

Client:

Dún Laoghaire-Rathdown County Council



Project:

# Living Streets: Coastal Mobility Route

Report:

## Options Assessment Report



# Document Control Sheet

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# Table of Contents

## INTRODUCTION 1

Purpose .....	1
Background .....	1

## POLICY CONTEXT, PROJECT NEED & OBJECTIVES ..... 2

Policy Context .....	2
Project Need .....	6
Project Objectives .....	9

## DESIGN GUIDANCE..... 10

## EXISTING CONDITIONS, CONSTRAINTS AND OPPORTUNITIES..... 11

Newtown Avenue Section A.....	11
Crofton Road and Queens Road Section B.....	12
Coal Quay Bridge Section C.....	13
Marine Road and Harbour Road Junction Section D.....	15
Park Road and Windsor Terrace Section E.....	16
Sandycove Avenue Section F.....	17

## OPTIONS ASSESSMENT METHODOLOGY ..... 19

1. Capital Cost.....	20
2. Integration .....	20
3. Accessibility and Social Inclusion .....	21
4. Safety .....	21
5. Environment.....	21

## COASTAL MOBILITY ROUTE – HIGH LEVEL OPTIONS ..... 23

Options Development.....	23
Options Assessment .....	24

## NEWTOWN AVENUE (SECTION A) ..... 27

Option Development .....	27
Option Assessment.....	28

## CROFTON ROAD AND QUEENS ROAD (SECTION B) ..... 30

Options Development.....	30
Options Assessment .....	32

## COAL QUAY BRIDGE (SECTION C) ..... 34

Options Development.....	34
Options Assessment .....	37

## MARINE ROAD AND HARBOUR ROAD JUNCTION (SECTION D) ..... 39

Options Development.....	39
Options Development.....	40

## PARK ROAD AND WINDSOR TERRACE (SECTION E) ..... 42

Options Development.....	42
Options Assessment .....	44

## SANDYCOVE AVENUE (SECTION F) ..... 46

Options Development.....	46
Options Assessment .....	48

## BUS ROUTING 50

Options Development.....	50
Options Assessment .....	52

# INTRODUCTION

## Purpose

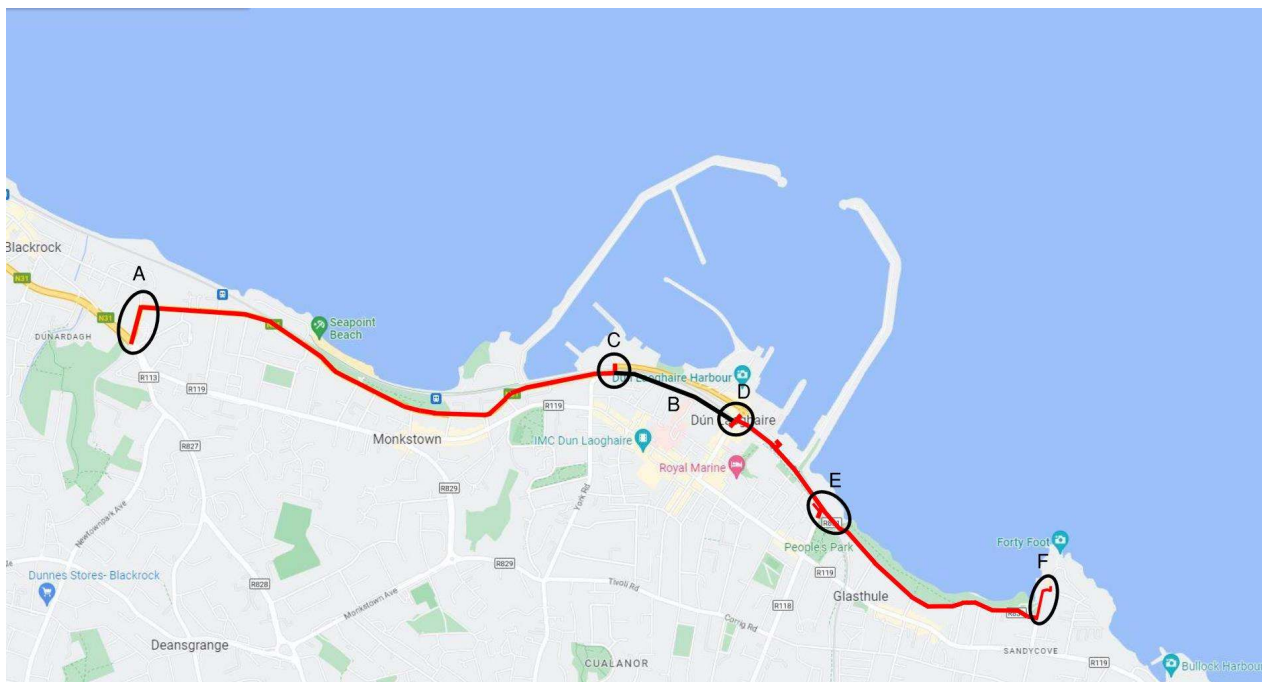
The purpose of this report is to assess the proposed options for the Living Streets: Coastal Mobility Route project. Several options have been developed, each option has been assessed relative to one another and a preferred option is recommended.

## Background

During 2020 and 2021, Dún Laoghaire-Rathdown County Council (DLRCC) introduced a number of interventions across the county in response to the Covid-19 pandemic. Part of this involved creating a one-way traffic system along the coast in order to free up space to create a high quality segregated two-way cycle lane. This intervention created a cycle route linking Blackrock to Sandycove and was named the Coastal Mobility Route.

DLRCC, in conjunction with the NTA, are working on reviewing these interventions with a view to developing permanent solutions. Barry Transportation (BT) were appointed by DLRCC to develop permanent design solutions for a number of these locations. This report focuses on one of these areas, the Coastal Mobility Route.

The study area for this project is shown in the figure below, for the purpose of the options assessment studies several sub-sections were created, and these are lettered A to F as shown below.



**Figure 1 – Study Area Sections along the Coastal Mobility Route**

# POLICY CONTEXT, PROJECT NEED & OBJECTIVES

## Policy Context

### National Policy

This scheme will support objectives set out in the following national policies:

- Project Ireland - National Development Plan 2021 - 2030;
- National Planning Framework – Project Ireland 2040;
- Climate Action Plan 2023 and Climate Action and Low Carbon Development (Amendment) Bill 2021;
- Strategic Investment Framework for Land Transport (SIFLT) 2015 and National Investment Framework for Transport in Ireland is my (NIFTI);
- Smarter Travel – A New Transport Policy for Ireland 2009 – 2020;
- Road Safety Authority (RSA), Road Safety Strategy, 2013-2020;

### Regional Policy

This scheme will support the objectives of the draft Greater Dublin Area (GDA) Cycle Network Plan (2022), the NTA Transport Strategy for the Greater Dublin Area 2022-2042 and the draft National Cycle Network Plan (2022). The CMR has been identified as a primary route and greenway as part of these plans as shown below.

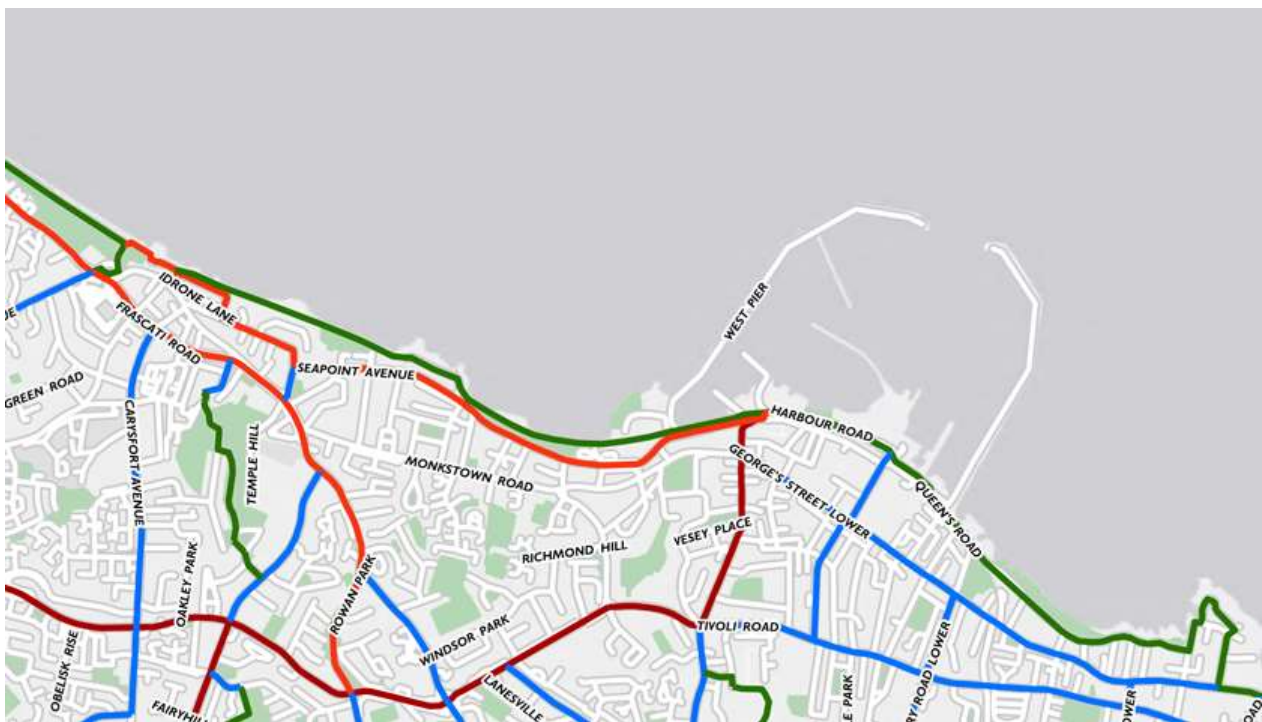


Figure 2: GDA Cycle Network Plan

## Local Policy

The scheme will support the specific objectives of the DLR County Development Plan 2022-2028, which include the following:

Objective number and name	Objective
T6 Quality Bus Network/Bus Connects	It is a Policy Objective to co-operate with the NTA and other relevant agencies to facilitate the implementation of the bus network measures as set out in the NTA's 'Greater Dublin Area Transport 2016-2035' and 'Integrated Implementation Plan 2019-2024' and the BusConnects Programme, and to extend the bus network to other areas where appropriate subject to design, environmental assessment, public consultation, approval, finance, and resources.
T7 Public Transport Interchanges	It is a Policy Objective to facilitate the provision of quality public transport interchanges at strategic rail, Luas stations and Core Bus Corridors within the County in accordance with national and regional guidelines in order to facilitate focussed access to multiple public transport modes and to maximize the movement of people via sustainable modes.
T11 Walking and Cycling	It is a Policy Objective to secure the development of a high quality, fully connected and inclusive walking and cycling network across the County and the integration of walking, cycling and physical activity with placemaking including public realm permeability improvements.
T13 County Cycle Network	It is a Policy Objective to secure improvements to the County Cycle Network in accordance with the Dún Laoghaire-Rathdown Cycle Network Review whilst supporting the NTA on the development and implementation of the Greater Dublin Area Cycle Network Plan 2013 and subsequent revisions, subject to environmental assessment and route feasibility.
T14 Coastal Cycling Infrastructure Objective	It is a Policy Objective of the Council to promote the development of the Sutton to Sandycove Promenade and Cycleway, as a component part of the National East Coast Trail Cycle Route and also the Dublin Bay Trail from the boundary with Dublin City to Wicklow County.
T23 Roads and Streets	It is a Policy Objective, in conjunction and co-operation with other transport bodies and authorities such as the TII and the NTA, to secure improvements to the County road network – including improved pedestrian and cycle facilities.
PHP37 Public Realm Design	It is a Policy Objective that all development proposals, whether in established areas or in new growth nodes, should contribute positively to an enhanced public realm and should demonstrate that the highest quality in public realm design is achieved.
EI6 Sustainable Drainage Systems	It is a Policy Objective to ensure that all development proposals incorporate Sustainable Drainage Systems (SuDS)

The scheme will also support the specific objectives of the Interim Dún Laoghaire Urban Framework Plan, which include the following:

Objective number	Objective
8	Provide a network of attractive and green urban spaces and public realm to enhance the user experience while also tackling climate action to create a low carbon, climate resilient and sustainable town.
14	Build on the temporary Covid 19 emergency works and strengthen cycling and walking links between Dún Laoghaire, Blackrock and Monkstown along Seapoint Avenue and Crofton Road and between Dún Laoghaire, Glasthule and Sandycove along Queen’s Road and Newtownsmith.
24	To implement the DLR Cycle Network objectives within the Interim Framework Plan area.



**Figure 3: DLR Development Plan Map**

The DLR development plan interactive map can be found online at:

<https://dlrcocouncil.maps.arcgis.com/apps/webappviewer/index.html?id=6e5e0fb0384a47dcb61cbf4e36eb6dcc>

## BusConnects

BusConnects is a programme of public transport investment in Ireland's major urban centres. It is developed and managed by the National Transport Authority (NTA), and funded by Project Ireland 2040. It is a key part of the Government's policy to improve public transport and address climate change in Dublin and other cities across Ireland. BusConnects is a key component within a number of Government and regional policies which include the National Development Plan 2021-2030, Climate Action Plan 2023, the National Planning Framework 2040 and the Greater Dublin Area Transport Strategy 2022-2042.

BusConnects includes many elements, but the relevant ones to this scheme are the network re-design and the building of new core corridors, which are presented below.

### Network Re-Design

The National Transport Authority published the new Dublin Area Bus Network in September 2020. The overall objective of the improved network is a significant increase in capacity and frequency for customers, as well as more evening and weekend services for all spines.

The implementation of the New Network will take place on a phased basis over a number of years, the first phase of the new BusConnects network for Dublin was launched in June 2021 and it is expected to be fully implemented by the end of 2024.

The new network is expected to be in place by the time this project has finished construction and so the scheme is being designed with the future network in mind, rather than the existing one.



**BusConnects New Network in Dun Laoghaire**

### BusConnects Belfield/Blackrock to City Centre Core Bus Corridor

The NTA have progressed the design of this CBC and the planning application was lodged in May 2022. The route travels down Frascati Road and will interact with this scheme at the junction with Newtown Avenue. A screenshot of the proposed design for this junction is shown below.





BusConnects – Proposed Newtown Avenue Junction

## Project Need

The mobility and public realm measures introduced to create the Coastal Mobility Route in 2020 have been proven to be highly effective with the majority of residents, businesses and visitors wanting the changes to be made permanent. The temporary scheme has been studied and independently evaluated by a team from Technical University Dublin and detailed in the Covid 19 Mobility Review report. This supports making the scheme permanent, and the report's recommendations are discussed below.

Formalising and improving these measures by making them permanent will present further opportunities to provide an improved environment for pedestrians and cyclists and to improve the urban realm along the Coastal Mobility Route. This will strongly support the objectives in national, regional, and local policy documents that are mentioned above.

## Technical University Dublin, Coastal Mobility Route - Mobility Study

Dún Laoghaire-Rathdown County Council engaged the School of Transport Engineering, Environment and Planning in TUD to undertake a preliminary evaluation and review of the Council's Covid-19 mobility and public realm response along the Coastal Mobility Route. An Interim Report was published in November 2021 and a second report was published in July 2022 studying the effects of these temporary measures.

The 2020-2021 study found high levels of walking and cycling along the Coastal Mobility Route; a large reduction in public transport passenger numbers, and vehicular traffic patterns that shifted from traditional peak-hour commuting to more locally based and off-peak trip making and a redistribution of traffic on the network. While there were limited specific pedestrian improvements made as part of the CMR's implementation, pedestrians have benefited from a safer, quieter, and less polluted environment, due to the substantial reduction in adjacent motor vehicles. The study also found that there was substantially positive feedback from key stakeholders, particularly regarding approaches to its design and implementation as an experimental active travel measure. As Covid-19 restrictions reduced, there has been a shift again in the patterns of usage in all modes of transport. As restriction levels eased, pedestrian and cycling volumes reduced and have shifted back more to a city centre focus (rather than suburban focus), and to more traditional commuter style patterns, although they are still different to before the pandemic. The CMR has maintained its position as the highest performing cycle counter within the DLR Council area and is also a key performer across the whole of the NTA's Dublin cycle counter network. The CMR has become an established route in people's travel habits and there is evidence of a considerable demand for it over a wide range of time periods both on weekdays and weekends, unlike more commuter-focused cycle lanes such as Clonskeagh, which have high levels of weekday use but much lower levels of weekend use.

The following recommendations from the TUD mobility study help highlight the need for this project:

- It is important to maintain and continue to expand the network of safe cycling facilities including addressing any missing links in the network. This is particularly important to increasing participation and use by vulnerable users.
- There is scope to improve pedestrian priority and the wider pedestrian environment in several locations along the route of the CMR. Several priority areas for traffic-calming and pedestrian crossing interventions have been identified. These are at Seapoint Avenue, at the junction with Albany Avenue; and along the stretch of road at Old Dunleary Road from the junction of Cumberland St up towards the York Avenue junction.
- It is recommended that lower speed limits are actively considered along this route as well as on adjacent and 'competitive' inland routes. It is important that any measures are done together, so that routes such as Monkstown Road do not become more attractive to drivers than the coast.
- Continued traffic management and public realm interventions to promote mode transfer and adjust traffic routing onto higher order routes are recommended. Achieving sustainable urban mobility is a circular process: as vehicular traffic is reduced; improvements can be made to public transport and active travel modes. These measures can then help to alleviate vehicular traffic further.
- Mobility management measures should be considered to ensure these areas maintain and enhance liveability, including:
  - o traffic calming and reviewing speed limits to be more appropriate to the urban context
  - o design and installation of safe and regular pedestrian crossings
  - o maintaining and enhancing public transport priority, especially at junctions
  - o continued investment in active travel and public realm improvement.
- Overall, since the introduction of the CMR, there has been a large increase in cycling numbers along the route, with numbers still up c.115-126% on pre-pandemic times, while overall volumes of vehicle traffic and public transport passenger numbers are still down on pre-pandemic levels.
- Priority for buses in particular will need to continue to be improved. Concerns were raised by operators about the tendency to reroute bus services to facilitate (otherwise welcomed) public events, and also the need for responsiveness of traffic authorities to manage traffic signal controls in order to prioritise bus services.

## Technical University Dublin, Coastal Mobility Route - Business Study

The School of Transport Engineering, Environment and Planning also conducted a study on the impacts to local businesses, this study was published in March 2023. The findings from the evaluation indicate that the business community is broadly supportive of the CMR and its retention. However, almost all respondents expressed the opinion that issues associated with the route's current design should be addressed if the infrastructure is to be made permanent. Furthermore, developing the CMR as a permanent scheme would create a more integrated network and would bring additional economic to the area.

Respondents noted the improved impact on footfall, better working conditions, enhanced environmental health, greater tourism, improved links with Dublin, and significant reputational benefits to Dún Laoghaire, as among the positives associated with the implementation of the route. Most of the interview respondents reported that the CMR has been either positive or value neutral in terms of its impact on business turnover. As one might anticipate, the cycling sector in particular reported noticeable improvements in revenue. Many

of the businesses also noted the reduction of traffic, noise and air pollutants as contributing to an improved working environment for staff, and even helped attract new staff.

The following recommendations from the TUD report are relevant for this project:

- A wayfinding plan for all modes of transport should be implemented. It should be considered that this can and should be supported by the provision of a legible and clear network of public transport routes, free of congestion and with good priority to ensure a very high level of service.
- A car-parking management strategy, employing the use of smart technologies, would address both wayfinding issues and encourage a more optimal use of the car parking spaces available. Technologies such as sensors and cameras might be considered which could monitor free parking spaces and direct drivers to the most appropriate locations via digital signage such as LED-displays. This would help discourage unnecessary vehicle movement into/through the heart of the town centre and encourage park 'n' stride at the peripheries of the town.
- Regarding pedestrian and cycling safety, it is recommended that universal design principles, such as the early prioritisation of additional pedestrian crossing facilities, are incorporated into any future design improvements or permanent plan for the CMR. The introduction of traffic calming measures at strategic points along the CMR would reduce excessive vehicular and cycling speeds, and support pedestrian crossing movements, and some key locations have been highlighted. A 30 to 40km/hr traffic speed limit with a 30km/hr maximum speed limit in areas with high levels of pedestrian movement will also help manage pedestrian and cyclist safety.
- A delivery and loading plan should be considered which addresses issues being experienced by traders and other stakeholders. On Windsor Terrace, there may be an opportunity to make dedicated/time-restricted parking spaces available to delivery and other commercial vehicles in the public car park. The issue of height restrictions, which currently applies, might be overcome by providing managed access to a key to operate the barrier. A redesign of the south-western edge of the carpark, footpath and cycle-path to incorporate loading facilities on the main adjacent carriageway should also be considered.
- A public consultation process, which affords all stakeholders the opportunity to express concerns and feedback, should be considered as mobilising stakeholders as an external form of innovation would assist in optimising the design of the infrastructure and also enhance public confidence in Local Authority decision-making.

## Project Objectives

This scheme aims to provide safer and more attractive infrastructure for pedestrians and cyclists and enhance the public realm to provide for better quality of life in public spaces along the Coastal Mobility Route in Dún Laoghaire. The scheme will also seek to provide environmental benefits by introducing new areas of planting and sustainable urban drainage features.

The proposed scheme will aim deliver the following objectives:

- To provide continuous, high-quality, and consistent cycling and walking facilities, including providing a safe and direct route for cyclists between Blackrock Village and the Sandycove.
- To provide improved public realm areas and enhance the overall visual quality the Coastal Mobility Route, including providing attractive seating areas to encourage visitors to the area and to promote social cohesion.
- To provide increased landscaping, planting and SUDS elements to improve the environment.
- To promote modal shift from private vehicle to more sustainable modes including walking, cycling and public transport.
- To create a place for all ages and abilities.
- To enhance safety for all road users including vulnerable persons.

Modern design standards will be applied to sections of car dominated urban carriageways, this will include reducing vehicle lane widths, upgraded junction designs with segregated cycle facilities and improved crossings for pedestrians, and other measures to reduce vehicle speeds. This will create an appealing environment promoting a further modal shift to more sustainable modes of transport. The design team have reviewed the recommendations made by the two TUD reports and have factored this into the option selection process to address as many as possible.

## DESIGN GUIDANCE

The design and assessment of options will be done in accordance with guidance set-out in the Design Manual for Urban Roads (DMURS), National Investment Framework for Transport in Ireland (NIFTII), the National Cycle Manual, the Traffic Signs Manual and Traffic Management Guidelines. It will prioritise the user hierarchy set out in DMURS and NIFTI which promote sustainable forms of transport.

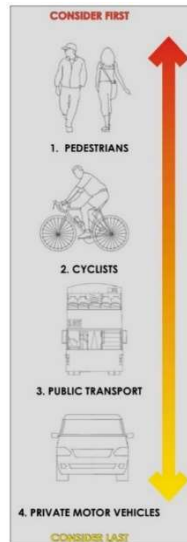


Figure 2-1 – DMURS Road User Hierarchy

## EXISTING CONDITIONS, CONSTRAINTS AND OPPORTUNITIES

### Newtown Avenue Section A

The existing layout consists of a two-way street linking Temple Road to Seapoint Avenue. The current layout has a footpath on either side of the road, a single traffic lane travelling north, two lanes travelling south, and parking on a section on the western side of the road as well as a bus stop. There are no cycle lanes provided.



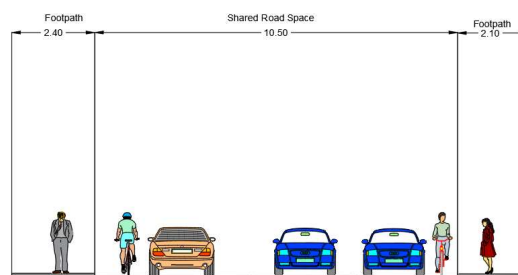
**Figure 4: Typical Layout of Section A**

Designers should consider several constraints linked to this section. These include the following:

- The available width along this section is roughly 15 meters.
- The presence of underground utilities may limit work proposals.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.
- The design of the road must take into account private property entrances.
- The design of the junction at Temple Road must take into account future BusConnects plans.
- There is on-street parking along a section of the western side of the street.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

- This section of the scheme provides an opportunity to enhance public realm space for pedestrians.
- There is an opportunity to extend the CMR down Newtown Avenue and linking it into the existing cycle path on Temple Road.
- There is an opportunity to reallocate road space, the wide carriageway may no longer be needed due to the reduced traffic levels since the introduction of the one-way system for the CMR.
- There is opportunity to improve pedestrian and cyclist facilities at junctions.
- There is an opportunity to include new landscaping and SUDs features.



**Figure 5: Typical Existing Cross Section for Section A**

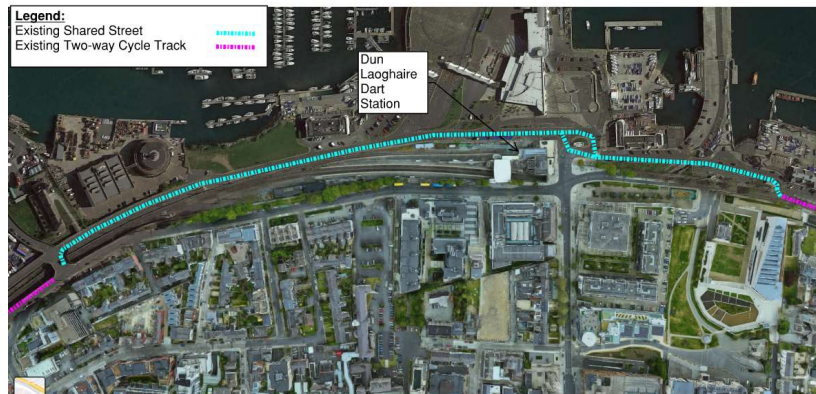
## Crofton Road and Queens Road Section B

The existing layout consists of a two-way street linking the Old Dunleary Road to Crofton Road. The current layout has a footpath on either side of the road, one traffic lane eastbound and one traffic lane westbound for the majority of the section. There is on-street car parking along the northern footpath, an EV charge point and some bus stops adjacent to the Dart station.



**Figure 6: Typical Layout of Section B**

This section of Queens Road consists of a two-way street that runs for roughly 100 meters from Crofton Road/Marine Road junction. The current layout has a footpath on either side of the road, one traffic lane south-eastbound and one traffic lane north-westbound, with occasional turning lanes or hatched central median.

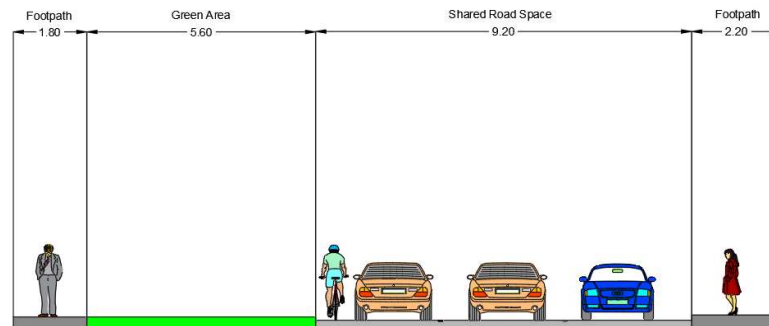


Designers should consider several constraints linked to this section. These include the following:

- The available width along this section varies between 11 and 20 meters.
- There are existing trees located along the northern and southern footpaths of this section of the scheme.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.
- The presence of underground and overhead utilities may limit work proposals.
- There is on-street parking along the street on Crofton Road.
- The area outside the Dart station has a high volume of pedestrians and is a very busy bus stop.
- Access to the Park Rite parking garage south of Queen's Road is needed for north-western and south-eastern traffic.
- The design outside the Dart Station must take into account future BusConnects plans.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

- This section of the scheme provides an opportunity to enhance public realm space along the street.
- There is an opportunity to provide a segregated cycle link between Queens Road and the Old Dunleary Road, connecting the two high quality and well used sections of the CMR and creating a continuous high-quality route along the seafront.
- There is an opportunity to provide better facilities outside the Dart Station.
- There is an opportunity to improve pedestrian and cycle facilities at crossings and junctions.
- There is an opportunity to include new landscaping and sustainable urban drainage features.



**Figure 7: Typical Existing Cross Section for Section B**

## Coal Quay Bridge Section C

This section of the scheme can be viewed as two different parts: Coal Quay Bridge and the junction between Clarence Street and the Old Dunleary Road.

Coal Quay Bridge is two-way, with one shared cycle and vehicle lane northbound and two shared cycle and vehicle lanes southbound. There are footpaths either side of the bridge and a pedestrian crossing on the southern side of the bridge. The segregated section of the CMR currently ends just before Coal Quay Bridge and cyclists are diverted towards Dun Laoghaire harbour where they share road space with cars. Many cyclists choose to continue down Crofton Road instead as this is a more direct route. This bridge is one of two access points to Dun Laoghaire harbour.

The Clarence Street and Old Dunleary is a T-junction with no possibility to turn left from Clarence Street on to the Old Dunleary Road. No traffic approaches from the Old Dunleary Road arm due to the one-way system. There is a footpath on either side of the road, two pedestrian crossings, one across Clarence Street and one across the Old Dunleary Road. If cyclists coming from the east do not make it onto the Coastal Mobility Route in one light cycle, the position cyclists must occupy to get back onto the coastal mobility route puts them in a vulnerable position relative to vehicles which are turning east from Clarence Street, including buses.





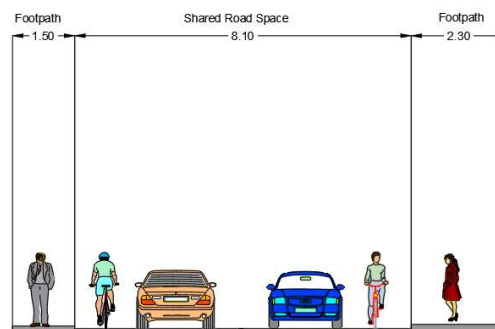
**Figure 8: Typical Layout of Section C**

Designers must consider several constraints linked to this section. These include the following:

- The available space is extremely limited given the southern boundary of private properties and northern boundary of the dart line.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.
- The available space on Coal Quay Bridge is 18 meters wide.
- The available space on Crofton Road is 12 meters wide.
- The presence of underground and overhead utilities may limit work proposals.
- The presence of street trees identified as protected in the DLR County Development Plan 2022-2028 may limit work proposals.
- The design of the junction must take into account the movement of buses and the future BusConnects plans.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

- This section of the scheme provides an opportunity to enhance pedestrian safety around Coal Quay Bridge, especially when crossing from one side of the bridge to the other.
- There is an opportunity to connect existing parts of the CMR.



**Figure 9: Typical Existing Cross Section for Section C**

## Marine Road and Harbour Road Junction Section D

The existing scenario at the Marine Road and Harbour Road junction consists of large corner radii, wide traffic lanes and limited cycle facilities through the junction. This junction is one of two access points to Dun Laoghaire harbour. There are footpaths on either side of every road leading into the junction, pedestrian crossings on all arms and advanced stop lines for cyclists on all approaches except the entrance to the harbour. All the roads have two lanes leading into the junction and one lane leading out of the junction.



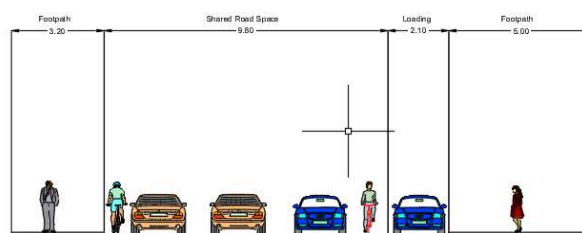
**Figure 10: Typical Layout of Section D**

Designers should consider several constraints linked to this section. These include the following:

- There are existing trees and landscaping elements located along footpaths of this section of the scheme.
- The presence of underground and overhead utilities may limit work proposals.
- The presence of various protected structures in the vicinity of the junction including bollards, chains and the Victoria Fountain.
- The design of the junction must take into account that the movement of buses in the future BusConnects plans.
- Several businesses along the Marine Road and Crofton Road, have a requirement for loading and there is a loading bay currently provided.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

- This section of the scheme provides an opportunity to enhance public realm space along the street and outside several cafes and restaurants.
- There is opportunity to greatly improve pedestrian and cycle facilities at crossings and junctions.
- There is an opportunity to include new landscaping and sustainable urban drainage features.
- There is an opportunity to connect existing parts of the CMR by providing segregated cycle lanes.
- There is an opportunity to add bicycle parking facilities adjacent to the Dart station.



**Figure 11: Typical Existing Cross Section for Section D**

## Park Road and Windsor Terrace Section E

This section of the scheme covers Park Road, Queen's Road and Windsor Terrace, it is adjacent to the People's Park and the Dún Laoghaire Baths.



Park Road is a northbound one-way street with on-street parking along the western footpath. North of the Park Road junction Queen's Road is northbound only for traffic, and south of the junction it is one-way southbound. There is a two-way segregated cycle lane on the sea side of the road.



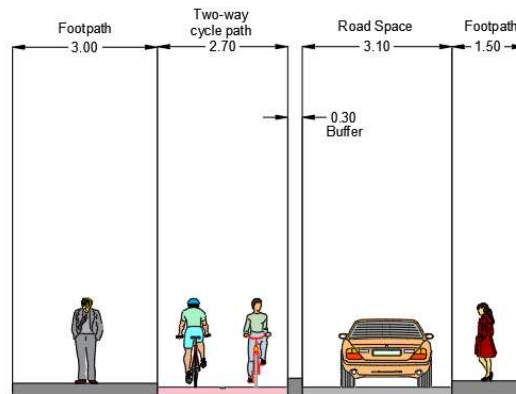
**Figure 12: Typical Layout of Section E**

Designers must consider several constraints linked to this section. These include the following:

- The available width on Park Road is 9 meters.
- The available width along Windsor Terrace is between 9 and 14 meters.
- The presence of underground and overhead utilities may limit work proposals.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.
- Access to the carpark along the seafront must be maintained.
- The current plans for the renovation and re-opening of the baths on the north side of the road must be taken into account. High volumes of pedestrians are expected in the future here.
- Businesses on the southern footpath have a need for public realm space considering how busy they can get.
- The Dún Laoghaire Bath have been recently opened and there may be high volumes of pedestrians here at times.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

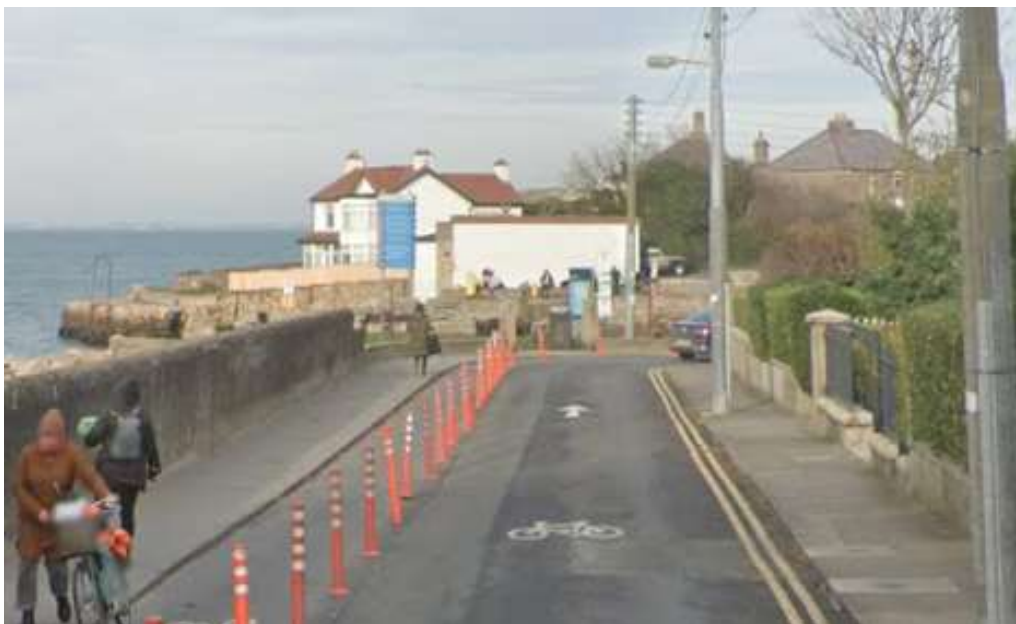
- This section of the scheme provides an opportunity to enhance public realm space along the street.
- This section of the scheme provides an opportunity to improve pedestrian safety along Windsor Terrace, and an opportunity to provide extra space for pedestrians outside the baths.
- There is opportunity to improve pedestrian and cycle facilities at crossings and junctions.
- There is an opportunity to include new landscaping and sustainable urban drainage features.



**Figure 13: Typical Existing Cross Section for Section E**

## Sandycove Avenue Section F

This section of Sandycove Avenue consists of a one-way street allowing traffic to travel in a northern direction, linking Otranto Place to the bathing area around Sandycove Beach. The current layout has a footpath on either side of the road, a single traffic lane and a contra-flow cycle-path. The northern part of this section of the scheme has one casual trading zone and two disabled spaces. Both disabled spaces and the casual trading zone are located on a shared space between pedestrians and vehicles adjacent to Sandycove Beach.



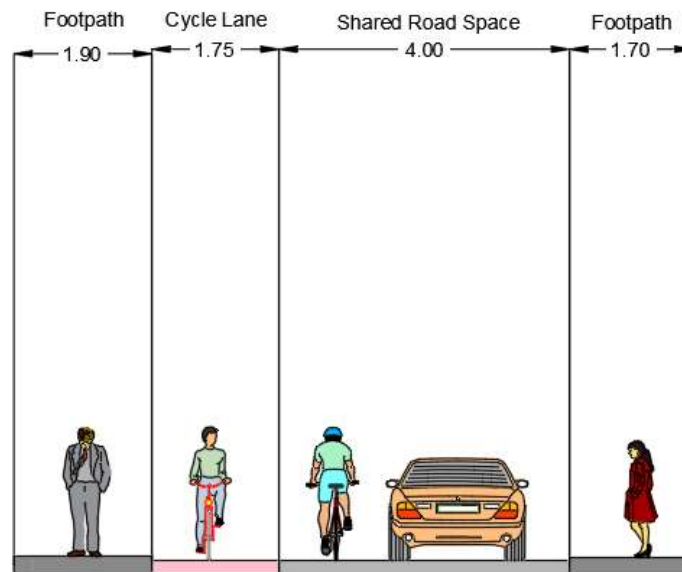
**Figure 14: Typical Layout of Section F**

Designers must consider several constraints linked to this section. These include the following:

- The available width along this section varies between 10 and 12 meters along Sandycove Avenue. The space available is limited to the east by private properties and on the west by the seafront.
- There are three private property entrances along Sandycove Point whose access will need to be maintained. There are also accesses to properties on Sandycove Ave West.
- The presence of underground and overhead utilities may limit work proposals.
- The existing levels of the site must be considered on this section of the scheme regarding building levels and drainage.
- The existing disabled parking space and casual trading zone must be maintained.
- There is a high demand for parking in the area, particularly on sunny summer days.

In addition to the above constraint's designers have identified the following opportunities in this section of the study area:

- This section of the scheme provides a significant opportunity to enhance public realm space around Sandycove Beach.
- There is opportunity to improve pedestrian facilities adjacent to Sandycove Beach.
- There is an opportunity to enhance cycle facilities connecting Otranto Place to Sandycove Beach, the existing scenario can be counter intuitive with many cyclists cycling the wrong way down the contra-flow cycle lane.



**Figure 15: Typical Existing Cross Section for Section F**

## OPTIONS ASSESSMENT METHODOLOGY

To gain an appreciation of the specific constraints and opportunities within the study area Barry Transportation conducted a comprehensive data collection process consisting of desktop analysis and site visits. Potential options were then developed bearing in mind the information gathered during the data collection stage. Engineering judgement was used to determine which options were feasible and could be progressed to the options assessment stage. These options were developed using design guidance from the National Cycle Manual and DMURS.

The options were then compared against one another using Multi-Criteria Analysis (MCA) in accordance with the Department of Transport "Guidelines on a Common Appraisal Framework for Transport Projects published by the Department of Transport (DTTAS), March 2016 (Updated October 2021).

Each of the proposed options has been assessed against the various Options Assessment criteria and assigned a colour grade, based on a 5-colour palette shown in Figure 3-1 below.

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

Figure 16: Five-Point Grading Scale

The criteria and sub-criteria considered as part of this assessment are outlined in the paragraphs below.

## 1. Capital Cost

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

- Pedestrian and Cycle route infrastructure
- Road re-alignment / new road construction
- Junction upgrades
- Drainage
- Services and utilities protection and relocation work
- Lighting
- Landscaping street furniture and urban realm improvements
- Signs & Lines
- Construction traffic management

## 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 a scheme fits into local area plans or any other objectives in area / county policies.

### 2.b. Pedestrian Integration

The level of service provided to pedestrians is assessed under this criterion. Footpath widths, pedestrian desire lines and the suitability and convenience of crossing points are considered.

### 2.c. Cyclist Integration

The level of service provided to cyclists is assessed under this criterion. Cycle lane widths, segregation type, gradient, directness, comfort and the suitability and convenience of crossing points are considered.

### 2.d. Public Transport Integration

Under this criterion, integration with the wider transport network is assessed and compared for each scheme. This includes transport modes such as railway, coaches, public bike schemes, and public and private bus operators. The potential for interchange facilities such as cycle parking areas, etc. are also assessed under this criterion.

### 2.e. Traffic Network Integration

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

## 3. Accessibility and Social Inclusion

### 3.a. Mobility & Vision Impaired Road Users

This criterion assesses the quality of the facilities provided for mobility and vision impaired road users as part of each option.

## 4. Safety

### 4.a. Road Safety

This criterion looks at road safety risks present for all road users in each the options.

## 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) on each option 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

This criterion looks at the impacts on biodiversity, for example, through removal of trees/hedges, or creation of new pollinator friendly planting. These impacts are compared for each scheme under this criterion.

### 5.c. Soils and Geology

Construction of infrastructure 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 infrastructure may include aspects (eg: increased run off, or new sustainable urban drainage measures) with the potential to impact on hydrology or water resources. Any such impacts are considered for each scheme under this criterion.

### 5.e. Landscape and Visual

Schemes have the potential to 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 effects considered under this criterion.



## **5.f. Noise, Vibration and Air**

Provision of infrastructure has the potential to negatively impact on noise, vibration and air quality. 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 affect land from achieving its intended use, for example through land acquisition, reallocation of road space, creation of new urban realm areas, removal of parking or loading spaces, or changes to access arrangements.

## COASTAL MOBILITY ROUTE – HIGH LEVEL OPTIONS

The first step in the options assessment process was to evaluate the high-level options for the Coastal Mobility Route as a whole. Following this assessment the study area sub-sections were then examined one by one.

### Options Development

The options evaluated are detailed below

#### Option 1

This option would reintroduce two-way traffic along the coast and remove the temporary segregated cycle track. The layout of this option is similar to what was in place before the temporary measures were introduced in 2020. Traffic calming, landscaping and pedestrian improvements would be done along the route.

#### Option 2

Option 2 would formalise the existing temporary measures and make them permanent using high quality materials. Traffic calming, landscaping and pedestrian improvements would be done along the route.

## Options Assessment

Coastal Mobility Route				
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Do Nothing
<b>Economy</b>	Capital Cost			
<b>Integration</b>	Land Use Integration			
	Pedestrian Intergration			
	Cyclist Integration			
	Public Transport Integration			
	Traffic Network Integration			
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users			
<b>Safety</b>	Road Safety			
<b>Environment</b>	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 both do something options would be more expensive than the do nothing.

In terms of Land Use Integration, Options 1 and 2 provide significant advantages, they align with land use policies in multiple European, National, Regional and Local policies, for example policy objective T16 which aims to “secure improvements to the County Cycle Network in accordance with the Dún Laoghaire-Rathdown Cycle Network Review whilst supporting the NTA on the development and implementation of the Greater Dublin Area Cycle Network Plan 2013 and subsequent revisions, subject to environmental assessment and route feasibility.” Option 1 presents a significant number of disadvantages as it goes against the previously mentioned policies by prioritising cars.

In terms of Pedestrian Integration, Option 1 is disadvantageous as would see a significant increase in traffic on the coastal route and does not create extra pedestrian space. The Do-Nothing Option presents slight advantages as having a one-way system in place for cars creates a safer pedestrian environment. Option 2 presents significant advantages as retains the one-way system while also enhancing pedestrian facilities along the route.

In terms of Cyclist Integration, Option 1 presents significant disadvantages as it would remove the existing segregated cycle facilities along the coastline. Option 2 presents significant advantages as it maintains the existing cycling facilities, but also completes missing links.

In terms of Public Transport Integration, Option 1 presents advantages as it allows for two-way traffic along the extents of the coastal route. Although no busses use the sections of this route that are currently one-way, reintroducing two-way traffic would likely reduce congestion slightly on other nearby bus routes.

In terms of Traffic Network Integration, Option 1 presents significant advantages as it allows for two-way traffic along the extents of the coastal route. Option 2 and the Do-Nothing Option present significant disadvantages as they only allow for one-way traffic.

In terms of Mobility & Vision Impaired Road Users, Option 1 presents slight disadvantages as it makes the coastal route busier and less safe. The Do-Nothing Option presents slight advantages as it maintains the current layout, which has reduced the traffic along the coastal route. Option 2 presents significant advantages as it will make the coastal route even safer, notably through the addition of traffic calming measures and step free pedestrian crossings.

In terms of Road Safety, Option 1 presents significant disadvantages as it greatly increases the amount of traffic, mixes cyclists with traffic and brings traffic closer to pedestrians. Option 2 presents significant advantages as it involves tightening junctions, and introduces new sections of segregated cycling and traffic calming measures such as reducing carriageway widths.

In terms of of Landscape and Visual and Biodiversity, Option 2 offers slight advantages when compared to Option 1 and the Do-Nothing Option as it upgrades new public realm space that would contain landscaping, seating, planting and trees.

In terms of Noise, Vibration and Air Quality, Option 1 presents significant disadvantages when compared to Option 2 and the Do-Nothing Option as returning to a two-way carriageway would greatly increase the amount on traffic along the route.

In terms of Land Use and Built Environment, Option 1 is disadvantageous as it would negatively impact the use of the coast as an amenity route. Option 2 presents significant advantages as it builds on the well-used temporary amenity route to optimise the use of space along the coastal route and create new parklets and seating areas.

## Recommendation

Option 2 has been recommended as the preferred option for the following reasons.

- It provides the highest level of service for cyclists. It formalises and enhances the existing segregated cycle route providing significant advantages to cyclists.
- It provides the highest level of service for pedestrians. It improves facilities for pedestrians and enhances the existing amenity route.
- It offers opportunities to improve the urban realm with new seating, informal play and rest areas along the route.
- It offers opportunities for new landscaping, tree planting and nature based sustainable urban drainage solutions.

This recommendation aligns with the objectives and road user hierarchies set out in the Design Manual for Urban Roads and Streets (DMURS) and the National Investment Framework for Transportation Projects (NIFTI)

Specific improvements to be made in each section of the study area are assessed in the following chapters.

# NEWTOWN AVENUE (SECTION A)

## Option Development

### Option 1

This option introduces a two-way cycle-path running along Newtown Avenue, on the eastern side of the road adjacent to the footpath and the park and separated from the carriageway by a buffer. This option creates additional public realm space as well as extra pedestrian space by removing one of the traffic lanes. This option also creates two new on-street parking spaces, and the redundant bus stop has been removed.



### Option 2

This option introduces a one-way cycle-path either side of Newtown Avenue. This option presents the opportunity for improved public realm space and improves cycle connectivity. The new cycle-paths come at the expense of one of the current traffic lanes. There is insufficient space to provide a buffer between the parked cars and the cycle lane which may pose a danger to cyclists.



## Option Assessment

Seapoint Avenue to Temple Road (Section A)				
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Do Nothing
Economy	Capital Cost	Orange	Orange	Green
Integration	Land Use Integration	Green	Green	Orange
	Pedestrian Intergration	Green	Green	Orange
	Cyclist Integration	Green	Green	Red
	Public Transport Integration	Yellow	Yellow	Yellow
	Traffic Network Integration	Yellow	Yellow	Yellow
Accessibility and Social Inclusion	Mobility & Vision Impaired Road Users	Green	Green	Orange
Safety	Road Safety	Green	Orange	Orange
Environment	Archaeological, Architectural and Cultural Heritage	Yellow	Yellow	Yellow
	Biodiversity	Green	Green	Orange
	Soils and Geology	Yellow	Yellow	Yellow
	Water Resources	Yellow	Yellow	Yellow
	Landscape and visual	Green	Green	Orange
	Noise, vibration and air quality	Yellow	Yellow	Yellow
	Land Use and Built Environment	Green	Orange	Orange

In terms of Capital Cost both do something options would be more expensive than the do nothing.

For Land Use Integration the do something options are preferred as they remove redundant traffic lanes and provide increased landscaping and cycle facilities.

In terms of Pedestrian Integration, the do something options would provide minor footpath improvements and improvements to crossing facilities at junctions and so are preferred.

In regard to Cyclist Integration, Options 1 and 2 present significant advantages when compared to the do-nothing option as they both include a cycle-path going both directions. The do-nothing option presents significant disadvantages because cyclists are, in this scenario, expected to share the carriageway with vehicles.

For Mobility & Vision Impaired Road Users both do something options will improve crossing facilities and tactile paving's and so are preferred.

For Road Safety, Option 1 presents slight advantages given that the cycle path is segregated from the road and separated by a buffer. Option 2 presents slight disadvantages as there is a potential for parked cars to open their doors into the cycle lane. The Do-Nothing option also present slight disadvantages given the lack of cycling facilities.

Regarding Biodiversity and Landscape & Visual, Option 1 presents the most advantages as it creates the most opportunity for new landscaping features. Option 2 creates some opportunities for this, but over a smaller area.

In regard to Land Use and Built Environment, Option 1 presents slightly more advantages than Option 2 and the do-nothing option as it creates more parking spaces as well as more public realm space. Option 2 would require the removal of some green space in Temple Park as it has a wider cross section.

## Recommendation

Option 1 is recommended as the preferred option for the following reasons:

- It removes redundant traffic lanes and reallocates space to sustainable transport modes.
- It provides safe segregated cycle facilities to link Frascati Road to the Coastal Mobility Route.
- It provides the greatest opportunity for landscaping and tree planting.

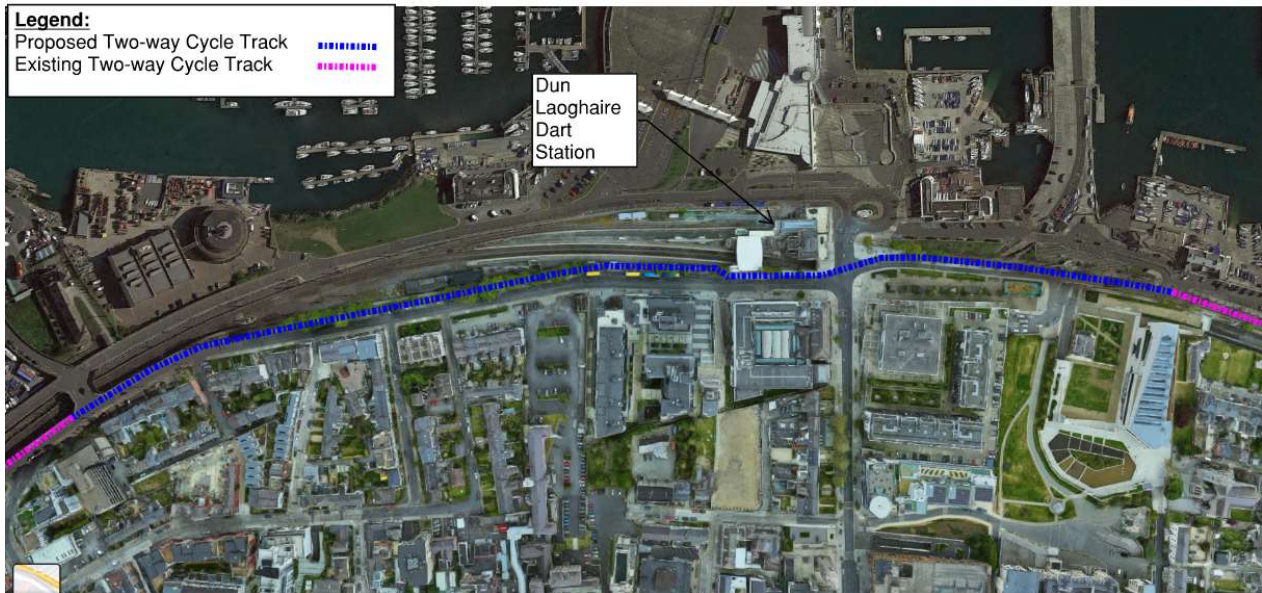


# CROFTON ROAD AND QUEENS ROAD (SECTION B)

## Options Development

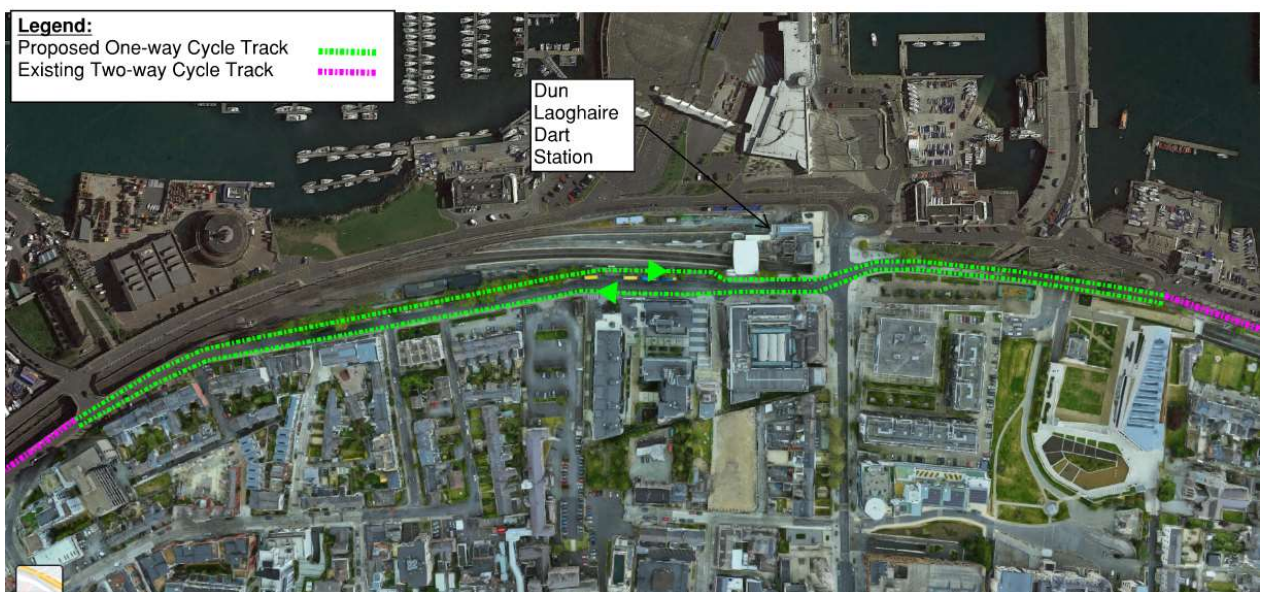
### Option 1

Option 1 proposes a segregated two-way off road cycle track on the northern side of Crofton Road.



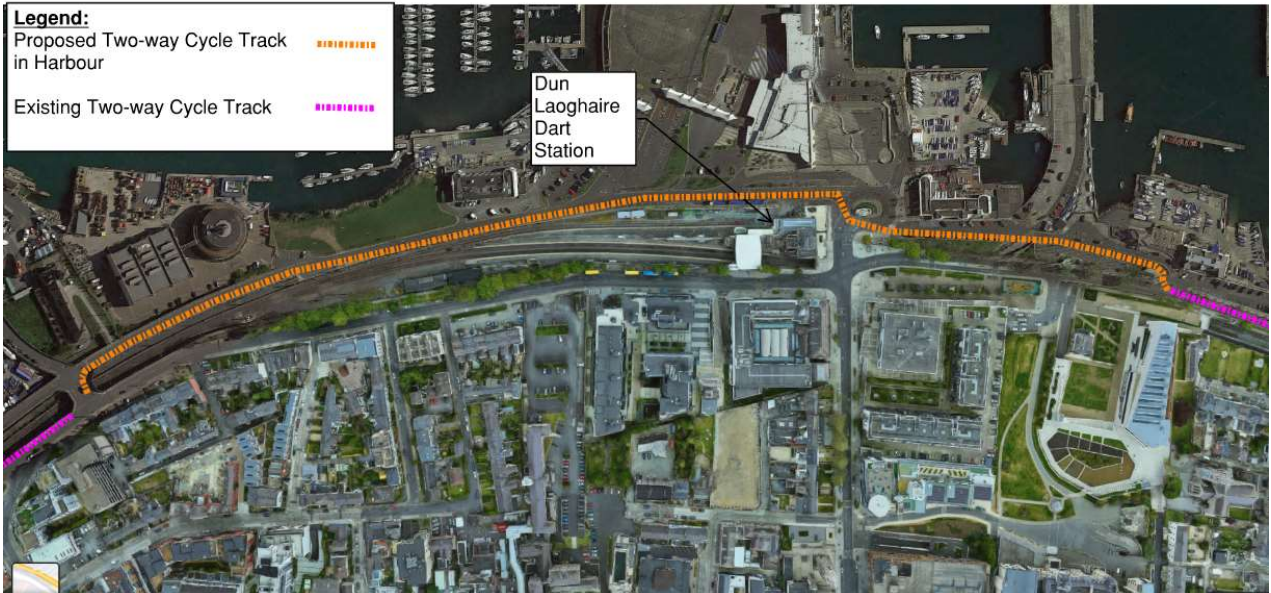
### Option 2

Option 2 proposes a segregated one-way cycle track on each side of Crofton Road.



### Option 3

Option 3 proposes a segregated two-way cycle route through the harbour. To achieve this a section of Harbour Road near the Irish Light building would need to be closed to through traffic using a modal filter, as there is insufficient space to provide both vehicle lanes and a segregated cycle lane.



## Options Assessment

Crofton Road and Queens Road (Section B)					
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Option 3	Do Nothing
<b>Economy</b>	Capital Cost				
<b>Integration</b>	Land Use Integration				
	Pedestrian Intergration				
	Cyclist Integration				
	Public Transport Integration				
	Traffic Network Integration				
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users				
<b>Safety</b>	Road Safety				
<b>Environment</b>	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 Cyclist Integration, Option 1 is the most advantageous as it provides the most direct and attractive route for cyclists on the CMR. Options 2 and 3 have slight advantages as they also provide a segregated route, however some cyclists may still continue to use Crofton Road on Option 3, and on Option 2 westbound cyclists would be required to cross the road twice.

Regarding Public Transport Integration, Option 1 has slight disadvantages as the cycle route reduces the space available for bus stops and layover outside the DART Station, Option 2 presents significant disadvantages as it creates the same problem as Option 1 but on both sides of the carriageway as opposed to one side. Options 3 and the Do-Nothing option present slight advantages given that the cycle facilities for Option 3 are not on a public transport route.

Regarding Traffic Network Integration Option 3 is disadvantageous as it would restrict through traffic on Harbour Road.

Regarding Mobility and Vision Impaired Road Users, the Do-Nothing option is the least preferred as it would not improve the pedestrian facilities or provide segregated cycling facilities. Option 3 has slight advantages compared to Option 2 because it would send cyclists through the Harbour and avoid the busy area outside the DART Station where there could be conflicts with pedestrians.

Regarding Road Safety, Option 1 presents more advantages than Options 2 and 3 as it provides the most direct convenient and attractive route for cyclists and so they would be most likely to use it.

## **Recommendation**

Option 1 has been recommended as the preferred option as it provides the highest level of service for cyclists by completing the missing section of the CMR with the safest, most direct, and most attractive route.

## COAL QUAY BRIDGE (SECTION C)

### Options Development

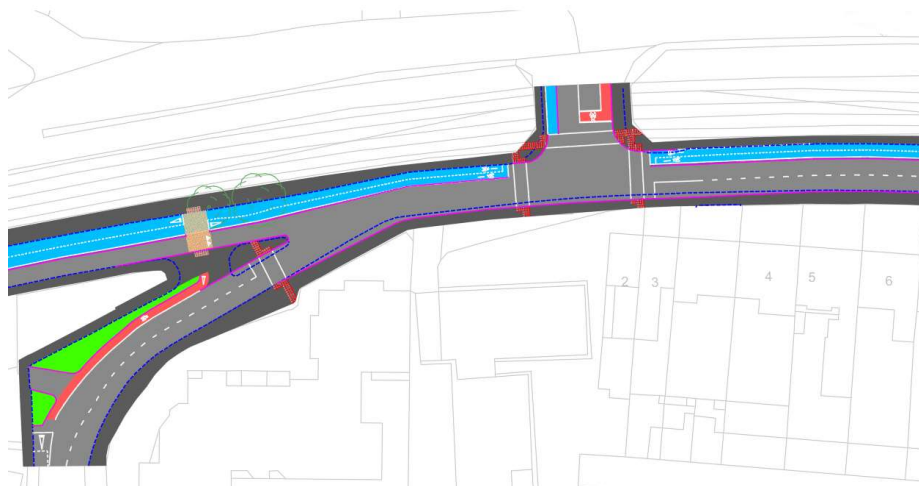
#### Option 1

This option introduces a one-way system on Coal Quay Bridge. Vehicles could only use Coal Quay Bridge to enter the harbour and would be required to exit via Harbour Road/Marine Road. This option creates additional space for pedestrians on the western footpath on the bridge. It combines Clarence Street/Old Dunleary Road and Coal Quay Bridge/Crofton Road into one junction. Currently, these junctions operate on different signal phasing. No green phase would be required for vehicles leaving the harbour and so there would be additional green time for all other phases. The two-way cycle lane on both sides has been brought forward to reduce the gap in the cycle lane as much as possible. This requires reducing the footpath to 1.5 m and the cycle lane to 2.5m wide.



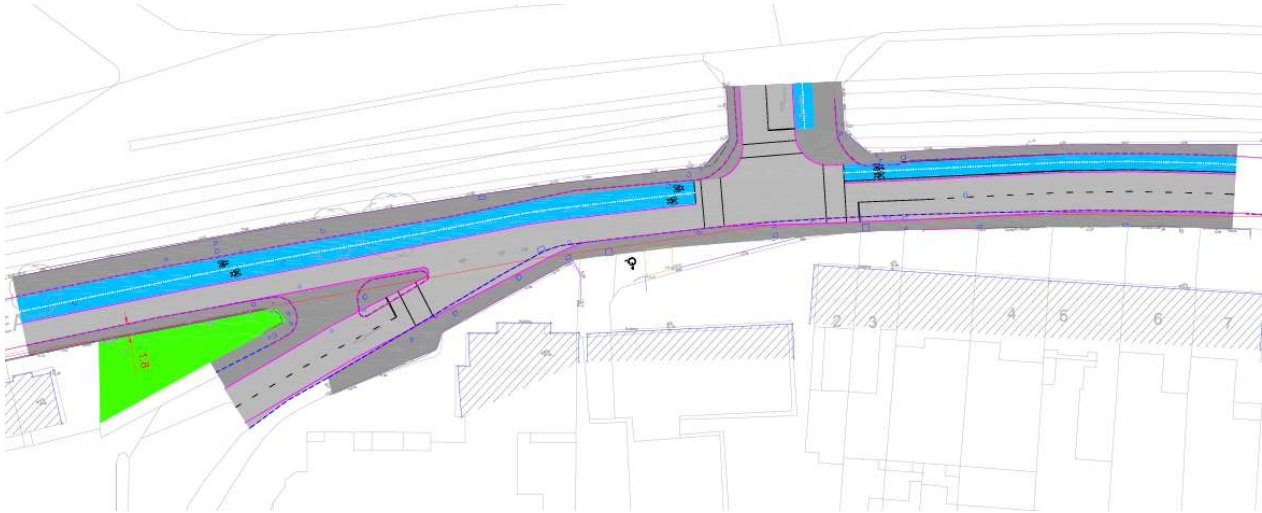
#### Option 2

This option also combines Clarence Street/Old Dunleary Road and Coal Quay Bridge/Crofton Road into one junction. This option would narrow the carriageway on Coal Quay Bridge by removing one of the two southbound turning lanes, allowing for extra pedestrian space. Again, the two-way cycle lane on both sides has been brought forward to reduce the gap in the cycle lane as much as possible. This requires reducing the footpath to 1.5 m and the cycle lane to 2.5m wide.



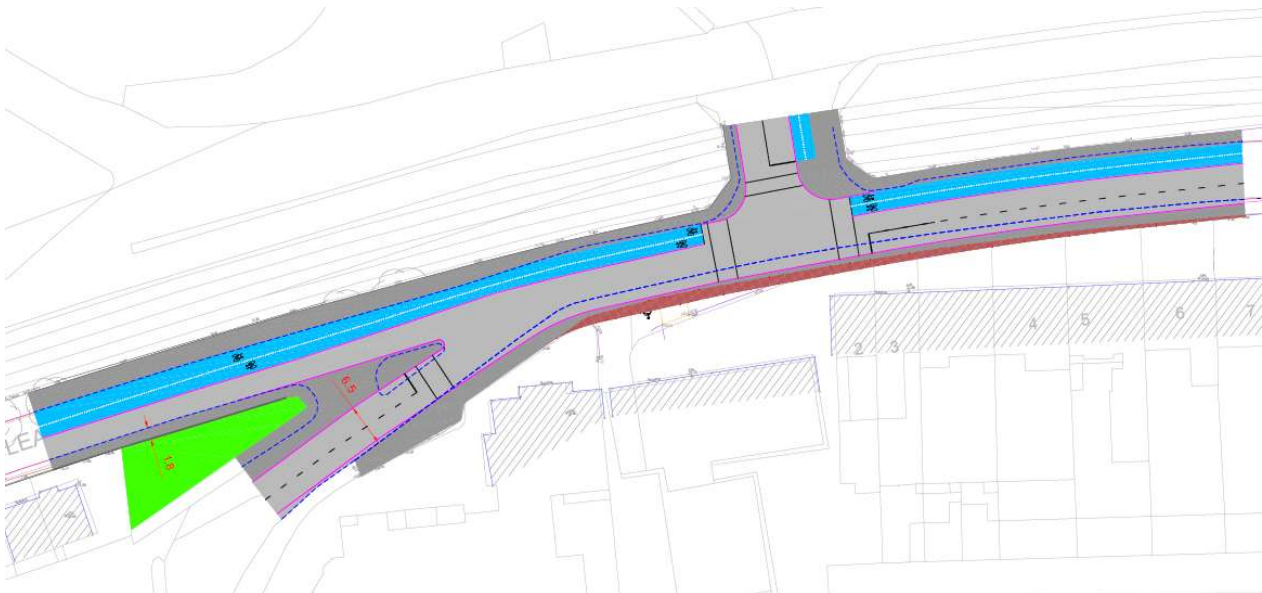
### Option 3

This option is similar to Option 2 but instead of having 6m of road space through the junction, this option reduces this to 4m. This means that vehicles could not proceed through the junction in opposite directions at the same time. This allows for the cycle-path north of the road to be wider than in Option 2 as well as allowing for the southern footpath to be slightly wider. Although the pinch point with narrow footpath/cycle lane would still exist just to the east of the junction.



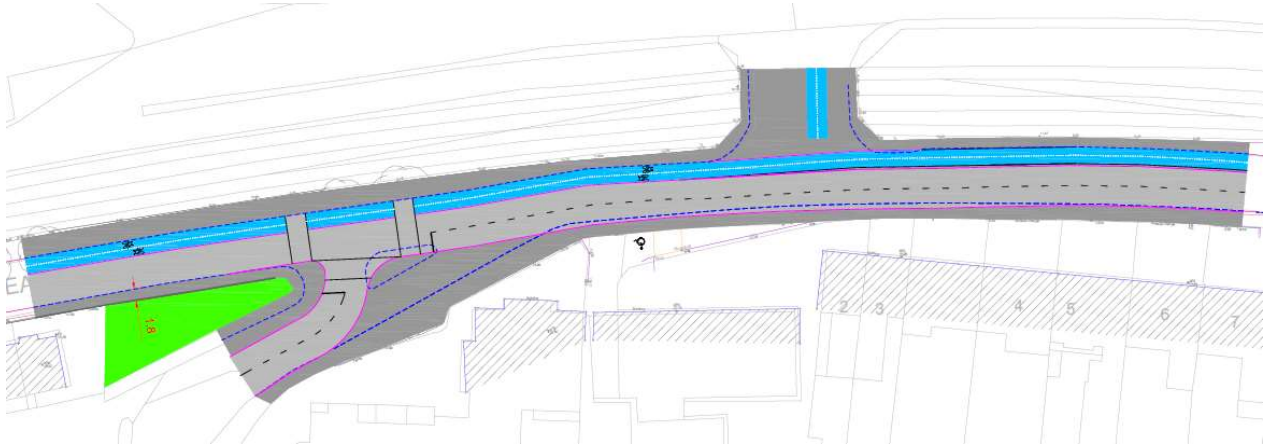
### Option 4

This option is also similar to Option 2, but in this scenario, the carriageway, cycle-path and both footpaths are, respectively, 6 m, 3 m and 2 m wide. This option requires the acquisition of a strip of private land from the southern side of the road as shown in the red colour below.



## Option 5

This option fully closes the Coal Quay Bridge to vehicular traffic, creating additional public realm space and simplifying the junction to a single T junction, rather than two staggered junctions. The cycle path, as suggested in Option 2, is also included in this option.



## Options Assessment

Coal Quay Bridge (Section C)							
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Do Nothing
<b>Economy</b>	Capital Cost	Orange	Orange	Orange	Red	Orange	Green
<b>Integration</b>	Land Use Integration	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Pedestrian Intergration	Green	Orange	Green	Green	Green	Orange
	Cyclist Integration	Green	Green	Green	Green	Green	Red
	Public Transport Integration	Orange	Green	Green	Green	Red	Green
	Traffic Network Integration	Orange	Green	Orange	Green	Red	Green
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users	Green	Green	Green	Green	Green	Red
<b>Safety</b>	Road Safety	Green	Green	Orange	Green	Green	Red
<b>Environment</b>	Archaeological, Architectural and Cultural Heritage	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Biodiversity	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Soils and Geology	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Water Resources	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Landscape and visual	Green	Green	Green	Green	Green	Orange
	Noise, vibration and air quality	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Land Use and Built Environment	Green	Green	Green	Red	Green	Green

Regarding Capital Cost, Option 4 requires land take on the southern footpath, which makes it the most expensive option. All other options would be more expensive than the do-nothing option and so score a “Slight Negative”.

Regarding Pedestrian Integration, Option 5 is the most advantageous as it pedestrianises Coal Quay Bridge. Options 2 and the Do-Nothing option are slightly more disadvantageous than Options 1, 2 and 4 as they do not include plans to extend the footpaths.

Regarding Cyclist Integration, Options 1-4 present some advantages when compared to the Do-Nothing option as they include plans for a new section of cycle-path. Option 5 is the most advantageous as the conflict with traffic has been eliminated.

Regarding Public Transport Integration, Option 5 has many disadvantages when compared to every other option, including the Do-Nothing option, given that buses currently use Coal Quay Bridge to do a loop before re-entering service. Option 5 would create additional delays. Option 1 presents slight disadvantages as it would also create additional delays given the obligation to re-route some buses.

Regarding Traffic Network Integration, Option 5 is the worst option as it closes Coal Quay Bridge for traffic and diverts all traffic to Marine Road/Harbour Road Junction. Option 1 presents some slight disadvantages as it closes the bridge in one direction. Option 3 also presents slight disadvantages as traffic would not be able to travel through the junction in both directions at the same time, and longer intergreen times would be



required in the signals, resulting in a less efficient junction. All other options, including the Do-Nothing option, present slight advantages as they keep the bridge open to traffic.

Regarding Mobility and Vision Impaired Road Users, Option 5 presents the most advantages as it pedestrianises the bridge. Options 1, 2, 3 and 4 all present slight advantages compared to the Do-Nothing option as they improve the junction layouts overall.

Regarding Road Safety, Option 5 presents the most advantages as it pedestrianises Coal Quay Bridge, therefore fully removing pedestrians and cyclists from conflicts with traffic and increasing safety. Option 3 presents disadvantages compared to Options 1, 2 and 4 as given that there is not room for two cars to pass each other in the junction, there is a greater risk of an accident if a vehicle breaks the lights.

Regarding Landscape and Visual, every Do-Something option provides new landscaping features.

Regarding Land Use and Built Environment, Option 4 presents disadvantages as it requires private land take, whereas every other option and the Do-Nothing option only use the available land.

## Recommendation

Option 5 appears to have significant benefits when compared to other options. It creates a high-quality cycle and pedestrian link and fully removes cyclists from conflicts with vehicles at the junction. However, this option would close the bridge to traffic in both directions which would lead to a significant increase in traffic at the Marine Road/Crofton Road Junction. The advantages experienced at this junction would be outweighed by the negatives experienced at the Marine Road junction.

Option 1 is similar in that it also provides a higher level of service at this junction by making things worse at the Marine Road junction, this option is also not preferred for the same reasons as Option 5.

The junction operation issues, and potential road safety issue of Option 3 mean this option has not been recommended.

Option 4 would take longer and be more problematic to construct given the requirement for land acquisition, and for this reason has not been recommended.

On balance Option 2 has been considered the preferred option for this section. It keeps the existing bridge open and so avoids creating traffic problems at the Marine Road junction and does not require the CPO of any land. It provides the highest level of service possible while working within the lands available and maintaining two-way movements for busses and general traffic.

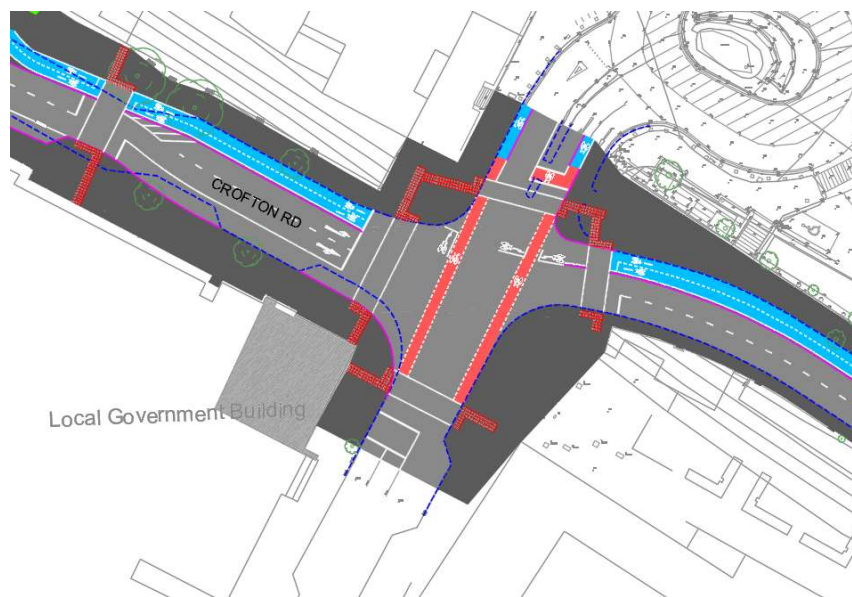
## MARINE ROAD AND HARBOUR ROAD JUNCTION (SECTION D)

### Options Development

#### Option 1

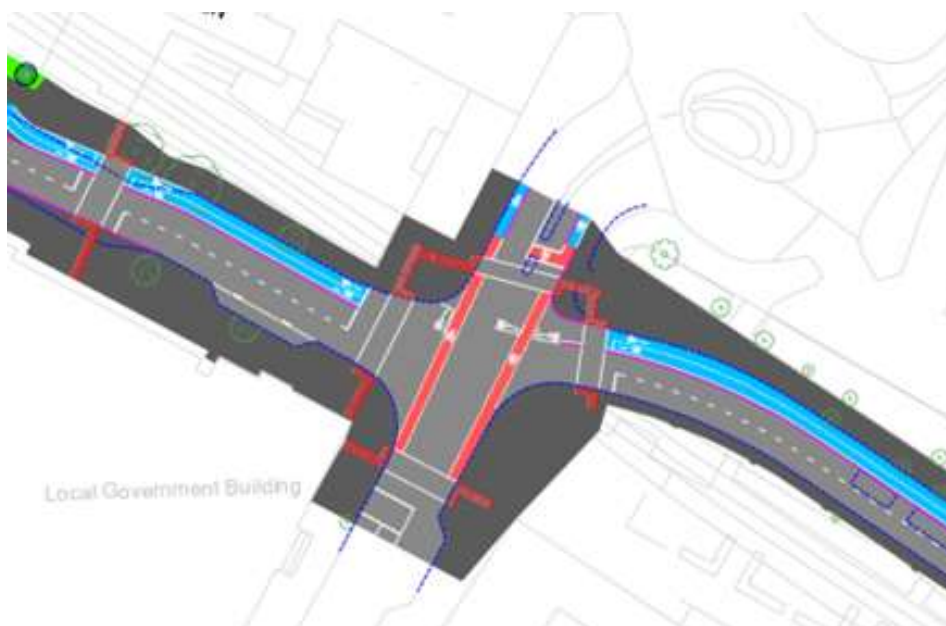
This option has a separate left turn lane from Crofton Road into the harbour.

The inclusion of the left turning lane allows stacking space for left turning traffic approaching from Crofton Road to be held back while traffic runs from Crofton Road to Marine Road (in both directions) and cyclists also proceed along the Coastal Mobility Route on the same signal phase. The addition of this left turning lane allows the junction to operate more efficiently than Option 2.



#### Option 2

This option only has one lane approaching on the Crofton Road arm, and left turners into the harbour would be mixed with those going straight and right.



## Options Development

Marine Road and Harbour Road Junction (Section D)				
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Do Nothing
<b>Economy</b>	Capital Cost			
<b>Integration</b>	Land Use Integration			
	Pedestrian Intergration			
	Cyclist Integration			
	Public Transport Integration			
	Traffic Network Integration			
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users			
<b>Safety</b>	Road Safety			
<b>Environment</b>	Archaeological, Architectural and Cultural Heritage			
	Biodiversity			
	Soils and Geology			
	Water Resources			
	Landscape and visual			
	Noise, vibration and air quality			
	Land Use and Built Environment			

Regarding Capital Cost, the Do-Nothing option is cheaper than both do something options.

Regarding Pedestrian Integration, Option 2 is the most disadvantageous as it would have the least efficient traffic signal phasing with the longest waiting time for pedestrians.

Regarding Cyclist Integration, Option 1 is the best for cyclists as a greater amount of signal phasing time could be afforded to cyclists at the junction than in Option 2. The Do-Nothing option does not include any cycling facilities and so is the most disadvantageous.

Regarding Traffic Network and Public Transport Integration, Option 1 and 2 introduce a new cyclist phase at the junction which would mean less overall green time for motorists and busses, for this reason Do Nothing scores best on this criterion. The left turn lane on Option 2 would allow for a more efficient traffic signal phasing than Option 2 and so is next preferred.

Regarding Mobility and Vision Impaired Road Users and Road Safety, Options 1 and 2 present slightly more advantages than the Do-Nothing option as they provide segregated cycling facilities.

Regarding Landscape and Visual and Land Use and Built Environment, Option 2 provides slightly more advantages than Option 1 as it provides an extra 3 meters of space for loading bays and public realm space in place of the left turning lane.

## Recommendation

Option 1 is recommended as the preferred option for the following reasons

- It offers the highest level of service for cyclists. It provides a segregated cycle lane with significantly more green time in the traffic signals than Option 2.
- It would have a shorter waiting time for pedestrians at the traffic signals.
- It would allow the junction to operate more efficiently than Option 2 with shorter delays for traffic and busses.

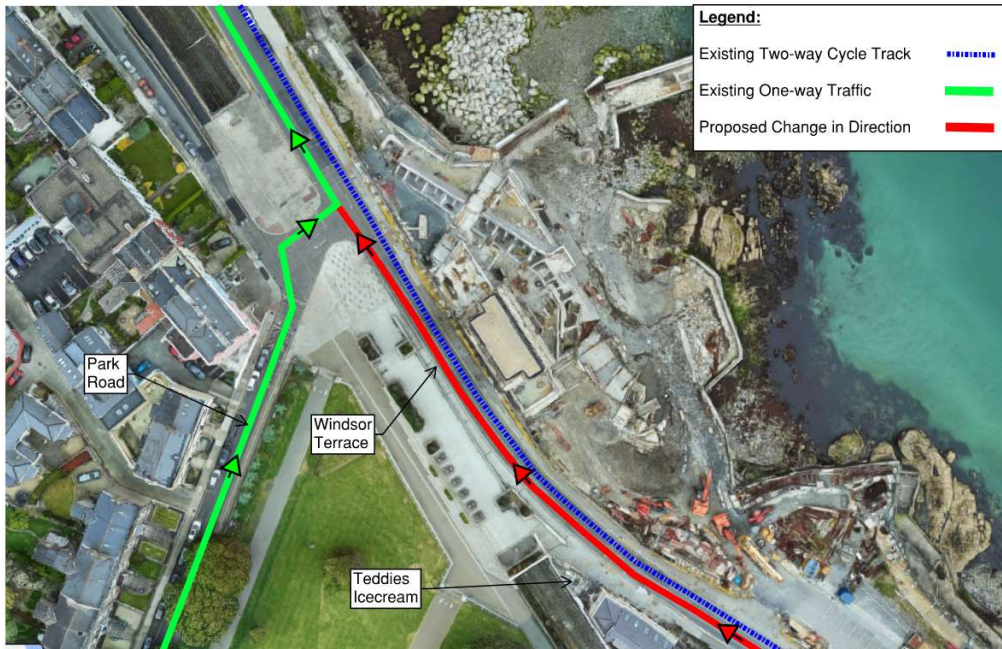
Option 1 and 2 have been tested with traffic modelling to confirm the above assumptions.

# PARK ROAD AND WINDSOR TERRACE (SECTION E)

## Options Development

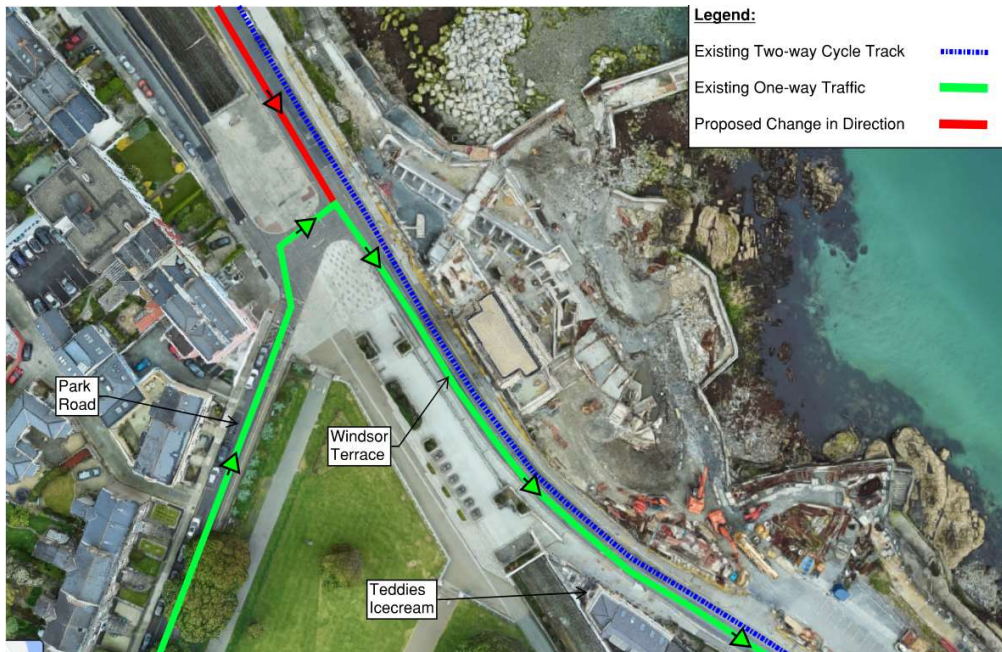
### Option 1

This option proposes to change the direction of one-way traffic to northbound on Windsor Terrace while maintaining the existing two-way cycle track.



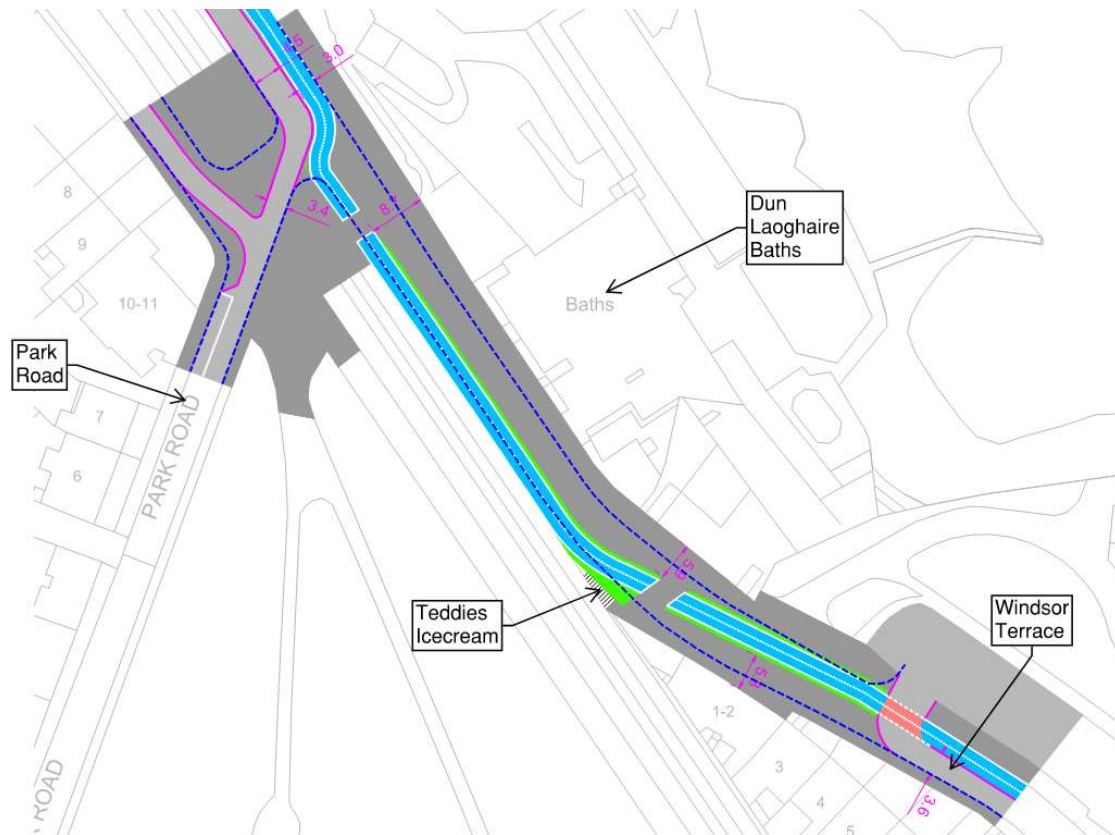
### Option 2

This option introduces one-way traffic southbound on Queens Road while maintaining the existing two-way cycle track.



### Option 3

This option involves pedestrianising Windsor Terrace, outside the Baths and Teddy's ice-cream shop.



## Options Assessment

Park Road and Windsor Terrace (Section E)					
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Option 3	Do Nothing
<b>Economy</b>	Capital Cost				
<b>Integration</b>	Land Use Integration				
	Pedestrian Intergration				
	Cyclist Integration				
	Public Transport Integration				
	Traffic Network Integration				
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users				
<b>Safety</b>	Road Safety				
<b>Environment</b>	Archaeological, Architectural and Cultural Heritage				
	Biodiversity				
	Soils and Geology				
	Water Resources				
	Landscape and visual				
	Noise, vibration and air quality				
	Land Use and Built Environment				

Regarding Capital Cost, Option 3 is the most expensive option as it involves pedestrianising and landscaping the road. Options 1 and 2, would be cheaper, and the Do-Nothing scenario is the cheapest.

Regarding Pedestrian Integration, Option 3 provides the most advantages as it fully pedestrianises this section of the road. Options 1 and 2 present slight disadvantages for pedestrian integration and the Do-Nothing scenario is worst.

Regarding Traffic Network and Public Transport Integration, Option 1 presents significant advantages as it as it would allow traffic approaching from the Glasthule direction to use the coast road as a westbound through route without passing through the Park Road/George's St Upper junction. This would relieve pressure on that junction and allow it to operate more efficiently, reducing delays for motorists and busses.

Regarding Mobility and Vision Impaired Road Users and Road Safety, Option 3 is the option with the most advantages given that it pedestrianises the street. Options 1 and 2 present slight advantages compared to the Do-Nothing scenario as they offer slightly better facilities.

Regarding Biodiversity and Landscape and Visual, Option 3 offers significant opportunity for landscaping and new public realm space. Options 1 and 2 offer slightly better opportunities than the Do-Nothing option.

Regarding Noise, Vibration and Air Quality, Option 3 presents slightly more advantages than Options 1, 2 and the Do-Nothing option as it proposes to pedestrianise the scheme, therefore greatly reducing the traffic on this section.

Regarding Land Use and Built Environment, Option 3 creates a new amenity area on the seafront and so scores best. Options 1, 2 and Do-Nothing present slight disadvantages.

## Recommendation

Option 3 appears to have significant advantages compared to the other options as it provides the highest level of safety and level of service for pedestrians, while also creating a new high quality amenity space along the seafront linking to the Dun Laoghaire Baths. However, this option involves closing the road to traffic which would have wider impacts on the traffic network, particularly the junction of Park Road and George's St Lower near the entrance to the People's Park. This is of particular concern for buses that need to pass through this junction. In the interest of proving faster and more reliable journey times for bus passengers this option has not been recommended as the preferred option.

Option 1 provides a high level of service for pedestrians and a safe segregated two-way cycle lane. It changes the direction of Windsor Terrace which makes the coast road usable as a through route for motorists. This route will be more intuitive for drivers and will take pressure off the People's Park junction and will reduce delays for motorists and bus passengers. This change of direction is an important part of a suite of traffic management measures that are proposed as part of the Living Streets: Dun Laoghaire project. This project includes pedestrianising George's St Lower and the creation of a quiet neighbourhood by introducing several modal filters. As a whole this project will have large benefits to pedestrians and cyclists throughout the Dún Laoghaire area. A full traffic modelling exercise has been performed as part of that project and will be made available to the public in Q3 2023.

For the reasons above Option 1 has been recommended as the preferred option for this section.



## SANDYCOVE AVENUE (SECTION F)

### Options Development

#### Option 1

This option reintroduces on-street parking on the western side of Sandycove Avenue, which comes at the expense of the existing temporary contra-flow cycle-path.



#### Option 2

This option maintains and makes permanent the current temporary scheme that was put in place during the Covid-19 pandemic.



### Option 3

This option introduces a two-way cycle path by reducing the road width. It would repave the area on Sandycove Point as a shared space with high quality paving. Access would be still possible to the houses along this road, but the new road layout would discourage use by passing traffic and indicate that pedestrians have priority. Three on street parking spaces would be removed to increase the size of the new paved area, the two existing disabled parking spaces would be relocated just beside the new pedestrianised area.

### Option 4

This option is similar to Option 3 but the cycle-path would end earlier, increasing size of the new paved area. This option offers better potential for integration with future developments of the public realm on the seaside of the walls.



## Options Assessment

Sandycove Avenue (Section F)						
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Option 3	Option 4	Do Nothing
<b>Economy</b>	Capital Cost	Green	Green	Orange	Orange	Green
<b>Integration</b>	Land Use Integration	Orange	Green	Green	Green	Green
	Pedestrian Intergration	Orange	Orange	Green	Green	Orange
	Cyclist Integration	Red	Green	Green	Green	Green
	Public Transport Integration	Yellow	Yellow	Yellow	Yellow	Yellow
	Traffic Network Integration	Yellow	Yellow	Yellow	Yellow	Yellow
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users	Orange	Orange	Green	Green	Orange
<b>Safety</b>	Road Safety	Orange	Green	Green	Green	Green
<b>Environment</b>	Archaeological, Architectural and Cultural Heritage	Yellow	Yellow	Yellow	Yellow	Yellow
	Biodiversity	Yellow	Yellow	Yellow	Yellow	Yellow
	Soils and Geology	Yellow	Yellow	Yellow	Yellow	Yellow
	Water Resources	Yellow	Yellow	Yellow	Yellow	Yellow
	Landscape and visual	Green	Green	Green	Green	Orange
	Noise, vibration and air quality	Orange	Green	Green	Green	Green
	Land Use and Built Environment	Red	Green	Green	Green	Orange

In regard to cost, Options 3 and 4 are the most expensive as they involve significant urban realm works. Options 1 and 2 would be cheaper as they only involve changes to the cycle lanes. Doing nothing would be the least expensive option.

Regarding Land Use Integration, Options 3 and 4 provide significant advantages compared to other options as they both provide additional and improved public realm space. Options 2 and do nothing provide slight advantages compared to Option 1 as they increase connectivity to Sandycove Beach.

Regarding Pedestrian Integration, Option 4 presents the most advantages as it creates the most public realm space. Option 3 presents some advantages as it also creates some additional and improved public realm space. Finally, Options 1, 2 and do nothing prioritise vehicles or cyclists.

Options 3 and 4 present the most advantages for Cyclist Integration as they propose a two-way cycle-path, increasing cyclist connectivity. Options 2 and do nothing provide slight advantages as they include a contra-flow cycle-path. Option 1 gets the worst rating as this option proposes to replace the current cycle-path with parking.

Options 3 and 4 provide slight advantages compared to Options 1, 2 and do-nothing regarding Mobility & Vision Impaired Road Users given the increased urban realm space.

Regarding Road Safety, Options 3 and 4 present the most advantages as cyclists in both directions would have segregated facilities.

Regarding Landscape and Visual, Option 4 presents the most advantages as it presents the most opportunities for new landscaping features. Options 1, 2 and 3 present slight advantages when compared to the do-nothing scenario as they provide slightly more opportunities for landscaping than doing nothing.

Regarding Noise, Vibration and Air Quality, Options 2, 3, 4 and do-nothing all present slight advantages when compared to Option 1 as Option 1 may lead to slightly more traffic given the additional parking created.

Regarding Land Use and Built Environment, Option 4 presents the most advantages as it allows for the most public realm space improvement. Options 2 and 3 provide some public realm space while the do-nothing makes no improvement. Finally, Option 1 has the worst rating as it reintroduces car parking spaces at the expense of urban realm space and cycle facilities.

## Recommendation

Option 4 is recommended as the preferred option for the following reasons

- it provides a segregated two-way cycle lane which keeps cyclists off the road and connects to the Coastal Mobility Route.
- It offers significant opportunities for urban realm improvement and placemaking around Sandycove Beach.

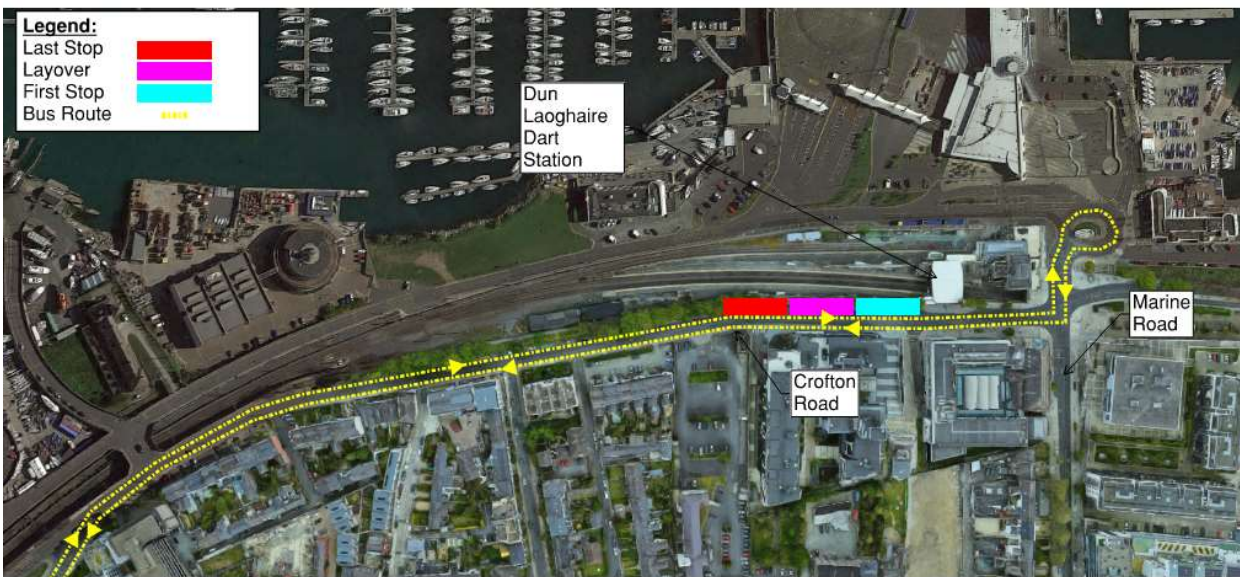
# BUS ROUTING

## Options Development

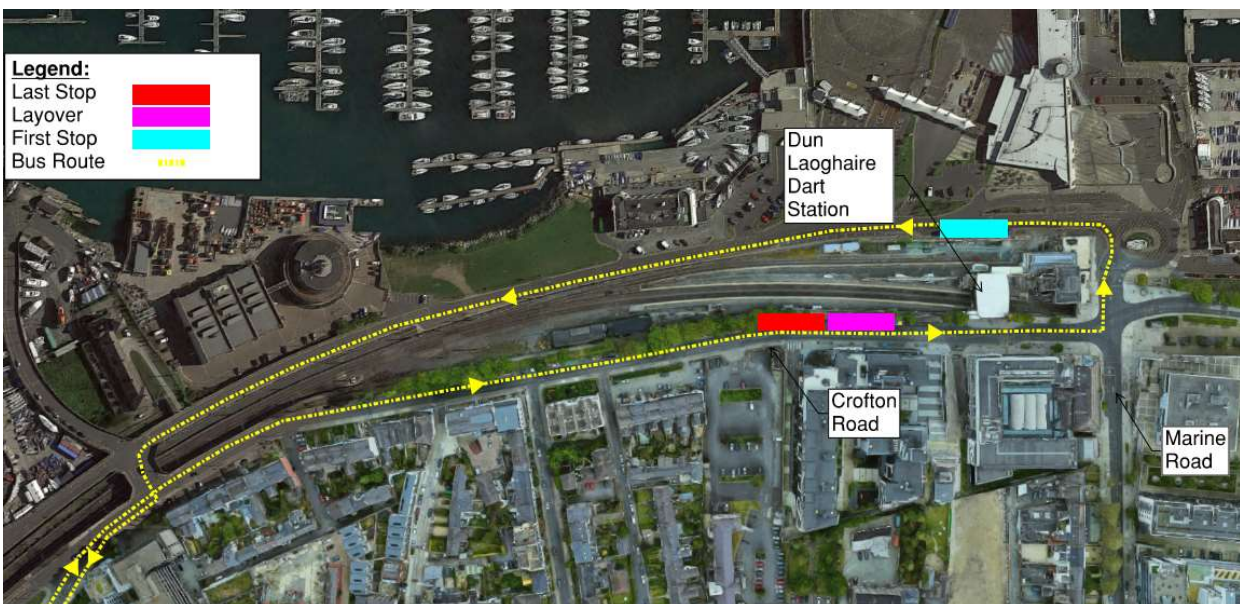
Several busses currently use this route that approaching from Crofton Road and terminate at the DART Station. In the future after the implementation of the new BusConnects Network busses will also travel westbound along Crofton Road. The new network will see an increase in bus numbers with up to 28 busses an hour approaching and terminating in the area around the Dun Laoghaire DART Station

Several options with different bus routing and terminus locations have been developed and assessed in this section of the report.

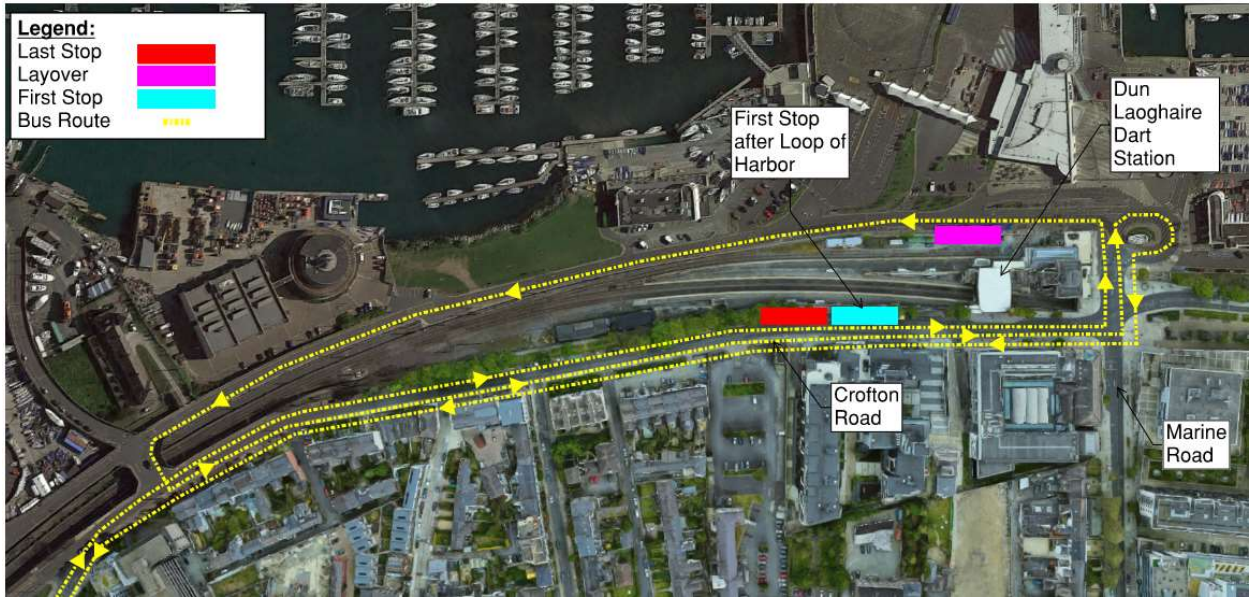
### Option 1



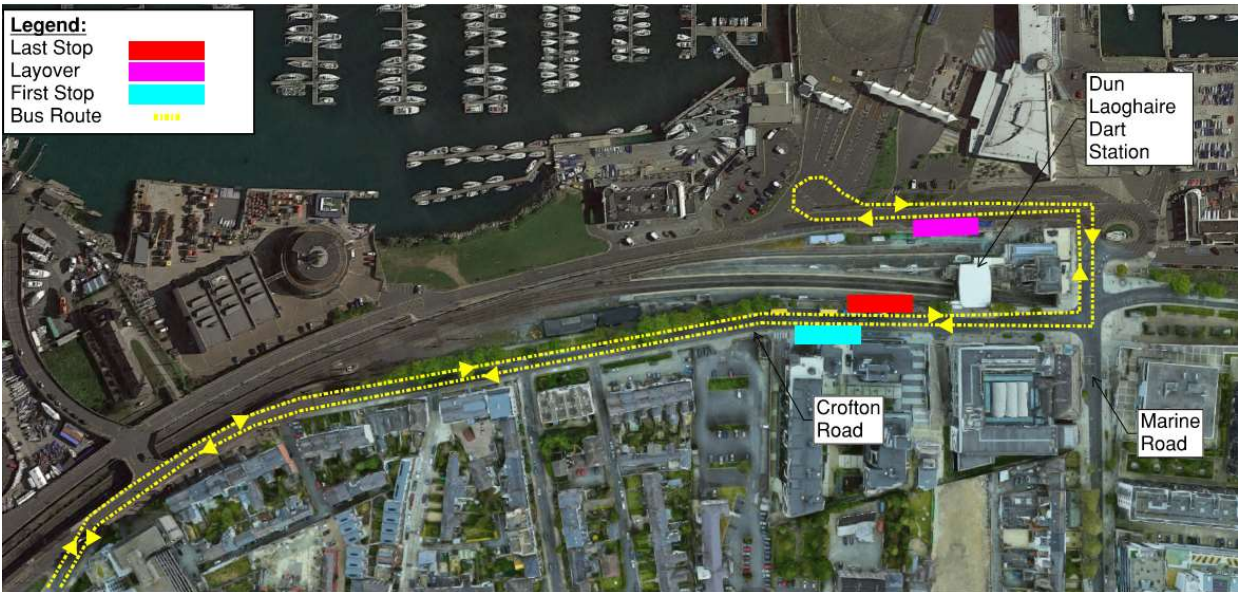
### Option 2



### Option 3



### Option 4



## Options Assessment

Bus Routing					
Assessment Criteria	Sub-Criteria	Option 1	Option 2	Option 3	Option 4
<b>Economy</b>	Capital Cost				
<b>Integration</b>	Land Use Integration				
	Pedestrian Intergration				
	Cyclist Integration				
	Public Transport Integration				
	Traffic Network Integration				
<b>Accessibility and Social Inclusion</b>	Mobility & Vision Impaired Road Users				
<b>Safety</b>	Road Safety				
<b>Environment</b>	Archaeological, Architectural and Cultural Heritage				
	Biodiversity				
	Soils and Geology				
	Water Resources				
	Landscape and visual				
	Noise, vibration and air quality				
	Land Use and Built Environment				

Regarding Public Transport Integration, Options 1, 2 and 4 are more advantageous as they have shorter lengths to travel. Option 2 could not have a 2<sup>nd</sup> bus stop further west on Crofton Road and so scores slightly worse. Option 3 could create and be caught in additional congestion when looping around Coal Quay Bridge for a 2<sup>nd</sup> time.

Regarding Traffic Network Integration, Safety and Noise, Vibration and Air Quality, Option 3 has significant disadvantages as it loops around Coal Quay Bridge to travel down Crofton Road a 2<sup>nd</sup> time causing additional congestion on the road.

In terms of Landscape and Visual and Land Use and Built Environment, Options 1 and 2 are more advantageous as the bus layover area is in the harbour and this keeps parked buses further away from the busy area on Crofton Road outside the DART station. It would also allow additional space to be used here for landscaping and urban realm improvements.

## Recommendation

Given the large volume of busses that will be required to layover a combination of Options 1 and 4 has been recommended as the preferred option. These options provide short overall route length while also allowing for enough bus layover space to accommodate the large number of buses in the new BusConnects network. Buses would layover outside the Dart station on Crofton Road as well as in the Harbour, and the first stop on outbound journeys would be opposite the Dart station on Crofton Road.

Consultation has taken place with the NTA to confirm that the above arrangement is suitable.