proposed to provide a footpath, cycle track bus lane and general traffic lane in each direction.

At the junction of Grange Road and Donnybrook Hill a new bridge is proposed over the Mangala Valley to connect with the Carrigaline Road. The STC proceeds north along the Carrigaline Road to connect with Douglas at the Fingerpost Roundabout. Priority for buses is provided along the entire route consisting of dedicated bus lanes in both directions.

The Well Road Cycle scheme is proposed to provide walking and cycling connectivity between Douglas and Skehard Road. A 'quietway' cycle route is proposed along Douglas Hall and Riverbank. A 'quietway' involves cyclist sharing the traffic lane with general traffic which is relatively low in volume. The proposal will require a reorganisation of existing access arrangements at Douglas Wells Apartments to facilitate pedestrians and cyclists travelling between Riverbank and Douglas Hall Lawn. Cycle tracks are proposed between the roundabout on Well Road at Douglas Hall Lawn and Skehard Road.

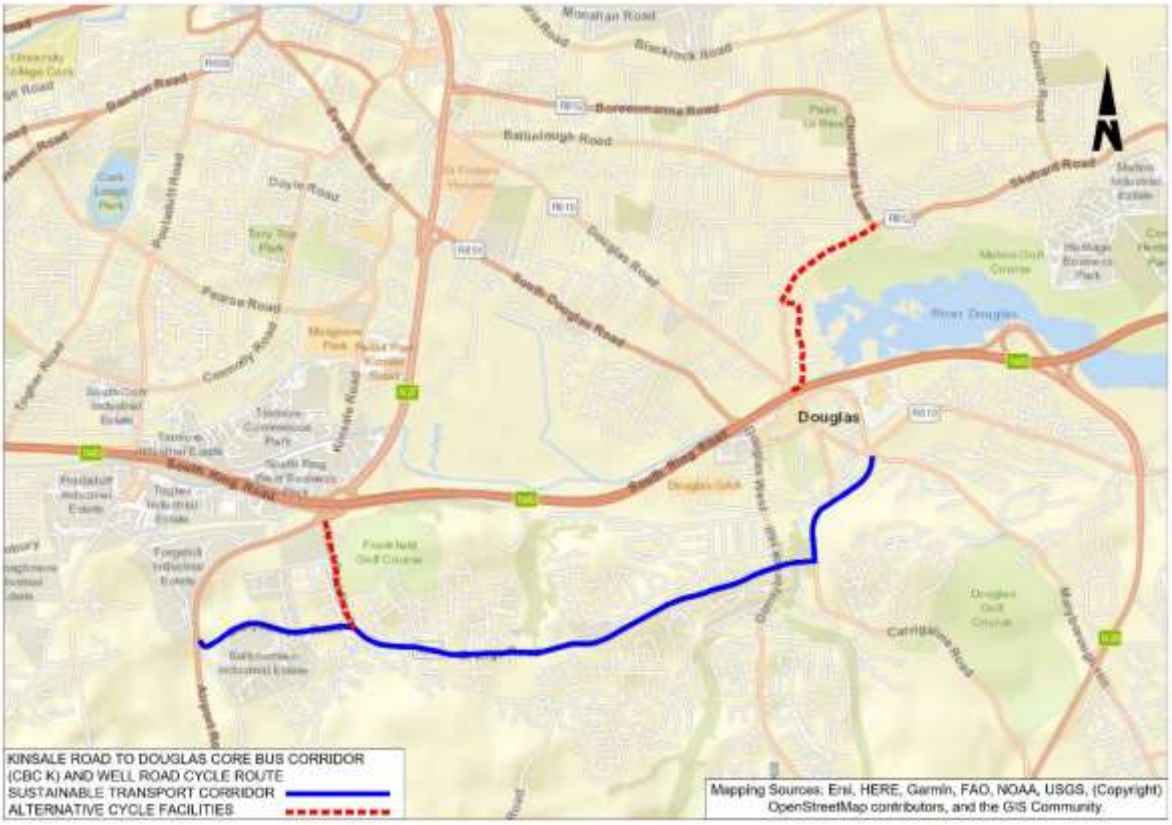


Figure 12.2 STC K Kinsale Road to Douglas and Well Road Cycle Scheme

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