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Member of the SNC-Lavalin Group

Sutton to Malahide Pedestrian and Cycle Scheme

Route Options Study - Portmarnock Bridge

Fingal County Council

April 2022

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Document history

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Client signoff

Client	FCC
Project	Sutton to Malahide Cycle Scheme
Job number	5158418
Client signature / date	

Contents

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1. Introduction

1.1. Scheme Outline

Fingal County Council (FCC) proposes to develop a comprehensive pedestrian and cycle route with a view to providing connecting facilities between the towns of Sutton and Malahide.

To achieve this objective, Atkins have been engaged by FCC to develop route options, to undertake preliminary design work on the preferred route option and to manage and coordinate all aspects of an application to An Bord Pleanála seeking approval for the implementation of the scheme. At present the scheme is at Stage 2 (Preliminary Design).

The purpose of the proposed scheme as set out by Fingal County Council and the National Transport Authority is to develop an urban greenway to facilitate leisure and recreational pedestrian and cycling trips between Sutton and Malahide. The proposed scheme will form a part of the long-standing objective of the Fingal Development Plan in providing a greenway from Sutton to Swords and the wider Fingal Coastal Way.

1.2. Feasibility Study Options Report

In November 2017, Atkins prepared and issued a Feasibility Study Options Report (FSOR) to FCC. The main aims and objectives of this Report were to:

- To consider the context of the scheme in terms of Local, Regional and National Planning Policy;
- To identify significant engineering and environmental constraints;
- To set out the route options considered and to summarise their feasibility and relative ranking in terms of economy, integration, accessibility, safety and environment; and
- To appraise the findings of the route options study and make a recommendation in relation to a preferred route and link type.

The above objectives are still valid in 2022 and consistent with the overall aims and objectives and in line with relevant policy.

Through discussions held with FCC and the National Transport Authority (NTA), the majority of the emerging route and link options have been agreed with the exception of some specific sections. One of the areas which required further review was in the vicinity of Portmarnock Bridge. The main concern adjacent to this area was the impact of the emerging preferred route of the FSOR through the adjacent Baldoyle Estuary Special Area of Conservation (SAC).

In order to address these concerns, BEC consultants a consultancy specialising in marine ecology was appointed by FCC to undertake an assessment of the impact.

1.3. Baldoyle Estuary Boardwalk Advisory Note

BEC Consultants Ltd was contracted by Fingal County Council to carry out a habitat survey in the northern section of Baldoyle Bay, Portmarnock, Co. Dublin, adjacent to the Portmarnock Bridge. The purpose was to produce an advisory note in relation to the proposed boardwalk structure associated with the emerging preferred route of the Sutton to Malahide Pedestrian and Cycle Scheme and its potential impact on the Baldoyle Estuary SAC, specifically with regard to saltmarsh and mudflat habitats.

Based on the assessment presented in the advisory note, the loss of area of the Annex I habitat 1330 Atlantic salt meadows would likely be considered significant and affect the integrity of the Baldoyle Bay SAC. This is based on the nature of the habitat and the judgment in relation to the Galway Bypass[1]. Should this be the case, for the project to proceed, it would be necessary to look to Article 6(4) of the Habitats Directive, examining alternative solutions or whether Imperative Reasons of Overriding Public Interest (IROPI) applies. This route would require the identification of an area suitable for the establishment of 1330 Atlantic salt meadows habitat within Baldoyle Bay as a compensatory measure for the predicted loss, and the development of a detailed plan for the creation of the new saltmarsh habitat.

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62011CJ0258

1.4. Purpose of Report

The purpose of this report is to undertake a detailed route options study in the vicinity of Portmarnock Bridge to evaluate the suitability and impacts of all potential alternative options.

1.5. Existing Context

This area in the vicinity of Portmarnock Bridge is particularly constrained. The R106 (Coast Road) is narrow (6.5m plus 1.5m footway on the northern side) on its approach to the roundabout. The Stand Road section of the R106 widens out to a 7.3m carriageway with an overall width of 11.5m including footpaths on both sides of the road.

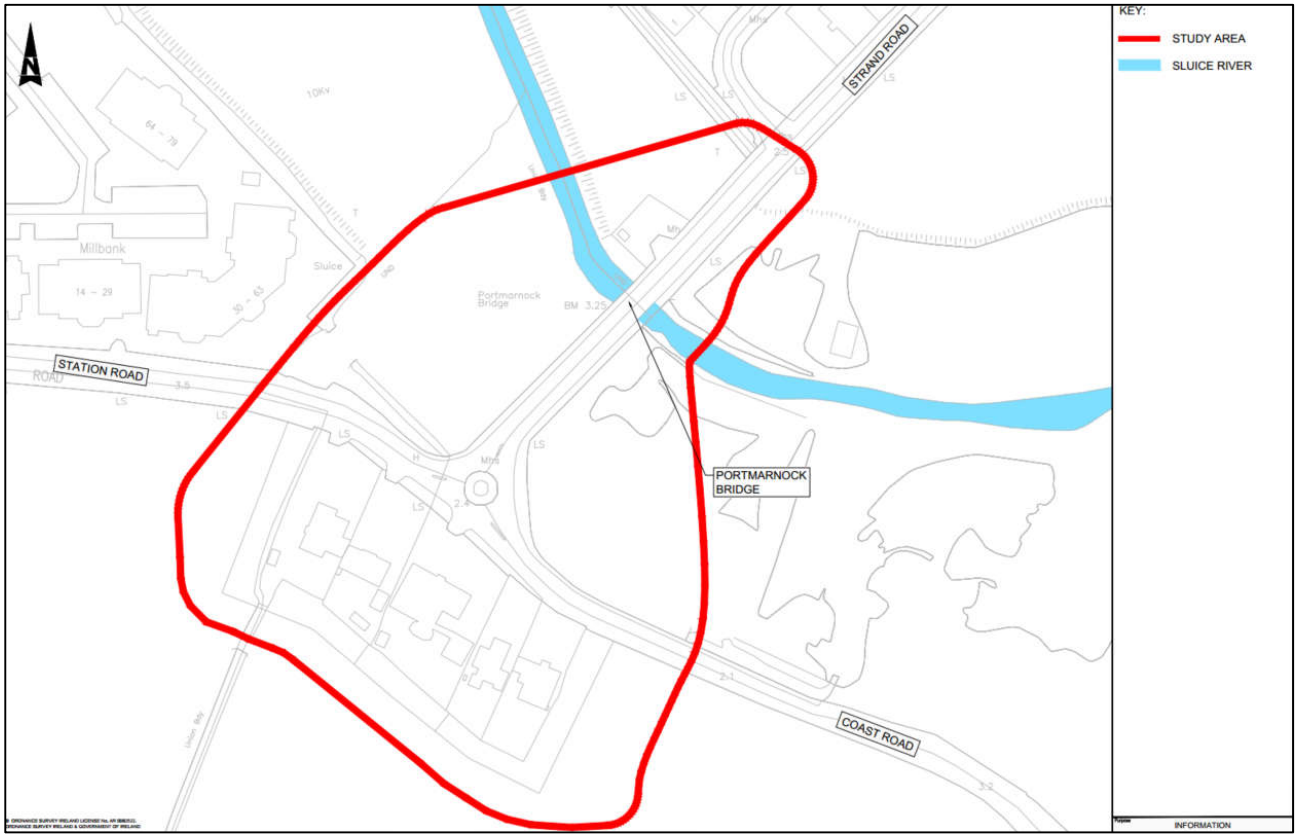
To the east lies the Baldoyle Special Area of Conservation (SAC), Baldoyle Proposed Natural Heritage Areas (pNHA) and the Baldoyle Bay Special Protection Areas (SPA).

To the south, along the Coast Road lie five (5) existing residential properties. To the south west lies development lands with permission for a one hundred and fifty (150) unit residential development (Reg.RefSHD002/17), At time of writing this report, significant progress has been made on the construction of these developments. The development includes for a combined walking and cycling path to the rear of the five (5) existing residential properties that will link the development with the Baldoyle to Portmarnock Cycle Scheme and Portmarnock Train Station. Therefore, there is an opportunity to connect to this walking and cycling facility, particularly for any route option developed to the western side of Portmarnock Bridge.

Along the western side of Portmarnock Bridge lies an area of significant scrub with drainage ditches and small streams in addition to an existing pumping station just north of the Sluice River. It is also noted that there are plans to decommission the existing pumping station and to build a new pumping station immediately to the south of the Sluice River. This land is not currently in public ownership.

Figure 1-1 illustrates the study area being considered. Refer to Appendix A for a full-size drawing of the Study Area.

Figure 1-1 – Study Area



1.6. Objective

The objectives of this report are to:

- Identify a suite of viable route options for the pedestrian and cycle scheme within the section under consideration;
- Subject selected options to a robust Multi Criteria Analysis process (MCA); and
- Identify a preferred route.

1.7. Multi Criteria Analysis (MCA)

The MCA process is a tool used by traffic engineers and transport planners to establish preferences between route options, by evaluating them against predefined objectives and criteria.

The MCA process set out within this study has been developed with reference to the National Cycle Manual (NCM), the Common Appraisal Framework for Transport Projects and Programmes (CAF) and Unit 7.0 'Multi Criteria Analysis' of TII's Project Appraisal Guidelines.

1.8. Methodology

The development of this study can be broken into three distinct phases:

- **Data Collection.** The first phase of the assessment began with a site inspection, this was followed by a desk study and a number of further site inspections;
- **Development of Route Options.** The second phase used the information gathered in phase one to develop a suite of viable route options; and
- **The MCA Process.** The third phase assesses the route options using a two-stage MCA process. The third phase culminated with the recommendation of the preferred route.

1.9. Documents Referenced

The following documents are referenced in preparation of this report:

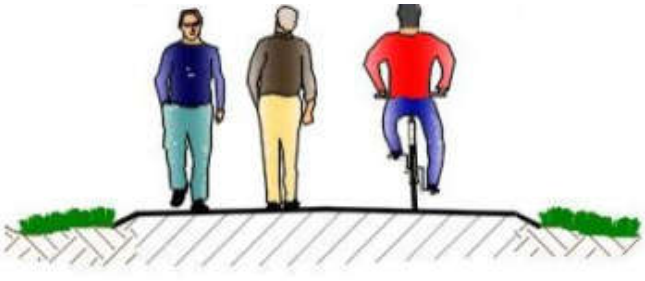
- Common Appraisal Framework for Transport Projects and Programmes, March 2016, by the NTA;
- Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis, October 2016 by TII; and
- Getting the Best from a Multi Criteria Appraisal Framework: Some Practical Tips, July 2018, by Graham James (ATKINS).

1.10. Proposed Scheme Cross Section

All route options necessitate the crossing of the Sluice River. This crossing will be provided by a bridge structure of circa 20-25m span. On the eastern side of the existing Portmarnock Bridge, any proposed bridge will need to be set back sufficiently to permit the operation of the flood gates.

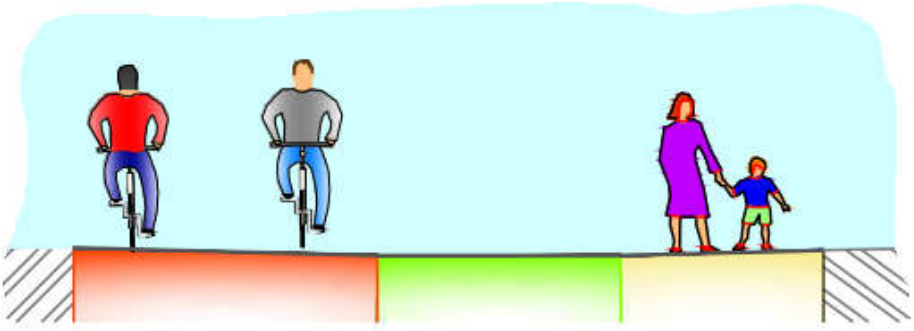
The link type to be implemented in connecting the Baldoyle to Portmarnock Scheme to the Sutton to Malahide Scheme may consist of a bound shared pedestrian / cycle path, bound segregated pedestrian / cycle path (both of which may be raised on an embankment where necessary) or a raised shared pedestrian / cycle boardwalk or a combination of these. Figure 1-2, Figure 1-3 and Figure 1-4 illustrate the typical Shared Path, Segregated Path and Boardwalk cross-section respectively.

Figure 1-2 – Cross Section of Proposed Shared Pedestrian / Cycle Path



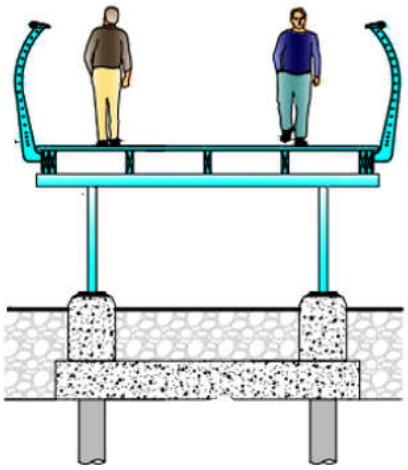
The shared pedestrian and cycle path would consist of a 3.0 to 4.0m wide bound asphalt pavement with 0.5 to 1.0m wide verges on both sides. Fencing may also be provided as appropriate. Pedestrians and cyclists will share the path with consideration towards each other and two-way movement will be accommodated. Signage will be installed to encourage this.

Figure 1-3 – Cross Section of Proposed Segregated Pedestrian / Cycle path



The segregated pedestrian and cycle path will consist of a 3.0m wide two-way cycle path, a 2.0m wide footpath with a 2.4m wide verge segregating each. The paths will be surfaced with a bound asphalt pavement with 0.5m to 1.0m wide verges on both sides. Fencing may also be provided as appropriate.

Figure 1-4 – Cross Section of Proposed Boardwalk



The boardwalk will accommodate a 4.0m wide shared pedestrian and cyclist facility equating to an effective user width of 3.0m. The support structure of the boardwalk will primarily comprise of steel components, with some timber elements also incorporated into the deck and railings. The sub-structure will consist of concrete piles and concrete pile caps spaced at approximately 4.0m centres. The above is one option, other engineering solutions may be considered subject to appropriate assessment.

The final route option, subject of this option appraisal study, may consist of a combination of the above link type options.

2. Stage 1 - Preliminary Appraisal

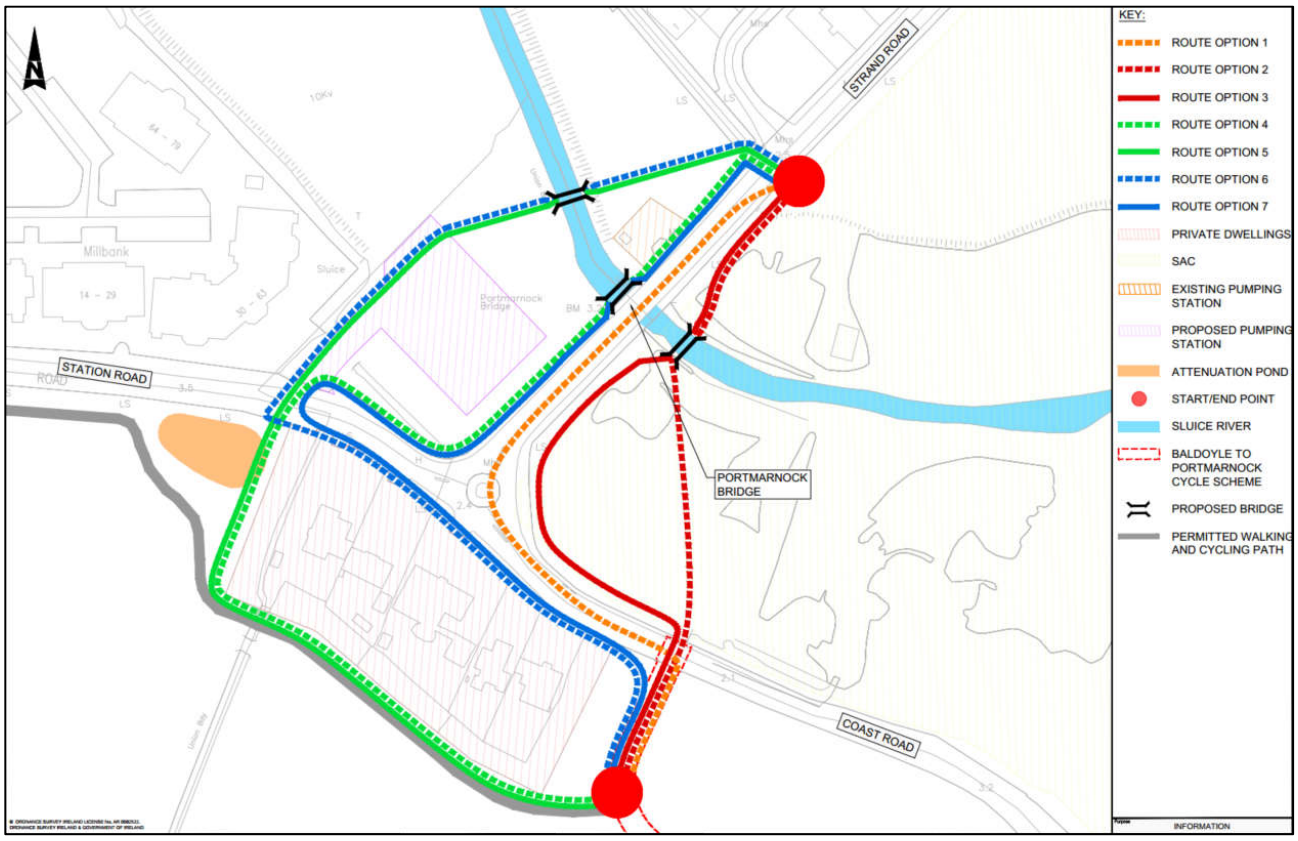
2.1. Introduction

A preliminary appraisal process has been carried out to eliminate any option which fails to meet any of the appraisal criteria highlighted in Table 2-1 below. This initial appraisal has been carried out in line with the principles of Multi Criteria Analysis referenced in section 1.7 above.

2.2. Identified Route Options and Constraints

Seven route options have been developed for appraisal as part of the Stage 1 sifting exercise. These options along with key constraints and opportunities are identified on Figure 2-1 below.

Figure 2-1 – Stage 1 Route Options



Option on Road

- Option 1: Provide Pedestrian and Cycle Facilities utilising Existing Coast Road / Strand Road Carriageway.

Options to East of Portmarnock Bridge.

- Option 2: Provide Pedestrian and Cycle Facility directly through SAC.
- Option 3: Provide Pedestrian and Cycle Facility within SAC but adjacent to Boundary with Strand Road / Coast Road.

Options to West of Portmarnock Bridge.

- Option 4: Provide Pedestrian and Cycle Facility to the south of the existing residential dwellings along the Station Road and along the east the Proposed Pumping Station
- Option 5: Provide Pedestrian and Cycle Facility to the south of the existing residential dwellings along the Station Road and along the west the Proposed Pumping Station.

- Option 6: Provide Pedestrian and Cycle Facilities along southern side of the Station Road and along the east the Proposed Pumping Station
- Option 7: Provide Pedestrian and Cycle Facilities along southern side of the Station Road and along the west the Proposed Pumping Station.

Refer to Appendix B for a full-size drawing of the Stage 1 route options.

2.3. Assessment Criteria

Table 2-1 sets out the main evaluation criteria and the associated sub criteria and considerations.

Table 2-1 - Stage 1 Preliminary Appraisal Criteria

Criteria	Sub Criteria	Considerations
Project Objectives	Accessibility for all Users	• Ease of access and progression for all users and users with varying levels of mobility.
	Connectivity to Existing and Future Facilities / Amenities	• Type of pedestrian/cycle facility. • Integration with adjacent residential areas. • Integration with adjacent road / pedestrian / cycle schemes.
Engineering	Safety	• Conflicts between users. • Road crossings. • Perception of safety.
	Adherence to Technical Standards	• Compliance with design standards set out in the National Cycle Manual and Design Manual for Urban Roads and Streets.
	Buildability	• Construction type. • Physical constraints. • Access from public road.
Environmental	Impact on SAC	• Impact on SAC. • Impact on visual landscape.
	Susceptibility to Flooding	• Usability during periods of flooding.
Land	Land Acquisition	• Land acquisition process. • Land acquisition costs.

2.4. Scoring Procedure

All route options have been assessed against the above criteria on pass / fail basis as per the table below.

Table 2-2 - Scoring Scale

Colour Coding	Rank Description
	Pass
	Neutral
	Fail

A fail within any criteria will result in an overall fail.

2.5. Option Evaluation

Table 2-3 – Stage 1 Preliminary Appraisal: Sifting

Criteria	Sub Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Project Objectives	Accessibility for all Users							
	Connectivity to Existing and Future Facilities / Amenities							
Engineering	Safety							
	Adherence to Technical Standards							
	Buildability							
Environment	Impact on SAC							
	Susceptibility to Flooding							
Land	Land Acquisition							
Option Sifting		X	X	X	✓	✓	X	X

2.6. Route Options Brought Forward to Stage 2

Of the seven (7) options developed, five are deemed to have failed and thus two are to be brought forward for detailed appraisal at Stage 2. A brief summary is provided below.

Options Failed and will not be brought forward to Stage 2:

- Option 1 failed to meet the requirements of the safety and adherence to technical standards.
- Options 2 and 3 failed to meet the requirements due to their impact on the SAC criteria.
- Options 6 and 7 failed due to their impact on the land acquisition criteria.

Options Passed to be brought forward to Stage 2:

- Option 4 and 5 met all the requirements of the preliminary appraisal.

3. Stage 2 - Detailed Appraisal

3.1. Route Options Brought Forward

A detailed appraisal process has been carried out for the two (2) route options brought forward from the Stage 1 Preliminary Appraisal stage.

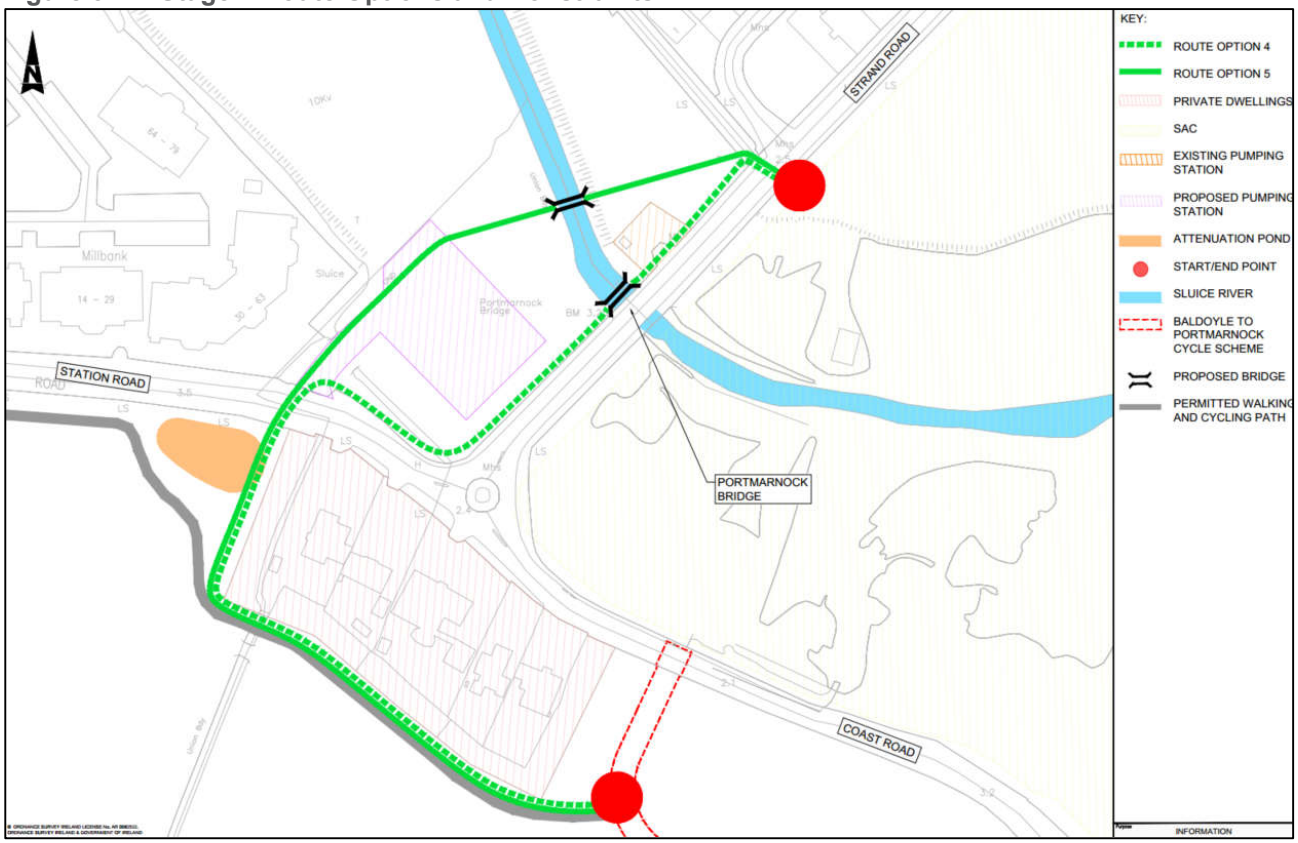
This detailed appraisal has also been carried out in line with the principles of Multi Criteria Analysis referenced in section 1.7, however the criteria utilised are more focused on specifics with the options.

For clarity the route options brought forward are:

- Option 4: Provide Pedestrian and Cycle Facility to the south of the existing residential dwellings along Station Road and within the Floodplain along the east the Proposed Pumping Station
- Option 5: Provide Pedestrian and Cycle Facility to the south of the existing residential dwellings along Station Road and within the Floodplain along the west the Proposed Pumping Station.

Figure 3-1 illustrates the two route options brought forward from preliminary appraisal of Stage 1 and the key constraints and opportunities relevant to the area in the vicinity the of Portmarnock Bridge. Refer to Appendix C for a full size drawing of the Stage 2 route options .

Figure 3-1 – Stage 2 Route Options and Constraints



3.2. Assessment Criteria

The following table sets out the considerations associated with the main evaluation criteria.

Table 3-1 - Stage 1 Preliminary Appraisal Criteria & Considerations

Criterion	Sub-Criterion	Considerations
Economy	Construction cost	Comparison of length of bridge / boardwalk / embankment to be potentially built.
	Maintenance cost	Maintenance of same.
	Delivery cost	Extent of land / property acquisition.
Safety	Vulnerable road users (VRU's)	How are VRU's accommodated.
	Collision reduction	Does one option reduce potential for conflict over the other?
	Perception of safety	Is the route overlooked, is there passive surveillance?
Environmental	Impact on SAC	Are the qualifying interests of the SAC impacted?
	Loss of trees / hedgerow	Does one option remove a greater number of trees or hedgerow.
	Landscape and visual impact	Is there a visual impact associated with the option?
	Land severance	Does the route sever land result in operational impacts for the owner?
Access & Social Inclusion	Accessibility	Are the mobility and visually impaired catered for?
	Linkage to adjacent amenities	Are links provided to local amenities and are these useable?
	Impact on local residents	Are residents impacted negatively.
Integration	Integration with existing / future infrastructure	How do the routes impact on existing and proposed infrastructure?

3.3. Scoring Procedure

Both route options have been assessed against the above criteria in a performance matrix (provided on the following page) which describes how each route performed against the other options.

Compliance with each criterion has been scored on a five-point colour coded scale. This scale has been provided in the table below and rates how well each route option satisfied a particular criterion.

Table 3-2 - Scoring Scale

Colour Coding	Rank Description
	Positive
	Slightly Positive
	Neutral
	Slightly Negative
	Negative

3.4. Option Analysis

Table 3-3 – Stage 2 Detailed Appraisal: Multi Criteria Analysis (MCA)

Criterion	Sub-Criterion	Option 4	Option 5
Economy	Construction cost		
	Maintenance cost		
	Delivery cost		
Safety	Vulnerable road users		
	Collision reduction		
	Perception of safety		
Environmental	Impact on SAC		
	Impact on trees / hedgerow / streams		
	Landscape and visual impact		
	Land severance		
Access & Social	Accessibility		
	Linkage to adjacent amenities		
	Impact on local residents		
Integration	Integration with existing / future infrastructure		
Ranking		***2nd***	***1st***

3.5. Option Discussion

3.5.1. Economy

In terms of Economy, Option 4 scores marginally lower than Option 5. This is due to the requirement for either a boardwalk or raised embankment to be constructed to the immediate southeast of the site proposed for the new pumping station. A structure is required here due to its proximity to the existing road carriageway and also to navigate the existing streams which may need culverting. Whilst a boardwalk may also be required along the north of the proposed pumping station for Option 5, that required within Option 4 would be more extensive. As such this adds to the construction delivery and maintenance costs.

3.5.2. Safety

In terms of Safety, it is clear that both route options will offer a safe segregated route which removes almost all interaction with private cars. The crossing location over Station Road can be designed as a signalised toucan crossing and thus a high level of safety can be expected.

In terms of perception of safety, both options score similarly, however careful design will be needed to ensure that the routes are well lit and overlooked as much as possible from adjacent residential areas and from the public road.

3.5.3. Environment

In Environment terms, neither will have an impact on the Baldoyle Estuary SAC and both offer similar opportunities in terms of landscape and visual quality potential. To accommodate Option 4 a large proportion of trees and hedgerows adjacent to the boundary with the public road would likely be lost and or removed. For this option, the streams located in this area would also have to be culverted or diverted.

Option 5 avoids this area and thus has a reduced impact versus Option 4. impact here. Option 5 may sever some land to the north west of the proposed pumping station site, however this land is zoned for High Amenity use and thus there is an opportunity for this option to be integrated with any potential future access into this site. An option through these lands would need to be studied further to ensure integration and reduce any adverse impacts.

3.5.4. Access and Social Inclusion

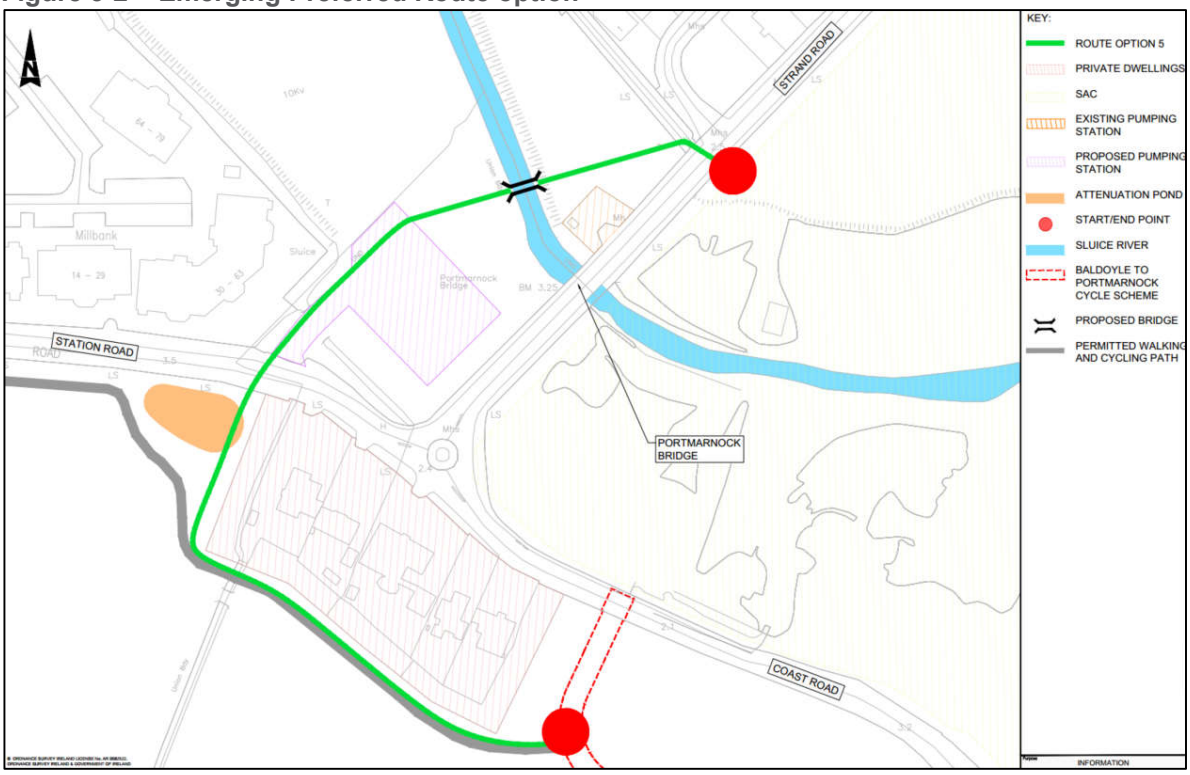
In terms of access, social inclusion and integration both options are considered to score highly, given that they connect with key destinations such as the Train Station and link with existing and future residential areas particularly well, all which will serve to provide high quality access for all and encourage social activity for the population catchment in its vicinity.

3.6. Emerging Preferred Option

Based on the above assessment and analysis the Emerging Preferred Route resulting from the Stage 2 Detailed Analysis is Option 5 ‘Provide Pedestrian and Cycle Facility to the south of the existing residential dwellings along the Station Road and within Floodplain along the west the Proposed Pumping Station’.

The following sketch illustrates the emerging preferred route option. Refer to Appendix D for a full-size drawing of the emerging preferred route option.

Figure 3-2 – Emerging Preferred Route option



4. Summary and Conclusion

As part of the proposed Sutton to Malahide Pedestrian and Cycle Scheme, seven route options have been identified in order to determine the emerging preferred route option in the vicinity of Portmarnock Bridge, Portmarnock Co, Dublin.

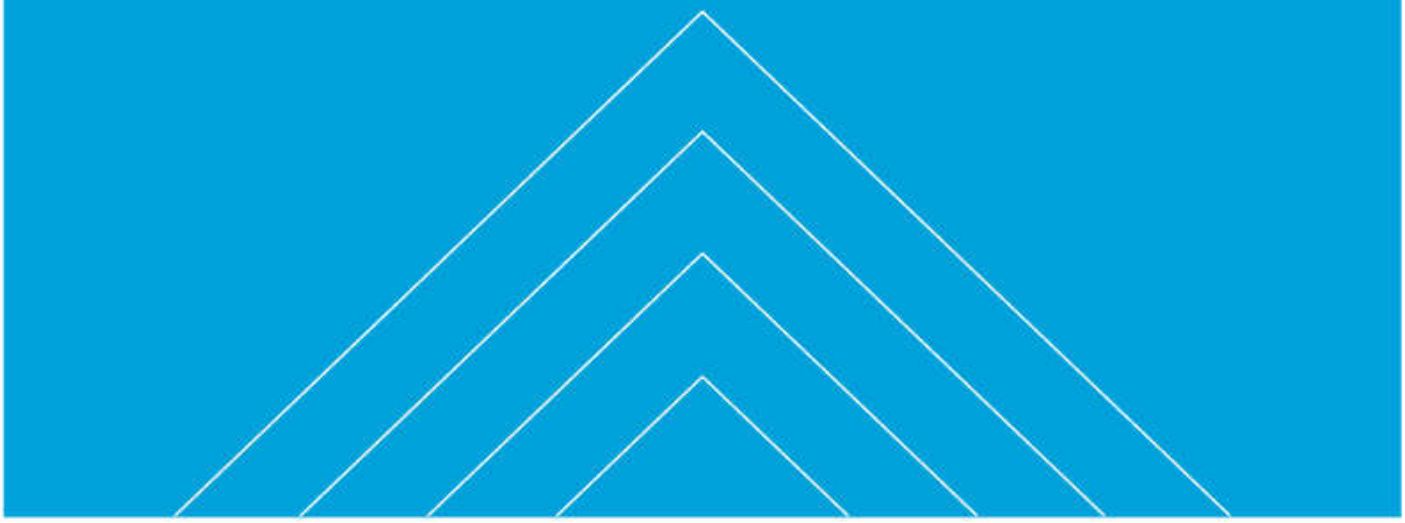
A two stage Multi Criteria Analysis has been undertaken on the identified route options. Stage 1 Preliminary Analysis constitutes a sifting exercise that reviews the high-level impacts of the routes on a pass / fail basis.

Of the seven route options considered five (5) were removed on safe, environmental and land take impacts. These options were Option 1 (Safety impacts), Option 2 and Option 3 (Environmental impacts) and Option 6 and Option 7 (Land take impacts). The remaining two options, Option 4 and Option 5 were then brought forward to the next stage of assessment.

Stage 2 Detailed Analysis constitutes a more thorough evaluation of the options fussing on specific details under the main criteria of Economy, Safety, Environmental, Access & Social Inclusion and Integration.

Of the two options assessed at detailed analysis stage, Option 5 was identified as the emerging preferred route option on the basis that it is slightly more economical from a construction, delivery and maintenance point of view and more specifically having a reduced environmental impact due to not having any impact on adjacent hedge rows, treeline and streams.

Appendices



Appendix A. Study Area

A1

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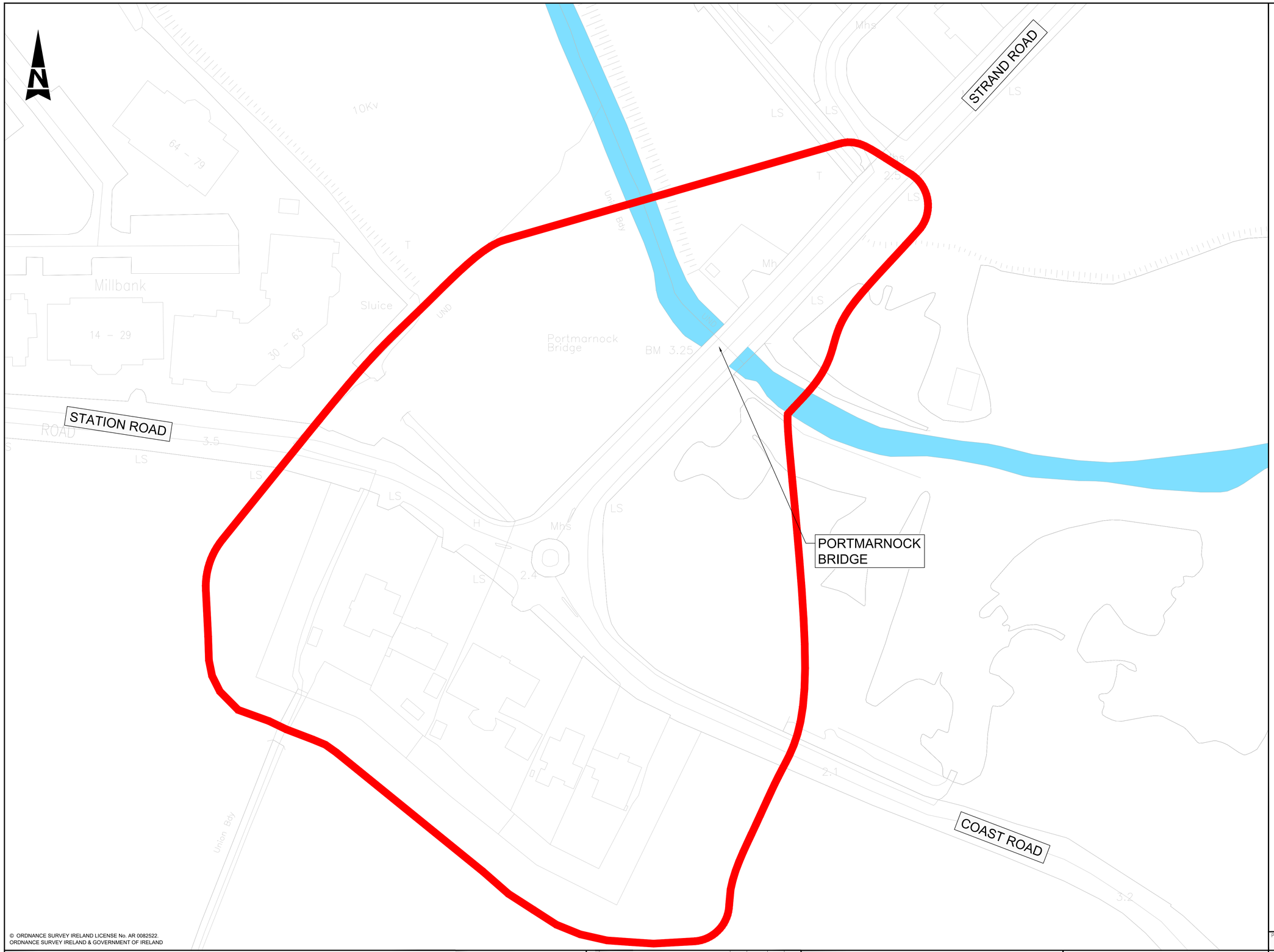

KEY:

- STUDY AREA
- SLUICE RIVER

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Comhairle Contae Fhine Gall
Fingal County Council

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Rev	Description	By	Date	Chk'd	Auth
A	FOR INFORMATION	AK	28.02.22	CF	CF
-	INFORMATION	BH	12.06.19	CF	MD

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: INFORMATION

Title: PORTMARNOCK BRIDGE STUDY AREA

Original Scale	Design/Drawn	Checked	Authorised
1:500 at A1 1:1000 at A3	BH Date 12.06.19	CF Date 12.06.19	MD Date 12.06.19

Status	Drawing Number	Rev
I	5158418 / HTR / SK / 0412	A

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Appendix B. Stage 1 Route Options

A1

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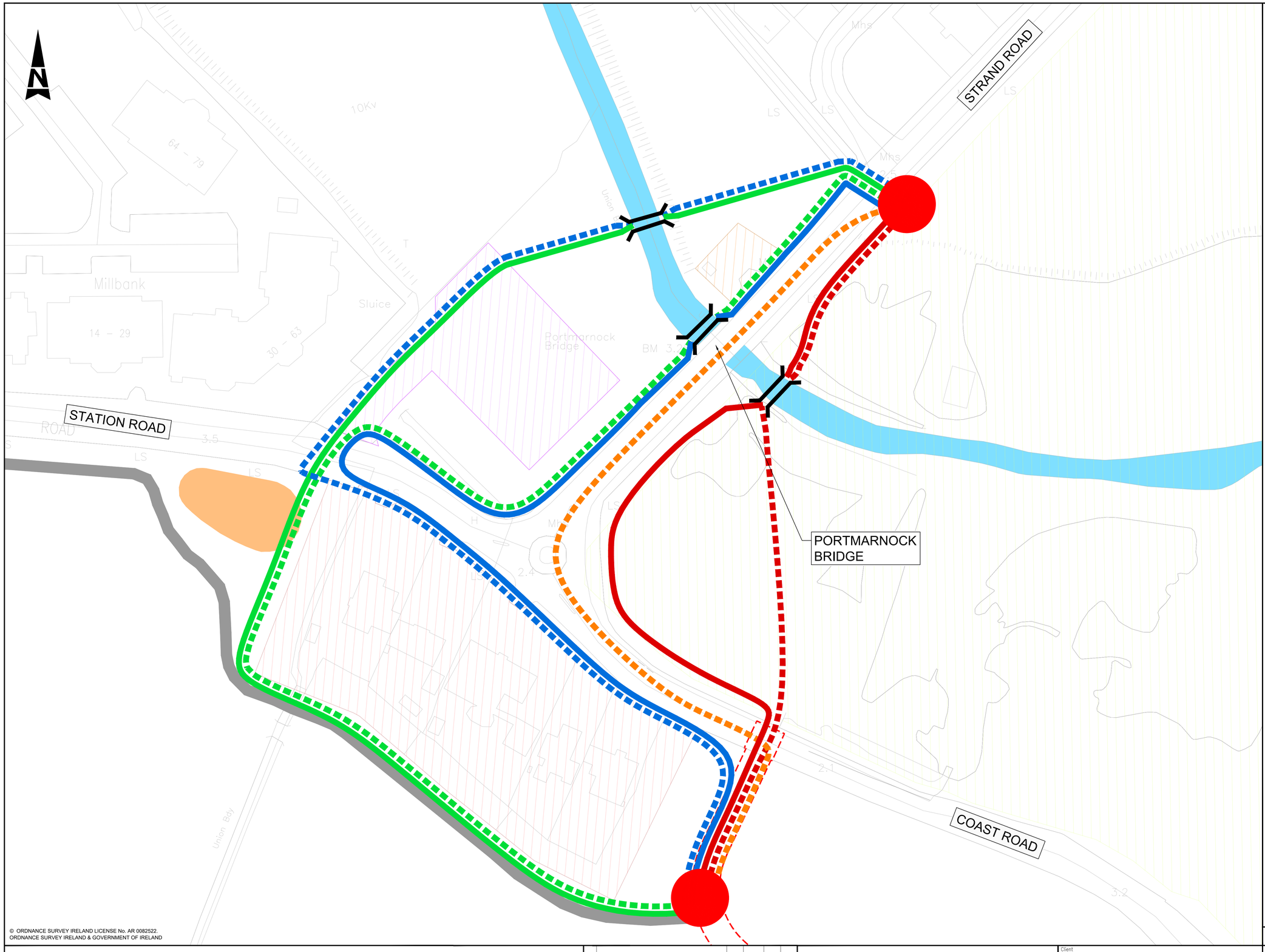

KEY:

- ROUTE OPTION 1
- ROUTE OPTION 2
- ROUTE OPTION 3
- ROUTE OPTION 4
- ROUTE OPTION 5
- ROUTE OPTION 6
- ROUTE OPTION 7
- PRIVATE DWELLINGS
- SAC
- EXISTING PUMPING STATION
- PROPOSED PUMPING STATION
- ATTENUATION POND
- START/END POINT
- SLUICE RIVER
- BALDOYLE TO PORTMARNOCK CYCLE SCHEME
- PROPOSED BRIDGE
- PERMITTED WALKING AND CYCLING PATH

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Fingal County Council

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Rev	Description	By	Date	Chk'd	Auth
B	FOR INFORMATION	AK	28.02.22	CF	CF
A	FOR INFORMATION	AK	15.07.19	CF	MD
-	FOR INFORMATION	BH	07.05.19	CF	MD

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: INFORMATION

Title: PORTMARNOCK BRIDGE STAGE 1 ROUTE OPTIONS

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Appendix C. Stage 2 Route Options

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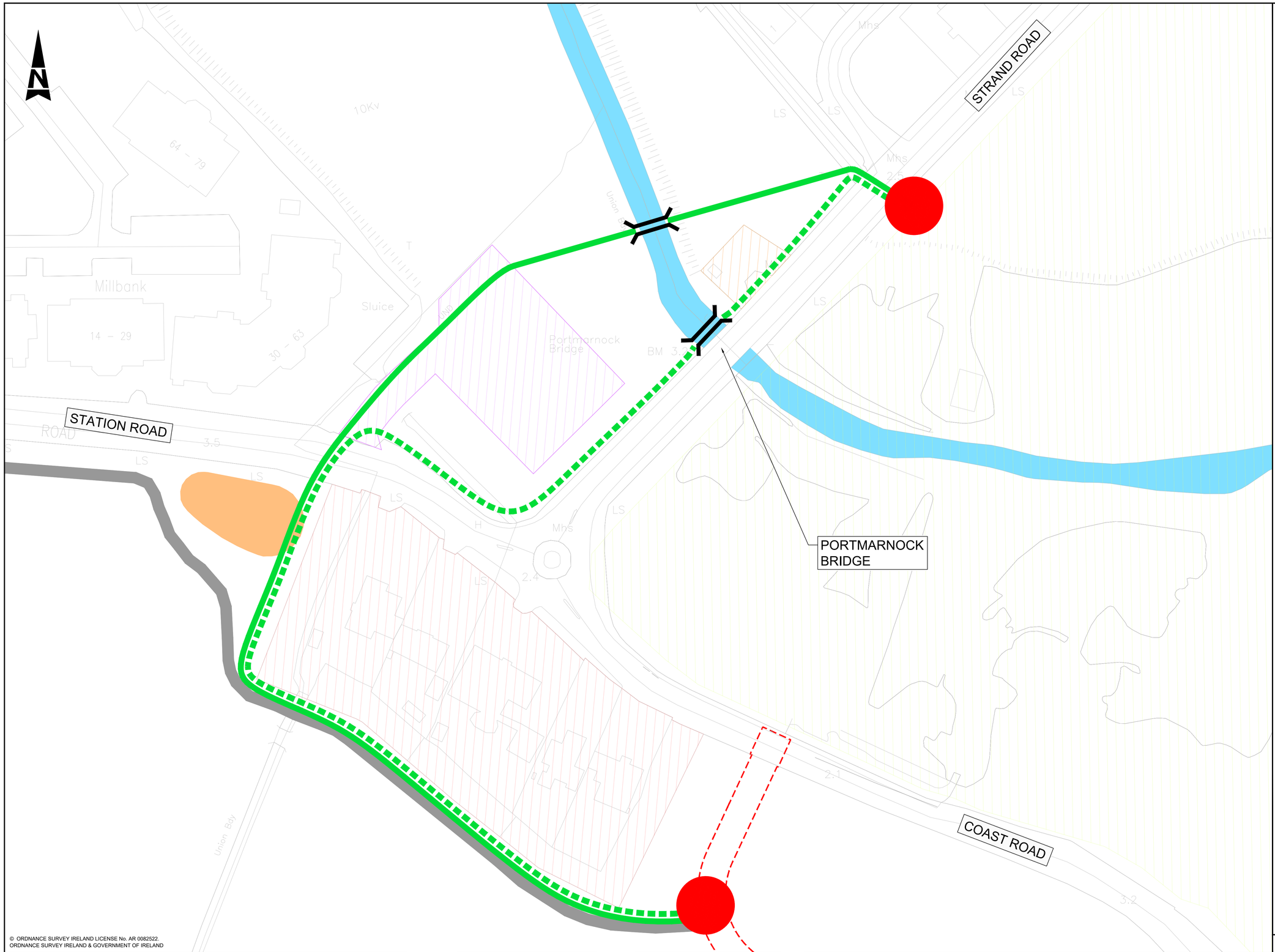

KEY:

- ROUTE OPTION 4
- ROUTE OPTION 5
- PRIVATE DWELLINGS
- SAC
- EXISTING PUMPING STATION
- PROPOSED PUMPING STATION
- ATTENUATION POND
- START/END POINT
- SLUICE RIVER
- BALDOYLE TO PORTMARNOCK CYCLE SCHEME
- PROPOSED BRIDGE
- PERMITTED WALKING AND CYCLING PATH

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Fingal County Council

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Rev	Description	By	Date	Chk'd	Auth
B	FOR INFORMATION	AK	28.02.22	CF	CF
A	FOR INFORMATION	AK	15.07.19	CF	MD
-	FOR INFORMATION	AK	07.06.19	CF	MD

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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: INFORMATION

Title: PORTMARNOCK BRIDGE STAGE 2 ROUTE OPTIONS

Original Scale	Design/Drawn	Checked	Authorised
1:500 at A1 1:1000 at A3	AK Date 07.06.19	CF Date 07.06.19	MD Date 07.06.19

Status	Drawing Number	Rev
I	5158418_HTR_SK_0409	B

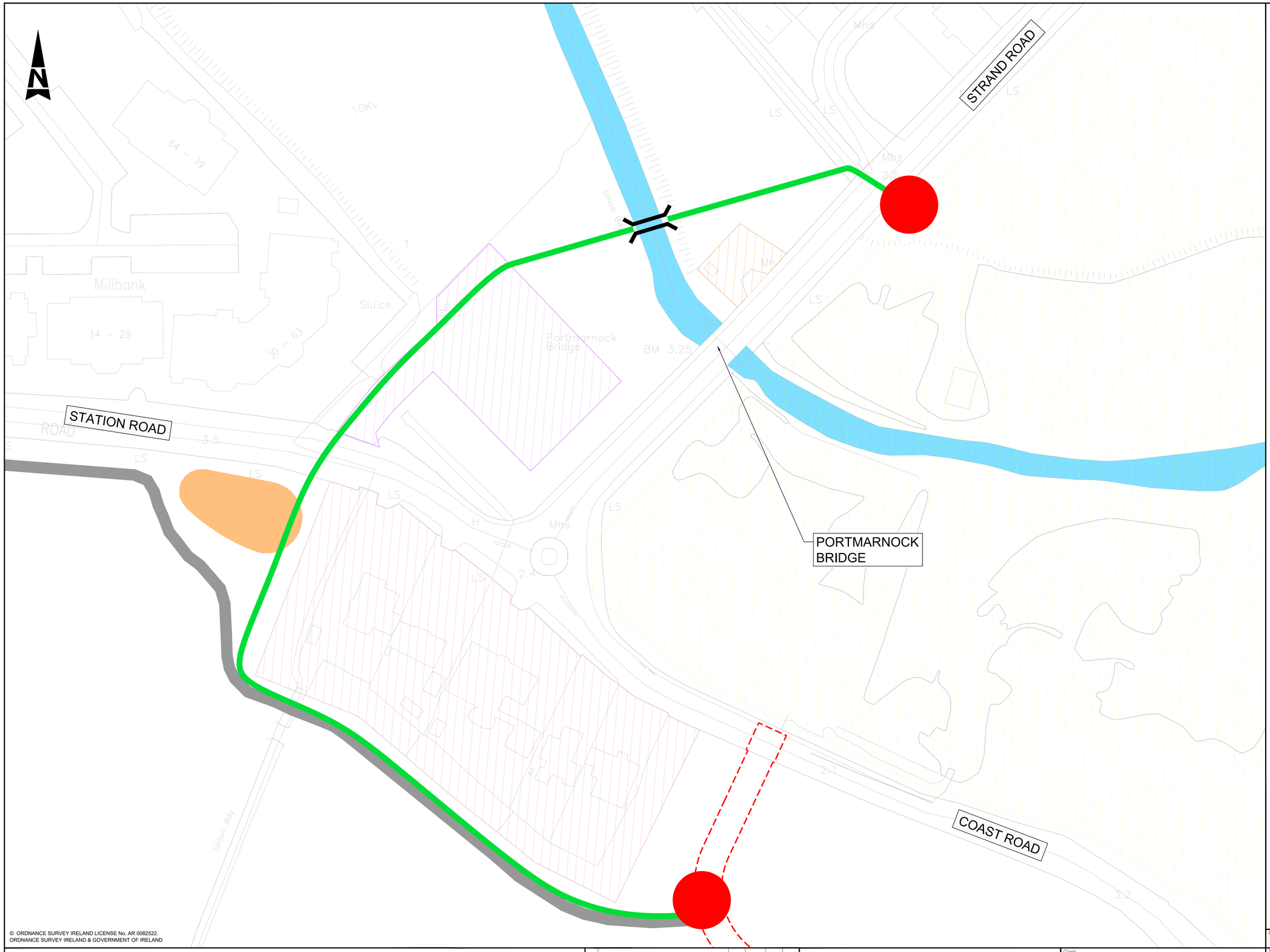
U:\5158418\6 Dwgs-Graphics\61 AutoCad\610 Sutton – Malahide –Swords Pedestrian Cycle Scheme\5158418_HTR_SK_0409.dwg

Appendix D. Emerging Preferred Route Option

A1

DO NOT SCALE

File: 5158418_HTR_SK_0410.dwg
Date: Feb 28, 2022 - 4:13pm
Plotted by: AKonyukovtsev



KEY:

- ROUTE OPTION 5
- PRIVATE DWELLINGS
- SAC
- EXISTING PUMPING STATION
- PROPOSED PUMPING STATION
- ATTENUATION POND
- START/END POINT
- SLUICE RIVER
- BALDOYLE TO PORTMARNOCK CYCLE SCHEME
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Client: FINGAL COUNTY COUNCIL

Project: SUTTON TO MALAHIDE PEDESTRIAN AND CYCLE SCHEME

Purpose: INFORMATION

Title: PORTMARNOCK BRIDGE EMERGING PREFERRED ROUTE OPTION

Original Scale	Design/Drawn	Checked	Authorised
1:500 at A1 1:1000 at A3	AK Date 07.06.19	CF Date 07.06.19	MD Date 07.06.19

Status	Drawing Number	Rev
I	5158418_HTR_SK_0410	B

U:\5158418\6 Dwgs-Graphics\61 AutoCad\610 Sutton - Malahide -Swords Pedestrian Cycle Scheme\5158418_HTR_SK_0410.dwg

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