

Dundalk Bay to Carlingford Greenway

Options Report - Volume 3 – Appendix A – Detailed Environmental Appraisal

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AECOM ROD ROUGHAN & O'DONOVAN

TII Transport Infrastructure Ireland

Comhairle Contae Lú Louth County Council

Rialtas na hÉireann Government of Ireland | Tionscadal Éireann Project Ireland 2040

An Roinn Iompair Department of Transport

Greenway

Dundalk Bay to Carlingford Greenway

WESTMEATH NATIONAL ROADS OFFICE
Oifig na hIarmhí um Bhóithre Náisiúnta

Dundalk Bay to Carlingford Greenway

Stage 2 Detailed Environmental Options Appraisal

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1. STAGE 2 OPTIONS ASSESSMENT

1.1 Introduction

This document presents the detailed options assessments under the Land Use Impacts, Climate Change Impacts and Local Environmental Impacts TAF headings. Refer to the main Options Report for assessments under the remaining TAF headings.

1.2 Description of Options

All options considered are described in detailed in Section 7.4 of the Options Report.

1.3 Assessment Methodology

The assessment of options was undertaken following the Multi-criteria analysis (MCA) of the quantifiable and non-quantifiable impacts of options in accordance with the Transport and Accessibility Appraisal (TAA) under the TAF Guidelines.

The sub-criterion under each of the TAA appraisal criteria headings have been developed to provide a differentiation between the options being assessed. The criteria are in line with TII's PAG Unit 13, whilst also taking into consideration TII PAG Unit 7.0, TAF Module 7, utilising the qualitative assessment indicators set out in subsequent sections.

The 7-point scale scoring system detailed in TAF Module 7 and TII PAG Unit 13 as shown in Table 1.3.1 below, will be used to evaluate the impact of each option relative to the baseline environment.

Table 1.3.1 TAF Impact Assessment Scoring System Matrix (Adapted from TAF, June 2023)

Score	Description	Colour Code
7 - Highly Positive Impact	The option is likely to significantly improve conditions in the relevant criteria.	
6 – Positive Impact	The option is likely to improve conditions in the relevant criteria.	
5 - Slight Positive Impact	The option is likely to somewhat improve conditions in the relevant criteria.	
4 – Neutral Impact	The option will result in no changes to conditions in the relevant criteria.	
3 – Slight Negative Impact	The option is likely to somewhat worsen conditions in the relevant criteria.	
2 – Negative Impact	The option is likely to worsen conditions in the relevant criteria.	
1 – Highly Negative Impact	The option is likely to significantly worsen conditions in the relevant criteria.	

As per the TII Project Appraisal Guidelines, whilst an overall score for each criterion will be recorded, these scores will be considered independently of one another and are not intended to lead to a numerical total across criteria for a given option.

2. LAND USE IMPACTS

2.1 Material Assets – Non-Agricultural Properties

2.1.1 Introduction

This section deals with options selection in relation to Material Assets – Non-agricultural property. The options assessment will inform Stage 2 of the Multi-Criteria Analysis (MCA) of options for the proposed Dundalk Bay to Carlingford Greenway project.

This assessment was prepared by John Bligh & Associate, Agricultural & Environmental Consultants. John is a Principal Agronomist with over 20 years' experience in consultancy. John holds a B.Agr.Sc. (University College Dublin), M.Sc. Environmental Systems (ATU), and is a Full Member of the Agricultural Consultants Association (ACA).

2.1.2 Methodology

The options assessment comprises an assessment of the route corridor options and the potential option impact on non-agricultural property. This will involve assigning a value rating and an impact rating to each option based on the criteria in Table 2.1.1.

Table 2.1.1 Options assessment

Rating	Criteria	Rating
Value criteria	Type and quantity of non-agricultural property.	High, Medium, Low or Very Low
Impact criteria	Impacts on property, on residential, commercial, community and development property, on property curtilage, on property entrance / access. Identify significant impacts.	High, Medium, Low or Very Low
Significance of impact	Significance category and MCA score based on the combination of both the value and impact ratings. based.	

The value rating in Table 2.1.2 is based on the qualitative and quantitative assessment of the option corridor with regards to the following non-agricultural property:

- Residential property.
- Commercial property.
- Community property – Public park, open space or lands that are used for public amenities and services; and
- Development land – Lands zoned for development (with or without planning permission) and sites with planning permission.

The methodology for the options assessment comprises of a qualitative and quantitative appraisal of the depot option and the impact on non-agricultural property in Table 2.1.2.

Table 2.1.2 Value rating criteria

Rating	Qualitative Criteria
High	Non-agricultural property – Residential, commercial, community and development property with zoning for development and planning permission is present.
Medium	Non-agricultural property – Residential, commercial, community and development property with zoning for development or planning permission is present.
Low	Non-agricultural property – Residential, commercial, community and development property with zoning for development or planning permission is present.

Rating	Qualitative Criteria
Very low	Non-agricultural property – Absent within the option site.

The qualitative assessment consists of an evaluation of non-agricultural property types along the route option corridor. The quantitative assessment considers the level of non-agricultural property types.

The impact rating in Table 2.1.3 is based on the qualitative and quantitative assessment of the potential option alignment under the following criteria:

- Landtake.
- Impact on dwelling houses / commercial / community buildings.
- Impact on entrance and access to property.
- Impact on property curtilage / property boundary.

The impact rating will consider the qualitative and quantitative criteria as presented in Table for the option alignment.

Table 2.1.3 Impact rating criteria

Rating	Qualitative Criteria
High	Landtake and property impacts – on residential, commercial, community and development property with zoning for development and planning permission. Significant direct impacts involving property acquisition or a substantial area of curtilage / lands.
Medium	Impacts on residential, commercial, community and development property with zoning for development or planning permission. Direct impacts involving acquisition of areas of property curtilage / lands.
Low	Impacts on residential, commercial, community and development property with zoning for development or planning permission. Impacts on non-agricultural lands without planning permission. Direct impacts are not significant on property present.
Very Low	There is no impact on non-agricultural property or direct impact involves acquisition of areas of public road only.

The impact assessment considers the combined effects of landtake, direct impacts to properties and impacts on property access. The assessment of the option impact is based on the effect of the proposed option landtake boundary on non-agricultural property present.

A direct impact on residential, community or commercial property may be a significant negative impact on the property. On residential property, landtake may result in loss of property curtilage involving direct impacts to the dwelling / property entrance / access / property boundary and loss of garden area / mature planting. On commercial property, a loss of property curtilage may result in direct impacts to buildings / property entrance / property boundary and loss of staff parking / customer parking / commercial yard area. On community property, landtake may result in a direct impact on community building / property entrance / property boundary and loss of amenity area, mature planting and public parking.

The option assessment has allowed for mitigation of the loss of property access involving the replacement of property entrances and access on a like-for-like basis. These will be

considered on an individual basis and final mitigation will inform the assessment of the non-agricultural impact on individual properties.

The Multi-Criteria Analysis (MCA) impact category for depot options is determined from the value rating combined with the impact rating from the matrix table in Table 2.1.4. There are four impact categories relevant to the assessment of the impact on non-agricultural property that comprise of 'neutral impact', 'slight negative impact', 'negative impact' and 'highly negative impact'. These categories are taken from the seven-point scale in TAF (2024).

Table 2.1.4 MCA Impact category and score

Value Rating	Impact Rating			
	High	**Medium**	**Low**	**Very low**
High	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Medium	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Low	Negative impact Score 2	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3
Very low	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4

2.1.3 Options Appraisal

The assessment of impact on non-agricultural property has assumed, unless stated otherwise, that the following will apply to the route options in each section:

- The impact on non-agricultural property mainly comprises of landtake on property curtilage, impact on property boundaries or impacts on existing property entrances.

2.1.3.1 Section A Options Appraisal

Option A3 (Node 1 – 4)

Table 2.1.5 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.5 Impact assessment of Option A3 (Node 1 – 4) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option A4-1 (Node 1 – 4)

Table 2.1.6 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.6 Impact assessment of Option A4-1 (Node 1 – 4) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option A4-1 (Node 4 - 9)

Table 2.1.7 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.7 Impact assessment of Option A4-1 (Node 4 - 9) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**Neutral**

Option A5 & A6 (Node 4 – 12)

Table 2.1.8 below provides impact assessment of this option on non-agricultural properties. This option is largely on road, shared road and agricultural land for most of length. However there is potential for direct impacts impacting gardens and curtilage of 5 no. properties. New walls and re-instatement will be required.

Table 2.1.8 Impact assessment of Option A5 & A6 (Node 4 – 12) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential	Medium	Medium	Impact on and curtilage and boundary
Residential	Medium	Medium	Impact on and curtilage and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Overall	**Medium**	**Medium**	**2 – Negative impact**

Option A5 (Node 12 – 14)

Table 2.1.9 below provides impact assessment of this option on non-agricultural properties. This option largely travels through agricultural lands but is likely to have direct impacts on curtilage of 2 no. houses and church.

Table 2.1.9 Impact assessment of Option A5 (Node 12 – 14) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Church	Medium	Medium	Acquisition / loss of property and, impacts on boundary wall
Residential	Medium	Medium	Acquisition / loss of property and, impacts on boundary fence
Residential	Medium	Medium	Acquisition / loss of property and, impacts on boundary fence
Overall	**Medium**	**Medium**	**2 – Negative impact**

Option A6 (Node 12 – 13)

Table 2.1.10 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.10 Impact assessment of Option A6 (Node 12 – 13) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Demesne Site	Very low	Very low	Severs Holding – Agricultural Impacts on site
Overall	**Very low**	**Very low**	**4 - Neutral**

Option A1 (Node 9 – 13)

Table 2.1.11 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.11 Impact assessment of Option A1 (Node 9 – 13) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
-	Very low	Very low	On road and track – no direct property impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option A1 (Node 13 – 14)

Table 2.1.12 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.12 Impact assessment of Option A1 (Node 13 – 14) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
-	-	-	On road/ track or through Agri Land – no direct non Agri impacts, may require roadbed acquisition / agreement
Overall	**Very low**	**Very low**	**4 - Neutral**

Option A3 (Node 4 – 13)

Table 2.1.13 below provides impact assessment of this option on non-agricultural properties. This option is likely to have direct impacts on curtilage, garden and / or property boundary of 9 no. dwellings.

Table 2.1.13 Impact assessment of Option A3 (Node 4 – 13) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Low	Impact on Access and Boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Residential	Medium	Medium	Impact on and curtilage, garden and boundary
Overall	**Medium**	**Medium**	**2 – Negative impact**

Option L2 (Node 8 – 9)

Table 2.1.14 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.14 Impact assessment of Option L2 (Node 8 – 9) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

2.1.3.2 Section B Options Appraisal

Option B1 (Node 14 -20)

Table 2.1.15 below provides impact assessment of this option on non-agricultural properties. This option is likely to have direct impacts on greenspace of a residential estate, and curtilage of 7 no. dwellings, school, GAA club, a church, parking area, cemetery and a commercial property.

Table 2.1.15 Impact assessment of Option B1 (Node 14 -20) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Greenspace housing development	Low	Low	Loss of greenspace, embankment setback 2m Permanently
Greenspace housing development	Low	Low	Loss of greenspace, embankment setback 2m Permanently
Sports facility	High	Medium	Wall setback approx. 1m, loss of Curtilage and impacts and play area
Education	High	Medium	Permanent loss of Curtilage and replacement wall, Temporary impacts on parking and access
Residential property	Medium	Medium	Permanent loss of Garden, Curtilage and replacement wall
Residential property	Medium	Medium	Permanent loss of Garden, Curtilage and replacement wall
Residential property	Low	Medium	Permanent loss of paved parking area, curtilage to front of property and wall
Residential property	Medium	Medium	Permanent loss of paved parking area and curtilage to front of property
Residential property	Medium	High	Permanent loss of Garden, Curtilage and replacement wall
Residential property	Medium	Medium	Permanent loss of Garden, Curtilage and replacement wall
Community property - Church	High	Low	Temporary loss of paved parking area and permanent loss of curtilage and wall requiring set back / replacement
Community property - Parking	Medium	Medium	Loss of paved parking area and curtilage
Commercial Property	Medium	Medium	Loss of paved parking area and curtilage
Residential property	Medium	Medium	Impact on wall and boundary requiring replacement and loss of garden and curtilage
Community property – Cemetery	Medium	Low	Impact on wall and parking requiring realignment, no loss of parking
Overall	**Medium**	**Medium**	**2 – Negative Impact**

Option B1 (Node 20 – 21)

Table 2.1.16 below provides impact assessment of this option on non-agricultural properties. This option is likely to have direct impact on the curtilage and boundary of an area being used as a quarry.

Table 2.1.16 Impact assessment of Option B1 (Node 20 – 21) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Quarry	Medium	Low	Impact on curtilage and boundary of area being used as Quarry
Overall	**Medium**	**Low**	**3 – Slight Negative**

Option B1 (Node 21 – 23)

Table 2.1.17 below provides impact assessment of this option on non-agricultural properties. This option is likely to have direct impact on the curtilage and boundary of 14 no. residential and mixed-use properties. This option will also have impacts on a church, a property housing a utilities building and greenspace area. Due to the number of properties potentially directly, with High impacts predicted on 5 no. properties, the overall impact on non-agricultural property from this option is assessed as 1- Highly Negative.

Table 2.1.17 Impact assessment of Option B1 (Node 21 – 23) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Medium	Medium	Impact on curtilage and boundary, requiring replacement and screening
Commercial and Residential Property	Medium	Medium	Impact on curtilage and boundary, requiring replacement and screening
Residential property	Medium	High	Impact on curtilage, garden and boundary wall, new retaining wall and boundary wall required
Residential property	Medium	High	Impact on curtilage, garden and boundary wall, new boundary wall required
Residential property/ Roadbed	Low	Very Low	Impact only on verge
Residential property/ Roadbed	Low	Very Low	Impact only on verge
Residential property/ Agricultural Field	Medium	Medium	Impact on agricultural section of property, loss of land, boundary and hedgerow
Residential property/ Agricultural Field	Medium	Medium	Impact on agricultural section of property, loss of land, boundary and hedgerow
Residential property	Medium	Medium	Impact on curtilage, garden and boundary wall, new boundary wall required
Residential property	Medium	Medium	Impact on curtilage, garden and boundary wall, new boundary wall required
Utilities Building / Property	Low	Very Low	No Impact
Residential property	Medium	High	Impact on curtilage, garden and boundary wall, new boundary wall required

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Medium	High	Impact on curtilage, garden and boundary wall, new boundary wall required
Residential property	Medium	High	Impact on curtilage, garden and boundary wall and outbuildings, new boundary wall required
Residential property	Medium	Low	Impact on curtilage,
Agricultural and Greenspace	Low	Very Low	No impacts on residential, impacts on agricultural properties and impacts on greenspace at The Bush
Church	Low	Very Low	Impacts, on road
Overall	**Medium**	**High**	**1 – Highly Negative Impact**

Option B2 (Node 14 – 19)

Table 2.1.18 below provides impact assessment of this option on non-agricultural properties. This option is likely to have direct impact on garden space of a residential property and loss of greenspace within a housing development.

Table 2.1.18 Impact assessment of Option B2 (Node 14 – 19) on non-agricultural properties

Property Type	Property	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Residential property	Medium	Medium	Loss of garden and potential site
Greenspace for housing development	Greenspace for housing development	Medium	Medium	Loss of greenspace,
Overall		**Medium**	**Medium**	**2 - Negative Impact**

Option B2 (Node 19 – 20)

Table 2.1.19 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.19 Impact assessment of Option B2 (Node 19 – 20) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
-	-	-	All agricultural impacts
Overall	**Very Low**	**Very Low**	**Neutral**

Option B2 (Node 20 – 23)

Table 2.1.20 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact the curtilage of a commercial property and potentially require the acquisition of a residential property. This option also directly impacts on a public space.

Table 2.1.20 Impact assessment of Option B2 (Node 20 – 23) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Commercial - Agricultural Warehousing	Medium	Low	Impact on corner of property, not part of industrial operation
Residential Property	Medium	High	Direct impacts on Property and curtilage, likely acquisition of entire property
Public Space, Mixed	Medium	Low	Impacts on public space
Overall	**Medium**	**High**	**1 - Highly Negative**

Option B3 (Node 14 – 19)

Table 2.1.21 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact the curtilage, front garden and boundary of 7 no. residential properties.

Table 2.1.21 Impact assessment of Option B3 (Node 14 – 19) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Very Low	Very Low	No impact, route to avoid house and garden
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on curtilage, front garden and boundary
Overall	**Medium**	**Medium**	**2 - Negative Impact**

Option B3 (Node 19 – 23)

Table 2.1.22 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact the curtilage, front garden and boundary of one residential property, and on public space.

Table 2.1.22 Impact assessment of Option B3 (Node 19 – 23) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Medium	Medium	Impact on and curtilage, garden and boundary
Public Space, Mixed	Medium	Low	Impacts on public space
Overall	**Medium**	**Medium**	**2 - Negative Impact**

Option B4 (Node 14 – 21A)

Table 2.1.23 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on 2 no. quarry sites and curtilage, front garden and boundary of one residential property, private access road, and on 2 no. planning permissions for a residential property.

Table 2.1.23 Impact assessment of Option B4 (Node 14 – 21A) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Low	Medium	Planning Permission for House, impact on laneway
Residential property	Low	Medium	Planning Permission for House, impact laneway
Residential property	Very Low	Very Low	On Seaside of Boundary
Quarry	Medium	Low	Impact on Quarry
Quarry	Medium	Low	Impact on Quarry
Overall	**Medium**	**Low**	**3 – Slight Negative**

Option L3 (Node 21 – 21A)

Table 2.1.24 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on the eastern part of an existing quarry and access road.

Table 2.1.24 Impact assessment of Option L3 (Node 21 – 21A) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Quarry	Medium	Medium	Impact on eastern part of quarry and access.
Overall	**Medium**	**Medium**	**2 - Negative**

Option B4 (Node 21A - 25)

Table 2.1.25 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.25 Impact assessment of Option B4 (Node 21A - 25) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
N/A	Very Low	Very Low	No Impacts on non-agricultural property
Overall	**Very Low**	**Very Low**	**4 - Neutral**

2.1.3.3 Section C Options Appraisal

Option C2 (Node 23 – 31)

Table 2.1.26 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.26 Impact assessment of Option C2 (Node 23 – 31) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C2 (Node 31 – 43)

Table 2.1.27 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.27 Impact assessment of Option C2 (Node 31 – 43) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts – assumes limited impacts on GAA Club.
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C9 (Node 31 – 41)

Table 2.1.28 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.28 Impact assessment of Option C9 (Node 31 – 41) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All on road – no direct property impacts, may require roadbed acquisition / agreement
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C5 (Node 25 – 28)

Table 2.1.29 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.29 Impact assessment of Option C5 (Node 25 – 28) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C5 (Node 28 – 35)

Table 2.1.30 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on boundary and wall of 3 no. residential properties.

Table 2.1.30 Impact assessment of Option C5 (Node 28 – 35) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential	Medium	Low	Impacts on Garden at coastal edge of Property upwards of 85m from house
Residential /Agri Land	Low	Low	Impacts on Lands in Agriculture Use at coastal edge of Property upwards of 100m from house
Residential /Agri Land	Low	Low	Impacts on Lands in Agriculture Use at coastal edge of Property upwards of 100m from house
Overall	**Low**	**Low**	**3 – Slight Negative**

Option C5 (Node 35 – 38)

Table 2.1.31 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on the boundary of 5 residential properties.

Table 2.1.31 Impact assessment of Option C5 (Node 35 – 38) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential	Medium	Medium	Impacts on wall and garden at Southern end of property
Residential	Medium	Medium	Impacts on boundary and garden at Southern end of property
Residential	Medium	Medium	Impacts on boundary and garden at Southeastern end of property
Residential /Agri Land	Low	Medium	Impacts on lands in agriculture use at coastal edge of property upwards of 60m from house
Residential /Agri Land	Low	Medium	Impacts on lands in agriculture use at coastal edge of property upwards of 80m from house
Overall	**Medium**	**Medium**	**2 – Negative**

Option C5 (Node 38 – 42)

Table 2.1.32 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.32 Impact assessment of Option C5 (Node 38 – 42) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	On road/ track or through Agri Land – no direct non Agri impacts, may require roadbed acquisition / agreement
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C10 (Node 38 – 41)

Table 2.1.33 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.33 Impact assessment of Option C10 (Node 38 – 41) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	On road/ track or through Agri Land – no direct non Agri impacts, may require roadbed acquisition / agreement
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C9 (Node 41 – 45)

Table 2.1.34 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on curtilage, front garden and boundary of 5 no. residential properties, and will require the acquisition of approximately 840m of the Greenore Golf Club's boundary hedgerow, trees, and planting.

Table 2.1.34 Impact assessment of Option C9 (Node 41 – 45) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Golf Club	High	High	Acquisition of boundary hedgerow, trees, planting, and rough area over 840 meters in length
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Overall	**Medium**	**Medium to High**	**1 - Highly Negative**

Option C10 (Node 41 – 44)

Table 2.1.35 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.35 Impact assessment of Option C10 (Node 41 – 44) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	On road, potential crossing at Cooley Oysters not feasible due to new parking and development, all on road.
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C3-1 (Node 25 – 23)

Table 2.1.36 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.36 Impact assessment of Option C3-1 (Node 25 – 23) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C4-1 (Node 28 – 30)

Table 2.1.37 below provides impact assessment of this option on non-agricultural properties. As shown, there is no potential direct impacts on non-agricultural properties.

Table 2.1.37 Impact assessment of Option C4-1 (Node 28 – 30) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Agricultural or Roadbed only	Very low	Very low	All agricultural impacts
Overall	**Very low**	**Very low**	**4 - Neutral**

Option C6-1 (Node 31 – 35)

Table 2.1.38 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on parking at a school, and on curtilage, front garden and stone retaining wall of 1 no. residential property.

Table 2.1.38 Impact assessment of Option C6-1 (Node 31 – 35) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
School	High	Medium	Impacts on parking.

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Medium	Medium	Impact on curtilage, front garden and stone retaining Wall which will require replacement
Overall	**Medium**	**Medium**	**2 - Negative**

Option C7 (Node 35 – 41)

Table 2.1.39 below provides impact assessment of this option on non-agricultural properties. As shown, this option has potential to directly impact on curtilage, front garden and boundary of 1 no. residential property.

Table 2.1.39 Impact assessment of Option C7 (Node 35 – 41) on non-agricultural properties

Property Type	Value Rating	Impact Rating	Non-Agricultural Property Impact
Residential property	Medium	Medium	Impact on and curtilage, front garden and boundary
Overall	**Medium**	**Medium**	**2 - Negative**

2.1.3.4 Assessment Summary

Table 2.1.40 below provides an assessment summary for material assets, non-agricultural properties.

Table 2.1.40 Summary of Impact Ratings for Material Assets: Non-Agricultural Properties

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	2	Negative
Option A5 (Node 12 – 14)	2	Negative
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	2	Negative
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	2	Negative
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	2	Negative
Option B2 (Node 14 – 19)	2	Negative
Option B3 (Node 14 – 19)	2	Negative
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	3	Slight Negative Impact
Option B1 (Node 21 - 23)	1	Highly Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option B2 (Node 20 – 23)	1	Highly Negative
Option B3 (Node 19 – 23)	2	Negative
Option B4 (Node 14 – 21A)	3	Slight Negative Impact
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21 - 21A)	2	Negative
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	3	Slight Negative Impact
Option C5 (Node 35 – 38)	2	Negative
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	1	Highly Negative
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	4	Neutral
Option C6-1 (Node 31 – 35)	2	Negative
Option C7 (Node 35 – 41)	2	Negative

2.2 Material Assets – Agricultural Properties

2.2.1 Introduction

This section details the Material Assets Agricultural Properties assessment of the Stage 2 options for the Dundalk Bay to Carlingford Greenway Project with respect to the material assets agricultural properties.

The methodology used in this material assets agriculture assessment is outlined in Section 2.2.2 below. A summary and conclusion of the options assessment findings is provided in Section 2.2.4.

The assessment was carried out by Con Curtin (B.Agric.Sc UCD). He has over 30 years of experience as an agricultural consultant and has carried out numerous option selection assessments for national road projects and greenway projects.

2.2.2 Methodology

As part of the assessment, a site visit was undertaken on 29th August 2024 to survey farm types and land quality. In addition, the following sources of information were examined;

- Corine (2018) and Google Earth aerial photography land use data referred to in the Constraints report was used to measure areas of agricultural land and lengths of indicative centrelines through agricultural land;

- Teagasc Soils mapping data and Google Earth aerial photography referred to in the Constraints report was used to identify good land quality. Good land quality in this assessment is mineral type soils and excludes peats and marsh type soils.
- Land registry mapping data was examined to identify land associated with farm yards, equine facilities and high sensitivity livestock such as horses and herds of dairy cows;
- Aerial mapping (Google Earth) was examined to identify land features such as housing, roads, field boundaries, land quality and natural boundaries; and,
- Planning files on the Louth County Council planning website were examined to identify farm types (e.g. planning applications for milking parlours or stables).

The guidelines set out for assessing local environmental effects in Section 3.4 of the February 2024 Project Appraisal Guidelines, Unit 7.0 – Multi-Criteria Analysis (PE-PAG-02031 Feb, 2024) are adhered to in this assessment. The potential effects on agriculture are assessed by examining;

- Potential effects due to severance of farm holdings;
- Potential effects due to land-take;
- Potential effects from removal of farm buildings or facilities; and
- Potential effects on farm production.

Level of likely severance for farm holdings: This is assessed by measuring the length of the indicative centreline which is off-line through agricultural land i.e. the length which does not adhere to existing roads, non-agricultural land boundaries (e.g. housing and woodland) and existing field boundaries. Where the indicative centreline aligns with existing roads and or non-agricultural land (e.g. public amenity, woodland, waterways/canals, industrial and housing) there is a high potential to mitigate farm severance, and this situation is the most preferred from a severance assessment point of view. Where the indicative centreline adheres with field boundaries there is some potential to mitigate farm severance, and although the proposed greenway may still sever a farm in these situations, it is more preferred than where the centreline crosses green fields without adhering to field boundaries.

Effects due to land-take: The potential land-take is assessed by measuring the total length of the indicative centreline, the length of the indicative centreline through agricultural land and the area of agricultural land within the entire corridor. The agricultural land area was identified in the Constraints Report where the Corine 2018 data was edited using aerial photography (Google Earth) to further exclude areas of commercial forestry and woodland, housing and other non-agricultural areas such as roads, industrial sites and playing pitches. The potential land-take impact is assessed quantitatively by comparing these measurements (i.e. the total length of the indicative centreline, the length of the indicative centreline through agricultural land and the land-take of agricultural land within the entire corridor) between the options. The potential land-take impact is assessed qualitatively by assessing land quality along each corridor with reference to the soils identified in the Constraints Report and by assessing the farming sensitivity with reference to the number of high sensitivity farm enterprises (dairy and equine) identified in the Constraints Report. Aerial photography is also used to indicate the location of poor quality land (e.g. scrub, marsh, rough grazing).

Effects due to removal of farm buildings and facilities: The farmyard is generally the activity hub of any farm and permanent impacts on it will potentially maximise impacts on the farm. Therefore, it is desirable to avoid farmyards and other farm facilities such as equine training tracks. The number of farmyards along the indicative centreline and within the option corridor is compared to evaluate this potential impact. Where the proposed centreline crosses the entrance to a farmyard along an existing public road the potential impact is lower than where the proposed centreline crosses the field access to a farmyard. This is because where

the proposed greenway is along an existing public road the greenway traffic is only part of the existing public traffic disturbance and the existing road is already having an impact; whereas in a green field situation the proposed greenway is a new impact.

Impact on agricultural produce of affected farms: This is a qualitative assessment based on the predicted impact of the option on agriculture. It considers the land-take and severance impacts, the land quality within the option and the sensitivity of farming along the option. Sensitivity is based mainly on the type of farm enterprise. Equine enterprises (equestrian farms, stud farms and training centres) are assessed as high or very high sensitivity due to the potentially high value of horses and their sensitivity to construction noise and disturbance which can have high impact consequences where they are being ridden by jockeys. Dairy farms generally have a high sensitivity because dairy cows have to access the milking parlour twice daily and therefore are sensitive to the severance impact of a new greenway. The movement of livestock is less frequent in beef and sheep farms where livestock can graze severed land parcels without the necessity of frequent (daily) movement and these enterprises are generally categorised as medium sensitivity. Tillage farms can operate in severed land parcels provided there is adequate access for machinery and this enterprise is also generally categorised as medium sensitivity. Enterprises such as horticulture, pigs and poultry generally have very high output from relatively small sites. The buildings layout on these sites is often critical to the successful operation of the enterprise. Also, specifically for pig farms, it may be very difficult to replace an existing site because there is less tolerance for new sites. These intensively farmed sites are generally high or very high sensitivity.

Table 2.2.1 Criteria for determining Farm Sensitivity

Farm enterprise type	Intensity / scale	Sensitivity
Stud-farms / equestrian centres, are generally high or very high sensitivity. Intensive horticulture is generally high or very high sensitivity. Intensive agriculture (pigs) is of very high sensitivity.	High	Very High
	Medium	High
	Low	Medium
Dairy farms and equine enterprises. Small horticultural enterprises.	High	High
	Medium	High
	Low	Medium
Non-dairy grazing livestock enterprises (including beef, sheep and small non intensive equine) and grass cropping enterprise.	High	Medium
	Medium	Low
	Low	Very Low
Tillage	High	Medium
	Medium	Low
	Low	Very low
Rough Grazing, Bog, Forestry, Woodland	Low	Low or Very Low

The TAF guidelines set out a scoring scale of 1 – 7 which has been followed to assign impact assessment scores to each option.

The agricultural effects of each of the four criteria is assessed in Table 2.2.2 and based on this an overall score of between 1 and 7 is assessed for each option.

Table 2.2.2 Summary Table of Option Measurements

Option	Total length (km)	Length off line (km)[1]	Length through agricultural land[2] (km)	Area of corridor (ha)	Agricultural area of corridor[3] (ha)	Area of good quality soils[4] (ha)	Number of high sensitivity enterprises within corridor	Number of high sensitivity enterprises along centreline	Number of farmyards within corridor	Number of farmyards along centreline
Section A										
A3 (Nodes 1 to 4)	4.2	0.0	1.9	44	19	24	1	0	0	0
	On-line lengths = 4.2km on-line with existing roads									
A4-1 (Nodes 1 to 4)	3.8	0.7	2.7	30	25	4.9	1	1	1	0
	On-line lengths = 0.7km public roads, 0.4kms disused railway line, 1.1km forestry, 0.9km field boundaries									
A4-1 (Nodes 4 to 9)	2.6	0.6	1.5	22	21	7	0	0	0	0
	On-line lengths = 0.9km field boundaries, 1.1km flood berm									
A5 & A6 (Nodes 4 to 12)	4.8	1.3	3.1	49	41	47	1	1	0	0
	On-line lengths = 0.15km public roads, 0.9kms private roads, 1.7km forestry, 0.75km field boundaries									
A5 (Nodes 12 to 14)	2.3	0.9	2.3	24	23	18	0	0	1	1
	On-line lengths = 0.4km public roads and dwellings, 1km field boundaries									
A6 (Nodes 12 to 13)	1.3	0.1	1.3	12	10	12	0	0	0	0
	On-line lengths = 0.75kms public roads, 0.45km field boundaries									
A1 (Nodes 9 to 13)	2.7	0.0	1.3	24	12	22	0	0	1	0
	On-line lengths = 1.3kms public roads, 0.6km unused railway line, 0.8km sea shore									
A1 (Nodes 13 to 14)	1.4	0.0	0.7	19	6	17	0	0	1	1

[1] Length which does not adhere to or align with any boundaries and therefore has the highest severance impact potential
[2] Measurements made using Google Earth imagery
[3] Measured with reference to Corine 2018 data and Google Earth imagery
[4] Measured with reference to Teagasc Irish Soils Information System Data and Google Earth imagery

Option	Total length (km)	Length off line (km)[1]	Length through agricultural land[2] (km)	Area of corridor (ha)	Agricultural area of corridor[3] (ha)	Area of good quality soils[4] (ha)	Number of high sensitivity enterprises within corridor	Number of high sensitivity enterprises along centreline	Number of farmyards within corridor	Number of farmyards along centreline
	On-line lengths = 0.5km public roads, 0.9km sea shore									
A3 (Nodes 4 to 13)	3.7	0	0.6	35	18	33	1	1	2	2
	On-line lengths = 3.7km on-line with existing roads									
L2 (Nodes 8 to 9)	2	0.1	2	13	13	5	1	1	1	1
	On-line lengths = 0.4km sea shore, 1.6km field boundaries									
Section B										
B1 (Nodes 14 to 20)	4.5	0.0	0.7	45	15	22.5	0	0	2	2
	On-line lengths = 4.5km public roads									
B2 (Nodes 14 to 19)	3.6	0.9	2.8	24	13	4.3	0	0	2	2
	On-line lengths = 0.6km public roads, 0.25km housing, 1.8km field boundaries									
B3 (Nodes 14 to 19)	4.0	0.4	3.2	35	26	2	0	0	5	2
	On-line lengths = 0.8km public roads, 0.1kms private roads, 2.7km field boundaries									
B2 (Nodes 19 to 20)	0.9	0.2	0.9	10	9	10	0	0	1	1
	On-line lengths = 0.2km public roads, 0.4km field boundaries									
B1 (Nodes 20 to 21)	0.6	0.0	0	5.8	0.0[5]	0	0	0	0	0
	On-line lengths = 0.6km public roads									
B1 (Nodes 21 to 23)	2.1	0	1.7	21	9	19.7	1	1	2	0
	On-line lengths = 2.1km public roads									
B2 (Nodes 20 to 23)	2.7	0.7	2.3	25	18	23.6	0	0	0	0

[5] Landtake is quarry – not agricultural

Option	Total length (km)	Length off line (km)[1]	Length through agricultural land[2] (km)	Area of corridor (ha)	Agricultural area of corridor[3] (ha)	Area of good quality soils[4] (ha)	Number of high sensitivity enterprises within corridor	Number of high sensitivity enterprises along centreline	Number of farmyards within corridor	Number of farmyards along centreline
	On-line lengths = 0.7km public roads, 0.3kms non-agri, 1km field boundaries									
B3 (Nodes 19 to 23)	4.1	0.3	4	51	43	49.1	1	1	3	2
	On-line lengths = 2.1km public roads, 0.5kms non-agri, 1.2km field boundaries									
B4 (Nodes 14 to 21A)	6.5	0.6	3.9	107	55	74.4	2	2	1	1
	On-line lengths = 4.1km sea shore, 1.3kms non-agri (housing), 0.45km field boundaries									
B4 (Nodes 21A to 25)	1.6	1.6	1.6	17	17	14.4	0	0	0	0
	On-line lengths = 1.6km sea shore									
L3 (Nodes 21 to 21A)	1.2	0.4	0.5	-	-	-	0	0	0	0
	On-line lengths = 0.45km private road, 0.4km field boundaries									
Section C										
C2 (Nodes 23 to 31)	1.3	0	0	12.79	9	11	0	0	3	2
	On-line lengths = 1.3km public roads									
C2 (Nodes 31 to 43)	3.4	0.8	3.4	48	46	48	0	0	5	2
	On-line lengths = 1.7km unused railway, 0.1kms private road, 0.75km field boundaries									
C9 (Nodes 31 to 41)	2.7	0.0	2.7	28	16	25	0	0	1	0
	On-line lengths = 2.7km public roads									
C5 (Nodes 25 to 28)	1.5	0.2	1.5	17	14	14	1	1	0	0
	On-line lengths = 1.3km sea shore									

Option	Total length (km)	Length off line (km)[1]	Length through agricultural land[2] (km)	Area of corridor (ha)	Agricultural area of corridor[3] (ha)	Area of good quality soils[4] (ha)	Number of high sensitivity enterprises within corridor	Number of high sensitivity enterprises along centreline	Number of farmyards within corridor	Number of farmyards along centreline
C5 (Nodes 28 to 35)	2.5	0.0	2.1	25	25	25	0	0	0	0
	On-line lengths = 2.2km sea shore, 0.3kms non-agri									
C5 (Nodes 35 to 38)	6.3	0.0	1.2	66	63	66	0	0	1	0
	On-line lengths = 6.3km public roads									
C5 (Nodes 38 to 42)	1.4	0.4	0.8	13	12	13	0	0	1	1
	On-line lengths = 0.6km public roads, 0.25kms non-agri (housing), 0.2km sea shore									
C10 (Nodes 38 to 41)	1.5	0.0	0.9	14	12	14	0	0	1	1
	On-line lengths = 1.5km public roads									
C9 (Nodes 41 to 45)	1.5	0.0	0.3	9	2	6.4	0	0	0	0
	On-line lengths = 1.5km public roads									
C10 (Nodes 41 to 44)	3.6	0.0	0.1	40	21	37	0	0	1	1
	On-line lengths = 3.6km public roads									
C3-1 (Nodes 23 to 25)	2.4	0.0	0.0	24.7	24.7	24.7	1	1	0	0
	On-line lengths = 0.05km public roads, 0.25kms non-agri, 2.1km field boundaries									
C4-1 (Nodes 28 to 30)	2.9	0.15	0.0	27	25	27	0	0	1	1
	On-line lengths = 0.05km non-agri, 2.75km field boundaries									
C6-1 (Nodes 31 to 35)	3.5	0.0	3.5	34	33	33	1	1	0	0

Option	Total length (km)	Length off line (km)[1]	Length through agricultural land[2] (km)	Area of corridor (ha)	Agricultural area of corridor[3] (ha)	Area of good quality soils[4] (ha)	Number of high sensitivity enterprises within corridor	Number of high sensitivity enterprises along centreline	Number of farmyards within corridor	Number of farmyards along centreline
	On-line lengths = 1.2km public roads, 2.4km field boundaries									
C7 (Nodes 35 to 41)	5.2	0.0	4.8	53	51	51	1	1	0	0
	On-line lengths = 0.6km public roads, 4.5km field boundaries									

2.2.3 Options Appraisal

2.2.3.1 Section A Options Appraisal

The assessment for the individual options within Section A are presented in Table 2.2.2.

Route Option A3 (Node 1 – 4)

Route Option A3 from nodes 1 to 4 is 4.2km in length. This option is on-line with the existing road network for its entire length. The option centreline crosses agricultural land for 1.9km and there is approximately 19 hectares of agricultural land within the 44 hectare corridor. There are no farmyards within the corridor. There is one high sensitivity farm enterprise within the corridor, although the centreline is adjacent to road without property impacts at this location. Approximately 44% of the centreline crosses good agricultural land and 42% of the corridor is classified as agricultural. Approximately 54% of the corridor is categorised as good agricultural land (i.e. including mineral type soils and excluding alluvial soils, wetlands and peats).

The potential impact from severance is low because the option is entirely aligned with the existing road network. The potential impact from land-take is low because 44% of the length of the option is through agricultural land. The potential impacts on farmyards and facilities is low because there are no farmyards within the corridor. Overall, the potential impact on farm production is low. The impact on agriculture is slight negative – TAF score 3.

Route Option A4-1 (Node 1 – 4)

Route Option A4 from nodes 1 to 4 is 3.8km in length. This option is on-line for approximately 3.1km. It is on-line with the existing road network, forestry and housing for approximately 1.9km and it is on-line with existing field boundaries for 1.2kms (0.4km is unused railway). The option centreline crosses agricultural land for 2.7km and there is approximately 25 hectares of agricultural land within the 30 hectare corridor. There is one farmyard within the corridor and the centreline crosses the farm access road from this yard. There is one high sensitivity farm enterprise within the corridor and along the centreline. Approximately 86% of the corridor is agricultural land. Approximately 17% of the corridor is categorised as good agricultural land.

The potential impact from severance is high because the option is off-line for 0.7km and is aligned with field boundaries through agricultural land for 1.3km. It crosses the agricultural access from a high sensitivity farmyard. The quality of the land-take will not be high because only 17% of the corridor consists of mineral type soils. The potential impact from land-take is medium - high because 71% of the length of the option is through agricultural land and 86% of the corridor is agricultural (according to Corine data). The potential impacts on farmyards and facilities is high because there is one farmyard within the corridor and the centreline crosses close to an entrance to this yard. Overall, the potential impact on farm production is low.

The impact on agriculture is negative – TAF score 2.

Route Option A4-1 (Node 4 - 9)

Route Option A4 from nodes 4 to 9 is 2.6km in length. This option is on-line with a flood berm for 1.1km and with existing field boundaries for 0.9km. The option off-line through agricultural land for 0.6km. The option centreline crosses agricultural land for 1.5km and there is approximately 21 hectares of agricultural land within the 22 hectare corridor. There are no farmyards within the corridor. There are no high sensitivity farm enterprises within the corridor. Approximately 35% of the centreline through agricultural land crosses good agricultural land. Approximately 29% of the corridor is categorised as good agricultural land.

The potential impact from severance is low because the option centreline is on-line with flood berm for 43% of its length and along field boundaries for 33% of its length. The potential impact from land-take is medium because, while nearly all the corridor is classified as agricultural (according to Corine data), only 57% of the length of the option centreline is through agricultural land. The potential impacts on farmyards and facilities is low because there are no farmyards within the corridor. Overall, the potential impact on farm production is low. The impact on agriculture is slight negative – TAF score 3.

Route Option A5 & A6 (Node 4 – 12)

Route Option A5 & A6 from nodes 4 to 12 is 4.8km in length. This combined option is on-line with existing field boundaries and private roads for 1.7km and online with public roads and forestry for 1.8km. The option is off-line through agricultural land for 1.3km. The option centreline crosses agricultural land for 3.1km and there is approximately 41 hectares of agricultural land within the 49 hectare corridor (84% agricultural land). There are no farmyards within the corridor. There is one very high sensitivity stud farm enterprise within the corridor and along the centreline. The centreline crosses the stud farm along an access track, but there is potential for severance between the stables and training track. All of the land within the corridor and along the centreline is good agricultural land.

The potential impact from severance is low because the option centreline is off-line approximately for 26% of its length. Approximately 35% of the centreline is on-line with field boundaries and private roads in agricultural land. The potential impact from land-take is medium - high because 64% of the length of the option centreline is through agricultural land and 84% of the corridor is agricultural. The potential impacts on farmyards is low because there are no farmyards within the corridor. The impact on a high sensitivity enterprise (training track) is mitigated because the centreline is on an existing track, however there is potential for severance impact on this stud farm. Overall, the potential impact on farm production is low. The impact on agriculture is negative because of the potential severance impact on the stud farm – TAF score 2.

Route Option A5 (Node 12 – 14)

Route Option A5 from nodes 12 to 14 is 2.3km in length. This option is on-line with existing field boundaries for approximately 1km and is on-line with public road and dwelling sites for approximately 0.4km. The option is off-line through agricultural land for 0.9km. The option centreline crosses agricultural land for its entire length and there is approximately 23 hectares of agricultural land within the 24 hectare corridor. There is one farmyard within the corridor and along the centreline. There are no high sensitivity farm enterprises within the corridor. Approximately 78% of the centreline crosses good agricultural land. Approximately 76% of the corridor is categorised as good agricultural land.

The potential impact from severance is medium to high because the option centreline is off line for 41% of its length and along field boundaries for 44% of its length. The potential impact from land-take is high because nearly all the land within the corridor and along the centreline is classified as agricultural (according to Corine data) and the land-take will be good quality. The potential impacts on farmyards and facilities is medium to high because the centreline is close to one farmyard. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option A6 (Node 12 – 13)

Route Option A6 from nodes 12 to 13 is 1.3km in length. This option is on-line with existing field boundaries for approximately 0.45km and is on-line with public road and dwelling sites for approximately 0.75km. The option is off-line through agricultural land for 0.1km. The option centreline crosses agricultural land for its entire length and there is approximately 10 hectares of agricultural land within the 12 hectare corridor. There are no farmyards within the corridor

and along the centreline. There are no high sensitivity farm enterprises within the corridor. All of the centreline and corridor is classified as good agricultural land.

The potential impact from severance is low because the option centreline is off line for only 4% of its length and along field boundaries for 36% of its length. The potential impact from land-take is medium - high because nearly all the land within the corridor and along the centreline is classified as agricultural (according to Corine data) and the land-take will be good quality. The potential impacts on farmyards and facilities is low because there are no farmyards. Overall, the potential impact on farm production is low. The impact on agriculture is slight negative – TAF score 3.

Route Option A1 (Node 9 – 13)

Route Option A1 from nodes 9 to 13 is 2.7km in length. This option is on-line with shoreline for approximately 1.45km and is on-line with public road and dwelling sites for approximately 1.3km. There are no off-line through agricultural land sections. The option centreline crosses agricultural land for approximately 1.3km, however the majority of this is poor quality land along the seashore. There is approximately 12 hectares of agricultural land within the 24 hectare corridor. There is one farmyard within the corridor, however the centreline is not adjoining this yard. There are no high sensitivity farm enterprises within the corridor.

The potential impact from severance is very low because the option centreline is on-line with non-agricultural features for its entire length. The potential impact from land-take is low because approximately 53% of the centreline is within existing roads and tracks and the land-take will generally be poor quality. The potential impacts on farmyards and facilities is low because the centreline will not impact on the one farmyard within the corridor. Overall, the potential impact on farm production is low. While there may be some low negative impacts from land-take, overall, the impact on agriculture is neutral – TAF score 4.

Route Option A1 (Node 13 – 14)

Route Option A1 from nodes 13 to 14 is 1.4km in length. This option is on-line with shoreline for approximately 0.9km and is on-line with public road and dwelling sites for approximately 0.5km. There are no off-line through agricultural land sections. The option centreline crosses agricultural land for 50% of its entire length and there is approximately 6 hectares of agricultural land within the 19 hectare corridor. There is one farmyard within the corridor and along the centreline – the centreline crosses close to it along the shoreline. There are no high sensitivity farm enterprises within the corridor. Approximately 81% of the centreline and 87% of the corridor is classified as good agricultural land.

The potential impact from severance is very low because the option centreline is either along the seashore or within existing roads. The potential impact from land-take is low - medium because 50% the centreline is through non-agricultural land. The land-take will generally be good quality. The potential impacts on farmyards and facilities is medium because the centreline crosses close to a farmyard, however, because it will be located along the sea shore the impact will be minimised. Overall, the potential impact on farm production is low. If the option could have avoided the farmyard the impact would be neutral, however, the impact on agriculture is slight negative – TAF score 3.

Route Option A3 (Node 4 – 13)

Route Option A3 from nodes 4 to 13 is 3.7km in length. This option is on-line with existing public road for its entire length. There are no off-line through agricultural land sections. There are potential land-take impacts for 17% of the length along the public road and the option is located within the public road curtilage for 83% of its length. There is one high sensitivity enterprise along the centreline and within the corridor. The agricultural area within the 35 hectare corridor is 18 hectares – most of which is good quality land. There are two farmyards

within the corridor and along the centreline. The entrance to a medium sensitivity farmyard is located on the opposite side of the public road from the proposed centreline. The entrance to a high sensitivity equine enterprise is located on the same side of the public road as the proposed centreline.

The potential impact from severance is very low because the option centreline is located within or adjoining existing roads. The potential impact from land-take is low - medium because 17% the centreline is through non-agricultural land. The land-take will generally be good quality. The potential impacts on farmyards and facilities is low because the centreline will be located adjoining a busy public road and the greenway will not add significantly to this effect. Overall, the potential impact on farm production is low. The impact on agriculture is neutral – TAF score 4.

Route Option L2 (Node 8 – 9)

Route Option L2 from nodes 8 to 9 is 2km in length. This option is on-line with existing field boundaries through agricultural land for approximately 1.6km and with the seashore for approximately 0.4km. The length off-line through agricultural land is approximately 3% of the centreline length. There are potential land-take impacts for the entire length of the option is located which is classified as 100% agricultural within the corridor and along the centreline. There is one high sensitivity enterprise along the centreline and within the corridor. There is one farmyard within the corridor and along the centreline.

The potential impact from severance is medium - high because the option centreline is located on agricultural land, although mainly along existing field boundaries. The potential impact from land-take is high because 100% the centreline is through agricultural land. The land-take will generally be medium quality. The potential impacts on farmyards and facilities is medium - high because the centreline will be located adjoining an equestrian enterprise. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

2.2.3.2 Section B Options Appraisal

The measurements for the individual options within Section B are presented in Table 2.2.2.

Route Option B1 (Node 14 – 20)

Route Option B1 from nodes 14 to 20 is 4.5km in length. This option is on-line with existing public road for its entire length. There are no off-line through agricultural land sections. There are potential land-take impacts for 16% of the length along the public road and the option is located within the public road curtilage or adjoining non-agricultural properties for 84% of its length. There are no high sensitivity enterprises along the centreline and within the corridor. There are two farmyards within the corridor and along the centreline where the centre line crosses the farm entrances on the public road.

The potential impact from severance is very low because the option centreline is located within or adjoining existing roads. The potential impact from land-take is low - medium because 16% the centreline is through non-agricultural land. The land-take will generally be approximately 50% good quality. The potential impacts on farmyards and facilities is low because the centreline will be located adjoining a busy public road and the greenway will not add significantly to the disturbance from traffic. Overall, the potential impact on farm production is low. The impact on agriculture is neutral – TAF score 4.

Route Option B2 (Node 14 – 19)

Route Option B2 from nodes 14 to 19 is 3.6km in length. This option is on-line with existing public road for 0.6km and non-agricultural features (residential) for 0.25km. It crosses agricultural land adhering to field boundaries for approximately 1.8km. The option is off-line

through agricultural land for 0.9km. There are potential land-take impacts for 79% of the length along the centreline which crosses agricultural land for 2.8kms. There are approximately 13 hectares of agricultural land within the 24 hectare corridor. The option centreline is located within the public road curtilage and residential properties for approximately 0.8kms (22% of its length). Approximately 19% of the centre line length and 18% of the corridor area is classified as good quality land. There are no high sensitivity enterprises along the centreline and within the corridor. There are two farmyards within the corridor and along the centreline.

The potential impact from severance is medium to high because the option centreline adjoins field boundaries on agricultural land and adjoins public road and residential developments. The potential impact from land-take is high because 79% the centreline is through agricultural land. The land-take will generally be approximately 20% good quality. The potential impacts on farmyards and facilities is low - medium because the centreline will be located adjoining a busy public road in the case of one farmyard and will not add significantly to the traffic disturbance effect. In the case of the eastern farmyard there may be low – medium levels of disturbance where the centreline crosses close to the farmyard but adheres to field boundaries. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option B3 (Node 14 – 19)

Route Option B3 from nodes 14 to 19 is 4km in length. This option is on-line with existing road for approximately 0.8km. It crosses agricultural land adhering to field boundaries for approximately 2.7km and is off-line through agricultural land for 0.4km. There are potential land-take impacts for 80% of the length along the centreline which crosses agricultural land for approximately 3.2kms. There are approximately 26 hectares of agricultural land within the 35 hectare corridor (74% agricultural land). The option centreline is located within the public road for approximately 0.8kms (20% of its length). Approximately 10% of the centre line length and 6% of the corridor area is classified as good quality land. Approximately 20% of the land within the corridor is classified as Moors and Heathland according to Corine data. There are no high sensitivity enterprises along the centreline and within the corridor. There are five farmyards within the corridor. The centreline crosses close to the most eastern farmyard in the corridor with a high potential to cause disturbance.

The potential impact from severance is high because the option centreline adjoins field boundaries on agricultural land for a high proportion of the overall length (69%). The potential impact from land-take is high because 80% the centreline is through agricultural land. The land-take will generally be approximately low - medium quality. The potential impacts on farmyards and facilities is high because there are a relatively high number of farmyards in the corridor and the centreline may have a high disturbance impact on one farmyard. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option B2 (Node 19 – 20)

Route Option B2 from nodes 19 to 20 is 0.9km in length. This option is on-line with existing road for approximately 0.2km. It crosses agricultural land adhering to field boundaries for approximately 0.4km and 0.2kms off-line through agricultural land. There are potential land-take impacts for 100% of the length along the centreline. There are approximately 9 hectares of agricultural land within the 10 hectare corridor. All of the centre line length and the corridor area is classified as good quality land. There are no high sensitivity enterprises along the centreline and within the corridor. There is one farmyard within the corridor. The centreline crosses close to this farmyard with a high potential to cause disturbance.

The potential impact from severance is high because the option centreline is off-line and adjoins field boundaries on agricultural land for a high proportion of the overall length (76%).

The potential impact from land-take is high because 100% the centreline is through agricultural land. The land-take will generally be good quality. The potential impacts on farmyards and facilities is high because the centreline severs access to field for one farmyard. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option B1 (Node 20 - 21)

Route Option B1 from nodes 20 to 21 is 0.6km in length. This option is on-line with existing road for its entire length and is within the existing road curtilage for 58% of its length. It does not cross agricultural land. The potential impact on farm production is not significant. The impact on agriculture is neutral – TAF score 4.

Route Option B1 (Node 21 - 23)

Route Option B1 from nodes 21 to 23 is 2.1km in length. This option is on-line with existing road for its entire length and is within the existing road curtilage for 29% of its length. It crosses agricultural land adjoining the public road for approximately 1.7km, all of which is classified as good agricultural land. There is one farmyard within the corridor and the entrance to a second farmyard is within the corridor. The centreline and corridor cross the edge of one high sensitivity dairy farm.

There is a low potential severance impact. There is a medium to high land-take impact . There is a low impact on farmyards and facilities. The potential impact on farm production is not significant. The impact on agriculture is neutral – TAF score 4 because the option is entirely located adjoining existing road.

Route Option B2 (Node 20 – 23)

Route Option B2 from nodes 20 to 23 is 2.7km in length. This option is on-line with existing road and non-agricultural features for approximately 1km. It crosses agricultural land adhering to field boundaries for approximately 1km and is off-line through agricultural land for approximately 0.7km. There are potential land-take impacts for 86% of the length along the centreline which crosses agricultural land (approximately 2.3km). There are approximately 18 hectares of agricultural land within the 25 hectare corridor (71% agricultural land). Over 90% of the centre line length and the corridor area is classified as good quality land. There are no high sensitivity enterprises within the corridor. There are no farmyards within the corridor.

The potential impact from severance is medium - high because the option centreline is off-line for 26% of its length and it adjoins field boundaries on agricultural land for a medium - high proportion of the overall length (39%). The potential impact from land-take is high because 86% the centreline is through agricultural land. The land-take will generally be good quality. The potential impacts on farmyards and facilities is low. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option B3 (Node 19 – 23)

Route Option B3 from nodes 19 to 23 is 4.1km in length. This option is on-line with existing road and non-agricultural features for approximately 2.6km. It crosses agricultural land adhering to field boundaries for approximately 1.2km and is off-line through agricultural land for approximately 0.3km. There are potential land-take impacts through agricultural land for 97% of the length along the centreline (approximately 4km). There are approximately 43 hectares of agricultural land within the 51 hectare corridor (85% agricultural land). Over 90% of the centre line length and the corridor area is classified as good quality land. There is one high sensitivity enterprise (dairy) along the centreline and within the corridor. There are three farmyards within the corridor, two of which are along the centreline.

The potential impact from severance is medium - high because the option centreline is on-line with road and residences for 63% of its length and a dairy farm will be severed. It adjoins field boundaries on agricultural land for 30% of the overall length leaving approximately 7% which is off-line. The access to two farmyards will be partially severed – although one of these yards is very small. Therefore, there is a medium – high impact on farmyards. The potential impact from land-take is high because 97% the centreline is through agricultural land. The land-take will generally be good quality. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option B4 (Node 14 – 21A)

Route Option B4 from nodes 14 to 21A is 6.5km in length. This option is on-line with existing seashore and non-agricultural features for approximately 5.4km (83% of its length). It crosses agricultural land adhering to field boundaries for approximately 0.5km and is off-line through agricultural land for approximately 0.6km (a lot of the off-line length is on rough grazing land). There are potential land-take impacts through agricultural land for 100% of the length along the centreline. Approximately 1.4kms (22%) is through rough grazing land adjoining the seashore. There are approximately 55 hectares of agricultural land within the 107 hectare corridor (51% agricultural land) – the remainder of the land is categorised water, quarry and non-agri features. Approximately 66% of the centre line and 69% of the corridor area are classified as good quality land. There are two high sensitivity equine enterprises along the centreline and within the corridor. There is one farmyard within the corridor and along the centreline.

The potential impact from severance is very low because the option centreline is on-line with seashore, track, quarry and residences for 83% of its length, is on-line with field boundaries for 7% and is off-line through mainly rough grazing land for approximately 10% of its length. The potential impact from land-take is medium - high because 100% the centreline is through agricultural land, however approximately 1.4km (22%) of the centreline is through rough grazing/marginal land. Approximately two thirds of the land-take will generally be good quality. There is no significant impact on farmyards. There is a direct impact on a horse track in high sensitivity equine enterprise, which can be mitigated by re-aligning the track. Overall, the potential impact on farm production is low. The location along the seashore is desirable from an agricultural perspective, however there will be an impact from land-take and an impact on an equine facility and therefore the impact on agriculture is slight negative – TAF score 3.

Route Option B4 (Node 21A - 25)

Route Option B4 from nodes 21A to 25 is 1.6km in length. This option is on-line with existing seashore for its entire length. There are potential land-take impacts through agricultural land for 100% of the length. There are approximately 17 hectares of agricultural land within the 17 hectare corridor (100% agricultural land). Approximately 90% of the centre line and the corridor area are classified as good quality land. There are no high sensitivity enterprises within the corridor. There are no farmyards within the corridor.

The potential impact from severance is very low because the option centreline is on-line with seashore. The potential impact from land-take is high because 100% the centreline is through agricultural land and the land-take will generally be good quality. There is no impact on farmyards. There are no impacts on high sensitivity enterprises. Overall, the potential impact on farm production is low. The location along the seashore is desirable from an agricultural perspective, however there will be an impact from land-take and therefore the impact on agriculture is slight negative – TAF score 3.

Route Option L3 (Node 21 – 21A)

Route Option L3 from nodes 21 to 21A is 1.2km in length. This option is along and access track and on-line with existing woodland for 27% of its length. There are potential land-take

impacts through agricultural land for 41% of the length. Approximately 46% of the centre line is classified as good quality land. There are no high sensitivity enterprises within the corridor. There are no farmyards within the corridor.

The potential impact from severance is very low because the option centreline is on-line with field boundaries along a ravine and on-line with the edge of a woodland. The potential impact from land-take is low - medium because 41% the centreline is through agricultural land and the land-take will generally be medium - good quality. There is no impact on farmyards. There are no impacts on high sensitivity enterprises. Overall, the potential impact on farm production is low. There will be an impact from land-take and therefore the impact on agriculture is slight negative – TAF score 3.

2.2.3.3 Section C Options Appraisal

The measurements for the individual options within Section A are presented in Table 2.2.2.

Route Option C2 (Node 23 – 31)

Route Option C2 from nodes 23 to 31 is within the curtilage of the existing public road for its entire length – 1.3km. Therefore, there are no severance or land-take impacts. There are no high sensitivity enterprises within the corridor. There are three farmyards within the corridor and two are along the centreline.

There is no impact on farm production and the impacts on the farmyards will not be significant where the proposed greenway is on the existing public road. The impact on agriculture is neutral – TAF score 4.

Route Option C2 (Node 31 – 43)

Route Option C2 from nodes 31 to 43 is 3.4km in length. This option crosses agricultural land adhering to field boundaries for approximately 0.8km and adheres to old railway line (along field boundaries) for approximately 1.7kms. It adheres to private track for 0.12km and it is off-line for approximately 0.8kms. There are potential land-take impacts for 100% of the length along the centreline, however approximately 50% of the centreline is along the unused railway line and this land is wooded and scrubby. There are approximately 46 hectares of agricultural land within the 48 hectare corridor. All of the centre line length and the corridor area is classified as good quality land, notwithstanding this classification based on Teagasc Soils data, the land along the unused railway line is likely to be poor quality. There are no high sensitivity enterprises along the centreline and within the corridor. There are four farmyards within the corridor and the access lane into a fifth yard is severed by the centreline.

The potential impact from severance is high because the option centreline is off-line and adjoins field boundaries on agricultural land for a high proportion of the overall length (96%). The potential impact from land-take is medium - high because 50% the centreline is through agricultural land and 50% is along unused railway line. The land-take will generally be good quality, except along the railway line. The potential impacts on farmyards and facilities is high because the centreline severs access to field for three farmyards and is close enough to cause potential disturbance to five farmyards. Overall, the potential impact on farm production is low - medium. The impact on agriculture is negative – TAF score 2.

Route Option C9 (Node 31 – 41)

Route Option C9 from nodes 31 to 41 is within the curtilage of the existing public road for its entire length – 2.7km. Therefore, there are no severance or land-take impacts. There are no high sensitivity enterprises within the corridor and there is one farmyard within the corridor.

There is no impact on farm production and the impacts on the farmyard will not be significant where the proposed greenway is on the existing public road. The impact on agriculture is neutral – TAF score 4.

Route Option C5 (Node 25 – 28)

Route Option C5 from nodes 25 to 28 is 1.5km in length. This option is on-line with existing seashore for 85% of its length. There are potential land-take impacts through agricultural land for 100% of the length. There are approximately 14 hectares of agricultural land within the 17 hectare corridor (85% agricultural land). 100% of the centre line and 85% of the corridor area are classified as good quality land. There is one high sensitivity enterprises within the corridor and along the centreline. There are no farmyards within the corridor.

The potential impact from severance is very low because the option centreline is mainly on-line with seashore. The potential impact from land-take is high because 100% the centreline is through agricultural land and the land-take will generally be good quality. There is no impact on farmyards. There is an edge impact on one high sensitivity dairy enterprise. Overall, the potential impact on farm production is low. The location along the seashore is desirable from an agricultural perspective, however there will be an impact from land-take and therefore the impact on agriculture is slight negative – TAF score 3.

Route Option C5 (Node 28 – 35)

Route Option C5 from nodes 28 to 25 is 2.5km in length. This option is on-line with existing seashore for 88% of its length and on-line. There are potential land-take impacts through agricultural land for 100% of the length. There are approximately 25 hectares of agricultural land within the 25 hectare corridor (99% agricultural land) and all is classified as good quality land. There are no high sensitivity enterprises within the corridor. There are no farmyards within the corridor.

The potential impact from severance is very low because the option centreline is mainly on-line with seashore. The potential impact from land-take is high because 88% the centreline is through agricultural land and the land-take will generally be good quality. There is no impact on farmyards. Overall, the potential impact on farm production is low. The location along the seashore is desirable from an agricultural perspective, however there will be an impact from land-take and therefore the impact on agriculture is slight negative – TAF score 3.

Route Option C5 (Node 35 – 38)

Route Option C5 from nodes 35 to 38 is 6.3km in length. This option is on-line with existing seashore for most of its length. There are some area of rough grassland between the sea shore and the centreline but these are not being utilised for agriculture. There are potential land-take impacts through agricultural land for 19% of the length – the remainder of the centreline is located on an existing public road or private tracks. There are approximately 63 hectares of agricultural land within the 66 hectare corridor (95% agricultural land) and all is classified as good quality land. There are no high sensitivity enterprises within the corridor. There is one farmyard within the corridor, however the centreline avoids this yard.

The potential impact from severance is very low because the option centreline is mainly on-line with seashore and within the public road. The potential impact from land-take is low because only 19% the centreline is through agricultural land and the land-take will generally be good quality. There is a very low impact on a farmyard. Overall, the potential impact on farm production is low. The location along the seashore is desirable from an agricultural perspective. Also the centreline is located on existing track and roads for 81% of its length. Although there will be some land-take, overall, the impact on agriculture is neutral – TAF score 4.

Route Option C5 (38 – 42)

Route Option C5 from nodes 38 to 42 is 1.4km in length. This option is on-line with existing seashore for 0.2km, with non-agricultural features for 0.25km and is located along an existing track/road for 0.6km. It crosses agricultural land without adhering to field boundaries for 0.4km. There are potential land-take impacts through agricultural land for 0.8km - 55% of the length – the remainder of the centreline is located on an existing public road or private track. There are approximately 12 hectares of agricultural land within the 13 hectare corridor (96% agricultural land) and all is classified as good quality land. There are no high sensitivity enterprises within the corridor. There is one farmyard within the corridor and near the centreline.

The potential impact from severance is medium because the option centreline crosses agricultural land for 24% of its length with potential severance impacts. The potential impact from land-take is medium because 55% the centreline is through agricultural land and the land-take will generally be good quality. There is a low impact on a farmyard because the greenway will be confined to a private road at this location. Overall, the potential impact on farm production is low. There will be medium levels of land-take and severance and the impact on agriculture is slight negative – TAF score 3.

Route Option C10 (Node 38 – 41)

Route Option C10 from nodes 38 to 41 is 1.5km in length. This option is on-line with existing roads and track for its entire length. There are potential land-take impacts through agricultural land for 0.9km - 61% of the length – the remainder of the centreline is located on an existing public road or private track. There are approximately 12 hectares of agricultural land within the 13 hectare corridor (83% agricultural land). All the corridor is classified as good agricultural land. There are no high sensitivity enterprises within the corridor. There is one farmyard within the corridor and along the centreline.

The potential impact from severance is very low because the option centreline is 100% on-line with existing roads. The potential impact from land-take is low - medium because 61% the centreline is through agricultural land, however, approximately 0.4km of this is in wet boggy ground. There are low potential impacts on farmyards. Overall, the potential impact on farm production is low. Taking into account that 44% of the agricultural land-take will be poor quality land (bog/marsh) the impact on agriculture is neutral – TAF score 4.

Route Option C9 (Node 41 – 45)

Route Option C9 from nodes 41 to 45 is 1.5km in length. This option is on-line with existing roads for its entire length. There are potential land-take impacts through agricultural land for 0.35km - 24% of the length – the remainder of the centreline is adjoining an existing public road through non-agricultural land. There are approximately 2 hectares of agricultural land within the 9 hectare corridor (26% agricultural land). There are no high sensitivity enterprises within the corridor. There are no farmyards within the corridor.

The potential impact from severance is very low because the option centreline is 100% on-line with existing roads. The potential impact from land-take is low because 24% the centreline is through agricultural land and the land quality is poor. There are no impacts on farmyards. Overall, the potential impact on farm production is low. The impact on agriculture is neutral – TAF score 4.

Route Option C10 (Node 41 – 44)

Route Option C10 from nodes 41 to 44 is 3.6km in length. It is within the curtilage of the existing public road for 95% of the length of the centreline and adjoins the road for the remaining 5%. Therefore, there are no severance impacts. There are potential land-take

impacts on agricultural land for approximately 0.05km. There are no high sensitivity enterprises within the corridor and there is one farmyard within the corridor and along the centre line.

There are no significant land-take or severance impacts. There is no impact on farm production and the impacts on the farmyard will not be significant where the proposed greenway is on the existing public road. The impact on agriculture is neutral – TAF score 4.

Route Option C3-1 (Node 23 – 25)

Route Option C3 from nodes 23 to 25 is 2.4km in length. This option crosses agricultural land for its entire length and is on-line with existing field boundaries for its entire length. The area of the corridor is approx. 24.7ha and the entire area is good quality agricultural land. There are potential land-take impacts through agricultural land for 100% of the length of the centreline. All the centreline crosses good agricultural land. There is one high sensitivity enterprise along the centreline (edge of dairy farm). There are no farmyards along the centreline.

The potential impact from severance is high because even though the centreline adheres to field boundaries it crosses agricultural land for 100% of its length. The potential impact from land-take is high because 100% the centreline is through agricultural land and the land quality is good. There are no impacts on farmyards. The is an edge impact on one high sensitive dairy enterprise. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option C4-1 (Node 28 – 30)

Route Option C4 from nodes 28 to 30 is 2.9km in length. There are potential land-take impacts through agricultural land for 100% of the length. The centreline is on-line with field boundaries for 95% of its length. There are approximately 25 hectares of agricultural land within the 27 hectare corridor (95% agricultural land) and all of the corridor is classified as good quality land. There are no high sensitivity enterprises within the corridor. There is one farmyard within the corridor and along the centreline.

The potential impacts from severance and land-take are high because the option centreline is 100% through agricultural land and the land quality is good. There is low - medium impact from disturbance on farmyard. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option C6-1 (Node 31 – 35)

Route Option C6-1 from nodes 31 to 35 is 3.5km in length. The centreline is on-line with existing public road for 33% of its length and on-line with field boundaries for 67% of its length. There are potential land-take impacts through agricultural land for 100% of the centre line length. There are approximately 33 hectares of agricultural land within the 34 hectare corridor (96% agricultural land) and most of the corridor is classified as good quality land. There is one high sensitivity enterprise within the corridor and along the centreline. There are no farmyards within the corridor.

Overall, there will be medium - high levels of severance because the centreline crosses agriculture land adhering mainly to field boundaries for 67% of its length. There will be high land-take impact because the option centreline is 100% through agricultural land and the land quality is good. There are no impacts on farmyards. There will be an impact on a high sensitivity dairy farm. Overall, the potential impact on farm production is low. The impact on agriculture is negative – TAF score 2.

Route Option C7 (Node 35 – 41)

Route Option C7 from nodes 35 to 41 is 5.2km in length. There are potential land-take impacts through agricultural land for 93% of the length (4.8km). The centreline is on-line with existing public road and private tracks for 12% of its length and on-line with field boundaries through agricultural land for 86% of its length. There are approximately 51 hectares of agricultural land within the 53 hectare corridor (97% agricultural land) and most of the corridor (97%) is classified as good quality land. There is one high sensitivity enterprise within the corridor. There are no farmyards within the corridor.

The potential impacts from severance is high because 86% of the centreline is across agricultural land and it crosses one high sensitivity dairy farm. There will be high land-take impact because the option centreline is 100% through agricultural land and the land quality is good. There are no impacts on farmyards. There will be a severance impact on a high sensitivity dairy farm. Overall, the potential impact on farm production is low - medium. The impact on agriculture is negative – TAF score 2.

2.2.4 Assessment Summary

Table 2.2.3 below provides a summary of the impact assessment for material assets, agricultural properties.

Table 2.2.3 Summary of Impact Ratings for Material Assets: Agricultural Properties

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 1 – 4)	2	Negative
Option A4-1 (Node 4 - 9)	3	Slight Negative
Option A5 & A6 (Node 4 – 12)	2	Negative
Option A5 (Node 12 – 14)	2	Negative
Option A6 (Node 12 – 13)	3	Slight Negative
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	3	Slight Negative
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	2	Negative
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	2	Negative
Option B3 (Node 14 – 19)	2	Negative
Option B2 (Node 19 – 20)	2	Negative
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	2	Negative
Option B3 (Node 20 – 23)	2	Negative
Option B4 (Node 14 – 21)	3	Slight Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option B4 (Node 21 - 25)	3	Slight Negative
Option L3 (21 – 21A)	3	Slight Negative
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	2	Negative
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	3	Slight Negative
Option C5 (Node 28 – 35)	3	Slight Negative
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	3	Slight Negative
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 23 – 25)	2	Negative
Option C4-1 (Node 28 – 30)	2	Negative
Option C6-1 (Node 31 – 35)	2	Negative
Option C7 (Node 35 – 41)	2	Negative

2.3 Existing Transport Network

2.3.1 Introduction

This assessment criterion evaluates a project based on the extent to which it integrates with existing or proposed transport infrastructure and services. Strong integration can deliver benefits such as improved journey times and user experience, enhanced connectivity between modes of transport, promotion of modal shift to more sustainable options, and increased resilience of the overall transport network to service disruptions. Projects should be assessed in the context of broader transport strategies and plans to ensure alignment and long-term network efficiency.

2.3.1.1 Methodology

The assessment is divided into two categories: Integration with Land Use Policy and Improving connectivity to cycling facilities.

Integration with Land Use Policy

This criterion assesses how well a proposed project supports and aligns with strategic land use and spatial planning at national, regional, or local levels. The evaluation considers whether the scheme facilitates access to zoned land for key uses and acts as an enabler for delivering identified spatial planning objectives. The assessment is informed by relevant evidence from statutory planning documents and strategies to ensure coherent integration with future development patterns.

Improved connectivity to cycling facilities

This sub-criterion evaluates the extent to which a proposed project connects with existing or planned cycling infrastructure at the local, regional, and national levels. The assessment includes identifying and quantifying the number of connections to other existing and proposed

greenways, active travel facilities, or alternative modes of transport within a 1 km radius. This integration is essential for enhancing network continuity, promoting active travel, and supporting sustainable mobility objectives.

2.3.1.2 Sources of Information

A review of the following documents took place as reference for the assessments mentioned in Section 2.3.1.1:

- Project Ireland 2040
- National Development Plan 2021-2030
- National Sustainable Mobility Policy Action Plan 2022-2025
- Strategy for the Future Development of National and Regional Greenways
- Our Rural Future: The Rural Development Policy 221-2025
- Climate Action Plan 2025
- Ireland's Government Road Safety Strategy 2021-2030
- National Cycle Network Plan Report 2023
- Cycle Connects: Draft Louth Cycle Network
- RSES Eastern and Midland Region (2019-2031)
- Consolidated Louth County Development Plan 2021-2027: Variation No. 1 and Variation No. 2
- Louth County Development Plan 2021-2027: Carlingford Local Area Plan (LAP)
- Dundalk LAP 2024-2030

  Louth County Development Plan 2021-2027: Rural Policy Zone Map

2.3.2 Integration with Land Use Policy

The assessment evaluates alignment with strategic land use and spatial planning context at national, regional, or local levels. The policy context that aligns with the proposed greenway project, and is evaluated within the proposed route options, is detailed in the section below.

2.3.2.1 Policy Context

This section outlines the key policies and objectives identified in relevant national, regional, and local policies that all of the proposed route options are compliant with. For full policy context, see the main Options Report.

National Policy Context

Project Ireland 2040

Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. Project Ireland 2040 incorporates both the National Planning Framework (NPF) and the National Development Plan (NDP).

National Planning Framework

The NPF succeeds the National Spatial Strategy and has statutory basis. It is the Government's high-level strategic plan for shaping the future growth and development of Ireland out to the year 2040. The overarching ambition of the NPF is to *"create a single vision, a shared set of goals for every community across the country"* by achieving several goals including, but not limited to, the following:

- Guide the future development of Ireland, considering a projected 1 million increase in our population by 2040;

- Of the 1 million extra people, 50% of growth to occur in key regional centres, towns, villages and rural areas, to be determined in the regional plans – Regional Spatial and Economic Strategies (RSES);
- Regenerate rural Ireland by promoting environmentally sustainable growth patterns;
- Plan for and implement a better distribution of regional growth, in terms of jobs and prosperity;
- Co-ordinate delivery of infrastructure and services in tandem with growth, through joined-up NPF/National Investment Plan and consistent sectoral plans, which will help to manage this growth and tackle congestion and quality of life issues in Dublin and elsewhere.

Objectives supported by proposed Greenway includes the following:

NPO 27: *Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments and integrating physical activity facilities for all ages.*

NPO 22: *Facilitate tourism development and in particular a National Greenways, Blueways and Peatways Strategy, which prioritises projects on the basis of achieving maximum impact and connectivity at national and regional level.*

NSO 3: *Invest in greenways, blueways and peatways as part of a nationally coordinated strategy.*

NSO 4: *Develop a comprehensive network of safe cycling routes in metropolitan areas to address travel needs and to provide similar facilities in towns and villages where appropriate.*

National Development Plan 2021-2030

The National Development Plan (NDP) 2021 – 2030, is a ten-year strategy identifying priorities for public capital investment across all sectors, including Transport. The total investment is estimated at €165 Billion over the next decade. The NDP has been designed to support the 10 National Strategic Outcomes in the National Planning Framework (NPF). The NDP outlines the governments investment into active travel infrastructure and introduces the new 'National Active Travel Programme' which will receive €360 million annually between 2021-2025.

Objectives supported by proposed Greenway includes the following:

- To invest in sustainable mobility infrastructure, including the expansion of greenways and active travel networks.
- To support regional development by enhancing transport connectivity and promoting tourism through greenway projects.

National Sustainable Mobility Policy Action Plan 2022-2025

The National Sustainable Mobility Policy (NSMP) was published in April 2022 as a replacement to the Smarter Travel – A Sustainable Transport Future and National Cycle Policy Framework, considering the significant changes in legislation during the intervening period. The NSMP aligns with current policy, such as the NPF, NDP, Climate Action Plan, Road Safety Strategy 2021-2030 and National Investment Framework for Transport in Ireland (NIFTI). Its vision is *"to connect people and places with sustainable mobility that is safe, green, accessible and efficient".*

Objectives supported by proposed Greenway includes the following:

Action 28: *Develop and publish cycle network plans for all counties.*

Action 29: *Develop and publish a strategic national cycle network.*
Action 30: *Expand greenway network establishing linkages with towns and villages in line with the strategic national cycle network.*

Action 45: *Conduct a study to assess incentives to encourage greater use of active travel as a mode of transport, including an assessment of international best practice.*

Policy Objectives: *To increase the number of daily active travel journeys by improving infrastructure and promoting walking and cycling.*

Policy Objectives: *To integrate active travel options with public transport, enhancing connectivity and accessibility.*

Strategy for the Future Development of National and Regional Greenways

The Strategy for the Future Development of National and Regional Greenways was launched by Ireland's Department of Transport, Tourism and Sport in 2018. It sets out a long-term vision to develop high-quality, scenic, and accessible greenways across the country. Aimed at promoting sustainable transport, tourism, and rural development, the strategy emphasizes routes that are safe, strategic, and well-integrated with local communities and natural landscapes.

Objectives supported by proposed Greenway includes the following:

Policy Objective 1: *A Strategic Greenway network of national and regional routes, with a number of high-capacity flagship routes that can be extended and/or link with local Greenways and other cycling and walking infrastructure;*

Policy Objective 2: *Greenways of scale and appropriate standard that have significant potential to deliver an increase in activity tourism to Ireland and are regularly used by overseas visitors, domestic visitors and locals thereby contributing to a healthier society through increased physical activity;*

Policy Objective 3: *Greenways that provide a substantially segregated offroad experience linking places of interest, recreation and leisure in areas with beautiful scenery of different types with plenty to see and do;*

Our Rural Future: The Rural Development Policy 2021-2025

Our Rural Future (2021–2025) is the Irish government's comprehensive and forward-looking rural development strategy, introduced in March 2021. Designed as a post-COVID blueprint, it adopts a place-based, whole-of-government approach with over 150 commitments aimed at revitalizing rural Ireland. The policy focuses on eight key themes: delivering high-speed broadband and remote working infrastructure; improving quality employment; regenerating towns and villages; enhancing community leadership; expanding public services; supporting a just transition to a climate-neutral society; sustaining agriculture, marine, forestry sectors; and bolstering island and coastal communities. It sets out transformative actions, from establishing 400+ remote working hubs and investing in town centre renewal, to supporting the green and circular economies, all coordinated under a national framework with strong stakeholder involvement. The aim is to create vibrant, well-connected, and sustainable rural communities by 2025 and beyond.

Objectives supported by proposed Greenway includes the following:

Action No. 36: *Invest in greenways, blueways, walking trails and other outdoor recreation infrastructure to support the growth in outdoor recreational tourism.*

Action No. 37: *Develop a pilot bicycle up-cycling initiative to support employment creation, to harness the potential of investment in greenways and to support the development of the social enterprise business model.*

Action No. 102: *Invest in high-quality walking and cycling infrastructure specifically targeted at towns and villages across the country.*

Climate Action Plan 2025

The Climate Action Plan 2025 (CAP25) is Ireland's latest roadmap for addressing the climate crisis, approved by the government in April 2025. Based upon the 2024 plan, CAP25 outlines decisive actions to reduce greenhouse gas emissions by 51% by 2030 and achieve climate neutrality by 2050, as mandated by the Climate Action and Low Carbon Development (Amendment) Act 2021.

This plan is the third to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, which commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050 and a reduction of 51 percent by 2030 (compared to 2018 levels) and is required to be reviewed and updated annually to ensure it is responsive.

Objectives supported by proposed Greenway includes the following:

TR/25/7: *Advance roll-out of walking/cycling infrastructure in line with National Cycle Network and CycleConnects plans.*

Ireland's Government Road Safety Strategy 2021 – 2030

Ireland's Government Road Safety Strategy 2021 – 2030 sets out targets to be achieved in terms of road safety in Ireland as well as policies to achieve these targets. Guiding this strategy is Vision Zero, Ireland's long-term goal of achieving zero road deaths or serious injuries by 2050 using a Safe Systems approach. To achieve Vision Zero, the Strategy aims to achieve *"a 50% reduction in deaths and serious injuries by 2030"*. Some of the key interventions that this strategy will deliver include significant investment in the provision of safe, segregated infrastructure to protect those walking and cycling on our roads, and initiatives to promote modal shift from motor vehicle travel to support environmental, safety and health objectives

Objectives supported by proposed Greenway includes the following:

Develop a National Cycle Network plan for interurban rural cycling and walking, providing connections to active travel networks and Greenways. Develop an implementation plan for delivery in Phases 2 & 3 of the Road Safety Strategy.

National Cycle Network Plan Report 2023

The National Cycle Network Plan 2023, jointly led by the Department of Transport and Transport Infrastructure Ireland, outlines a bold, country-wide framework for a connected and inclusive cycling system across Ireland. Built around a core 3,500 km network linking over 200 cities, towns, and villages, the plan integrates existing greenways with new on- and off-road cycling routes designed for commuting, recreation, and tourism. It aims to ensure that around 80% of households and 89% of jobs are within five kilometres of the network, thereby enhancing connectivity, public health, and regional economic development.

Objectives supported by proposed Greenway includes the following:

- Increase the number of cycle trips by improving the provision of safe and attractive cycle infrastructure.
- Connect to strategic destinations outside of urban area as appropriate (including centres of education, centres of employment, and leisure destinations).
- Support the development of cycling and walking culture in Ireland.
- Connect identified urban areas of 5,000+ population and those urban areas listed in the NTA's urban cycle network strategy.
- Integrate with existing and proposed cycle infrastructure (including greenways, safe routes to schools, the EuroVelo network, Interreg projects), as appropriate.
- Encourage use of off-road infrastructure, where appropriate.
- Incorporate existing greenways, disused railways, canals, bypassed national roads, regional and local roads, long distance trails, as appropriate.
- Future-proof cycle route capacity, taking account of population growth and additional demand from modal shift.

Draft CycleConnects: Ireland's Cycle Network - Draft Louth Cycle Network

The Louth Cycle Network primarily extends the network beyond the key settlement areas of Drogheda and Dundalk. In summary, it will consist of an urban cycle network for Drogheda and Dundalk, with interurban connectors between towns such as Ardee, Carlingford, Clogherhead, Dunleer, and Termonfeckin. These then extend into adjoining counties forming a comprehensive and connecting cycle network nationally.

The Cycle Network consists of four types of cycle routes, namely urban primary, urban secondary, inter-urban and greenway. According to the Draft Louth Cycle Network, it is proposed to extend Great Eastern Greenway to Newry and Dundalk (incorporating Greenore and Templetown) to increase the length of the greenway to approx. 55km. An indicative route for the connection of the Great Eastern Greenway between Carlingford and Dundalk is also shown. The proposed greenway development is consistent with the proposed cycle network and will extend the Great Eastern Greenway from Carlingford to Dundalk.

Regional Policy Context

RSES Eastern and Midland Region (2019-2031)

The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region 2019–2031 is a statutory, long-term framework designed to implement Project Ireland 2040's National Planning Framework and National Development Plan. It provides a cohesive roadmap to guide spatial planning, economic development, and climate action across the region. It sets out strategies to balance growth across urban and rural areas, foster compact development, support employment, and enhance public services, infrastructure, and environmental resilience, from Dublin's metropolitan core to the Midlands.

Objectives supported by proposed Greenway includes the following:

RPO 7.22: *Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species.*

RPO 7.23: *Support the further development of Green Infrastructure policies and coordinate the mapping of strategic Green Infrastructure in the Region.*

RPO 7.24: *Promote the development of a sustainable Strategic Greenway Network of national and regional routes, with a number of high-capacity flagship routes that can be extended and /or linked with local greenways and other cycling and walking infrastructure, notwithstanding that capacity of a greenway is limited to what is ecologically sustainable.*

RPO 7.25: *Support local authorities and state agencies in the delivery of sustainable strategic greenways, blueways, and peatways projects in the Region under the Strategy for the Future Development of National and Regional Greenways.*

Local Policy Context

Dundalk Local Area Plan 2025-2031

The Dundalk Local Rea Plan came into effect on the 17th of April 2025. It sets out a strategic vision for the future growth and development of Dundalk for the next six years and beyond. The plan is prepared with reference to Sections 18, 19 and 20 of the Planning and Development Act, 2000 (as amended). It aims to strengthen Dundalk's role as a Regional Growth Centre along Dublin- Belfast corridor. The plan emphasises integrated land use, housing delivery, environmental protection, and enhanced transport connectivity to create a vibrant, inclusive, and resilient urban environment.

Objectives supported by proposed Greenway includes the following:

RT 12: *To support Dundalk's tourist potential, in particular, its cultural heritage tourism and promote uses which activate and enhance the existing historic environment, including buildings, public realm, industrial and maritime heritage*.

RT 14: *To develop and enhance the tourism, recreational and amenity potential of the town's waterways and coastal area, while not compromising the ecological importance of these areas.*

MOV 2: *To support investment in sustainable transport infrastructure that will make walking, cycling and public transport more attractive and appealing, and facilitate accessibility for all, regardless of age, physical mobility, or economic status.*

MOV 4: *To encourage a modal shift from use of the private car towards more sustainable modes of transport including walking, cycling, and public transport and to support any initiatives that would assist in the attainment of the Climate Action Plan 2024 mode share targets for 2030: 53% (Car), 19% (Public Transport) and 28% (Active Travel).*

MOV 7: *To support the progression and implementation of the NTA CycleConnects Programme as it relates to the Plan area, the active travel projects as set out in Chapter 5 of the Local Transport Plan (and listed in Tables 8.1-8.3 of this Plan), and any other active travel projects proposed by the Council.*

MOV 8: *To support the retrospective provision of walking and cycling infrastructure, where feasible, to achieve growth in sustainable mobility and strengthen and improve the walking and cycling network.*

MOV 10: *To provide, where possible, traffic free pedestrian and cyclist routes particularly where such routes would provide a more direct, safer, and more attractive alternative to the car.*

MOV 13: *To support permeability and connectivity throughout the Plan area that will improve connections within existing and between existing and new neighbourhoods. This includes vehicular and/or active travel connections between developed and undeveloped lands. Where*

such a connection would traverse an area of open space it will only be facilitated where the functionality of the open space will not be undermined. The principle of 'Filtered Permeability' will also be considered throughout the Plan area were considered appropriate/feasible.

MOV 14: *To continue to support the development of a network of greenways in Dundalk and the surrounding areas including those set out in Section 8.6 of this Plan, and to continue to engage and work with stakeholders including Transport Infrastructure Ireland (TII), the National Transport Authority (NTA) and the Office of Public Works (OPW) in the progression of these projects.*

Louth County Development Plan 2021-2027- Carlingford LAP

Carlingford Local Area Plan within Louth County Development Plan 2021-2027, establishes a spatial framework to guide the town's development as a self-sustaining, heritage rich coastal settlement over the plan's lifetime.

Integrated policies focus on maintaining the town's historic identity while facilitating public realm enhancements, improved transport connectivity, and tourism-driven economic development. Through structured land-use zoning, design guidance, and infrastructure measures, it seeks to balance heritage preservation, community vitality, and environmental sustainability, positioning Carlingford as a vibrant, well-connected town within County Louth.

Objectives supported by proposed Greenway includes the following:
CAR 10: *To work in conjunction with adjoining authorities including Newry, Mourne and Down District Council to extend and design new walking and cycling routes, such as the Great Eastern Greenway and ensure all proposals include appraisal of environmental impacts and take full account of the potential for negative impacts on European Sites through the process of Habitats Directive Assessment Screening.*

CAR 20: *To promote and facilitate the development of walkways and cycleways at appropriate locations throughout Carlingford.*

Louth County Development Plan 2021-2027

The Louth County Development Plan 2021–2027 sets out the strategic vision and policy framework for the sustainable development of County Louth over a six-year period. Aligned with national and regional planning frameworks, namely the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES), the plan represents a significant shift from previous development approaches by prioritising compact growth, climate action, economic resilience, and quality of life across urban and rural areas.

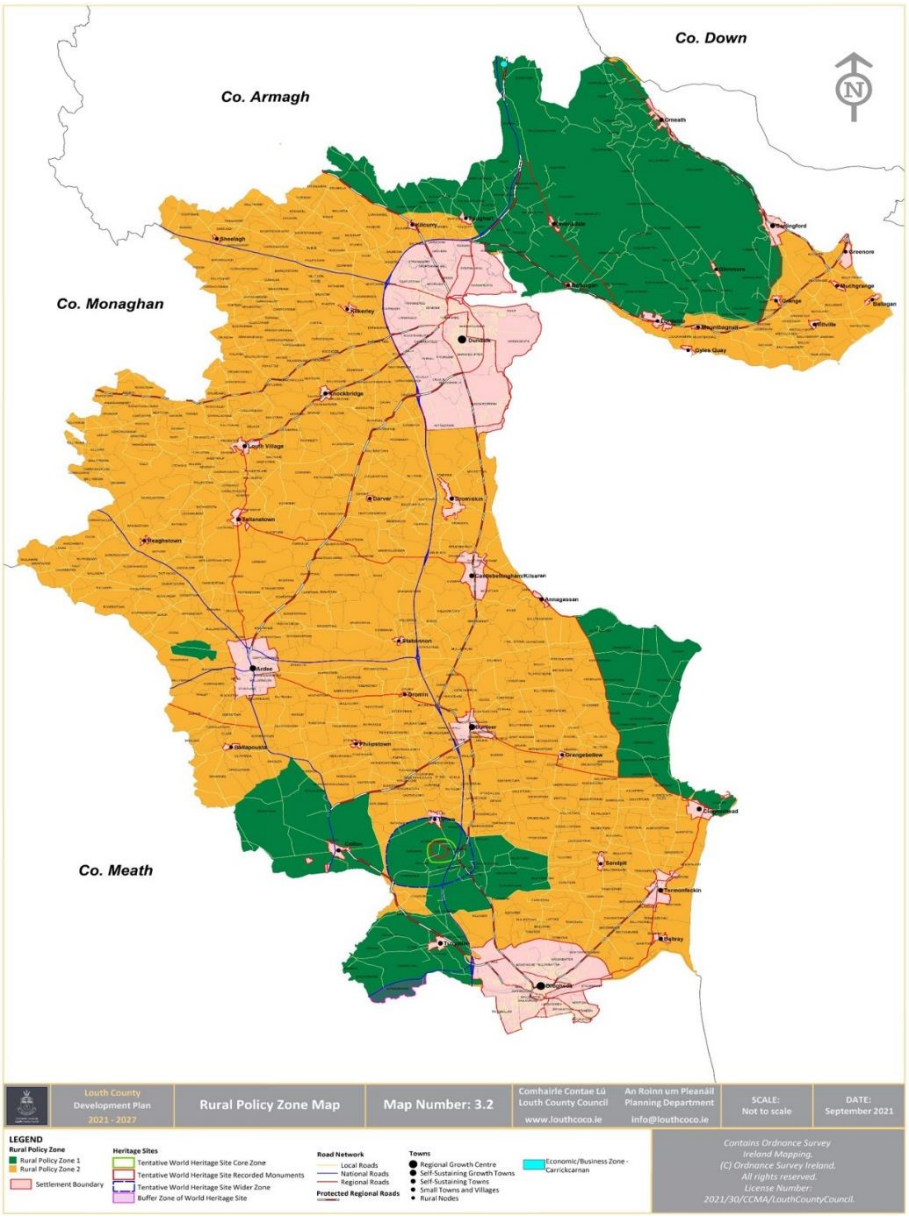


Figure 2.3.1 Rural Policy Zone Map- Louth County Development Plan 2021-2027

Objectives supported by proposed Greenway includes the following:

MOV 9: *To support investment in sustainable transport infrastructure that will make walking, cycling or public transport more attractive and appealing, and facilitates accessibility for all, regardless of age, physical mobility, or social disadvantage.*

MOV 30: *To provide, where possible traffic free pedestrian and cyclist routes particularly where such routes would provide a more direct, safer, and more attractive alternative to the car.*

MOV 33: *To continue the development of a network of Greenways in the County in accordance with the Strategy for the Future Development of National and Regional Greenways.*

MOV 38: *To engage in the Compulsory Purchase Order process when required in order to facilitate the timely delivery of the Greenway and Cycleway Projects in the County.*

NBG 52: *To develop and support the implementation of a Regional Green Infrastructure approach by working collaboratively and in partnership with the Eastern and Midland Regional Assembly, adjoining local authorities and other key stakeholders to identify, protect, enhance and manage existing green infrastructure within the County and to provide additional GI where possible.*

NBG 55: *To create an integrated and coherent green infrastructure for County Louth by ensuring compliance with the objectives listed in the Green Infrastructure Strategy outlined in Appendix 8, Volume 3, to improve pedestrian and cycle access routes within this green infrastructure network while ensuring that ecosystem functions and existing amenity uses are not compromised and existing biodiversity and heritage is protected and enhanced.*

Draft Louth County Council Climate Action Plan 2024-2029

The Draft Louth County Council Climate Action Plan 2024–2029 outlines the Council's strategic framework for addressing climate change through mitigation, adaptation, and enhanced climate resilience at the local level. The plan is developed in alignment with national legislation and regional policy, including the Climate Action and Low Carbon Development (Amendment) Act 2021. It sets out a clear pathway for Louth to contribute to Ireland's national targets for emissions reduction and climate resilience by 2030 and beyond.

Objectives supported by proposed Greenway includes the following:

Action 2.4: *Deliver additional active travel projects within the county to further develop walking and cycling as an alternative to private car use. Ensure supported active travel development is carried out in a manner that has due regard to environmental sensitivities such as biodiversity, European sites, water quality and hydrology.*

2.3.2.2 Appraisal of all Options

Section A Options Appraisal

Route Option A3 (Node 1 – 4)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

At local level, the Dundalk Local Area Plan 2025–2031 supports the Greenway under Section 8.6, which identifies the Dundalk Bay to Carlingford Greenway as part of the greenway network receiving continued investment. The Greenway aligns with policy objectives, detailed in Section 2.3.2.1, that promote tourism and the expansion of walking and cycling infrastructure, including: RT12, RT14, MOV2, MOV4, MOV7, MOV8, MOV10, MOV13, and MOV14.

The Greenway is also consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

The surrounding land use zoning includes:

- Dundalk Settlement Area
- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

None of the relevant zoning objectives restrict or prohibit the development of a greenway along this corridor. According to the Dundalk Local Area Plan 2025–2031, the proposed route runs adjacent to lands zoned as H1 Open Space, A2 New Residential Phase 1, E1 General Employment, I1 Tourism and Leisure, and L1 Strategic Reserve.

Under the Louth County Development Plan 2021–2027, Cycleway/Walkway trails are classified as a 'Generally Permitted Use' within H1 Open Space and I1 Tourism and Leisure zones.

For Rural Policy Zone 1, however, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A3 (Node 1 – 4) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A4-1 (Node 1 – 4)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

At the local level, the Dundalk Local Area Plan 2025–2031 supports the Greenway under Section 8.6, which identifies the Dundalk Bay to Carlingford Greenway as part of the greenway network receiving continued investment. The Greenway aligns with policy objectives, detailed in Section 2.3.2.1, that promote tourism and the expansion of walking and cycling infrastructure, including: RT12, RT14, MOV2, MOV4, MOV7, MOV8, MOV10, MOV13, and MOV14.

The Greenway is also consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

The surrounding land use zoning includes:

- Dundalk Settlement Area
- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

None of the relevant zoning objectives restrict or prohibit the development of a greenway along this corridor. According to the Dundalk Local Area Plan 2025–2031, the proposed route runs adjacent to lands zoned as H1 Open Space, A1 Existing Residential, and I1 Tourism and Leisure.

Under the Louth County Development Plan 2021–2027, Cycleway/Walkway trails are classified as a 'Generally Permitted Use' within H1 Open Space and I1 Tourism and Leisure zones.

For Rural Policy Zone 1, however, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A4-1 (Node 1 – 4) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A4-1 (Node 4 – 9)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

At the local level, the Dundalk Local Area Plan 2025–2031 supports the Greenway under Section 8.6, which identifies the Dundalk Bay to Carlingford Greenway as part of the greenway network receiving continued investment. The Greenway aligns with policy objectives, detailed in Section 2.3.2.1, that promote tourism and the expansion of walking and cycling infrastructure, including: RT12, RT14, MOV2, MOV4, MOV7, MOV8, MOV10, MOV13, and MOV14.

The Greenway is also consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A4-1 (Node 4– 9) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A5 & A6 (Node 4 – 12)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

At the local level, the Dundalk Local Area Plan 2025–2031 supports the Greenway under Section 8.6, which identifies the Dundalk Bay to Carlingford Greenway as part of the greenway network receiving continued investment. The Greenway aligns with policy objectives, detailed in Section 2.3.2.1, that promote tourism and the expansion of walking and cycling infrastructure, including: RT12, RT14, MOV2, MOV4, MOV7, MOV8, MOV10, MOV13, and MOV14.

The Greenway is also consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A5 & A6 (Node 4– 12) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A5 (Node 12 – 14)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A5 (Node 12– 14) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A6 (Node 12 – 13)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the

connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A6 (Node 12– 13) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A1 (Node 9 – 13)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A1 (Node 9– 13) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A1 (Node 13 – 14)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

A fraction of the route is online, and this section of the route will be within the existing road corridor, which is zoned as 'Protected Regional Route', (based on Rural Policy Zone Map from the Louth County Development Plan 2021–2027) and therefore, the further access onto the road is restricted.

The route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A1 (Node 13– 14) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option A3 (Node 4 – 13)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

The route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option A3 (Node 4– 13) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option L2 (Node 8 – 9)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option L2 (Node 8– 9) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Section B Options Appraisal

Route Option B1 (Node 14 – 20)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

The surrounding land use zoning includes:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'.
- Settlements including Lordship and Mountbagnall

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B1 (Node 14– 20) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B2 (Node 14 – 19)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence'
- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'
- Settlement including Lordship

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 1 & 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B2 (Node 14– 19) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B3 (Node 14 – 19)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 1 - Categorized as being under 'strong urban influence' and of significant landscape value.

The surrounding land use zoning includes:

- Settlements including Lordship.

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 1, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any

use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B3 (Node 14– 19) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B2 (Node 19 – 20)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'
- Settlements of Mountbagnall

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B2 (Node 19– 20) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B1 (Node 20 – 21 and Node 21 – 23)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

The surrounding land use zoning includes:

- Settlements including Mountbagnall

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B1 (Node 20– 21 and Node 21-23) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B2 (Node 20 – 23)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the land use zone mentioned below:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

The surrounding land use zoning includes:

- Settlements including Mountbagnall

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B2 (Node 20– 23) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B3 (Node 19 – 23)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning::

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B3 (Node 19– 23) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B4 (Node 14 – 21A)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'
- Settlements of Gyles Quay

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B4 (Node 14– 21-A) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option B4 (Node 21-A – 25)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the

connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option B4 (Node 21-A– 25) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Link L3 (Node 21 – 21A)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option L3 (Node 21– 21-A) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Section C Options Appraisal

Route Option C2 (Node 23 – 31)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C2 (Node 23 – 31) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C2 (Node 31 – 43)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C2 (Node 31– 43) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C9 (Node 31 – 41)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the

connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C9 (Node 31– 41) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C5 (Node 25 – 28)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2- Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C5 (Node 25– 28) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C5 (Node 28 – 35)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the

connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C5 (Node 28– 35) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C5 (Node 35 – 38)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

According to the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the entire proposed route lies along an existing road designated as a Protected Regional Route, where further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'
- Settlement of Ballagan

The Louth County Development Plan 2021-2027 does not designate any specific land uses for the lands located within the settlement. For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C5 (Node 35– 38) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C5 (38 – 42)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning::

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence'

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C5 (Node 38– 42) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C10 (Node 38 – 41)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

A fraction of the route is online, and this section of the route will be within the existing road corridor, which is zoned as 'Protected Regional Route', (based on Rural Policy Zone Map from the Louth County Development Plan 2021–2027) and therefore, the further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C10 (Node 38– 41) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C9 (Node 41 – 45)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

A fraction of the route is online, and this section of the route will be within the existing road corridor, which is zoned as 'Protected Regional Route', (based on Rural Policy Zone Map from the Louth County Development Plan 2021–2027) and therefore, the further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C9 (Node 41– 45) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C10 (Node 41 – 44)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021-2027, the Carlingford Local Area Plan objectives that support the proposed Greenway includes the following:

CAR 10: *To work in conjunction with adjoining authorities including Newry, Mourne and Down District Council to extend and design new walking and cycling routes, such as the Great Eastern Greenway and ensure all proposals include appraisal of environmental impacts and take full account of the potential for negative impacts on European Sites through the process of Habitats Directive Assessment Screening.*

CAR 20: *To promote and facilitate the development of walkways and cycleways at appropriate locations throughout Carlingford.*

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

This route option will be within the existing road corridor, which is zoned as 'Protected Regional Route', (based on Rural Policy Zone Map from the Louth County Development Plan 2021–2027) and therefore, the further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence' and of significant landscape value. There may be impacts on the urban fabric of the settlement.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C10 (Node 41– 44) is scored as Positive as this option may impact on the urban fabric of Carlingford.

Route Option C3-1 (Node 25 – 23)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C3-1 (Node 25– 23) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C4-1 (Node 28 – 30)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2 - Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C4-1 (Node 28– 30) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C6-1 (Node 35 – 31)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

A fraction of the route is online, and this section of the route will be within the existing road corridor, which is zoned as 'Protected Regional Route', (based on Rural Policy Zone Map from the Louth County Development Plan 2021–2027) and therefore, the further access onto the road is restricted.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2- Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C6-1 (Node 35– 31) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

Route Option C7 (Node 35 – 41)

The proposed route option is supported by local, regional, and national policy objectives promoting sustainable transport and active travel networks.

The Greenway is consistent with the Draft CycleConnects: Ireland's Cycle Network – Draft Louth Cycle Network, which identifies a portion of the route as an indicative link in the connection between Carlingford and Dundalk, contributing to the broader Great Eastern Greenway.

Under the Louth County Development Plan 2021–2027, the Greenway is supported through transport and climate objectives, detailed in Section 2.3.2.1, particularly: MOV9, MOV30, MOV33, MOV38, NBG52, and NBG55.

As per the Rural Policy Zone Map from the Louth County Development Plan 2021–2027, the route passes through the following land use zoning:

- Rural Policy Zone 2- Categorized as being under 'strong urban influence' and of significant landscape value.

For Rural Policy Zone 2, the plan does not provide a specific list of 'Generally Permitted' or 'Open for Consideration' uses. In such cases, any use not explicitly listed is considered not acceptable in principle. Nonetheless, these uses may still be assessed on a case-by-case basis and may be permitted only if they enhance, complement, are ancillary to, or neutral in impact to the zoning objective. Overall, option C7 (Node 35– 41) is scored as Highly Positive as this option is consistent with the national, regional and local planning policy.

2.3.2.3 Assessment Summary

Table 2.3.1 below provides a summary of the impact assessment for integration and impact on land use planning.

Table 2.3.1 Summary of Impact Ratings for Integration and impact on land use planning policy at local, regional and national level

Route Option	Overall TAF Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	7	Highly Positive
Option A4-1 (Node 1 – 4)	7	Highly Positive
Option A4-1 (Node 4 - 9)	7	Highly Positive
Option A5 & A6 (Node 4 – 12)	7	Highly Positive
Option A5 (Node 12 – 14)	7	Highly Positive
Option A6 (Node 12 – 13)	7	Highly Positive
Option A1 (Node 9 – 13)	7	Highly Positive
Option A1 (Node 13 – 14)	7	Highly Positive
Option A3 (Node 4 – 13)	7	Highly Positive
Option L2 (Node 8 – 9)	7	Highly Positive
Section B		
Option B1 (Node 14 – 20)	7	Highly Positive
Option B2 (Node 14 – 19)	7	Highly Positive
Option B3 (Node 14 – 19)	7	Highly Positive
Option B2 (Node 19 – 20)	7	Highly Positive
Option B1 (Node 20 - 21)	7	Highly Positive
Option B1 (Node 21 - 23)	7	Highly Positive
Option B2 (Node 20 – 23)	7	Highly Positive
Option B3 (Node 19 – 23)	7	Highly Positive
Option B4 (Node 14 – 21a)	7	Highly Positive
Option B4 (Node 21-A - 25)	7	Highly Positive
Option L3 (Node 21-21-A)	7	Highly Positive
Section C		

Route Option	Overall TAF Impact Assessment Score	
Option C2 (Node 23 – 31)	7	Highly Positive
Option C2 (Node 31 – 43)	7	Highly Positive
Option C9 (Node 31 – 41)	7	Highly Positive
Option C5 (Node 25 – 28)	7	Highly Positive
Option C5 (Node 28 – 35)	7	Highly Positive
Option C5 (Node 35 – 38)	7	Highly Positive
Option C5 (Node 38 – 42)	7	Highly Positive
Option C10 (Node 38 – 41)	7	Highly Positive
Option C9 (Node 41 – 45)	7	Highly Positive
Option C10 (Node 41 – 44)	6	Positive
Option C3-1 (Node 25 – 23)	7	Highly Positive
Option C4-1 (Node 28 – 30)	7	Highly Positive
Option C6-1 (Node 31 – 35)	7	Highly Positive
Option C7 (Node 35 – 41)	7	Highly Positive

2.3.3 Improved connectivity to other local, regional and national cycling facilities

2.3.3.1 Options Appraisal

Section A Options Appraisal

Route Option A3 (Node 1 – 4)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout, which overlap with this proposed route. The planned R132 Inner Relief Road Active Travel Scheme will further enhance connectivity by extending cycle facilities from Tain Bridge into Dundalk. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A3 (Node 1-4) is scored as Highly Positive.

Route Option A4-1 (Node 1 – 4)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout, which overlap with this proposed route. The planned R132 Inner Relief Road Active Travel Scheme will further enhance connectivity by extending cycle facilities from Tain Bridge into Dundalk. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A4-1 (Node 1-4) is scored as Highly Positive.

Route Option A4-1 (Node 4 – 9)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda).

Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A4-1 (Node 4-9) is scored as Positive.

Route Option A5 & A6 (Node 4 – 12)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A5 & A6 (Node 4-12) is scored as Positive.

Route Option A5 (Node 12 – 14)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. This option will also provide an indirect connection to McCrystals Track, a cycling park. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A5 (Node 12-14) is scored as Slight Positive as it provides an indirect link to other existing and future active travel facilities via other routes.

Route Option A6 (Node 12 – 13)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. This option will also provide an indirect connection to McCrystals Track, a cycling park. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A6 (Node 12-13) is scored as Slight Positive as it provides an indirect link to other existing and future active travel facilities via other routes.

Route Option A1 (Node 9 – 13)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A1 (Node 9-13) is scored as Slight Positive.

Route Option A1 (Node 13 – 14)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option can potentially connect to these facilities via other Section A options travelling to Dundalk. At the Carlingford

end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A1 (Node 13-14) is scored as Slight Positive.

Route Option A3 (Node 4 – 13)

The proposed route lies within or near two planned National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and NCN Corridor 83 (Dundalk to Drogheda). Regarding existing infrastructure, dedicated cycle tracks are currently available along sections of the N52 between Tain Bridge and Ballymascanlan Roundabout. This option will directly connect to these facilities. At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option A3 (Node 4-13) is scored as Positive.

Route Option L2 (Node 8 – 9)

This option serves as a link between Bellurgan Point and the R173 and does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed route will link to the Carlingford to Omeath Greenway via its connection with route options in Section C. Overall, option L2 (Node 8-9) is scored as Slight Positive.

Section B Options Appraisal

Route Option B1 (Node 14 – 20)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. This option is however in proximity to Annaloughan Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B1 (Node 14-20) is scored as Positive.

Route Option B2 (Node 14 – 19)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. This option is however in proximity to Annaloughan Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B2 (Node 14-19) is scored as Positive.

Route Option B3 (Node 14 – 19)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. This option is however in proximity to Annaloughan Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B3 (Node 14-19) is scored as Positive.

Route Option B2 (Node 19 – 20)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to

existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B2 (Node 19-20) is scored as Slight Positive.

Route Option B1 (Node 20 – 21)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B1 (Node 20-21) is scored as Slight Positive.

Route Option B1 (Node 21 – 23)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B1 (Node 21-23) is scored as Slight Positive.

Route Option B2 (Node 20 – 23)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B2 (Node 20-23) is scored as Slight Positive.

Route Option B3 (Node 19 – 23)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B3 (Node 19-23) is scored as Slight Positive.

Route Option B4 (Node 14 – 21-A)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. This option will however provide connection to Annaloughan Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B4 (Node 14-21-A) is scored as Positive.

Route Option B4 (Node 21 – A-25)

There are no existing or proposed dedicated cycling facilities through the settlements of Jenkinstown and Lordship / Rampark. Therefore, this option does not, by itself connect to existing or proposed cycling infrastructure. This option will however provide connection to Annaloughan Loop via other Section B options. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the existing Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option B4 (Node 21-A-25) is scored as Slight Positive.

Route Option L3 (Node 21 – 21-A)

This option serves as a link between the coast and the R173 and does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option L3 (Node 21-21-A) is scored as Slight Positive.

Section C Options Appraisal

Route Option C2 (Node 23 – 31)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C2 (Node 23-31) is scored as Slight Positive.

Route Option C2 (Node 31 – 43)

This option will connect to the existing Grange Loops - Molly Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with options in Section C. Overall, option C2 (Node 31-43) is scored as Positive.

Route Option C9 (Node 31 – 41)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C9 (Node 31-41) is scored as Slight Positive.

Route Option C5 (Node 25 – 28)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C5 (Node 25-28) is scored as Slight Positive.

Route Option C5 (Node 28 – 35)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C5 (Node 28-35) is scored as Slight Positive.

Route Option C5 (Node 35 – 38)

This option will connect with the existing Whitestown Coastal Loop. Additionally, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C5 (Node 35-38) is scored as Positive.

Route Option C5 (Node 38 – 42)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C5 (Node 38-42) is scored as Slight Positive.

Route Option C10 (Node 38 – 41)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C10 (Node 38-41) is scored as Slight Positive.

Route Option C9 (Node 41 – 45)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C9 (Node 41-45) is scored as Slight Positive.

Route Option C10 (Node 41 – 44)

This option travels directly into Carlingford and will connect to the Carlingford to Omeath Greenway. There are other existing walking and cycling routes located in the areas, including the Slieve Foye Trail, Tain Way Trail, and Barnevave Trail. This option will also connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN)

corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). Overall, option C10 (Node 41-44) is scored as Highly Positive.

Route Option C3-1 (Node 25 – 23)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C3-1 (Node 25-23) is scored as Slight Positive.

Route Option C4-1 (Node 28 – 30)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C4-1 (Node 28-30) is scored as Slight Positive.

Route Option C7 (Node 35 – 41)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C7 (Node 35-41) is scored as Slight Positive.

Route Option C6-1 (Node 35 – 31)

This option does not, by itself connect to existing or proposed cycle facilities. However, this option will connect to Section A options which are in vicinity of two proposed National Cycle Network (NCN) corridors, namely NCN Corridor 90 (Newry to Dundalk) and, NCN Corridor 83 (Dundalk to Drogheda). At the Carlingford end, the proposed option will connect to the Carlingford to Omeath Greenway through its connection with other options in Section C. Overall, option C6-1 (Node 35-31) is scored as Slight Positive.

2.3.3.2 Assessment Summary

Table 2.3.2 below provides a summary of impact assessed for integration and impact on improved connectivity to other local, regional and national cycling facilities.

Table 2.3.2 Summary of Impact Ratings for Integration and impact on Improved connectivity to other local, regional and national cycling facilities

Route Option	Overall TAF Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	7	Highly Positive
Option A4-1 (Node 1 – 4)	7	Highly Positive
Option A4-1 (Node 4 - 9)	6	Positive
Option A5 & A6 (Node 4 – 12)	6	Positive
Option A5 (Node 12 – 14)	5	Slight Positive

Route Option	Overall TAF Impact Assessment Score	
Option A6 (Node 12 – 13)	5	Slight Positive
Option A1 (Node 9 – 13)	5	Slight Positive
Option A1 (Node 13 – 14)	5	Slight Positive
Option A3 (Node 4 – 13)	6	Positive
Option L2 (Node 8 – 9)	5	Slight Positive
Section B		
Option B1 (Node 14 – 20)	6	Positive
Option B2 (Node 14 – 19)	6	Positive
Option B3 (Node 14 – 19)	6	Positive
Option B2 (Node 19 – 20)	5	Slight Positive
Option B1 (Node 20 - 21)	5	Slight Positive
Option B1 (Node 21 - 23)	5	Slight Positive
Option B2 (Node 20 – 23)	5	Slight Positive
Option B3 (Node 19 – 23)	5	Slight Positive
Option B4 (Node 14 – 21A)	6	Positive
Option B4 (Node 21-A - 25)	5	Slight Positive
Option L3 (Node 21-21-A)	5	Slight Positive
Section C		
Option C2 (Node 23 – 31)	5	Slight Positive
Option C2 (Node 31 – 43)	6	Positive
Option C9 (Node 31 – 41)	5	Slight Positive
Option C5 (Node 25 – 28)	5	Slight Positive
Option C5 (Node 28 – 35)	5	Slight Positive
Option C5 (Node 35 – 38)	6	Positive
Option C5 (Node 38 – 42)	5	Slight Positive
Option C10 (Node 38 – 41)	5	Slight Positive
Option C9 (Node 41 – 45)	5	Slight Positive
Option C10 (Node 41 – 44)	7	Highly Positive
Option C3-1 (Node 25 – 23)	5	Slight Positive
Option C4-1 (Node 28 – 30)	5	Slight Positive
Option C6-1 (Node 31 – 35)	5	Slight Positive
Option C7 (Node 35 – 41)	5	Slight Positive

3. CLIMATE

3.1 Introduction

This section details the environmental assessment of the Phase 2 Stage 2 Project Appraisal Matrix with respect to the potential climate impacts associated with the project. The aim of this greenway is to link Carlingford, and the many rural settlements on the Cooley Peninsula to Dundalk town to boost the smaller settlements with increased visitor numbers whilst greatly improving accessibility for rural dwellers. The proposed development will be linear in nature and will form part of a larger network of greenways in the region, linking to the constructed Carlingford Greenway and the currently under construction Omeath to Newry Greenway providing cross-border links into Northern Ireland from Dundalk.

AWN Consulting Ltd. have prepared the air quality assessment for the various route corridors in line with the most recent Transport Infrastructure Ireland (TII) guidance published in December 2022 and Transport Appraisal Framework (TAF) (Department of Transport 2023). A comparison of the Climate impact of each route option has been provided.

Ciara Nolan is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments commercial and industrial developments, as well as renewable energy development. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

3.2 Methodology

This assessment has been prepared based on the following TII guidance published in December 2022:

- PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII 2022a);
- PE-ENV-01105: Climate Assessment of Proposed National Roads – Standard (TII 2022b); and
- GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII 2022c).

The climate assessment is split into two aspects, the greenhouse gas assessment (GHGA) (i.e. the impact of the project on climate change) and the climate change risk assessment (CCRA) (i.e. the impact of climate change on the project).

3.2.1 Greenhouse Gas Assessment (GHGA)

The GHGA involves identifying and quantifying the carbon sources for each route option.

GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII 2022c) provides guidance on the use of the TII Carbon Tool for assessing lifecycle carbon emissions for national road and light rail infrastructure projects in Ireland. The Carbon Tool aligns with Section 7 of PAS 2080, which was published by the

British Standards Institution (BSI), the Construction Leadership Council and the Green Construction Board in 2016.

The embodied construction emissions for the route options were calculated using the online TII Carbon Assessment Tool (TII 2025). The TII Online Carbon Tool uses emission factors from recognized sources including the ICE v4 (Circular Ecology), UK National Highways Carbon Tool v2.4 and UK Government Department for Energy Security and Net Zero 2024 Greenhouse Gas Reporting Conversion Factors. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The TII Online Carbon Tool (TII 2025) has been commissioned by TII to assess GHG emissions associated with infrastructure projects using Ireland-specific emission factors and data. The goal of the tool is to assist project development as a decision-making tool that drives lower carbon infrastructure and to facilitate the integration of environmental issues into transport infrastructure planning, construction and operation.

Preference is based on the lowest lifecycle GHG emissions. Consideration is given to routes which have higher potential for mitigation during further design.

To enable alignment with Ireland's net zero trajectory, discussion is included on mitigation measures based on available data. Mitigation measures are based on the following mitigation hierarchy:

- Avoid;
- Reduce;
- Replace; and
- Offset.

This hierarchy is detailed in Figure 3.2.1 below which is a reproduction of Figure 6.3 of PE-ENV-01104 (TII 2022a) with reduction impacts quantified where possible.

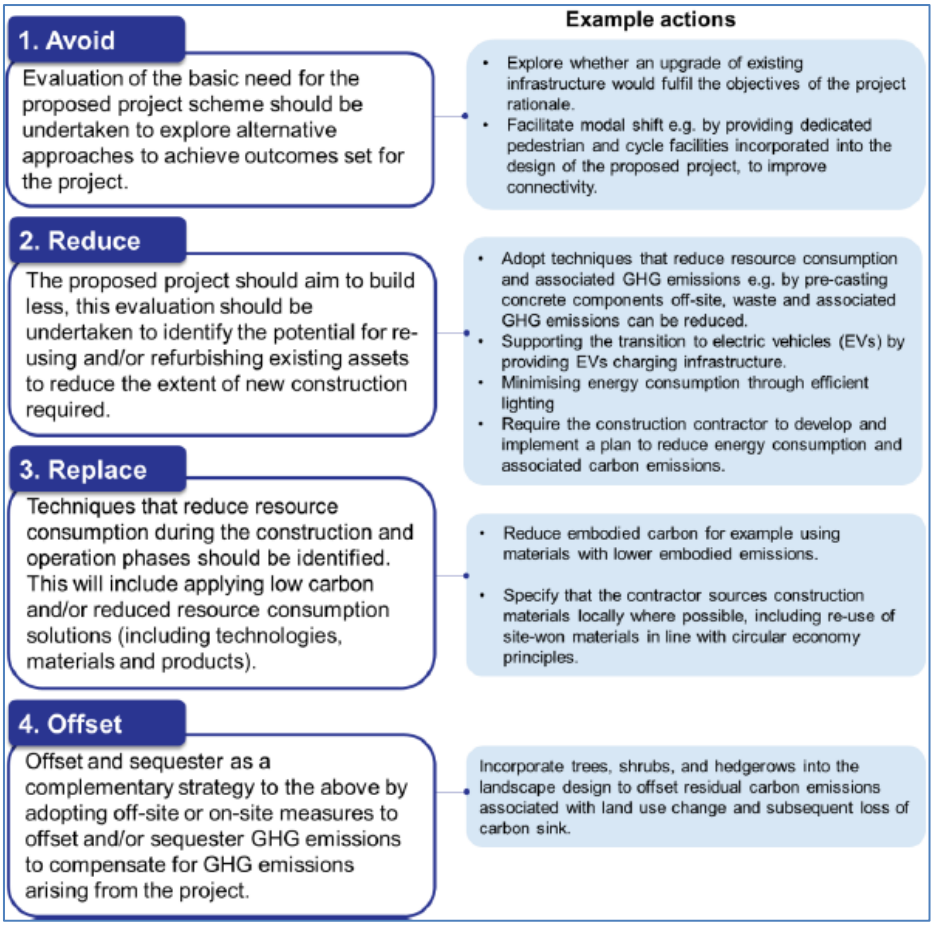


Figure 3.2.1 Figure 6.3 of PE-ENV-01104 (TII 2022a)

A list of potential mitigation measures that could be used for further design in the climate assessment are as follows:

- Reduce resource consumption and waste;
- Use materials with lower embodied carbon;
- Provide electric vehicle charging infrastructure (EV) to support the transition to electric vehicles;
- Reduce energy consumption by utilising energy efficient lighting;
- Re-use materials in line with circular economy principles;
- Incorporate trees, shrubs and hedgerows into the landscape design;
- Flooding;
- Drainage; and
- Links to active travel-greenway.

A scoring scale as detailed in PE-ENV-01105 (TII 2022b) as shown in Table 3.1.1 below.

Table 3.1.1 Greenhouse Gas Assessment Scoring Scale

Score		Description
Major or Highly Positive	7	Based on professional judgement the option would result in a potentially significantly positive improvement, providing a GHG reduction overall and

Score		Description
		positively contributing to Ireland's net zero trajectory. Mitigation measures are in place well beyond policy requirements.
Moderately Positive	6	Based on professional judgement it is anticipated that the option would not result in a potentially significant positive improvement. However, the option has the potential to provide a moderate GHG reduction and will align with Ireland's net zero trajectory. Some mitigation measures are in place.
Minor or Slightly Positive	5	Based on professional judgement it is anticipated that the option would not result in a potentially significant positive improvement. However, the option has the potential to provide a small GHG reduction and will align with Ireland's net zero trajectory. Some mitigation measures are in place.
Not Significant or Neutral	4	Based on professional judgement it is anticipated that the option will align with Ireland's net zero trajectory. No mitigation measures are in place.
Minor or Slightly Negative	3	Based on professional judgement it is anticipated that the option has mitigation measures in place way beyond policy requirements, but it is likely that the project will produce some carbon emissions and fall short of Ireland's net zero trajectory.
Moderately Negative	2	Based on professional judgement it is anticipated that the option has some mitigation measures in place, but it is likely that the project will produce carbon emissions and fall short of Ireland's net zero trajectory.
Major or Highly Negative	1	Based on professional judgement it is anticipated that the option has no mitigation measures in place, and it is likely that the project will produce carbon emissions and fall short of Ireland's net zero trajectory. Mitigation would be required for an option to progress.

Source: TII (2022b) Climate Assessment of Proposed National Roads – Standard (PE-ENV-01105)

The Transport Appraisal Framework (TAA) from the Department of Transport scoring differs from the TII scoring system (TII 2022b) and reviews three elements for significance:

- Percentage change in mode share from private vehicles to public transport and active travel modes;
- Percentage change in private car kilometres travelled; and
- Percentage change in CO_2 emissions.

The change criteria are shown in Table 3.1.2. For Change in CO_2, the score should be based on the projected change in CO_2 as a result of the scheme based on design year traffic. Consideration is not made within the TAA of the construction, maintenance or deconstruction phase carbon emissions. The TAA assessment states that the total score for Climate Mitigation should be based on a combination of the scores recorded across each criterion and professional judgment.

Table 3.1.2 TAA Climate Mitigation Scoring

Score	% Change in CO_2	Score	Mode Share Percentage Point Change	Score	% Car km Change
High Negative	> 3%	High Negative	< -3%	High Negative	> 3%
Negative	1% to 3%	Negative	-1% to -3%	Negative	1% to 3%
Slight Negative	0.25% to 1%	Slight Negative	- 0.25% to -1%	Slight Negative	0.25% to 1%

Score	% Change in CO_2	Score	Mode Share Percentage Point Change	Score	% Car km Change
Neutral	-0.25% to 0.25%	Neutral	-0.25% to 0.25%	Neutral	-0.25% to 0.25%
Slight Positive	-0.25% to -1%	Slight Positive	0.25% to 1%	Slight Positive	-0.25% to -1%
Positive	-1% to -3%	Positive	1% to 3%	Positive	-1% to -3%
High Positive	< -3%	High Positive	>3%	High Positive	< -3%

The change criteria for TAF Climate Change Risk Assessment are shown in Table 3.1.3. For this criterion, the score should be based on the extent to which the scheme influences projected or observed climate-related impacts (e.g. flooding or erosion), and the degree to which the scheme itself is affected by those impacts. The assessment considers both the level of impact observed or projected, and the extent of impact with the scheme in place.

Table 3.1.3 TAF Climate Change Risk Assessment MCA Scoring Scale

Impact		With Scheme		
		Not impacted	Limited Impact	Significant Impact
Observed / Projected	Not impacted	Neutral	Negative	High Negative
	Limited Impact	Positive	Negative	High Negative
	Significant impact	High Positive	Slight Positive	High Negative

3.2.2 Climate Change Risk Assessment (CCRA)

In addition to the greenhouse gas assessment, a screening climate change risk assessment has been conducted to consider the vulnerability of each route option to future climate change. This involves an analysis of the sensitivity and exposure of the project to climate hazards, which together provide a measure of vulnerability.

Firstly, the project asset categories must be assigned a level of sensitivity to climate hazards irrespective of the project location (e.g. sea level rise will affect seaport projects regardless of specific location). PE-ENV-01105 (TII, 2022b) provide the below list of asset categories and climate hazards to be considered.

- **Asset Categories:** Pavements; drainage; structures; utilities; landscaping; signs, light posts, associated auxiliary buildings, and fences.
- **Climate Hazards**: Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity:** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity:** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity:** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure:** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure:** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure:** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability (Table 3.1.3). The MCA scoring scale is detailed in Table 3.1.3.

The Climate Change Risk Assessment results will inform the scoring assessment in combination with the GHGA, while considering possible mitigation measures. Since to the options are geographically close, the climate vulnerability is primarily distinguished by differences in flood risk and soil stability concerns.

The Transport Appraisal Framework (TAA) from the Department of Transport scoring differs from the TII scoring system (TII 2022b) for climate adaptation and focuses on flood risk in both the baseline and future climate events, i.e. a 1-in-100-year flooding event. The risk assessment aims to determine if there is any change in the potential for adverse or beneficial coastal erosion, coastal flood risk or inland flood risk due to the proposed development over the current situation. When considering erosion or flood risk it is determined if there is a potential for no impact, limited impact or significant impact with and without the scheme (Table 3.1.4). Limited and significant impacts can be described as:

- **Limited Impact:** A small area of the scheme area is impacted which could cause minor disruptions to services; or
- **Significant Impact:** A large section of the scheme area is impacted by the hazard which could lead to significant service disruptions.

Some of the proposed route options are located close to the coast, with the furthest option approximately 3km inland. As such, coastal erosion and coastal flood risk are potential hazards for those routes near the shoreline. For other options further inland, a small amount of fluvial flooding has been predicted along four or five of the routes. Therefore, the flood risk relates to both coastal and fluvial flooding, depending on the route location. However, all impacts are considered neutral according to the TAA. This indicates that the scheme is not expected to be affected by climate-related hazards, and no significant climate impacts have been observed or projected. It is also noted that the TAF assessment criteria do not specify which future climate scenarios must be considered.

Table 3.1.4 Screening Assessment: Vulnerability Analysis

		Exposure		
		High (3)	**Medium (2)**	**Low (1)**
Sensitivity	**High (3)**	9 - High	6 - High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 - Low	1 - Low

The results of the CCRA will be used to inform the comparative ranking (MCA) and PAG, with consideration given to possible mitigations.

Table 3.1.5 Climate Change Risk Assessment MCA Scoring Scale

Score		Description
Major or Highly Positive	7	Based on the vulnerability assessment undertaken for the project, the option has only low vulnerabilities to climate change risk across all climate hazards.
Moderately Positive	6	Based on the vulnerability assessment undertaken for the project, the option has primarily low vulnerability to climate change risk, with medium vulnerability for one climate hazard.
Minor or Slightly Positive	5	Based on the vulnerability assessment undertaken for the project, the option has primarily low vulnerability to climate change risk, with medium vulnerability across up to three climate hazards.
Not Significant or Neutral	4	Based on the vulnerability assessment undertaken for the project, the option has only low and medium vulnerabilities to climate change risk across all hazards.
Minor or Slightly Negative	3	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk for one climate hazard.
Moderately Negative	2	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk across more than one climate hazard.
Major or Highly Negative	1	Based on the vulnerability assessment undertaken for the project, the option has high vulnerability to climate change risk across three or more climate hazards.

3.3 Existing Environment

3.3.1 Greenhouse Gases

PE-ENV-01105 (TII, 2022b) states that a baseline climate scenario should identify, consistent with the study area for the proposed development, GHG emissions without the proposed development for both the current and future baseline.

Given the circumstances of Ireland's declaration of a climate and biodiversity emergency in May 2019 and the November 2019, European Parliament approval of a resolution declaring a climate and environment emergency in Europe, in conjunction with Ireland's current failure to meet its EU binding targets under the GHG Regulation, beneficially or adverse changes in GHG emissions are of more significance than previously viewed prior to these declarations. Thus, the baseline climatic environment should be considered a highly sensitive environment for the assessment of impacts.

The future baseline with respect to the GHGA can also be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022b) and IEMA Guidance (IEMA, 2022), the future baseline is a trajectory towards net zero by 2050, *"whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".*

The future baseline will be determined by Ireland meeting its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets.

3.3.2 Climate Change Vulnerability

Met Éireann's 2024 *Climate Statement* (Met Éireann 2025) states 2024's average shaded air temperature in Ireland is provisionally 10.72 °C, which is 1.17°C above the 1961-1990 long-term average or 0.55°C above the most recent 1991-2020 long-term average. This is the 4th warmest year on record with 2023 breaking previous records. Seven of the top ten warmest years have occurred since 2005. Record high sea surface temperatures (SST) were recorded in 202, and in 2024 continued at or near record high levels. 2024 was overall drier than average. However, there were many instances of heavy or intense rainfall which led to flooding events. This trend is predicted to continue with climate change with an increase in both dry periods and heavy rainfall events.

The TRANSLATE research report (Met Éireann 2024) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer, with an increase of 0.5°C to 3.5°C. Autumn is projected to have the highest increase in average minimum temperatures, with an increase of 1.1°C to 4.4°C. The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected; however, this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

The projections were echoed by the *Updated High-Resolution Climate Projections for Ireland Research Report: 471* (EPA 2024) which was in broad agreement with previous research. The future autumn and winter months are projected to be up to 10% wetter, while summer is projected to be up to 8% drier.

3.4 Route Options Appraisal (Greenhouse Gas Assessment)

The TII Carbon Tool was used to determine the total GHG emissions for each of the route options (Table 3.3.1). This information was provided by the design team. Information on all elements was not available at this stage in the project. Inputs were kept consistent across all route options to allow for an equal comparison of impacts; where information on a certain element was not available for all route options it was not included within the study. Information for end of life and operational use (non-road emissions) was not available for any of the route options. However, the project design team has advised that there is no potential for significant changes in traffic as a result of any of the options. An impact score, in line with Table 3.1.2, is shown in Table 3.3.2. Mitigation that can be applied is similar across all options, and is, therefore, not a differentiating factor between options.
Data is unavailable for CO_2 emissions, mode shift or car km usage. However, the success of the scheme in reducing car dependency relies on creating a safe and connected transport network that encourages cycling and walking. People are more likely to cycle if they feel safe. This requires dedicated cycle lanes, well-designed junctions, and seamless connectivity between different cycling routes. Experience from other option selection suggests that investment in supporting infrastructure, such as protected cycleways and pedestrian-friendly routes, drives increased adoption of sustainable transport.

3.4.1 Section A Options Appraisal

3.4.1.1 Route Option A3 (Node 1 – 4)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Although all route options will incur some construction-related emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.2 Route Option A4-1 (Node 1 – 4)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.3 Route Option A4-1 (Node 4 - 9)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall

impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.4 Route Option A5 & A6 (Node 4 – 12)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.5 Route Option A5 (Node 12 – 14)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.6 Route Option A6 (Node 12 – 13)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.7 Route Option A1 (Node 9 – 13)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.8 Route Option A1 (Node 13 – 14)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car

usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.9 Route Option A3 (Node 4 – 13)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.1.10 Route Option L2 (Node 8 – 9)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2 Section B Options Appraisal

3.4.2.1 Route Option B1 (Node 14 – 20)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.2 Route Option B2 (Node 14 – 19)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.3 Route Option B3 (Node 14 – 19)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.4 Route Option B2 (Node 19 – 20)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.5 Route Option B1 (Node 20 - 21)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.6 Route Option B1 (Node 21 – 23)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.7 Route Option B2 (Node 20 – 23)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-

phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.8 Route Option B3 (Node 19 – 23)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.9 Route Option B4 (Node 14 – 21A)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.10 Route Option B4 (Node 21A – 25)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.2.11 Route Option L3 (Node 21 – 21A)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3 Section C Options Appraisal

3.4.3.1 Route Option C2 (Node 23 – 31)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.2 Route Option C2 (Node 31 – 43)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.3 Route Option C9 (Node 31 – 41)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-

phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.4 Route Option C5 (Node 25 – 28)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.5 Route Option C5 (Node 28 – 35)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.6 Route Option C5 (Node 35 – 38)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.7 Route Option C5 (Node 38 – 42)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.8 Route Option C10 (Node 38 – 41)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.9 Route Option C9 (Node 41 – 45)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates lower construction-phase emissions compared to alternatives because it is a shorter route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.10 Route Option C10 (Node 41 – 44)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-

phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.11 Route Option C3-1 (Node 25 – 23)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.12 Route Option C4-1 (Node 28 – 30)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.13 Route Option C6-1 (Node 31 – 35)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

3.4.3.14 Route Option C7 (Node 35 – 41)

The percentage change in modal shift resulting from this scheme has not been quantified, but it is unlikely to be significant in the short term. Nevertheless, the cumulative expansion of safe active travel networks and improved junction safety remains essential to achieving modal shift goals. This route option supports those objectives by enhancing conditions for active travel users.

Although some embodied carbon will result from construction, the improved road layout is expected to facilitate long-term reductions in private car use. While immediate changes in car usage are not expected to be substantial, this route option will contribute positively to the overall active travel network and encourage further modal shift.

Embodied carbon has been assessed for this option, which demonstrates higher construction-phase emissions compared to alternatives because it is a longer route option (Table 3.1.5). Emissions, mitigation measures (e.g. the use of low-carbon materials) can reduce overall impact, similar mitigation measures are applicable across all options. These construction-phase emissions are expected to be offset over time by reduced operational emissions and increased uptake of active travel.

In summary, this option supports long-term modal shift and aligns with CAP25 objectives. Qualitatively, it is considered beneficial due to its potential to reduce car dependency and expand active travel infrastructure.

Table 3.3.1 Total tCO2e of each Impact

Route Option	Total tCO_2e	Route Option Length (km)
Section A		
Option A3 (Node 1 – 4)	1,333	4.2
Option A4-1 (Node 1 – 4)	1,632	3.82
Option A4-1 (Node 4 - 9)	1,005	2.61

Route Option	Total tCO_2e	Route Option Length (km)
Option A5 & A6 (Node 4 – 12)	1,925	4.8
Option A5 (Node 12 – 14)	1,045	2.39
Option A6 (Node 12 – 13)	549	1.22
Option A1 (Node 9 – 13)	678	2.65
Option A1 (Node 13 – 14)	565	1.44
Option A3 (Node 4 – 13)	1,105	5.06
Option L2 (Node 8 – 9)	614	1.39
Section B		
Option B1 (Node 14 – 20)	1,560	4.53
Option B2 (Node 14 – 19)	1,605	3.89
Option B3 (Node 14 – 19)	1,541	3.91
Option B2 (Node 19 – 20)	265	0.94
Option B1 (Node 20 - 21)	182	0.59
Option B1 (Node 21 - 23)	643	2
Option B2 (Node 20 – 23)	828	2.5
Option B3 (Node 19 – 23)	1,737	4.06
Option B4 (Node 14 – 21A)	2,876	6.49
Option B4 (Node 21A - 25) including L3	737	1.63
Section C		
Option C2 (Node 23 – 31)	347	1.28
Option C2 (Node 31 – 43)	1,462	3.41
Option C9 (Node 31 – 41)	757	2.8
Option C5 (Node 25 – 28)	678	1.51
Option C5 (Node 28 – 35)	1,147	2.69
Option C5 (Node 35 – 38)	697	6.19
Option C5 (Node 38 – 42)	542	1.46
Option C10 (Node 38 – 41)	319	1.53
Option C9 (Node 41 – 45)	498	1.48
Option C10 (Node 41 – 44)	1,005	3.66
Option C3-1 (Node 25 – 23)	1,072	2.42
Option C4-1 (Node 28 – 30)	1,308	2.96
Option C6-1 (Node 31 – 35)	1,534	5.16
Option C7 (Node 35 – 41)	2,215	3.51

Table 3.3.2 GHGA Scoring

Route Option		TAF MCA Impact Assessment Score
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral
Option B3 (Node 19 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral

Route Option		TAF MCA Impact Assessment Score
Option C4-1 (Node 28 – 30)	4	Neutral
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

3.5 Route Options Appraisal (Climate Change Risk Assessment)

A screening risk assessment has been conducted for potential climate change impacts on the proposed route options. This assessment was conducted with exposure input from the Climate Ireland database, which provides data for Representative Concentration Pathways (RCP) Scenarios 4.5 (Moderate) and 8.5 (High), which are appropriate to adopt for this assessment (TII, 2022a), and the OPW flood risk GIS portal, Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) and the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2025). Information was also provided by the design team and environmental specialists based on the route options analysis for the various environmental disciplines.

Table 3.4.1 outlines the vulnerability of each of the route options. This was based on considering the sensitivity and exposure of each of the project assets (pavements, drainage, structures, utilities, landscaping, signs, light posts, associated auxiliary buildings, and fences) to the various climate hazards. There is not a significant geographical spread to the route options which would warrant variation in exposure to climate hazards. The majority of climate hazards stay the same across the various route options, including extreme heat, extreme cold, wildfire, drought, extreme wind, lightning & hail and fog. Therefore, there is minimal variation between the route options.

Since all route options are within a confined area, exposure to climate hazards remains largely consistent across them. Consequently, there are limited differentiating factors in terms of climate risk, except for flood risk and soil stability. Where such differences exist, or where mitigation measures are proposed, climate factors can play a critical role in assessing the long-term resilience of each option - supporting the selection of a route that can better withstand future climate-related impacts and maintain infrastructure integrity.

Flooding impacts have been identified; however, drainage provisions required under future climate scenarios such as RCP4.5 or RCP8.5 have not been considered at this stage. In areas where flooding is likely, a combination of mitigation measures will be explored, with detailed consideration to be undertaken during the preliminary design stage.

In relation to coastal erosion, the vulnerability of the route options was determined based on the data available on the Climate Ireland website (EPA, 2025) as recommended by the TAF Guidance. There is minimal scheme specific information on coastal erosion available on the Climate Ireland website, available data indicates that 40-50% of the County Louth coastline is at risk of coastal erosion, this has the potential to increase in future years with climate change. The Climate Ireland website states that "*it is very difficult to predict future changes in levels of coastal erosion as rates of increase will be determined by local coastal circumstances*" (EPA, 2025). The proposed route options in closest proximity to the coast have been deemed most at risk of coastal erosion for the purposes of this assessment, while route options further from the coast have been assessed as at lesser risk.

3.5.1 Section A Options Appraisal

3.5.1.1 Route Option A3 (Node 1 – 4)

The corridor is in proximity to fluvial and coastal flood areas. Option A3 is affected by coastal flooding across all return periods (20-, 100-, and 1,000-year), with potential spot flooding at the junction in medium-end future scenarios and up to 1m of flooding in high-end 1:200 events. A slight overlap with fluvial flooding occurs under the 1,000-year return period only, with no interaction under the 20- or 100-year events. There is no pluvial flood risk indicated by OPW surface water mapping. This option can provide improved drainage to assist with the increased potential for heavy rainfall and coastal flooding. The design can ensure climate-related hazards do not result in chronic surface damage. Other risks due to climate change (i.e. wind, extreme temperatures etc) do not vary across options due to the localised nature of the scheme and mitigation can be applied to ensure the scheme appropriately adapts to future climate risk associated with the hazards. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.2 Route Option A4-1 (Node 1 – 4)

Option A4-1 (Node 1-4) is subject to fluvial and coastal flooding. For fluvial flooding, approximately 78% of route lies within Flood Zone A according to CFRAM's flood extents. Approximately, 88% of the route lies within Flood Zone A for Coastal Flooding. Overall, the corridor option has an imperceptible to significant magnitude of impact on the water environment, resulting in a slightly negative significance of impact.

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 78% of Route Option A4-1 lies within Flood Zone A for fluvial flooding and 88% within Flood Zone A for coastal flooding, according to CFRAM flood extents. This option can provide improved drainage to assist with the increased potential for heavy rainfall and flooding. The design can ensure that climate-related hazards do not result in chronic surface damage. Other risks due to climate change (i.e. wind, extreme temperatures etc) do not vary across options due to the localised nature of the scheme and mitigation can be applied to ensure the scheme appropriately adapts to future climate risk associated with the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.3 Route Option A4-1 (Node 4 - 9)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Option A4-1 (Node 4–9) is highly exposed, with approximately 74% of the route lying within Flood Zone A for fluvial flooding and 82% within Flood Zone A for coastal flooding, based on CFRAM flood extents.

This option can incorporate improved drainage measures to assist with the increased potential for heavy rainfall and coastal flooding. The design can ensure climate-related hazards do not lead to ongoing surface degradation.

Overall, the corridor is sensitive to flooding, but impacts can be mitigated through appropriate design and construction measures. Other risks due to climate change (i.e. wind, extreme temperatures etc) do not vary across options due to the localised nature of the scheme and mitigation can be applied to ensure the scheme appropriately adapts to future climate risk associated with the scheme. This area has a low to moderately low susceptibility to landslides. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.1.4 Route Option A5 & A6 (Node 4 – 12)

Option A5 & A6 (Node 4-12) is not subjected to past flood events, fluvial and coastal flooding. As such, risks due to climate change are reduced for this option compared to others in Section A. While flood risk is minimal, appropriate drainage design will still be required to manage future climate impacts such as increased rainfall intensity. Other risks due to climate change (i.e. wind, extreme temperatures etc) do not vary across options due to the localised nature of the scheme and mitigation can be applied to ensure the scheme appropriately adapts to future climate risk associated with the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.5 Route Option A5 (Node 12 – 14)

The corridor is not in proximity to fluvial or coastal flood areas and is not associated with any known past flood events. Risks due to climate change do not have advantages over each other across the options for Section A. While flood risk is minimal, the design can incorporate appropriate drainage measures to manage increased rainfall intensity associated with future climate scenarios. This will help ensure that climate-related hazards do not result in chronic surface damage. Other risks due to climate change (i.e. wind, extreme temperatures etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.6 Route Option A6 (Node 12 – 13)

The corridor is in proximity to coastal flood areas but is not associated with past flood events or fluvial flooding. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 3% of the route lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. While coastal flood exposure is limited, the design can incorporate drainage measures to address increased rainfall and climate-related pressures, ensuring that such hazards do not result in chronic surface issues. Other risks due to climate change (i.e. wind, extreme temperatures etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.7 Route Option A1 (Node 9 – 13)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 24% of the route lies within Flood Zone A for fluvial flooding and 46% within Flood Zone A for coastal flooding, according to CFRAM flood extents. This option can incorporate improved drainage measures to assist with the increased potential for heavy rainfall and flooding. The design can ensure climate-related hazards do not result in chronic surface damage. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.1.8 Route Option A1 (Node 13 – 14)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 2% of the route lies within Flood Zone A for fluvial flooding and 38% within Flood Zone A for coastal flooding, according to CFRAM flood extents. This option can incorporate improved drainage measures to assist with the increased potential for heavy rainfall and flooding. The design can ensure climate-related hazards do not result in chronic surface damage. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each

other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.1.9 Route Option A3 (Node 4 – 13)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Slight overlap occurs with fluvial flooding under the 20-, 100-, and 1,000-year return periods. Coastal flooding under the 20-, 100-, and 1,000-year return periods will affect this route option. The GSI surface water flood map shows no interaction. Approximately 43% of the route lies within Flood Zone A for fluvial flooding and 54% within Flood Zone A for coastal flooding, based on CFRAM flood extents. This option can incorporate improved drainage measures to assist with the increased potential for heavy rainfall and flooding. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.1.10 Route Option L2 (Node 8 – 9)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. The entire route (100%) lies within Flood Zone A for fluvial flooding, and approximately 99.5% lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. Despite high flood exposure, the design can incorporate drainage measures to mitigate the potential for surface damage due to increased rainfall or tidal events. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2 Section B Options Appraisal

3.5.2.1 Route Option B1 (Node 14 – 20)

The corridor is not in proximity to fluvial flood areas and is minimally affected by coastal flooding. Risks due to climate change do not have advantages over each other across the options for Section B. Approximately 2% of the route lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. There are no coastal waterbodies proximal to the corridor, and the absence of fluvial flood risk reduces overall exposure. While the risk from tidal or storm surge events is low, the design can still incorporate drainage features to address increased rainfall associated with climate change. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.2 Route Option B2 (Node 14 – 19)

Option B2 (Node 14-19) is not subject to past flood events, fluvial or coastal flooding. There are no transitional waterbodies or coastal waterbodies proximal to the corridor option. This option can incorporate improved drainage measures to assist with the increased potential for heavy rainfall and flooding This option has similar impact level as option B3 (node 14-19). However, the corridor option covers less spatial extent compared to option B3 (node 14-19). This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.3 Route Option B3 (Node 14 – 19)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies proximal to this corridor, and no flood risk zones intersect the route.

This option has a similar level of environmental impact as Option B3 (Node 14–19) but occupies a smaller spatial extent, offering potential advantages in terms of footprint and land use. Given the absence of significant flood risks, this route requires minimal climate adaptation. However, the design can still incorporate drainage features to address increased rainfall associated with climate change. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.4 Route Option B2 (Node 19 – 20)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no river crossings, and no transitional or coastal waterbodies are located near the corridor. The design can still incorporate drainage features to address increased rainfall associated with climate change. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.5 Route Option B1 (Node 20 - 21)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.6 Route Option B1 (Node 21 - 23)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.7 Route Option B2 (Node 20 – 23)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage

design will account for increased rainfall associated with future climate scenarios. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This area has a low to moderately low susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.8 Route Option B3 (Node 19 – 23)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This option passes through an area that has a moderately high to high susceptibility to landslides. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.2.9 Route Option B4 (Node 14 – 21A)

The corridor is not subject to fluvial flood events or any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. Approximately 10% of the route lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. While the risk from coastal flooding is limited, appropriate drainage measures can be incorporated to manage increased rainfall and mitigate localised surface water impacts under future climate conditions. This area has a low to moderately low susceptibility to landslides. Other risks associated with climate change (e.g. wind, extreme temperatures) remain consistent across the scheme due to its localised context. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.2.10 Route Option B4 (Node 21A - 25)

The corridor is not subject to fluvial flood events or any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. Approximately 6% of the route lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. While the risk from coastal flooding is limited, appropriate drainage measures can be incorporated to manage increased rainfall and mitigate localised surface water impacts under future climate conditions. This area has a low to moderately low susceptibility to landslides. Other risks associated with climate change (e.g. wind, extreme temperatures) remain consistent across the scheme due to its localised context. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.2.11 Route Option L3 (Node 21-21A)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3 Section C Options Appraisal

3.5.3.1 Route Option C2 (Node 23 – 31)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each

other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.2 Route Option C2 (Node 31 – 43)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.3 Route Option C9 (Node 31 – 41)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.4 Route Option C5 (Node 25 – 28)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.5 Route Option C5 (Node 28 – 35)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.6 Route Option C5 (Node 35 – 38)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each

other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.7 Route Option C5 (Node 38 – 42)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 50% of the route lies within Flood Zone A for fluvial flooding, and approximately 73% lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. Despite high flood exposure, the design can incorporate drainage measures to mitigate the potential for surface damage due to increased rainfall or tidal events. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.8 Route Option C10 (Node 38 – 41)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 10% of the route lies within Flood Zone A for fluvial flooding, and approximately 55% lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. Despite high flood exposure, the design can incorporate drainage measures to mitigate the potential for surface damage due to increased rainfall or tidal events. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.9 Route Option C9 (Node 41 – 45)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 28% of the route lies within Flood Zone A for fluvial flooding, and approximately 69% lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. Despite high flood exposure, the design can incorporate drainage measures to mitigate the potential for surface damage due to increased rainfall or tidal events. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.10 Route Option C10 (Node 41 – 44)

The corridor is in proximity to fluvial and coastal flood areas. Risks due to climate change do not have advantages over each other across the options for Section A. Approximately 11% of the route lies within Flood Zone A for fluvial flooding, and approximately 52% lies within Flood Zone A for coastal flooding, based on CFRAM flood extents. Despite high flood exposure, the design can incorporate drainage measures to mitigate the potential for surface damage due to increased rainfall or tidal events. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (i.e., wind, extreme temperatures, etc.) do not have advantages over each other across the options due to the localised nature of the scheme. Due to the proximity of the route option to the coast, it is of medium vulnerability to coastal erosion.

3.5.3.11 Route Option C3-1 (Node 25 – 23)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.12 Route Option C4-1 (Node 28 – 30)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.13 Route Option C6-1 (Node 31 – 35)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme. This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

3.5.3.14 Route Option C7 (Node 35 – 41)

The corridor is not in proximity to fluvial or coastal flood areas and is not subject to any recorded past flood events. Risks due to climate change do not have advantages over each other across the options for Section B. There are no transitional or coastal waterbodies located near the corridor, and no flood zones intersect the route. Nevertheless, drainage design will account for increased rainfall associated with future climate scenarios. This area has a low to moderately low susceptibility to landslides. Other risks due to climate change (e.g. wind, extreme temperatures) remain consistent across all options due to the localised nature of the scheme.
This route option is of low vulnerability to coastal erosion due to it's distance from the coast.

Table 3.4.1 Climate Change Risk Assessment

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Section A													
Option A3 (Node 1 – 4)	4	4	4	4	4	1	1	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option A4-1 (Node 1 – 4)	4	4	4	4	4	1	1	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option A4-1 (Node 4 - 9)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option A5 & A6 (Node 4 – 12)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option A5 (Node 12 – 14)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option A6 (Node 12 – 13)	4	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Option A1 (Node 9 – 13)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option A1 (Node 13 – 14)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option A3 (Node 4 – 13)	4	4	4	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option L2 (Node 8 – 9)	4	4	4	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Section B													
Option B1 (Node 14 – 20)	3	4	3	4	4	1	1	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B2 (Node 14 – 19)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Option B3 (Node 14 – 19)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B2 (Node 19 – 20)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B1 (Node 20 - 21)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B1 (Node 21 - 23)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B2 (Node 20 – 23)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option B3 (Node 19 – 23)	3	4	3	4	4	1	1	1	1	3	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold, drought and landslides due to the project location. This should be mitigated with further design.
Option B4 (Node 14 – 21A)	3	4	3	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Option B4 (Node 21A - 25)	3	4	3	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Section C													
Option C2 (Node 23 – 31)	3	4	3	4	4	1	4	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C2 (Node 31 – 43)	3	4	3	4	4	1	4	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C9 (Node 31 – 41)	3	4	3	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C5 (Node 25 – 28)	3	4	3	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option C5 (Node 28 – 35)	3	4	3	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Option C5 (Node 35 – 38)	3	4	3	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option C5 (Node 38 – 42)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option C10 (Node 38 – 41)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option C9 (Node 41 – 45)	4	4	4	4	4	1	1	1	1	1	1	1	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C10 (Node 41 – 44)	4	4	4	4	4	1	1	1	1	1	1	4	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought and coastal erosion due to the project location. This should be mitigated with further design.
Option C3-1 (Node 25 – 23)	3	4	3	4	4	1	4	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.

Climate Hazards	Flooding (Coastal)	Flooding (Pluvial)	Flooding (Fluvial)	Extreme Heat	Extreme Cold	Wildfire	Drought	Extreme Wind	Lightning & Hail	Landslides	Fog	Coastal Erosion	Qualitative Commentary
Option C4-1 (Node 28 – 30)	3	4	3	4	4	1	4	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C6-1 (Node 31 – 35)	3	4	3	4	4	1	4	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.
Option C7 (Node 35 – 41)	3	4	3	4	4	1	4	1	1	1	1	2	There is a medium vulnerability to flooding (coastal, pluvial and fluvial), extreme heat, extreme cold and drought due to the project location. This should be mitigated with further design.

Table 3.4.2 CCRA Scoring

Route Corridor Option		Overall TAF MCA Impact Assessment Score
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral
Option B3 (Node 19 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral

Route Corridor Option		Overall TAF MCA Impact Assessment Score
Option C4-1 (Node 28 – 30)	4	Neutral
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

3.6 Assessment Summary

The assessment in relation to climate is in two sections: a GHGA and CCRA. The scorings and preferences of the route options are applied separately to each of the GHGA and CCRA the results have been used to inform the overall project appraisal matrix.

The Route Corridor Options, offer qualitative benefits by supporting the cumulative expansion of the active travel network and aligning with CAP25. This expansion is critical to achieving modal shift goals, although no significant operational phase emissions, modal shift, and quantitative data on private car use changes is available. GHG saving varies among the options depending on the route length and alignment. Shorter options likely have lower GHG impacts, while longer options may have higher GHG emissions, though this can be mitigated through the use of low-carbon materials. The improvements at the junction for active travel improve the overall network and encourage further modal shift. This assessment is limited to the immediate road network, meaning the percentage change is reflective of a localised area. As the project develops, mitigation in relation to greenhouse gases will be designed into the project to reduce the footprint of the route.

There is not a significant variation in the route options with regard to the vulnerability to climate change due to the limited study area. In Section A, corridors such as A4-1, A3, A1, and L2 intersect areas classified as Flood Zone A, while A5 and A6 show relatively lower exposure. Section B exhibits uniformly low flood risk, with most routes located away from fluvial or coastal waterbodies and lacking flood history, although B3 crosses land moderately to highly susceptible to landslides. All other route options are within areas of low to moderately low susceptibility to landslides. Therefore, soil stability is not a major differentiating factor. In Section C, most routes - including C2, C3-1, C4-1, C5, C6-1, and C7 - are outside flood zones and have no record of flood events, though drainage features will still be needed to manage future rainfall. However, certain routes in the eastern portion of Section C (C5, C9, and C10) are more exposed, with segments overlapping Flood Zone A by up to 73% for coastal and 50% for fluvial flooding, requiring more robust climate adaptation in design.

All route options can incorporate improved drainage design to enhance resilience against increased rainfall and climate-related impacts. Other climate-related hazards (e.g. wind and heat) are uniform across the section due to the area's confined geographic scope.

Vulnerability to coastal erosion is highest for the route options in closest proximity to the coast (A4-1 (Node 1-4); A1 (Node 9-13); A1 (Node 13-14); B4 (Node 14-21A); B4 (Node 21A-25); C5; C10), with the risk decreasing with further distance inland. Future changes in levels of coastal erosion are determined by local coastal circumstances such as geology, coastal configuration - exposure, sediments, supply factor, and land movement. Further investigation of local factors will better determine the potential the risk of coastal erosion. Where medium or high risk of coastal erosion has been identified mitigation can be incorporated into the detailed design to improve resilience.

3.7 References

Environmental Protection Agency (EPA) (2021b) Critical Infrastructure Vulnerability to Climate Change Report No. 369

Environmental Protection Agency (EPA) (2024a) Ireland's Greenhouse Gas Emissions Projections 2023-2050

Environmental Protection Agency (2024b) Updated High-resolution Climate Projections for Ireland Research Report: 471

IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance

The Geological Society of Ireland (GSI) (2025) Landslide Susceptibility Mapping Database

Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) Think Hazard!

Met Éireann (2025) Met Éireann's 2024 Climate Statement Available at: https://www.met.ie/annual-climate-statement-for-2024

Met Éireann (2024) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate

Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01105: Climate Assessment of Proposed National Roads – Standard

Transport Infrastructure Ireland (TII) (2025) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

4. LOCAL ENVIRONMENTAL IMPACT

4.1 Air Quality

4.1.1 Introduction

This section details the environmental assessment of the Phase 2 Stage 2 Project Appraisal Matrix with respect to the potential air quality impacts associated with the project. The aim of this greenway is to link Carlingford, and the many rural settlements on the Cooley Peninsula to Dundalk town to boost the smaller settlements with increased visitor numbers whilst greatly improving accessibility for rural dwellers. The proposed development will be linear in nature and will form part of a larger network of greenways in the region, linking to the constructed Carlingford Greenway and the currently under construction Omeath to Newry Greenway providing cross-border links into Northern Ireland from Dundalk.

AWN Consulting Ltd. have prepared the air quality assessment for the various route corridors in line with the most recent Transport Infrastructure Ireland (TII) guidance published in December 2022 and Transport Appraisal Framework (TAF) (Department of Transport 2023).

This assessment was prepared by Dr. Jovanna Arndt, a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc. in Environmental Science and a Ph.D. in Atmospheric Chemistry from University College Cork. She is an Associate Member of both the Institute of Air Quality Management and the Institute of Environmental Sciences. She has been specialising in the area of air quality, EIA and air dispersion modelling for over 8 years.

4.1.2 Methodology

This assessment has been prepared based on the following TII Air Quality guidance:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (TII, 2022a); and
- PE-ENV-01107: Air Quality Assessment Standard for Proposed National Roads (TII, 2022b).

These guidance documents were issued in December 2022 and supersede the 2011 Transport Infrastructure Ireland document '*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*', or 'TII Air Quality Guidelines'. The primary aspects of the assessment relate to the existing ambient air quality, proximity of sensitive locations and a review of the overall significance of potential changes in air quality.

The objective at this stage of the option selection process is to indicate whether there are likely to be significant air quality impacts associated with the proposed route corridor options. The TII guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. The criteria is:

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

In addition, the number of residential properties within 50m of the carriageway edge of each "affected" options are identified. A comparison of the "affected" proposed route corridor

options is carried out based on a calculation of the Index of the Overall Change in Exposure to Nitrogen Oxides (NOx) and Particulate Matter (PM_{10}) resulting from each individual route corridor.

The calculation of the Index of Overall Change in Exposure allows a review of the overall air quality impact on people from each route option corridor to be carried out. The Index is based on identifying the number of sensitive receptor locations (e.g. residential dwellings, schools, hospitals) within 50m of the carriageway of all road links that would experience a significant change in traffic for each of the routes. The change in emissions is influenced by changes in traffic flow, composition and speed. The analysis was carried out using the methodology of TII (2022a, 2022b) using the TII Road Emissions Model (REM) (GE-ENV-01107) (TII, 2024).

Upon discussions with the project design team the potential for any option to cause a road to be classified as "affected" using the criteria above has been scoped out and a further assessment, including the calculation of the index of exposure is also therefore scoped out.

In addition to assessing the impact to people as a result of air quality, the impact to sensitive ecosystems must also be assessed as per the TII guidelines (2022a, 2022b). The EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive") requires an Appropriate Assessment to be carried out where there is likely to be a significant impact upon a European protected site. TII requires the Air Quality Specialist to liaise with an ecologist on schemes where there is a European protected site within 2km of the route. However, as the potential impact of a scheme is limited to local level, detailed consideration need only be given to roads where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line. Where these two requirements are fulfilled, the assessment at the route selection stage involves a calculation of nitrogen oxides (NO_X) and ammonia (NH_3) concentrations and nitrogen dry deposition and acid deposition rates using the methodology set out in TII Guidance document PE-ENV-01106 (TII, 2022a).

The designated ecological sites of Dundalk Bay SAC, SPA and pNHA, Carlingford Shore SAC, Carlingford Lough SPA and pNHA, Trumpet Hill pNHA and Liscarragh Marsh pNHA are located within the 50m of the proposed greenway route corridors. However, a potential further ecological assessment has been scoped out as none of the road links within the study area are considered "affected".

Construction phase impacts relate to construction dust. Construction dust related impacts can be mitigated with best practice mitigation measures and are temporary in nature, so are not considered significant for scoring. The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) outlines mitigation measures and to determine the level of site-specific mitigation required. Transport Infrastructure Ireland (TII) recommends the use of the IAQM guidance (IAQM, 2024) in the TII guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a).

While the TII Guidance has been used to scope in and out potential for significant impacts from options, the Transport Appraisal Framework (TAF) scoring has been used to provide a rating of impact for each of the options. The air quality assessment within this TAF is based on background air quality levels, as referenced from the EPA's Air Quality Index for Health (AQIH) (Table 4.1.1). The primary objective of this assessment is to evaluate whether the proposed development would lead to any changes, either adverse or beneficial, in air quality compared to the existing conditions. The rating for impact of a potential option is based on the TAF Air Quality Scorecard (Department of Transport 2023) as shown in Table 4.1.2.

Table 4.1.1 EPA's Air Quality Index for Health

EPA Air Quality Index	Local Air Pollutant			
	NO_X	SO_2	$PM_{2.5}$	PM_{10}
Good	0-200 (µg/m³) 1 hour mean	0-89 (µg/m³) 1 hour mean	0-35 (µg/m³) 24 hour mean	0-50 (µg/m³) 24 hour mean
Fair	201-400 (µg/m³) 1 hour mean	90-179 (µg/m³) 1 hour mean	36-53 (µg/m³) 24 hour mean	51-75 (µg/m³) 24 hour mean
Poor	401-600 (µg/m³) 1 hour mean	180-354 (µg/m³) 1 hour mean	54-70 (µg/m³) 24 hour mean	76-100 (µg/m³) 24 hour mean
Very Poor	>601 (µg/m³) 1 hour mean	>355 (µg/m³) 1 hour mean	>71 (µg/m³) 24 hour mean	>101 (µg/m³) 24 hour mean

The assessment categorises air quality impacts into four levels: Good, Fair, Poor, and Very Poor, both with and without the proposed scheme. Specifically, the classification is guided by EPA AQIH criteria, focusing primarily on key pollutants such as nitrogen oxides (NO_X) and particulate matter (PM_{10}). The descriptions of Good, Fair, Poor and Very Poor air quality ratings are outlined below:

- **Good EPA Air Quality Index:** Air quality falls within the EPA's "Good" category, indicating that NO_x and PM_{10} concentrations are well below regulatory thresholds, with minimal potential for adverse health impacts. In such conditions, pollution levels are largely influenced by background sources and natural dispersion, ensuring a negligible effect from traffic emissions or industrial activity.
- **Fair EPA Air Quality Index:** Air quality is classified as "Fair" when pollutant concentrations, particularly PM_{10} and NO_x, are slightly elevated but remain within acceptable health limits. This may occur in areas with moderate traffic congestion, localized emissions, or seasonal variations affecting air quality.
- **Poor EPA Air Quality Index:** Air quality is rated as "Poor" when concentrations of NO_x and PM_{10} exceed recommended thresholds for health protection. Such conditions often arise in areas with high traffic volumes, limited air dispersion, or proximity to industrial sources. Exposure in these environments may lead to short-term respiratory symptoms in sensitive individuals and indicates a clear need for mitigation or intervention.
- **Very Poor EPA Air Quality Index:** "Very Poor" air quality reflects pollutant concentrations—particularly NO_x and PM_{10} - that are significantly above health-based guideline values. These levels pose a heightened risk to public health, especially for vulnerable populations such as children, the elderly, and those with pre-existing respiratory or cardiovascular conditions. This rating typically corresponds to severe pollution episodes or persistent high-emission sources, necessitating urgent and sustained remedial action.

Table 4.1.2 TAF Air Quality Scorecard

Impact		With Scheme			
		Good	Fair	Poor	Very Poor
Observed	Good	Neutral	Slight Negative	High Negative	High Negative
	Fair	Positive	Neutral	Negative	High Negative

Impact		With Scheme			
		Good	Fair	Poor	Very Poor
	Poor	High Positive	Positive	High Negative	High Negative
	Very Poor	High Positive	High Positive	Slight Positive	High Negative

4.1.3 Existing Environment

4.1.3.1 Air Pollution Sources

The existing environment of the study area comprises a semi-rural area. Apart from the roads, the land use is predominately a mixture of agricultural lands and residential properties. Residential properties are typically in ribbon style development along the existing national and local roads. The sensitive receptors within 50m of each route option are identified in Figure 4.1.1. No significant modal change due to the greenway as its likely to only be used for commuting purposes at very localised areas. There are likely to be modal shifts at very localised level, for example by locals using the greenway to access community and educational facilities.

The study area likely experiences typical background concentrations of pollutants with some contribution from traffic on the R173. Some options to the very west of the study area may have emissions contribution from the N1, however this will have reduced to background levels within approximately 200m from the road. A review of EPA Industrial Emissions (IE) licenced sites indicates that there are no facilities within 2km of the study area (EPA, 2025).

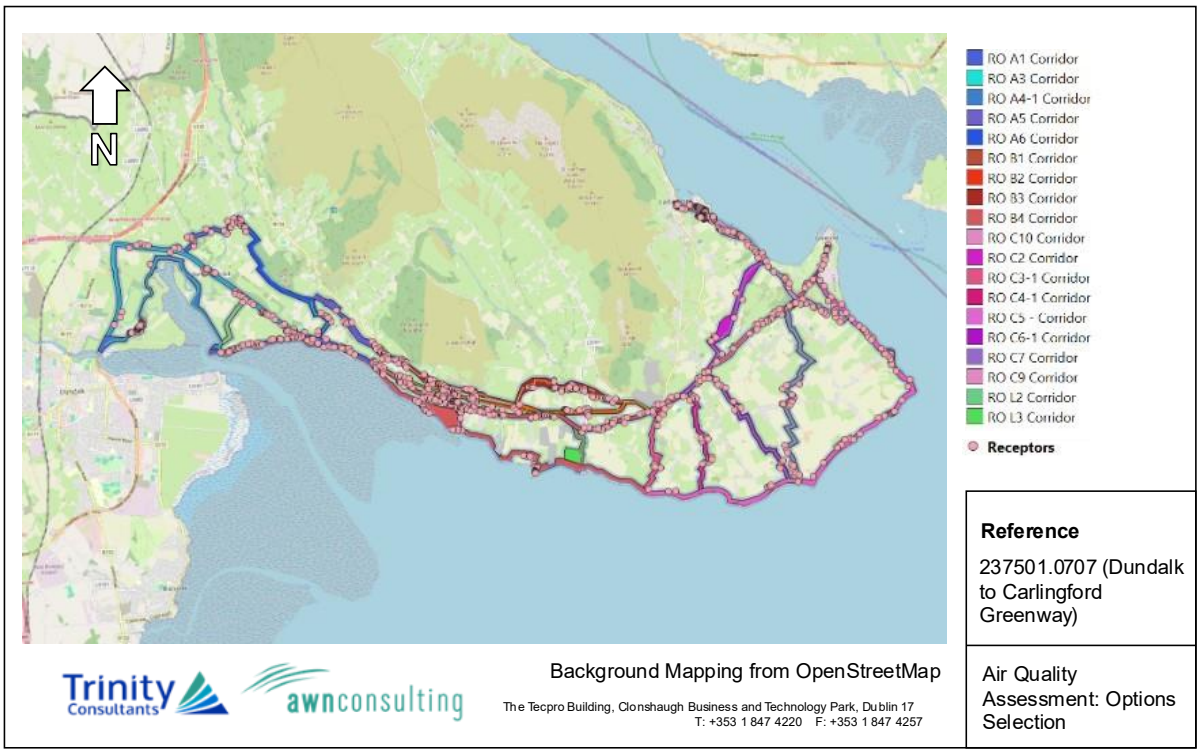


Figure 4.1.1 Air Quality Sensitive Receptors within Study Area

4.1.3.2 Background Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2023*" (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is primarily within Zone D, and partially within Zone C (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

Continuous monitoring of NO_2 was conducted at Zone D locations in Kilkit, Emo Court, Birr and Edenderry, as well as one Zone C location in Dundalk (EPA, 2024). The results show that current levels of NO_2 are below both the annual and 1-hour limit values, with annual average levels ranging from 2 – 9 µg/m^3 in 2023.

Sufficient data is available for all stations to observe the long-term trend since 2020 with average results ranging from 2 – 12 µg/m^3 and two exceedances of the one-hour limit value in Dundalk, one exceedance in 2020 and one exceedance in 2022 (EPA, 2023).

Continuous PM_{10} monitoring carried out at the Zone D locations of Castlebar, Kilkit, Claremorris and Carrick-on-Shannon and Zone C location of Dundalk. The annual mean concentrations range from 7 – 13 µg/m^3 in 2023, with 2 exceedances of the daily limit value of 50 µg/m^3 (35 exceedances are permitted per year) at Dundalk in 2019, 2020 and 2022. Sufficient data is available for all stations to observe trends over the 2020 - 2024 period. Average annual mean PM_{10} concentrations suggest an average concentration range of 7 to 16 µg/m^3.

Continuous $PM_{2.5}$ monitoring carried out at the Zone D location of Edenderry, Enniscorthy, Birr and Cavan Town and Zone C location of Dundalk. The annual mean concentrations ranging from 9 – 20 µg/m^3 over the 2020 - 2024 period. Average concentrations in 2023 ranged from 6 to 12 µg/m^3. The maximum of 19.8 µg/m^3 was recorded at the Dundalk monitoring site. A summary of the estimated air quality background concentrations are shown in Table 4.1.3.

In accordance with TAF criteria detailed in Table 4.1.1 the background air quality is considered "Good" at all option locations.

Table 4.1.3 Estimated Current Air Quality Background Concentrations in Study Area

NO_2	PM_{10}	$PM_{2.5}$
8 µg/m^3	11 µg/m^3	12 µg/m^3

4.1.3.3 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength, i.e. traffic levels. Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10} (particulate matter less than 10 microns), the situation is more

complex due to the range of sources of this pollutant. Therefore, measured levels of PM_{10} can be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station. This station is located approximately 60km south of the study area and has been chosen as a representative meteorological station. A review of the meteorological data for historic years indicates that the prevailing wind is south westerly in direction (Met Éireann, 2025).

4.1.4 Route Options Appraisal

As noted in Section 4.1.2, the potential for an air quality impact due to traffic has been scoped out as per TII criteria (TII, 2022a). The adverse air quality impacts are limited to the construction stage. Construction phase impacts relate to construction dust which can be mitigated with best practice and will be short-term in nature.

As traffic impacts on air quality have been scoped out, and there are no other likely sources of operational phase impacts in accordance with the TAF scoring (Table 4.1.2) all options to have a neutral impact (Table 4.1.3). This is due to the air quality in both the baseline and with all proposed options being classified as "Good".

If TII criteria (TII, 2022a) is considered, the score is a slight positive as active travel assists with the clean air strategy and working towards achieving Directive (EU) 2024/2881 by providing alternatives to private car use.

A commentary on each of the route options is provided in Section 4.1.5 to 4.1.7.

4.1.5 Section A Options Appraisal

4.1.5.1 Route Option A3 (Node 1 – 4)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option runs parallel to the N52 and R173 and passes Dundalk Stadium. It will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.2 Route Option A4-1 (Node 1 – 4)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes behind Ath Lethan residential estate and Dundalk Stadium providing active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.3 Route Option A4-1 (Node 4 - 9)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes near Strandfield Cafe and the Ballymascanlon Hotel and will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.4 Route Option A5 & A6 (Node 4 – 12)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.5 Route Option A5 (Node 12 – 14)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.6 Route Option A6 (Node 12 – 13)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.7 Route Option A1 (Node 9 – 13)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the coast, adjacent to the R173 and will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.8 Route Option A1 (Node 13 – 14)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the coast, and will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.9 Route Option A3 (Node 4 – 13)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option runs parallel to the R173 and passes Ballymascanlon Hotel & Gold Resort and Millgrove Stables. It also passes Bellurgan National School and football Club along the coast, which will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.5.10 Route Option L2 (Node 8 – 9)

Route L2 serves as a connecting link between routes A3 and A4-1. There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6 Section B Options Appraisal

4.1.6.1 Route Option B1 (Node 14 – 20)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option commences approximately 100 meters west of Fitzpatrick's Bar & Restaurant and passes a school, a playground and a GFC (along the R173), which will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.2 Route Option B2 (Node 14 – 19)

Same start/end point as B1. There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements

to the active travel network which is considered positive for air quality. This option passes to the north of St Patricks GAA club and will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.3 Route Option B3 (Node 14 – 19)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.4 Route Option B2 (Node 19 – 20)

Same start/end point as B1. There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality.

4.1.6.5 Route Option B1 (Node 20 - 21)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.6 Route Option B1 (Node 21 - 23)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.7 Route Option B2 (Node 20 – 23)

Same start/end point as B1. There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.8 Route Option B3 (Node 19 – 23)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.9 Route Option B4 (Node 14 – 21A)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the Dundalk Bay coast, passing to the north of Gyles Quay caravan and camping park, before connecting to Gyle Quay pier and beach and will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.6.10 Route Option B4 (Node 21A - 25)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality.

4.1.6.11 Route Option L3 (Node 21-21A)

Route L1 serves as a connecting link between routes B1 and B4. There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7 Section C Options Appraisal

4.1.7.1 Route Option C2 (Node 23 – 31)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.2 Route Option C2 (Node 31 – 43)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.3 Route Option C9 (Node 31 – 41)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along a Cooley Kickhams GFC, which will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.4 Route Option C5 (Node 25 – 28)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the Dundalk Bay coast, passing scenic beaches and will provide active travel options (more likely as leisure cycling) and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.5 Route Option C5 (Node 28 – 35)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the Dundalk Bay coast, passing scenic beaches and will provide active travel options (more likely as leisure cycling) and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.6 Route Option C5 (Node 35 – 38)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the Dundalk Bay coast, passing scenic beaches and will provide active travel options (more likely as leisure cycling) and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.7 Route Option C5 (38 – 42)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes along the Dundalk Bay coast, passing scenic beaches and will provide active travel options (more likely as leisure cycling) and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.8 Route Option C10 (Node 38 – 41)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.9 Route Option C9 (Node 41 – 45)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.10 Route Option C10 (Node 41 – 44)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.11 Route Option C3-1 (Node 25 – 23)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.12 Route Option C4-1 (Node 28 – 30)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.13 Route Option C6-1 (Node 31 – 35)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option will provided active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.7.14 Route Option C7 (Node 35 – 41)

There are no traffic related, or other, operational phase air quality impacts. Therefore, the TAF scoring is neutral. However, the option provides enhancements to the active travel network which is considered positive for air quality. This option passes a national school and will provide active travel options and a potential modal shift from fossil fuel cars, with a potential to improve air quality.

4.1.8 Assessment Summary

The routes have been scored in Table 4.1.4. The TII guidance (TII 2022a; TII 2022b) states that professional judgement should be used when determining significance for air quality impacts. The length of all route options does not vary significantly, and the area of impacts is quite localised.

All options assessed across Sections A, B, and C have neutral traffic-related operational phase air quality impacts, as indicated by consistent TAF scoring. All options include enhancements to active travel infrastructure, which support reduced reliance on private cars and are, therefore, viewed more positively. While construction phase dust related air quality impacts are expected for all options, these can be effectively mitigated.

Table 4.1.4 Summary of Impact Ratings for Air Quality

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral
Option B3 (Node 19 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	4	Neutral

Route Option	Overall TAF MCA Impact Assessment Score	
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

4.1.9 References

Department of Transport (2023) Transport Appraisal Framework (TAF)

EPA (2024) Air Quality in Ireland 2023 (and previous annual reports)

EPA (2025) https://www.epa.ie/our-services/licensing/industrial/industrial-emissions-licensing-ied/

Met Éireann (2025) www.met.ie

Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects

Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01107: Air Quality Assessment Standard for Proposed National Roads

Transport Infrastructure Ireland (TII) (2024) GE-ENV-01107: TII Roads Emissions Model (REM): Model Development Report

4.2 Noise and Vibration

4.2.1 Introduction

This section presents the noise and vibration route selection assessment for the Dundalk Bay to Carlingford Greenway. This report assesses the various route options from end to end within the three sectors and presents the most favourable routes in terms of the noise and vibration impact.

This assessment was prepared by Dr. Aoife Kelly (Senior Acoustic Consultant) who holds a BSc (Hons) in Environmental Health, a Diploma in Acoustics and Noise Control, a PhD in Occupational Noise and is a member of the Institute of Acoustics (MIOA). Aoife has specialised in acoustics since 2014 and won the 2016 Association of Noise Consultants (ANC) best diploma project. She has extensive knowledge in the field of occupational noise risk assessments, environmental noise and vibration effect assessment and inward effect assessments. She also has delivered the environmental noise specialist module on the IOA Diploma in Acoustics and Noise Control.

4.2.2 Methodology

4.2.2.1 Methodology Overview

The potential noise and vibration impacts under consideration fall into two categories – the short term construction phase and the long term operational phase.

During the operational phase, expected noise sources will primarily come from public use of the greenway. These will include bicycle activity and human voices. In addition, these sounds are transient, occurring only as individuals pass by. The daytime sound pressure threshold of 50 dB L_{Aeq}[6] would be expected to protect the majority of people from being moderately annoyed. A raised voice typically generates 67 dB[7] at a distance of 1m, however due to the

[6] World Health Organisation, 1999. *Guidelines for Community Noise.*
[7] American National Standard, 1997. ANSI 3.5– *Methods for Calculation of the Speech Intelligibility Index*.

attenuation of sound over distance, at 10m this level drops by approximately 20 dB i.e. the resulting sound pressure level will be low and generally consistent with ambient sound levels typical of semi-rural or rural environments. Therefore the operation of the greenway would not be expected to alter the existing noise environment/soundscape to any significant degree and the existing noise environments in rural settings, where anthropogenic sources dominate the ambient and background noise levels, will remain.

There are no vibration noise sources associated with the operational phase.

With the above in mind, the basis of the noise and vibration route selection study is mainly focused on the consideration of the construction phase of the development.

The methodology used to determine the potential impact of the construction phase and the most preferable routes is summarised overleaf:

- Set appropriate construction noise criteria at the nearest sensitive locations.
- Using empirical noise reference levels, predict the potential construction noise levels at the nearest sensitive receivers.
- Take into account the intensity of required construction e.g. adjacent to road property impacts i.e. the need for widening of the existing road corridor into the adjacent land/property holding, and the distance between areas of construction works to the nearest sensitive receivers.
- Rank route options based primarily upon property counts and a review of the likely requirement for mitigation measures.

Review of the proposed route and the prevailing noise environment has determined the likely appropriate construction noise category value applicable to the majority of the length of the route.

Preliminary construction noise predictions have been carried out based on the anticipated construction activities required for construction of a new section of cycle path. It is predicted that noise levels at distances of 50m and greater from the greenway route will not exceed the relevant construction noise criteria at a sensitive receiver and that mitigation would not be required.

Property counts have been carried out for the 0 to 50m distance band either side of a centreline of each option in order to determine the number of properties associated with each option to identify which route option is preferable.

The construction criteria, predicted construction noise levels and property count results are all discussed in the following sections.

4.2.2.2 Assessment Criteria

Construction Noise

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Planning authorities typically control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In order to set appropriate construction noise limits for the development route, reference has been made to BS 5228 2009 +A1 2014 *Code of practice for noise and vibration control on construction and open sites.* Part 1 of this document *Noise* provides guidance on selecting appropriate noise criteria relating construction works.

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact that is associated with the construction activities.

BS 5228-1:2009+A1:2014 sets out guidance on permissible noise levels relative to the existing noise environment. Table 4.2.1 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors.

The closest neighbouring noise sensitive properties to the proposed route typically comprise residential dwellings and commercial premises including equine facilities.

Table 4.2.1 Example Threshold of Significant Effects at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A [A]	Category B [B]	Category C [C]
Daytime (08:00 – 19:00) and Saturdays (08:00 – 14:00)	65	70	75
Evenings and weekends [D]	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

A. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

B. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

C. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

D. 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

Taking into account the construction noise criteria threshold values detailed in Table 4.2.1 and the estimated existing ambient noise levels, the following category value is determined to be appropriate:

Daytime Category A value (i.e. 65 dB $L_{Aeq,1hr}$)

It is understood that no night-time construction works will be required, i.e. between 23:00hrs to 07:00hrs.

Construction Vibration

In terms of vibration, British Standard BS 5228-2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Vibration* recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. The standard also notes that below 12.5 mm/s PPV the risk of damage tends to zero. It is therefore common, on a cautious basis to use this lower value.

Taking the above into consideration the vibration criteria in Table 4.2.2 are recommended. For any protected structures located in proximity to the proposed works, there is a greater potential for these to be more vulnerable than modern structures. Therefore, on a precautionary basis, the guidance values for structurally sound buildings are reduced by 50% in line with the guidance documents referred to above.

Table 4.2.2 Recommended Vibration Criteria During Construction Phase

Category of Building	Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:		
	Less than 15Hz	15 to 40Hz	40Hz and above
Structurally sound and non-protected buildings	12 mm/s	20 mm/s	50 mm/s
Protected and /or potentially vulnerable buildings	6 mm/s	10 mm/s	25 mm/s

4.2.2.3 Predicted Construction Noise Levels

During the construction phase of the proposed development, a variety of items of plant will be in use. The Construction and Environmental Management Plan (CEMP) has not been developed in detail at this stage however it is expected that plant items such as road pavers, dumper trucks, water pumps, and vibratory rollers will be used.

Due to the nature of daytime activities undertaken on a construction site, there is potential for generation of significant levels of noise.

It is possible to predict typical noise levels using guidance set out in BS 5228-1:2009+A1:2014. Table 4.2.3 outlines plant items and associated noise levels that are anticipated for this aspect of the construction programme. There may be some variations depending on the actual construction methodology implemented by the successful contractor however these are not likely to be change significantly and will be required to be agreed with the local authority prior to construction.

Table 4.2.3 Reference Plant Noise Emissions and Indicative Construction Noise Levels

Activity	Item of Plant *(BS5228 Ref)*	L_{Aeq} at 10m	Predicted L_{Aeq} at 50m
Paving and Landscaping	Asphalt Paver & Tipping Lorry (C5.30)	75	59
	Electric Water Pump (C5.40)	68	52
	Vibratory Roller (C5.20)	75	59
	Tracked excavator (C2.21)	71	55
	Cumulative		**63**

Allowing for the attenuation of sound over distance, the predicted construction noise level at noise sensitive properties at a distance of 50m and greater of the site works is within the relevant construction noise criteria, i.e. the level at which a potential significant impact could be expected to occur at noise sensitive locations.

On this basis, the exercise in quantifying the number of receptors in need of mitigation is conducted by counting properties within a 50m band either side of the greenway route.

4.2.2.4 Predicted Construction Vibration

Review of the expected construction activities concludes that the predicted vibration at 5m distance from areas of major works are orders of magnitude below the vibration criteria set out in Table 4.2.2 previously. As a worst case, heavy breaking activities using excavators has been measured historically and found to generate vibration levels of 0.25 PPV (mm/s) at 50m from works. This is well below the vibration criteria.

On this basis vibration is not a determining factor in the selection assessment, considering the propagation of vibration and the large distances between areas of works and sensitive receivers.

4.2.2.5 Potential Impact Rating (PIR)

The assessment of potential noise impacts and ranking of route options is based on the following assessment criteria:

- Potential Impact Rating (PIR), and
- Likely Requirements for Noise Mitigation.

The assessment for each of these criteria are discussed in the following sections.

Potential Impact Rating (PIR)

An assessment of potential noise impact based upon the number of noise sensitive receptors within the specified distance band (0-50m) from each of the route options under consideration is set out in the following section.

The number of properties potentially sensitive to noise within 50m of each of the proposed route options has been identified. For the purpose of this study, property counts include existing residential properties, hospitals and medical buildings, educational buildings and religious buildings, and equine facilities which were undertaken using OS mapping data.

Property counts have been undertaken for 50m bands either side of the footprint line of each route option. For the PIR assessment, the calculated value for each route section is the total number of receptors identified.

Likely Requirements for Noise Mitigation

The number of receptors identified in the 50m band for each route section is then has been reviewed to account for the likely requirement for mitigation. Based on the assumptions outlined in Section 4.2.2.3, the predicted construction noise level at 40m from construction works is on par with the construction noise threshold. Therefore, it is assumed that receptors at or closer than 40m from construction works may require mitigation. Review of the 40m and 50m distance bands concluded that the footprint of receptor buildings often spanned the 40m and 50m band. Therefore, for the purpose of this assessment, a distance band of 50m has been adopted.

Construction Noise

A range of construction activities have been identified relating to the various route sections. These include:

- Construction of greenway along existing roads which have the space to provide the greenway within the existing road corridor without impacting the adjacent landowner
- Widening of the existing road corridor into the adjacent land/property holding;
- Construction of new paths and fencing requiring landtake from agricultural lands, disused railways, access tracks or curtilage of a residential property; and
- Reuse of the existing road with minimal construction works which will include road marking and road signage works, rather than pavement works, or widening of the road.

The intensity of each of these activities as well as the separation distance to the nearest receptors has been taking into account on a qualitative basis when comparing route sections.

4.2.3 Existing Environment

4.2.3.1 Noise

The study area is predominately rural in nature with housing estates most prominent around the western end encapsulating urban areas of north Dundalk, as well as the east sector taking in Carlingford Town. Outside of the aforementioned towns the land use is predominately a mixture of agricultural lands, one off residential properties and some commercial premises including stadiums, hotels and equine facilities. Residential properties are typically located in ribbon style development along the R173 and R175, which bound the study area to the north and south, the R176 which bound the study area to the east, and along local roads which bound the study area to the north and south. Local roads traversing the study area also have residential properties offset from them.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the existing N52, R173, R175 and R176 roads. With background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage. Review of EPA Noise Maps indicates that traffic noise levels within 125m of the R173 road (between R173/R132 roundabout and R173/R174 intersection) are in the range between 55 – 70 dB L_{den} and between 45 – 60 dB L_{night} during the night-time.

4.2.3.2 Vibration

There are no significant sources of vibration within the existing environment.

4.2.3.3 Sensitive Human Receptors

It is preferable to locate infrastructure developments away from noise sensitive areas where feasible, but it is not always possible to do this, particularly for developments located close to and through sub-urban settings. In this instance, the nature of the proposed greenway means that noise and vibration impacts on human receptors will be limited to the duration of the construction works and are therefore temporary to short-term.
Sensitive receptors such as the following have been noted within the study area:

- Residential and commercial properties;
- Accommodation including hotels;
- Several pre-school, national and secondary schools;
- Sports facilities including equine;
- Cultural attractions;
- Churches; and
- A nursing home.

The presence of these noise sensitive locations are not necessarily obstacles to the development of the greenway route, however, the proximity of these areas and buildings are considered as part of the route options assessment.

4.2.4 Section A Options Appraisal

4.2.4.1 Route Option A3 (Node 1 – 4)

Option A3 (Node 1 – 4) starts on the western end encapsulating urban areas of north Dundalk and travels north along the N52 until the M1 interchange, before moving east along the R173 as far as the L3095 junction to the north.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the N52 and R173 with background noise levels also including local traffic along

minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 9 no. receptors within the 50m distance band.

This route corridor option runs adjacent to the N52 and R173 and will require widening of the existing road corridor along 3 no. noise sensitive receptors along the N52 for 1km. Although there are road widening works proposed along this route, the existing noise environment is dominated by road traffic noise and construction noise while audible will not significantly increase the existing noise levels.

4.2.4.2 Route Option A4-1 (Node 1 – 4)

Option A4-1 (Node 1 – 4) starts on the western end along the N52 but quickly turns east along disused railway passing a housing estate to the west before heading north across agricultural lands, passing Dundalk Stadium to the west and turns east again to the south of the R173.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the N52 and R173 with background noise levels also including local traffic along minor roads and the housing estate, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 35 no. receptors within the 50m distance band, although this is mainly from the contribution from the housing estate rather than along the entire route itself.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located in one estate along the route.

4.2.4.3 Route Option A4-1 (Node 4 - 9)

Option A4-1 (Node 4 – 9) starts to the south of the R173 and moves to the southeast along agricultural lands and on a flood berm towards Bellurgan Point.

The existing noise environment is expected to be dominated by road traffic to the north of the route, but as it moves through agricultural lands and towards the sea, the dominant noise source will local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There is a low property count along this route option with 4 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.4.4 Route Option A5 & A6 (Node 4 – 12)

Option A5 & A6 (Node 4 – 12) starts to the north of the R173 along the L3095 with a shared road before turning east across agricultural lands and a access track adjacent to the Ballymascanlan golf club. It then turns north along a local road to the east of the Flurry River before turning east along a shared road and access track and into agricultural lands which end to the south of the R174.

The existing noise environment is expected to be dominated by distant road traffic to the north of the route, but as it moves through agricultural lands, the dominant noise source will local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including bird song and rustling foliage.

There are 29 no. receptors within the 50m distance band, which includes one equine receptor adjacent to the proposed corridor.

This route corridor option will require widening of the existing road corridor where 2 no. NSLs are less than 20m distance to the construction works. As there are lower existing noise environment levels expected, construction noise will be audible but impacts will be temporary.

4.2.4.5 Route Option A5 (Node 12 – 14)

Option A5 (Node 12-14) starts to the south of the R174 and moves east across agricultural lands.

The existing noise environment is expected to be dominated by road traffic to the north and south of the route, with background noise levels from farmyard activities and general environmental sources including bird song and rustling foliage.

There are 11 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.4.6 Route Option A6 (Node 12 – 13)

Option A6 (Node 12-13) starts to the south of the R174 and moves south towards the R173 across agricultural lands adjacent to local roads.

The existing noise environment is expected to be dominated by road traffic to the north and south of the route, with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 9 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.4.7 Route Option A1 (Node 9 – 13)

Option A1 (Node 9-13) starts to the west of Bellurgan Point and moves east on shared coastal roads and access tracks before it moves onto agricultural lands adjacent to the coastal road.

The existing noise environment is expected to be dominated by local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 30 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.4.8 Route Option A1 (Node 13 – 14)

Option A1 (Node 13-14) continues along the coast along agricultural lands to the south of the R173 where it heads northeast to join the R173 and adjacent to the road.

The existing noise environment is expected to be dominated by road tariff noise to the north and local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 11 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.4.9 Route Option A3 (Node 4 – 13)

Option A3 (Node 4-13) starts on the R173 at the L3095 junction to the north and continues east adjacent to the R173 road.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 58 no. receptors within the 50m distance band.

This route corridor option runs adjacent to the R173 and will require widening of the existing road corridor along three sections of the route option. There are 10 NSLs within 15m of the road widening works. While the existing noise environment is dominated by road traffic noise, the construction noise will be dominant at the closest NSLs for a temporary duration.

4.2.4.10 Route Option L2 (Node 8 – 9)

Option L2 (Node 8-9) starts at the R173 and moves south towards Bellurgan Point along agricultural lands.

The existing noise environment is expected to be dominated by local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There is a low property count along this route option with 2 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.5 Section B Options Appraisal

4.2.5.1 Route Option B1 (Node 14 – 20)

Option B1 (Node 14-20) starts on the R173 to the north of the coast and continues east adjacent to the R173.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 119 no. receptors within the 50m distance band.

This route corridor option runs adjacent to the R173 and will require widening of the existing road corridor for 1.7km of the route option. There are 15 NSLs within 15m of the road widening works. While the existing noise environment is dominated by road traffic noise, the construction noise will be dominant at the closest NSLs for a temporary duration.

4.2.5.2 Route Option B3 (Node 14 – 19)

Option B3 (Node 14-19) starts on agricultural land to the south of the R174 and moves east along the R174 for a short section before it joins a shared local road, then moves intermittently between agricultural land and local roads. Also passing a housing estate.

The existing noise environment is expected to be dominated by distant road traffic in from the R174 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 40 no. receptors within the 50m distance band.

This route corridor option will require widening of the existing road corridor where 4 no. NSLs are less than 15m distance to the construction works, including one NSL along the R174. As there are lower existing noise environment levels expected at 3 NSLs, construction noise will be audible but impacts will be temporary.

4.2.5.3 Route Option B2 (Node 14 – 19)

Option B2 (Node 14-19) starts on the R173 and continues northeast of the R173 along agricultural land, passing a housing estate.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 45 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located along the route.

4.2.5.4 Route Option B2 (Node 19 – 20)

Option B2 (Node 19-20) starts north of the R173 and continues east heading closer to the R173 along agricultural land.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 19 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be just audible over the road traffic noise but impacts will be temporary at the NSLs located along the route.

4.2.5.5 Route Option B1 (Node 20 - 21)

Option B1 (Node 20-21) is adjacent to the R173 but does not have any NSLs within a 50m distance band.

4.2.5.6 Route Option B1 (Node 21 - 23)

Option B1 (Node 21-23) starts on the R173 and continues east ending at the R173 and R175 junction.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 40 no. receptors within the 50m distance band.

This route corridor option runs adjacent to the R173 and will require widening of the existing road corridor along three sections of the route option. There are 9 NSLs within 15m of the road widening works. While the existing noise environment is dominated by road traffic noise, the construction noise will be dominant at the closest NSLs for a temporary duration.

4.2.5.7 Route Option B2 (Node 20 – 23)

Option B2 (Node 20-23) starts north of the R173 and continues east heading away from the R173 along agricultural land before it heads north and joins a local road close to a quarry before finishing on agricultural land to the north of the R173.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including quarry noise, local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 11 no. receptors within the 50m distance band.

Although there are road widening works proposed along this route for 2 NSLs at 40m distance, the existing noise environment is dominated by road traffic noise and quarry noise. Construction noise while audible will not significantly increase the existing noise levels.

4.2.5.8 Route Option B3 (Node 19 – 23)

Option B3 (Node 19-23) starts further north of the R173 than Option B2 and continues north and then east heading away from the R173 along agricultural land before it heads north and joins a local road close to a quarry before finishing on agricultural land to the north of the R173, similar to Option B2.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R173 with background noise levels also including quarry noise, local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.

There are 32 no. receptors within the 50m distance band, which is higher than the Option B2 (Node 20-23), as the route passes in closer proximity to the residential ribbon development located along the local roads.

Although there are road widening works proposed along this route for 2 NSLs at 40m distance, the existing noise environment is dominated by road traffic noise and quarry noise. Construction noise while audible will not significantly increase the existing noise levels.

4.2.5.9 Route Option B4 (Node 14 – 21A)

Option B4 (Node 14-21A) starts south of the R173 close to the coast and continues east away from the R173 and along the coast through agricultural land. It branches off to the north via a shared road linking the route option to the R173, and also continues east along agricultural land along the coastline, passing a Caravan and Campling Park and Equine NSLs to the south before ending to the west of the Castletown River.

The existing noise environment is expected to be dominated by local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 83 no. receptors within the 50m distance band, the majority of which are located in the Caravan and Campling Park to the south of the route option.

There is no road widening proposed along this route option. Construction noise will be just audible but impacts will be temporary at the NSLs located along the route.

4.2.5.10 Route Option B4 (Node 21A - 25)

Option B4 (Node 21A-25) is located to the east of the Castletown River and moves east across agricultural land but does not have any NSLs within a 50m distance band.

4.2.5.11 Route Option L3 (Node 21-21A)

Option L3 (Node 21-21A) moves to the south of the R173 along an access track and agricultural land to the east of the Castletown River, heading towards the coast but does not have any NSLs within a 50m distance band.

4.2.6 Section C Options Appraisal

4.2.6.1 Route Option C2 (Node 23 – 31)

Option C2 (Node 23-31) starts at the R173 and R175 junction and travels adjacent to the R175 until Rogans Cross Roads junction.

The existing noise environment is expected to be dominated by road traffic from the R175 with background noise levels also including local traffic along minor roads and general environmental sources including bird song and rustling foliage.

There are 21 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be just audible over the road traffic noise but impacts will be temporary at the NSLs located along the route.

4.2.6.2 Route Option C2 (Node 31 – 43)

Option C2 (Node 31-43) starts at the R175 and Rogans Cross Roads junction where it moves northeast of the R175 along disused railway and agricultural land before ending to the east of the R176 on the outskirts of Carlingford.

The existing noise environment is expected to be dominated by road traffic in particular for areas close to the R175 with background noise levels also including local traffic along minor roads, farmyard activities and general environmental sources including bird song and rustling foliage.
There are 18 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located along the route.

4.2.6.3 Route Option C9 (Node 31 – 41)

Option C9 (Node 31-41) starts to the southeast of the R175 and Rogans Cross Roads junction and travels east adjacent to the R175 where it ends at the R175 and R176 junction.

The existing noise environment is expected to be dominated by road traffic from the R175 and R176 with background noise levels also including local traffic along minor roads and general environmental sources including bird song and rustling foliage.

There are 57 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be just audible over the road traffic noise but impacts will be temporary at the NSLs located along the route.

4.2.6.4 Route Option C5 (Node 25 – 28)

Option C5 (Node 25-28) is located to the south of Rathcor townlands and moves east across agricultural land but does not have any NSLs within a 50m distance band.

4.2.6.5 Route Option C5 (Node 28 – 35)

Option C5 (Node 28-35) is located to the south of Rathcor townlands and moves east across agricultural land and access tracks close to the coastline.

The existing noise environment is expected to be dominated by local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There is a low property count along this route option with 2 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.6.6 Route Option C5 (Node 35 – 38)

Option C5 (Node 35-38) is located to the south of Templetown townlands and moves northeast across agricultural land, access tracks and shared road close to the coastline.

The existing noise environment is expected to be dominated by local traffic along minor roads with background noise levels from farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 42 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located along the route.

4.2.6.7 Route Option C5 (Node 38 – 42)

Option C5 (Node 38-42) is located to the east of Ballytrasna townlands and moves north across agricultural land and access tracks close to the coastline before it ends at the R175, adjacent to the Greenore industrial estate.

The existing noise environment is expected to be dominated by distant road traffic and plant noise from the R175 and nearby industrial estate, with background noise levels from local traffic along minor roads, farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There is a low property count along this route option with 6 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the small number of NSLs located along the route.

4.2.6.8 Route Option C10 (Node 38 – 41)

Option C10 (Node 38-41) is located to the west of Ballytrasna townlands and moves northwest across a shared road before it ends at the R175, further south of the Greenore industrial estate than Option C5 (Node 38-42).

The existing noise environment is expected to be dominated by local and distant road traffic, with background noise levels from farmyard activities and general environmental sources including bird song and rustling foliage.

There are 12 no. receptors within the 50m distance band.

This route corridor option will require widening of the existing road corridor where 6 no. NSLs are less between 35m to 50m distance to the construction works. While the existing noise environment is dominated by road traffic noise, the construction noise will be dominant at the closest NSLs for a temporary duration.

4.2.6.9 Route Option C9 (Node 41 – 45)

Option C9 (Node 41-45) is located to the north of the R175 and R176 junction and moves east adjacent to the R175 road before ending to the southwest of the R175 and Euston Street junction in Greenore.

The existing noise environment is expected to be dominated by road traffic from the R175 with background noise levels also including plant noise from the industrial estate and local traffic along minor roads, and general environmental sources including bird song and rustling foliage.

There are 18 no. receptors within the 50m distance band.

This route corridor option runs adjacent to the R176 and will require widening of the existing road corridor along the full section of the route option. There are 7 NSLs within 20m of the road widening works. While the existing noise environment is dominated by road traffic noise, the construction noise will be dominant at the closest NSLs for a temporary duration.

4.2.6.10 Route Option C10 (Node 41 – 44)

Option C10 (Node 41-44) is located to the north of the R175 and R176 junction and moves adjacent to the R176 road before ending to the southwest of the R176 and Old Quay Lane junction.

The existing noise environment is expected to be dominated by road traffic from the R176 with background noise levels also including local traffic along minor roads and general environmental sources including bird song and rustling foliage.

There are 131 no. receptors within the 50m distance band, the highest count among all of the route options.
Although there are road widening works proposed along this route for 2 NSLs at 50m distance, the existing noise environment is dominated by road traffic noise. Construction noise while audible will not significantly increase the existing noise levels.

4.2.6.11 Route Option C3-1 (Node 25 – 23)

Option C3-1 (Node 25-23) is starts to the north of the coastline in the townlands of Rathcor before moving north along agricultural land to join the R173 at the R175 junction.

The existing noise environment is expected to be dominated by distant road traffic, with background noise levels from local traffic along minor roads, farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 12 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located along the route.

4.2.6.12 Route Option C4-1 (Node 28 – 30)

Option C4-1 (Node 28-30) starts to the north of the coastline in the townlands of Rathcor, further east than Option C3-1, before moving north along agricultural land to join the R175 mid-way between the R175 and R173 junction to the west and the Rogans Cross Roads junction to the east.

The existing noise environment is expected to be dominated by distant road traffic, with background noise levels from local traffic along minor roads, farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 15 no. receptors within the 50m distance band.

There is no road widening proposed along this route option. Construction noise will be audible but impacts will be temporary at the NSLs located along the route.

4.2.6.13 Route Option C6-1 (Node 31 – 35)

Option C6-1 (Node 31-35) starts to the southwest of the Rogans Cross Road junction with the R175 and moves southeast adjacent to local roads and then across agricultural land before it ends to the northwest of Templetown Beach.

The existing noise environment is expected to be dominated by road traffic, with background noise levels from local traffic along minor roads, farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 17 no. receptors within the 50m distance band.

This route corridor option will require widening of the existing road corridor where 6 no. NSLs are less than 15m distance to the construction works. As there are lower existing noise environment levels expected construction noise will be audible but impacts will be temporary.

4.2.6.14 Route Option C7 (Node 35 – 41)

Option C7 (Node 35-41) starts to the northwest of Templetown Beach and moves north adjacent to local roads and then across agricultural lands and access tracks before it ends to the south of the R175, further west than option C10 (Node 28-41).

The existing noise environment is expected to be dominated by road traffic, with background noise levels from local traffic along minor roads, farmyard activities and general environmental sources including wave sounds, bird song and rustling foliage.

There are 28 no. receptors within the 50m distance band.

This route corridor option will require widening of the existing road corridor where 2 no. NSLs are less than 15m distance to the construction works. As there are lower existing noise environment levels expected construction noise will be audible but impacts will be temporary.

4.2.7 Assessment Summary

As summarised in Table 4.2.4, there are four route options with no NSLs within 50m of the construction works, therefore these route options have been assigned a TAF impact score of 4 (Neutral Impact).

All other route options have been assigned a TAF impact score of 3 (Slight Negative Impact) due to the temporary impact of construction noise at NSLs during the linear construction works.

Table 4.2.4 Summary of Impact Ratings for Noise and Vibration

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 4 - 9)	3	Slight Negative
Option A5 & A6 (Node 4 – 12)	3	Slight Negative
Option A5 (Node 12 – 14)	3	Slight Negative
Option A6 (Node 12 – 13)	3	Slight Negative
Option A1 (Node 9 – 13)	3	Slight Negative
Option A1 (Node 13 – 14)	3	Slight Negative
Option A3 (Node 4 – 13)	3	Slight Negative
Option L2 (Node 8 – 9)	3	Slight Negative
Section B		
Option B1 (Node 14 – 20)	3	Slight Negative
Option B2 (Node 14 – 19)	3	Slight Negative
Option B3 (Node 14 – 19)	3	Slight Negative
Option B2 (Node 19 – 20)	3	Slight Negative
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	3	Slight Negative
Option B2 (Node 20 – 23)	3	Slight Negative
Option B3 (Node 19 – 23)	3	Slight Negative
Option B4 (Node 14 – 21A)	3	Slight Negative
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	3	Slight Negative
Option C2 (Node 31 – 43)	3	Slight Negative
Option C9 (Node 31 – 41)	3	Slight Negative
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	3	Slight Negative
Option C5 (Node 35 – 38)	3	Slight Negative
Option C5 (Node 38 – 42)	3	Slight Negative
Option C10 (Node 38 – 41)	3	Slight Negative
Option C9 (Node 41 – 45)	3	Slight Negative
Option C10 (Node 41 – 44)	3	Slight Negative
Option C3-1 (Node 25 – 23)	3	Slight Negative
Option C4-1 (Node 28 – 30)	3	Slight Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option C6-1 (Node 31 – 35)	3	Slight Negative
Option C7 (Node 35 – 41)	3	Slight Negative

4.3 Biodiversity

4.3.1 Introduction

This section presents an appraisal of route corridor options in terms of their impact on biodiversity. The option selection process involves undertaking a comparative evaluation of the route corridor options, having regard to multiple factors in order to identify an Emerging Preferred Option. The objectives of the options selection exercise with regards to biodiversity are to:

- Complete a desk study to obtain relevant ecological data for each route corridor option.
- Identify and describe sites of ecological interest.
- Assess the significance of the likely impacts of each route corridor option on biodiversity.
- To evaluate and compare each route corridor option in accordance with the Transport Infrastructure Ireland (TII) *Guidelines for Assessment of Ecological Impact of National Road Schemes* (TII, 2009) and *Greenways and Cycle Routes Ancillary Infrastructure Guidelines* (DoT, 2018) considering interactions with other environmental disciplines.
- To assess each option in accordance with the Transport Appraisal Framework Appraisal Guidelines for Capital Investments in Transport Module 7 - Detailed Guidance on Appraisal Techniques (June 2023) and where applicable, the Project Appraisal Guidelines for National Roads Unit 13.0 - Appraisal of Active Modes [PAGs] (TII, 2023).

In fulfilling these objectives, an assessment on the likely impacts of the route corridor options on biodiversity constraints and ecological receptors, can be carried out. An informed choice can therefore be made with the knowledge of the potential impacts to biodiversity. This enables the importance of the proposed effects and the scope for mitigating these to be appropriately evaluated.

This section of the report was prepared by Mark Gilligan and reviewed by Síofra Sealy and Patrick O'Shea. Mark is a graduate ecologist with two years' experience in ecological assessment. He holds an MSc in Applied Ecology (with distinction) from the University of Gloucestershire. Mark is a Qualifying Member of the Chartered Institute of Ecological and Environmental Management (QualCIEEM).

Síofra is a Senior Ecologist with over six years' experience in ecological consultancy. She holds a BA (Hons) degree in Natural Sciences (Zoology) from Trinity College Dublin and is a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

Patrick O'Shea is a Principal Ecologist with over ten years' experience in ecological assessment. He holds a degree in Botany from Trinity College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. Patrick is a Full member of the CIEEM.

4.3.2 Study Area

The study area to inform the option selection was defined as:

- The entire area within the route corridor options, plus a 1km buffer.

The study area is below shown in Figure 4.3.1.

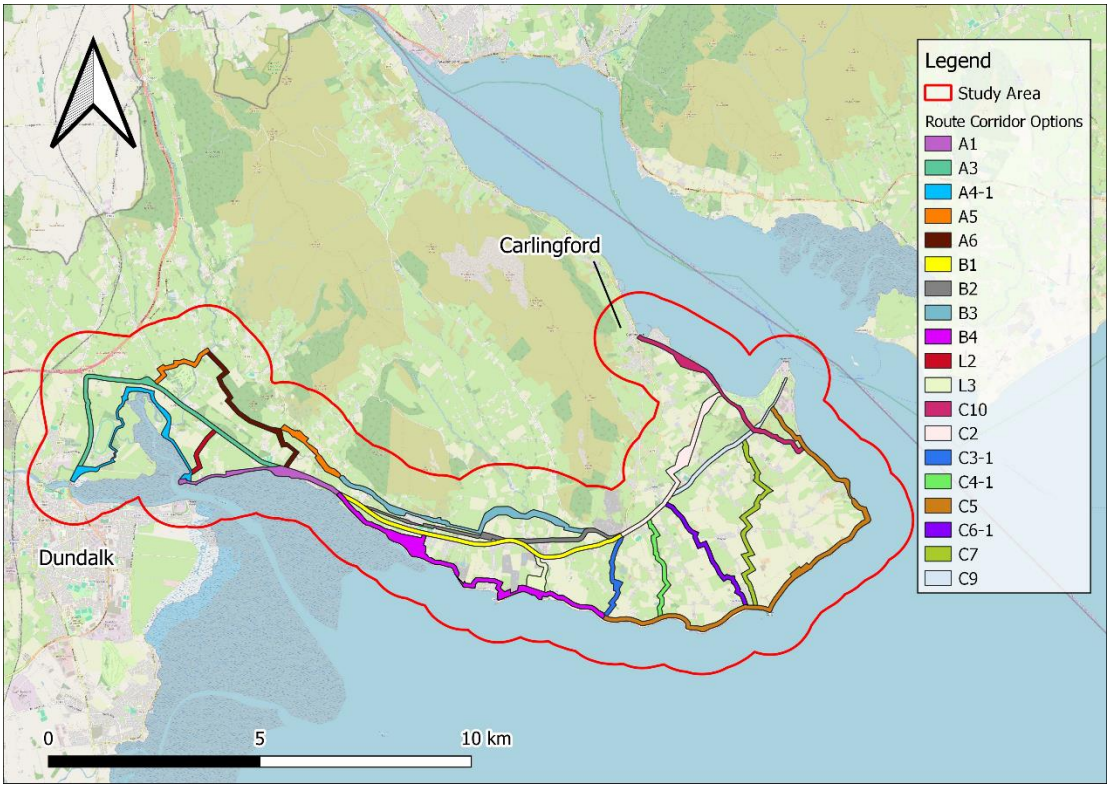


Figure 4.3.1 Study area and route corridor options

4.3.3 Methodology

The methodology for the option assessment comprised a desk study undertaken in May 2025 and wintering bird surveys undertaken from October 2024 to March 2025. These are described in further detail below.

4.3.3.1 Desk Study

The desk study was used to identify and describe the features of ecological value within the study area. The material sources consulted as part of the desk study are as follows:

- Data from the National Parks and Wildlife Service (NPWS) online database, for information on designated sites of nature conservation interest and Annex I habitats in the study area, accessed May 2025 (www.npws.ie);
- Ramsar Sites in Ireland (https://www.irishwetlands.ie/irish-sites/);
- Environmental Protection Agency (2025) *EPA Maps Online Map Viewer*. Available at: https://gis.epa.ie/EPAMaps/. Accessed May 2025;
- Foss, P., Crushell, P., O'Loughlin, B. & Wilson, F. (2011) *Louth Wetland Identification Survey 2011*. Prepared for Louth County Council & The Heritage Council. Available at: wetlandsurveysireland.com/downloads/lws2011_report.pdf. Accessed May 2025;
- Geological Survey of Ireland (2025) Geological Survey Ireland Spatial Resources *Online Map Viewer*. Available at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Accessed May 2025;
- Gilbert, G., Stanbury, A., Lewis, L. (2021) *Birds of Conservation Concern in Ireland* 4: 2020 – 2026;
- Louth County Council (2021) *Louth Development Plan Development Plan 2021-2027*. Dundalk, Co. Louth A91 W20C;

- NPWS (2011a) *Dundalk Bay Special Protection Area [004026] and Dundalk Bay Special Area of Conservation [000455] Conservation Objectives*. National Parks and Wildlife Services;
- NPWS (2011b) *the Dundalk Bay SPA [004026] Conservation Objectives Supporting Document*. National Parks and Wildlife Services;
- NPWS (2011c) *Dundalk Bay Special Area of Conservation [000455] Conservation Objectives Supporting Document – Coastal Habitats*. National Parks and Wildlife Services;
- NPWS (2011d*) Dundalk Bay Special Area of Conservation [000455] Conservation Objectives Supporting Document – Marine Habitats*. National Parks and Wildlife Services;
- NPWS (2013) *Carlingford Shore SPA [004078] Conservation Objectives.* National Parks and Wildlife Services;
- NPWS (2014a) *Dundalk Bay SPA [004026] Site Synopsis*. National Parks and Wildlife Services;
- NPWS (2014b) *Carlingford Shore SAC [002306] Site Synopsis*. National Parks and Wildlife Services;
- The National Biodiversity Data Centre (NBDC) database, consulted for records of rare, protected and invasive species for Irish National Grid 10x10km grid squares J00, J01, J10, J11, J20, and J21.
- NPWS (2019a) *National Conservation Assessment for three fen habitat types (7140, 7210, 7230) 2013-2018* Resource Catalogue. Accessed May 2025;
- NPWS (2019b) *Reporting on the Annex I Habitat Sea cliffs (1230) under Article 17 of the EU Habitats Directive*. Accessed May 2025;
- NPWS (2019c) *Reporting on the Annex I Habitat Large shallow inlets and bays (1160) under Article 17 of the EU Habitats Directive*. Accessed May 2025;
- NPWS (2019d) *Reporting on the Annex I Habitat Tidal Mudflats (1140) under Article 17 of the EU Habitats Directive.* Accessed May 2025;
- NPWS (2019e) *Reporting on the Annex I Habitat Coastal Lagoons (1150) under Article 17 of the EU Habitats Directive.* Accessed May 2025;
- NPWS (2022) *Flora (Protection) Order 2022 Online Map Viewer*. Available at https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e. Accessed May 2025;
- O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013) *The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals*, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland;
- Perrin, P., Martin, J., Barron, S., O'Neill, F., McNutt, K. & Delaney, A. (2008) *National Survey of Native Woodlands 2003-2008: Volume 1*. A report submitted to the National Parks & Wildlife Service. BEC Consultants Ltd;
- Perrin, P.M. & Daly, O.H., (2010) *A provisional inventory of ancient and long-established woodland in Ireland*. Irish Wildlife Manuals, No. 46. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland;
- TII (2009) *Guidelines for Assessment of Ecological Impact of National Road Schemes.* Available at: https://www.tii.ie/media/kzldoawo/guidelines-for-assessment-of-ecological-impacts-of-national-road-schemes.pdf. Accessed May 2025
- TII (2024) – *Project Appraisal Guidelines Unit 13.0 – Appraisal of Active Modes PE-PAG-02036.* Available at: https://cdn.tii.ie/publications/PE-PAG-02036-04.pdf. Accessed May 2025

- Wetland Surveys Ireland (2025) *Map of Irish Wetlands Online Map Viewer*. Available at: https://wetland.maps.arcgis.com/apps/View/index.html?appid=e13b75c3bcab4932b992aa0169aa4a32&extent=-12.6266,51.3236,-3.2168,55.4102. Accessed May 2025;

The first step in the assessment of ecological impacts from the various route corridor options was to select and evaluate the ecological receptors along the corridor options. The importance of the ecological receptors was determined with reference to *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (TII, 2009).

4.3.3.2 Wintering Bird Surveys

Survey areas included all publicly accessible coastal areas within the study area and agricultural fields within/adjacent to route corridor options which may support roosting/foraging birds.

In coastal areas, point count surveys of wintering birds were undertaken from selected vantage points within 2 hours either side of low tide and high tide. These point count surveys were followed by surveys of inland areas, also within this survey window. These surveys were undertaken on a monthly basis between October 2024 and March 2025. Generally, surveys were carried out over a two-day period, with one day dedicated to the eastern half of the study area and the other day dedicated to the western half. All waterbirds within c. 600m of each vantage point were observed using binoculars and a Hawke Endurance ED 20-60 x 68 scope. Bird species were recorded on maps using standard British Trust for Ornithology (BTO) species codes and numbers of each species were counted.

In coastal areas, (comprising areas of rocky shoreline, beaches, estuaries, tidal mudflats and sandflats), eight publicly accessible survey areas were selected using existing BirdWatch Ireland I-WeBS locations. Multiple vantage points were used at the larger coastal survey areas or where views were obstructed, in order to survey the entire viewshed. The coastal survey areas and are shown below in Figure 4.3.2.

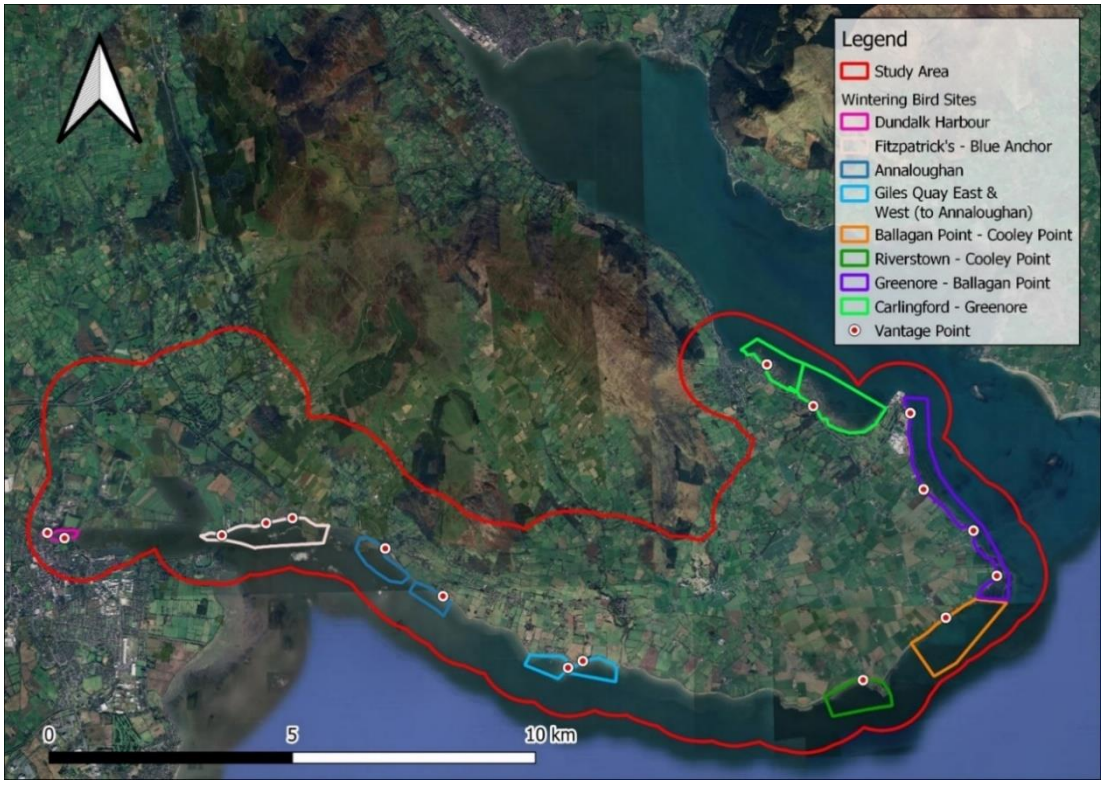


Figure 4.3.2 Coastal Wintering bird survey locations and vantage points within the Study Area. Basemap provided by Google.

Inland roosting and foraging wintering bird areas were identified by driving along publicly accessible roads within the study area and scanning adjacent agricultural land during within 2 hours of both high tide and low tide. Any identified wintering bird species were counted and the location recorded.

Surveys adhered to the following guidelines:

- Gilbert, G., Gibbons, D.W., & Evans, J. (1998) *Bird Monitoring Methods: A Manual of Techniques for UK Key Species*. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.
- BTO (2011) Bird Atlas 2007-11: *The breeding and wintering birds of Britain and Ireland*. BTO, Norfolk.
- Counter Manual: *Guidelines for Irish Wetland Bird Survey Counters* (Irish Wetland Bird Survey, 2019).

The purpose of the surveys was to identify key locations for wintering birds (feeding areas, coastal roosts, inland roosts) along each route corridor option, the potential assess the impacts of each option on wintering birds.

4.3.4 Assumptions and Limitations

The following assumptions and limitations apply to this section of the Options Report.

Due to the large size associated with the project, it was not practical to carry out a walkover survey across all identified potential route corridor options. The Options Report was based on data collected during the desk study and the wintering bird surveys. This information is considered adequate to inform a robust options assessment.

Wintering bird surveys were carried out from publicly accessible roads and points along the coast. Therefore, it was not possible to survey all areas that have the potential to support wintering birds. This meant that some suitable wintering bird areas within the study area have not been surveyed. Where wintering birds were recorded within/near a route corridor option, this is stated within the assessment. Where a route corridor option travels through an area which was inaccessible for surveys but provides suitable supporting habitat for wintering birds, it is assumed that wintering birds are present in line with the precautionary principle.

Potential impacts to the most sensitive ecological receptors within the study area have been used to distinguish between the route corridor options. These include the presence of European and nationally designated sites, wintering bird species, Annex I habitats, wetland areas of ecological importance, nationally designated sites and overall impact to natural habitats and protected species.

As with all desk studies, data is only as good as the records which have been submitted. It should be noted that lack of records of a habitat or species in a grid square does not confirm their absence. Therefore, protected habitats and species may also occur in areas where there are currently no records. Any assumptions that were made in view of gaps in the ecological data were made in accordance with the Precautionary Principle.

The potential impacts of each route corridor option on ecological receptors were assessed using the following design assumptions which were assigned to each section of all route corridor options. Some route corridor options are comprised of multiple design types along their length.

- Adjacent to Road Property Impacts: These sections will likely require the widening of the existing road corridor into the adjacent land/property holding.

- Agricultural Land: These sections will likely require land-take from agricultural lands and field boundaries.
- On Disused Railway: These sections will likely require construction along the disused railway line.
- Adjacent to Road no property impacts: This is where the existing road is likely to have sufficient width that it will be possible to narrow the existing road and repurpose the space to provide the greenway within the existing road corridor without impacting the adjacent land.
- On Access Track: These sections will likely utilise an existing access track. This will require pavement works and fencing on the line of the existing track. Access will be required on these sections of the greenway for the landowner.
- Property Impact: This is where the greenway is envisaged to have an impact on the curtilage of a residential property. All dwellings themselves will be avoided.
- On Flood Berm: These sections are expected to run along the top of the existing flood berm (only applicable to Option A4-1 Node 4 to Node 9).
- Shared Road: These sections will likely utilise an existing quiet road as a shared space. This will require minimal works limited to updates to signage and road markings.

Where a route corridor option is parallel to an existing hedgerow/treeline, it is expected that it will be constructed either side of the hedgerow/treeline, rather than removing it.

For the purposes of carrying out a fair and true assessment of each route corridor option, a number of assumptions were made with respect to the following route corridor options:

4.3.4.1 Section A

Route Corridor Option A3 (Node 1 to Node 4)

- Corridor A3 is not likely to be constructed inside the SAC or SPA.
- At Node 1, from the Tain Bridge, the route corridor option is expected to be constructed along the N52, leaving the screening provided by existing vegetation in place.
- Between Node 3 and 4, the route corridor option is expected to be constructed within the R173, leaving the screening provided by existing vegetation in place.

Route Corridor Option A6 (Node 12 to Node 13)

- This route corridor option is expected to be constructed within the western side of the L7084 Jenkinstown Road, and is expected to avoid the Transitional Mire habitat on the eastern of this road.

Route Corridor Option A1 (Node 13 to Node 14)

- This route corridor option is expected to be constructed within the existing road corridor, plus a 2m wide section of agricultural land north of the R173, avoiding construction within the SAC/SPA boundary.

Route Corridor Option A3 (Node 4 to Node 13)

- The route corridor option is expected to be constructed within the curtilage of the R173 between Nodes 4 and the Marsh Road/R173 intersection (200m northeast of Node 8).

4.3.4.2 Section B

Route Corridor Option B1 (Node 14 to Node 20)

- From Node 14, the route corridor option is expected to be constructed within the curtilage of R173 for c.1.8 km, avoiding construction within the SAC/SPA boundary.

Route Corridor Option B2 (Node 14 to Node 19)

- From Node 14, the route corridor option is expected to be constructed within the curtilage of R173 for c. 600 m, avoiding construction within the SAC/SPA boundary.

4.3.4.3 Section C

Route Corridor Option C2 (Node 31 to Node 43)

- Where the route corridor option travels parallel to field boundaries, it is expected to travel on one side of the hedgerow/ treeline, so that the hedgerow/treeline can be retained.
- The route corridor option will avoid the pond located c. 280m north of Cooley Kickhams GFC which is within the route corridor option boundary.
- The disused railway corridor was not accessible during the surveys and is assumed to be overgrown with scrub and woodland habitat.

Route Corridor Option C9 (Node 31 to Node 41)

- This route corridor option terminates at the R175/R176 intersection, and is expected to not be constructed within areas of Annex I Alkaline Fens [7230] and Calcareous Fens [7210] habitat to the northeast of Node 41.

Route Corridor Option C9 (Node 41 to Node 45)

- The route corridor option is not expected to be constructed within the Annex I habitats Alkaline Fens [7230] and Calcareous Fens [7210] to the south and north of the R175.

Route Corridor Option C3-1 (Node 25 to Node 23)

- The route corridor option is not expected to be constructed within Liscarragh Marsh Proposed Natural Heritage Area (pNHA).

Route Corridor Option C10 (Node 38 to Node 41)

- The route corridor option is anticipated to travel on the north side of the road through areas containing the Annex I habitats Alkaline Fens [7230] and Calcareous Fens [7210]. These habitats will be directly impacted by this route corridor option.

Route Corridor Option C6-1 (Node 31 to Node 35)

- The route corridor option is not anticipated to be constructed within the area of Annex I habitat Alkaline Fens [7230] northwest of Our Lady's Well and the buffer zone of scrub/ wetland around it.

Route Corridor Option C7 (Node 35 to Node 41)

- This route corridor option terminates at the R175/R176 intersection, it is not expected to be constructed within areas of Annex I Alkaline Fens [7230] and Calcareous Fens [7210] habitat to the northeast of Node 41.

4.3.5 Existing Environment

4.3.5.1 European Designated Sites

A total of 3 No. Special Areas of Conservation (SAC) and 2 No. Special Protection Areas (SPA) are located within the study area (shown below in Table 4.3.1 and Figure 4.3.3).

Table 4.3.1 European sites within the study area

Site Code	Site Name	Qualifying Interest Habitats and Species
Special Area of Conservation (SAC)		
000455	Dundalk Bay SAC	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
002306	Carlingford Shore SAC	• Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220]
000453	Carlingford Mountain SAC	• Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)* [6230] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Alkaline fens [7230] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220]
Special Protection Area (SPA)		
004026	Dundalk Bay SPA	• Great Crested Grebe (*Podiceps cristatus*) [A005] • Greylag Goose (*Anser anser*) [A043] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Teal (*Anas crecca*) [A052] • Mallard (*Anas platyrhynchos*) [A053] • Pintail (*Anas acuta*) [A054] • Common Scoter (*Melanitta nigra*) [A065] • Red-breasted Merganser (*Mergus serrator*) [A069] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140]

Site Code	Site Name	Qualifying Interest Habitats and Species
		• Grey Plover (*Pluvialis squatarola*) [A141] • Lapwing (*Vanellus vanellus*) [A142] • Knot (*Calidris canutus*) [A143] • Dunlin (*Calidris alpina*) [A149] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Herring Gull *(Larus argentatus*) [A184] • Wetland and Waterbirds [A999]
004078	Carlingford Shore SPA	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wetland and Waterbirds [A999]

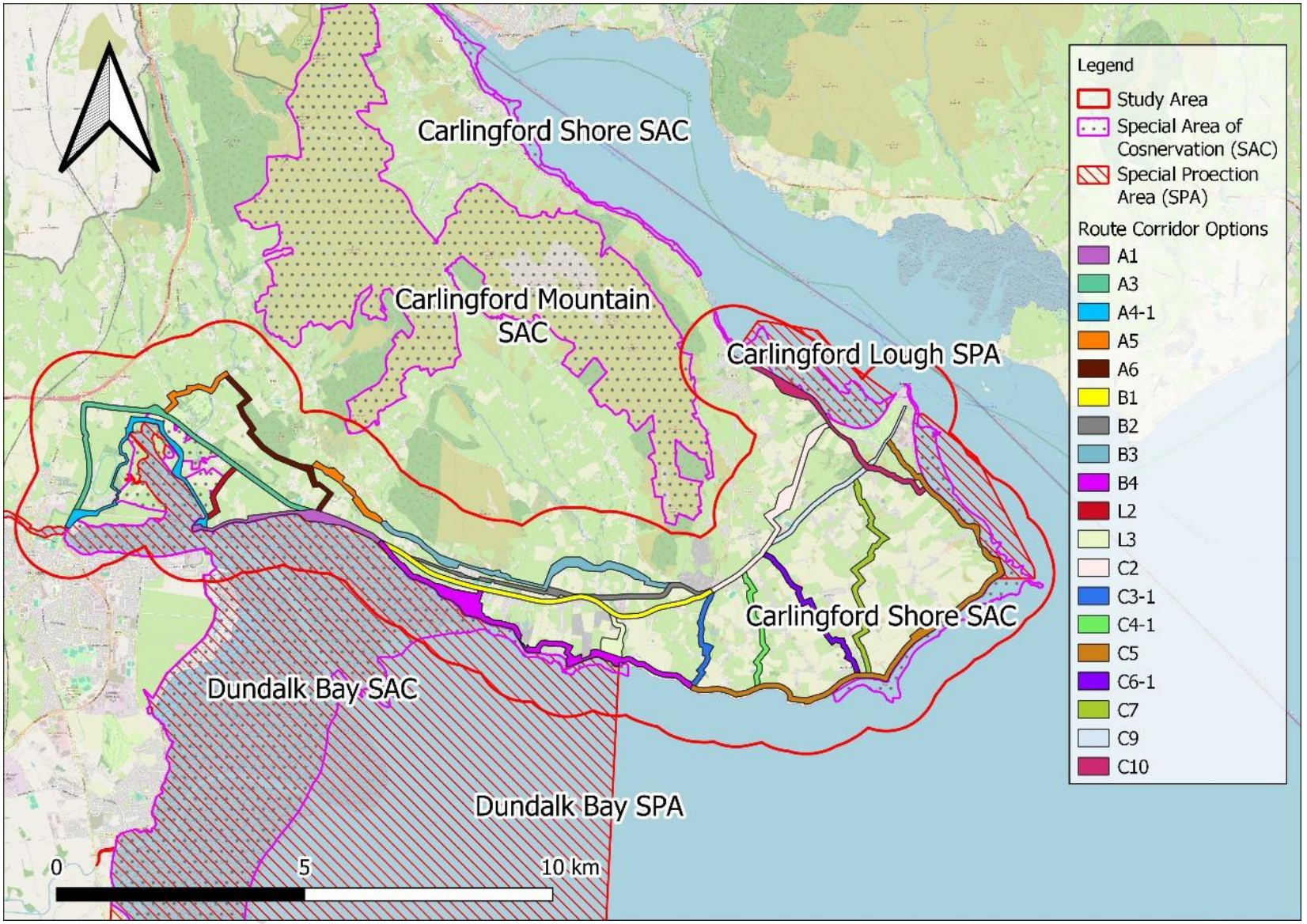


Figure 4.3.3 European sites within 1km buffer area around the study area of the proposed greenway project

4.3.5.2 Nationally Designated Sites

Nationally designated sites such as Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA) are largely located within areas also designated as SACs or SPAs. These sites have been considered along with the European sites and are not detailed separately in this assessment as the biodiversity impacts would be the same. Exceptions to this which are Trumpet Hill (Louth) pNHA and Liscarragh Marsh pNHA which are not designated as an SAC or SPA.

In Northern Ireland, nationally designated sites comprise SPAs and Areas of Special Scientific Interest (ASSI). The Carlingford Shore SPA and ASSI are located just outside the study area, however these sites include mobile species which could occur within the study area.

Nationally designated sites within the study area are listed below in Table 4.3.2 and shown in Figure 4.3.4.

Table 4.3.2 Proposed Natural Heritage Areas within the study area

Site Code	Site Name	Qualifying Interest Habitats and Species
000452	Carlingford Lough pNHA	Refer to the Carlingford Shore SPA, and the Carlingford Shore SAC.
000453	Carlingford Mountain pNHA	Refer to Carlingford Mountain SAC.
000455	Dundalk Bay pNHA	Refer to the Dundalk Bay SAC and SPA.
001451	Liscarragh Marsh pNHA	This small lake and marsh is situated about 6km south of Carlingford, Co. Louth. The terrain forms a natural basin containing the site. The wetland ranges from open water to stands of Common Reed (*Phragmites australis*) swamp with occasional willow (*Salix spp.*) trees. The plant species occurring include Bulrush (*Typha latifolia*), Meadowsweet (*Filipendula ulmaria*), Yellow Iris (*Iris pseudacorus*), Ragged-Robin (*Lychnis flos-cuculi*) and Yorkshire-fog (*Holcus lanatus*). The original area has been subject to drainage and agricultural reclamation. These are potential threats to the wetland habitats. However, since the site occupies a natural basin these threats are diminished. Liscarragh Marsh is a wetland site including open water, swamp, marsh, fen, and scrub habitats with typical floral communities. It is a good representative example of this typical habitat in a part of the country where many wetlands have been destroyed by drainage.
001468	Trumpet Hill (Louth) pNHA	This basalt hill stands 6km directly north-east of Dundalk. The site contains several habitats. The central hill has rocky outcrops, and where it slopes abruptly to the north, various ferns are growing. This slope is covered in mosses and liverworts with Wood Sage (*Teucrium scorodonia*), Bilberry (*Vaccinium myrtillus*), Cross-leaved Heath (*Erica tetralix*) and Great Wood-rush (*Luzula sylvatica*) also present. At the base of the hill is a fringe of scrub trees with a ground flora of Wood-sorrel (*Oxalis acetosella*) and Honeysuckle (*Lonicera periclymenum*). In a westerly direction, the hill slopes gradually, upon which grows a mixed forest dominated by Beech (*Fagus sylvatica*) interspersed with Ash (*Fraxinus excelsior*), Sycamore (*Acer*

Site Code	Site Name	Qualifying Interest Habitats and Species
		pseudoplatanus)., Elder (*Sambucus nigra*), Alder (*Alnus glutinosa*), Hazel (*Corylus avellana*) and Oak (*Quercus spp,*). Human land use of the site primarily involves the felling of mature trees. This practice, if unmanaged, is a threat to the woodland habitat. The aspect, steep slope and varied plant cover of Trumpet Hill form several habitat types and permit a wide range of microflora to grow there. The association of mixed Beech wood with the basalt outcrop adds diversity of habitat to a small area.
Northern Ireland		
UK9020161	Carlingford Lough SPA	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Common Tern (*Sterna hirundo*) [A193] • Sandwich Tern (*Sterna sandvicensis*) [A191]
ASSI 103	Carlingford Lough ASSI	Refer to the Carlingford Shore SPA [NI].

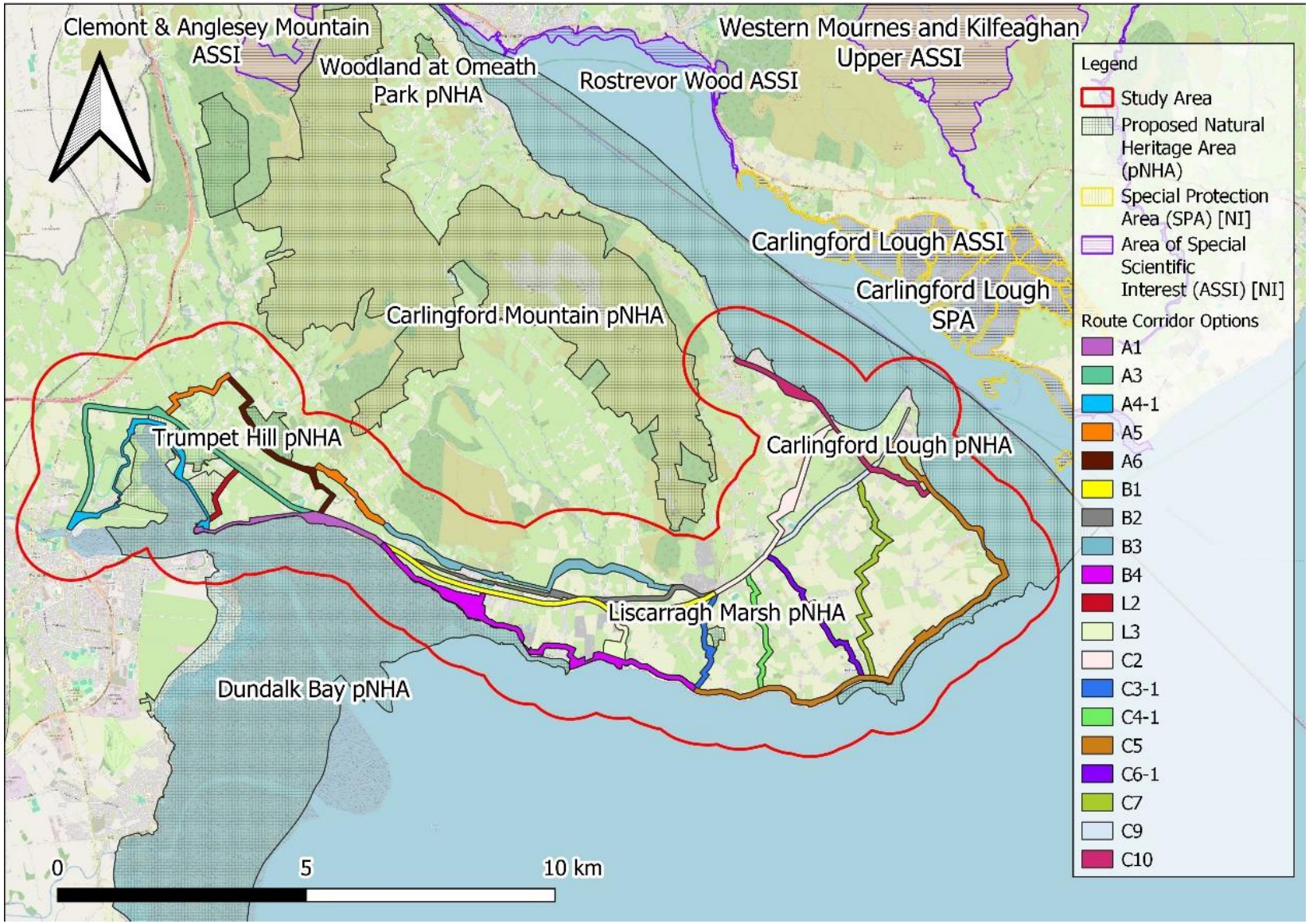


Figure 4.3.4 Nationally Designated sites within 1m buffer area around the study area of the proposed greenway project

4.3.5.3 Wintering Bird Survey Results

The coastal areas that were surveyed as part of the 2024-2025 survey (Figure 4.3.2) were regularly used by high numbers of wintering birds, many of which were Qualifying Interests of the Dundalk Bay SPA and the Carlingford Shore SPA. Additionally, a number of inland agricultural areas within the study area (generally in close proximity to the coast and to the Dundalk Bay SPA and the Carlingford Shore SPA) were regularly utilised as foraging and roosting areas by numerous wintering bird species.

4.3.5.4 Non-designated Annex I Habitats

The desk study has shown that there is a total of 21 No. non-designated Annex I habitat types within the study area. These habitats are listed below in Table 4.3.3.

Table 4.3.3 Non-designated Annex I Habitats within the study area

Habitat Code	Habitat Name (* = priority type)
1130	Estuaries
1140	Mudflats and sandflats not covered by seawater at low tide
1160	Large shallow inlets and bays
1210	Annual vegetation of drift lines
1220	Perennial vegetation on stony banks
1230	Vegetated Sea cliffs
1310	*Salicornia* and other annuals colonising mud and sand
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
1410	Mediterranean salt meadows (*Juncetalia maritimi*)
4010	Wet heath
4030	Dry heaths
4060	Alpine and Boreal heaths
6230	Species-rich Nardus grassland*
6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
7130	Blanket bogs
7140	Transition mires and quaking bogs
7210	Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
7220	Petrifying springs with tufa formation (*Cratoneurion*)
7230	Alkaline fens
8110	Siliceous scree
8220	Siliceous rocky slopes

4.3.5.5 Ecological Receptors

The five ecological receptors used in the assessment are:

- European sites – SACs and SPAs hydrologically/functionally connected to the route corridor options and their Qualifying Interests.
- Wintering waterbirds, including divers, grebes, herons, swans, geese, ducks, rails, coots, waders and gulls.

- Non-designated Annex I habitats within, or hydrologically/functionally connected to the route corridor options.
- Liscarragh Marsh pNHA and Trumpet Hill (Louth) pNHA.
- Natural and semi-natural habitats within the study area such as grasslands, scrub, wetlands, watercourses, coastal habitats, woodlands, hedgerows and treelines. These areas function as breeding, foraging, and commuting areas for native species such as birds, mammals (including bats), invertebrates.

4.3.6 General Impacts to the Natural Environment

The construction and operation of the route corridor options is likely to give rise to impacts to ecological features as outlined below.

Construction Phase

Habitat loss

The construction of the route corridor options will result in the loss of habitats that have the potential to support birds, mammals (including bats) and invertebrates, namely grasslands, scrub, wetlands, watercourses, coastal habitats, woodlands, hedgerows and treelines.

Water quality

A number of route corridor options involve crossings of watercourses which contain hydrological connections to sensitive aquatic habitats including downstream SPAs and SACs. For the purposes of this Options Report, it is assumed that standard measures for the protection of watercourses will be used during construction. Therefore, it will be unlikely for the route corridor options to result in negative impacts to aquatic habitats and species.

Disturbance

There will be an increase in disturbance levels due to human activity, noise, vibration and artificial lighting within the route corridor options and the wider environment as a result of equipment and machinery used during the construction phase.

Operational Phase

Human disturbance

During the operation of the greenway, there will be an increase in human disturbance due the presence of humans and dogs, in areas which are currently inaccessible to the public. This has the potential to impact the distribution of species that are sensitive to human disturbance, in particular birds.

4.3.7 Section A Options Appraisal

4.3.7.1 Route Option A3 (Node 1 – 4)

Corridor Option A3 (Node 1 to Node 4) is c. 4.2km in length and runs northward from Táin Bridge outside Dundalk town through a number of agricultural fields parallel to the N52 before veering east along the R173 as far as Node 4, which is located west of Ballymascanlon Hotel & Golf Resort. This route corridor option is expected to be constructed within agricultural land and on existing roads.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, the boundaries of which overlap with this route corridor option for a distance of c. 180m east of the N52 at Node 1. This route corridor option and the Dundalk Bay SAC also overlap for a distance of c. 290m in the agricultural fields south of the R173 between Node 3 and 4.

From Node 1 at the Táin Bridge to Dundalk Stadium, the route corridor option is expected to be constructed along the N52. This will retain the scrub vegetation in this area which screens the N52 and the route corridor option from the Dundalk Bay SPA. Therefore, there is no potential for disturbance to wintering birds from the SPA in this area during either the construction or operational phases.

North of Dundalk Stadium, the route corridor option is expected to be constructed within the boundaries of a number of agricultural fields that are adjacent to the N52 and R173. No wintering birds were recorded in these fields during the 2024/2025 wintering bird survey period. Given these survey results and the availability of similar habitat in the wider area, this option will not impact wintering birds from the Dundalk Bay SPA.

Between Nodes 3 and 4, this route corridor option is anticipated to be constructed within the existing R173 road corridor, and not within the Dundalk Bay SAC. Furthermore, the existing hedgerows/treelines along this section of the R173 are likely to be retained during the construction and operation of this route corridor option. Given the screening effect provided by these hedgerows/treelines, there will be no disturbance to wintering birds at the Dundalk Bay SPA in this area during the construction and operation of the route corridor option.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

The construction of the route corridor option within agricultural lands has the potential to result in the loss of hedgerow/treeline habitat which is utilised by a number of bird, mammal (including bats) and invertebrate species for breeding, foraging and commuting. The construction and operation of the route corridor option will also result in potential disturbance to these species as a result of construction activities (increased noise, vibration, artificial lighting) and increased human disturbance. These are widespread and common habitats. Given the abundance of similarly suitable habitat in the wider area, this will not have a significant impact.

4.3.7.2 Route Option A4-1 (Node 1 – 4)

Route Corridor Option A4-1 (Node 1 to Node 4) is c. 3.8km in length and travels in a northeasterly direction from Táin Bridge at Node 1 outside Dundalk town around the eastern boundary of Dundalk Stadium, before proceeding northwards through a number of agricultural fields west of Ballymascanlan Estuary as far as Aghaboys. From here, it veers eastward travelling through several agricultural fields directly adjacent to the estuary west of Node 4. This route corridor option is likely to be constructed on a small section of existing road, the disused railway line, as well as agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, the boundaries of which overlap with the boundary of this route corridor option in the area immediately east of Node 1 for a distance of c. 250m. Further overlap between this route corridor option and the Dundalk Bay SAC also occurs east of Dundalk

Stadium and south of the R173 at Aghaboys for a distance of c. 1.3km. This route corridor option and the Dundalk Bay SPA are directly adjacent to one another south of the R173 at Aghaboys for a distance of c. 380m.

The construction of the route corridor option will potentially result in the loss of non-Qualifying Interest habitat (agricultural fields) within the SAC.

During the 2024/2025 wintering bird survey period, 8 no. wintering bird species, 7 of which are wintering bird species that are qualifying interests of nearby SPAs from Dundalk Bay SPA are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021), were recorded in some of the agricultural areas in the route corridor option area. Although the remaining route corridor option area was not accessible for survey, it is assumed that it is also utilised by wintering birds from the SPA given that Ballymascanlan Estuary and the adjacent agricultural lands are known to host internationally important numbers of wintering bird species (NPWS, 2011b). Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, artificial lighting).

The route corridor option area is not currently accessible to the public. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of nearby SPAs from the Dundalk Bay SPA as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

The construction of the route corridor option on a small section of disused railway east of the Táin Bridge and within agricultural lands has the potential to result in the loss of scrub, hedgerow/treeline habitat which is utilised by a number of bird, mammal (including bats) and invertebrate species for breeding, foraging and commuting. The construction and operation of the route corridor option will also result in potential disturbance to these species as a result of construction activities (increased noise, vibration, artificial lighting) and increased human disturbance. These are widespread and common habitats. Given the abundance of similarly suitable habitat in the wider area, this will not have a significant impact.

4.3.7.3 Route Option A4-1 (Node 4 – 9)

Corridor A4-1 (Node 4 to Node 9) is c. 2.6km in length and travels from Node 4 in a southeasterly direction along the eastern banks/flood berm of the Flurry River and Ballymascanlan Estuary through agricultural lands before terminating c. 200m northwest of Bellurgan Point at Node 9. This route corridor option is anticipated to be constructed within agricultural land, some of which is located on a flood berm next to Ballymascanlan Estuary.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. This route corridor option travels directly through the SAC for most of its length. The boundary of this route corridor option and the boundary of the Dundalk Bay SPA also overlap for a distance of c.1km south of Marsh Road along the eastern bank of Ballymascanlan Estuary. In addition, the route corridor boundary is directly adjacent to the SPA along the Flurry River at Node 4.

The construction of the route corridor option will potentially result in the loss of Qualifying Interest habitats (Atlantic Salt Meadows and Estuaries) and non-Qualifying Interest habitat (agricultural fields) within the SAC.

The route corridor option area was not accessible for surveys during the 2024/2025 wintering bird survey period. However, it is assumed that it is utilised by wintering birds given its proximity to the SPA and given that Ballymascanlan Estuary and the adjacent agricultural lands are known to host internationally important numbers of wintering bird species (NPWS, 2011b). Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, artificial lighting).

The route corridor option area is not currently accessible to the public. It will also be constructed on a flood embankment directly adjacent to the Dundalk Bay SPA. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of the Dundalk Bay SPA as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.4 Route Option A5 & A6 (Node 4 – 12)

Corridor A5 and A6 (Node 4 to Node 12) is c. 4.8km in length and is an inland corridor. It travels northeast from the R173 at Node 4 along local roads as far as Upper Deerpark, where it changes to a southeasterly trajectory to travel through a number of agricultural fields adjacent to Trumpet Hill pNHA west of Node 12. This route corridor option is anticipated to be constructed within agricultural land and on existing roads.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, which are located c. 50m and c. 280m (respectively) from the start-point at

Node 4, south of the R173. Beyond this start-point, this route corridor option is an inland corridor. Given the intervening lands, roads and buildings between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Trumpet Hill pNHA

This route corridor option runs directly adjacent to the southern boundary of Trumpet Hill pNHA, which is also classified a long-established semi-natural broadleaf woodland (Perrin & Daly, 2010). There is a small overlap of c. 180m in length between the route corridor option boundary and the pNHA boundary at its southeastern end. This section of the route corridor option is expected to be constructed within agricultural land to the south of Trumpet Hill pNHA, rather than within the woodland. As such, no habitat loss within the pNHA will occur as a result of the construction of the route corridor option.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.5 Route Option A5 (Node 12 – 14)

Corridor A5 and A6 (Node 12 to Node 14) is c. 2.4km in length and is an inland corridor. It travels entirely through agricultural fields located between Node 12, c. 170m east of the L7086 Bellurgan and Node 14, c. 85m east of the R174, near Rockmarshall. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, both of which are located c. 400m from the endpoint at Node 14 south of the R173. Given the distance and intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will result in the loss of a small area of agricultural land which may support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of these areas will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

A small area of the Annex I habitat Transition Mires [7140] (NPWS, 2019a) is located in the agricultural area south of the corridor, c. 45m from the route corridor option boundary. This area was classified as a wetland area of international importance by the Louth Wetland Identification Survey [LWS ID: 23] (Foss et al., 2011). Given the distance between the route corridor option and this habitat and the minimal earthworks required during construction, no impacts will occur during the construction of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.6 Route Option A6 (Node 12 – 13)

Corridor A6 (Node 12 to Node 13) is c. 1.2km in length and is an inland corridor. It travels in a southeasterly direction through agricultural fields located between Node 12, c. 170m east of the L7086 Bellurgan and Node 13, located at the intersection between the L3084 and the R173. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, both of which are located c. 170m from the endpoint at Node 13 south of the R173. Given the intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will result in the loss of a small area of agricultural land which may support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of these areas will have a negligible impact on wintering birds.

Given that this route is not hydrologically connected to any European sites, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

Non-designated Annex I Habitats

A small area of the Annex I habitat Transition Mires [7140] (NPWS, 2019) is located the agricultural area east of the L7084 within the route corridor option boundary. This area was classified as a wetland area of local importance in the Louth Wetland Identification Survey [LWS ID: 21] (Foss et al., 2011). The route corridor option is anticipated to be constructed west of the L7084, rather than within this wetland area. Therefore, no impacts to this habitat will occur during the construction of the route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of

short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.7 Route Option A1 (Node 9 – 13)

Corridor A1 (Node 9 to Node 13) is c. 2.65km in length. This is a coastal corridor. It travels in an easterly direction from agricultural fields located beside Ballymascanlan Estuary at Node 9 along the Bellurgan Road as far as Node 13, located on the R173. This route corridor option will be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. The southern boundary of the route corridor option and the northern boundary of the Dundalk Bay SPA overlap for most of its length along the coast. The boundaries of the Dundalk Bay SAC and this route corridor option are adjacent to one another for most of its length. The boundaries of this SAC and the route corridor option also overlap for a distance of c. 460m southwest of Node 13 within the lands directly adjacent to the west of Loughview Boarding Kennels in Bellurgan.

The construction of this route corridor option will potentially result in the loss of Qualifying Interest habitats (Tidal Mudflats and Sandflats, Atlantic Salt Meadows and Estuaries) and non-Qualifying Interest habitat (agricultural fields) within the SAC.

Although no wintering bird surveys were carried out during the 2024/2025 survey period within the agricultural lands around Node 9 adjacent to the Dundalk Bay SPA/Ballymascanlan Estuary as this area is not publicly accessible, it is assumed that it is utilised by wintering birds given its proximity to the SPA and given that internationally important numbers of birds have been recorded at Ballymascanlan Estuary (NPWS, 2011b). Furthermore, a high number of wintering bird species that are qualifying interests of nearby SPAs which are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021) were recorded in the estuary/mudflat areas adjacent to these agricultural lands. Similarly, high numbers of designated wintering birds were also recorded in the estuary, mudflats and saltmarsh areas of the SPA southwest of Node 13 during the 2024/2025 survey period. Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in these areas as a result of construction activities (increased noise, vibration, artificial lighting).

The operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests from the Dundalk Bay SPA as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.8 Route Option A1 (Node 13 – 14)

Corridor A1 (Node 13 to Node 14) is c. 1.44km in length. It travels in a southeasterly direction along the R173 between Jenkinstown and Annaloughan. This route corridor option is expected to be built within an existing road.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, the boundaries of which overlap with the southern boundary of this route corridor option. However, this route corridor option is anticipated to be constructed within the existing R173 road corridor, rather than within the SAC/SPA. Thus, no potential disturbance impacts arising during the construction and operation of this route corridor will occur at these sites due to the existing hedgerow/treelines located along the R173 which will screen these sites from this route corridor option.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

A small area of the Annex I habitat Transition Mires [7140] is located in the agricultural lands north of the R173 around Node 14 (NPWS, 2019a). This area was classified as a wetland area of international importance in the Louth Wetland Identification Survey [LWS ID: 23] (Foss et al., 2011). This route corridor option is expected to be constructed within the existing R173 road corridor and an additional 2m wide section of this agricultural area may be required. Given the intervening minimum distance (c. 80m) between the route corridor option and this habitat, no impacts will occur to this wetland area during construction.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.9 Route Option A3 (Node 4 – 13)

Corridor A3 (Node 4 to Node 13) is c. 5km in length. It travels southeast from Ballymascanlan Hotel & Golf Resort at Node 4 along the R173 as far as Node 13 at Jenkintown. This route corridor option is likely to be constructed within agricultural land and an existing road.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. The northernmost boundary of the Dundalk Bay SAC and the southernmost boundary of this road corridor option overlap for a distance of c. 1.5km along the R173 between Node 4 and Marsh Road. The Dundalk Bay SPA is located c. 90-180m from this route corridor option in the areas south of Node 4 and Node 13.

Between Node 4 and the Marsh Road (1.5km southeast and 200m northwest of Node 8), Corridor A3 (Node 4 to Node 13) is expected to be built within the existing R173 road corridor. From this point to Node 13 in Jenkintown, this route corridor option is anticipated to either be built within the existing road corridor or in the adjacent agricultural lands. As such, no habitat loss within the SAC will occur as a result of the construction of this route corridor option.

Additionally, given the screening provided by existing hedgerows/treelines, intervening lands and buildings between this route corridor option and the Dundalk Bay SPA, potential disturbance impacts to wintering birds arising during the construction and operation of this route corridor option will not occur at this site.

The construction of this route corridor option will result in the loss of some minor strips of agricultural land adjacent to the R173 which may support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of these areas will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option. This route corridor option is likely to be constructed within agricultural land.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.7.10 Route Option L2 (Node 8 – 9)

Corridor A4-1 (Node 8 to Node 9) is c.1.4km in length and travels from the R173 at Node 8 in a southerly direction through agricultural lands south of Marsh Road before terminating c. 200m northwest of Bellurgan Point at Node 9.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. This route corridor option travels directly through the SAC for most of its length. This route corridor option and the Dundalk Bay SPA are adjacent to one another in the agricultural lands beside Ballymascanlan Estuary at Node 9.

The construction of the route corridor option will potentially result in the loss of non-Qualifying Interest habitats (agricultural fields) within the SAC.

The route corridor option area was not accessible for surveys during the 2024/2025 wintering bird survey period. However, that it is assumed that it is utilised by wintering birds given its proximity to the SPA and given that Ballymascanlan Estuary and the adjacent agricultural lands are known to host internationally important numbers of wintering bird species (NPWS, 2011b). Therefore, there is potential for the construction of this route corridor option to result

in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, and artificial lighting).

The route corridor option area is not currently accessible to the public. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of nearby SPAs from the Dundalk Bay SPA as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8 Section B Options Appraisal

4.3.8.1 Route Option B1 (Node 14 – 20)

Corridor B1 (Node 14 to Node 20) is c. 4.5km in length and is an inland corridor. It travels east from Annaloughan at Node 14 along the R173 through Lordship before terminating at Loughanmhór. This route corridor option is expected to be constructed within agricultural land and an existing road.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, both of which overlap with this route corridor option for a distance of c. 140m at Node 14. In this area, this route corridor option will be constructed within the existing road corridor rather than the SAC/SPA. For the remainder of its length, this route corridor option is anticipated to travel inland. Thus, no construction within the SAC will occur and no potential disturbance impacts within either of these sites will occur during the construction or operational phase of this route corridor option.

This route corridor option travels adjacent to several agricultural fields outside of the Dundalk Bay SPA south of the R173 between Node 15 at Rockmarshall and Node 17 at Lordship that were utilised by multiple bird species designated as Qualifying Interests in the SPA which are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021) during 2024/2025 wintering bird surveys. However, this route corridor option will be constructed within the existing road corridor in this area. Thus, given the screening provided by existing hedgerows/treelines, intervening lands and buildings, potential ex-situ disturbance impacts to designated wintering birds during the construction and operation of this route corridor will not occur.

Between the junction of the R173 with Cluain na Táin Road in the east of Lordship and Node 20 (c.480m in length), the construction of this route corridor option will likely result in the loss of some minor strips of agricultural land which may support wintering bird species that are qualifying interests of nearby SPAs. However, given that no birds were recorded in these fields during the 2024/2025 survey period and the abundance of more suitable alternative habitat closer to the coast, the potential loss of these areas will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.2 Route Option B2 (Node 14 – 19)

Corridor B2 (Node 14 to Node 19) is c. 3.9km in length and is an inland corridor. It travels eastward from Annaloughan at Node 14, running parallel to the R173 through agricultural lands before terminating at the L7078 Piedmont. This route corridor option is expected to be constructed within agricultural land and an existing road.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, both of which overlap with this route corridor option for a distance of c. 140m at Node 14. In this area, this route corridor option is anticipated to be constructed within the existing road corridor rather than the SAC/SPA. For the remainder of its length, this route corridor option travels inland. Thus, no construction within the SAC will occur and no potential disturbance impacts at either of these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.3 Route Option B3 (Node 14 – 19)

Corridor B3 (Node 14 to Node 19) is c. 3.9km in length and is an inland corridor. It travels eastward from Rockmarshall at Node 14, running parallel to the R173 through agricultural lands south of Rampark Hill before terminating at the L7078 Piedmont. This route corridor option is expected to be constructed within agricultural land and an existing road.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, which are located c. 400m from the start-point at Node 14 south of the R173. Given the distance and intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

A small area of the Annex I habitat Transition Mires [7140] (NPWS, 2019a) is located in the agricultural area south of Node 14, c. 45m from the route corridor option boundary. This area was classified as a wetland area of international importance by the Louth Wetland Identification Survey [LWS ID: 23] (Foss et al., 2011). Given the distance between the route corridor option and this habitat and the minimal earthworks required during construction, no impacts will occur during the construction of the route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.4 Route Option B2 (Node 19 – 20)

Corridor B2 (Node 19 to Node 20) is c. 939m in length and is an inland corridor. It travels through agricultural lands eastward from the L7078 Piedmont at Node 19 before terminating

north of the R173 beside Newtown Cemetery. This route corridor option is expected to be constructed within agricultural land.

European sites

This route is not hydrologically connected to any European sites. Therefore, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area agricultural land located north of Loughanmhór which may support wintering bird species that are qualifying interests of nearby SPAs. However, given that no birds were recorded in these fields during the 2024/2025 survey period and the abundance of more suitable alternative habitat closer to the coast, the potential loss of these areas will have a negligible impact on wintering birds.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.5 Route Option B1 (Node 20 – 21)

Corridor B1 (Node 20 to Node 20) is c. 588m in length and is an inland corridor. It travels eastward from Newtown Cemetery in Loughanmhór along the R173 as far as Node 21, west of Carlingford Brewing Company. This route corridor option is anticipated to be built within an existing road corridor.

European sites

This route is not hydrologically/functionally connected to any European sites. Therefore, no impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.6 Route Option B1 (Node 21 – 23)

Corridor B1 (Node 21 to Node 23) is c. 2km in length and is an inland corridor. It travels eastward from Node 21 which is located west of Carlingford Brewing Company, along the R173 as far as Node 23, which is located at the intersection between the R173 and the R175 at The Bush. This route corridor option is expected to be constructed within agricultural land and an existing road corridor.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, which are located c. 900m south of the start-point at Node 21. Given the distance and intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of land immediately adjacent to the R173 which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given that no birds were recorded in these fields during the 2024/2025 survey period and the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.7 Route Option B2 (Node 20 – 23)

Corridor B2 (Node 20 to Node 23) is c. 2.5km in length and is an inland corridor. It travels eastward from Newtown Cemetery at Node 20 through agricultural lands as far as Node 23, located at the intersection between the R173 and the R175 at The Bush. This route corridor option is expected to be constructed within agricultural land and an existing road corridor.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, which are located c. 1.2km south of the start-point at Node 20. Given the distance and intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying

interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.8 Route Option B3 (Node 19 – 23)

Corridor B3 (Node 19 to Node 23) is c. 4km in length and is an inland corridor. It travels eastward from the L7078 Piedmont at Node 19 through agricultural lands before terminating at the intersection between the R173 and the R175 at The Bush. This route corridor option is expected to be constructed within agricultural land and an existing road corridor.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, which are located c. 1.2km south of the start-point at Node 19. Given the distance and intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.9 Route Option B4 (Node 14 – 21-A)

Corridor B4 (Node 14 to Node 21-A) is c. 6.5km in length. This is a coastal corridor. It travels in an easterly direction through agricultural lands which are adjacent to the coast between Annaloughan at Node 14 and Castlecarragh at Node 21-A. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. For most of its length, the southern boundary of this route corridor option and the northern boundaries of the Dundalk Bay SAC and the Dundalk Bay SPA overlap.

The construction of the route corridor option will potentially result in loss of Qualifying Interest habitats (Estuaries, Tidal Mudflats and Sandflats, Perennial vegetation of Stony Banks, Atlantic Salt Meadows) and non-Qualifying Interest habitat (agricultural fields) within the SAC.

During the 2024/2025 survey period, various areas within/adjacent to this route corridor option were regularly utilised as roosting/foraging areas by high numbers of wintering bird species that are qualifying interests of nearby SPAs which are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021); in particular: the saltmarsh area south of Node 14 at Annaloughan, the agricultural fields/lake areas south of Node 17 at Rampark Lake [LWS ID: 26] and the agricultural land/rocky shoreline area around Node 21-A at the easternmost extent of Castlecarragh Bay Beach. Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, artificial lighting).

Much of the route corridor option area is not currently accessible to the public. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of nearby SPAs from the Dundalk Bay SPA as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

The fields with two small lakes south of Rampark/Lordship beside the coast were classified as a wetland area of local importance in the Louth Wetland Identification Survey [LWS ID: 26] (Foss et al., 2011). As this route corridor is located c. 50m south of these lake areas, no impacts to this wetland area are expected to occur during the construction or operational phases.

4.3.8.10 Route Option B4 (Node 21-A - 25)

Corridor B4 (Node 21-A to Node 25) is c. 1.6km in length. This is a coastal corridor. It travels in an easterly direction through agricultural lands which are adjacent to the coast between Castlecarragh at Node 21-A and Node 25. This route corridor option is expected to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. The southern boundary of this route corridor option and the northern boundary of the Dundalk Bay SAC overlap within the agricultural field at Node 21-A, at which point it is also directly adjacent to the Dundalk Bay SPA. East of Node 21-A, the route corridor option is briefly adjacent to the easternmost extent of the Dundalk Bay SAC, from which point it proceeds eastward away from these European sites.

The construction of the route corridor option will potentially result in loss of Qualifying Interest (Perennial vegetation of stony banks [1220]) and non-Qualifying Interest habitat (agricultural fields) within the SAC.

During the 2024/2025 survey period, the agricultural land/rocky shoreline area (adjacent to the Dundalk Bay SPA) around Node 21-A at the easternmost extent of Castlecarragh Bay Beach was utilised by high numbers of designated wintering bird which are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021) as a roosting/foraging area. Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, artificial lighting).

The route corridor option area is not currently accessible to the public. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of nearby SPAs as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

A small area of the Annex I habitat Transition Mires [7140] (NPWS, 2019a) is located in the agricultural area northeast of Node 21-A, c. 10m north of the route corridor option boundary. This area was classified as a wetland area of county importance by the Louth Wetland Identification Survey [LWS ID: 28] (Foss et al., 2011). Given the distance between the route corridor option and this habitat and the minimal earthworks required during construction, no impacts to this habitat will occur during the construction of the route corridor option.

The Annex I habitat Large Shallow Inlets and Bays [1160] is located along the southern boundary of this route corridor option between Node 21-A and Node 25 (NPWS, 2019c). This route corridor option is hydrologically connected to this aquatic habitat. However, standard

mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to this habitat.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.8.11 Route Option L3 (Node 21 – 21-A)

Corridor L3 (Node 21 to Node 21-A) is c. 1.2km in length. It travels in a southerly direction from the R173 along an access track before proceeding through agricultural lands which are adjacent to the coast at Node 21-A, at the easternmost extent of Castlecarragh Bay Beach. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA. The southern boundary of this route corridor option and the northern boundary of the Dundalk Bay SAC overlap within the agricultural field at Node 21-A, at which point it is also directly adjacent to the Dundalk Bay SPA.

The construction of the route corridor option will potentially result in loss of Qualifying Interest habitat (Perennial vegetation of stony banks [1220]) and non-Qualifying Interest habitat (agricultural fields) within the SAC.

During the 2024/2025 survey period, the agricultural land/rocky shoreline area (adjacent to the Dundalk Bay SPA) around Node 21-A at the easternmost extent of Castlecarragh Bay Beach was utilised by high numbers of designated wintering bird which are also amber and red-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021) as a roosting/foraging area. Therefore, there is potential for the construction of this route corridor option to result in loss of supporting habitat and a temporary increase in disturbance levels to wintering birds in the area as a result of construction activities (increased noise, vibration, artificial lighting).

The route corridor option area is not currently accessible to the public. Therefore, the operation of the route corridor option will potentially result in a long-term increase in human disturbance levels to wintering bird species that are qualifying interests of nearby SPAs as a result of the presence of people and dogs in the route corridor option area.

This route corridor option is hydrologically connected to the Dundalk Bay SAC and to the Dundalk Bay SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites.

Non-designated Annex I Habitats

The Annex I habitat Large Shallow Inlets and Bays [1160] is located along the southern boundary of this route corridor option between southeast of Node 21-A. This route corridor option is hydrologically connected to this aquatic habitat. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to this habitat.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and

widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9 Section C Options Appraisal

4.3.9.1 Route Option C2 (Node 23 – 31)

Corridor C2 (Node 23 to Node 31) is c. 1.3km in length and is an inland corridor. It travels in a northeasterly direction along the R175 from the Bush at Node 23 to Grange at Node 31. This route corridor option is anticipated to be built within an existing road corridor.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, both of which are located c. 2.4km southwest the start-point at Node 23. Given the intervening lands and roads between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

Given that this route is not hydrologically connected to any European sites, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

The construction of this route corridor option will not result in the loss of any habitat which has the potential to support wintering bird species that are qualifying interests of nearby SPAs.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to be built entirely within the existing road corridor. Therefore, there will be no impacts to any natural habitats during the construction and operation of the route corridor option.

4.3.9.2 Route Option C2 (Node 31 – 43)

Corridor C2 (Node 23 to Node 31) is c. 3.4km in length and is an inland corridor. It travels in a northeasterly direction along a disused railway line and through agricultural fields from Grange at Node 31 to Mullatee at Node 43. This route corridor option will likely result in impacts to both agricultural land and to a disused railway.

European sites

The closest European site to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA, both of which are located c. c. 150m east of the endpoint at Node 23. Given the intervening lands, road and buildings between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

Given that this route is not hydrologically connected to any European sites, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

The construction of the route corridor option within agricultural lands and on the disused railway will likely result in the potential loss of scrub, woodland and hedgerow/treeline habitat which is utilised by a number of bird, mammal (including bats) and invertebrate species for breeding, foraging and commuting. The construction and operation of the route corridor option will also result in potential disturbance to these species as a result of construction activities (increased noise, vibration, artificial lighting) and increased human disturbance. Given that this route corridor option is located almost entirely along the disused railway (which is overgrown with scrub and woodland), it is likely to have a greater impact to these ecological receptors than other route corridor options.

A small pond is located within the route corridor option boundary c. 250m north of Cooley Kickham GFC. Standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to this aquatic habitat.

4.3.9.3 Route Option C9 (Node 31 – 41)

Corridor C9 (Node 31 to Node 41) is c. 2.9km in length and is an inland corridor. It travels entirely along the R175 from Node 31 at Grange to Node 41 at the intersection between the R175 and the R176 at Muchgrange. This route corridor option is anticipated to be built within an existing road corridor.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA, both of which are located c. 800m north from the endpoint at Node 41. Given the distance and intervening lands, roads and buildings between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

This route corridor option is hydrologically connected to the Carlingford Shore SAC and to the Carlingford Shore SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to designated habitats and bird species at these sites.

The construction of this route corridor option will not result in the loss of any habitat which has the potential to support wintering bird species that are qualifying interests of nearby SPAs.

Non-designated Annex I Habitats

Two Annex I habitats - Alkaline Fens [7230] and Calcareous Fens [7120] – are located within the northern boundary of this route corridor option at Node 41 at the intersection between the R175 and the R176 at Muchgrange (NPWS, 2019a). Calcareous Fens [7120] is a priority Annex I habitat. This area was classified as a wetland area of county importance in the Louth Wetland Identification Survey [LWS ID: 54] (Foss et al., 2011). As this route corridor option is

anticipated to be constructed within the existing R175 corridor, no loss of these habitats will occur as a result of the construction of this route corridor option.

This route corridor option is also hydrologically connected to these habitats and to a further occurrence of the priority Annex I habitat Coastal Lagoons [1150] at Greenore Golf Club (NPWS, 2019e). Standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats.

Semi-natural Habitats

The construction of the route within this corridor option will likely result in the loss of small sections of hedgerow / treeline habitat which are utilised by a number of bird, mammal (including bats) and invertebrate species for breeding, foraging and commuting. The construction and operation of the route corridor option will also result in potential disturbance to these species as a result of construction activities (increased noise, vibration, artificial lighting) and increased human disturbance. These are widespread and common habitats. Given the abundance of similarly suitable habitat in the wider area, this will not have a significant impact.

4.3.9.4 Route Option C5 (Node 25 – 28)

Corridor C5 (Node 25 to Node 28) is c. 1.5km in length. This is a coastal corridor. It travels in an easterly direction through agricultural lands which are adjacent to the Rathcor Bay Beach between Node 25 and Node 28. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European sites to this route corridor option are the Dundalk Bay SAC and the Dundalk Bay SPA, located c. 1.3km west of this route corridor option.

The route corridor option area was not accessible for surveys during the 2024/2025 wintering bird survey period as it was not publicly accessible. However, it is assumed that it is utilised by wintering birds given its proximity to nearby SPAs and known wintering bird areas at Castlecarragh Bay Beach and Cooley Point, as recorded during the 2024/2025 survey period. Therefore, there is potential for the construction of this route corridor option to result in ex-situ impacts to designated wintering birds as a result of in loss of supporting habitat and an increase in disturbance levels in the route corridor option area during construction (increased noise, vibration, artificial lighting).

The operation of the route corridor option will potentially result in ex-situ impacts to wintering bird species that are qualifying interests of nearby SPAs via a long-term increase in human disturbance levels in the route corridor option area as a result of the presence of people and dogs.

Given that this route is not hydrologically connected to any European sites, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

Non-designated Annex I Habitats

This route is expected to be constructed in agricultural fields on top of/directly adjacent to the Annex I habitat Vegetated Sea Cliffs of the Atlantic and Baltic coasts [1230] at Rathcor Bay Beach (NPWS, 2019b). A recent study within the route corridor option area has also indicated the presence of the priority Annex I habitat Petrifying Springs with Tufa Formation (*Cratoneurion*) [7220] between Rathcor Beach and Shellinghill (east of Node 28) (Flynn Ecology, 2025). The construction and operation of the route corridor option near these

habitats will potentially result in degradation/loss of these habitats. However, the route will not be constructed within these habitats and degradation during operation will be avoided through the use of fencing to prevent incursion into these habitats.

The Annex I habitat Large Shallow Inlets and Bays [1160] is located along the southern boundary of this route corridor option between Node 25 and Node 28. This route corridor option is hydrologically connected to this aquatic habitat. Standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to this aquatic habitat as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.5 Route Option C5 (Node 28 – 35)

Corridor C5 (Node 28 to Node 35) is c. 2.7km in length. This is a coastal corridor. It travels in an easterly direction through agricultural lands which are adjacent to the coast from Rathcor Bay Beach at Node 25 to Cooley Point at Node 35.

European sites

The closest European site to this route corridor option are the Carlingford Shore SAC located c. 1.5km east of this route corridor option.

The route corridor option area was generally not accessible for surveys during the 2024/2025 wintering bird survey period as it was not publicly accessible, except along the road leading to Rathcor Beach. However, it is assumed that it is utilised by wintering birds given its proximity to nearby SPAs and known wintering bird areas, as recorded during the 2024/2025 survey period. Therefore, there is potential for the construction of this route corridor option to result in ex-situ impacts to designated wintering birds as a result of loss of supporting habitat and an increase in disturbance levels in the route corridor option area during construction (increased noise, vibration, artificial lighting).

The operation of the route corridor option will potentially result in ex-situ impacts to wintering bird species that are qualifying interests of nearby SPAs via a long-term increase in human disturbance levels in the route corridor option area as a result of the presence of people and dogs.

This route corridor option is hydrologically connected to the Carlingford Shore SAC. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to the aquatic habitats at this site as a result of the route corridor option.

Non-designated Annex I Habitats

This route is anticipated to be constructed in agricultural fields on top of/directly adjacent to the Annex I habitat Vegetated Sea Cliffs of the Atlantic and Baltic coasts [1230] at Rathcor Bay Beach (NPWS, 2019b). A recent study within the route corridor option area has also indicated the presence of the priority Annex I habitat Petrifying Springs with Tufa Formation (*Cratoneurion*) [7220] between Rathcor Beach and Shellinghill (east of Node 28) (Flynn Ecology, 2025). The construction and operation of the route corridor option near these habitats will potentially result in degradation/loss of these habitats. However, the route is not

likely to be constructed within these habitats and degradation during operation will be avoided through the use of fencing to prevent incursion into these habitats.

The Annex I habitats Large Shallow Inlets and Bays [1160] and Tidal and Mudflats and Sandflats [1140] are located along the southern boundary of this route corridor option between Node 28 and 35. This route corridor option is hydrologically connected to these habitats. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is expected to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.6 Route Option C5 (Node 35 – 38)

Corridor C5 (Node 35 to Node 38) is c. 6.2km in length. This is a coastal corridor. It travels in a northeasterly direction from Cooley Point at Node 35 to Rubie's Overlook along the Greenore Road before proceeding northward to Node 38 at Ballagan, utilising a mixture of access tracks, agricultural land and existing roads. This route corridor option will likely follow agricultural lands and an existing road corridor.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA. The boundaries of this route corridor option and the Carlingford Shore SAC overlap for a distance of c. 1.5km from Rubie's Overlook northward to Node 38. All remaining non-overlapping sections of this route corridor option are directly adjacent to this European site. The boundaries of this route corridor option and the Carlingford Shore SPA overlap for a distance of c. 900m from Rubie's Overlook northward to Node 38. All remaining non-overlapping sections of this route corridor option in this area are directly adjacent to this European site.

With the exception of the agricultural lands adjacent to Cooley Beach and Whitestown Beach immediately northeast of Node 38, this route corridor option is anticipated to be implemented within an existing shared road. This will require minimal works, generally comprising updates to road markings and signage. As such, no construction-related disturbance impacts to European sites will occur along the majority of this route corridor option (c. 4.6km).

However, the remaining distance (comprising c. 1.6km), will likely be constructed within the agricultural lands which are adjacent to the northwest and northeast of Cooley Point. No wintering bird surveys were carried out within this area during the 2024/2025 survey period as it would have required disturbing the high numbers of wintering birds present at Cooley Point. However, given the close proximity to this known wintering bird foraging/roosting area and to the Dundalk Bay SPA and the Carlingford Shore SPA, the agricultural fields present within this section of this route corridor option are considered to be similarly suitable for wintering birds designated as part of these SPAs.

Therefore, there is potential for the construction of this route corridor option in these agricultural lands to result in ex-situ impacts to designated wintering birds as a result of loss of supporting habitat and an increase in disturbance levels in the route corridor option area during construction (increased noise, vibration, artificial lighting).

During the 2024/2025 survey period, a high number of wintering bird species that are qualifying interests of nearby SPAs were recorded in the intertidal areas in the Carlingford Shore SAC/the Carlingford Shore SPA adjacent to the route corridor option along the coastal road between Rubie's Overlook and Node 38 and adjacent agricultural fields. These intertidal areas are used for the purposes of aquaculture. As such, there is currently disturbance to wintering birds in this area as a result of aquacultural workers accessing wintering bird foraging areas during low tide. However, it is anticipated that there will be an increase in people and dogwalkers along all sections of the route corridor option during all tidal states during the operational phase.

Therefore, there is potential for increased disturbance to wintering bird species that are qualifying interests of nearby SPAs during the operation of this route corridor option.

This route corridor option is hydrologically connected to the Carlingford Shore SAC. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to the aquatic habitats at this site.

Non-designated Annex I Habitats and breeding Sand Martin

This route is anticipated to be constructed in agricultural fields on top of/directly adjacent to the Annex I habitat Vegetated Sea Cliffs of the Atlantic and Baltic coasts [1230] at Cooley Point. These cliffs are utilised by breeding Sand Martin (*Riparia riparia*) during the 2024 breeding season. Sand Martin is amber-listed as part of the latest BoCCI assessment (Gilbert *et al.,* 2021). Increased noise, vibration, artificial lighting during construction in this area has the potential to result in disturbance impacts to breeding Sand Martin. Additionally, the construction and operation of the route corridor option near the cliffs habitat will potentially result in habitat loss/degradation of nest sites. However, the route will not be built close to the cliff edge and damage to the cliffs during operation will be avoided through the use of fencing to prevent incursion into this habitat.

The Annex I habitats Large Shallow Inlets and Bays [1160] and Tidal and Mudflats and Sandflats [1140] are located at Templetown Beach beside Node 35 (NPWS, 2019c, 2019d). This route corridor option is hydrologically connected to these habitats. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to these aquatic habitats as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.7 Route Option C5 (Node 38 – 42)

Corridor C5 (Node 38 to Node 42) is c. 1.5km in length and is expected to travel through agricultural land and on a local road (L70662 Greenore). It travels in a north-westerly direction through agricultural fields from Ballytrasna at Node 38 to the intersection between the R175 and the L70662 (Greenore) at Node 42.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA, both of which are adjacent the east of the route corridor option in the agricultural lands around Cooley Oysters (north of Node 38). The construction of this route corridor option in this area will likely result in the loss of a small area of agricultural fields which

has the potential to support wintering birds from the SPA. However, given that no birds were recorded in these fields during the 2024/2025 wintering bird survey period and the abundance of suitable habitat in the wider area, the potential loss of these areas is not expected to have any significant impact on wintering birds.

During the 2024/2025 survey period, a high number of wintering bird species that are qualifying interests of nearby SPAs were recorded in the intertidal areas in the Carlingford Shore SAC/the Carlingford Shore SPA adjacent to the route corridor option along the coastal road between Rubie's Overlook and Node 38 and adjacent agricultural fields. These intertidal areas are used for the purposes of aquaculture. As such, there is currently disturbance to wintering birds in this area as a result of aquacultural workers accessing wintering bird foraging areas during low tide. However, it is anticipated that there will be an increase in people and dogwalkers along all sections of the route corridor option during all tidal states during the operational phase. Therefore, there is potential for increased disturbance to wintering bird species that are qualifying interests of nearby SPAs during the operation of this route corridor option.

Given that this route is not hydrologically connected to any European sites, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

Non-designated Annex I Habitats

No records of non-designated Annex I habitats functionally or hydrologically connected to this route corridor option were identified during the desk study. Therefore, no impacts to this ecological receptor are expected to arise as a result of the construction and operation of this route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.8 Route Option C10 (Node 38 – 41)

Corridor C10 (Node 38 to Node 41) is c. 1.5km in length and is an inland corridor. It travels in a north-westerly direction along a local road/through agricultural fields from Ballytrasna at Node 38 to the intersection between the R175 and the R176 at Muchgrange. This route corridor option is anticipated to travel through agricultural lands and along a local road corridor.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA, which are adjacent to the east of start-point of the route at Node 38. Beyond this start-point, this route corridor option is an inland corridor. This section of the route will be implemented on a shared road, requiring minimal works generally comprising updates to road markings and signage. As such, no disturbance impacts arising during the construction or operational phase of this route corridor option will occur at these European sites.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land along the Muchgrange Road which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Carlingford Shore SAC and to the Carlingford Shore SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites as a result of the route corridor option.

Non-designated Annex I Habitats

Two Annex I habitats - Alkaline Fens [7230] and Calcareous Fens [7120] – are located within the northern boundary of this route corridor option along the Muchgrange Road (NPWS, 2019a). Calcareous Fens [7120] is a priority Annex I habitat. This area was classified as a wetland area of local importance and the area east of the Muchgrange has been classified as a wetland area of local importance in the Louth Wetland Identification Survey [LWS ID: 53]. The construction of this route corridor option will potentially result in the direct loss of these habitats.

Additionally, this route corridor option is hydrologically connected to a further record of each of these habitats north of the R175 and to a record of Coastal Lagoons [1150] in Greenore Golf Club, a priority Annex I habitat (NPWS, 2019a, 2019e). However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats as a result of the route corridor options.

This route corridor option terminates at the R175/R176 intersection. Therefore, it will not be constructed within areas of Annex I Alkaline Fens [7230] and Calcareous Fens [7210] habitat to the northeast of Node 41. Therefore, no impacts to these habitats will occur during the construction of this route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.9 Route Option C9 (Node 41 – 45)

Corridor C9 (Node 41 to Node 45) is c. 1.5km in length and is an inland corridor and is anticipated to primarily travelling along an existing road. It travels in a north-westerly direction from the intersection between the R175 and the R176 at Node 41 at Muchgrange to Euston Street at Node 45.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA between 130-280m east and west of this route corridor option at Node 45 south of the R173. Given the intervening lands, roads and buildings between the route corridor option and these sites, no potential disturbance impacts at these sites will occur during the construction or operational phase of this route corridor option.

The construction of this route corridor option will likely result in the loss of a small area of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat closer to the coast, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Carlingford Shore SAC and to the Carlingford Shore SPA. However, standard mitigation measures to prevent impacts to water

quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites as a result of the route corridor option.

Non-designated Annex I Habitats

Two Annex I habitats - Alkaline Fens [7230] and Calcareous Fens [7120] – are located within the northern and southern boundaries of this route corridor option along the R175 (NPWS, 2019a). Calcareous Fens [7120] is a priority Annex I habitat. The areas north and south of the R175 were classified as a wetland areas of local county importance in the Louth Wetland Identification Survey [LWS ID: 53 & 54] (Foss et al., 2011). This route corridor option will be constructed within a scrub buffer zone which separates the R173 from the wetland area to the south. Therefore, no impacts to these habitats will occur during the construction of this route corridor option.

Additionally, this route corridor option is hydrologically connected to a further record of each of these habitats north of the R175 and to a record of Coastal Lagoons [1150] in Greenore Golf Club, a priority Annex I habitat. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.10 Route Option C10 (Node 41 – 44)

Corridor C10 (Node 41 to Node 44) is c. 3.7km in length. It travels in a north-westerly direction through along R176 from Node 41 at Muchgrange to Carlingford Harbour at Node 45. This route corridor option is anticipated to be built within an existing road corridor.

European sites

The closest European sites to this route corridor option are the Carlingford Shore SAC and the Carlingford Shore SPA. The boundaries of this route corridor option and these European sites overlap for a distance of c. 680m along the R176.

During the 2024/2025 survey period, a number of wintering bird species that are qualifying interests of nearby SPAs were recorded in the agricultural fields east of the R176. This route corridor option will be constructed entirely within an existing busy road that is subject to HGV traffic. No construction within these European sites or adjacent agricultural lands will occur as a result of this route corridor option. Taking this high baseline level of disturbance into account and the existing screening provided by hedgerow/treelines and barriers which are likely to be retained between road and the SAC/SPA, it is not anticipated that there will be an increase in disturbance to wintering birds in the route corridor option area during the construction and operation.

This route corridor option is hydrologically connected to the Carlingford Shore SAC and to the Carlingford Shore SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites as a result of the route corridor option.

Non-designated Annex I Habitats

Two Annex I habitats - Alkaline Fens [7230] and Calcareous Fens [7120] which located within the eastern boundary of this route corridor option along the R176 north of Node 41 (NPWS, 2019a). Calcareous Fens [7120] is a priority Annex I habitat. These habitats north of Node 41 were classified as a wetland area of county importance in the Louth Wetland Identification Survey [LWS ID: 54] (Foss et al., 2011). The route corridor option is likely to be constructed entirely within the existing road, rather than this wetland area. Therefore, there will be no impacts to this wetland area as a result of the route corridor option.

Additionally, this route corridor option is hydrologically connected to these aquatic habitats and to a record of Coastal Lagoons [1150] in Greenore Golf Club, a priority Annex I habitat. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is expected to be built entirely within the existing road corridor. Therefore, there will be no impacts to any natural habitats during the construction and operation of the route corridor option.

4.3.9.11 Route Option C3-1 (Node 25 – 23)

Corridor C3-1 (Node 25 to Node 23) is c. 2.4km in length. It travels in a northerly direction through agricultural lands which span from the coastal area east of Rathcor Bay beach at Node 25 as far as the intersection between the R173 and R175 at the Bush at Node 23. This route corridor option is anticipated to be constructed within agricultural land.

European sites

This route is not hydrologically connected to any European sites. Therefore, no water quality impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

The construction of this route corridor option will likely result in the loss of agricultural fields which have the potential to support wintering birds. With the exception of two fields adjacent to the route corridor option utilised by low numbers of Black-headed Gull and (*Chroicocephalus ridibundus*) Common Gull (*Larus canus*). These two species are designated as Qualifying Interests in the Dundalk Bay SPA and are also amber-listed and as part of the latest BoCCI assessment (Gilbert *et al.,* 2021). No wintering bird species that are qualifying interests of nearby SPAs were recorded throughout most of this route corridor option during the 2024/2025 wintering bird survey period. Taking this into account along with the abundance of suitable habitat in the wider area, the potential loss of these areas will have a negligible impact on wintering birds.

Liscarragh Marsh pNHA

The boundaries of this route corridor option and Liscarragh Marsh pNHA overlap for a distance of c.140m. The route corridor option is also hydrologically connected to this nationally designated site. The mesotrophic lake and reed and sedge swamp habitat, Liscarragh Marsh were classified as a wetland area of national importance by the Louth Wetland Survey [LWS ID: 32] (Foss et al., 2011). However, construction is not expected to occur within Liscarragh Marash pNHA as a result of the route corridor option. Additionally, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to this site during the construction and operation of the route corridor option.

Non-designated Annex I Habitats

The Annex I habitat Large Shallow Inlets and Bays [1160] is located along the southern boundary of this route corridor option between Node 21-A and Node 25 (NPWS, 2019c). This route corridor option is hydrologically connected to this aquatic habitat. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to this aquatic habitat as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.12 Route Option C4-1 (Node 28 – 30)

Corridor C4-1 (Node 28 to Node 30) is c. 3 km in length. It travels in a northerly direction through agricultural lands which span from the coastal area east of Rathcor Bay beach at Node 28 as far as Node 30 along the R175 at Rath Lower. This route corridor option is anticipated to be constructed within agricultural land.

European sites

This route is not hydrologically connected to any European sites. Therefore, no impacts to this ecological receptor will occur during the construction and operational phases of this route corridor option.

The construction of this route corridor option will likely result in the loss of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat in the wider area, the potential loss of this area will have a negligible impact on wintering birds.

Non-designated Annex I Habitats

This route will likely be constructed in agricultural fields on top of, or directly adjacent to, the Annex I habitat Vegetated Sea Cliffs of the Atlantic and Baltic coasts [1230] at Rathcor Bay Beach (NPWS, 2019b). A recent study within the route corridor option area has also indicated the presence of the priority Annex I habitat Petrifying Springs with Tufa Formation (*Cratoneurion*) [7220] between Rathcor Beach and Shellinghill (east of Node 28) (Flynn Ecology, 2025). The construction and operation of the route corridor option near these habitats will potentially result in degradation/loss of these habitats. However, the route will not be constructed within these habitats and degradation during operation will be avoided through the use of fencing to prevent incursion into these habitats

Non-designated Annex I Habitats

The Annex I habitat Transition Mires [7140] and several other non-annex aquatic habitats (reed and sedge swamp, marsh, dystrophic lake, drainage ditch and mesotrophic lake habitat) within the route corridor option were classified as wetland areas of local importance by the Louth Wetland Survey [LWS ID: 42, 37, 39, 36] (Foss et al., 2011). It is not possible to avoid these habitats due to the tight constraints of the route corridor option area. Therefore, the construction of the route corridor option will potentially result in the direct loss of these habitats. Standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to these aquatic habitats as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.13 Route Option C6-1 (Node 35 – 31)

Corridor C6-1 (Node 35 to Node 31) is c. 3.5 km in length. It travels in a north-westerly direction through agricultural lands north of Templetown Beach at Node 35 as far as Node 31 along the R175 at Grange. This route corridor option is anticipated to be constructed within agricultural land.

European sites

The closest European site to this route corridor option is the Carlingford Shore SAC, located c. 50m south of the route corridor option boundary at Templetown Beach. No habitat loss within the SAC will occur as a result of the construction of this route corridor option.

The construction of this route corridor option will result in the loss of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. Excluding a single flock of 60 Common Gull recorded during one survey in February 2025, no wintering bird species that are qualifying interests of nearby SPAs were recorded in any agricultural fields within the route corridor option area during the 2024/2025 wintering bird survey period. Given the abundance of more suitable alternative habitat in the wider area, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Carlingford Shore SAC. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no impacts to aquatic habitats at this site as a result of the route corridor option.

Non-designated Annex I Habitats

The route corridor option is hydrologically connected to and travels c. 60m east of a record of the Annex I habitat Alkaline Fens at Our Lady's Well, Ballynamoney (Bradshaw) north of Node 35 [7230] (NPWS, 2019a). This area was classified as a wetland area of local importance by the Louth Wetland Survey [LWS ID: 44] (Foss et al., 2011). The route corridor option is not expected to be constructed within this wetland area and instead, is likely to be constructed within the adjacent agricultural land. Therefore, no impacts to this wetland will occur during the construction of this route corridor option. Furthermore, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to this wetland area as a result of the route corridor option as a result of the route corridor option.

Semi-natural Habitats

This route corridor option travels through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.9.14 Route Option C7 (Node 35 – 41)

Corridor C7 (Node 35 to Node 41) is c. 5.1 km in length. It travels in a northerly direction through agricultural lands north of Templetown Beach at Node 35 as far as Node 41 along the R175 at Muchgrange. This route corridor option is anticipated to be constructed within agricultural land and an existing road.

European sites

The closest European site to this route corridor option is the Carlingford Shore SAC, located c. 50m south of the route corridor option boundary at Templetown Beach. No habitat loss within the SAC will occur as a result of the construction of this route corridor option.

The construction of this route corridor option will likely result in the loss of agricultural land which has the potential to support wintering bird species that are qualifying interests of nearby SPAs. However, given the abundance of more suitable alternative habitat in the wider area, the potential loss of this area will have a negligible impact on wintering birds.

This route corridor option is hydrologically connected to the Carlingford Shore SAC and to the Carlingford Shore SPA. However, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to designated habitats and bird species at these sites as a result of the route corridor option.

Non-designated Annex I Habitats

The route corridor option boundary overlaps with a record of the Annex I habitats Alkaline Fens [7230] and Calcareous Fens [7230] at Muchgrange south of Node 40 (NPWS, 2019a). Calcareous Fens [7120] is a priority Annex I habitat. This area was classified as a wetland area of county importance by the Louth Wetland Survey [LWS ID: 51]. The route corridor option is not expected to be constructed within this wetland area and instead, is likely to be constructed within the adjacent agricultural land. Therefore, no impacts to this wetland will occur during the construction of this route corridor option. Furthermore, standard mitigation measures to prevent impacts to water quality during the construction of route corridor option will be applied. Therefore, there will be no water quality impacts to this wetland area as a result of the route corridor option as a result of the route corridor option.

Semi-natural Habitats

This route corridor option is anticipated to travel through agricultural land and will likely result in the loss of farmland, hedgerows and treelines. These habitats are very common and widespread and the loss of short sections to facilitate the greenway, in the context of the amount of similar habitat available, is not significant.

4.3.10 Assessment Summary

Table 4.3.4 Summary of Impact Ratings for Biodiversity

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 1 – 4)	1	Highly Negative
Option A4-1 (Node 4 - 9)	1	Highly Negative
Option A5 & A6 (Node 4 – 12)	3	Slight Negative
Option A5 (Node 12 – 14)	3	Slight Negative
Option A6 (Node 12 – 13)	3	Slight Negative
Option A1 (Node 9 – 13)	1	Highly Negative
Option A1 (Node 13 – 14)	3	Slight Negative
Option A3 (Node 4 – 13)	3	Slight Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option L2 (Node 8 – 9)	1	Highly Negative
Section B		
Option B1 (Node 14 – 20)	3	Slight Negative
Option B2 (Node 14 – 19)	3	Slight Negative
Option B3 (Node 14 – 19)	3	Slight Negative
Option B2 (Node 19 – 20)	3	Slight Negative
Option B1 (Node 20 - 21)	3	Slight Negative
Option B1 (Node 21 - 23)	3	Slight Negative
Option B2 (Node 20 – 23)	3	Slight Negative
Option B3 (Node 19 – 23)	3	Slight Negative
Option B4 (Node 14 – 21A)	1	Highly Negative
Option B4 (Node 21A - 25)	1	Highly Negative
Option L3 (Node 21 – 21-A)	1	Highly Negative
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	2	Negative
Option C9 (Node 31 – 41)	3	Slight Negative
Option C5 (Node 25 – 28)	1	Highly Negative
Option C5 (Node 28 – 35)	1	Highly Negative
Option C5 (Node 35 – 38)	1	Highly Negative
Option C5 (Node 38 – 42)	1	Highly Negative
Option C10 (Node 38 – 41)	1	Highly Negative
Option C9 (Node 41 – 45)	3	Slight Negative
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	3	Slight Negative
Option C4-1 (Node 28 – 30)	2	Negative
Option C6-1 (Node 31 – 35)	3	Slight Negative
Option C7 (Node 35 – 41)	3	Slight Negative

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4.4 Landscape and Visual Amenity

4.4.1 Introduction

Landscape and Visual Assessment (LVIA) is a tool used to identify the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

This section refers to the landscape and visual quality of the receiving environment, along with the high-level assessment of each of the Options proposed, and the preferred ranking of each

option. Along with this, the potential for opportunities for appreciation of the scenic qualities of the landscape and cultural heritage features, is also recognised.

A number of criteria related to Landscape and Visual elements are referred to in the Constraints report, and these are further development in this Options report.

This landscape and visual amenity options assessment has been prepared by Jamie Ball of Cunnane Stratton Reynolds (CSR). Jamie is a Senior Landscape Architect at CSR, with a BA Hons in Landscape Architecture (University of Gloucestershire) 1998 and is a Member of the Irish Landscape Institute (MILI).

4.4.2 Methodology

A number of policy and guidance documents are relevant to this study, which inform the methodology. These include both documents specific to Landscape and Visual Assessment, and guidance relating to the Options Appraisal stage, as well as design related guidance.

- The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, (UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA).
- Transport Appraisal Framework - Appraisal Guidelines for Capital Investments in Transport, Module 7 - Detailed Guidance on Appraisal Techniques. (Transport Infrastructure Ireland, 2023.)
- Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects - Overarching Technical Document PE-ENV-01101. TII (2020).
- Strategy for the Future Development of National and Regional Greenways. Department of Tourism, Transport and Sport (2018).
- Rural Cycleway Design (Offline & Greenway). Transport Infrastructure Ireland (2022).

It should be noted that while there is some recent TII LVIA -specific guidance (PE-ENV-01101 referred to above) relating to the various stages of the project cycle, including assessment and ranking of Options, the majority of this guidance, and the well-established GLVIA guidance, focuses mainly on the LVIA process of a particular development, rather than the process of options selection and MCA scoring.

Section 6.2.1 of the TII guidance on LVIA for Linear Infrastructure (PE-ENV-01101) notes that:

> *'The purpose of Stage 1 is to examine all feasible project options and to select a reduced number of options (or a preferred option for smaller projects) for further assessment.*
>
> *Multiple route or site options may be identified and the level of detailed project information available is likely to be very limited. Linear projects may only be defined as potential corridors and site-based projects (e.g. motorway service area) may only indicate indicative locations.*
>
> *Nevertheless, a proportionate LVIA must be carried out to allow for assessment of likely landscape and visual effects and for comparison and ranking of the options in a MCA.'*

This aligns closely with the process also set out in the GLVIA 2013 and in the EPA (2022), involving the preparation of the baseline or receiving environment characteristics. This includes two stages, which are a desk-based study and site visit/field study. These allow the assessor to establish the existing receiving environment and key landscape and visual characteristics and their sensitivities.

4.4.2.1 Desk Study

The process set out in the GLVIA 2013 and in the EPA (2022) as well as in the TII *PE-ENV-01101* (2020) involves the preparation of the baseline or receiving environment characteristics. This includes two stages, which are, firstly, a desk based study and, secondly, a site visit/field study. These allow the assessor to establish the existing receiving environment and key landscape and visual characteristics and their sensitivities.

The desk based study includes:

- Review of preliminary proposals and identification of preliminary study area.
- Review of the current County Development Plan within the study area, and any other plans as appropriate, to identify relevant national and local designations and polices.
- This may include designations such as scenic routes, protected views and other landscape designations including any Landscape Character Assessments International designations such as UNESCO designations would also be relevant here, if present.
- Other information that may be consulted include aerial imagery, OSI Discovery series mapping, historic (6-inch and 25 inch) mapping and CORINE Landcover Maps (2018).
- A site visit to review and/or confirm the findings of the desk based study and provide a more detailed description of the landscape and visual character of the study area. Based on both the desk study and site visit, the assessor identifies landscape and visual receptors and their relative sensitivity.

However, an initial desk study was carried out, albeit on a larger scale, for the Constraints and Feasibility study in March 2024. Therefore, refinement of the initial desk studies and updating to reflect the more targeted study areas of the Options, has been carried out with regard to the information outlined above. This is consistent with the TII (2020) methodology which is relevant to this Stage below:

In terms of methodology for the Desk based study for Phase 2 Stage 1 Options, the TII *PE-ENV-01101* (2020) requires:

- *'A review of the geographic extent of the identified options and appropriate level of detail for baseline study.*
- *A review of the identified options against the baseline landscape and visual information collected at the LCA stage (Section 4 of these Guidelines).'*

4.4.2.2 Fieldwork

In terms of methodology for Field Study the Phase 2 Stage 1 Options, the TII Guidance (2020) requires:

> *'An updated field study to prepare a focused refinement of the description and mapping of the landscape and visual information (character areas, types, features, designations, visual receptors, etc.) along or around each identified option. This will allow appropriate and proportionate assessment and comparison of likely significant effects.'*

Accordingly, in April 2025, an additional site visit was carried out both in the overall study area and in the vicinity of the route options corridors. It should be noted that these site visits were undertaken from public lands only, and as such some sections of the route corridor options within private lands could not be surveyed.

Based on both the desk study and site visit, the assessor then identified landscape and visual receptors and their relative sensitivity.

4.4.2.3 Assessment Criteria – Landscape Quality

The main principles of LVIA are set out in the GLVIA, regardless of development types. Therefore, these are first explained, and the typical methodology outlined for the assessment

of Landscape Effects with subsequent relevant notes from the TII *PE-ENV-01101* (2020) and the TAF (TII, 2023), in terms of the specific requirements for Phase 2 Stage 1 of the Options Selection process.

The GLVIA (LI/IEMA 2013) outlines the assessment process, which combines judgements on the sensitivity of the resource, and the magnitude of the change as a result of the proposed development. These are then combined to reach an assessment of the significance of the effect.

Another key distinction to make is that in the GLVIA methodology, a distinction is made between landscape effects and the visual effects of a proposed development.
'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA 2013 prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

The landscape effects of the development are assessed in Sections 4.4.4 to 4.4.6 of this report. Landscape impact assessment considers the likely nature and scale of changes to the main landscape elements and characteristics, and the consequential effect on landscape character and value. Existing trends of change in the landscape are taken into account. The potential effect is assessed based on measurement of the landscape sensitivity against the magnitude of change which would result from the development.

Landscape sensitivity

This includes consideration of landscape values as well as the susceptibility of the landscape to change. It also relates to the nature and scale of development proposed.

Landscape values can be identified by the presence of landscape designations or policies which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape. These are described further below.

Landscape susceptibility is defined in the GLVIA as the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies. Susceptibility also relates to the type of development – a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development.

For the purpose of assessment, in Table 4.4.1, below, five categories are used to classify the landscape sensitivity of the receiving environment:

Table 4.4.1 Categories of Landscape Sensitivity

Landscape Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principal management objective for the area is conservation of the existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principal management objective is to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Magnitude of Landscape Change:

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Five categories are used to classify magnitude of landscape change, from Very High sensitivity to Negligible. These categories are defined in Table 4.4.2, below:

Table 4.4.2 Magnitude of Landscape Change

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in alteration or compromise to key elements, features or characteristics, and/or introduction of large elements

Magnitude of Change	Description
	considered uncharacteristic in the context. Such development results in a moderate to large change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily uncharacteristic in the context. Such development results in moderate change to the character of the landscape.
Low	Change that is limited in extent, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is very limited in extent, resulting in no alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are characteristic in the context. Such development results in minimal change to the character of the landscape.

4.4.2.4 Assessment Criteria – Visual Quality

The high-level visual effects of the proposed development are assessed. Visual assessment considers the sensitivity of the viewers (i.e. groups of people) and the magnitude of the changes to the composition and character of views.

The significance of the visual effects experienced at these locations is assessed by measuring the visual receptor sensitivity against the magnitude of change to the view resulting from the proposed development.

While typically in an LVIA, the assessment is informed by a number of viewpoints selected to represent the range of visual receptors in the receiving environment, this is a high-level assessment of a high number of route options. Therefore, a more general commentary on potential visual effects is included only.

Sensitivity of the Visual Receptor

Visual receptor sensitivity is a function of two main considerations:

- Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention or interest is focussed on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience.

  Visual receptors less susceptible to change include travellers on road, rail and other transport routes (unless on recognised scenic routes which would be more susceptible), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.
- Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

For the purpose of assessment, five categories are used to classify visual receptor sensitivity. These categories range from Very High to Negligible and are described in Table 4.4.3, below:

Table 4.4.3 Categories of Visual Receptor Sensitivity

Sensitivity	Description
Very High	Viewers at iconic viewpoints - towards or from a landscape feature or area - that are recognised in policy or otherwise regarded as being of very high value or national value. This may also include residential viewers whose primary view is of very high value.
High	Viewers at viewpoints that are recognised in policy or otherwise designated as being of high value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and are valued by the local community. This would include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.
Medium	Viewers at viewpoints representing people travelling at slow or moderate speed through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.
Low	Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, or that it is regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be considered of low susceptibility.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities, such as shopping, where the view has no relevance or is of poor quality and not valued.

Magnitude of Change to the view

Classification of the magnitude of change takes into account the size or scale of the intrusion of the proposed development into the view, relative to the other elements and features in the composition(i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral, or glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects.

Five categories are used to classify magnitude of change to a view. These range from Very High to Negligible and are defined in Table 4.4.4, below:

Table 4.4.4 Magnitude of Visual Change

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs highly valued features or characteristics, or the introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered

Magnitude of Change	Description
	uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

In most LVIAs, tools such as marked up images, wireframes of photomontages can be used to assist in the assessment of visual effects. However, this is not appropriate at Options Stage.

4.4.2.5 Significance of Effects

In order to classify the significance of landscape and visual effects, the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint. The definitions used by the EPA (2022) provide a useful scale to describe the significance of the effects.

There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

The relationship between the magnitude of change and sensitivity of the receptor with the varying classifications of Significance is illustrated on the below extract from the EPA (2022) Guidelines (with labels amended and simplified based on GLVIA (2013) guidance.

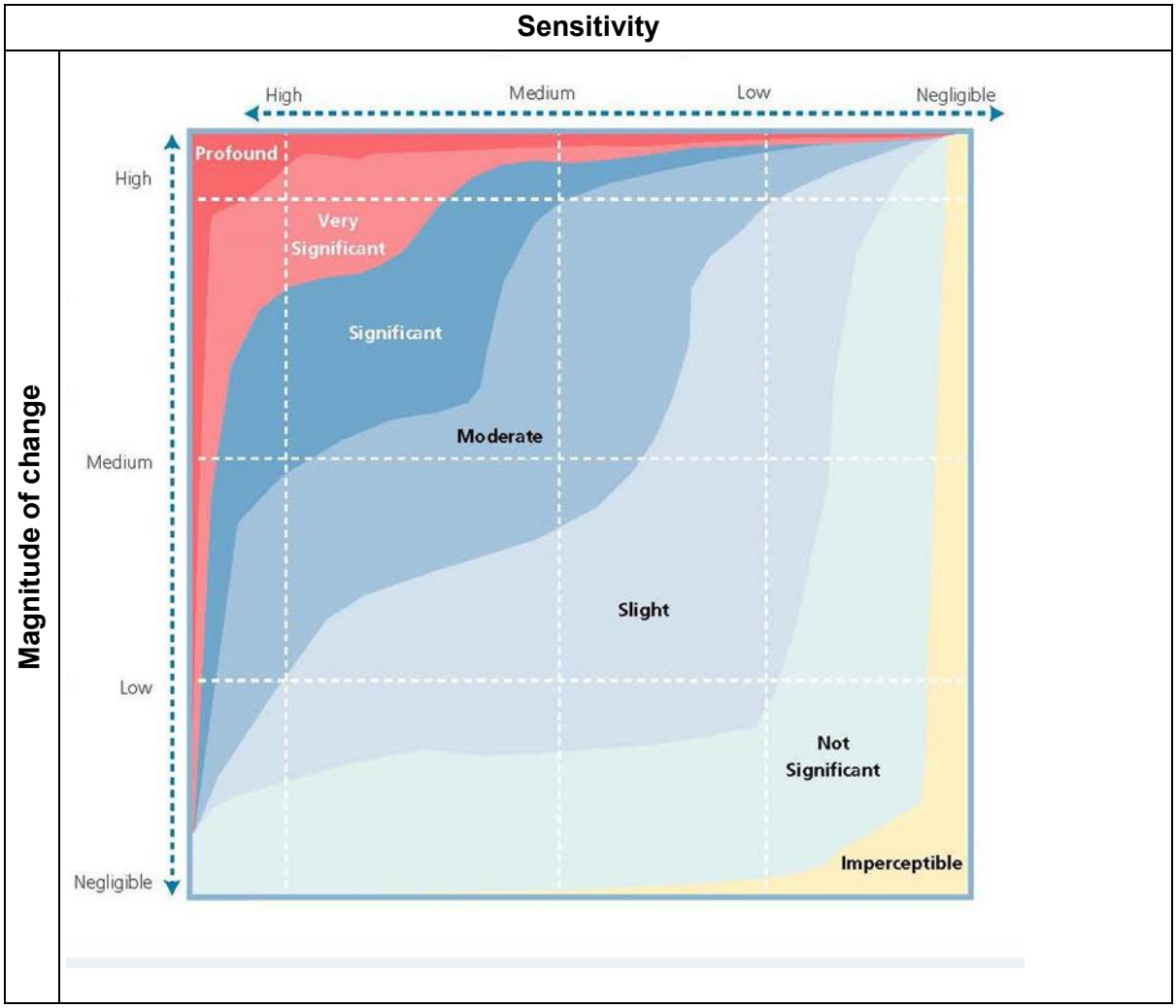


Figure 4.4.1 Significance of Effects Matrix (Source: EPA 2022)*

**Note: This graphic is a guideline only, and an element of professional judgment is also applied. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable.*

Please note that in Section 5.3.1, Assessing the Significance of Landscape and Visual Effects the TII *PE-ENV-01101* (2020) has slightly adapted this Matrix. However, the use of the phrase *Landscape Significance/Sensitivity* is confusing and inaccurate, as 'Significant' is a term to be used with careful consideration in the assessment of effects. Therefore, a label consistent with the GLVIA in terms of the two separate elements that feed into the judgment of Significance of Effect as outlined above – namely the Sensitivity of the Receptor, and Magnitude of Change.

The GLVIA 3rd Edition recognises (at para 2.23) that:

> *"…professional judgement is a very important part of LVIA. While there is scope for quantitative measurement of some relatively objective matters, much of the assessment must rely on qualitative judgements."*

4.4.2.6 Quality of Effects

In accordance with the EPA (2022), the predicted impacts are also classified as beneficial, neutral, or adverse.

This is not an absolute exercise (e.g. visual receptors' attitudes to development thus their response to the impact of a proposed development, will vary). However, the methodology

applied is designed to provide robust justification for the conclusions drawn. These qualitative definitions are included in Table 4.4.5, below.

Table 4.4.5 Quality of Effect

Quality of Effect	Description
Adverse Effect	Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.
Neutral Effect	Scheme complements (or does not detract from) the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality.
Beneficial Effect	Improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

4.4.2.7 Determining Overall Effects

As set out above, the GLVIA methodology carried out for EIAR includes the combined judgements relating to the sensitivity of the baseline landscape and visual environment and combined with the magnitude of change) result in an effect judged to be on a scale of Significance ranging from imperceptible to profound.

However as noted in the TII PE-ENV-01101 (2020) extract below, at this stage, (Phase 2, Stage 1), requirements are a high level assessment with ranking of options as per the MCA criteria set out as follows in Section 6.2.1.1:

- *'A high-level identification, description and assessment of likely significant landscape and visual effects of each option.*
- *Comparison and ranking in landscape and visual effects of the identified options in the MCA.*
- *Liaison with the Project Manager and the other relevant project professionals (including the TII-assigned Project Archaeologist).*
- *Prepare Stage 1 LVIA report, describing the methodology used, the landscape and visual baseline, and the assessment of landscape and visual effects. The report should also highlight any measures that should be considered to mitigate significant effects in the LVIA.'*

Furthermore, with respect to the MCA and, requirements in the TAF (TII 2023) set out specific categories for assessment of options, as well as ranking of options as set out in Table 4.4.6 in this report. The 'criteria' referred to in Table 4.4.5 above refers to a list of LVIA-specific criteria which were developed based on the GLVIA (2013) and TII PE-ENV-01101 (2020) guidance to assess the various options. These include the effect on the overall landscape character, landscape pattern (such as sensitive landscape elements like treelines, hedgerows, woodland, rivers, key buildings or structures, or other rare or sensitive types of landcover), effects on designated landscapes, historic landscapes, and on areas/elements of cultural heritage value.

Greenways - opportunities and constraints

The development of a Greenway can be an opportunity to increase access (for both tourists and locals) to more remote and previously inaccessible parts of the study area, while providing

new viewing points in the landscape and opportunities to enjoy scenic views. It also has the potential to revitalise certain parts of the study area.

However, a Greenway could also result in adverse landscape and visual effects, depending on the design and the surroundings it travels through. This is acknowledged by the TAF Appraisal Guidelines document where it states (Section 7.2.9):

> *'Landscape and Visual Quality: Transport infrastructure has the potential to impact on the intrinsic character of landscapes and townscapes. This in turn can impact the views experienced from domestic dwellings, workplaces and from outdoor recreational areas.*
>
> *'These impacts can be produced through excavation works, e.g., cuttings, the construction of bridges, embankments, and the removal of flora such as woodlands and hedgerows. In some cases, new infrastructure may also affect the amount of natural light experienced. For the purpose of scheme appraisals, a qualitative discussion of these impacts is sufficient.'*

The DTTAS document (2018) notes that Greenways should follow a number of criteria, which relate to both design and route selection. These include the requirements that for funding purposes, Greenways should be 'Scenic' as well as 'Substantially Segregated'. The 'Scenic' requirement seems to stem from Greenways as a source of tourism potential, as stated on Page 8 below:

> *'Fáilte Ireland's research also indicates that visitors cycling while on holidays want their cycling routes to be scenic and have lots of other things to see and do.'*

This creates a potential dichotomy in terms of Options selection. For example, certain route options may traverse highly scenic landscapes, resulting in pleasant views for the Greenway user. However, they may also result in adverse landscape and visual effects for nearby visual receptors by the introduction of a wide paved corridor through a sensitive landscape, such as rugged unspoiled coastlines or riverbank landscapes, or a protected heritage landscape.

However, the DTTAS document (2018) recognises the potential for effects on sensitive landscapes, and suggests particular considerations be applied to surfacing materials:

> *'In rural cycleway and Greenway situations, where the cycleway's attractiveness is just as important as comfort, dust path construction or other loose material construction may be the preferred option in order to blend with the environment and to avoid unnecessary impacts in forests, along protected heritage trails, tow paths and along river banks. The application of loose surfaces can enhance the cycleways' appeal to its users due to its more natural aesthetics.'*

Therefore, while the requirement of Greenways to run through scenic areas is noted, this is considered a relevant but separate consideration to the likely landscape and visual effects.

Impact of Greenway Design

Though in most cases the introduction of a Greenway would be unlikely to significantly change the character of an area, this will depend on a variety of factors. Much of this depends on the route selection, but also on good Greenway design including the Greenway location (relative to existing landscape features), as well as Greenway width, and surfacing as noted above.

This report assumes that the proposed Greenway width varies between 3m minimum and 5m maximum, as per the Rural Cycle Design guidance. It is worth noting that the difference between a 3m wide track and a 5m wide path can be considerable, depending on the context.

For example, trailhead or hub developments should be well located and integrated in the towns and villages along the preferred route. Where the route is close to residences, sensitive design of the route can take advantage of natural screening, where possible, or include landscape mitigation measures. Elements along the route which are of natural or built heritage interest (e.g. bridges, mature trees and hedgerows) should be enhanced rather than adversely affected by the presence of a well-designed Greenway. Where the proposed Greenway traverses narrow rural roads, landscape and visual effects can be minimised by choosing an on-road option and alternative surfacing options should be explored in sensitive rural landscapes as noted by DTTAS (2018).

The examination of the various Options shows a number of scenarios for the proposed Greenway route corridor with an indicative centreline. Although there is no detailed design at this stage, the indicative centreline shows that a number of different scenarios may be present:

- Option following existing road: The proposed Greenway travels along the existing road or track corridor (e.g. rural road, track).
- Adjacent to road: The proposed Greenway travels adjacent to the existing road/track, separated by a narrow verge. This may or may not result in the removal of roadside vegetation/walls/features.
- Adjacent to road but separated by an existing feature such as hedgerow or tree line.
- Off road option making use of existing tracks/path (e.g. Coillte track, former railway track).
- Off road option away from existing roads or tracks, through undisturbed land.

In general, those options with the potential for the least amount of landscape and visual effects are considered to be on-road options, or where the indicative centreline follows an existing track, with minimal or no disturbance to the existing road/track corridor.

Options where the proposed Greenway is physically and visually separated from the road (e.g. by a hedgerow) are also considered to be preferable to the removal of hedgerow or roadside ditches and/or trees, which effectively results in a road widening scheme.

Less preferable scenarios are those where the Greenway runs immediately adjacent to the road, and with extensive vegetation/wall clearance, resulting in what appears to be a wider road.

Options where the Greenway runs completely off-line and away from existing tracks or roads are in general, some of the least preferable, though this also depends on the sensitivity and capacity of the surrounding landscape, as well as design (width and surfacing) of the Greenway.

Where appropriate, the importance of mitigation measures such as vegetation retention, Greenway width and surfacing has been highlighted.
Finally, it is noted that the Route Options display both a route Corridor, and an indicative centreline. An indicative centreline has been used in assessing the options as it is a more detailed guide as to a potential route within each corridor.

4.4.3 Receiving Environment

The receiving environment of the study area, has been comprehensively laid out in the Landscape & Visual Constraints & Opportunities Study, delivered in 2024 as part of Stage 1 of this project.

This entailed an in-depth analysis of the relevant planning policy context, landscape characteristics and visual amenity/visual receptors associated with the study area.

This analysis resulted in the establishment of 6 No. landscape units and 4 No. landscape sub-units, each of which were assessed in relation to their relevant landscape & visual constraints *and* opportunities. While there is no necessity to repeat that same analysis in this chapter, it is worth noting that the Landscape & Visual Constraints & Opportunities Study deeply and directly informs the following Options Appraisal process.

4.4.4 Section A Options Appraisal

4.4.4.1 Route Option A3 (Node 1 – 4)

Landscape Effects: The initial approx. 2.5km of this route, from Node 1 northwards along the N52, will require widening works, although it will generally avoid the loss of trees and other existing roadside vegetation. However, along the R173, the proposed works will extend into adjacent agricultural lands. Overall, the resulting landscape effects are likely to be slight negative.

In such a scenario, the facilitation of the Greenway is unlikely to lead to the substantial loss of any valuable landscape character associated with this busy road, while also having the potential to marginally enrich the landscape character along this utilitarian channel.

Visual Effects: Resulting visual effects are likely to be marginally adverse. However, for the aforementioned 2.5km of this route, the Greenway has the potential to slightly enrich the visual amenity of this locale.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.4.2 Route Option A4-1 (Node 1 – 4)

Landscape Effects: Resulting landscape effects are likely to involve the removal of extensive number of mature trees as well as the modification of field patterns. In addition, this route would partially enter into the Dundalk Bay SAC over the length of c. 300m to the immediate southeast of Ath Lethan housing development. However, it is also acknowledged that no excavations or any apparent construction of ramparts or bridges are likely to be required in this option.

Visual Effects: The likely loss extensive number of mature trees as well as the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. However, it is acknowledged that in the vast majority of instances, the route closely aligns or 'hugs' existing field boundaries.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.4.3 Route Option A4-1 (Node 4 - 9)

Landscape Effects: Resulting landscape effects are likely to involve the removal of extensive number of mature trees as well as the modification of field patterns. In addition, this route would enter into extensive lengths (i.e. over 2km, in total) of the Dundalk Bay SAC, whereby the creation of a 3-5m wide hardscape corridor within a protected, greenfield setting are likely to generate highly negative landscape effects.

Visual Effects: The likely loss extensive number of mature trees as well as the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. In addition, the creation of a 3-5m wide hardscape corridor within that greenfield setting has the potential to enter partial views of the Bay from the R173, and residences aligning it. This is

especially so, in light of the sufficiently raised level (e.g. upon an embankment) the Greenway would presumably have to be if constructed along these low-lying, flood-prone marshlands aligning the estuary.

Thus, on balance, the combined landscape & visual effects are likely to be Highly Negative, or '1' in the TAF 7-point scale.

4.4.4.4 Route Option A5 & A6 (Node 4 – 12)

Landscape Effects: The resulting landscape effects are likely to involve the removal of mature trees as well as, to a far lesser extent, the modification of existing field patterns. For large Sections of A5 (Node 4-6), as well as the western end of A6, it would appear that the indicative centreline of this route runs within existing narrow country roads, as well as the co-option of a narrow laneway (i.e. it assumed the Greenway would fully fill this laneway, without it needing to be widened, while vehicular traffic would be curtailed along it). However, within other sections of the A5 route, there will be some widening of the existing road, which will also require the construction of retaining walls.

Visual Effects: The likely loss of numerous mature trees as well as, to a lesser extent, the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. However, it is acknowledged that in the vast majority of instances, the route closely aligns or 'hugs' existing field boundaries.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.4.5 Route Option A5 (Node 12 – 14)

Landscape Effects: The resulting landscape effects are likely to involve the removal of extensive number of mature trees as well as the modification of field patterns, particularly at its western end.

Visual Effects: The likely loss of numerous mature trees as well as, to a lesser extent, the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. However, it is acknowledged that in the vast majority of instances, the route closely aligns or 'hugs' existing field boundaries. In addition, this route would cross two local roads, thereby slightly increasing potential visual effects for road users.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.4.6 Route Option A6 (Node 12 – 13)

Landscape Effects: This short route option largely mirrors existing field boundaries. However, for a distance of more than 400m, the indicative centreline is clearly set to the west and, subsequently, east of the L3084, while crossing this public road once. Overall, a minimal to moderate amount of vegetation loss is predicted to occur.

Visual Effects: The likely loss of mature trees as well as, to a lesser extent, the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. However, it is acknowledged that the route closely aligns or 'hugs' existing field boundaries. In addition, this route would cross one local road (i.e. L3084), thereby slightly increasing potential visual effects for road users.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.4.7 Route Option A1 (Node 9 – 13)

Landscape Effects: This route option aligns or runs close to the northern coast of Dundalk Bay and partially mirrors that of the existing coastal road at Bellurgan, and/or the alignment of the former rail line corridor. The alignment of the indicative centreline mostly runs to the immediate south of Bellurgan Road (i.e. the coastal road). While this is likely to entail minor loss of vegetation, it is more likely to include the construction of a rampart or embankment to support the Greenway. In addition, the route will experience some minor overlap with the Dundalk Bay SPA & SAC. Where the route is within the alignment of the former rail line corridor, the likely landscape effects are expected to be minor.

Visual Effects: Should the surface level of the Greenway be no higher than that of the existing road to its immediate north and should no visually impermeable barrier (i.e. wall) be constructed to either side of the Greenway, then the likely visual impact on the multiple residents aligning the northern side of the road is unlikely to be major. Where the route is within the alignment of the former rail line corridor, the likely visual effects are expected to be minor, in some case, and pronounced in other locations, where it takes the form of an existing raised (rail) embankment for approx. 300m.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.4.8 Route Option A1 (Node 13 – 14)

Please note, two indicative centrelines are currently present within this corridor: the former substantially aligns with/along the R173, while the latter entirely aligns with/along that busy, arterial road. For the purposes of this assessment, the latter option has been selected.

Landscape Effects: Most of this route follows the northern shoreline of Dundalk Bay, resulting in minor loss of vegetation. For the most easterly 600-700m of this route along the R173, minimal or no widening of the road/paved surface would be required along this busy, broad arterial route, resulting in no loss of roadside trees or larger vegetation. In such a scenario, the facilitation of the Greenway is unlikely to lead to the loss of any valuable landscape character associated with this busy road, while also having the potential to marginally enrich the landscape character along the R173 road.

Visual Effects: Where this route follows the northern shoreline of Dundalk Bay, there may be visual impacts from nearby residents (whose primary views are southward). Where it follows the R173, the Greenway has the potential to slightly enrich the visual amenity of this locale, as the route transitions from being intensively arterial to being partly arterial, partly recreational (i.e. as suitable to walkers, runners & cyclists as it is to vehicles).

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.4.9 Route Option A3 (Node 4 – 13)

Landscape Effects: Resulting landscape effects are likely to be slight negative, as most of this relatively straight, arterial section would have minimal or no widening of the road/paved surface required. However, along two stretches there will be some widening works, resulting in the loss of roadside trees or larger vegetation. In such a scenario, the facilitation of the Greenway is unlikely to lead to the loss of any valuable landscape character associated with this busy road, while also having the potential to marginally enrich the landscape character along this utilitarian channel.

Visual Effects: Resulting visual effects are likely to be either neutral or marginally adverse, owing to the above factors that effect the likely landscape effects.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative or '3' in the TAF 7-point scale.

4.4.4.10 Route Option L2 (Node 8 – 9)

Landscape Effects: While this route option largely mirrors existing field boundaries, it would also introduce upwards of a 5m-wide constructed/hardscape corridor within an otherwise greenfield agricultural context. Overall, a moderate amount of vegetation loss is predicted to occur.

Visual Effects: The likely loss of mature trees as well as, to a lesser extent, the modification of field patterns is likely to lead to a reduction in the inherent visual amenity along this route. This route also has the potential to appear somewhat incongruous to visual receptors. The broader north-south alignment of this route through an otherwise intensively managed agricultural realm may instil a lack of legibility or coherence; one that is intensified in the context of a broader Greenway corridor that mostly aligns an east-west direction.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.5 Section B Options Appraisal

4.4.5.1 Route Option B1 (Node 14 – 20)

Landscape Effects: Resulting landscape effects are likely to be slight negative, on the basis that some widening of the road/paved surface would be required along this route, where it passes through built-up areas such as Lordship, which would result in some loss of roadside trees as well as boundary walls of properties. However, this scenario is unlikely to apply to large sections of the R173 (e.g. Nodes 14-17), where it is envisaged that that minimal or no widening of the road/paved surface would be required, resulting in no loss of roadside trees.

Visual Effects: Overall, the resulting visual effects are likely to be marginally adverse, in light of the factors set out above (i.e. in Landscape Effects).

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.2 Route Option B2 (Node 14 – 19)

Landscape Effects: The indicative centreline traverses a range of contexts, along this route. It partly aligns with the R173 regional road, before travelling within the alignment of the former rail corridor, while also, in other locations, running alongside existing field boundaries (i.e. inside fields). The route is likely to lead to the loss of vegetation, but the landscape character of the route could prove marginally adverse or beneficial, depending on the location in question (e.g. potentially beneficial in the more built up areas near Lordship).

Visual Effects: The variety of contexts along this route (i.e. see above 'Landscape Effects') is likely to generate visual effects ranging from neutral to negative. For example, this route will cross four public roads; combined with the likely loss of vegetation clearing in these roadside hedgerows, these would likely generate negative visual effects.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.3 Route Option B3 (Node 14 – 19)

Landscape Effects: Based on the indicative centreline, this route is likely to lead to road widening and the extensive loss of vegetation, while, to a lesser extent, leading to the

modification of existing field patterns. The route also traverses more naturalistic and/or ecologically sensitive habitats of the foothills of the Cooley Mountains.

Visual Effects: Owing to the broader foothills/uplands terrain of this route (i.e. Area of High Scenic Quality), a Greenway is likely to be visible, in places, from residential receptors to the south, especially in built up areas near Lordship. However, in most cases the primary views of residences across this sloping domain are southwards, towards the sea. In addition, this route will cross five public roads; combined with the likely loss of vegetation clearing in these roadside hedgerows, these would likely generate negative visual effects.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.5.4 Route Option B2 (Node 19 – 20)

Landscape Effects: Less than 1km in length, this relatively short route is likely to entail the minor loss of vegetation, with a slight alteration of existing field patterns. Overall, the likely landscape effects are expected to be minor.

Visual Effects: As this proposed route aligns existing field boundaries, the likely visual effects are expected to be relatively minor.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.5 Route Option B1 (Node 20 – 21 and Node 21 - 23)

Landscape Effects: Resulting landscape effects are likely to be either neutral or slight negative on the condition that minimal or no widening of the road/paved surface would be required along the R173, resulting in no loss of roadside trees. In such a scenario, the facilitation of the Greenway is unlikely to lead to the loss of any valuable landscape character associated with this busy road, while also having the potential to marginally enrich the landscape character along this road.

Visual Effects: Resulting visual effects are likely to be either neutral or marginally beneficial, on the condition that either minimal or no widening of the road/paved surface would be required along this road, resulting in no loss of roadside trees. In such a context, the Greenway has the potential to slightly enrich the visual amenity of this locale, as the route transitions from being an intensively arterial corridor to being partly arterial, partly recreational (i.e. as suitable to walkers, runners & cyclists as it is to vehicles).

Thus, on balance, the combined landscape & visual effects are likely to be Neutral, or '4' in the TAF 7-point scale.

4.4.5.6 Route Option B2 (Node 20 – 23)

Landscape Effects: The indicative centreline traverses a range of landscape contexts, along this route. This includes natural scrub/vegetation to the immediate south of McCourts Warehouses and to the immediate north of Cooley Distillery. This route also involves the indicative centreline running within the former rail corridor, as well sections of the L3057 Ballaverty local road, beside the large Ready Mixed Concrete quarry works. The route is likely to lead to the loss of vegetation, but the landscape character of the route could prove marginally adverse or beneficial, depending on the location in question (e.g. potentially beneficial in vicinity of Coley Distillery and Ready Mixed Concrete site).

Visual Effects: The variety of contexts along this route (i.e. see above 'Landscape Effects') is likely to generate visual effects ranging from neutral to negative.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.7 Route Option B3 (Node 19 – 23)

Landscape Effects: This route would traverse a designated 'Area of High Scenic Quality,' and would result in the substantial loss of mature vegetation and the alteration of field patterns, as well as the likely construction of a new Greenway bridge over a watercourse, resulting in patently negative landscape impacts.

Visual Effects: Owing to the aforementioned reasons, a Greenway along this route is likely to generate overtly negative visual impacts.

Thus, on balance, the combined landscape & visual effects are likely to be Highly Negative, or '1' in the TAF 7-point scale.

4.4.5.8 Route Option B4 (Node 14 – 21A)

Landscape Effects: This section is c.7km in length and presents considerably varied landscape constraints & opportunities along such a distance. For the most part, the indicative centreline sits inside fields boundaries that align the coast. Overall, while the alteration of field patterns is minimalised, there is likely to be some loss of mature vegetation. However, any additional/proposed excavations or embankments, ramparts or bridges are not envisaged.

Visual Effects: A multitude of visual constraints & opportunities are presented by this long and varied route. The likely visual effects will alter considerably on the context of the receiving environment. In many cases, the route traverses agricultural, and coastal fields, but in other contexts, the route aligns the periphery of quarries and caravan parks. While seaward views from some residences may be negatively affected, for the most part this greenway route would not be noticeable from most residences in the locality.

This is owing to the relative distance of these residences from the route (e.g. residences within developments off the R173). However, it is also because in most instances, the Greenway would likely have an immediate backdrop of vegetation/low trees, rather than sea (i.e. Greenway users are less likely to be silhouetted against the background sea), if or where visible from residences to the north. It is noted that where there are existing dwellings abutting the coastline, the indicative centreline diverts northwards behind them.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.9 Link L3 (Node 21-21A).

Landscape Effects: At Node 21, the indicative centreline follows along an existing narrow road/boreen for approx. 700m, where the resulting likely landscape effects would be minimal. For the remainder of this route, the Greenway aligns to the west of the river, which is likely to require minimal loss of vegetation and broadly low visual impacts, on balance.

Visual Effects: For the most northern section (approx. 700m) of this route, the resulting visual effects are likely to be minimal, as the route follows along an existing narrow road/boreen. For the remaining section of the route, there may be some very minor visual impacts.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.5.10 Route Option B4 (Node 21a - 25)

Landscape Effects: For most of this c.1.6km section, the indicative centreline sits inside fields boundaries that align the coast. Overall, while the alteration of field patterns is minimalised, there is likely to be some loss of mature vegetation. In addition, the construction of a c.15m-long bridge would be required in the far west of this section, over the Castletown River mouth.

Visual Effects: While seaward views from some residences may be partially affected, such residences are mostly located more than 500m from this route. Indeed, it is more likely that this greenway route would not be noticeable from most residences in the immediate locality. However, even if partially seen from visual receptors to the north, in most instances the Greenway would likely have an immediate backdrop of vegetation/low trees, rather than sea (i.e. Greenway users are less likely to be silhouetted against the background sea).

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6 Section C Options Appraisal

4.4.6.1 Route Option C2 (Node 23 – 31)

Landscape Effects: As it is anticipated that minimal or no widening of the road/paved surface would be required along R173, a wide, heavily used road, it will result in no loss of roadside trees or larger vegetation. In such a scenario, the facilitation of the Greenway is unlikely to lead to the loss of any valuable landscape character associated with this busy road, while also having the potential to marginally enrich the landscape character along this road.

Visual Effects: Resulting visual effects are likely to be either neutral or marginally beneficial on the condition that either minimal or no widening of the road/paved surface would be required along this road, resulting in no loss of roadside trees. In such a context, the Greenway has the potential to slightly enrich the visual amenity of this locale, as the route transitions from being an intensively arterial corridor to being partly arterial, partly recreational (i.e. as suitable to walkers, runners & cyclists as it is to vehicles).

Thus, on balance, the combined landscape & visual effects are likely to be Neutral, or '4' in the TAF 7-point scale.

4.4.6.2 Route Option C2 (Node 31 – 43)

Landscape Effects: This route covers approx. 3.6km in total and largely follows within the physical and visual remnants of the former rail corridor. Along such sections, the anticipated landscape effects are likely to be minimal. However, for approx. 1km, the route diverts off the original rail corridor, and angles across several agricultural fields and Cooley Kickhams GFC, and further north, around the curtilage of a private house and garden.
Visual Effects: No palpable visual effects are anticipated for the majority of this route, where it adheres to the former rail corridor. However, the likely visually effects for the aforementioned 1km section of the route will be more pronounced.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.3 Route Option C9 (Node 31 – 41)

Landscape Effects: This route runs for approx. 2.7km from The Grange to the junction of the R176, in what is a busy road serving Greenore Port. Minimal or no widening of the road/paved surface would be required along this road, thus resulting in no loss of roadside trees or larger vegetation. Consequently, the facilitation of the Greenway is unlikely to lead to the loss of any valuable landscape character associated with the R173 regional road, while also having the potential to marginally enrich the landscape character along this road.

Visual Effects: Resulting visual effects are likely to be either neutral or marginally beneficial. This is on the understanding that either minimal or no widening of the road/paved surface would be required along this road, resulting in no loss of roadside trees. In such a context, the Greenway has the potential to slightly enrich the visual amenity of this locale, as the route transitions from being an intensively arterial corridor to being partly arterial, partly recreational (i.e. as suitable to walkers, runners & cyclists as it is to vehicles).

Thus, on balance, the combined landscape & visual effects are likely to be Neutral, or '4' in the TAF 7-point scale.

4.4.6.4 Route Option C5 (Node 25 – 28)

Landscape Effects: For this route, the indicative centreline sits inside fields boundaries that align the coast. Overall, while the alteration of field patterns is minimalised, there is likely to be some loss of mature vegetation. However, any additional/proposed excavations or embankments, ramparts or bridges are not envisaged.

Visual Effects: While seaward views from some residences may be negatively affected, for the most part this greenway route would not be visually prominent from most residences in the locality.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.5 Route Option C5 (Node 28 – 35)

Landscape Effects: This coastal route runs for approx. 2.5km, including passing that of Shelling Hill Beach and Templetown Beach. Overall, while the alteration of field patterns will be minimised, there is likely to be some loss of vegetation and/or earthen banks

Visual Effects: While seaward views from some residences may be negatively affected, for the most part this greenway route would not be noticeable from most residences in the locality.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.6 Route Option C5 (Node 35 – 38)

Landscape Effects: This route is a notably lengthy one, at over 6km, as it aligns the coastline from Templetown Beach Car Park, past Whitestown Bay, Whitestown Beach and Ballagan Bay to Ballytrasna Bay. While there is potential for some loss of vegetation most of the route entails Greenway users sharing the existing local road.

Visual Effects: Seaward views from several residences may be negatively affected. However, should the proposed greenway be flush/level with the receiving terrain (i.e. no raised embankments), along with no or non-visually obstructive fencing, then the potential for visual impacts will be minimised.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.7 Route Option C5 (38 – 42)

Landscape Effects: Where this route follows an existing local road for approx. 600m, there will be the potential loss of roadside vegetation to accommodate the Greenway. The route will pass through agricultural lands for the remaining approx. 800m, largely adhering to existing field boundaries and with the minimal likely loss of trees.

Visual Effects: With the exception of one property, there is a lack of visual receptors (e.g. nearby residents) within the direct vicinity of this route. Consequently, the resulting visual effects are likely to be minimal.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.8 Route Option C10 (Node 38 – 41)

Landscape Impacts: For approx. 600m, this route will align a local narrow road/boreen. Any widening of long-established laneways and narrow roads to facilitate the Greenway, will result in the extensive loss of vegetation and negatively affect the inherent landscape character. For almost 1km distance, the route will run inside the field boundaries of numerous fields, before crossing this narrow local road near Node 41. This section of this route is likely to result in less overt landscape impacts.

Visual Impacts: Any widening of long-established laneways and narrow roads to facilitate the Greenway will reduce the visual amenity of the setting. However, as this route is not coastal in nature, the Greenway is less likely to potentially or partially obstruct valued views from nearby residences.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.6.9 Route Option C9 (Node 41 – 45)

Landscape Effects: All vehicles passing in/out of either Greenore village or Greenore Port will traverse this wide section of the R175. The route will pass through Ramparts, and running past Greenore Golf Club, before terminating at Greenore village. Road widening will be required along sections of this route, resulting in the loss of roadside trees or larger vegetation.

Visual Effects: Any resulting loss of roadside trees or larger vegetation will reduce the inherent visual amenity of this setting.

Thus, on balance, the combined landscape & visual effects are likely to be Slight Negative, or '3' in the TAF 7-point scale.

4.4.6.10 Route Option C10 (Node 41 – 44)

Landscape Effects: This route, which is mostly coastal runs for approx. 3.5km along the wide R176. It is, therefore, anticipated that there will be minimal or no widening of the road/paved surface required along this busy, broad arterial route, resulting in no loss of roadside trees or larger vegetation.

Visual Effects: Resulting visual effects are likely to be either neutral or marginally beneficial, assuming that either minimal or no widening of the road/paved surface would be required along this road, resulting in no loss of roadside trees. In such a context, the Greenway has the potential to slightly enrich the visual amenity of this locale, as the route transitions from being an intensively arterial corridor to being partly arterial, partly recreational (i.e. as suitable to walkers, runners & cyclists as it is to vehicles).

Thus, on balance, the combined landscape & visual effects are likely to be Neutral, or '4' in the TAF 7-point scale.

4.4.6.11 Route Option C3-1 (Node 25 – 23)

Landscape Effects: This approx. 2.5km route will cross the two public roads, and the vast majority of it will traverse agricultural fields, largely aligning existing field boundaries.

However, owing to the number of fields involved, there is likely to be removal of vegetation and ditches/earthen banks, as well as the minor modification of field patterns.

Visual Effects: For the most part, visual effects will be mitigated to a certain extent by the Greenway aligning existing, mature field boundaries. However, this will be partially offset by the density of rural housing in the vicinity, and the crossing of two public roads.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.6.12 Route Option C4-1 (Node 28 – 30)

Landscape Effects: This route will cross the three public roads, with most of the route traversing agricultural fields. While the route will largely align existing field boundaries, there is, nonetheless, a considerable number of fields along this route. Thus, there is likely to be removal of vegetation and ditches/earthen banks, as well as the minor modification of field patterns.

Visual Effects: For the most part, visual effects will be mitigated to a certain extent by the Greenway aligning existing, mature field boundaries. However, this will be partially offset by the density of rural housing in the vicinity, and the crossing of three public roads.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.6.13 Route Option C6-1 (Node 31 – 35)

Landscape Effects: While this approx. 3.5km route will, in places, cross the two public roads; align a public road for over 400m and the vast majority of it will traverse agricultural fields, largely aligning existing field boundaries. However, owing to the number of fields involved, there is likely to be removal of vegetation and ditches/earthen banks, as well as the minor modification of field patterns.

Visual Effects: The removal of vegetation and ditches/earthen banks, as well as the minor modification of field patterns, will have negative landscape & visual effects.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.6.14 Route Option C7 (Node 35 – 41)

Landscape Effects: This route will cross the three public roads, with most of the route traversing agricultural fields. While the route will largely align existing field boundaries, there is, nonetheless, a considerable number of fields along this route. This, there is likely to be removal of vegetation and ditches/earthen banks, as well as the minor modification of field patterns

Visual Effects: For the most part, visual effects will be mitigated to a certain extent by the Greenway aligning existing, mature field boundaries. However, this will be partially offset by the density of rural housing in the vicinity, and the crossing of three public roads.

Thus, on balance, the combined landscape & visual effects are likely to be Negative, or '2' in the TAF 7-point scale.

4.4.7 Assessment Summary

Table 4.4.6 below provides a summary of impact assessment for landscape and visual quality.

Table 4.4.6 Summary of Impact Ratings for Landscape & Visual Quality

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 1 – 4)	2	Negative
Option A4-1 (Node 4 - 9)	1	Highly Negative
Option A5 & A6 (Node 4 – 12)	3	Slight Negative
Option A5 (Node 12 – 14)	2	Negative
Option A6 (Node 12 – 13)	3	Slight Negative
Option A1 (Node 9 – 13)	3	Slight Negative
Option A1 (Node 13 – 14)	3	Slight Negative
Option A3 (Node 4 – 13)	3	Slight Negative
Option L2 (Node 8 – 9)	2	Negative
Section B		
Option B1 (Node 14 – 20)	3	Slight Negative
Option B2 (Node 14 – 19)	3	Slight Negative
Option B3 (Node 14 – 19)	2	Negative
Option B2 (Node 19 – 20)	3	Slight Negative
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	3	Slight Negative
Option B3 (Node 19 – 23)	1	Highly Negative
Option B4 (Node 14 – 21a)	3	Slight Negative
Option B4 (Node 21a - 25)	3	Slight Negative
Option L3 (Node 21-21A)	3	Slight Negative
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	3	Slight Negative
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	3	Slight Negative
Option C5 (Node 28 – 35)	3	Slight Negative
Option C5 (Node 35 – 38)	3	Slight Negative
Option C5 (Node 38 – 42)	3	Slight Negative
Option C10 (Node 38 – 41)	2	Negative
Option C9 (Node 41 – 45)	3	Slight Negative
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	2	Negative
Option C4-1 (Node 28 – 30)	2	Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option C6-1 (Node 31 – 35)	2	Negative
Option C7 (Node 35 – 41)	2	Negative

4.5 Water Resources

4.5.1 Introduction

This section presents an appraisal of the options selection stage 2 assessment of the Dundalk Bay to Carlingford Greenway in terms of their impacts on water resources, namely on flood risk, surface water and groundwater environment. This section outlines the appraisal of options under hydrology and hydrogeology. The route selection process involves undertaking an assessment of each of the corridor options, having regard to multiple factors in relation to the baseline condition.

The hydrogeology assessment was prepared by Maryann Nwankwo of Roughan & O'Donovan Consulting Engineers. Maryann is a Senior Hydrogeologist in ROD. She has a B.Sc. in Geology and an MSc in Hydrogeology. She has worked in various roles as a mining hydrogeologist, engineering hydrogeologist, and Water and Sanitation expert. She has a chartered status with CIWEM, and the Society for the Environment and is also a fellow of the Geological Society of London. She has more than 15 years' experience of supervision of option Investigation (SI) works and has completed Environmental Impact Assessment (EIA), hydrogeological impact assessment, water resource estimation, water monitoring and development of water management plan for mine and construction options including project management. Her technical experience includes all aspects hydrological and hydrogeological assessments, groundwater and surface water characterisation and monitoring, water quality assessment and land contamination and flood studies. Her experience cuts across a variety of water related projects including impact assessments for transport projects, industrial, residential, quarry, mine, landfill, utilities, construction, solar and wind farm developments in the UK and Ireland. She has completed many projects feasibility, through to options assessments, and preparation of all stages of the EIA process relating to the water environment.

John Cody has a BSc (Hons), MSc in Hydrology for Environmental Management, Dip Poll Con, and Trans Eng Tech. John is a hydrologist with over 20 years of experience flood hydrology, water resources engineering, environmental monitoring & hydrometry projects. John's experience in Flood Risk management covers the spectrum from flood risk assessment, flood prediction and early warning, flood preparedness and multi-agency flood emergency response coordination. John has recently joined the Roughan & O'Donnovan Water Group as a Senior Hydrologist. Prior to joining Roughan & O'Donnovan John worked as a senior Environmental Scientist on the Lower Lee, Lifford and Ballinasloe Flood Relief Schemes and completed site specific Flood risk Assessments for projects subject to fluvial, pluvial and coastal flood risk sources. John is consequently familiar with existing national standards and guidelines in relation to flood estimation, planning and risk management.

4.5.2 Methodology

The assessment in this section was carried out in accordance with:

- Department of Transport's Transport Appraisal Framework (TAF, 2023): Appraisal Guidelines for Capital Investments in Transport. Module 7 - Detailed Guidance on Appraisal Techniques[8];
- Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (PE-PAG-02031) (PAGs; TII, 2024)[9]; and
- National Roads Authority (NRA) Guidelines on Procedures for Assessment Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII, 2008)[10].

This is not significantly different from the methodology adopted in Stage 1 of the options selection.

The assessment has been informed by the guidance documents listed below:

- Environmental Protection Agency (EPA) (2022). 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports[11];
- Institute of Geologists Ireland (IGI) (2013). 'Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements'[12]; and
- Transport Infrastructure Ireland (TII) (2015) 'Road Drainage and the Water Environment, DNDNG-03065'[13].

The hydrology baseline for the project area has been compiled based on a review of published data summarised in Table 4.5.1

Table 4.5.1 Hydrology Data Sources

Source	Comments
Catchment Flood Risk Assessment and Management Study (CFRAM) Maps	OPW shapefiles for the 1% AEP Floods. Flood Maps - Floodinfo.ie
National Indicative Fluvial Mapping (NIFM)	
Pluvial Flood Maps	
Water Framework Directive (WFD)	WFD Risk and Status of Waterbodies, Significant Pressures, and Objectives of the Catchment. Data - Catchments.ie - Catchments.ie

[8] TII (2024) Department of Transport's Transport Appraisal Framework (TAF, 2023): Appraisal Guidelines for Capital Investments in Transport. Module 7- Detailed Guidance on Appraisal Techniques. Available @ taf-2024-module-7-detailed-guidance-on-appraisal-techniques-abca0078-f2d7-4d5f-bd48-52.pdf. Accessed on 28th May 2025
[9]PAGs; TII, 2024. Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (PE-PAG-02031) Available @ PE-PAG-02031. Accessed on 28th May 2025
[10] TII 2008. National Roads Authority (NRA) Guidelines on Procedures for Assessment Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes. Available at untitled. Accessed on 28th May 2025
[11] EPA (2022) 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available @ Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR). Accessed on 28th May 2025
[12] IGI 2013. Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements' Available at IGI_guidelines_on_EIAR.pdf. Accessed on 28th May 2025
[13] TII 2015. Road Drainage and the Water Environment, DNDNG-03065'. Available at: Microsoft Word - HD45.docx. Accessed on 28th May 2025

Source	Comments
EPA Shapefiles	River Water Bodies, Coastal Water bodies, Transitional Waterbodies, Lake Water bodies, SAC's, pNHA's, and NHA's.

The hydrogeology baseline for the proposed options has been compiled based on a review of published data summarised in Table 4.5.2.

Table 4.5.2 Hydrogeology Data Sources

Source	Comments
Groundwater resources (aquifers) Wells and Springs	https://gsi.geodata.gov.ie/portal/apps/webappviewer/index.html?
Groundwater vulnerability	
Group scheme and public supply source protection zones. Groundwater Protection Schemes	
Catchment and WFD management units.	
Groundwater body Descriptions	
WFD Cycle 3 Risk Projection and status	WFD Risk and Status of Waterbodies, Significant Pressures, and Objectives of the Catchment. Data - Catchments.ie - Catchments.ie EPA website
EPA Shapefiles	Groundwater bodies, Ground water dependent terrestrial ecosystem (GWDTE) SACs / SPAs, springs and wells

The procedures specified in the PAG, professional judgement and reference to the listed guidance documents, have been used to identify the potential effects of the options on the hydrogeological elements. The impact significance of the options has been assessed by considering two factors:

- The sensitivity / level of importance of the receiving groundwater environment; and
- the magnitude of impact.

The magnitude of impact is defined by:

- The amount or intensity by which the character of the water environment will change;
- The spatial extent of the impact; and
- The perceptibility, social implication or scientific significance of change.

The magnitude of impact is rated according to the criteria defined in Table 4.5.3.

Table 4.5.3 The Magnitude Should an Effect Occur (TII, 2008)

Magnitude of Impact	Criteria
Imperceptible	An effect capable of measurement but without noticeable consequence
Slight	An effect that alters the character of the environment without affecting its sensitivities

Magnitude of Impact	Criteria
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing or emerging trends
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Profound	An effect which obliterates all previous sensitive characteristics

The sensitivity of a surface water receptor is rated according to the criteria defined in Table 4.5.4.

Table 4.5.4 Criteria for rating option attributes -estimation of hydrology attributes (TII, 2008)

Attribute Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding Nationally important amenity site for wide
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2- 3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

The receptors selected for the hydrology assessment are listed and discussed below:

- Flooding and flood risk;

- Water Framework Directive (WFD) Status of the waterbodies crossed; and
- Protected Areas registered under Article 6 of the WFD.

4.5.2.1 Flooding and Flood Risk

The effects of the proposed routes on flooding have been assessed by comparing the proportions of each route that crosses the flood plain of the 10%, 1%, and 0.1% Annual Exceedance Probability Flood for fluvial flooding and 10%, 0.5%, and 0.1% Annual Exceedance Probability Flood for coastal flooding. The number of historical floods events along each route were also considered, however this criterion was found to be non-discriminatory between routes.

4.5.2.2 Water Framework Directive Status

The WFD status of individual receptors has been incorporated in the sensitivity rating for each waterbody. The likely effects of the proposed routes on WFD status considered include impacts on the Water Quality Element (QE) and the Hydromorphology QE. Intersections between the proposed routes and WFD designated Water Bodies was identified as a comparative proxy indicator of the magnitude effects on both QE's.

4.5.2.3 Protected Areas registered under Article 6 of the WFD

Interaction of the proposed routes with protected areas registered under Article 6 of the WFD has been incorporated into the sensitivity ratings of each water body.

The sensitivity of the groundwater receptor is dependent on the aquifer type, source protection areas, potable water source supply and groundwater supporting rivers, wetlands and is rated according to the criteria defined in Table 4.5.5.

Table 4.5.5 Criteria for rating option attributes -estimation of hydrogeology attributes (TII, 2008)

Attribute Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or	Locally Important Aquifer. Potable water source supplying >50 homes.

Attribute Importance	Criteria	Typical Examples
	value on a local scale	Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying.

The various factors relating to hydrogeology against which the options have been assessed are presented in Table 4.5.6 below.

Table 4.5.6 Hydrogeological features and impact assessment criteria

Hydrogeological features to be assessed	Means of assessment of potential impacts
The classification and extent of aquifers underlying each corridor option and increased risk presented to them.	Aquifer classification of and the extent of aquifer – provided as the length of the option or as a percentage which is underlain by a particular aquifer classification. Aquifer vulnerability – provided as the length of the option, or as a percentage which is underlain by groundwater classified as low, moderate, high, extreme or rock at or near surface vulnerability. The extent of removal of subsoil cover or part of aquifer (i.e. cuttings along the options) which may give rise to changes in groundwater level and change in aquifer vulnerability and aquifer classification.
High yielding water supply wells and springs and increased risk presented by the corridor option Groundwater water resources ((i.e. group water schemes (GWS), public water supply (PWS), and, source protection zones and private abstractions and public water supply and abstractions, drinking water rivers, lakes)) crossed by or down hydraulic gradient of the route corridor.	The proximity to the feature (s). The length of the option within the protection zone or zones of contribution, and areas close to and down hydraulic gradient of the option. The extent of the potential influence of the cut, fill and earthworks areas along the options on the feature(s).
Karst features along each option and the risk presented to them by the corridor option	The proximity to the feature(s) and the length of the option within the feature. The extent of the potential influence of the cut, fill and earthworks areas along the options on the feature(s).
Groundwater dependant habitats and the risk presented to them by the corridor option	The proximity and the position of the corridor option (upgradient or downgradient) to the feature. Removal of subsoil cover or part of aquifer (cuttings along the option) which may give rise to changes in groundwater level that is likely to impact the integrity of the habitat. Removal of part of the habitat by the option.
Ground Waterbody and Water Framework Directive (WFD) Quality	An assessment in terms of potential impacts to groundwater quality and subsequent change in the WFD status of the groundwater body as a result of the cut, fill and earthworks along the option.

Hydrogeological features to be assessed	Means of assessment of potential impacts
Geological Survey Ireland (GSI) groundwater flooding	Areas of groundwater flooding intercepted or down hydraulic gradient of the option connected through groundwater baseflow. The extent of the potential influence of the cut, fill and earthworks areas along the options on the groundwater flood areas.

The risk to groundwater is defined through assessment of Groundwater vulnerability, aquifer potential and source protection zones. Vulnerability represents the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. It depends on the:

- Time of travel of infiltrating water (and contaminants);
- Relative quantity of contaminants that can reach the groundwater; and
- Contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate (DELG/EPA/GSI, 19995).

The above are a function of the following natural attributes of any area:

- Type and permeability of the subsoils that overlie the groundwater.
- Thickness of the unsaturated zone through which the contaminant moves; and
- Recharge type, whether point or diffuse.

Where the level of the proposed corridor option is below the existing ground level, existing materials will require excavation and removal. These cut areas will require the removal of soils, made ground, subsoils and bedrock. Earthworks and fill works are typically undertaken in a 'dry' environment; however, cuts are more likely to intercept the groundwater table and may require temporary dewatering. The location of water supply wells, karst groundwater features, groundwater dependent habitats, the WFD status of the groundwater body and groundwater flood areas hydraulically connected to the option and areas where the works are planned. The potential impacts related to this activity are further discussed as part of this assessment.

4.5.3 Assessment Criteria

In accordance with the Transport Appraisal Framework (TAF) guidelines, an impact assessment has been completed using the 7-point scale, where each option is assessed against its respective baseline environment independent of the other options. A description of the hydrological and hydrogeological baseline conditions, and potential impacts in relation to each of the corridor options are discussed respective to each corridor option.

Table 4.5.7 shows the criteria for rating the impact significance at the corridor selection stage which is derived from the value rating combined with the attribute importance for a hydrological and hydrogeological receptor and the magnitude of impact. There are four impact categories relevant to the assessment of the impact on hydrogeology that comprise of 'neutral impact', slight negative impact', negative impact' and 'highly negative impact'. These categories are taken from the seven-point scale in TAF (2024).

Table 4.5.7 Criteria for rating Impact Significance

Magnitude of Impact	Importance of an Attribute				
	Extremely High	Very High	High	Medium	Low
Profound	Highly negative impact Score 1	Highly negative impact Score 1	Negative impact Score 2	Slight negative impact Score 3	Neutral impact Score 4
Significant	Highly negative impact Score 1	Negative impact Score 2	Negative impact Score 2	Slight negative impact Score 3	Neutral impact Score 4
Moderate	Negative impact Score 2	Negative impact Score 2	Slight negative impact Score 3	Slight negative impact Score 3	Neutral impact Score 4
Slight	Slight negative impact Score 3	Slight negative impact Score 3	Slight negative impact Score 3	Neutral impact Score 4	Neutral impact Score 4
Imperceptible	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4	Neutral impact Score 4

Source (TII, 2008 Guidelines)

Limitations

The assessment has been completed solely using publicly available hydrological and hydrogeological data with associated limitations as no site investigations have been completed at this stage. The information available for the key hydrogeological receptors is seen as appropriate for the scale and nature of the assessment undertaken.

Assumptions

This assessment has been prepared based on available data and this is assumed to represent the baseline condition in line with the requirement of evidence-based analysis.

4.5.4 Existing Environment

The corridor options are within the Water Framework Directive (WFD) Catchment 06 known as Newry, Fane, Glyde and Dee as shown on Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-200056 to 59 in Volume 2 of this Options Report. The Newry, Fane, Glyde and Dee catchment include the area drained by the Newry, Fane, Glyde and Dee rivers, and by all streams entering tidal water between Murlough Upper and The Haven, Co. Louth. The largest urban centre is Dundalk. The other main urban centres are Carrickmacross, Ardee, Kingscourt, Dunleer and Castleblaney and the total population (in the RoI) is approximately 115,900, with a population density of 83 people per km². The catchment is characterised by the upland area of the Carlingford Peninsula, which is underlain by granites and other igneous rocks, and undulating land to the south, and a heavily drumlinised (lenticular, steep sloped hills) landscape in the western half of the catchment. There are extensive gravel deposits along much of the coast in this catchment, which are an important local groundwater resource. The annual long term average rainfall for Ballyhaise Station (located approximately 75km west of Dundalk) is 1022mm.

The water bodies intersected include (nine) 9 EPA named River Waterbodies and their tributaries including three (3) Coastal waterbodies and three (3) Transitional waterbodies. The WFD 2018 - 2021 of the waterbodies within the catchment that are crossed by the corridor options have been considered as part of the assessment.

The WFD register of protected areas identifies a Drinking Water - Rivers - Dec 2018 (Big (Louth)_020), three SACs with Water Dependent Habitats/Species (Carlingford Shore SAC, Carlingford Mountain SAC and Dundalk Bay SAC) and two water dependent protected areas. As such, the Big (Louth)_020 is of high importance whilst the Water Dependent Habitats/Species are of extremely high importance. The Big (Louth)_020 is crossed by corridor options B1 (Node 20-21), B2 (Node 20-23), B3 (Node 19-23) and B4 (Node 21A-25), whilst corridor option L3 runs along the river's western bank for the majority of its 1.1km route from the R173 to the coast. Being a drinking water river, it is therefore imperative to preserve the integrity of Big (Louth)_020.

The significant pressure affecting the greatest number of waterbodies is agriculture followed by hydromorphology, urban wastewater, other, urban runoff, domestic wastewater, industry and forestry. Industry has been identified as a significant pressure in river waterbody, Big (Louth)_020. These point source discharges, causing nutrient and organic issues, arise from industrial discharges and also an abstraction in Big (Louth)_020. Channelisation is the dominant hydromorphology subcategory in the catchment with several river waterbodies within the catchment subject to extensive modification due to arterial drainage.

There are no known arterial drainage schemes (ADS) and no drainage districts (DD) embarkments crossed by the corridor options.

Several historical and predictive flood indicator datasets show that some of the corridor options cross parts of these areas as shown on Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-200060 to 63 in Volume 2 of the Options Report.

There are two (2) EPA licensed activities i.e., Urban Wastewater (UWW) and emission points, two (2) Primary Effluent Emission Points and seven (7) storm water overflows proximal to the corridor options.

In terms of abstraction, there is an industrial abstraction (APR000018) at the Big (Louth)_020 in Castletowncooley, known as a 'surface water abstraction'.

Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-200032 to 35 in Volume 2 of the Options Report show that the corridor options are underlain by four (4) types of aquifer:

- Locally Important Aquifer - Bedrock which is Generally Moderately Productive (Lm);
- Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (Pl);
- Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (Ll); and
- Locally Important Aquifer – Gravel.

A significant extent of the package of corridor options is underlain by Locally Important Aquifer, whilst a small portion in the north and southwest is underlain by Poor Aquifer.

In terms of groundwater vulnerability, the corridor options are underlain by areas of Low, Moderate, High, Extreme and Rock at or Near Surface vulnerability categories, as shown on Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-200048 to 51 in Volume 2 of the Options Report. The majority of the corridor options are underlain by groundwater of Moderate and High Vulnerability.

The corridor options are underlain by three (3) WFD groundwater bodies (Dundalk Gravels (IE_NB_G_024), Dundalk (IE_NB_G_015) and Louth (IEGBNI_NB_G_019)). Their current WFD status (2016-2021) is 'Good' and the WFD 3rd cycle risk status for all three (3) groundwater bodies is 'Not at Risk'. Groundwater bodies that are 'Not at Risk' automatically achieve a 'Good' status.

No groundwater flooding is predicted and there are no karst landforms shown to be present along the areas underlain by the corridor options.

According to the GSI's groundwater well, borehole and spring locations dataset there are numerous groundwater abstractions (boreholes/dug wells/springs) crossed or proximal to the corridor options as presented in Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-200032 to 35 in Volume 2 of the Options Report. There is a National Federation of Group Water Scheme (Group Water Scheme Abstraction Points) known as Mountain Park and Option C10 (Node 41-44) is proximal and down hydraulic gradient of this area. Its water source is a spring. In addition, there are two (2) Public Supply Source Protection Areas, which both have a Source Inner (SI) area and Source Outer (SO) area within the study area. Option C10 (Node 41-44) is proximal and down hydraulic gradient of the Cooley Carlingford PWS Protection Area, which relates to Mountain Park Spring. Options C2 (Node 23-31) and C4-1 (Node 28-30) cross the Ardtullybeg PWS Protection Area, which relates to the public water supply source 2929NEW022.

The SACs and SPAs with water dependent habitats/species mentioned above are not directly dependent on groundwater.

4.5.4.1 Options Appraisal

A description of the baseline groundwater condition and the potential impacts in relation to each of the options are discussed in the following section.

4.5.5 Section A Options Appraisal

4.5.5.1 Corridor Option A3 (Node 1 – 4)

Hydrology

Option A3 (Node 1-4) is subject to minimal extents of fluvial and coastal flooding. In terms of fluvial flooding, approximately 14% of the corridor option lies within the CFRAM 10%AEP (Flood zone A), approximately 6% of the route lies within CFRAM 1%AEP (Flood zone A), and approximately 29% of the route lies within CFRAM 0.1%AEP (Flood zone B) flood extent. The corridor option passes through an area with single past flood event at Newry Road, Dundalk. For coastal flooding, approximately 23% of the corridor option lies within 10% AEP, approximately 29% lies within 0.1%AEP, and approximately 27% of the route lies within 0.5%AEP coastal flood extent.

The corridor option crosses the river waterbody (Ballymascanlan_010 of medium importance) twice.

The corridor option passes through a small area of transitional waterbody (Castletown Estuary). There are no coastal waterbodies proximal to the corridor option.

A small section of the south of the corridor option passes through Dundalk Bay SAC and SPA which are of extremely high importance.

Overall, the corridor option has an imperceptible/slight magnitude of impact (in terms of flooding and areas crossing an SAC and SPA) to moderate magnitude of impact (in terms of

the Ballymascanlan_010 crossings) on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option A3 (Node 1-4), approximately half of the corridor option is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of medium importance), whilst the other half of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance). The corridor option is underlain by groundwater of High (approximately 36% of the corridor), Moderate (approximately 62% of the corridor) and Low (approximately 2% of the corridor) vulnerability, although the corridor runs along or adjacent to existing roads.

There are four boreholes (2929NEW102, 2929NEW103, 2929NEW104, 2929NEW105) crossed by the corridor option at its southern end, that all have a location accuracy of 500m. Based on the surrounding topography, groundwater is expected to flow in a south-easterly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'. At the southern end of the corridor option is a waste facility (W0034-03).

The majority of the corridor option is underlain by an area with a relatively low groundwater recharge rate of 51-100 mm/yr, with the remaining section underlain by groundwater with a higher recharge rate of 251-300 mm/yr. As this option is largely adjacent to, and follows the alignment of the existing road, the overall significance of impact is considered to be Neutral overall.

4.5.5.2 Corridor Option A4-1 (Node 1 – 4)

Hydrology

Option A4-1 (Node 1-4) is subject to significant extents of fluvial and coastal flooding. In terms of Fluvial flooding, approximately 78% of the corridor option lies within CFRAM 10%AEP, approximately 57% of the route lies within CFRAM 1%AEP, and approximately 93% of the route lies within CFRAM 0.1%AEP. The corridor option passes through an area with recurring past flood event at Racecourse Road Dundalk Co. Louth. In terms of coastal flooding, approximately 83% of the corridor option lies within 10%AEP, approximately 88% of the route lies within 0.1%AEP, and approximately 86% of the route lies within 0.5%AEP coastal flood extent.

The corridor option crosses the river (Raskeagh_010) of low importance thrice.

A small section of the corridor option passes through two transitional waterbodies (Ballymascalan Estuary and Castletown Estuary). There are no coastal waterbodies proximal to the corridor option.

The corridor option passes through a small area within Dundalk Bay SAC and SPA which are of extremely high importance.

Overall, the corridor option has an Imperceptible/slight (in terms of areas crossing an Estuary, SAC and SPA) to moderate/significant magnitude of impact (in terms of fluvial, coastal and Raskeagh_010 crossings) on the water environment resulting in an overall Slight Negative significance of impact.

Hydrogeology

Under Option A4-1 (Node 1-4), approximately half of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance), whilst the other half of the corridor option is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of low importance).

The entire corridor option runs through agricultural fields, with the majority of the corridor being underlain by Low (approximately 40% of the corridor) and Moderate (approximately 47% of the corridor) groundwater vulnerability with a small extent underlain by High (approximately 6%) and Extreme (approximately 7%) groundwater vulnerability.

There are five boreholes crossed by the corridor option, four of which (2929NEW102, 2929NEW103, 2929NEW104, 2929NEW105) are at the southern end with a location accuracy of 500m and the fifth (2929NEW007) further northwards with a location accuracy of 20m. Based on the surrounding topography, groundwater is expected to flow in a south-easterly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'. At the southern end of the corridor option is a waste facility (W0034-03).

Approximately half of the corridor option is underlain by an area with a low groundwater recharge rate of 51-100 mm/yr, with the other half underlain by groundwater with an extremely low recharge rate of 1-50 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is considered to be Neutral overall.

4.5.5.3 Corridor Option A4-1 (Node 4 - 9)

Hydrology

Option A4-1 (Node 4-9) is subject to significant extents of fluvial and coastal flooding. In terms of fluvial flooding, approximately 74% of the corridor option lies within CFRAM 10%AEP, approximately 69% of the route lies within CFRAM 1%AEP, and approximately 91% of the route lies within CFRAM 0.1%AEP. The corridor option passes through an area with recurring past flood event at Flurry River (near Ballymascanlan).

In terms of coastal flooding, approximately 74% of the corridor option lies within 10%AEP, approximately 82% of the route lies within 0.1%AEP, and approximately 80% of the route lies within 0.5%AEP coastal flood extent.

The corridor option crosses the river waterbody (Rockmarshall_010) once which is of low importance.

The transitional waterbody Ballymascalan Estuary crossed thrice along the corridor option. There are no coastal waterbodies proximal to the route option.

The corridor option passes through a small area within Dundalk Bay SAC and SPA which are of extremely high importance.

Overall, the corridor option has an imperceptible/slight (in terms of the Rockmarshall_010 crossing and the area crossing the SPA/SAC) to significant (in terms of fluvial and coastal flooding) magnitude of impact on the water environment, resulting in an overall Slight Negative significance of impact.

Hydrogeology

Option A4-1 (Node 4-9) is offline. Under Option A4-1 (Node 4-9), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 500m of the corridor option is bordered by Locally Important Aquifer - Gravel (of medium importance).

The corridor option runs through agricultural land and along a flood berm, with the majority of the corridor being underlain by ow groundwater vulnerability (approximately 58% of the corridor) with extents underlain by Moderate (approximately 14%) and High (approximately 28%) groundwater vulnerability.

There is one borehole (2929NEW049) crossed by the corridor option, that has a location accuracy of 50m. Based on the surrounding topography, groundwater is expected to flow in a south-westerly direction, therefore groundwater which interacts with the corridor is not expected to affect the borehole. The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by an area with an extremely low groundwater recharge rate of 1-50 mm/yr, with the remaining section underlain by groundwater with a much higher recharge rate of 351-400 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral overall.

4.5.5.4 Corridor Option A5 & A6 (Node 4 – 12)

Hydrology

Option A5 & A6 (Node 4-12) is not subject to past flood events, fluvial and coastal flooding. Approximately 10% of the corridor option lies within National Coastal Flood Hazard Mapping (NCFHM) 1%AEP. The corridor option passes through an area with single past flood event.

There is river waterbody (Flurry_030) of high importance crossing thrice and river waterbody (Ballymascanlan_010) of medium importance crossing once along the corridor option.

There are no transitional water bodies, coastal waterbodies, or designated sites proximal to the route option.

Overall, the corridor option has an imperceptible/slight (in terms of past flood events and the Ballymascanlan_010 crossing) to moderate (in terms of the Flurry_030 crossings) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option A5 & A6 (Node 4-12), the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance), however, a small extent of the corridor option is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of medium importance).

The corridor will mostly run through agricultural land but runs along existing roads in places, with the majority of the corridor being underlain by High groundwater vulnerability (approximately 70% of the corridor) with extents underlain by Extreme groundwater vulnerability (approximately 7%) and Moderate groundwater vulnerability (approximately 23%).

There are six boreholes crossed by the corridor option, all of which are situated near the northern end of the corridor option. Boreholes 2931SEW001 and 2931SEW002 have a location accuracy of 1km and the other four boreholes (2931SEW039, 2931SEW095, 2931SEW096 and 2931SEW097) have a location accuracy of 20m. Based on the surrounding

topography, groundwater is expected to flow in a south-westerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by an area with a groundwater recharge rate of 301-350 mm/yr, with the sections at either end of the corridor underlain by groundwater with a recharge rate of 251-300 mm/yr and a small section near the mid-point of the corridor underlain by groundwater with a recharge rate of 51-100mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral overall.

4.5.5.5 Corridor Option A5 (Node 12 – 14)

Hydrology

Option A5 (Node 12-14) is not subject to fluvial flooding. The corridor option passes through an area with recurring past flood event at Jenkinstown. In terms of coastal flooding, 0.1% of the corridor option lies within 0.1%AEP coastal flood extent.

There is one river waterbody (Rockmarshall_010) crossing of low importance along the corridor option.

There are no transitional water bodies, coastal waterbodies, or designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of areas with past flood events, 0.1% AEP coastal flooding and the Rockmarshall_010 crossing) magnitude of impact on the water environment, resulting in overall Neutral significance of impact.

Hydrogeology

Under Option A5 (Node 12-14), the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) but a small extent of the corridor option is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of medium importance).

The entire corridor option will run through agricultural land, with the majority of the corridor being underlain by High groundwater vulnerability (approximately 77% of the corridor) with small extents underlain by Extreme (approximately 19%) and Rock at or Near Surface (approximately 4%).

There are three boreholes (2929NEW030, 2929NEW035 and 2929NEW006) crossed by the corridor option, that have a location accuracy of 20m, 20m and 2km respectively. Based on the surrounding topography, groundwater is expected to flow in a south-westerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes. The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

Approximately half of the corridor option is underlain by an area with a low groundwater recharge rate of 51-100 mm/yr, with the remaining half underlain by groundwater with a recharge rate of 251-300 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.5.6 Corridor Option A6 (Node 12 – 13)

Hydrology

Option A6 (Node 12-13) is subject coastal flooding but not subject to past flood events and fluvial flooding. In terms of coastal flooding, approximately 0.3% of the corridor option lies within to 0.1%AEP, approximately 0.2% of the route lies within 0.5%AEP coastal flood extent.

There are no river waterbodies crossing, transitional water bodies, coastal waterbodies, or designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms coastal flooding) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option A6 (Node 12-13), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 250m of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

Approximately one-third of the corridor option is located offline, with the entire corridor being underlain by High groundwater vulnerability.

There are no boreholes crossed by the corridor option, though borehole 2929NEW070,that has a location accuracy of 20m, is immediately north of the corridor. Based on the surrounding topography, groundwater is expected to flow in a south-westerly direction, therefore groundwater which interacts with the corridor is not expected to affect the borehole. The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

Approximately half of the corridor option is underlain by an area with a groundwater recharge rate of 351-400 mm/yr, with the remaining half underlain by groundwater with a recharge rate of 251-300 mm/yr, although there is a small section of groundwater with an extremely low recharge rate of 1-50 mm/yr at the mid-point of the corridor option. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.5.7 Corridor Option A1 (Node 9 – 13)

Hydrology

Option A1 (Node 9-13) is subject to fluvial and coastal flooding. In terms of Fluvial flooding, approximately 24% of the corridor option lies within to CFRAM 10%AEP, approximately 4% of the route lies within to CFRAM 1%AEP, and approximately 64% of the route lies within CFRAM 0.1%AEP. The corridor option passes through an area with single past flood event at Bellurgan Pier. In terms of coastal flooding, approximately 22% of the corridor option lies within to 10%AEP, approximately 46% of the route lies within 0.1%AEP, and approximately 37% of the corridor option subjected to 0.5%AEP coastal flood extent.

There are no river waterbodies crossing the corridor option. The Transitional waterbodies Inner Dundalk Bay, Ballymascalan Estuary, and Castletown Estuary are crossing the corridor option. There are no coastal waterbodies proximal to the corridor option.

The corridor option passes through small area within Dundalk Bay SAC and SPA which are of extremely high importance.

Overall, the corridor option has an imperceptible/slight/moderate (in terms of the transitional water bodies crossed, SPA and SAC crossed) to significant (in terms of fluvial flooding) magnitude of impact on the water environment, resulting in an overall Slight Negative significance of impact.

Hydrogeology

Under Option A1 (Node 9-13), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option is underlain by High groundwater vulnerability. There is one borehole (2929NEW077) crossed by the corridor option, that has a location accuracy of 20m.

There are also three proximal boreholes (2929NEW055, 2929NEW061 and 2929NEW062), that all have a location accuracy of 20m, immediately north of the corridor. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'. The entire corridor option is underlain by an area with a groundwater recharge rate of 351-400 mm/yr. This corridor option will have a minimal impact on groundwater flow and quality as it largely reuses an existing road as a shared space with minimal works limited to signage and road markings. Therefore, the overall significance of impact is Neutral.

4.5.5.8 Corridor Option A1 (Node 13 – 14)

Hydrology

Option A1 (Node 13-14) is subject to a minimal extent of fluvial and coastal flooding. In terms of Fluvial flooding, approximately 2% of the corridor option lies within CFRAM 10%AEP, and approximately 4% of the route lies within CFRAM 0.1%AEP. There are no historic past flood areas proximal to the corridor option. In terms of coastal flooding, approximately 12% of the corridor option lies within to 10%AEP, approximately 38% of the route lies within 0.1%AEP, and approximately 27% of the route lies within 0.5%AEP coastal flood extent.

There is river waterbody (Rockmarshall_010) of low importance crossing once along the corridor option. There are no transitional waterbodies and no coastal waterbodies proximal to the corridor option.
The corridor option passes through a small area within Dundalk Bay SAC and SPA of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of fluvial flooding and Rockmarshall_01 crossing) to slight (in terms of coastal flooding and the SAC/SPA crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option A1 (Node 13-14), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 61% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option remains online but is underlain by High groundwater vulnerability.

There are three boreholes (2929NEW068, 2929NEW033 and 2929NEW006) crossed by the corridor option, that have a location accuracy of 20m, 20m and 2km respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'.

The entire corridor option is underlain by an area with a groundwater recharge rate of 351-400 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.5.9 Corridor Option A3 (Node 4 – 13)

Hydrology

Option A3 (Node 4-13) is subject to significant extents of fluvial and coastal flooding. In terms of Fluvial flooding, approximately 43% of the corridor option lies within CFRAM 10%AEP, approximately 36% of the route lies within CFRAM 1%AEP, and approximately 52% of the route lies within CFRAM 0.1%AEP. Approximately 2% of the corridor option lies within NIFHM 1%AEP. The corridor option passes through an area with recurring past flood event at Flurry River (near Ballymascanlan). In terms of coastal flooding, 47% of the corridor option lies within 10%AEP, 54% of the route lies within 0.1%AEP and approximately 51% of the route lies within 0.5%AEP coastal flood extent.

There is river waterbody (Flurry_030) of high importance crossing twice and river (Rockmarshall_010) of low importance crossing once along the corridor option.

There are no transitional waterbodies, coastal waterbodies and SPAs proximal to the corridor option. The corridor option passes through small area within Dundalk Bay SAC which is of extremely high importance.

Overall, the corridor option has an imperceptible/slight (in terms of Rockmarshall_010 crossing, area crossing an SAC and past flood events) to moderate/significant (in terms of fluvial, coastal flooding and Flurry_030 crossing) magnitude of impact on the water environment, resulting in an overall Slight Negative significance of impact.

Hydrogeology

Under Option A3 (Node 4-13), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and the majority of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option is online, with the majority of the corridor being underlain by High groundwater vulnerability (approximately 74% of the corridor) with the western end of the route corridor underlain by Moderate groundwater vulnerability (approximately 26% of the corridor).

There are five boreholes (2931SEW113, 2929NEW067, 2929NEW053, 2929NEW076 and 2929NEW075) crossed by the corridor option, that all have a location accuracy of 20m. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 351-400 mm/yr, one quarter underlain by groundwater with a relatively high recharge rate of 401-450 mm/yr and the remaining section underlain by groundwater with a recharge rate of 251-350mm.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.5.10 Corridor Option L2 (Node 8 – 9)

Hydrology

Option L2 (Node 8-9) is subject to significant extents of fluvial and coastal flooding. In terms of Fluvial flooding, approximately 100% of the corridor option lies within CFRAM 10% AEP, 1% AEP and 0.1% AEP. The corridor option passes through an area with single past flood event at Bellurgan Rampart and Bellurgan Pier. For coastal flooding, approximately 99.5% of the corridor option lies within 10%AEP, 0.1%AEP and 0.5%AEP coastal flood extent.

There is river waterbody (Rockmarshall_010) of low importance crossing once along the corridor option. The Ballymascalan Estuary Transitional waterbody is crossing the route option. There are no coastal waterbodies proximal to the corridor option.

The corridor option passes through a small area within Dundalk Bay SAC and is adjacent to Dundalk Bay SPA which are of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of Ballymascalan Estuary and Rockmarshall_010 crossing including past flood events) to moderate/significant (in terms of the SAC crossing, fluvial and coastal flooding), magnitude of impact on the water environment, resulting in an overall Slight Negative significance of impact.

Hydrogeology

Under Option L2 (Node 8-9), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and the majority of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option is offline, with the majority (approximately 74%) of the corridor being underlain by High groundwater vulnerability with a section (approximately 26%) underlain by Low groundwater vulnerability.

There are no boreholes crossed by the route option; though borehole 2929NEW053, that has a location accuracy of 20m, is immediately north of the corridor at its northern end. Based on the surrounding topography, groundwater is expected to flow in a south-westerly direction, therefore groundwater which interacts with the corridor is not expected to affect the borehole. The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 351-400 mm/yr, with the remaining section underlain by groundwater with an extremely low recharge rate of 1-50 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6 Section B Options Appraisal

4.5.6.1 Corridor Option B1 (Node 14 – 20)

Hydrology

Option B1 (Node 14-20) is not subject to fluvial flooding. The corridor option passes through an area with single past flood event at Dundalk to Greenore Road (near Rampart). For coastal flooding, approximately 0.4% of the corridor option lies within 10%AEP, approximately 2% of

the route lies within 0.1%AEP, and approximately 1.2% of the route lies within 0.5%AEP coastal flood extent.

There is (Rockmarshall_010) river waterbody of low importance crossing once along the corridor option. There is (Inner Dundalk Bay) transitional waterbody along the corridor option. There are no coastal waterbodies proximal to the corridor option.

There are no SPA areas proximal to the corridor option. The west section of the corridor option passes through small area within Dundalk Bay SAC of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of coastal flooding and Rockmarshall_010 crossing) to slight (in terms of the Inner Dundalk Bay adjacent to the route) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Option B1 (Node 14-20) runs fully online. Under Option B1 (Node 14-20), approximately 6% of the corridor option is underlain by Locally Important Aquifer - Gravel (of medium importance) but the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) with a small extent of the corridor underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of low importance).

The majority (approximately 63%) of the corridor is underlain by High groundwater vulnerability with extents underlain by Medium (approximately 17%), Extreme (approximately 17%) and Rock at or Near Surface (approximately 3%).

There are four boreholes (2929NEW006, 2929NEW033, 2929NEW066 and 2929NEW013) crossed by the corridor option, that have a location accuracy of 2km, 20m, 1km and 50m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction. Corridor option B1 (Node 14-20) crosses the northern extents of the 1km range of borehole 2929NEW066, therefore this borehole may be impacted by groundwater flowing from the vicinity of the corridor.
The entire corridor option is underlain by groundwater with a recharge rate of 201-400 mm/yr. As the corridor option is online, the overall significance of impact is Neutral.

4.5.6.2 Corridor Option B2 (Node 14 – 19)

Hydrology

Option B2 (Node 14-19) is not subject to fluvial or coastal flooding. The corridor option passes through an area with single past flood event at Dundalk to Greenore Road (near Rampart).

There is (Rockmarshall_010) river waterbody of low importance crossing once along the corridor option. There are no transitional waterbodies, coastal waterbodies, or designated sites proximal to the corridor option.

This option has similar impact level as option B3 (node 14-19). However, the corridor option covers less spatial extent compared to option B3 (node 14-19).

Overall, the corridor option has an imperceptible (in terms of past flood event and Rockmarshall_010 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B2 (Node 14-19), the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive with one small extent of the corridor underlain by Locally Important Aquifer - Bedrock which is Moderately Productive only in local zones (of medium importance) and another small extent of the corridor underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of low importance).

The entire corridor option runs through agricultural land, with the majority (approximately 65%) of the corridor being underlain by High groundwater vulnerability with extents underlain by Moderate (approximately 7%), Extreme (approximately 26%) and Rock at or Near Surface (approximately 2%).

There are three boreholes (2929NEW003, 2929NEW066 and 2929NEW013) crossed by the corridor option, that have a location accuracy of 2km, 1km and 50m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction. Corridor option B2 (Node 14-19) crosses the northern extents of the 1km range of borehole 2929NEW066 and the northern extents of the 50m range of borehole 2929NEW013. Therefore, these boreholes may be impacted by groundwater flowing from the vicinity of the corridor. The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 251-350 mm/yr, with the remaining section underlain by groundwater with a low recharge rate of 51-100 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.3 Corridor Option B3 (Node 14 – 19)

Hydrology

Option B3 (Node 14-19) is not subject to fluvial or coastal flooding. The corridor option passes through an area with single past flood event at Dundalk to Greenore Road (near Rampart).

There is (Rockmarshall_010) river waterbody at low importance crossing once along the corridor option. There are no transitional waterbodies, coastal waterbodies, or designated sites proximal to the corridor option.
Overall, the corridor option has an imperceptible (in terms of past flood event and Rockmarshall_010 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B3 (Node 14-19), the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. A small extent of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and another small extent of the corridor is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of low importance).

Most of the corridor option runs through agricultural land, with the majority (approximately 64%) of the corridor being underlain by Extreme groundwater vulnerability with extents underlain by High (approximately 15%), Rock at or Near Surface (approximately 20%) and Moderate (approximately 1%) vulnerability.

There are four boreholes (2929NEW034, 2929NEW006, 2929NEW003 and 2929NEW066) crossed by the corridor option, that have a location accuracy of 20m, 2km, 2km and 1km respectively. Based on the surrounding topography, groundwater is expected to flow in a

southerly direction. Corridor option B3 (Node 14-19) crosses the northern extents of the 1km range of borehole 2929NEW066, therefore this borehole may be impacted by groundwater flowing from the vicinity of the corridor. The corridor option is mostly underlain by Louth (IEGBNI_NB_G_019) and slightly by Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 151-200 mm/yr, with small sections underlain by groundwater with recharge rates of 51-100 mm/yr and 251-300mm/yr. As the impacts are only local, generally the significance of impact is Neutral.

4.5.6.4 Corridor Option B2 (Node 19 – 20)

Hydrology

Option B2 (Node 19-20) is not subject to fluvial or coastal flood areas, past flood events, river waterbodies crossing, transitional waterbodies, coastal waterbodies, and there are no designated sites proximal to the corridor option.

Overall, the corridor option has an no impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B2 (Node 19-20), the entire corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

Most of the corridor option runs through agricultural land and the majority (approximately 92%) of the corridor option is underlain by Moderate groundwater vulnerability a very small extent (approximately 8%) underlain by High groundwater vulnerability.

There are no boreholes crossed by the corridor option. The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

The entire corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.5 Corridor Option B1 (Node 20 - 21)

Hydrology

Option B1 (Node 20-21) is not subject to past flood events, fluvial and coastal flooding. Approximately 4% of the corridor option lies within NIFHM 1%AEP.

There is (Big (Louth)_020) river waterbody of high importance crossing once along the corridor option. There are no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of a minimal section crossing NIFHM 1% AEP extent) to moderate (in terms of the Big (Louth)_020 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B1 (Node 20-21), the entire corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

The entire corridor option is online, with the majority (approximately 71%) of the corridor being underlain by High groundwater vulnerability, with extents of Extreme (approximately 22%), Moderate (approximately 4%) and Rock at or Near Surface (approximately 3%).

There is one dug well (2929NEW029) crossed by the corridor option, that has a location accuracy of 1km. Based on the surrounding topography, groundwater is expected to flow in a southerly direction. The corridor extends into the western extent of the dug well's 1km range, however groundwater which interacts with the corridor is not expected to affect the dug well. The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

The majority of the corridor option is underlain by an area with a groundwater recharge rate of 201-250 mm/yr, with small sections underlain by groundwater with a recharge rate of 301-350mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.6 Corridor Option B1 (Node 21 - 23)

Hydrology

Option B1 (Node 21-23) is not subject to past flood events, fluvial and coastal flooding. Approximately 3% of the corridor option lies within NIFHM 1%AEP.

This option crosses the (Ballynamaghery_010) river waterbody of low importance once. There are no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of a minimal section crossing NIFHM 1% AEP extent and Ballynamaghery_010 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B1 (Node 21-23), the entire corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

The entire corridor option is online, with the majority (approximately 80%) of the corridor being underlain by Moderate groundwater vulnerability with an extent (approximately 20%) underlain by High groundwater vulnerability.
There is a dug well (2929NEW029) and two boreholes (2929NEW106 and 2929NEW063) crossed by the corridor option, that have a location accuracy of 1km, 1km and 500m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction. Corridor option B1 (Node 21-23) crosses the northern extents of the 1km range of borehole 2929NEW106 and the central extents of the 1km range of dug well 2929NEW029. Therefore, these boreholes may be impacted by groundwater flowing from the vicinity of the corridor.

The corridor option is mostly underlain by Dundalk Gravels (IE_NB_G_024) and slightly by Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'. The entire corridor option is underlain by an area with an average groundwater recharge rate of 201-250 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.7 Corridor Option B2 (Node 20 – 23)

Hydrology

Option B2 (Node 20-23) is not subject to past flood events, fluvial or coastal flooding. Approximately 1% of the corridor option lies within to NIFHM 1%AEP.

There is one (Big (Louth)_020) river waterbody of high importance and one (Ballynamaghery_010) river waterbody of low importance crossing the corridor option once. There are no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible in terms of a minimal section crossing NIFHM 1% AEP extent and Ballynamaghery_010 crossing) to slight (in terms of the Big (Louth)_020 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B2 (Node 20-23), the entire corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

Most of the corridor option runs through agricultural land. Approximately 67% of the corridor option is underlain by Moderate groundwater vulnerability with an extent (approximately 24%) underlain by High groundwater vulnerability and very small extents of Extreme (approximately 7%) and Rock at or Near Surface (approximately 2%).

There is a dug well (2929NEW029) and four boreholes (2929NEW106, 2929NEW100, 2929NEW039 and 2929NEW063) crossed by the corridor option, that have a location accuracy of 1km, 1km, 50m, 10m and 500m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction. Corridor option B2 (Node 20-23) crosses the northern or central extents of the ranges of the dug well and all boreholes. Therefore, this dug well, and these boreholes may be impacted by groundwater flowing from the vicinity of the corridor.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr, with small sections underlain by groundwater with recharge rates of 301-350mm/yr and 51-100 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.8 Corridor Option B3 (Node 19 – 23)

Hydrology

Option B3 (Node 19-23) is not subject to past flood events, fluvial flooding and coastal flooding. Approximately 2% of the corridor option lies within NIFHM 1%AEP.

There is (Ballynamaghery_010) river waterbody of low importance crossing the route twice and river waterbody (Big (Louth)_020) of high importance crossing once along the corridor option. There are no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible to slight (in terms of the Big (Louth)_020 and Ballynamaghery_010 crossings) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B3 (Node 19-23), the majority of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance)

with a small extent of the corridor option underlain by Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones.

Most of the corridor option runs through agricultural land, with approximately 51% of the corridor option being underlain by Moderate groundwater vulnerability with a large extent (approximately 44%) underlain by High groundwater vulnerability and very small extents of Extreme (approximately 4%) and Rock at or Near Surface (approximately 1%).

There is one borehole (2929NEW063) crossed by the corridor option at its eastern end, that has a location accuracy of 500m. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the borehole.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024), Dundalk (IE_NB_G_015) and Louth (IEGBNI_NB_G_019) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by an area with a groundwater recharge rate of 301-350 mm/yr, with small sections underlain by groundwater with a recharge rate of 101-200 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.9 Corridor Option B4 (Node 14 – 21A)

Hydrology

Option B4 (Node 14-21A) is not subject to fluvial flood events and past flood events. The corridor option passes through an area with single past flood event at Dundalk to Greenore Road (near Rampart). In terms of the coastal flooding, approximately 7% of the corridor option subjected to 10%AEP, approximately 10% of the route lies within 0.1%AEP, and approximately 9% of the route lies within 0.5%AEP coastal flood extent.

There is river (Rockmarshall_010) of low importance crossing once along the corridor option. The Inner Dundalk Bay transitional waterbody is present along the end of the corridor option. The Outer Dundalk Bay coastal waterbody is present along the end of the corridor option.

The corridor option passes through small area within Dundalk Bay SAC and SPA, both of which are of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of coastal flooding, Rockmarshall_010 crossing and the proximal distance to Inner and Outer Dundalk Bay) to slight (in terms of the SAC and SPA crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B4 (Node 14-21A), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 82% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option runs through agricultural land, with approximately 96% of the corridor being underlain by High groundwater vulnerability and approximately 4% by Moderate vulnerability.

There are five boreholes (2929NEW006, 2929NEW032, 2929NEW033, 2929NEW065 and 2929NEW066) crossed by the corridor option, that have a location accuracy of 2km, 20m, 20m, 500m and 1km respectively. Based on the surrounding topography and considering Option B4 (Node 14-21A) is along a coastal corridor, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the boreholes inland.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'. The majority of the corridor option is underlain by groundwater with a recharge rate of 351-400 mm/yr, with the eastern end underlain by groundwater with a recharge rate of 301-350 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.10 Corridor Option B4 (Node 21A - 25)

Hydrology

Option B4 (Node 21A-25) is not subject to fluvial flood events and past flood events. Approximately 5% of the corridor option lies within NIFHM 1%AEP. For coastal flooding, approximately 3% of the corridor option lies within 10%AEP, approximately 6% of the route lies within 0.1%AEP, and approximately 5% of the route lies within 0.5%AEP coastal flood extent.

There is (Big (Louth)_020) river waterbody of high importance crossing once along the corridor option. There are no transitional waterbodies proximal to the corridor option. The Outer Dundalk Bay coastal waterbody is present along the entire route option.

The corridor option is within / adjacent to Dundalk Bay SAC and SPA of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of areas subject to NIFHM 1%AEP flood extent and coastal flood risk) to moderate (in terms of the SAC and SPA crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option B4 (Node 21A-25), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and also by Locally Important Aquifer - Gravel (of medium importance).

The entire corridor option runs through agricultural land, with the majority (92%) of the corridor being underlain by High groundwater vulnerability with a small extent (8%) underlain by Moderate groundwater vulnerability.

There are two dug wells (2929NEW004 and 2929NEW005) crossed by the corridor option, that both have a location accuracy of 2km. Based on the surrounding topography and considering Option B4 (Node 21A-25) is a coastal corridor, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the dug wells inland.
The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 301-350 mm/yr, with a small western section underlain by groundwater with a recharge rate of 151-200 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.6.11 Corridor Option L3 (Node 21-21A)

Hydrology

Option L3 (Node 21-21A) has no past flood events, fluvial or coastal flooding. 20% of the corridor option lies within NIFHM 1%AEP.

There are no river waterbodies crossing, no transitional waterbodies, and no coastal waterbodies within the corridor option. The route option travels directly through agricultural fields within Dundalk Bay SAC and adjacent to Dundalk Bay SPA of extremely high importance.

Overall, the corridor option has an imperceptible (in terms of areas subject to NIFHM 1%AEP flood extent) to slight (in terms of the SAC crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option L3 (Node 21-21A), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 97% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

Approximately half of the corridor option runs through agricultural land, with the other half running along an existing access track. The corridor is underlain by High (66% of the corridor) and Moderate (34%) groundwater vulnerability.

There is one dug well (2929NEW029) and one borehole (2929NEW106) crossed by the northern extents of the corridor option, that both have a location accuracy of 1km. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the dug well or the borehole.
The corridor option is mostly underlain by Dundalk Gravels (IE_NB_G_024) and slightly by Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

The corridor option has a groundwater recharge rate of 151-200 mm/yr where it passes near the Big (Louth)_020 river waterbody and a recharge rate of 301-350 mm/yr elsewhere. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7 Section C Options Appraisal

4.5.7.1 Corridor Option C2 (Node 23 – 31)

Hydrology

Option C2 (Node 23-31) is not subject to fluvial or coastal flood areas. The corridor option passes through an area with single past flood event at Petestown, North Louth.

There are no river waterbodies crossing, no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of past flood events) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C2 (Node 23-31), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).
The entire corridor option is online, with approximately 71% of the corridor option being underlain by Moderate groundwater vulnerability with the rest underlain by High groundwater vulnerability (approximately 26%) and a small extent (approximately 3%) underlain by Extreme groundwater vulnerability.

There are no boreholes crossed by the route option. The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'. The majority of the corridor option is underlain by groundwater with a recharge rate of 351-400 mm/yr, with small sections of groundwater with recharge rates of 51-100 mm/yr and 201-250 mm/yr at the southern end of the corridor option.

The corridor option crosses Ardtullybeg (Source Outer) Public Water Supply Source Protection Area upstream of the borehole that the protection area relates to (2929NEW022).

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.2 Corridor Option C2 (Node 31 – 43)

Hydrology

Option C2 (Node 31-43) is not subject to past flood events or fluvial flooding. Approximately 0.07% of the corridor option lies within 0.1%AEP, approximately 0.1% of the Route lies within 0.5%AEP coastal flood extent.

There are no river waterbodies crossing the corridor option. There are no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of coastal flooding) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C2 (Node 31-43), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive.

The corridor option runs along a disused railway and agricultural land, with approximately 32% of the corridor being underlain by Extreme groundwater vulnerability and large extents of Moderate and High groundwater vulnerabilities (each covers approximately 28% of the corridor) and extents of Rock at or Near Surface (approximately 12%).

There is one borehole (2929NEW101) crossed by the corridor option, that has a location accuracy of 50m. There is also a proximal borehole (3229NWW008) to the immediate east of the corridor, that has a location accuracy of 20m. Based on the surrounding topography, groundwater is expected to flow in an easterly direction, therefore groundwater which interacts with the corridor during construction could impact borehole 3229NWW008. The corridor option is mostly underlain by Dundalk (IE_NB_G_015) and slightly by Dundalk Gravels (IE_NB_G_024) groundwater bodies, which are both 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 351 - 400 mm/yr, one quarter by groundwater with a recharge rate of 251-300mm/yr and the northern quarter by groundwater with a recharge rate of 301-350mm/yr.

As the impacts are only local, generally the significance of impact is Neutral.

4.5.7.3 Corridor Option C9 (Node 31 – 41)

Hydrology

Option C9 (Node 31-41) is not subject to past flood events, fluvial or coastal flooding. There is (Greenore_01) river waterbody of low importance crossing once along the corridor option. There are no past flood events, no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of Greenore_01) crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C9 (Node 31-41), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive.

The entire corridor option is online, with approximately 43% of the corridor being underlain by Moderate groundwater vulnerability and approximately 44% by High groundwater vulnerability, with approximately 10% of the corridor being underlain by Extreme groundwater vulnerability and the final approximately 3% underlain by Rock at or Near Surface.

There are no boreholes crossed by the route option. The corridor option is mostly underlain by Dundalk (IE_NB_G_015) and slightly by Dundalk Gravels (IE_NB_G_024) groundwater bodies, which are both 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 251-300 mm/yr, with a section of groundwater with a recharge rate of 351-400 mm/yr at the southern end of the corridor option.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.4 Corridor Option C5 (Node 25 – 28)

Hydrology

Option C5 (Node 25-28) is not subject to past flood events, fluvial or coastal flooding. 6% of the corridor option lies within NIFHM 1%AEP.

There is (Ballynamaghery_010) river waterbody of low importance crossing once along the corridor option.

There are no transitional waterbodies, no SPA, no SAC proximal to the corridor option. The Outer Dundalk Bay coastal waterbody is present along the corridor option.

Overall, the corridor option has an imperceptible (in terms of a minimal extent subject to NIFHM 1%AEP and Ballynamaghery_010 crossing) to slight (in terms of the proximity of the Outer Dundalk Bay) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C5 (Node 25-28), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 76% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The majority (approximately 76%) of the corridor is underlain by High groundwater vulnerability but with a large extent (approximately 24%) of Moderate groundwater vulnerability.

There are two dug wells (2929NEW004 and 2929NEW005) crossed by the corridor option, that both have a location accuracy of 2km. Based on the surrounding topography and considering Option C5 (Node 25-28) is a coastal corridor, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect the dug wells inland. The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 301-350 mm/yr and the other half underlain by groundwater with a recharge rate of 201-250 mm/yr.

This corridor option will have a minimal impact on groundwater flow and quality as it reuses an existing road as a shared space with minimal works limited to signage and road markings. Therefore, generally the significance of impact is Neutral.

4.5.7.5 Corridor Option C5 (Node 28 – 35)

Hydrology

Option C5 (Node 28-35) is not subject to past flood events, fluvial or coastal flooding. When compared with option C5 (node 25-28), approximately 0.03% of the corridor option lies within NIFHM 1%AEP.

There is (Ballynamaghery_010) river waterbody of low importance crossing once along the corridor option. There are no transitional waterbodies, and no SPAs proximal to the corridor option. The option is proximal to Carlingford Shore SAC of extremely high importance. The Outer Dundalk Bay coastal waterbody is adjacent to the corridor option.

Overall, the corridor option has an imperceptible (in terms of a minimal extent subject to NIFHM 1%AEP and Ballynamaghery_010 crossing) to slight (in terms of the proximity of the Outer Dundalk Bay and SAC) magnitude of impact on the water environment, resulting in a Neutral significance of impact.

Hydrogeology

Under Option C5 (Node 28-35), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

The entire corridor option is underlain by Moderate groundwater vulnerability.

There are no boreholes crossed by the corridor option. The corridor option is mostly underlain by Dundalk (IE_NB_G_015) and slightly by Dundalk Gravels (IE_NB_G_024) groundwater bodies, which are both 'not at risk'.

The entire corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr. This corridor option will have a minimal impact on groundwater flow and quality as it reuses an existing road as a shared space with minimal works limited to signage and road markings.

Therefore, generally the significance of impact is Neutral.

4.5.7.6 Corridor Option C5 (Node 35 – 38)

Hydrology

Option C5 (Node 35-38) is not subject to fluvial or coastal flooding. Approximately 0.5% of corridor option lies within NIFHM 1%AEP. The corridor option passes through an area with recurring past flood event at Coast Road - Cooley Pt. to Ballagan Pt. In terms of Coastal flooding, approximately 1% of the corridor option lies within 10%AEP, approximately 11% of the route lies within 0.1%AEP, and approximately 7% of the route lies within 0.5%AEP coastal flood extent.

There is (Greenore_010) river waterbody of low importance crossing the route twice and (Ballynamaghery_010) river waterbody of low importance crossing once along the corridor option. There are no transitional waterbodies proximal to the corridor option. The Outer Dundalk Bay, Mourne Coast, and Carlingford Lough coastal waterbody is present along the corridor option.

The corridor option passes through an area within Carlingford Shore SAC and Carlingford Lough SPA of extremely high importance.

Overall, the corridor option has an imperceptible/slight (in terms of past flood event, coastal flooding, and Ballynamaghery_010 crossing) to moderate (in terms of SAC and SPA crossings) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C5 (Node 35-38), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

Approximately 77% of the corridor option is underlain by High groundwater vulnerability, approximately 21% by Extreme groundwater vulnerability and approximately 2% by Moderate groundwater vulnerability.

There are two dug wells (3229NWW003 and 3229NWW005), a borehole (3229NWW004) and a spring of medium importance (3229NWW010) crossed by the corridor option, that have a location accuracy of 2km, 2km, 2km and 20m respectively. Based on the surrounding topography and considering Option C5 (Node 35-38) is a coastal corridor, groundwater is expected to flow in an easterly/south-easterly direction, therefore groundwater which interacts with the corridor is not expected to affect the dug wells or boreholes inland.

The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 301-350 mm/yr and the other half is underlain by groundwater with a recharge rate of 201-250 mm/yr. This corridor option will have a minimal impact on groundwater flow and quality as it reuses an existing road as a shared space with minimal works limited to signage and road markings.

Therefore, generally the significance of impact is Neutral.

4.5.7.7 Corridor Option C5 (38 – 42)

Hydrology

Option C5 (Node 38-42) is subject to fluvial and coastal flooding. In terms of Fluvial flooding, approximately 16% of the corridor option lies within CFRAM 1%AEP (Flood Zone A), and

approximately 50% of the route lies within CFRAM 0.1%AEP (Flood Zone B). In terms of coastal flooding, approximately 58% of the corridor option lies within 10% AEP, approximately 73% of the route lies within 0.1% AEP, and approximately 69% of the route lies within 0.5%AEP coastal flood extent.

There are no river waterbodies crossing, no transitional waterbodies proximal to the corridor option. The Carlingford Lough coastal waterbody is present along the corridor option.

The corridor option passes through small area within Carlingford Lough SPA and Carlingford Shore SAC of extremely high importance.

Overall, the corridor option has an imperceptible/slight (in terms of the Carlingford Lough adjacent to the corridor option and SAC/SPA crossings) to moderate/significant (in terms of fluvial and coastal flooding) magnitude of impact on the water environment, resulting in a Slight Negative significance of impact.

Hydrogeology

Under Option C5 (Node 38-42), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

The majority of the corridor option is online, with the majority (approximately 77%) of the corridor being underlain by High groundwater vulnerability but with a large extent (approximately 23%) of Moderate groundwater vulnerability.

There is one borehole (3231SWW001) crossed by the corridor option, that has a location accuracy of 1km. There is also a proximal borehole (3229NWW006), that has a location accuracy of 50m. Based on the surrounding topography, groundwater is expected to flow in an easterly direction, therefore groundwater which interacts with the corridor is not expected to affect these boreholes, which are to the west and north (i.e., up hydraulic gradient) of the corridor.

The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 201-300 mm/yr and the other half is underlain by groundwater with a recharge rate of 351-450 mm/yr. As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.8 Corridor Option C10 (Node 38 – 41)

Hydrology

In terms of Fluvial flooding, approximately 5% of the corridor option lies within CFRAM 10%AEP (Flood Zone A), approximately 10% of the route lies within CFRAM 1%AEP (Flood Zone A), and approximately 36% of the route lies within CFRAM 0.1%AEP (Flood Zone B). There are no past flood events proximal to the route option. For coastal flooding, approximately 45% of the corridor option lies within 10%AEP, approximately 55% of the route lies within 0.1%AEP, and approximately 52% of the route lies within 0.5%AEP coastal flood extent.

There are no river waterbodies crossing, no transitional waterbodies, no coastal waterbodies proximal to the corridor option, and no overlap with designated sites.

Overall, the corridor option has an imperceptible (in terms of fluvial flooding) to moderate (in terms of coastal flooding) magnitude of impact on the water environment, resulting in a Neutral significance of Impact.

Hydrogeology

Under Option C10 (Node 38-41), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).
The entire corridor option is online, with approximately 62% of the corridor being underlain by Moderate groundwater vulnerability and the rest (approximately 38%) being underlain by High groundwater vulnerability.

There is one borehole (3229NWW006) crossed by the corridor option, that has a location accuracy of 50m. Based on the surrounding topography, groundwater is expected to flow in an easterly direction, therefore groundwater which interacts with the corridor could impact this borehole, which is located within the eastern half of the corridor.

The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 201-300 mm/yr and the other half is underlain by groundwater with a recharge rate of 351-400 mm/yr, with small sections of groundwater with a recharge rate of 51-100 mm/yr.

As the corridor option is generally online, the overall significance of impact is Neutral.

4.5.7.9 Corridor Option C9 (Node 41 – 45)

Hydrology

Option C9 (Node 41-45) is subject to fluvial and coastal flooding. In terms of Fluvial flooding, approximately 20% of the corridor option lies within CFRAM 10%AEP (Flood Zone A), approximately 28% of the route lies within CFRAM 1%AEP (Flood Zone A), and approximately 61% of the route lies within CFRAM 0.1%AEP (Flood Zone B). There are no past flood event areas proximal to the corridor option. In terms of coastal flooding, approximately 63% of the corridor option lies within 10%AEP, approximately 69% of the route lies within 0.1%AEP, approximately 68% of the route lies within 0.5%AEP coastal flood extent.

There are no river waterbodies crossing, no transitional waterbodies, no coastal waterbodies, and no designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible to significant (in terms of fluvial and coastal flooding) magnitude of impact on the water environment, resulting in a neutral significance of impact.

Hydrogeology

Under Option C9 (Node 41-45), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

The entire corridor option is online, with the majority (approximately 93%) of the corridor being underlain by High groundwater vulnerability with a small extent (approximately 5%) of Extreme groundwater vulnerability and a small extent of Rock at or Near Surface (approximately 2%).

There is one borehole (3231SWW001) crossed by the corridor option, that has a location accuracy of 1km. Based on the surrounding topography, groundwater is expected to flow in an easterly direction. Corridor option C9 (Node 41-45) crosses the central extents of the 1km

range of borehole 3231SWW001, therefore this borehole may be impacted by groundwater flowing from the corridor.

The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

The majority of the corridor option is underlain by groundwater with a recharge rate of 401-450 mm/yr, with sections of groundwater with a recharge rate of 351-400 mm/yr at the southern end of the corridor option and 101-150 mm/yr towards the coast.

As the corridor option is generally online, the overall significance of impact is Neutral.

4.5.7.10 Corridor Option C10 (Node 41 – 44)

Hydrology

Option C10 (Node 41-44) is subject to fluvial and coastal flooding. In terms of Fluvial flooding, approximately 6% of the corridor option lies within CFRAM 10%AEP (Flood Zone A), approximately 11% of the corridor option subjected to CFRAM 1%AEP (Flood Zone A), approximately 23% of the Route subjected to CFRAM 0.1%AEP (Flood Zone B). The corridor option passes through an area with single past flood event at Grove Road, Carlingford, Co. Louth. For coastal flooding, approximately 33% of the corridor option lies within 10%AEP, approximately 52% of the corridor option lies within 0.1%AEP, and approximately 46% of the route lies within 0.5%AEP coastal flood risk.

There is (Greenore_010) river waterbody of low importance crossing the corridor thrice and (Carlingford_010) river of low importance crossing the corridor twice. The Shilties Lough transitional waterbody and the Carlingford Lough coastal waterbody is present along the corridor option.

The corridor option passes through small area within Carlingford Lough SPA and Carlingford Shore SAC of extremely high importance.

Overall, the corridor option has an imperceptible/slight (in terms of fluvial flooding, past flood events and coastal and transitional waterbodies adjacent) to moderate (in terms of river crossing, coastal flooding and SAC/SPA crossed) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C10 (Node 41-44), approximately half of the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance), whilst the other half of the corridor option is underlain by Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (of low importance).

The entire corridor option is online, with approximately 38% of the corridor also underlain by Locally Important Aquifer - Gravel. Approximately 9% of the corridor option is underlain by Rock at or Near Surface, approximately 38% is underlain by Extreme groundwater vulnerability, approximately 49% is underlain by High groundwater vulnerability and approximately 4% is underlain by Moderate groundwater vulnerability.

There are no boreholes crossed by the route option. The corridor option is underlain by Louth (IEGBNI_NB_G_019) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'. A large section of the corridor option is underlain by groundwater with a recharge rate of 551-600 mm/yr, with small sections of groundwater with recharge rates of 401-450 mm/yr, 301-350 mm/yr and 51-150 mm/yr.

As the corridor option is online, generally the significance of impact is Neutral.

4.5.7.11 Corridor Option C3-1 (Node 23 – 25)

Hydrology

Option C3-1 (Node 23-25) is not subject to past flood events, fluvial or coastal flooding. There is (Ballynamaghery_010) river waterbody of low importance crossing once along the corridor and a small section is adjacent to the river waterbody near St Andrews Church bush. There are no transitional waterbodies, coastal waterbodies, or designated sites proximal to the corridor option.

This option has similar impact as Option C9 (Node 31-41), it is considered to have marginally higher impact due to the crossing of the Ballynamaghery_010 and the section adjacent to it.

Overall, the corridor option has an imperceptible (in terms of the Ballynamaghery_010 river crossing) magnitude of impact on the water environment, resulting in a Neutral significance of impact.

Hydrogeology

Option C3-1 (Node 23-25) runs fully offline. Under Option C3-1 (Node 23-25), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 17% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The majority (approximately 73%) of the corridor is underlain by Moderate groundwater vulnerability with extents of High (approximately 25%) and Extreme (approximately 2%) groundwater vulnerability.

There are two dug wells (2929NEW004 and 2929NEW005) and one borehole (2929NEW064) crossed by the corridor option, that have a location accuracy of 2km, 2km and 500m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the corridor is not expected to affect these boreholes, which are to the east and north (up hydraulic gradient) of the corridor.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'. The majority of the corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr, with a section of groundwater with a recharge rate of 301-350 mm/yr towards the coast at the southern end of the corridor option.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.12 Corridor Option C4-1 (Node 28 – 30)

Hydrology

Option C4-1 (Node 28-30) is not subject to fluvial or coastal flooding. The corridor option passes through an area with single past flood event at Petestown, Ardtullymore, North Louth.

There are no river waterbodies crossing, transitional waterbodies, coastal waterbodies, or designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of past flood event) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Option C4-1 (Node 28-30) runs fully offline. Under Option C4-1 (Node 28-30), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance) and approximately 26% of the corridor option is also underlain by Locally Important Aquifer - Gravel (of medium importance).

The majority (approximately 74%) of the corridor is underlain by Moderate groundwater vulnerability with an extent (approximately 26%) of High groundwater vulnerability. There are two dug wells (2929NEW004 and 2929NEW005), an unknown feature classed as a Public Water Supply Source (2929NEW022) and two boreholes (2929NEW090 and 2929NEW091) crossed by the corridor option, that have a location accuracy of 2km, 2km, 1km, 20m and 20m respectively. Based on the surrounding topography, groundwater is expected to flow in a southerly direction, therefore groundwater which interacts with the northern half of the corridor could impact these dug wells, boreholes and the Public Water Supply Source, which are crossed by the corridor option.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) groundwater body, which is 'not at risk'. The majority of the corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr, with a section of groundwater with a recharge rate of 301-350 mm/yr and very small sections with a recharge rate of 1-100 mm/yr. The corridor option crosses Ardtullybeg (Source Outer and Source Inner) Public Water Supply Source Protection Area, which relates to borehole 2929NEW022.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.13 Route Option C6-1 (Node 31 – 35)

Hydrology

Option C6-1 (Node 31-35) is not subject to fluvial or coastal flooding. The corridor option passes through an area with recurring past flood event at Templetown North Louth.

There is (Ballynamaghery_010) river waterbody of low importance crossing once along the corridor option. There are no transitional waterbodies, coastal waterbodies, or designated sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of a minimal section crossing NIFHM 1% AEP extent and the Ballynamaghery_010 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Under Option C6-1 (Node 31-35), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance). The majority of the corridor option is offline.

Approximately 77% of the corridor option is underlain by Moderate groundwater vulnerability with an extent (approximately 23%) of High groundwater vulnerability. There are two boreholes (3229NWW001 and 3229NWW002) crossed by the corridor option, that both have a location accuracy of 2km. Based on the surrounding topography, groundwater is expected to flow in a southerly/south-easterly direction, therefore groundwater which interacts with the corridor is not expected to affect these boreholes, which are to the east of the corridor.

The corridor option is underlain by Dundalk Gravels (IE_NB_G_024) and Dundalk (IE_NB_G_015) groundwater bodies, which are both 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr and the other half is underlain by groundwater with a recharge rate of 301-400 mm/yr, interspersed with small sections underlain by groundwater with a recharge rate of 1-50 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.7.14 Corridor Option C7 (Node 35 – 41)

Hydrology

Option C7 (Node 35-41) is not subject to past flood events, or coastal flooding. In terms of fluvial flooding, approximately 0.09% of the corridor option lies within CFRAM 10%AEP, approximately 0.05% of the route lies within CFRAM 1%AEP, and approximately 1% of the route lies within CFRAM 0.1%AEP. Approximately 4% of the corridor option lies within NIFHM 1%AEP.

There is (Greenore_010) river waterbody of low importance crossing once along the corridor option. There are no transitional waterbodies, coastal waterbodies, or designates sites proximal to the corridor option.

Overall, the corridor option has an imperceptible (in terms of a past flood event and the Greenore_010 crossing) magnitude of impact on the water environment, resulting in an overall Neutral significance of impact.

Hydrogeology

Option C7 (Node 35-41) runs mostly offline. Under Option C7 (Node 35-41), the corridor option is underlain by Locally Important Aquifer - Bedrock which is Generally Moderately Productive (of medium importance).

Approximately half (46%) of the corridor being underlain by Moderate groundwater vulnerability with the remaining approximately 54% being underlain by High groundwater vulnerability. There are two boreholes (3229NWW001, 3229NWW002) and a dug well (3229NWW007) crossed by the corridor option, that have a location accuracy of 2km, 2km and 1km respectively. Based on the surrounding topography, groundwater is expected to flow in an easterly/south-easterly direction, therefore groundwater which interacts with the corridor could impact boreholes 3229NWW001 and 3229NWW002 which are located in the close vicinity of the central extents of the corridor.

The corridor option is underlain by Dundalk (IE_NB_G_015) groundwater body, which is 'not at risk'.

Approximately half of the corridor option is underlain by groundwater with a recharge rate of 201-250 mm/yr and the other half is underlain by groundwater with a recharge rate of 251-300 mm/yr, interspersed with small sections of groundwater with a recharge rate of 51-100 mm/yr.

As the impacts are only local, with greenway developments requiring minimal earthworks, the overall significance of impact is Neutral.

4.5.8 Assessment Summary

Table 4.5.8 below provides a summary of impact assessment for hydrology.

Table 4.5.8 Summary of Impact Ratings for Hydrology

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	3	Slight Negative
Option A4-1 (Node 4 - 9)	3	Slight Negative
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	3	Slight Negative
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	3	Slight Negative
Option L2 (Node 8 – 9)	3	Slight Negative
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral
Option B3 (Node 20 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	3	Slight Negative
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	4	Neutral

Route Option	Overall TAF MCA Impact Assessment Score	
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

Table 4.5.9 Summary of Impact Ratings for Hydrogeology

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral
Option B3 (Node 20 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral

Route Option	Overall TAF MCA Impact Assessment Score	
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	4	Neutral
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

4.6 Soils and Geology (including Waste)

4.6.1 Introduction

In this section the options have been assessed based on potential impact on the soils and geology (including Waste). This assessment is undertaken in line with Transport Infrastructure Ireland (TII) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, and also in line with GE-GEN-01101 Guide to the Implementation of Sustainability for TII Projects.

This assessment was prepared by Jorge Castrillo of Roughan & O'Donovan Consulting Engineers. Jorge is a geotechnical engineer with over 7 years of experience in consultancy. Jorge holds a B.Sc. and a M.Sc. in Civil Engineering by the University of Burgos (Spain) and by the Silesian University of Technology (Poland).

4.6.2 Methodology

The potential impact of each corridor option on the soils and geology has been assessed based on the following aspects where relevant:

- Economy based on geological resources from the vicinity of the site where the corridor options are being proposed;
- Amount of earthworks involved as per outline design. High amounts of excavations and embankment construction is likely to cause a disturbance to the existing soils and to their characteristics;
- Excavation and replacement work potentially required due to unsuitable soils below the proposed alignment. These works could disturb the existing soils and their characteristics;
- Earthworks balance. A balanced amount of cuttings and embankments could reduce the amounts of generated waste and the need for imported fill if excavated material is considered suitable;
- Waste. Any excavated soil not being reused on the scheme will need to be disposed of off-site. Depending on the type of waste (suitable soil, non-suitable soil or contaminated/hazardous soil) it shall be disposed of to its corresponding suitable licensed facility. Excavated soils that can be reused contribute to a more sustainable construction practice;
- Imported fill. The avoidance of imported fill reduces the impact on the existing geological environment and the reuse of existing soils is considered a preferred approach in terms of sustainability;
- Geological heritage. The existence of a geological heritage site within the environs of a proposed scheme can represent an impact on both.
- Geohazards (karst features, landslides, bog-bursts, coastal erosion or risks derived from floods and high tides).

The sources inquired included the Geological Survey of Ireland and the Environmental Protection Agency websites from which information on quaternary sediments, geological units, geological heritage sites, karst features, landslide susceptibility maps, landfill sites, mineral localities, active quarries and nearby industrial facilities was consulted. Also, Google Earth Pro satellite and 3D imagery was used to visualize the existing topography at the study areas.

A historical ground investigation was conducted by "McCarthy and Partners" as part of a programme of National Road Improvements for the construction of a Relief Road on an easterly route around Dundalk town. However, this historical campaign only provides information for a very small fraction of the proposed scheme.

All of the aspects listed above were reviewed for each corridor option relative to its applicability. A score was assigned to each corridor for the impacts on Land and Soils based on a holistic consideration of all the aspects listed above.

For that purpose, an impact assessment based on qualitative rating method was adopted. This includes a rating defining the potential magnitude of each impact and score ranging from 1 to 7 in a decreasing order from positive (i.e., 7- Major or highly positive) to negative (i.e., 1- Major or highly negative) in accordance with TAF.

Assumptions and limitations

This assessment has been based on the desk study from the previously listed sources, and with very limited amount of available historical ground investigation information.

Suitability and reusability of soils was assessed based on the type of quaternary sediments identified in the area during the desk study.

Earthworks amount was considered to be minimal for all corridor options as difference in existing levels and proposed levels are for the most part below 1m as per available profile drawings. As a consequence the alignments were considered to be at grade.

Any works carried out on site have the potential to impact negatively on the land and the soils to a greater or a lesser extent and very rarely would offer a general positive impact to this environment. This negative impact can be reduced by adopting sustainable practices such as maximizing the reusability of the excavated soils from the site, minimizing the generation of waste soils, protecting geological resources from soil sealing or using alternative engineering solutions (reinforced soils, geogrids, ground anchors, etc) to provide required functionality and performance to the works using the existing soils/reducing required amounts of materials.

4.6.3 Section A Options Appraisal

4.6.3.1 Route Option A3 (Node 1 – 4)

This route option is underlain by estuarine silts and clays, till derived from lower Palaeozoic sandstones and shales and in less proportion till derived from granites. Estuarine silts and clays are generally soft, compressible soil deposits which depending their conditions may not be suitable for the proposed scheme and might need some minimum ground improvements through excavation and replacement, however given the nature of the scheme these works should be limited. Any possible excavation of unsuitable material will need to be disposed of as a waste to a suitable licensed facility, but its amount is anticipated to be limited. A limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

No mineral localities nor active quarries were identified in proximity to the route option.

At the southernmost end of the route there is a recycling centre known as "V & W Recycling (Dundalk Recycling Centre)" and named as "Dundalk Landfill & Civic Waste Facility – Dundalk Town Council" registered as EPA Licensed Activity. Although no evidence of contamination is available such facilities are at higher risk of being a source of contamination and therefore a cautious approach should be adopted.

A fuel supplier called "Niall Clarke Oils" is noted at the northern stretch of route, however excavation works might be minor and any risk of finding contamination would be imperceptible.

The northeastern end of the route passes through a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.
The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.2 Route Option A4-1 (Node 1 – 4)

The proposed route option passes mainly over estuarine silts and clays and in much lower proportion over marine gravel and sands and over some marginal areas of till derived from granites.

Estuarine silts and clays are generally soft, compressible soil deposits which depending on their conditions may not be suitable for the proposed scheme and might need some minimum ground improvements through excavation and replacement, however given the nature of the scheme these works should be limited. Any possible excavation of unsuitable material will need to be disposed of as a waste to a suitable licensed facility, but its amount is anticipated to be limited. A limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

No mineral localities nor active quarries were identified in proximity to the route option.

At the southernmost end of the route there is a recycling centre known as "V & W Recycling (Dundalk Recycling Centre)" and named as "Dundalk Landfill & Civic Waste Facility – Dundalk Town Council" registered as EPA Licensed Activity. Although no evidence of contamination is available such facilities are at higher risk of being a source of contamination and therefore a cautious approach should be adopted.

The route passes through some portions of a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.3 Route Option A4-1 (Node 4 - 9)

The proposed route option passes mainly over estuarine silts and clays and in much lower proportion over marine gravel and sands and over some marginal areas of till derived from granites and alluvium.

Estuarine silts and clays are generally soft, compressible soil deposits which depending on their conditions may not be suitable for the proposed scheme and might need some minimum ground improvements through excavation and replacement, however given the nature of the scheme these works should be limited. Any possible excavation of unsuitable material will need to be disposed of as a waste to a suitable licensed facility, but its amount is anticipated to be limited. A limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

The proposed route passes approximately 300m distant from a mineral locality, consisting of clay and brick. No active quarries were identified in the proximity of the route option.

Approximately 200m distant from the southernmost end of the proposed route there is a manufacturing industry called "Bellurgan Precision Engineering Limited" related to machined components and sub-assemblies which cannot be ruled out as a possible source of contamination.

Most of the route passes through a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.
The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.4 Route Option A5 & A6 (Node 4 – 12)

The proposed route option passes mainly over till derived from granites, which is generally a suitable material for construction activities. Some small amount of alluvium is present at the northeaster end of route option A5, which is likely to be compressible and soft. Marginal and localised amounts of bedrock outcrop and subcrop could also be encountered. Some very reduced amounts of soft ground might require excavation and replacement. Excavated unsuitable material shall be treated as a waste and to be disposed of to a suitable licensed facility. A very limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

No mineral localities nor active quarries are in the proximity of the proposed route.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

The entire option A6 passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.5 Route Option A5 (Node 12 – 14)

The proposed route option passes mainly over till derived from granites, which is generally a suitable material for construction activities. Some small amount of cut over raised peat and alluvium are present at the eastern half of the route and they are likely to be excavated and replaced to some extent. This excavated unsuitable material shall be treated as a waste and to be disposed of to a suitable licensed facility. A very limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

No mineral localities nor active quarries are in the proximity of the proposed route.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.6 Route Option A6 (Node 12 – 13)

The proposed route option passes mainly over till derived from granites, which is generally a suitable material for construction activities, and over marine gravel and sands. Minor amounts of cut over raised peat is found localised in the middle of the route and is likely to require excavation and replacement. This excavated unsuitable material shall be treated as a waste and to be disposed of to a suitable licensed facility. A very limited amount of imported fill could be needed to account for replacement of any possible soft ground removal and to achieve the proposed levels.

No mineral localities nor active quarries are in the proximity of the proposed route.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.7 Route Option A1 (Node 9 – 13)

The proposed route option passes mainly over marine gravel and sands. Some compaction works might be required but no excavation and replacement is anticipated and therefore only an imperceptible waste material generation is foreseen, which will need to be disposed to a suitable licensed facility. Similarly, insignificant amounts of imported fill might be required to achieve the proposed levels.

No mineral localities nor active quarries are in the proximity of the proposed route.

No landfill activities were noted in the vicinity of the proposed route option, however some locations were noted where possible contamination cannot be ruled out. These were the following:

- A car body repair centre called "Competition-motors" near the western end of the route;
- A manufacturing industry called "Bellurgan Precision Engineering Limited" related to machined components and sub-assemblies. It is located at the western end of the route;
- A land noted to have agricultural/farming plant at the eastern end of the route.

The entire option passes adjacent to a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.8 Route Option A1 (Node 13 – 14)

The proposed route option passes mainly over marine gravel and sands and over some marine beach sands. Some compaction works might be required but no excavation and replacement is anticipated and therefore only an imperceptible waste material generation is foreseen, which will need to be disposed to a suitable licensed facility. Similarly, insignificant amounts of imported fill might be required to achieve the proposed levels.

A mineral locality of iron is noted approximately 600m to the East of the eastern end of the proposed route. No active quarries are noted.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.9 Route Option A3 (Node 4 – 13)

The proposed route option passes mainly over marine gravel and sands and over some marine beach sands. In a smaller proportion the route also passes over till derived from granites and over some minor area of alluvium, which might require some degree of excavation and replacement, which would lead to some waste material to be disposed of in a suitable licensed facility. Some compaction works might be required. Similarly, a small amount of imported fill might be required to achieve the proposed levels after removal of localised soft ground.

No mineral localities nor active quarries are in the proximity of the proposed route.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.3.10 Route Option L2 (Node 8 – 9)

The proposed route option passes over marine beach sands, estuarine silts and clays and, in a less proportion, over marine gravel and sands.

Estuarine silts and clays are generally soft, compressible soil deposits which depending on their conditions may not be suitable for the proposed scheme and might need some minimum ground improvements through excavation and replacement, however given the nature of the scheme these works should be limited. Any possible excavation of unsuitable material will need to be disposed of as a waste to a suitable licensed facility, but its amount is anticipated to be limited. A limited amount of imported fill could be needed to account for replacement of some soft ground removal and to achieve the proposed levels.

The route passes near a mineral locality of clay and break, approximately 400m to the West of its northern end.

No active quarries are in the proximity of the proposed route.

No landfill nor industrial activities were noted in the vicinity of the proposed route option.

A part of this option passes through or is adjacent to a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4 Section B Options Appraisal

4.6.4.1 Route Option B1 (Node 14 – 20)

The proposed route option passes mainly over till derived from granites followed by gravels derived from granite. Some marine gravel and sands are below the western end of the route and some bedrock outcrop or subcrop can be found localised.

No excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any amount of waste will need to be disposed to a suitable licensed facility.

The following mineral localities are found in the vicinity of the proposed route:

- Iron: located 300m to the North of the western end of the route;
- Sands and gravels: these are recorded as active pits and they appear at three different locations which are, approximately, at the middle of the route (at the R173 road) and 1km to the southwest and southeast of the eastern end of the route.

The route also passes approximately 1km distant from an active quarry, but no information is available about it.

There is a distillery named "Cooley Distillery" approximately 600m to the East of the route's eastern end which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.2 Route Option B2 (Node 14 – 19)

Almost the entire proposed route option passes over till derived from granites. A very small part of it is underlain by gravels derived from granite, by bedrock outcrop or subcrop and by marine gravel and sands at the western end of the route.

No excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

The following mineral localities are found in the vicinity of the proposed route:

- Iron: located 300m to the North of the western end of the route;
- Sands and gravels: these are recorded as active pits and they appear at three different locations which are, approximately, adjacent to the middle of the route (at the R173 road) and 1.3km to the south and southeast of the eastern end of the route.

The route also passes approximately 1km distant from an active quarry, but no information is available about it.

There is a distillery named "Cooley Distillery" approximately 600m to the East of the route's eastern end which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.
The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.3 Route Option B3 (Node 14 – 19)

Almost the entire proposed route option passes over till derived from granites. A very small part of it is underlain by bedrock outcrop or subcrop that is found scattered throughout the site.

No excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

The following mineral localities are found in the vicinity of the proposed route:

- Iron: located adjacent to the site at the western end of the route;
- Sands and gravels: these are recorded as active pits and they appear at three different locations which are, approximately, 300m to the South of the middle of the route (at the R173 road) and 1.3km to the south and southeast of the eastern end of the route.

The route also passes approximately 1km distant from an active quarry, but no information is available about it.

There is a distillery named "Cooley Distillery" approximately 1.5km to the East of the route's eastern end which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.4 Route Option B2 (Node 19 – 20)

The proposed route option is underlain by till derived from granites.

No excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

Mineral localities are found in the vicinity of the proposed route in the form of sands and gravels at three different locations, which are, approximately, 1km to the West of the western end of the route and 1km to the southwest and southeast of the eastern end of the route.
The route also passes approximately 1km distant from an active quarry, but no information is available about it.

There is a distillery named "Cooley Distillery" approximately 600m to the East of the route's eastern end which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.5 Route Option B1 (Node 20 - 21)

The proposed route option is underlain by till derived from granites and potentially by some alluvium.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A Mineral locality of sand and gravel is found 500m to the south of the eastern end of the route.

A quarry is also noted adjacent to the eastern end of the route for which no information is available and it is not recorded as an active quarry. Due to the proximity with the mineral locality formerly mentioned it could be a quarry of sands and gravels.

There is a distillery named "Cooley Distillery" next to the eastern end of the route which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.6 Route Option B1 (Node 21 - 23)

The proposed route option is mostly underlain by till derived from granites followed by gravels derived from granite. Some alluvium is also present at the western end of the route which corresponds to Castletown River.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A Mineral locality of sand and gravel is found 500m to the south of the western end of the route where a quarry is noted, however no information nor current status is available.

Another mineral locality of sand and gravel is located right at the eastern end of the route, at Ballaverty. It is described as an active pit producing concrete blocks and brick sand with low lime content, washed sand and gravel for building. It is believed to be active.

There is a distillery named "Cooley Distillery" next to the western end of the route which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to and through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.7 Route Option B2 (Node 20 – 23)

The proposed route option is mostly underlain by till derived from granites and by gravels derived from granite. Some alluvium is also present at the western part of the route which corresponds to Castletown River.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A Mineral locality of sand and gravel is found 500m to the south of the western end of the route where a quarry is noted, however no information nor current status is available.
Another mineral locality of sand and gravel is located right at the eastern end of the route, at Ballaverty. It is described as an active pit producing concrete blocks and brick sand with low lime content, washed sand and gravel for building. It is believed to be active.

There is a distillery named "Cooley Distillery" next to the western end of the route which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.8 Route Option B3 (Node 19 – 23)

The proposed route option is mostly underlain by till derived from granites and by gravels derived from granite. Some alluvium is also present at the crossing with Castletown River where a small, localised area of bedrock outcrop or subcrop is also found.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A mineral locality of sand and gravel is located right at the eastern end of the route, at Ballaverty. It is described as an active pit producing concrete blocks and brick sand with low lime content, washed sand and gravel for building. It is believed to be active.

There is a distillery named "Cooley Distillery" nearly 600m to the South of the central part of the route which might constitute a possible source of contamination, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes through a geoheritage audited site known as "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.9 Route Option B4 (Node 14 – 21A)

The proposed route option is underlain by gravels derived from granite. Some marine gravel and sands are also present, at the western end of the route, and some alluvium at its eastern side, corresponding to Castletown River.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

The following type of mineral localities are found in the vicinity of the route:

- Iron. Found 400m to the East of the western end of the route;
- Sand and gravel. Located at three different locations which are approximately 700m to the north of the route in the vicinity of Rampark, described as an active gravel pit, 400m to the north of the route, near Maddoxland townland, described as an active gravel pit, and 700m to the north of the route's eastern end, at Mountbagnal townland, which is noted to be a quarry and is described as producing sand and gravel for concrete, building and plastering.

There is a distillery named "Cooley Distillery" 800m to the North of the eastern end of the route which might constitute a possible source of contamination via Castletown River downstream, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The entire option passes adjacent to a geoheritage audited site known as "Dundalk Bay" (County Geological Site Code: LH018) and described as extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands.

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.10 Route Option B4 (Node 21A - 25)

The proposed route option is underlain by gravels derived from granite. Some alluvium is also present at the western end of the route corresponding to Castletown River. Marine beach sands run parallel to the southern side of the proposed route and could also be encountered.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A sand and gravel mineral locality is found 700m to the north of the route's western end, at Mountbagnal townland, which is noted to be a quarry and is described as producing sand and gravel for concrete, building and plastering.

There is a distillery named "Cooley Distillery" 800m to the North of the western end of the route which might constitute a possible source of contamination via Castletown River downstream, although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

Most of this route passes through a geoheritage audited site known as "Rathcor Complex" (County Geological Site Code: LH027) and described as comprising a large accumulation of hummocky sands and gravels (area of hummocky topography 8 x 1 km in extent).

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.4.11 Route Option L3 (Node 21-21A)

The proposed route option is underlain by gravels derived from granite and from alluvium as this option runs along Castletown River.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A sand and gravel mineral locality is found right at the western side of the route option, at Mountbagnal townland, which is noted to be a quarry and is described as producing sand and gravel for concrete, building and plastering. It is believed to be still active.

There is a distillery named "Cooley Distillery" right next to the northern end of the route which might constitute a possible source of contamination although no evidence of it is known.

No landfills were noted in the vicinity of the proposed route option.

The route passes in close proximity with the following geological heritage audited sites:

- To the east side of the route: "Rathcor Complex" (County Geological Site Code: LH027) and described as comprising a large accumulation of hummocky sands and gravels (area of hummocky topography 8 x 1 km in extent).
- To the north side of the route: "Carlingford Area" (County Geological Site Code: LH009) and described as Palaeogene volcanic and intrusive igneous rocks, minerals and metamorphosed country rocks.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5 Section C Options Appraisal

4.6.5.1 Route Option C2 (Node 23 – 31)

The proposed route option is underlain mostly by till derived from Lower Palaeozoic sandstones and shales, followed by gravels and till both derived from granites, at the western part of the route.

No amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.
A mineral locality of sand and gravel is located right at the eastern end of the route, at Ballaverty. It is described as an active pit producing concrete blocks and brick sand with low lime content, washed sand and gravel for building. It is believed to be active.

No landfills were noted in the vicinity of the proposed route option.

The western part of the route passes adjacent to an audited geological heritage site named "Bush Delta" (County Geological Site Code: LH008) described as comprising a raised, elevated area of sands and gravels, including a working pit. The delta includes a large accumulation of sands and gravels deposited between two ice lobes.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.2 Route Option C2 (Node 31 – 43)

The proposed route option is underlain almost entirely by till derived from Lower Palaeozoic sandstones and shales. There are some small isolated areas of bedrock outcrop or subcrop scattered throughout the site and a single localised area of lacustrine sediments approximately at the middle of the route. Cut over raised peat was found in the vicinity of the site at some localised areas.

Reduced or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A mineral locality of clay was noted 600m to the East of the eastern end of the route.

No landfills were noted in the vicinity of the proposed route option.

A geological heritage audited site was identified to the East of the eastern end of the route. It is called "Greenore Raised Beach" (County Geological Site Code: LH019) and is described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.3 Route Option C9 (Node 31 – 41)

The proposed route option is underlain almost entirely by till derived from Lower Palaeozoic sandstones and shales. There are some small, isolated areas of bedrock outcrop or subcrop, alluvium and cut over raised peat.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

A mineral locality of clay was noted 700m to the North of the eastern end of the route.

No landfills were noted in the vicinity of the proposed route option.

A geological heritage audited site was identified to the North of the eastern end of the route. It is called "Greenore Raised Beach" (County Geological Site Code: LH019) and is described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.4 Route Option C5 (Node 25 – 28)

The proposed route option is underlain by gravels and till both derived from granite. A strip of marine beach sands runs parallel to the coast and in proximity to the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

Most of this route passes through a geoheritage audited site known as "Rathcor Complex" (County Geological Site Code: LH027) and described as comprising a large accumulation of hummocky sands and gravels (area of hummocky topography 8 x 1 km in extent).

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.5 Route Option C5 (Node 28 – 35)

The proposed route option is underlain, in a similar proportion, by till from granites, at the western half of the route, and by till from Lower Palaeozoic sandstones and shales, at the eastern half. A strip of marine beach sands runs parallel to the coast and in proximity to the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

The easternmost part of the route passes through a geological heritage audited site known as "Templetown Raised Beach" (County Geological Site Code: LH031), described as a wide, flat-topped feature along the shoreline west of Cooley point extending inland up to 500m. It is also described as a beach deposited when sea level was approximately 20m higher than it is today.

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.6 Route Option C5 (Node 35 – 38)

The proposed route option is mainly underlain by till derived from Lower Palaeozoic sandstones and shales and by marine gravel and sands. There are also some gravels derived from granite, locally found at the southern end of the route, and some small areas of bedrock outcrop or subcrop at the middle of the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

The route passes in proximity to a mineral locality identified as lead. Other two mineral localities were found approximately 600m distant from the proposed route at locations in between Willville and Whitestown and in between Whitestown and Ballagan, which identified clay and marl, respectively.

A geological heritage audited site was noted at the southern end of the route known as "Cooley Point" (County Geological Site: LH015) described as "a low coastal cliff section several 100m long, c.6-8m high for most of its extent. Sediments in cliff are important evidence for sea levels in this area at the end of the last Ice Age".

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.7 Route Option C5 (38 – 42)

The proposed route option is underlain by till derived from Lower Palaeozoic sandstones and shales, by marine gravel and sands and by gravels derived from Lower Palaeozoic sandstones and shales.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

There are some economic activities in the vicinity of the northern end of the route with potential for contamination, although no evidence of such is available. These are, in order of proximity to the route, a manufacturing centre called "Slieve Foy Tool & Die Ltd.", a transportation service called "Hanlon Transport Limited", a warehouse named "Teelings Whiskey" and Greenore Port Limited, at the port.

A mineral locality is noted 500m to the West of the northern end of the route. It is recorded as clay.

A geological heritage audited site was noted at the northern half of the proposed route. It is named "Greenore Raised Beach" (County Geological Site Code: LH019) and described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.8 Route Option C10 (Node 38 – 41)

The proposed route option is underlain by till derived from Lower Palaeozoic sandstones and shales and by marine gravel and sands.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

There are some economic activities in the vicinity of the northern side of the route with potential for contamination, although no evidence of such is available. These are, in order of proximity to the route, a manufacturing centre called "Slieve Foy Tool & Die Ltd.", a transportation service called "Hanlon Transport Limited", a warehouse named "Teelings Whiskey" and Greenore Port Limited, at the port.

A mineral locality is noted 700m to the North of the western end of the route. It is recorded as clay.

Most of the proposed route passes through a geological heritage audited site. It is named "Greenore Raised Beach" (County Geological Site Code: LH019) and described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.9 Route Option C9 (Node 41 – 45)

The proposed route option is underlain by marine gravels and sands and by gravels derived from Lower Palaeozoic sandstones and shales.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

There are some economic activities adjacent to the route with potential for contamination, although no evidence of such is available. These are, at the eastern side of the route, a manufacturing centre called "Slieve Foy Tool & Die Ltd.", a transportation service called "Hanlon Transport Limited" and a warehouse named "Teelings Whiskey". At the north of the northern end of the route the port is found, named "Greenore Port Limited".

A mineral locality is noted 500m to the West of the route. It is recorded as clay.

The proposed route passes through a geological heritage audited site. It is named "Greenore Raised Beach" (County Geological Site Code: LH019) and described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.10 Route Option C10 (Node 41 – 44)

The proposed route option is underlain by till derived from Lower Palaeozoic sandstones and shales, gravels derived from granite, marine gravel and sands, and in smaller amounts by some bedrock outcrops or subcrops found scattered throughout the site.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

The western end of the route is within Carlingford, which is an urban area and therefore subject to possible contamination, although no evidence of this is available.

A mineral locality is noted approximately 300m to the East of route, between Mullatee and Greenore areas. It is recorded as clay.

The proposed route passes adjacent to a geological heritage audited site. It is named "Greenore Raised Beach" (County Geological Site Code: LH019) and described as a wide, flat-topped feature adjacent to the shoreline around greenore. It is also described as the remains of a beach deposited in the locality when sea level was 3-5m higher than it is today.

It is noted that the proposed route is in proximity to the edge of the coast and might be subject to the effects of coastal erosion.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.11 Route Option C3-1 (Node 25 – 23)

The proposed route option is underlain mostly by till derived from granites followed by gravels derived from granite. There is also a small portion of fen peat, alluvium and potentially minor amounts of lacustrine sediments.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

A mineral locality is present at the north of the northern end of the route. It is an active pit recorded as sand and gravel and described as producing concrete blocks and brick sand with low lime content (water filtration) and washed sand and gravel for building, believed to be still active.

The proposed route passes through two areas of the same geological heritage audited site. It is named "Rathcor Complex" (County Geological Site Code: LH027) and described as

comprising a large accumulation of hummocky sands and gravels (area of hummocky topography 8 x 1 km in extent).

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.12 Route Option C4-1 (Node 28 – 30)

The proposed route option is underlain at the southern half of the route by till derived from granites, and by till and gravels both derived from Lower Palaeozoic sandstones and shales at the northern half of the route. There are some small scattered areas of lacustrine sediments and fen peat in the middle portion of the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

A mineral locality is present approximately 800m to the West of the northern end of the route. It is an active pit recorded as sand and gravel and described as producing concrete blocks and brick sand with low lime content (water filtration) and washed sand and gravel for building, believed to be still active.

The proposed route passes through a geological heritage audited site named "Rathcor Complex" (County Geological Site Code: LH027) and described as comprising a large accumulation of hummocky sands and gravels (area of hummocky topography 8 x 1 km in extent).

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.13 Route Option C6-1 (Node 31 – 35)

The proposed route option is underlain, for the most part, by till derived from Lower Palaeozoic sandstones and shales and secondarily, in the middle part of the route, by gravels derived from Lower Palaeozoic sandstones and shales. A small, localised area of cut over raised peat is noted at the southern part of the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

The proposed route passes at its southernmost stretch through a geological heritage audited site known as "Templetown Raised Beach" (County Geological Site Code: LH031), which is described as a wide, flat-topped feature along the shoreline west of Cooley Point extending inland 500m. It is also described as a beach deposited when sea level was approximately 20m higher than it is today

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.5.14 Route Option C7 (Node 35 – 40)

The proposed route option is underlain almost entirely by till derived from Lower Palaeozoic sandstones and shales. Small, localised areas of alluvium and cut over raised peat were

noted at the northern third of the route and an area of gravels derived from granite was identified at the southern end of the route.

Minor or no amounts of excavation and replacement works are anticipated. Any generation of waste and any fill import requirement to reach design levels should be minor. Any possible amount of waste will need to be disposed to a suitable licensed facility.

No landfills were noted in the vicinity of the proposed route option.

The proposed route passes adjacent to two different geological heritage audited sites next to each other, at the southern end of the route. These are the following:

- "Templetown Raised Beach" (County Geological Site Code: LH031): it is described as a wide, flat-topped feature along the shoreline west of Cooley Point extending inland 500m. It is also described as a beach deposited when sea level was approximately 20m higher than it is today.
- "Cooley Point" (County Geological Site Code: LH015): it is described as a low coastal cliff section several 100m long, c. 6-8m high for most of its extent. It is also reported that sediments in cliff are important evidence for sea levels in this area at the end of the last Ice Age.

The proposed route option is considered to have, as a whole, a neutral impact on Soils and Geology.

4.6.6 Assessment Summary

Table 4.6.1 Summary of Impact Ratings for Soils and Geology

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	4	Neutral
Option A5 (Node 12 – 14)	4	Neutral
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	4	Neutral
Option A3 (Node 4 – 13)	4	Neutral
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	4	Neutral
Option B2 (Node 14 – 19)	4	Neutral
Option B3 (Node 14 – 19)	4	Neutral
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	4	Neutral
Option B1 (Node 21 - 23)	4	Neutral
Option B2 (Node 20 – 23)	4	Neutral

Route Option	Overall TAF MCA Impact Assessment Score	
Option B3 (Node 19 – 23)	4	Neutral
Option B4 (Node 14 – 21A)	4	Neutral
Option B4 (Node 21A - 25)	4	Neutral
Option L3 (Node 21-21A)	4	Neutral
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	4	Neutral
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	4	Neutral
Option C5 (Node 35 – 38)	4	Neutral
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	4	Neutral
Option C9 (Node 41 – 45)	4	Neutral
Option C10 (Node 41 – 44)	4	Neutral
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	4	Neutral
Option C6-1 (Node 31 – 35)	4	Neutral
Option C7 (Node 35 – 41)	4	Neutral

4.7 Cultural Heritage

4.7.1 Introduction

This assessment provides an evaluation of Stage 2 options for the proposed Dundalk Bay to Carlingford Greenway to define the emerging preferred option from a Cultural Heritage perspective. The report details the recorded or known Cultural Heritage presence within each option.

The assessment was prepared by Dr Clare Crowley of Courtney Deery Heritage Consultancy Ltd. Clare is a Senior Archaeologist and cultural heritage specialist with over 25 years' experience in consultancy and research. Clare holds a PhD in Archaeology, Technical University Dublin, and a B.A. (Hons) in Ancient History, Archaeology & French, Trinity College Dublin, a Certificate in Condition Surveys of Historic Buildings, Oxford University, and Certificate in Repair and Conservation of Historic Buildings, Dublin CivicTrust. She is a Full Member of the Institute of Archaeologists of Ireland.

4.7.2 Methodology

The assessment has been guided by the methodologies outlined in 'Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects' (TII 2024).

Cultural Heritage includes archaeology, architectural heritage, folklore and history (EPA 2022). It is a broad term that incorporates a wide range of tangible and intangible cultural considerations. Cultural heritage can relate to settlements, former designed landscapes, buildings and structures, folklore, townland and place names, and historical events, as well as traditions (e.g. mass paths and pilgrim ways) and traditional practices (e.g. saints' pattern

days). Cultural heritage is part of our cultural identity and contributes to defining a sense of place.

The Cultural Heritage assessment is about managing change and creating a framework that considers the Cultural Heritage environment and the significance of archaeological monuments and protected structures, while securing an approach for the appropriate design and development of a greenway.

The desk-based assessment took account of the number and type of cultural heritage receptors within each option, both designated[14] and (where known) undesignated. All receptors within the options, as well as relevant receptors in proximity to them, have assessment ID numbers (CH1, CH2, etc). The numbers were initially assigned for use during the Phase 1 Constraints Study and have been retained for use in this assessment; as such, they are not necessarily sequential.

Given the type of development, it should be possible in most instances (with some exceptions) to avoid direct negative effects on the designated heritage receptors within the corridor and to protect their settings with sympathetic design. The assessment also took account of the opportunities for the enhancement of the cultural heritage environment through the provision of a greenway. This may occur through the use of heritage signage, increased visibility and awareness of heritage sites, and the development of a sense of place that is integral to the cultural heritage of an area.

4.7.2.1 Study Area

The area examined for this study includes the full extents of the proposed option corridors as provided. This was sufficient to assess the immediate Cultural Heritage potential of the proposed project. The corridors provided are of varying widths and, in line with the overall options selection process for the project, they were treated as linear constraints areas for the purpose of the Phase 2 Stage 2 assessment. In addition, the likely expected impact areas, as provided for the purpose of the assessment, were used to determine where potential direct impacts may occur.

Professional judgement was used to determine where the study area should be extended to consider archaeological sites / monuments or historic structures that lie beyond its boundaries. As required and where appropriate, the relationship of structures, sites, monuments, and complexes that fall outside this study area was considered and evaluated.

The route options traverse 48 townlands, as listed in Table 4.7.1. The toponomy of an area can be a valuable indicator of the type of cultural heritage within it. Townlands are land divisions that form a unique feature in the Irish landscape, their origin can be of great antiquity, and many are pre-Norman in date. They existed long before the establishment of parishes or counties. Townland boundaries can take the form of natural topographical features (such as rivers) or routeways but are predominantly formed by well-built artificially constructed earthen bank and ditch divisions. Boundaries that demarcate the townland are often distinguishable from standard field division boundaries. In a linear development it will be impossible to avoid an impact on such boundaries. As such, they are not taken into account when assessing the individual route options.

[14] Designated receptors are those with statutory protection, as included in the list of National Monuments, in the Record of Monuments and Places (RMP) / Site and Monuments Record (SMR), and in the Record of Protected Structures and Architectural Conservation Areas (as provided in the county development plan) (see Section 2.1.2.2 Sources of Information). Undesignated receptors include sites or features included in the National Inventory of Architectural Heritage surveys and any other receptors of cultural heritage interest or value that are identified through the assessment.

Table 4.7.1 Townlands crossed by the route options (including placename meanings)

Townland Name	Gallic Name & meaning	Parish	Barony
Aghaboys	An tÁth Buí -Yellow Ford	Ballymascanlan	Lower Dundalk
Annaloughan	Áth an Locháin - Ford of the lake	Ballymascanlan	Lower Dundalk
Ardtully Beg	Ardtulaigh Bheag - small hillock	Carlingford	Lower Dundalk
Ardtully More	Ardtulaigh Mhór - Big Hillock	Carlingford	Lower Dundalk
Ballagan	Baile Lagáin - Hagans town	Carlingford	Lower Dundalk
Ballaverty	Baile Uí Laibheartaigh - Flaherty's town	Carlingford	Lower Dundalk
Ballug	Baile Loig - hollow town	Carlingford	Lower Dundalk
Ballymascanlan	Baile Mhic Scanláin - Scanlantown	Ballymascanlan	Lower Dundalk
Ballynamaghery	Baile na Machaire - Town of the plain	Carlingford	Lower Dundalk
Ballynamony (Bradshaw)	Baile na Móna - Bradshaws turftown	Carlingford	Lower Dundalk
Ballynamony (Murphy)	Baile na Móna - Murphys Turftown	Carlingford	Lower Dundalk
Ballytrasna	Baile an Trasna -Crosstown	Carlingford	Lower Dundalk
Bellurgan	Baile na Lorgan - town of long hills	Ballyboys	Lower Dundalk
Castlecarragh	An Caisleán Carrach - The rugged Castle	Carlingford	Lower Dundalk
Castletowncooley	Caisleán Chuaille - Castle Cooley	Carlingford	Lower Dundalk
Culfore	Cúil Fobhair - the cold back of a hill	Ballymascanlan	Lower Dundalk
Dowdallshill	Mullach an Dúdálaigh - Dowdal's Hill	Dundalk	Upper Dundalk
Earls Quarter	Ceathrú an Iarla - The Earls Quarter	Carlingford	Lower Dundalk
Galtrimsland	Fearann Ghalatroma - Galtrims Land	Carlingford	Lower Dundalk
Grange Irish	An Ghráinseach Ghaelach - The Irish grange	Carlingford	Lower Dundalk
Grange Old	An tSeanghráinseach - old grange	Carlingford	Lower Dundalk
Greenore	An Grianfort - a sunny port	Carlingford	Lower Dundalk
Liberties of Carlingford	Líbeartaí Chairlinn: presumably by location derived by its location outside the town walls of Carlingford	Carlingford	Lower Dundalk
Loughanmore	An Lochán Mór - Great Lake	Ballymascanlan	Lower Dundalk
Maddoxgarden	Garraí Mhadóg - Maddox Gardens	Carlingford	Lower Dundalk
Maddoxland	Fearann Mhadóg - Maddox land	Carlingford	Lower Dundalk
Marsh North	An Méirse Thuaidh - North Mersey	Dundalk	Upper Dundalk
Millgrange	Gráinseach an Mhuilinn - Mill grange	Carlingford	Lower Dundalk
Monksland	Fearann na Manach - Monks land	Carlingford	Lower Dundalk
Mountbagnall	Moin Bhagnail - previously referred to as Le Coly (1332)	Carlingford	Lower Dundalk

Townland Name	Gallic Name & meaning	Parish	Barony
Muchgrange	An Ghráinseach Mhór - large grange (formally referred to as English Grange in 1302	Carlingford	Lower Dundalk
Mucklagh	An Muclach - pig farm	Carlingford	Lower Dundalk
Mullabane	An Mullach Bán - white summit	Carlingford	Lower Dundalk
Mullaghattin	Mullach Aitinne - gorse hilltop	Carlingford	Lower Dundalk
Mullatee	Mullach an tSí - fairy hill	Carlingford	Lower Dundalk
Navan	Nabhainn- Navan	Ballymascanlan	Lower Dundalk
Petestown	Baile Pheití - Petestown	Carlingford	Lower Dundalk
Piedmont	Baile Mhic Dhónaill - Maconnolly town	Ballymascanlan	Lower Dundalk
Proleek	Proilíg - origininaating from the older Prialic meaning a giants grave	Ballymascanlan	Lower Dundalk
Rampark	Páirc an Reithin - Ram Park	Ballymascanlan	Lower Dundalk
Rath	An Ráth - Fort	Carlingford	Lower Dundalk
Rath Lower	an Rath Íochtarach - Lower fort	Carlingford	Lower Dundalk
Rathcor	An Ráth Corr - round hill fort	Carlingford	Lower Dundalk
Rockmarshall	Carraig an Mharascalaigh - origniating from Sir Nicholas Bagnall The king's Marshall in this part of Ireland (1838)	Ballymascanlan	Lower Dundalk
Templetown	Baile an Teampaill - Perhaps associated with Thomas White of Moretoun a knights templar	Carlingford	Lower Dundalk
Whitestown	Baile an Fhaoitigh - Land of Thomas le Whyte	Carlingford	Lower Dundalk
Willville	An Corrbhaile - formally named Corbaly meaning pointed hill town	Carlingford	Lower Dundalk

4.7.2.2 Sources of Information

A review of the following information took place in order to inform the report:

- UNESCO World Heritage Sites (WHS) and Tentative World Heritage Sites and those monuments on the tentative list;
- National Monuments in State care, as listed by the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH);
- Sites with Preservation Orders;
- Sites listed in the Register of Historic Monuments;
- RMP and the SMR from the Archaeological Survey of Ireland;
- Record of Protected Structures in Louth County Development Plan (2021-2027);
- Architectural Conservation Areas (ACAs) and their statements of character;
- NIAH Building Survey (NIAH ratings are international, national and regional, local and record, and those of regional and above are generally recommended for inclusion in the RPS. Local and record rated sites have now been removed from the NIAH dataset). The NIAH survey is a non-statutory record and any sites included on it which are not also protected structures, are classified as non-designated receptors for the purposes of this assessment;

- NIAH Garden Survey (paper survey only). These are non-statutory records and any sites identified in it are classified as non-designated receptors for the purposes of this assessment;
- A review of artefactual material held in the National Museum of Ireland;
- Cartographical Sources, OSi Historic Mapping Archive, including early editions of the Ordnance Survey including historical mapping (such as Down Survey 1656 barony and parish maps);
- The Irish archaeological excavations catalogue i.e. Excavations bulletin and Excavations Database;
- Place names; Townland names and toponomy (loganim.ie);
- National Folklore Collection (Duchas.ie);
- The Ship Wrecks Database available on the National Monuments Service 'Wreck Viewer';
- A review and interpretation of aerial imagery (OSI Aerial Imagery 1995, 2000, 2005, Aerial Premium 2013-2018, Digital Globe 2011-2013, Google Earth 2001–2025, Bing 2025) to be used in combination with historic mapping to map potential cultural heritage assets.
- A review of existing guidelines and best practice approaches.

The following legislation, standards and guidelines consulted for this study:

- Archaeology and Development Guidelines for Good practice for Developers prepared by ICOMOS for the Heritage Council (2000);
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 and the Planning and Development Act (as amended);
- Code of Practice between Transport Infrastructure Ireland (TII) and the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs, 2017;
- Cork County Council Heritage Unit (2007) Guidance Notes for the Appraisal of Historic Gardens, Demesnes, Estate and their Settings;
- Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (TII 2025);
- Department of Arts, Heritage, Gaeltacht, and Islands, (1999a), Framework and Principles for the Protection of the Archaeological Heritage;
- Environmental Protection Agency (EPA) (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports;
- Heritage Act, 1995;
- Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023. This was enacted in October 2023 and is now law. The Minister for Housing, Local Government and Heritage commenced certain provisions in May 2024 (S.I. No. 252/2024), December 2024 (S.I. No. 663/2024) and March 2025 (S.I. No. 88/2025); however until the Act is fully commenced, the National Monuments Acts have not yet been repealed and remain in force;
- National Monuments Acts 1930 to 2014 (as amended) ;
- National Roads Authority (2017) Project Management Guidelines;
- PE-PAG-02036 - Project Appraisal Guidelines for National Roads Unit 13.0 - Appraisal of Active Modes;
- PE-PMG-02047-02 – Project Manager's Manual for Greenway Projects;

- Planning and Development Act 2024.

4.7.2.3 Method of Assessment for Options Appraisal

The appraisal of the route options within Sections A, B and C are detailed in Sections 4.7.3 to 4.7.5 below, with summary assessment and impact scores for the options provided in Section 4.7.54.

The appraisals identify any known Cultural Heritage receptors and potential archaeology sites / undesignated sites of cultural heritage interest within / partly within each assessment corridor and relevant receptors in their vicinity. This is based on currently available information and it should be noted that more detailed research and survey work in the subsequent phases of assessment for the project, once a preferred option has been chosen, may identify additional sites of interest. Where upstanding archaeological sites are located immediately outside the corridors, these sites have been included in the appraisal to ensure that their settings are given due consideration.

The appraisal also takes account of significant aspects of the wider archaeological and historic landscape, thus noting relevant Cultural Heritage receptors in proximity / adjacent to the corridors, where there is potential for associated activity or for impact to setting.

Where general indicators of archaeological potential exist – such as previously undeveloped 'greenfield' areas, coastal and riverine environments, and former wetlands – these are noted in the appraisals. As further investigation would be required to quantify the potential within the route options, these are not factors that influence the impact scores assigned. Rather, they provide a guide for future assessment that would be required should the option be brought forward.

In contrast, any specific areas of archaeological potential identified during the assessment are used to inform the impact score. These may include potential features associated with known archaeological sites (designated receptors) that could extend into the corridor or into the likely impact areas. Other examples include post-medieval milling activity depicted on the first edition Ordnance Survey (OS) mapping, where this could be indicative of an earlier (early medieval / medieval) tradition of milling in that area (e.g. a later mill near a castle or church site). This could indicate a potentially higher sensitivity / value rating for any remains that may be present at these locations.

The former 19th century railway line that connected Dundalk and Carlingford, with a branch extending to Greenore, is common to a number of the route options. Its survival is piecemeal, with relatively little in terms of above ground remains to mark its presence. This is a feature of local historical and industrial heritage interest. It was once a dominant transport link across the peninsula; as such it has been given an assessment number. Its former presence is likely to have disturbed any archaeological sites / features that may have existed along its line and this has been taken into account in the options appraisal. It is also possible that some remains of the industrial heritage features (e.g. embankments, rail lines, tracks, and culverts / drains) could survive subsurface along the length of the former rail line. Any such remains would be considered to be of low sensitivity.

The likely expected impact areas, as provided for the purpose of the assessment, were used to determine where potential direct impacts may occur in relation to the Cultural Heritage receptors identified.

Note: Where NIAH Building Survey sites are also included in the Record of Protected Structures (RPS), only the protected structure designation is taken into account, as the statutory designation for architectural heritage. Corresponding NIAH registration numbers are included in the appraisal tables where relevant.

4.7.3 Section A Options Appraisal

4.7.3.1 Route Option A3 (Node 1 – 4)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 7 designated receptors (RMP/SMR sites), within or partly within the option corridor (Table 4.7.2).

Four of these have been previously excavated (CH172-174 & CH195 in Table 4.7.2), one in part. The latter, an enclosure site (LH007-127001; CH172) was discovered during construction of the Eastern Bypass (R132) Road in the mid-1990s (Licence No. 94E0075; Channing 1994), west of Dundalk Stadium.[15] The enclosure was tentatively dated to the early medieval period (9th-11th centuries AD) on the basis of the artefacts recovered (Channing 1994). The truncated remains of the site within the road wayleave were excavated (Figure 4.7.1) but the enclosure ditches continue beyond the wayleave on both sides of the road and some archaeology was also left in situ in the slope of the tree-line that runs alongside the road. The likely impact area will be adjacent to the road along its east side and parts of the enclosure ditches would be directly impacted (a potentially moderate impact).

Where the corridor continues along the R173 road, there is the potential to impact a subsurface ringfort and souterrain (LH004-127001 & -127002; CH29 & 30) and / or associated features in Aghaboys townland. The souterrain was discovered during road works in 1973 (widening and realignment of the R173) and remains in situ beneath the road. The extent of both recorded monuments is uncertain, but they probably extend in part into the likely impacts area for this option. The ringfort was identified during archaeological testing at a proposed house site and only parts of the curving ditch were recorded in the trenches. It was thought from the arc of the excavated sections that the enclosure is an estimated 48m diameter and that it could extend to the north side of the road, with the souterrain in its interior. There is the potential for a moderate / significant negative impact in relation to both monuments.

This is a pinch point, with another recorded monument (enclosure) located north-west of the road at this location (LH004-122; CH46). The enclosure is considered likely to be a tree-ring associated with the landscape design of the former Mount Pleasant estate. However, if this is an earlier archaeological enclosure, its edge may extend beneath the existing road, which is a bypassed section of the old road as shown on the historic OS maps.

[15] The site location for the enclosure (and adjacent metal-working site) (CH172 & CH173) as shown on the ASI Historic Environment Viewer is incorrectly positioned 110m south / south-west of their actual location. The points as shown on the accompanying mapping (Drawing No. D2CG-RODA-EGN-SW_AE-DR-EN-2000068) have been moved to be consistent with the location as documented in the excavation report (Channing 1994).

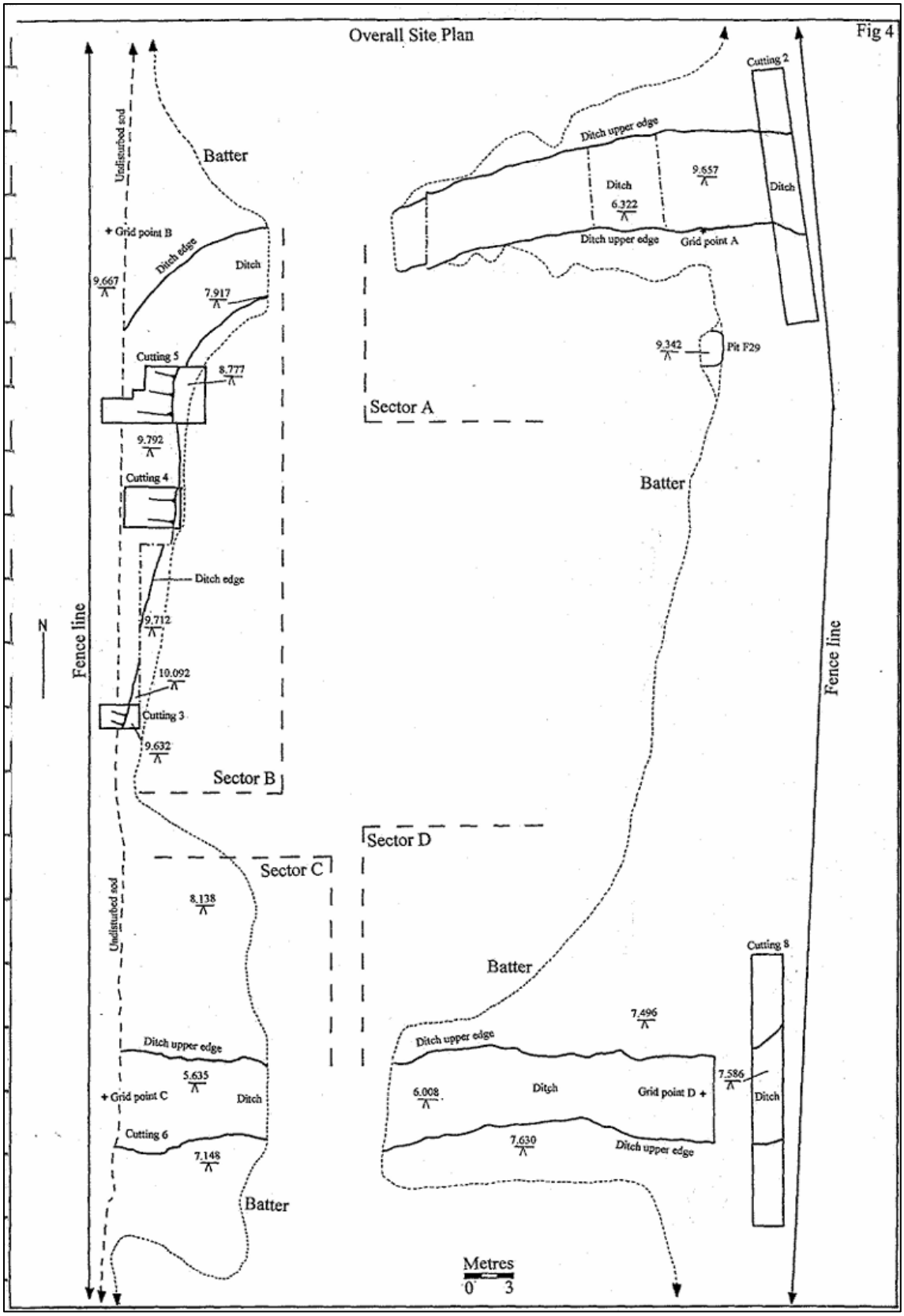


Figure 4.7.1 Excavated enclosure ditches of CH172 within road wayleave (Channing 1994)

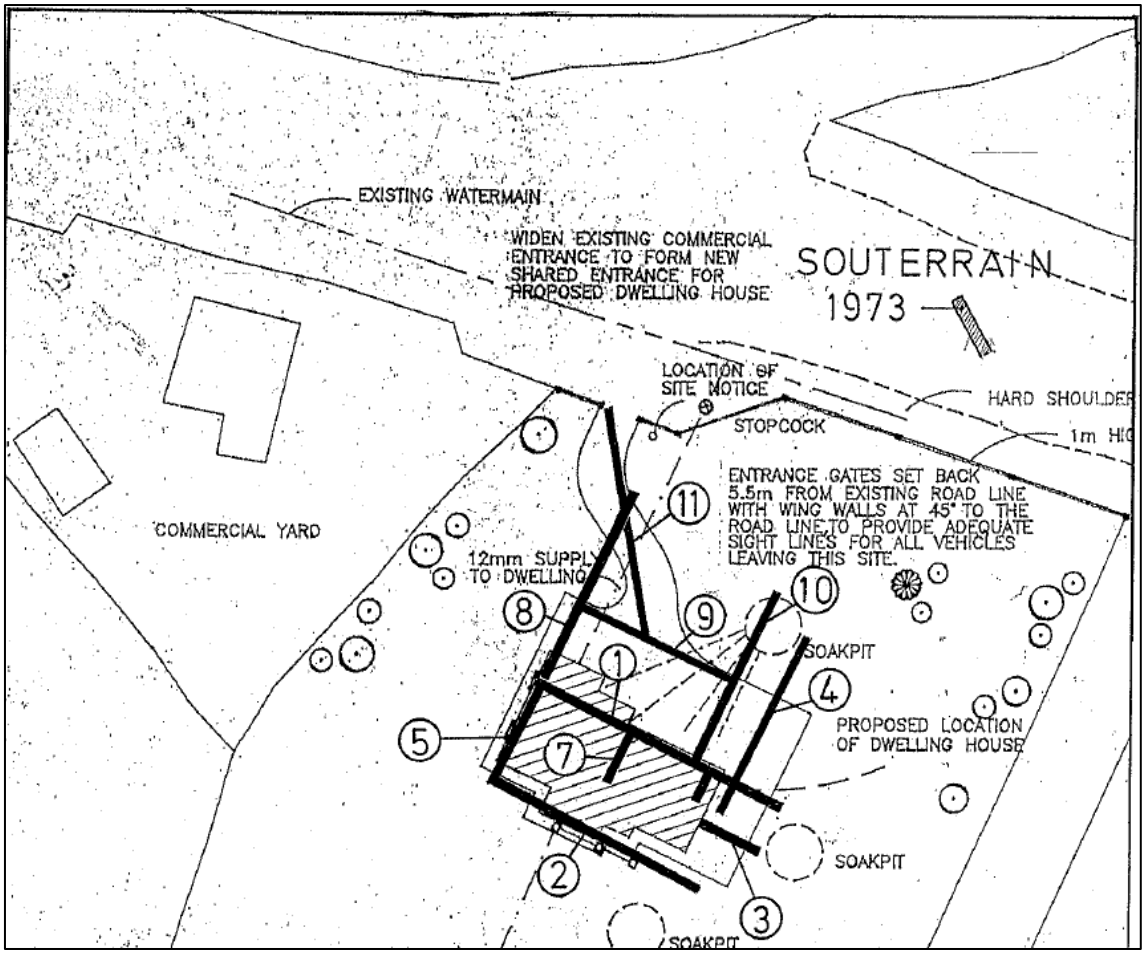


Figure 4.7.2 Location of souterrain CH30 within the road and the test trenches at the proposed house site where the enclosure CH29 was identified (in trenches 1, 5, 7)(Campbell 1996)

There is general archaeological potential in greenfield areas alongside the road (4.2km length), and there is therefore the potential for the discovery of previously unknown subsurface archaeological remains (also referred to as 'greenfield potential'). This potential is heightened at the south end by the estuarine and riverine environments encountered, in an area of former marshland. Watercourses have attracted settlement and human activity throughout time and the environs of rivers and streams, and former wetland areas, are ideal for the preservation of organic material, such as wood and leather, from archaeological contexts. Further investigation would be required to quantify the potential within the route option.

Archaeological testing of part of this area (c. 350m along the east side of the R132 road in Red Cow townland) found nothing archaeological interest (Licence No. 09E0086; Kyle 2009), despite the known potential in this landscape. This is within the likely impact area between Dundalk Racecourse and the roundabout, which reduces potential impacts for archaeological heritage along this northern section of the R132.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

In general, there is an opportunity to connect to the history and heritage of this area, with its multiple known archaeological sites, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Appraisal Summary

There would be a potentially moderate impact on the remains of the enclosure at the R132 road, west of the Dundalk Stadium. As the remains are located on both sides of the road, this impact would be difficult to avoid within the current option corridor.

In addition, there are potentially significant negative impacts associated with this route option further north-west in Aghaboys townland. A pinch point of three recorded archaeological monuments within the corridor along the R173 road may create difficulties for avoidance. Given the type of development, it may be possible to avoid or minimise direct negative effects on the designated heritage receptors, e.g. take the route north side of the R173 to avoid the ringfort and souterrain and divert around the south side of the bypassed section of old road.

There is also relatively high potential for currently unidentified archaeological sites to be encountered, as demonstrated by those uncovered during previous archaeological investigations. Further investigation would be required to quantify the potential within the route option.

There is an opportunity to connect to the history and heritage of this area, especially given the information available from the excavated sites. This would serve to highlight its value and enhance the sense of place, which is an important feature of cultural heritage.

Table 4.7.2 Designated Archaeological Heritage Receptors within the Corridor (Route Option A3 (Node 1 – 4))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH29	LH004-127001	Recorded monument	Ringfort - rath	Ballymascanlan	707128	810600
CH46	LH004-122	Recorded monument	Enclosure	Aghaboys	707058	810660
CH172	LH007-127001	Recorded monument	Enclosure	Dowdallshill	705789	809017
CH173	LH007-127002	Recorded monument	Metalworking site	Dowdallshill	705783	809000
CH174	LH007-128	Recorded monument	Fulacht fia	Dowdallshill	705898	809277
CH195	LH007-176	Recorded monument	Field system	Dowdallshill	705882	809003
CH206	LH004-131	Recorded monument	Habitation site	Navan	706011	810741
CH30	LH004-127002	Recorded monument	Souterrain	Ballymascanlan	707128	810600

4.7.3.2 Route Option A4-1 (Node 1 – 4)

There are no designated[16] or known[17] archaeological or architectural heritage receptors with this option or adjacent to it.

[16] Designated receptors for archaeology: National monument, RMP / SMR site. Designated receptors for architecture: Architectural Conservation Area (ACA), protected structure (RPS).
[17] This includes sites / features / designed landscapes included in the NIAH surveys (architectural heritage), as well as any newly identified archaeological sites which are not yet designated.

There is general archaeological potential along the length (3.82km), as it is predominantly greenfield. This potential is heightened by the estuarine and riverine environments encountered, in an area of former marshland.

The subsurface archaeological potential is demonstrated by the results of archaeological investigations at its south-western end (outside the option corridor), near Dundalk Stadium. A midden, fulacht fia, and prehistoric pits were uncovered during archaeological investigations carried out in advance of a residential development (Licence No. 04E1180; the excavated sites were added to the SMR, Nos LH007-184 to -186). The nearest of these sites is c. 70m west of the option corridor.

Appraisal Summary

Further investigation would be required to quantify the potential within the route option. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.3.3 Route Option A4-1 (Node 4 - 9)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

There is general archaeological potential along the length (2.61km), as it is predominantly greenfield, and this potential is heightened by the estuarine and riverine environments encountered, in an area of former marshland.

Appraisal Summary

Further investigation would be required to quantify the potential within the route option. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.3.4 Route Option A5 & A6 (Node 4 – 12)

Archaeological heritage

The option corridor contains 3 designated archaeological receptors (Table 4.7.3).

Two of these are national monuments, situated close to each other in Proleek townland (RMP LH004-074 & -075; CH688). The monuments comprise megalithic tombs – a wedge tomb and portal tomb – located within a landscaped golf course, at its northern boundary (Figure 4.7.3). The likely impact area is within an agricultural field immediately north-east of and alongside the boundary with the golf course, only c. 15-17m from the monuments. While the upstanding monuments would not be directly impacted, there is potential for impacts in relation to any associated subsurface features that may be present. The setting of the monuments is also a consideration and would require a sensitive design that would not detract from their existing rural setting. Further investigation would be required to determine if potentially moderate / significant impacts could be avoided. Ministerial consent would be required for any ground disturbance works (including any archaeological investigations) within the corridor here. The monuments are likely screened from view by the landscaping and boundary elements, but there is an opportunity, however, to highlight their presence through the use of heritage signage.

The third receptor within the corridor is a ring-ditch (RMP LH007-022; CH93) in Bellurgan townland. The subsurface monument is located at the edge of the option corridor, c. 40m south of the likely impact area. Neither the ring-ditch nor the enclosure to its south-west (LH007-023; CH94; outside the corridor) have any above-ground remains. Both were identified as cropmarks.

There is generally high archaeological potential for this route option, as much of the 4.2km length is greenfield and in addition to the national monuments and RMP sites located within the corridor, there are numerous RMP/SMR sites in the landscape around and close to / adjacent the corridor indicating prehistoric and early medieval activity (where the ZoN is traversed by the corridor but the monument is outside it; Table 4.7.4), with additional riverine potential along the Ballymascanlon River. These include an upstanding ringfort c. 14m outside the corridor (LH004-087; CH47), which is set within a larger enclosure thought to be a later construction and modern in date. As the likely impact area would be alongside the existing road to the north-east, there would be no potential impacts in relation to its setting. Further investigation would be required to quantify the potential within the route option.



Figure 4.7.3 Aerial imagery (OSi 2018; ASI Historic Environment Viewer) showing national monuments at Proleek (CH688), within landscaped golf course.

Architectural Heritage

The option corridor contains 2 designated receptors (protected structures (RPS)), one of which is the portal tomb national monument at Proleek (CH688; RPS LHS004-005; referred to as a dolmen in the RPS) (Table 4.7.5).

The second is a gate lodge (RPS LHS004-024, CH232) associated with Ballymascanlon estate. The lodge is not depicted on the first edition Ordnance Survey (OS) six-inch map (1836) and was likely built c. 1840 (NIAH 13900416). The present building is as shown on the 1909 OS 25-inch map (Figure 4.7.4) and is now a private residence. The lodge is located at a bend in the roadside, where the carriageway widens, with the likely impact area along the opposite side of the road.

Non-Designated Cultural Heritage

The corridor also includes 2 non-designated cultural heritage receptors, both former demesnes included in the NIAH Garden Survey (Table 4.7.7).

The edge of the former Ballymascanlon demesne, where it runs along the roadside towards the gate lodge, falls within the corridor (Figure 4.7.4). The grounds, as depicted on the first edition OS map, are included in the NIAH Garden Survey (GS No. LH0004; CH694). No original boundary elements survive along this side of the estate, with low hedgerow at the south end and a modern boundary wall at the north; the latter is associated with a modern property occupying a large plot immediately south-east of the gate lodge, within the former demesne. Ballymascanlon House is now in use as a hotel and its former demesne is now a golf course and grounds associated with the hotel. While the house (a protected structure; Table 4.7.6) is located c. 395m outside the corridor, its curtilage is a possible consideration, given that the relatively modest demesne retains much of its original layout. Bearing this in mind, incursion into the estate should be avoided.

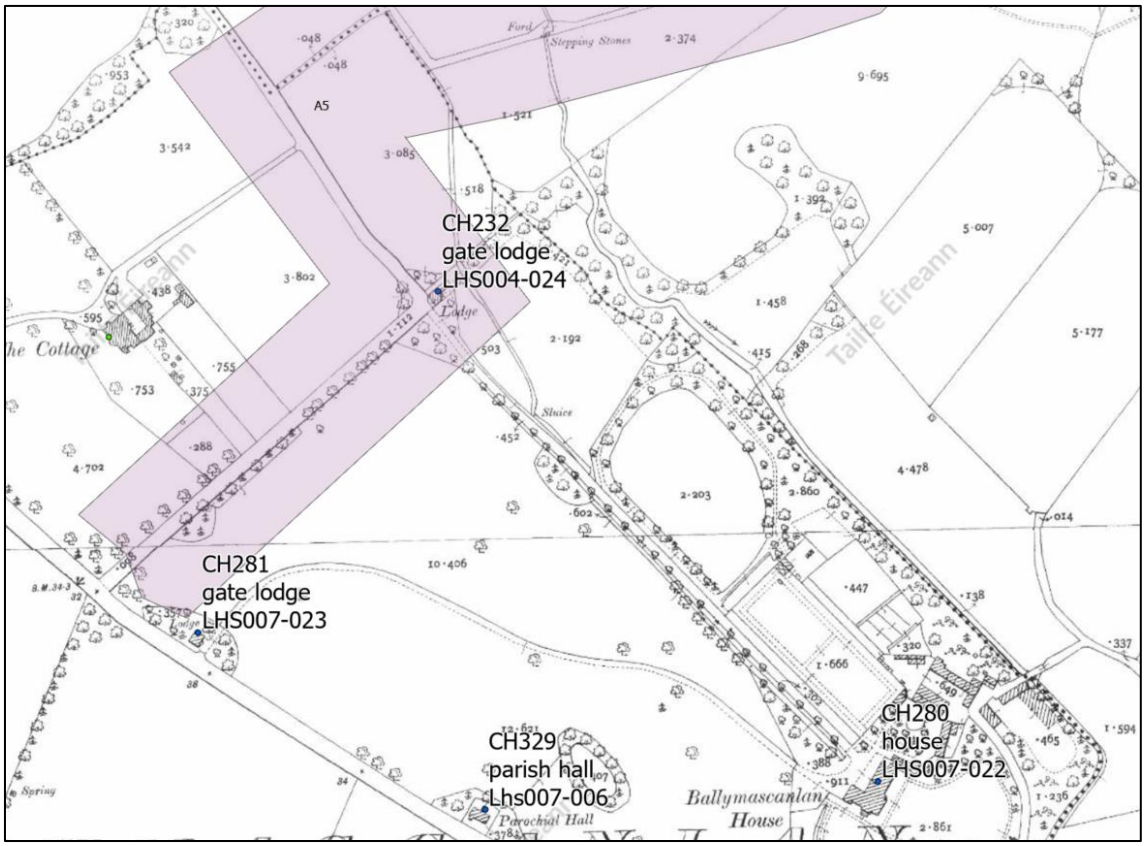


Figure 4.7.4 **OS 25-inch map (1909) showing gate lodge (CH232) at north-west boundary of Ballymascanlan House Demesne, with approximate location of route option A5 overlaid and highlighted in purple**

The corridor also traverses the demesne land (CH695) associated with Bellurgan Park House, as depicted on the first edition OS map (NIAH Garden Survey, GS No. 1300 (Figure 4.7.5). The house, which is a protected structure (Table 4.7.6), is located c. 218m south-west of the corridor and would be screened from the route option by the outbuildings on its north-east side and existing tree-planting. The designed views from the 18th century house are to the south-east, with the front of the house facing in that direction. The demesne landscape is relatively unchanged since the early 19th century (as shown on the 1836 OS map) and therefore the issue of curtilage and the setting of the house are a consideration.

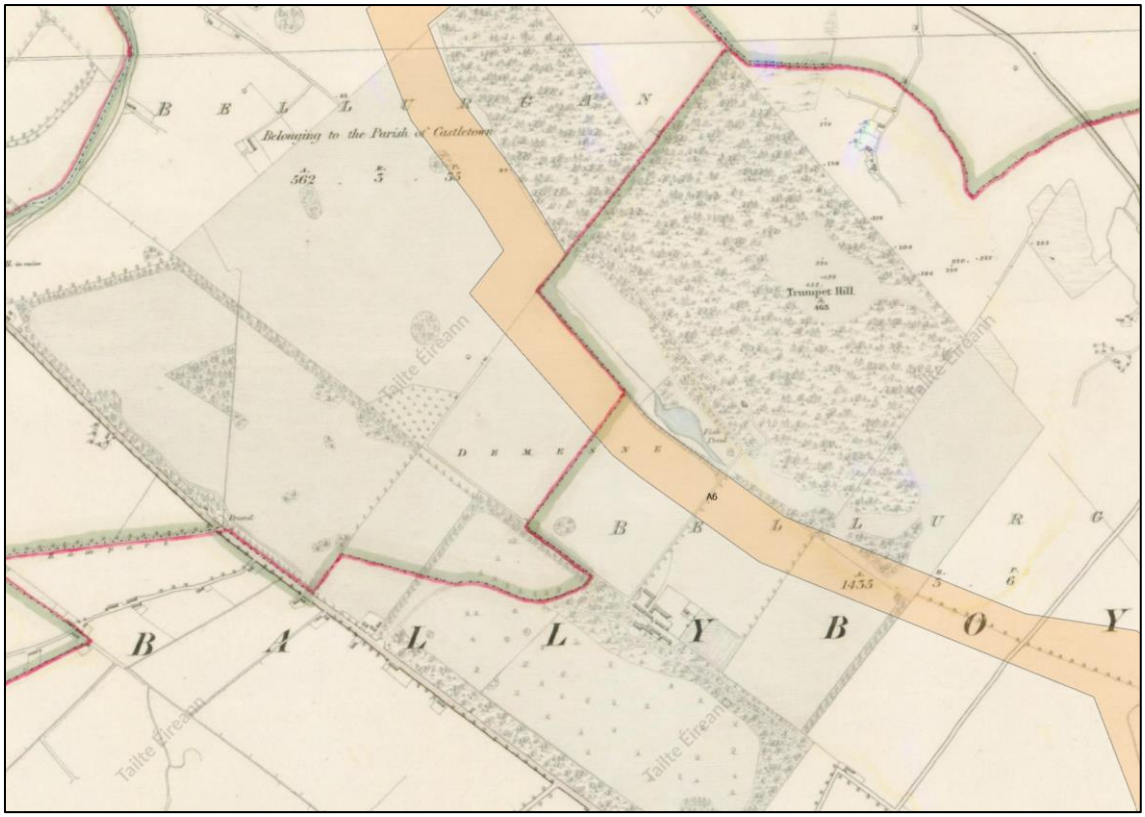


Figure 4.7.5 **First edition OS six-inch map (1835) showing Bellurgan Park House Demesne (grey shaded area) (CH695), with approximate location of route option A6 overlaid and highlighted in orange**

Appraisal Summary

There are potentially significant negative impacts associated with this route option, but given the type of development, it may be possible to avoid direct negative effects on the designated heritage receptors within the corridor. It is also important to avoid any negative effects on the setting of the heritage receptors through sympathetic design. However, there is relatively high potential for currently unidentified archaeological sites to be encountered. Further investigation would be required to quantify the potential within the route option.

There is an opportunity to connect to the history and heritage of this area, especially given the upstanding megalithic tombs, both national monuments. This would serve to highlight its value and enhance the sense of place, which is an important feature of cultural heritage.

Table 4.7.3 **Designated Archaeological Heritage Receptors within the Corridor (Route Option A5 & A6 (Node 4 – 12))**

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH63	LH004-074	National monument (NM 688)	Megalithic tomb - portal tomb	Proleek	708191	811042
CH64	LH004-075	National monument (NM 688)	Megalithic tomb - wedge tomb	Proleek	708265	811011
CH93	LH007-022	Recorded monument	Ring-ditch	Bellurgan (Dundalk Lwr by; Castletown par.)	710138	809430

Table 4.7.4 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option A5 & A6 (Node 4 – 12))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH56	LH004-073	Recorded monument	Enclosure	Ballymascanlan, Culfore	707468	810950
CH69	LH004-085	Recorded monument	Ringfort - rath	Bellurgan (Dundalk Lwr by; Castletown par.)	708518	811070
CH47	LH004-087	Recorded monument	Ringfort - rath	Bellurgan (Dundalk Lwr by; Castletown par.)	708918	810930
CH91	LH007-021001	Recorded monument	Souterrain	Bellurgan (Dundalk Lwr by; Castletown par.)	710457	809480
CH92	LH007-021002	Recorded monument	Souterrain	Bellurgan (Dundalk Lwr by; Castletown par.)	710447	809490
CH94	LH007-023	Recorded monument	Enclosure	Bellurgan (Dundalk Lwr by; Castletown par.)	710098	809390

Table 4.7.5 Designated Architectural Heritage Receptors within the Corridor (Route Option A5 & A6 (Node 4 – 12))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH232	LHS004-024 (NIAH 13900416)	Protected structure	Gate lodge	Ballymascanlan	707632	810762
CH316	LHS004-005	Protected structure / National monument	Dolmen (portal tomb)	Proleek	708191	811042

Table 4.7.6 Relevant Designated Architectural Heritage Receptors outside the Corridor (Route Option A5 & A6 (Node 4 – 12))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH280	LHS007-022 (NIAH 13900756)	Protected structure	Country House (Ballymascanlan House)	Ballymascanlan	707930	810434
CH337	LHS007-014 (NIAH 13900746)	Protected structure	Country House (Bellurgan Park)	Bellurgan (Dundalk Lwr by; Castletown par.)	709395	809515

Table 4.7.7 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option A5 & A6 (Node 4 – 12))

Assessment ID No.	NIAH Garden Survey Ref.	Legal Status	Site Name	Townland	ITM_E	ITM_N
CH694	LH0004	None	Ballymascanlan House demesne	Ballymascanlan	708028	810509
CH695	1300	None	Bellurgan House demesne	Bellurgan (Dundalk Lwr by; Castletown par.)	709427	809610

4.7.3.5 Route Option A5 (Node 12 – 14)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

The corridor contains 2 designated archaeological receptors (RMP sites) (Table 4.7.8), both souterrains located close together at the north-west end of the route option (RMP LH007-021001 & -021002; CH91-92). The exact locations and extent of the subsurface monuments are unknown, thus it is possible that they extend into the likely impact area which runs across the edge of the RMP zone of notification for the monuments (ZoN).

Souterrains are artificial underground structures built of either drystone walling and covered with large stone lintels, or cut into bedrock or hard boulder clay. The predominant type of souterrain in County Louth is the drystone build, in some cases incorporating natural bedrock for the floor or lower sections of the walls. They can comprise various combinations of passages and chambers with creeps connecting them and can vary from large and complex to very simple. Most Irish souterrains date from the second half of the first millennium AD and are often found in association with other sites of the early historical period, such as ringforts and early ecclesiastical sites, although a high proportion of the County Louth souterrains are found in isolation (as appears to be the case here). It may be that the enclosure around them has been subsequently levelled or that they were deliberately built that way to escape detection (O'Riordain 1979). Their primary use may have been for refuge, but they may also have been for storage of foodstuffs and valuables.

Further investigation would be required to determine if potentially moderate / significant impacts could be avoided in relation to the recorded monuments.

There is generally high archaeological potential for this route option. The entire 2.39km length is through greenfield and there are also numerous RMP/SMR sites in the landscape around and close to / adjacent the corridor indicating both prehistoric and early medieval activity (e.g. a souterrain and enclosure just outside the south-east end of the corridor in Rockmarshall townland; Table Table 4.7.9). These known sites include a group of three middens located outside the corridor to the south-west in Rockmarshall townland (LH008-026001 to -026003) and excavated in the 1970s, which point to later Mesolithic (c. 4230-3970 BC) activity along the coast, and demonstrate the potential for the discovery of subsurface archaeological sites. Further investigation would be required to quantify the potential within the route option.

While the sites within the corridor have no visible presence, the wealth of archaeological heritage in the surrounding landscape presents an opportunity to connect to the history and heritage of this area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

There are potentially moderate / significant negative impacts associated with this route option in relation to two recorded souterrains. Given the type of development, it may be possible to avoid direct negative effects on the designated heritage receptors. Further investigation would be required to determine the nature and extent of the archaeological sites and to determine if a direct impact could be avoided (i.e. by routing around them once the extents have been defined).

Table 4.7.8 Designated Archaeological Heritage Receptors within the Corridor (Route Option A5 (Node 12 – 14))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH91	LH007-021001-	Recorded monument	Souterrain	Bellurgan (Dundalk Lwr by; Castletown par.)	710457	809480
CH92	LH007-021002-	Recorded monument	Souterrain	Bellurgan (Dundalk Lwr by; Castletown par.)	710447	809490

Table 4.7.9 Relevant Designated Archaeological Heritage Receptors outside the Corridor (Route Option A5 (Node 12 – 14))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH31	LH008-030002-	Recorded monument	Souterrain	Rockmarshall	711824	808327
CH85	LH008-030001-	Recorded monument	Enclosure	Rockmarshall	711837	808330
CH106	LH008-026001-	Recorded monument	Midden	Rockmarshall	711367	808440
CH107	LH008-026002-	Recorded monument	Midden	Rockmarshall	711417	808440
CH108	LH008-026003-	Recorded monument	Midden	Rockmarshall	711447	808440

4.7.3.6 Route Option A6 (Node 12 – 13)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

There is some general archaeological potential along the length (albeit it short, 1.22km), which is partly greenfield.

Appraisal Summary

Further investigation would be required to quantify the potential within the route option. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.3.7 Route Option A1 (Node 9 – 13)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

There is some greenfield potential along the length (2.65km), heightened by the coastal environment encountered. While the sea offers far greater challenges to the navigator than rivers and lakes – as the many shipwrecks off our coast can testify – it provides a means of connection with the wider world that has been exploited since the prehistoric period. Thus there is the potential for the discovery of previously unknown subsurface archaeological remains in any greenfield sections along the route. Further investigation would be required to quantify the potential within the route option.

The potential to impact on previously unknown archaeology is relatively limited for this option, however, as much of it is expected to utilise shared road / access track, with minimal ground disturbance. In addition, it coincides with the line of the former 19th century railway line on the approach to Node 13, which would have caused considerable disturbance and greatly reduced any subsurface archaeological potential. There is the possibility that features associated with the railway (e.g. buried rails and track) could be present subsurface (CH684; Table Table 4.7.10). Such features, while of local historical / industrial heritage interest, are considered to be of low significance / sensitivity.

Appraisal Summary

Further investigation would be required to quantify the potential within the route option. As no designated receptors would be affected and there are no specific sites of known / significant archaeological potential, the option is considered neutral at this stage.

There is an opportunity to connect to the history of the former railway line and industrial heritage of this area.

Table 4.7.10 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option A1 (Node 9 – 13))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Bellurgan (Dundalk Lwr by; Castletown par.)	n/a	n/a

4.7.3.8 Route Option A1 (Node 13 – 14)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

There is general archaeological potential along the length (albeit short, 1.44km), which is predominantly greenfield, with potential heightened by the estuarine and coastal environments encountered, in an area of former marshland. However, the likely impact area is adjacent to the modern realigned R173 road and the eastern half of the route is between the former railway embankment and road. The associated disturbance would have reduced / negated the inherent archaeological potential in this area.

The former railway line (CH684; Table 4.7.11) and any surviving remains are of local and historical interest, as a feature of industrial heritage. Large sections of the former line have been removed along its length, with the survival of above-ground elements (e.g. embankments) very much piecemeal. Any surviving remains would be considered low sensitivity.

Appraisal Summary

Further investigation would be required to quantify the potential within the route option. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

There is an opportunity to connect to the history of the former railway line and industrial heritage of this area.

Table 4.7.11 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option A1 (Node 13 – 14))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Bellurgan (Dundalk Lwr by; Castletown par.), Rockmarshall	n/a	n/a

4.7.3.9 Route Option A3 (Node 4 – 13)

Archaeological heritage

There are no designated or known archaeological receptors within the corridor.

In terms of archaeological potential, a tower house (LH007-115, CH98) is located just outside the corridor to the north and the route option traverses its zone of notification (ZoN) (Table 4.7.12). The monument was probably strategically sited to overlook the river and old coastal routeway. The surviving upstanding remains are located within tree copse and as such, there is no potential impact with regard to its setting. Given the site type, associated features within the corridor are a possibility.

In addition, there is milling depicted on the 1835 OS six-inch map to the south of the old coast road (CH681), opposite the castle site, and to its north-east (Figure 4.7.6). Given this, there is the potential for earlier milling here, perhaps associated with the castle. The likely impact area is adjacent to the existing road for its length (5.06km). While there would be general archaeological potential in any greenfield areas alongside the road, where sections of the road have been previously widened / realigned this potential is reduced. This includes in the vicinity of the castle and milling activity. Further investigation would be required to quantify the potential within the route option.

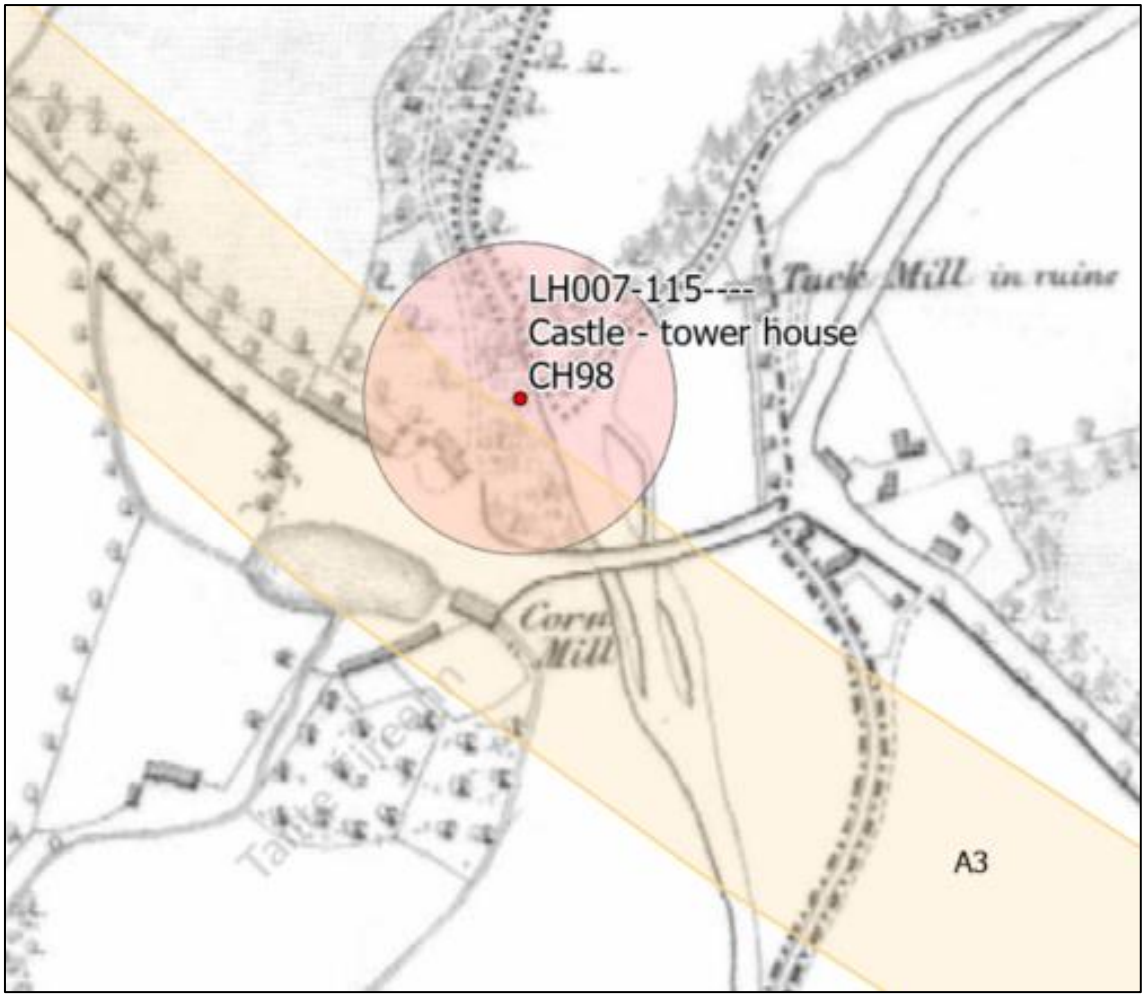


Figure 4.7.6 **First edition OS six-inch map (1835) showing location of tower house CH98, with a Corn Mill to the south and 'Tuck mill (in ruins)' to the north-east (overlaid with approximate location of route option A3, shown in orange)**

Architectural Heritage

There are 10 protected structures (Table 4.7.13), nine of which are associated with Ballymascanlan House demesne. This includes a terrace of estate cottages (RPS LHS007-007 to -013; CH330-336), a gate lodge and a parochial hall (LHS007-023 & -006; CH281 & CH329). While these are situated along the estate boundaries on the north side of the R173 road, the likely impact area is along the (opposite) south-east side of the road and no property impacts are anticipated.

Another protected structure, Ballymascanlan bridge (LHS007-020, CH278), is located within corridor. However, it is outside likely impact area, on a section of the old road now bypassed by the R173. As such it would not be affected.

Non-Designated Cultural Heritage

The corridor also includes 2 non-designated cultural heritage receptors, both former demesnes included in the NIAH Garden Survey (Table 4.7.15). The southwestern edges of both demesnes are within the corridor. As both associated houses are protected structures (Table 4.7.14), curtilage is a consideration in terms of their estate boundaries. This consideration is somewhat reduced at Ballymascanlan, where the road (as shown on the historic OS mapping) has been widened alongside Ballymascanlan House demesne (GS No. LH0004, CH694), removing the original estate boundaries. The mature tree-belt along both estate boundaries provides a sense of demesne enclosure & character.

Tree planting and a low stone wall demarcate the boundary along the Bellurgan House demesne (GS No. 1300; CH695), the line of which remains unaltered. The original entrance and drive are located within this boundary, as are the remains of several buildings / features set into the boundary that are depicted on the first edition OS six-inch map (1835) and subsequent edition maps. The likely impact area is on the opposite side of the road.

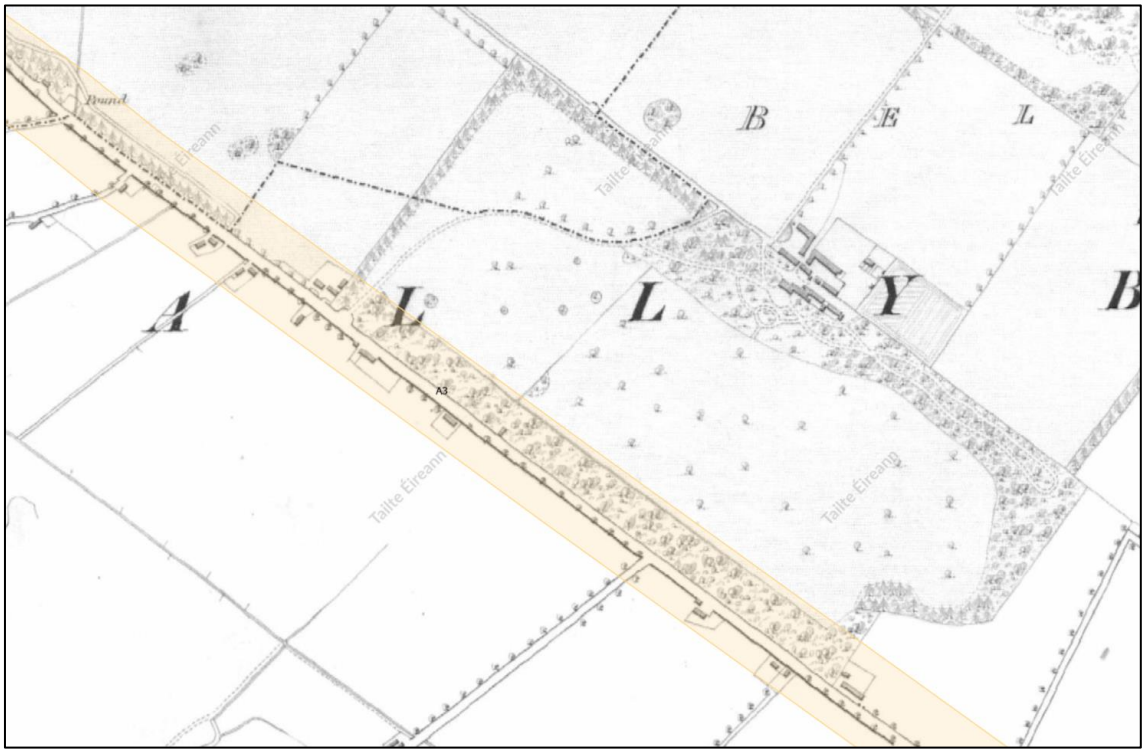


Figure 4.7.7 **First edition OS six-inch map (1835) showing the south-western boundary of Bellurgan Park House Demesne (grey shaded area) (CH695), with approximate location of route option A3 overlaid and highlighted in orange.**

Appraisal Summary

No potentially significant negative impacts were identified in association with this route option. There are specific locations of archaeological potential, one associated with the tower house and the other with milling activity, though this was likely reduced by the road widening.

Given the type of development, it should be possible to avoid direct negative effects on the designated architectural heritage receptors within the corridor (which follows the existing road). It is also important to avoid any negative effects on the setting of the heritage receptors through sympathetic design. This is particularly important with regard to the demesne boundaries and associated elements within the corridor (which follows existing road). Although not protected structures / NIAH sites, they are an integral part of the setting of the protected structures within the demesnes and the curtilage of both structures is a consideration.

There is an opportunity to connect to the history and heritage of this area (medieval and post-medieval), highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.12 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option A3 (Node 4 – 13))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH98	LH007-115	Recorded monument	Castle - tower house	Ballymascanlan	708005	810156

Table 4.7.13 Designated Architectural Heritage Receptors within the Corridor (Route Option A3 (Node 4 – 13))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH278	LHS007-020 (NIAH 13900754)	Protected structure	Road bridge	Ballymascanlan	708055	810107
CH281	LHS007-023 (NIAH 13900757)	Protected structure	Gate lodge	Ballymascanlan	707474	810533
CH329	LHS007-006 (NIAH 13900758)	Protected structure	Parish hall	Ballymascanlan	707667	810414
CH330	LHS007-007 (NIAH 13900753)	Protected structure	Cottage	Ballymascanlan	707930	810168
CH331	LHS007-008 (NIAH 13900752)	Protected structure	Cottage	Ballymascanlan	707936	810166
CH332	LHS007-009 (NIAH 13900751)	Protected structure	Cottage	Ballymascanlan	707941	810164
CH333	LHS007-010 (NIAH 13900750)	Protected structure	Cottage	Ballymascanlan	707946	810160
CH334	LHS007-011 (NIAH 13900749)	Protected structure	Cottage	Ballymascanlan	707953	810157
CH335	LHS007-012 (NIAH 13900748)	Protected structure	Cottage	Ballymascanlan	707958	810153
CH336	LHS007-013 (NIAH 13900747)	Protected structure	Cottage	Ballymascanlan	707964	810152

Table 4.7.14 Relevant Designated Architectural Heritage Receptors outside the Corridor (Route Option A3 (Node 4 – 13))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH280	LHS007-022 (NIAH 13900756)	Protected structure	Country House (Ballymascanlan House)	Ballymascanlan	707930	810434

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH337	LHS007-014 (NIAH 13900746)	Protected structure	Country House (Bellurgan Park)	Bellurgan (Dundalk Lwr by; Castletown par.)	709395	809515

Table 4.7.15 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option A3 (Node 4 – 13))

Assessment ID No.	Other Ref.	Legal Status	Site Name / Site Type	Townland	ITM_E	ITM_N
CH694	NIAH Garden Survey ID LH0004	None	Ballymascanlan House demesne	Ballymascanlan	708028	810509
CH695	NIAH Garden Survey ID 1300	None	Bellurgan House demesne	Bellurgan (Dundalk Lwr by; Castletown par.)	709427	809610
CH681	None	None	Mill (site of)	Ballymascanlan	707988	810076

4.7.3.10 Route Option L2 (Node 8 – 9)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There is general archaeological potential along the length (albeit short, 1.39km), which is predominantly greenfield, with potential heightened by the estuarine and coastal environments encountered, in an area of former marshland. The potential would need to be quantified with further investigation. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.4 Section B Options Appraisal

4.7.4.1 Route Option B1 (Node 14 – 20)

Archaeological heritage

There are no designated or known archaeological heritage receptors with this option or adjacent to it. The corridor follows the existing road in a built-up area, thus the general archaeological potential is considered to be low.

Architectural Heritage

There are 4 protected structures located within the corridor (3 houses, 1 church; RPS LHS008-002, -010, -013, -011; CH283, 284, 286, 339; Table 4.7.16). All are situated at the road side, with potential for boundary impacts (curtilage is also a consideration). However, only one of these, the church, is located on the same side of the road as the likely impact area where property boundary impacts are anticipated. The boundary of the church (as shown on both the 1835 and 1909 OS mapping) was altered some time in the 20th century. Where it was previously a straight line parallel to the road, it is now set back from the road side. The low wall that forms the boundary is modern in appearance, with a flat concrete coping and set within modern concrete edging to the public path and grounds, suggesting a relatively late date. This would render any potential setting impact in the slight to moderate range.



Figure 4.7.8 Comparison of the modern mapping with the 25-inch OS map of 1909 shows the altered road-side boundary at church CH284

Appraisal Summary

No potentially significant negative impacts were identified in association with this route option. While there is the potential to impact on the boundary associated with one of the protected structures, given the type of development, it may be possible to avoid a direct negative effect. In addition, the boundary has previously been altered and appears of modern construction. While curtilage of the protected structure would still be a consideration, a potential setting impact is likely to be in the slight to moderate range, rather than significant. It is important to avoid any negative effects on the setting of the heritage receptors through sympathetic design.

Table 4.7.16 Designated Architectural Heritage Receptors within the Corridor (Route Option B1 (Node 14 – 20))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland / Location	ITM_E	ITM_N
CH283	LHS008-010 (NIAH 13900802)	Protected structure	House	Rampark	713600	807039
CH284	LHS008-011 (NIAH 13900804)	Protected structure	Church (St Mary's, Roman Catholic)	Piedmont	714305	806951
CH286	LHS008-013 (NIAH 13900807)	Protected structure	House	Loughanmore	715375	806743
CH339	LHS008-002 (NIAH 13900803)	Protected structure	Thatched cottage	Greenore Road, Rampark	713744	806999

4.7.4.2 Route Option B2 (Node 14 – 19)

Archaeological heritage

There are no designated or known archaeological or heritage receptors with this option or adjacent to it. The corridor follows the former railway line (CH684; Table 4.7.18), thus the general archaeological potential is considered to be reduced.

Architectural Heritage

There is 1 protected structure located within the corridor, which is associated with the former railway line, a disused railway bridge (RPS LHS008-012; CH285; Table 4.7.17). The bridge is on the line of the likely impact area.

Appraisal Summary

While there is potential for negative impacts on the railway bridge (and direct effects on designated receptors should be avoided as a first principal), it should be possible, given the type of development to avoid any significant negative impact on the bridge. Negative impacts could also be mitigated through appropriate design and the reuse of the bridge – reconnecting it with the re-used line of the former railway (albeit with a different use) – would be a positive effect.

There is an opportunity to connect to the history of the former railway line and industrial heritage of this area.

Table 4.7.17 Designated Architectural Heritage Receptors within the Corridor (Route Option B2 (Node 14 – 19))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland / Location	ITM_E	ITM_N
CH285	LHS008-012 (NIAH 13900806)	Protected structure	Railway bridge (disused)	Piedmont	715067	806900

Table 4.7.18 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option B2 (Node 14 – 19))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Rockmarshall, Annaloughan, Piedmont	n/a	n/a

4.7.4.3 Route Option B3 (Node 14 – 19)

Archaeological heritage

The option corridor contains 7 designated archaeological receptors (Table 4.7.19), one of which is a national monument. The latter is a megalithic tomb in Rockmarshall townland (NM 562; RMP LH008-033; CH689), located within a small green space at the side of an access road to Rockmarshall House (a 19th century farmhouse; not a designated receptor). The likely impact area is immediately south of the monument (c. 3-4m) and the corridor includes the ZoN associated with the recorded monument designation[18]. While the upstanding monument would not be directly impacted, there is potential for impacts in relation to any associated subsurface features that may be present, particularly given its proximity.

The setting of the monument is also of particular concern, for the same reason. Use of the existing roads around the green space would be preferable here. Its setting within the grounds of Rockmarshall House, in a landscaped green space, is depicted on the 1835 OS six-inch map, with the addition of the access road to the south-west / south shown on the 1909 25-inch map (Figure 4.7.9). It would also be important to have a sensitive design that would not detract from the existing setting or which could improve upon it (depending on the current condition

[18] While no associated zone of notification is shown on the ASI Historic Environment Viewer, the published RMP maps (ASI 1996) includes a ZoN for recorded monument LH008-033, the national monument at Rockmarshall.

and taking into account the roads and buildings nearby). Further investigation would be required to determine if potentially moderate / significant impacts could be avoided. Ministerial consent would be required for any ground disturbance works (including any archaeological investigations) within the corridor here.

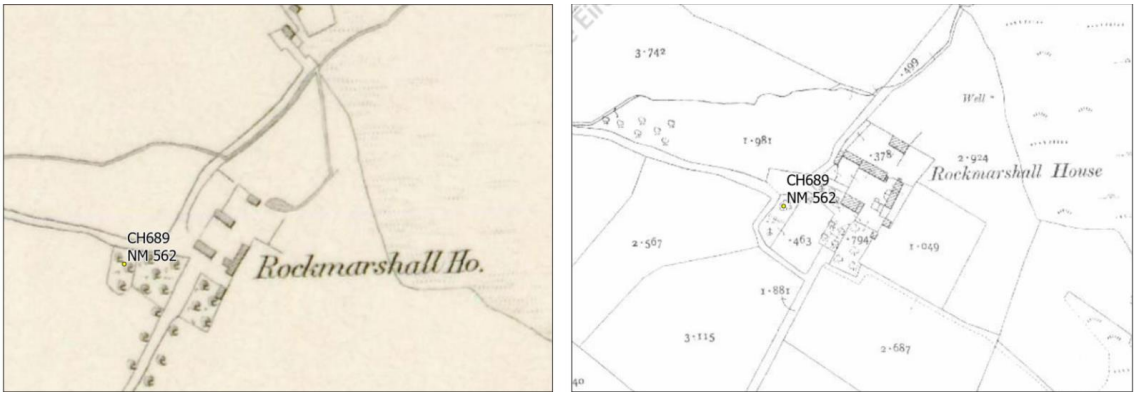


Figure 4.7.9 First edition OS six-inch map (1835) (left) and 25-inch OS map of 1909 (right), with location of national monument CH689 indicated

The corridor also contains 6 RMP sites, clustered in three locations (Table 4.7.19). These comprise souterrain and enclosure in Rockmarshall townland (LH008-030001 & -030002; CH85 & CH31), a ringfort, hut site and souterrain in Annaloughan (LH008-035001 to -035003; CH112-114), and a mass rock (LH008-041; CH116), also in Annaloughan.

While the known extents of the monuments would not be directly affected, all are adjacent / close to the likely impact area. With the exception of the mass rock (a site type not expected to have associated features), there is the potential for moderate / significant impacts if the monuments extend into the impact area, e.g. souterrains or potential features associated with the ringfort or enclosure, such as annexes or field systems. Further investigation would be required to determine if the impacts could be avoided, but given the type of development, it should be possible to avoid direct negative effects on the designated heritage receptors. It is also important to avoid any negative effects on their setting through sympathetic design.

There is generally high archaeological potential, as the majority of the length is through greenfield and there are other known and recorded archaeological sites in the landscape close to / adjacent the corridor (the nearest of which are included in Table 4.7.20), which points to both prehistoric and early medieval activity in the area. Further investigation would be required to quantify the potential within the route option.

Architectural Heritage

The option corridor contains 1 designated receptor (protected structure), which is the megalithic tomb national monument at Rockmarshall (discussed above).

Appraisal Summary

There are potentially significant negative impacts associated with this route option, but given the type of development, it should be possible to avoid direct negative effects on the designated heritage receptors within the corridor. It is also important to avoid any negative effects on the setting of the heritage receptors through sympathetic design. The national monument is of particular concern in this context. However, there is relatively high potential for currently unidentified archaeological sites to be encountered, including features associated with the designated monuments. Further investigation would be required to quantify the potential within1 the route option.

There is an opportunity to connect to the history and heritage of this area, especially given the upstanding megalithic tomb, a national monument, mass rock, and ringfort. This would serve to highlight its value and enhance the sense of place, which is an important feature of cultural heritage.

Table 4.7.19 Designated Archaeological Heritage Receptors within the Corridor (Route Option B3 (Node 14 – 19))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH689	LH008-033	National monument (NM 562)	Megalithic tomb - court tomb	Rockmarshall	712430	808028
CH31	LH008-030002-	Recorded monument	Souterrain	Rockmarshall	711824	808327
CH85	LH008-030001-	Recorded monument	Enclosure	Rockmarshall	711837	808330
CH112	LH008-035001-	Recorded monument	Ringfort - rath	Annaloughan	713012	807653
CH113	LH008-035002-	Recorded monument	Souterrain	Annaloughan	713017	807660
CH114	LH008-035003-	Recorded monument	Hut site	Annaloughan	713005	807657
CH116	LH008-041----	Recorded monument	Mass-rock	Annaloughan	713361	807536

Table 4.7.20 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option B3 (Node 14 – 19))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH143	LH008-103	Recorded monument	Pit-burial	Piedmont	714472	807139
CH109	LH008-032	Recorded monument	Ringfort - rath	Rockmarshall	712117	808020

4.7.4.4 Route Option B2 (Node 19 – 20)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There is general archaeological potential along the length (albeit short, 0.94km), which is predominantly greenfield. There are also ecclesiastical remains and a motte-and-bailey (site of) in the vicinity, outside the corridor to the west / north-west in Mountbagnall townland (Table 4.7.21), indicating medieval activity in the area. Although there is a pit burial (SMR LH008-110, CH171) located immediately west of the ZoN for the castle site (CH136), it is undated and there is little information available for it; it speaks to the general archaeological potential in this area.

The potential within the corridor would need to be quantified with further investigation, however, as it follows the former railway line (CH684; Table 4.7.22) along this option, the archaeological potential is considered to be reduced.

As no designated receptors would be affected, there are no specific sites of known archaeological potential, and taking into account disturbance from the railway, the option is considered neutral at this stage.

Table 4.7.21 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option B2 (Node 19 – 20))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH136	LH008-072	Recorded monument	Castle - motte and bailey	Mountbagnall	716197	806917
CH137	LH008-073001 & -073002	Recorded monument	Church & Graveyard	Mountbagnall	716090	806824
CH171	LH008-110	Recorded monument	Pit-burial	Mountbagnall	716125	806907

Table 4.7.22 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option B2 (Node 19 – 20))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Piedmont	n/a	n/a

4.7.4.5 Route Option B1 (Node 20 - 21)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 2 designated receptors, within the option corridor, comprising a church and graveyard in Mountbagnell townland (RMP LH008-073001 & -073002; CH137; Table 4.7.23). The date of the church is unknown, but it may be associated with the medieval motte-and-bailey that once stood c. 115m to the north-east (outside the corridor; Table 4.7.24; the site is now at least partly beneath a modern factory). As there is a holy well c. 255m east of the graveyard (also outside the corridor; Table 4.7.24), it is also possible that this could be an earlier ecclesiastical foundation originating in the early Christian / early medieval period.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

As the likely impact area is along the side of road to the south of (i.e. opposite) the graveyard and the road was constructed in the later 20th century, there is reduced (but not negated) potential for the discovery of archaeological features associated with the church and graveyard. Further investigation would be required to quantify the potential at this location. This is a very short section of route (0.59km), which follows the existing modern road, thus general archaeological potential is considered to be low.

There is an opportunity to connect to the medieval history and heritage of this area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.23 Designated Archaeological Heritage Receptors within the Corridor (Route Option B1 (Node 20 - 21))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH137	LH008-073001 & -073002	Recorded monument	Church & Graveyard	Mountbagnall	716090	806824

Table 4.7.24 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option B1 (Node 20 - 21))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH136	LH008-072	Recorded monument	Castle - motte and bailey	Mountbagnall	716197	806917
CH144	LH008-107	Recorded monument	Ritual site - holy well	Mountbagnall	716356	806801

4.7.4.6 Route Option B1 (Node 21 - 23)

Archaeological heritage

There are no designated or known archaeological or heritage receptors with this option or adjacent to it. There is general archaeological potential in roadside greenfield areas and clear evidence of medieval activity in the wider area, outside the corridor (e.g. milling at the River Castletown in the early 19th century, as depicted on the 1835 OS map, and a castle - motte recorded outside corridor to the south (Table 4.7.25). As the likely impact area follows the existing road for its length and the road has been previously widened / realigned in places, the archaeological potential is considered to be low.

Architectural Heritage

There is 1 protected structure located within the corridor (RPS LHS008-005; CH342; Table 4.7.26), which is a combined record comprising two mid-19th century buildings, a church and school (mid-19th century; named Bush Church and School) set in a graveyard. The church and school form a prominent local landmark, set on an elevated site. The distinctive boundary (both wall and gateway), which is contemporary with the church and school, adds character to the streetscape and is integral to the setting of the heritage receptor. Any direct impact to this boundary would be significant and should be avoided. While the boundary is not itemised in the RPS record, curtilage of the protected structures is also a consideration. There is also the potential for a moderate / significant effect on the setting of the protected structure, though this could be mitigated through the use of an appropriate design. However, the likely impact area is alongside the stone wall and gateway to the graveyard, and the road is sufficiently wide here that boundary impacts are not expected.

Appraisal Summary

Given the type of development, it should be possible to avoid direct negative effects on the designated heritage receptor within the corridor. As the likely impact area is alongside the distinctive and contemporary boundary associated with the protected structure, it is also important to avoid any potential negative effects on the setting of the heritage receptor through sympathetic design.

There is an opportunity to connect to the history and heritage of this area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.25 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option B1 (Node 21 - 23))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH14	LH008-079	Recorded monument	Castle - motte and bailey	Castlecarragh	716757	806294

Table 4.7.26 Designated Architectural Heritage Receptors within the Corridor (Route Option B1 (Node 21 - 23))

Assessment ID No.	RPS No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH342	LHS008-005 (NIAH 13900811)	Protected structure	Church & school	Rathcor	718275	806836

4.7.4.7 Route Option B2 (Node 20 – 23)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 4 designated receptors within the option corridor (Table Table 4.7.27), comprising an enclosure in Ballaverty (LH008-078; CH13) and a church and graveyard, and holy well, in Mountbagnell townland (RMP LH008-073001 & -073002 (CH137), LH008-107 (CH144)).

There would be a potentially significant negative impact on the enclosure in Ballaverty (CH13), which is located within the likely impact area. The enclosure was identified as a cropmark, with suggestions of an outer enclosure with wide intervening space. The exact nature and extent of the enclosure is as yet unknown.

The date of the church in Mountbagnell is unknown, but it may be associated with the medieval motte-and-bailey that once stood c. 115m to the north-east (outside the corridor; the site is now at least partly beneath a modern factory. As there is a holy well c. 255m east of the graveyard, it is also possible that this could be an earlier ecclesiastical foundation originating in the early Christian / early medieval period. The holy well is located within the corridor, but not within the likely impact area.

There are clear indications of early / later medieval activity in this area and therefore potential for subsurface archaeology associated with it. The likely impact area is immediately north of graveyard, however, the corridor follows the former railway line (CH684; Table Table 4.7.28) at this point, thus the archaeological potential in relation to the ecclesiastical remains is considered to be significantly reduced / negated. Likewise, in relation to inherent riverine archaeological potential, the previous disturbance where the railway line crossed the Castletown River, will have greatly reduced / negated the potential here.

There is only one section of greenfield along the length, with the rest of the corridor following the former railway line. There is a general archaeological potential within the greenfield section (which is predominantly in Ballaverty townland), in addition to the specific potential associated with the recorded enclosure.

Architectural Heritage

There are no designated architectural heritage receptors (ACA / RPS) within the corridor.

A non-designated receptor (NIAH site) is within the corridor in Castletowncooley townland (Table 4.7.28). This comprises a 20th century distillery building (NIAH 13900817; CH648). The building is not within the likely impact area, which runs outside the grounds of the complex to the north, where the boundary is well screened with hedgerow / mature trees. As an industrial complex with an existing screened boundary, and given type of development, there are no significant setting considerations.

Appraisal Summary

There is potential for a significant negative impact on a designated archaeological receptor, an enclosure in Ballaverty, which is within the likely impact area. Further investigation would be required to determine if the impact could be avoided in relation to the recorded monument. Given the type of development, it may be possible to avoid direct negative effects on the designated heritage receptor, by routing around it once the extents have been defined.

Further investigation would also be required to quantify the potential within the greenfield section of the route option. The archaeological potential in the vicinity of the ecclesiastical remains and the river crossing in Mountbagnell townland is considered to be significantly reduced / negated, though this would need to be confirmed through archaeological investigation.

There is an opportunity to connect to the medieval and later history of the area, including the former railway line and industrial heritage, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.27 Designated Archaeological Heritage Receptors within the Corridor (Route Option B2 (Node 20 – 23))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH13	LH008-078----	Recorded monument	Enclosure	Ballaverty	717626	807081
CH137	LH008-073001 & -073002	Recorded monument	Church & Graveyard	Mountbagnall	716090	806824
CH144	LH008-107----	Recorded monument	Ritual site - holy well	Mountbagnall	716356	806801

Table 4.7.28 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option B2 (Node 20 – 23))

Assessment ID No.	NIAH Building Survey Ref.	Legal Status	Site Name	Townland	ITM_E	ITM_N
CH648	13900817	None	Cooley Distillery PLC (factory)	Castletowncooley	716580	806811
CH684	None	None	19th century railway (former)	Mountbagnall, Castletowncooley, Earls Quarter, Ballaverty	n/a	n/a

4.7.4.8 Route Option B3 (Node 20 – 23)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There is 1 designated receptor within the option corridor, comprising an enclosure in Ballaverty (LH008-078; CH13; Table Table 4.7.29). The site it is not within the likely impact area, which runs north of the existing road. While the ZoN for the recorded monument includes the area north of the road, the RMP description does not indicate that the archaeological site extends across the road into the field to the north. There is, however, a slight potential for associated features (e.g. a field system or annexe, if the existing road was not part of an older routeway) within the likely impact area.

There is also general archaeological potential along the length of the route (4.6km) which runs through agricultural land. A 17th century house and bawn located outside the corridor to the north-west, indicate late medieval activity in area, with other earlier medieval sites in surrounding landscape. Additional potential is associated with the river, which would be crossed by the route, and the milling activity shown on the 1835 map (a Tuck Mill), within the likely impact area at the river. Further investigation would be required to quantify this greenfield and riverine potential.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

The recorded enclosure site would not be directly affected, as the likely impact area runs north of the existing road. There is a slight potential for associated features within the likely impact area. There is also general greenfield and riverine potential (including post-medieval milling) elsewhere along the route. Further investigation would be required to quantify the potential within the route option.

There is an opportunity to connect to the medieval history and heritage of this area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.29 Designated Archaeological Heritage Receptors within the Corridor (Route Option B3 (Node 20 – 23))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH13	LH008-078----	Recorded monument	Enclosure	Ballaverty	717626	807081

4.7.4.9 Route Option B4 (Node 14 – 21)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 4 designated receptors, within the option corridor (Table 4.7.30), comprising a ringfort and souterrain (RMP LH008-007001 & -007002; CH36, 37), a midden (LH008-034, CH111), and a promontory fort (LH008-085, CH21). The sites are not clustered, but are well spread out along the corridor. Only one of the sites, the promontory fort is situated in the vicinity of the likely impact area. The latter traverses the edge of the south-east corner of the ZoN for the monument and while its exact extent is uncertain, the historic OS maps indicate that it is not within likely impact area, which follows the Castletown River to the east (c. 55m west of it). As the land falls away from the monument to the river, it is unlikely that further

embankments / ditches would be encountered on this side of the monument. However, this would need to be confirmed through archaeological investigation.

There is general archaeological potential, coastal, riverine and greenfield, as demonstrated by the presence of the archaeological sites within the corridor, which indicate activity from the prehistoric period onwards. The route is predominantly greenfield, with some disturbance along it where areas have been quarried in the past. There are also some small coastal settlements shown on the 1835 OS map (any surviving subsurface remains would have a low sensitivity). Further investigation would be required to quantify the potential within the route option.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

The recorded promontory fort would not be directly affected, based on its depiction on the historic maps and the topography at that location. However, this would need to be confirmed through archaeological investigation and there remains a slight potential that associated features could extend into the likely impact area. Given the type of development, it may be possible to avoid any potential negative effects on the designated heritage receptor by routing around it once the extents have been defined. It is important to avoid any negative effects on the setting of the heritage receptor through sympathetic design.

There is an opportunity to connect to the prehistoric and later history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.30 Designated Archaeological Heritage Receptors within the Corridor (Route Option B4 (Node 14 – 21))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH36	LH008-070001-	Recorded monument	Ringfort - rath	Rampark	713447	806861
CH37	LH008-070002-	Recorded monument	Souterrain	Rampark	713447	806861
CH21	LH008-085----	Recorded monument	Promontory fort - coastal	Mountbagnall	716504	805617
CH111	LH008-034----	Recorded monument	Midden	Rockmarshall	712047	807660

4.7.4.10 Route Option B4 (Node 21 - 25)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 2 designated receptors, within the option corridor, comprising a souterrain and burial ground (RMP LH008-086001 & -086002; CH22 & CH6; Table Table 4.7.31), recorded close to each other in Castlecarragh townland. Neither monument has an above-ground presence and their precise location is not known. There is a local tradition of a graveyard sited in a gravelly field close to the sea, known as 'Shankill' and bones are said to have been found here when ploughing. Local tradition places a souterrain in the same field. The likely impact area traverses the southern edge of the ZoN for the burial ground, with the souterrain recorded

further north-east. However, as the exact location and extent of both sites is unknown, there is the potential for direct negative impact in relation to both sites, including for the discovery of human remains.

There is also general archaeological potential, both coastal and greenfield, along the corridor (albeit very short; length 1.63km), as demonstrated by the presence of a recorded promontory fort located outside the corridor to the west (Table Table 4.7.32). Further investigation would be required to quantify the potential within the route option.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

There is the potential for a significant negative impact in relation to the recorded archaeological monuments within the corridor. Further investigation would be required to determine if the impact could be avoided. Given the type of development, it may be possible to avoid direct negative effects on the designated heritage receptors, by routing around them once the extents have been defined.

There is an opportunity to connect to the history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.31 Designated Archaeological Heritage Receptors within the Corridor (Route Option B4 (Node 21 - 25))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH6	LH008-086002-	Recorded monument	Souterrain	Castlecarragh	716966	805551
CH22	LH008-086001-	Recorded monument	Burial ground	Castlecarragh	716948	805499

Table 4.7.32 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option B4 (Node 21 - 25))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH21	LH008-085----	Recorded monument	Promontory fort - coastal	Mountbagnall	716504	805617

4.7.4.11 Route Option L3 (Node 21 – 21-A)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

The corridor contains 1 designated receptor, a promontory fort (RMP LH008-085, CH21; Table 4.7.33). The likely impact area traverses the edge of the south-east corner of the ZoN for the monument and while its exact extent is uncertain, the historic OS maps indicate that it is not within likely impact area, which follows the Castletown River to the east (c. 55m west of it). As the land falls away from the monument to the river, it is unlikely that further embankments / ditches would be encountered on this side of the monument. However, this would need to be confirmed through archaeological investigation.

There is general archaeological potential, coastal / riverine and greenfield, though this is a short route (1.23km), with a section through an area previously quarried. Further investigation would be required to quantify the potential within the route option.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

The recorded promontory fort would not be directly affected, based on its depiction on the historic maps and the topography at that location. However, this would need to be confirmed through archaeological investigation and there remains a slight potential that associated features could extend into the likely impact area. Given the type of development, it may be possible to avoid any potential negative effects on the designated heritage receptor by routing around it once the extents have been defined. It is important to avoid any negative effects on the setting of the heritage receptor through sympathetic design.

There is an opportunity to connect to the history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.33 Designated Archaeological Heritage Receptors within the Corridor (Route Option L3 (Node 21 – 21-A))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH21	LH008-085----	Recorded monument	Promontory fort - coastal	Mountbagnall	716504	805617

4.7.5 Section C Options Appraisal

4.7.5.1 Route Option C2 (Node 23 – 31)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There are no known archaeological sites in the vicinity of the corridor. In addition, the corridor follows the former railway line (CH684; Table 4.7.34) (now a road), thus there is significantly reduced archaeological potential. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

Table 4.7.34 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option C2 (Node 23 – 31))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Rath Lower, Monksland	n/a	n/a

4.7.5.2 Route Option C2 (Node 31 – 43)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

As the majority of corridor follows the former railway line (CH684; Table 4.7.35) (now a road), there is significantly reduced archaeological potential for the most part. There is general archaeological potential in the small area of greenfield traversed by the route option in Grange Irish / Carlingford townlands, with evidence in the wider area for prehistoric and early medieval activity. The potential in this area would need to be quantified with further investigation. As no designated receptors would be affected, there are no specific sites of known archaeological potential, and taking into account the disturbance caused by the railway along much of its length, the option is considered neutral at this stage.

Table 4.7.35 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option C2 (Node 31 – 43))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Monksland, Grange Irish, Liberties of Carlingford, Mullatee	n/a	n/a

4.7.5.3 Route Option C9 (Node 31 – 41)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 2 designated receptors, within the option corridor, comprising two ring-ditches (RMP LH008-068001 & -068002, CH133 & 187; Table 4.7.36). There is no surface trace of either monument, both of which were identified as cropmarks. Aerial imagery shows them at the edge of a field on the north-west side of the road, but this has since been developed and is now within a car parking area for a sports ground. The likely impact area is on the opposite (south-east) side of the road, avoiding the monuments (though still within the ZoN), but there is a slight potential for associated or similar features (ring-ditches can occur in groups).

The corridor also traverses the ZoN for a church and graveyard and holy well at Node 41 (LH009-002001 to -002003; CH146; Table 4.7.37). The monuments themselves are located south of the old road, outside the corridor; and the likely impact area is further north on the modern realigned road. This greatly reduces the potential for associated features, if present, to survive subsurface.

There is evidence for post-medieval milling in the vicinity of Carnaneel, where a mill race crosses the road (an extant mill race is crossed by the present road; CH682; Table 4.7.38). In addition, the townland name Millgrange, and those of the neighbouring townlands Muchgrange and Monksland, point to possible links with earlier milling and to ecclesiastical agricultural land-holdings in this area. The archaeological potential for the route is considered to be relatively low, however, as the majority of the likely impact area is along the existing road.

Architectural Heritage

There are no designated architectural heritage receptors (ACA / RPS) within the corridor.

A non-designated receptor (NIAH site) is within the corridor in Millgrange townland. Grange House (NIAH 13900904; CH649; Table 4.7.39) is a late 18th / early 19th century middle-sized house. The property is not within the likely impact area and the road widens at this point, creating a natural buffer between the two.

Appraisal Summary

While no designated heritage receptors would be directly affected, there is the potential for the discovery of subsurface features associated with the two ring-ditches and the church and graveyard, or for similar, unknown sites to be present, given the proximity to the recorded sites. This potential is reduced as the route (and likely impact area) follows the existing road.

There is an opportunity to connect to the history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.36 Designated Archaeological Heritage Receptors within the Corridor (Route Option C9 (Node 31 – 41))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH187	LH008-068002-	Recorded monument	Ring-ditch	Monksland	720079	808260
CH133	LH008-068001-	Recorded monument	Ring-ditch	Monksland	720065	808240

Table 4.7.37 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C9 (Node 31 – 41))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH146	LH009-002001-	Recorded monument	Church	Muchgrange	721616	809417
CH146	LH009-002002-	Recorded monument	Ritual site - holy well	Church	721607	809422
CH146	LH009-002003-	Recorded monument	Graveyard	Ritual site - holy well	721616	809410

Table 4.7.38 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option C9 (Node 31 – 41))

Assessment ID No.	Other Ref.	Legal Status	Site Name	Townland	ITM_E	ITM_N
CH649	NIAH Building Survey Ref. 13900904	None	Grange House	Millgrange	721389	809253
CH682	None		Mill-race	Millgrange	721086	809107

4.7.5.4 Route Option C5 (Node 25 – 28)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There is general archaeological potential along the length (albeit short, 1.51km), which is predominantly greenfield, with potential heightened by the coastal environment encountered. The potential would need to be quantified with further investigation. There is also evidence for post-medieval milling activity at Rathcor Lower on 1835 OS map, with no indicators that it predates this period (any surviving subsurface remains are low sensitivity). As no designated receptors would be affected and there are no specific sites of known (significant) archaeological potential, the option is considered neutral at this stage.



Figure 4.7.10 First edition OS six-inch map (1835) showing location of mills at Rathcor Lower (overlaid with approximate location of route option C5 (Node 25 – 28), shown in purple)

4.7.5.5 Route Option C5 (Node 28 – 35)

Archaeological heritage

There are no designated / known receptors within corridor, however, there is a recorded field system (LH008-117, CH218; Table 4.7.39) c. 85m north of the corridor, the extent of which is unknown. Given the site type, there is potential for features to extend into the corridor.

There is general archaeological potential, associated with both greenfield and coastal environments. There is also evidence for post-medieval (or earlier) milling activity at Templetown, with an 'Old Mill' (CH683; Table 4.7.40) indicated on the 1835 OS map (Figure 4.7.11) to the north of the likely impact area. The label 'Old Mill' on an early 19th century map could indicate that a mill had been in existence here for some time and therefore a medieval tradition of milling is a possibility.



Figure 4.7.11 First edition OS six-inch map (1835) showing location of 'Old Mill' (CH683) (overlaid with approximate location of route option C5 (Node 28 – 35), shown in purple)

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

While no designated heritage receptors would be directly affected, there is the potential for the recorded field system to extend into the route corridor and for the discovery of associated features. The potential would need to be quantified with further investigation. Given the type of development, it should be possible to avoid direct negative effects on the designated heritage receptor should it extend into the corridor.

The general greenfield potential and possibility of surviving subsurface remains associated with the milling activity would also need to be quantified with further investigation.

There is an opportunity to connect to the history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.39 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C5 (Node 28 – 35))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH218	LH008-117----	Recorded monument	Field system	Templetown	719928	805143

Table 4.7.40 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option C5 (Node 28 – 35))

Assessment ID No.	Other Ref.	Legal Status	Site Name	Townland	ITM_E	ITM_N
CH683	None	None	Mill (site of)	Templetown	720834	804977

4.7.5.6 Route Option C5 (Node 35 – 38)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 2 designated receptors within the option corridor (Table 4.7.41), comprising an earthwork in Templetown townland (RMP LH009-017; CH156) and a mound in Ballagan (LH009-009, CH33). Of the two there would be a potentially significant negative impact on the earthwork, which is within the likely impact area, in a greenfield section of the route. The description of in the RMP file is brief, stating only 'Natural promontory, partly eroded'.

The mound in Ballagan is situated c. 27m north-west of the likely impact area, with no potential impact. In this section, the route will reuse the existing quiet road, with minimal works envisaged.

There is general archaeological potential, coastal and greenfield, as demonstrated by the presence of the archaeological sites within the corridor, however, the majority of the length is expected to use shared road space with minimal intervention / ground disturbance. This greatly reduces the potential to impact on any previously unknown archaeological sites / features that may be present.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

Given the type of development, it should be possible to avoid direct negative effects on the designated heritage receptor (earthwork), however, further investigation would be required to determine the nature and extent of the archaeological site and to determine if a direct impact could be avoided (i.e. by routing around it once the extents have been defined).

Table 4.7.41 Designated Archaeological Heritage Receptors within the Corridor (Route Option C5 (Node 35 – 38))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH33	LH009-009----	Recorded monument	Mound	Ballagan	724275	807310
CH156	LH009-017----	Recorded monument	Earthwork	Templetown	721899	805175

4.7.5.7 Route Option C5 (38 – 42)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There is general archaeological potential along the length (albeit short, 1.46km), which is predominantly greenfield, with potential heightened by the coastal environment encountered. The potential would need to be quantified with further investigation. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.5.8 Route Option C10 (Node 38 – 41)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There are 3 designated receptors within the option corridor (Table 4.7.42), comprising a church and graveyard and holy well just south of Node 41 (LH009-002001 to -002003; CH146). The monuments themselves are located on the south side of the old road, c. 15m south of the likely impact area. The latter runs through an area of greenfield adjacent to the road. The old road, which is depicted on the 1835 six-inch OS map, forms a boundary to the graveyard; this road was bypassed in the 20th century (the R175 now runs north-west of it). The graveyard is marked as 'Old Burying Ground' on the 1835 map, indicating that it is of some antiquity, while the presence of the holy well (marked as 'St James's Well') may suggest an early medieval date. There will be no direct impact on the designated receptors, but there is some potential for the discovery of associated features within the likely impact area.

There is general archaeological potential, where the route runs adjacent to the road in greenfield. A stream flows north of the road in the greenfield area north / north-east of the graveyard, but this is a relatively restricted area of riverine potential.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

The recorded church, graveyard and holy well would not be directly affected, as the likely impact area runs north of the old road. There is a slight potential for associated features within the likely impact area. There is also general greenfield and (in part) riverine potential elsewhere along the route. However, this is a short route (1.53km) and at least one third of the route is expected to use shared road space with minimal intervention / ground disturbance. Further investigation would be required to quantify the potential within the route option.

There is an opportunity to connect to the history and heritage of the area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.42 Designated Archaeological Heritage Receptors within the Corridor (Route Option C10 (Node 38 – 41))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH146	LH009-002001-	Recorded monument	Church	Muchgrange	721616	809417
CH146	LH009-002002-	Recorded monument	Ritual site - holy well	Church	721607	809422
CH146	LH009-002003-	Recorded monument	Graveyard	Ritual site - holy well	721616	809410

4.7.5.9 Route Option C9 (Node 41 – 45)

Archaeological heritage

There are no designated or known archaeological or heritage receptors with this option. The corridor traverses the north-eastern edge of the ZoN for a church and graveyard and holy well at Node 41 (LH009-002001 to -002003; CH146; Table 4.7.43). The monuments themselves are located south of the old road, outside the corridor; and the likely impact area is further north on the modern realigned road. This greatly reduces the potential for associated features, if present, to survive subsurface.

The general archaeological potential is reduced as the corridor follows the R175 road, with some potential in the adjacent greenfield alongside the road.

Architectural Heritage

The corridor contains 5 designated receptors, comprising Greenore ACA (CH687 and 4 protected structures, all of which are houses within Greenore ACA (RPS LHS009-028 to -031; CH373-376) (Table 4.7.44). The houses are located at the southern end of the ACA and form two pairs of semi-detached late 19th century Arts and Crafts style houses. They were originally built as holiday accommodation (according to the NIAH description for the four buildings[19]) and were situated close to the golf course to maximize their leisure potential.

As described in the ACA statement for Greenore (Louth CDP 2021-2027, Appendix 11, Section 15), this is a planned village, constructed in the second half of the 19th century. It was designed and built by the London North West Railway company to provide it with a direct route to Ireland, midway between the major ports of Dublin and Belfast. The harbour complex, pier and railway station were designed by James Barton, a pupil of John MacNeill (engineer for the Great Northern Railway line). The railway company was responsible for building the port for its ferries and railway lines to connect to the Irish Rail system, in addition to a hotel, houses for the staff, and a school for the children. A golf course and bungalows for the officers / managerial elite of the railway and port company were added in the late 1890s to the south of the village (Figure 4.7.12). The bungalows referenced in the ACA statement of character equate to the protected structures noted above. These Arts and Crafts inspired houses, which were built by the Great Northern Railway architect M.A .Mills, form a marked contrast with the typical architecture of the village. The ACA statement of character concludes that Greenore is an outstanding example of a purpose-built, English-style industrial village in a coastal setting.

[19] E.g. https://www.buildingsofireland.ie/buildings-search/building/13831004/four-winds-1-the-bungalows-greenore-greenore-louth

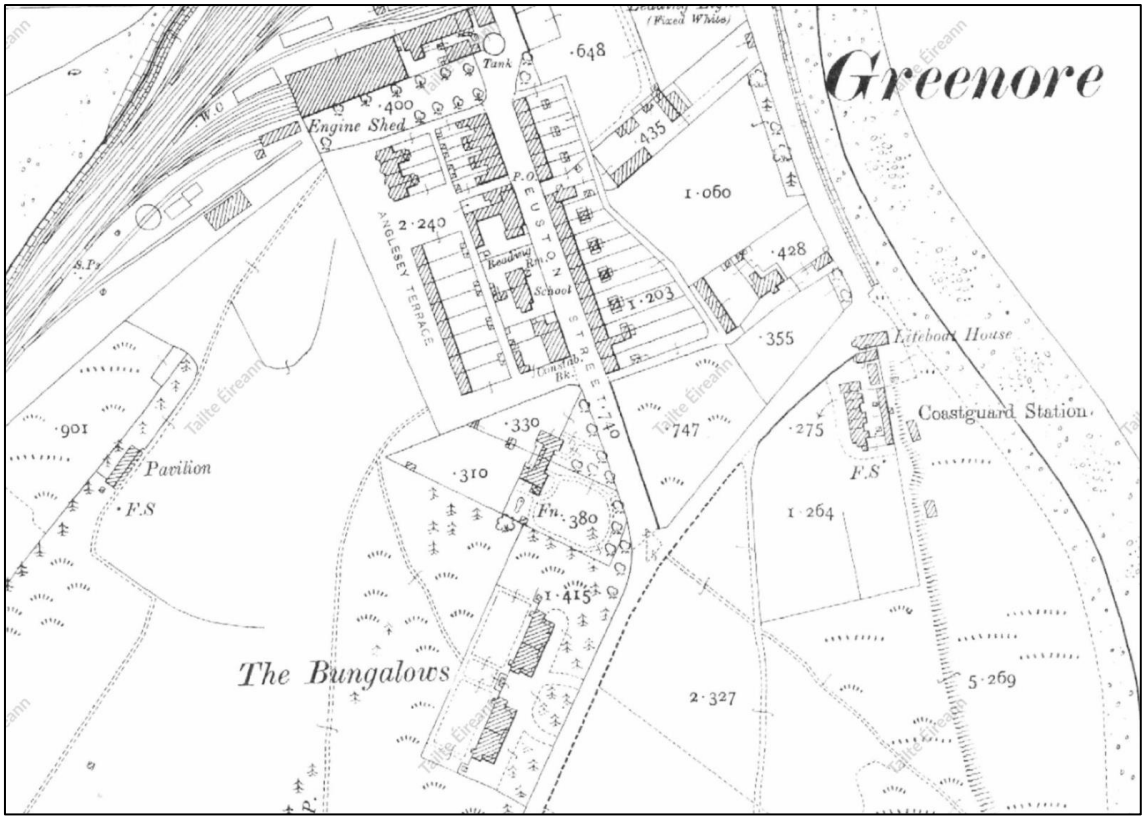


Figure 4.7.12 25-inch OS map of 1909 showing the village of Greenore (CH687), with 'The Bungalows' (CH373-376) at the south-west end

Appraisal Summary

The archaeological potential is relatively low for this route, but would need to be quantified with further investigation.

In terms of architectural heritage in Greenore, the likely expected impact area is along the R175 road at the south end of the ACA, alongside the boundaries of the protected structures. Boundary impacts are not ruled out for this option. Any potential impacts to these boundaries could be considered significant with regard to the setting of the houses and should be avoided (e.g. any road widening should be moved to the opposite side of the road). The curtilage of the protected structures and their setting is an important consideration; the houses and their boundaries are integral to the character of the ACA.

Given the type of development, it should be possible to avoid direct negative effects on the protected structures within the corridor. It is also important to avoid any negative effects on the setting of the heritage receptors through sympathetic design. With regard to the ACA, County Development Plan policies BHC31-37 highlight the need to enhance and protect the ACA.

There is an opportunity to connect to the history and heritage of Greenore as a 19th century planned village, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.43 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C9 (Node 41 – 45))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH146	LH009-002001-	Recorded monument	Church	Muchgrange	721616	809417
CH146	LH009-002002-	Recorded monument	Ritual site - holy well	Church	721607	809422
CH146	LH009-002003-	Recorded monument	Graveyard	Ritual site - holy well	721616	809410

Table 4.7.44 Designated Architectural Heritage Receptors within the Corridor (Route Option C9 (Node 41 – 45))

Assessment ID No.	RPS / ACA No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH687	31	ACA	Greenore ACA	Greenore	718740[20]	811698
CH373	LHS009-028 (NIAH 13831004)	Protected structure	House (No.1 The Bungalows)	Greenore	722279	810606
CH374	LHS009-029 (NIAH 13831003)	Protected structure	House (No.2 The Bungalows)	Greenore	722283	810617
CH375	LHS009-030 (NIAH 13831002)	Protected structure	House (No.3 The Bungalows)	Greenore	722293	810640
CH376	LHS009-031 (NIAH 13831001)	Protected structure	House (No.4 The Bungalows)	Greenore	722300	810658

4.7.5.10 Route Option C10 (Node 41 – 44)

Archaeological heritage

The corridor contains 5 designated receptors (Table 4.7.45Table), one of which – Carlingford town defences (LH005-042001, CH79) – is a national monument. Carlingford is a medieval walled town. The exact circuit of the wall / town defences is uncertain but the projected line is crossed by the route corridor, though the likely impact area avoids it and runs parallel to it (c. 75m east) as it enters Carlingford on the R176 road (Figure 4.7.13). A t this point the likely impact area traverses the RMP ZoN for the historic town (RMP LH005-042, CH74). The potential for subsurface remains in this location is significantly reduced, however, as this was the former railway line (CH684) and station area. Ministerial consent would be required for works within the corridor here, should they be in the vicinity of the national monument.

Another national monument is located outside the corridor to the west (RMP LH005-042008, NM 242, CH78) on Tholsel Street, an urban tower house known as The Mint (Table 4.7.46). Despite its name (which first appears in the late 19th century), this was likely the residence of one of the thriving merchant families that prospered in Carlingford and the surviving architectural details are indicative of a 16th century date. There would be no potential negative impact on its setting, as the monument would be screened by the intervening buildings separating Tholsel Street and Old Quay Lane. This is one of several other national

[20] Centrepoint of ACA

monuments in Carlingford (none would be affected by the route option), all of which are connected to its history as a walled medieval town.

There was no previous urban settlement here and a town only gradually developed after a castle was built c. 1200, known as King John's Castle (also Carlingford Castle; RMP LH005-042002, NM 249, CH685) (Table 4.7.46). This was positioned on the protruding rock overlooking Carlingford Lough, commanding a strong defensive position over the surrounding landscape and the lough. This was a strategic location previously used – the castle was built on an earlier monument, possibly a promontory fort and the remains of a souterrain were found in the western courtyard in 2016. The medieval borough developed to the south / south-west of the castle and contained the other national monument, Carlingford Abbey (Table 4.7.46), a Dominican priory founded c. 1305.

The layout of the town has a distinctive linear pattern forming an elongated H-plan with a central market place. It began to be enclosed with a town wall in the in early 13th century and eventually enclosed an area estimated at c. 8 hectares. Whether this extensive area was ever fully built up is doubtful, but its size suggests something of the hopes and vitality of the early town planners. Its trade flourished and by the 15th and 16th centuries the townspeople had obtained sufficient wealth to enable them to erect substantial tower houses and have them decorated in the latest architectural style (e.g. The Mint). The suggested line of the wall is based on the remaining fragments and the position of the Tholsel Gate. A large section of the wall exists at the northwest side of the town at Back Lane and to the southeast of the Tholsel.

A 18th / 19th century house (RMP LH005-042012; CH27), also in Carlingford, is situated partly within the corridor, but well removed from likely impact area. Likewise, a midden further south-east in Liberties of Carlingford townland, c. 1.2km from the town (LH005-038, CH73).

However, a castle site in Mullatee (RMP LH009-001; CH145) is adjacent to the likely impact area. While the building as shown on the 1835 OS map is not within the likely impact area, there is potential for associated features within it. There is also a reference to a souterrain near here (location unknown). As the route is expected to follow the modern (realigned) road, the potential is somewhat reduced.

Similarly, with regard to the general archaeological potential, as the route follows the former railway line and modern road, this potential is considered to be relatively low, though not entirely negated. The presence of the midden demonstrates the potential for the discovery of such sites that are typical of coastal locations.

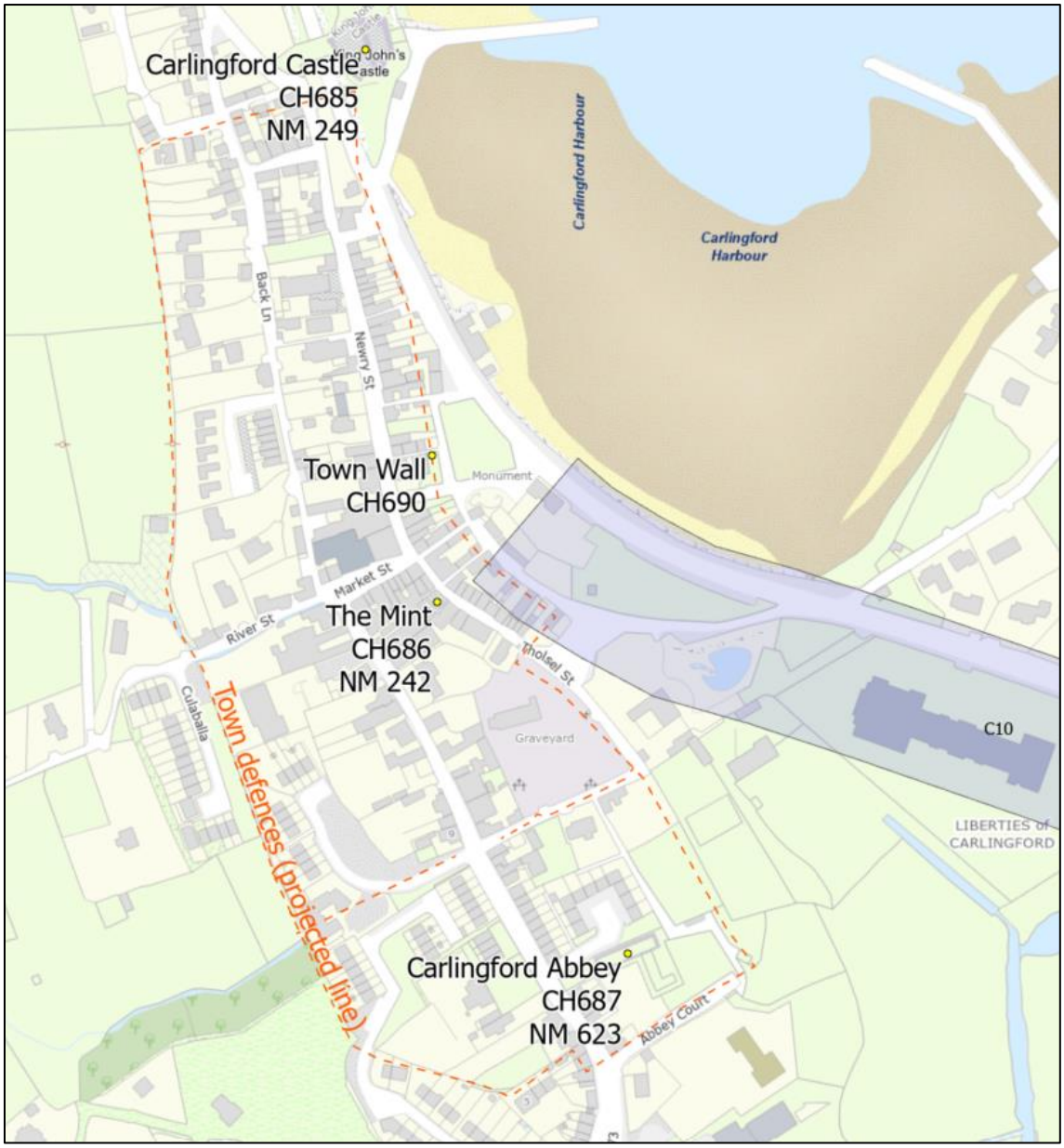


Figure 4.7.13 **Location of national monuments in Carlingford (CH685-687 & 690), showing project line of the medieval town defences, with route option C10 (Node 41 – 44), shown in blue.**

Architectural Heritage

The corridor contains 8 designated receptors comprising Carlingford ACA and 7 protected structures, within or partly within the corridor (Table 4.7.47).

The ACA statement of character for Carlingford ACA (CH686) indicates that the boundary is based 'on the line of the medieval town walls and extends from the town wall on the west, to the coastline on the east, and from King John's Castle on the North to the Mill Pond on the south'. It should be noted however that the medieval wall town, as based on the available evidence and described above, are not thought to have extended as far east as the coastline.

The ACA statement of character notes that 'the medieval character of the town is evident in the survival of the medieval street pattern which provides a striking sense of enclosure - its two parallel streets running north/south, cut by three cross streets, the principle being Market Street, and the narrow interconnecting laneways. A remarkable feature of the town is the

number of medieval buildings surviving – King John's Castle, the Dominican Abbey, the Mint, the Tholsel, Taaffe's Castle'. One of the objectives included in the ACA is to 'preserve the special character of the town, its medieval street pattern and its setting through positive management of changes to the built environment, in particular, by requiring that the height, scale, design and materials of any proposed development within the ACA and in the adjoining area should complement the character of the town and not diminish its distinctiveness of place'.

While the corridor extends into the south-eastern quadrant of the ACA, the route option would be outside of the medieval town and the likely impact area is along the R176 road, which follows the former railway line.

Two of the protected structures partly within the corridor are within the ACA, the former railway station (now tourist office) and two 18th century houses (RPS LHS005-049, -008, -015[21]; CH262, 320, 326). Two are located outside the ACA but nonetheless associated with Carlingford, and also part of its 19th century industrial heritage and transport history, both former railway worker's houses (LHS005-064 & -071, CH276 & 277).

The remaining two protected structures are located further south-east on the west side of the R176 road, the 18th century Avonmore House and an early 20th century house Rocklands (RPS, LHS008-020, -045; CH291, 307).

Appraisal Summary

The proximity of the important medieval settlement of Carlingford and the national monuments within it is an important consideration for this option. None of the upstanding national monuments in Carlingford would be negatively impacted.

There are potentially significant negative impacts associated with this route option, primarily in relation to any unknown subsurface features that may be associated with the medieval town defences (if they extended as far as the likely impact area), a national monument, and any medieval and earlier settlement that may have been present in this area (already demonstrated on the north side of the town at Carlingford Castle).

This part of the coast was clearly in use prior to the arrival of the Anglo-Normans and this adds to the general archaeological potential along the corridor, while there is also some potential associated with the recorded castle and souterrain in Mullatee.

As the route is expected to follow the modern (realigned) road, and in part the former rail line, the archaeological potential is somewhat reduced, both within Carlingford and along the rest of the corridor. Further investigation would be required to quantify the potential within the route option.

In terms of architectural heritage, the likely expected impact area is along the R176 road and would not affect the protected structures either within or outside of Carlingford ACA. It is anticipated to run adjacent to the road with no boundary impacts. With regard to the ACA itself, the principal elements that provide the character for the ACA are primarily rooted in its medieval history and would not be negatively impacted. An objective of the ACA is to protect views inward and outward, but given the nature of the development, there would be no negative impact on viewsheds.

Given the type of development, it should be possible to avoid direct negative effects on the protected structures within the corridor. It is also important to avoid any negative effects on the setting of the heritage receptors through sympathetic design. With regard to the ACA,

[21] RPS LHS005-015 is also RMP LH005-042012.

County Development Plan policies BHC31-37 highlight the need to enhance and protect the ACA.

There is an opportunity to connect to the medieval history of Carlingford, as well as its later heritage (such as the railway), highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.45 Designated Archaeological Heritage Receptors within the Corridor (Route Option C10 (Node 41 – 44))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH27	LH005-042012-	Recorded monument	House - 18th / 19th century	Liberties of Carlingford	718930	811564
CH73	LH005-038----	Recorded monument	Midden	Liberties of Carlingford	720215	810900
CH74	LH005-042----	Recorded monument	Historic town	Liberties of Carlingford	718740	811640
CH79	LH005-042001-	National monument	Town defences	Liberties of Carlingford	718615	811864
CH145	LH009-001----	Recorded monument	Castle - unclassified	Mullatee	721324	809867

Table 4.7.46 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C10 (Node 41 – 44))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH78	LH005-042008	National monument (NM 242)	Urban Tower House (The Mint)	Liberties of Carlingford	718792	811631
CH685	LH005-042002	National monument	Castle (Carlingford Castle)	Liberties of Carlingford	718744	811973
CH623	LH005-042013	National monument	Friary (Dominican) Carlingford Abbey)	Liberties of Carlingford	718916	811410

Table 4.7.47 Designated Architectural Heritage Receptors within the Corridor (Route Option C10 (Node 41 – 44))

Assessment ID No.	RPS / ACA No.	Legal Status	Site Type	Townland / Location	ITM_E	ITM_N
CH686	28	ACA	Carlingford ACA	Carlingford	722316[22]	810764
CH262	LHS005-049 (NIAH 13825042)	Protected structure	Railway station (now Carlingford Tourist Office)	Carlingford (R176 road)	718858	811695
CH276	LHS005-064 (NIAH 13825059)	Protected structure	railway worker's house	Liberties of Carlingford	719067	811635

[22] Centrepoint of ACA

Assessment ID No.	RPS / ACA No.	Legal Status	Site Type	Townland / Location	ITM_E	ITM_N
CH277	LHS005-071	Protected structure	railway worker's house	Ghan Road	719659	811360
CH291	LHS008-020 (NIAH 13900901)	Protected structure	House (Rocklands House)	Mullatee	720356	810862
CH307	LHS009-045 (NIAH 13900902)	Protected structure	House (Avonmore House)	Avonmore House, Mullatee	720550	810647
CH320	LHS005-008 (NIAH 13825041)	Protected structure	House (Former Thatched House)	Liberties of Carlingford	718864	811619
CH326	LHS005-015 (NIAH 13825002)	Protected structure	House (Ghan House)	Liberties of Carlingford	718928	811567

Table 4.7.48 Non-Designated Cultural Heritage Receptors within the Corridor (Route Option C10 (Node 41 – 44))

Assessment ID No.	Other Ref.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH684	None	None	19th century railway (former)	Millgrange, Mullatee, Liberties of Carlingford	n/a	n/a

4.7.5.11 Route Option C3-1 (Node 25 – 23)

Archaeological heritage

There are no designated / known receptors within corridor, however, it traverses the western side of a ZoN for a recorded enclosure (RMP LH008-083, CH18; Table 4.7.49). The enclosure is outside the corridor, but there may be an associated outer enclosure that could extend into the corridor, though not within the likely impact area.

There is also general archaeological potential, greenfield and part coastal / riverine. The potential would need to be quantified with further investigation.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

As no designated receptors would be affected and there are no specific sites of known archaeological potential within the likely impact area, the option is considered neutral at this stage.

Table 4.7.49 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C3-1 (Node 25 – 23))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH18	LH008-083	Recorded monument	Enclosure	Rathcor	718316	806241

4.7.5.12 Route Option C4-1 (Node 28 – 30)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There is 1 designated receptor within the option corridor, comprising a souterrain (RMP LH008-090, CH4; Table 4.7.50), which is located immediately adjacent likely impact area. The exact location and extent of the subsurface monument are unknown. Given this and the site type, it would be difficult to avoid a negative impact on the monument without further investigation to identify both its location and extent. Avoidance may also be difficult in this context as the route is constrained where it passes between two properties in the vicinity of the recorded location.

The corridor also traverses the western edge of a ZoN for a recorded enclosure (RMP LH008-114, CH197; Table 4.7.51). The enclosure is outside the corridor, but there may be an associated field system that could extend into the corridor, though possibly not within the likely impact area.

There is also general archaeological potential, greenfield and part coastal / riverine, as well as a series of ponds (wetland potential). The potential would need to be quantified with further investigation.

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

There are potentially significant negative impacts associated with this route option. Given the type of development, it may be possible to avoid direct negative effects on the designated heritage receptor (souterrain), though this may prove more difficult given its location. Further investigation would be required to determine the nature and extent of the archaeological site and to determine if a direct impact could be avoided (i.e. by routing around it once the extents have been defined). Investigation would also be required to identify the extents of the possible field system associated with the enclosure site.

There is an opportunity to connect to the early medieval history of this area, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.50 Designated Archaeological Heritage Receptors within the Corridor (Route Option C4-1 (Node 28 – 30))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH4	LH008-090----	Recorded monument	Souterrain	Galtrimsland	719196	807141

Table 4.7.51 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C4-1 (Node 28 – 30))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH197	LH008-114	Recorded monument	Enclosure	Galtrimsland	319633	305948

4.7.5.13 Route Option C6-1 (Node 31 – 35)

Archaeological heritage

No national monuments are located within the corridor or in proximity to it.

There is 1 designated / known receptor within the corridor, a holy well (RMP LH009-015, CH155; Table 4.7.52) in Templetown townland. The monument is not within the likely impact area and as a site type, it is discrete and small in scale, thus easy to avoid. It is known as 'Lady Well' (as marked on the 25-inch OS map of 1909; Figure 4.7.14) and in 1934, according to the Irish Folklore Commission Schools Collection, the sides of the well were walled in and steps down to it were put in place (IFC Schools MSS 659, 170-1).

There are ecclesiastical remains c. 110m west of the corridor at this point (LH009-011001 to -011003; CH152; Table 4.7.53), which may represent an early medieval foundation with an association to the holy well. The RMP file description notes that some architectural elements suggest an early medieval date, with other dating to the 15th/16th century (RMP file LH009-011001, www.archaeology.ie). While potential associated features are unlikely to extend as far as the likely impact area, further investigation would be required to confirm this and there is, therefore the potential for subsurface archaeology to be present. The corridor also traverses the ZoN for an enclosure (LH008-082; CH17; Table 4.7.53), but the monument is outside the corridor, at its edge, and well removed from the likely impact area.

There is also general archaeological potential, greenfield and part coastal. The potential would need to be quantified with further investigation.

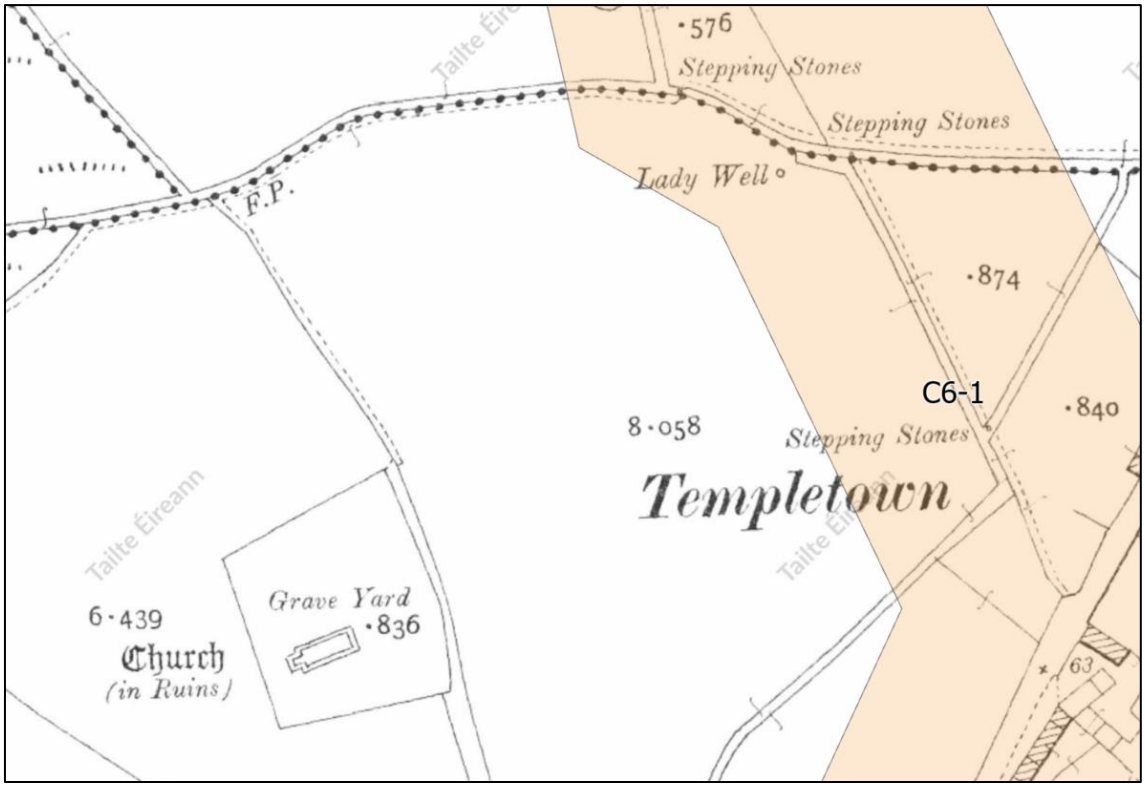


Figure 4.7.14 25-inch OS map of 1909 showing location of 'Lady Well' (CH155) (overlaid with approximate location of route option C6-1 (Node 31 – 35), shown in orange)

Architectural Heritage

There are no designated / known architectural heritage receptors within the corridor.

Appraisal Summary

While no designated heritage receptors would be directly affected, there is the slight potential for the discovery of features associated with the ecclesiastical remains in Templetown. The potential would need to be quantified with further investigation. Given the type of development, it should be possible to avoid direct negative effects on any such features should they extend into the corridor.

There is an opportunity to connect to the early medieval history of this area and to the cultural heritage associated with the veneration of the holy well, highlighting its value and enhancing the sense of place, which is an important feature of cultural heritage.

Table 4.7.52 Designated Archaeological Heritage Receptors within the Corridor (Route Option C6-1 (Node 31 – 35))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH155	LH009-015----	Recorded monument	Ritual site - holy well	Templetown	721125	805801

Table 4.7.53 Relevant Designated Archaeological Heritage Receptors adjacent / close to the Corridor (Route Option C6-1 (Node 31 – 35))

Assessment ID No.	RMP/ SMR No.	Legal Status	Site Type	Townland	ITM_E	ITM_N
CH152	LH009-011001-	Recorded monument	Church	Templetown	720989	805678
CH152	LH009-011002-	Recorded monument	Architectural fragment	Templetown	721016	805681
CH152	LH009-011003-	Recorded monument	Graveyard	Templetown	720994	805697
CH17	LH008-082----	Recorded monument	Enclosure	Grange Old	720085	807171

4.7.5.14 Route Option C7 (Node 35 – 41)

There are no designated or known archaeological or architectural heritage receptors with this option or adjacent to it.

Appraisal Summary

There is general archaeological potential along the length (albeit short, 1.46km), which is predominantly greenfield, with potential heightened by the partly coastal environment encountered. The potential would need to be quantified with further investigation. As no designated receptors would be affected and there are no specific sites of known archaeological potential, the option is considered neutral at this stage.

4.7.6 Assessment Summary

Table 4.7.54 Summary of Impact Ratings for Cultural Heritage

Route Option	Overall TAF MCA Impact Assessment Score	
Section A		
Option A3 (Node 1 – 4)	2	Negative

Route Option	Overall TAF MCA Impact Assessment Score	
Option A4-1 (Node 1 – 4)	4	Neutral
Option A4-1 (Node 4 - 9)	4	Neutral
Option A5 & A6 (Node 4 – 12)	2	Negative
Option A5 (Node 12 – 14)	2	Negative
Option A6 (Node 12 – 13)	4	Neutral
Option A1 (Node 9 – 13)	4	Neutral
Option A1 (Node 13 – 14)	3	Slight Negative
Option A3 (Node 4 – 13)	3	Slight Negative
Option L2 (Node 8 – 9)	4	Neutral
Section B		
Option B1 (Node 14 – 20)	3	Slight Negative
Option B2 (Node 14 – 19)	3	Slight Negative
Option B3 (Node 14 – 19)	2	Negative
Option B2 (Node 19 – 20)	4	Neutral
Option B1 (Node 20 - 21)	3	Slight Negative
Option B1 (Node 21 - 23)	3	Slight Negative
Option B2 (Node 20 – 23)	2	Negative
Option B3 (Node 19 – 23)	3	Slight Negative
Option B4 (Node 14 – 21A)	3	Slight Negative
Option B4 (Node 21 - 25)	2	Negative
Option L3 (Node 21 – 21A)	3	Slight Negative
Section C		
Option C2 (Node 23 – 31)	4	Neutral
Option C2 (Node 31 – 43)	4	Neutral
Option C9 (Node 31 – 41)	3	Slight Negative
Option C5 (Node 25 – 28)	4	Neutral
Option C5 (Node 28 – 35)	3	Slight Negative
Option C5 (Node 35 – 38)	3	Slight Negative
Option C5 (Node 38 – 42)	4	Neutral
Option C10 (Node 38 – 41)	3	Slight Negative
Option C9 (Node 41 – 45)	2	Negative
Option C10 (Node 41 – 44)	2	Negative
Option C3-1 (Node 25 – 23)	4	Neutral
Option C4-1 (Node 28 – 30)	2	Negative
Option C7 (Node 35 – 41)	4	Neutral
Option C6-1 (Node 31 – 35)	3	Slight Negative

4.7.7 Further Studies at Phase 3

This route option assessment does not preclude further studies. Specific mitigation requirements can only be identified as issues for development when the preferred route emerges. A detailed cultural heritage impact study, including a systematic field inspection of the entire length of the preferred route option, will be crucial to the final route appraisal. Further investigation to determine the archaeological potential within areas of greenfield would also be required, which may include LiDAR survey, geophysical survey, and targeted test-trenching, as appropriate. This will ensure that all impacts are identified and mitigated at that stage. These investigations will seek to establish the presence of possible low-visibility or previously unrecorded sites that may be associated with the existing archaeological record and to identify any cultural or architectural heritage features that might exist along the route in addition to those that have been identified during the route option assessment.

The full construction details for river and stream crossings along the chosen route will also need to be considered. Rivers were foci of settlement activity and ritual deposition of artefacts in prehistory and have served as arteries of communication throughout all periods. Old fording points have also crossed rivers in the past, and, for these reasons, the crossing points of rivers must be considered places of archaeological potential. Inspection of waterways during detailed field survey may suffice given the size of the water courses. However, more significant forms of assessment, including underwater assessment or bank survey assessment of the larger waterbodies may also be required.

Avoidance of all designated cultural heritage receptors listed in this report should form the focus of the route selection procedure. However, it is accepted that the avoidance of direct impact by not be possible in every case. In the case of archaeological sites that are only partly preserved or have only a partial expression above the surface, additional archaeological assessment involving geophysical survey and/or test excavation may be required. Any features uncovered during such investigations will need to be fully resolved through excavation or appropriate mitigation measures will otherwise have to be undertaken.