Environmental Impact Assessment Report (EIAR) Volume 2 Main Body Part 1

Chapters 1-7

In respect of

The Royal Canal Urban Greenway

On behalf of

Fingal County Council

October 2026

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1 Introduction

1.1 Overview

This Environmental Impact Assessment Report (EIAR) has been collated by KPMG Planning of Stokes Place, St. Stephen's Green, Dublin 2 for DBFL Consulting Engineers, on behalf of Fingal County Council (FCC), in relation to the construction of a proposed greenway running adjacent to the Royal Canal.

The Royal Canal Urban Greenway, hereafter referred to as the 'Proposed Development', is a pedestrian and cycle route approximately 8.1km in length. It will be constructed along and adjacent to the Royal Canal, extending eastwards from the Kildare County Boundary to the Old Navan Road, near the 12th Lock, where it will connect with the previously constructed Ashtown Greenway. The cycleway is for the exclusive use of pedal cyclists and pedestrians. Full details of the Proposed Development are set out in Section 1.4.

FCC is the scheme promoter, in conjunction with the National Transport Authority as the funding body and Waterways Ireland as the principal property owner. FCC is required to submit this EIAR to An Coimisiún Pleanála (Commission) to inform the Commission's Environmental Impact Assessment (EIA) of the Proposed Development.

The Proposed Development will provide a continuous, high-quality active travel corridor serving the communities of Clonsilla, Coolmine, Castleknock and Blanchardstown and will improve accessibility to schools, public transport, employment centres, recreational amenities and local services. The scheme will encourage a modal shift towards walking and cycling, while supporting recreation, health and wellbeing, sustainable transport objectives and climate action policies at national, regional and local level. The extent of the scheme is illustrated in Figure 1.1.

This EIAR forms part of an application to the Commission under Section 51 of the Roads Act 1993 (as amended) for approval of the Proposed Development. The application, along with all supporting documentation (including EIAR and Appropriate Assessment Screening Report), is submitted to the Commission.

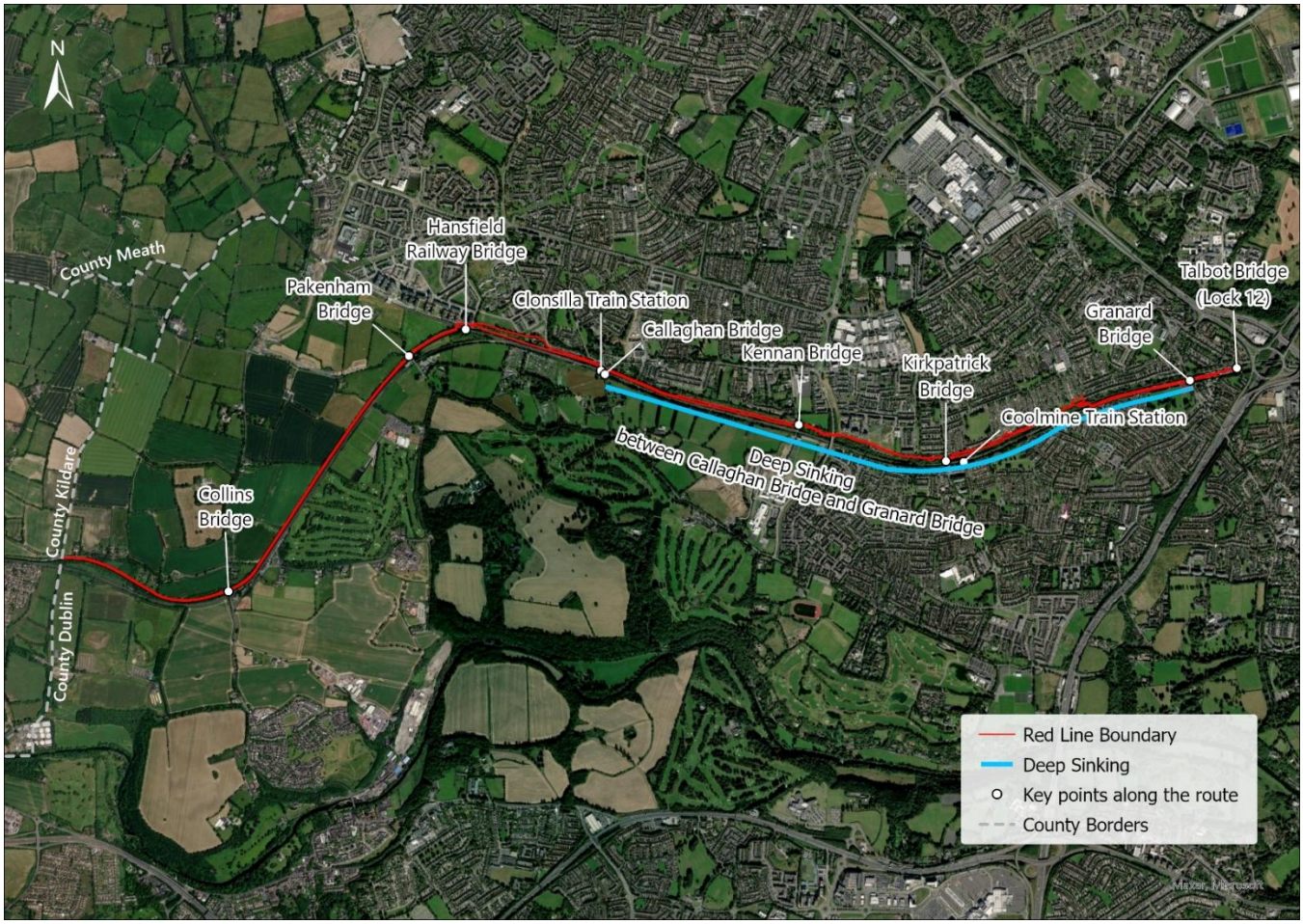


Figure 1-1 The Royal Canal Urban Greenway

The objectives of this EIAR are as follows:

- To provide a description of the Proposed Development.
- To provide a description of the likely significant effects of the Proposed Development on the environment during the construction and operational phases having regard to the characteristics of the receiving environment. To evaluate the magnitude and significance of effects and to provide a description of the features of the Proposed Development and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.
- To provide a description of the reasonable alternatives studied by FCC, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the Proposed Development on the environment
- To identify, where appropriate, monitoring measures to be implemented during the construction and operational phases.
- To set out any difficulties encountered in the preparation of this EIAR.

This EIAR has been prepared to address all of the requirements of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 (EIA Directive).

The statutory description is provided in Section 1.3, with a more detailed description of the Proposed Development in Section 1.4. Details of the Proposed Development will be available online through the EIA Portal[1] and on the website of FCC.

1.2 Location

The Proposed Development is located adjacent to the Royal Canal and stretches from the northwest boundary of the townland of St. Catherine's Park at the Fingal/Kildare County boundary in the west to Talbot Bridge in the east on the Old Navan Road, immediately west of the 12th Lock and in the townland of Blanchardstown. At this location, the Proposed Development connects to the existing Royal Canal Greenway infrastructure serving Ashtown and the wider Dublin City Council Royal Canal Greenway network.

The Proposed Development will be completed in three sections between the Kildare County Border and Talbot Bridge on the Old Navan Road. These sections are defined by their distinct geographical and physical characteristics, as follows and shown on Figure 1.2.

- Section 1 – Kildare County Border to Hansfield Railway Bridge (Ch. 0000m – 3200m)
- Section 2 – Hansfield Railway Bridge to Kennan Bridge (Ch. 3200m – 5300m)
- Section 3 – Kennan Bridge to Talbot Bridge (Ch 5300m – 8100m)

Further detail on the location of the Proposed Development is provided in Section 1.4.

[1] EIA Portal is accessible via the following: https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal

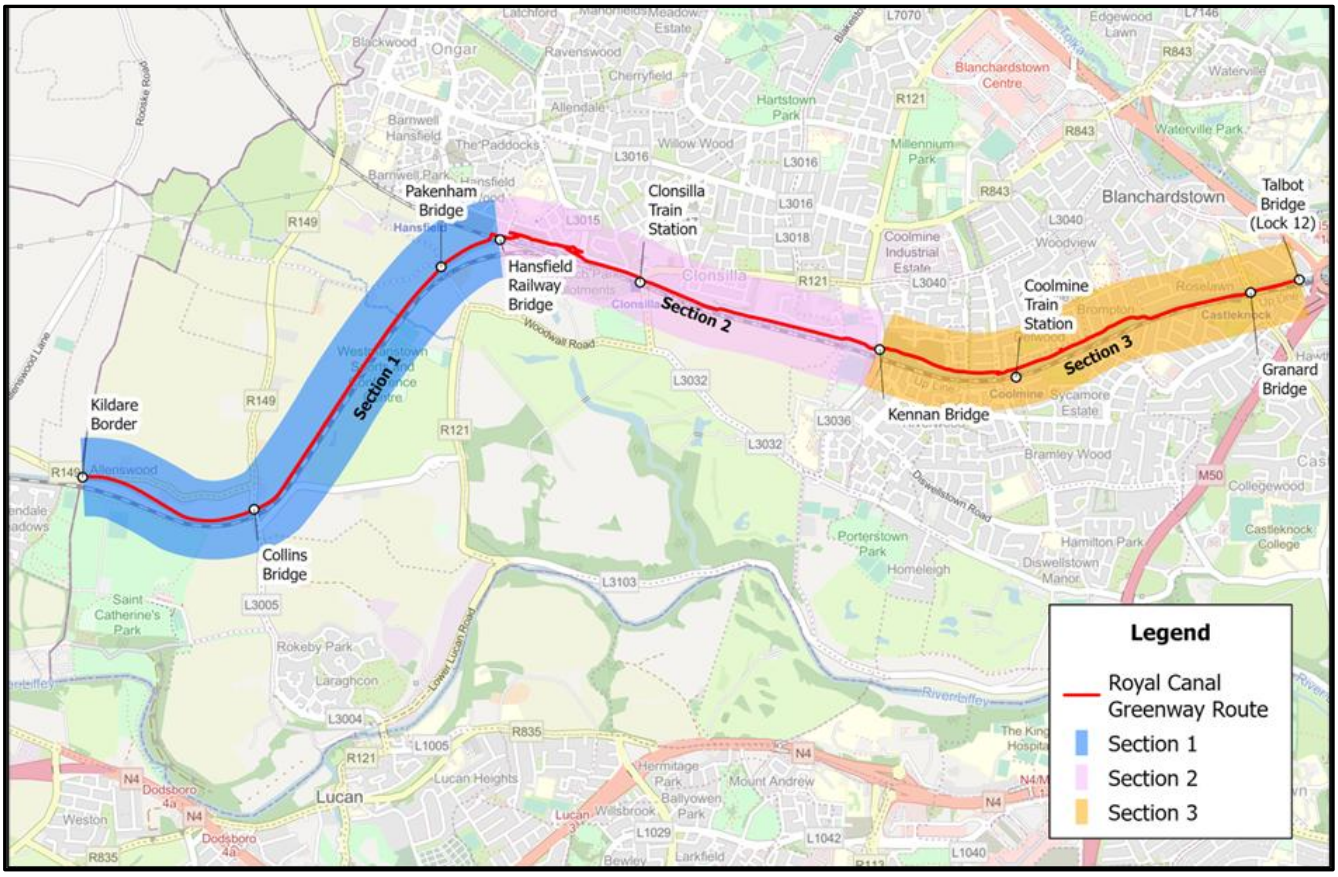


Figure 1-2 Sections of the Proposed Development route



Figure 1-3 Aerial view of the proposed development

- **Section 1 – Kildare County Border to Hansfield Railway Bridge** (Ch. 0000m – 3200m)

Section 1 extends from Kildare County Council boundary line at Allenswood and Confey to Hansfield Railway Bridge. This section is predominantly rural/peri-urban in character, traversing agricultural lands and open countryside while also adjoining established recreational and community amenities, including Westmanstown Golf Club and Westmanstown Sports Centre. The existing towpath is located along the northern embankment of the Royal Canal and currently comprises an unsurfaced grass track with no bound or unbound surfacing (Figure 1.4). The surrounding landscape is generally flat, with the canal corridor forming a linear feature through the area. Land uses within this section are primarily agricultural, interspersed with recreational and amenity uses, resulting in a generally low-density receiving environment with limited urban development.



Figure 1-4 Existing Towpath between Collins & Packenham Bridges

- **Section 2 – Hansfield Railway Bridge to Kennan Bridge (Porterstown Road)** (Ch. 3200m – 5300m)

Section 2 extends from Hansfield Railway Bridge to Kennan Bridge (Porterstown Road) and represents a transition from the rural landscape of west Fingal to the established suburban communities of Clonsilla and Dublin 15. The receiving environment comprises a mix of residential development, agriculture, recreation and transport infrastructure. Significant recent growth associated with the Hansfield SDZ has resulted in the development of large-scale housing schemes, schools, community facilities and neighbourhood centres north of the canal, while agricultural lands and open fields remain evident to the south.

The Royal Canal continues to form the defining landscape feature and an important green infrastructure corridor, providing mature vegetation, biodiversity value and recreational amenity within an increasingly urbanised setting. The existing towpath is located on the northern bank and comprises a combination of grass, asphalt and quarry dust surfaces (Figure 1.5). The canal and adjacent Dublin–Maynooth railway line occupy a narrow corridor defined by embankments and cuttings, creating a relatively enclosed landscape in places despite the generally flat topography.

Existing land uses include residential neighbourhoods, educational and community facilities, railway infrastructure, local parks and agricultural lands. The section also contains several protected structures and historic canal features, including Callaghan Bridge, Kennan Bridge, Porterstown School House, Clonsilla Signal Box and the former Porterstown Crossing Keeper's House. Lands surrounding the route are primarily zoned OS (Open Space), RA/RS (Residential) and HA (High Amenity) and include portions of the Hansfield SDZ and Kellystown Local Area Plan area.

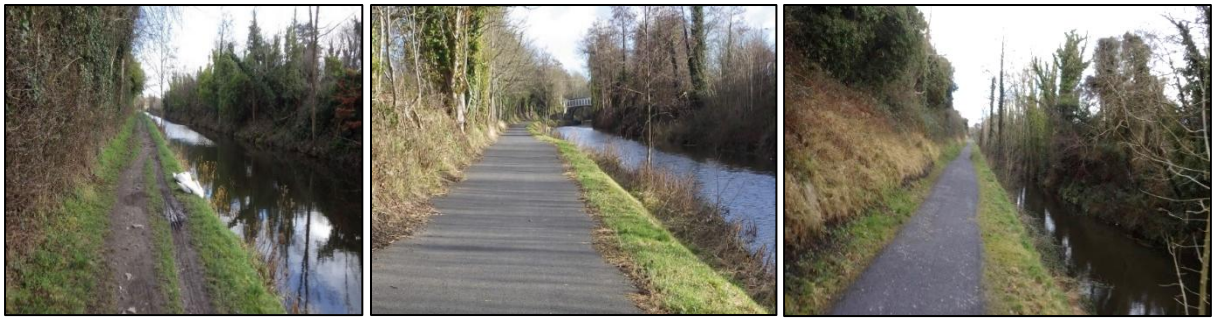


Figure 1-5 Existing surfacing along the northern towpath of Section 2

- **Section 3 – Kennan Bridge (Porterstown Road) to Talbot Bridge (Navan Road)** (Ch 5300m – 8100m)

Section 3 extends from Kennan Bridge to Talbot Bridge (Old Navan Road) and is characterised by a predominantly urban environment within the established suburbs of Clonsilla, Coolmine and Castleknock. The receiving environment is considerably more developed than Sections 1 and 2, with extensive residential neighbourhoods, schools, community facilities, local retail and employment uses surrounding the canal corridor.



Figure 1-6 Existing surfacing along the towpath for Section 3

The Royal Canal remains the defining landscape feature and serves as an important recreational, ecological and heritage asset within the urban area. The existing towpath is primarily located on the southern side of the canal and is largely unsurfaced. The canal and Dublin–Maynooth railway line occupy a constrained corridor, with the towpath generally comprising a narrow 2–3m track situated between the canal and railway infrastructure. In places, retaining walls, railway embankments and other structures create localised pinch points, reducing the available corridor width. The section also incorporates the historic **Deep Sinking** between Clonsilla Road and Castleknock Road, where the canal passes through a steep-sided cutting enclosed by mature vegetation, exposed rock faces, retaining

structures and railway infrastructure. Topography along the corridor varies, with embankments and level changes contributing to a relatively enclosed landscape character despite the urban setting.



Figure 1-7 Pinch point between towpath and the railway signal



Figure 1-8 Northern bank in Section 3

Existing land uses comprise predominantly residential development, educational and childcare facilities, sports and community amenities, local retail centres, employment uses and railway infrastructure. The corridor also contains a number of protected structures and historic canal features, including Kirkpatrick Bridge, Granard Bridge and Talbot Bridge. Mature trees, scrub, grassland and aquatic habitats associated with the canal contribute to an important biodiversity and green infrastructure corridor connecting urban green spaces across western Dublin. Lands adjoining the route are predominantly zoned OS (Open Space) and RA/RS (Residential), reflecting the established residential character of the surrounding area.

1.3 Statutory Description of Development

The description of development as per the statutory notices is provided below. Further information on the Proposed Development is set out in Section 1.4.

Notice pursuant to Section 51(3)(a) of the Roads Act 1993 (as amended) in relation to an application for approval of a proposed road development and the submission of an environmental impact statement

Fingal County Council

Royal Canal Urban Greenway

Fingal County Council ("the Road Authority") has applied under section 51(2) of the Roads Act, 1993 (as amended) to An Coimisiún Pleanála ("the Coimisiún") for approval in relation to a proposed road development consisting of the construction of an approximately 8.1km shared pedestrian and cycle greenway along and adjacent to the Royal Canal towpath, extending from the Kildare County Council boundary in the west to Talbot Bridge (Old Navan Road) in the east, where it will tie into the completed Ashtown Greenway. The proposed development will be constructed in the townlands of St. Catherine's Park, Coldblow, Westmanstown, Barnhill, Barberstown, Clonsilla, Kellystown, Porterstown, Diswellstown, Sheepmoor, Carpenterstown and Blanchardstown, as illustrated in the map below.

The Proposed Development will include the following works:

- *Construction of the greenway route, including the following pavements and surfacing:*
- *Section 1 – unbound surface (width 2-3m) from Kildare County Border to Hansfield Railway Bridge (Ch. 0 – 3200m).*
- *Section 2 – bituminous surface (3-4m width) for the majority of the section, with the exception of pre-cast concrete cantilevered boardwalk from approx. Ch. 4140 - 4540.*
- *Section 3 - bituminous surface (4m width) for the majority of the section, in-situ concrete surfacing and portions of raised boardwalk due to local topography.*
- *Embankments and retaining structures at various locations to stabilise ground conditions.*
- *3 no. toucan signalised crossings (4m wide) and 1 no. zebra crossing at road interfaces along the route.*
- *Lighting installation between Hansfield Railway Bridge and the 12th Lock (approx Ch. 3200m to Ch. 8100m).*
- *Ground level adjustments along the interface with Delwood Park including lowering of path levels and the construction of a 2m high timber palisade fence with anti-climb mesh (Ch. 6200 – 6800).*
- *Construction of the Quarry Bridge, a 30m single-span composite steel beam and concrete deck bridge spanning a historic quarry on the northern bank of the Royal Canal (Ch. +6500m) and associated boardwalk sections.*
- *Privacy planting and railings along the Brompton green area to supplement existing boundary fencing.*
- *Construction of the Landmark Bridge, a steel bridge approximately 235m in length with a maximum single span of 30m, traversing the Royal Canal (Ch. 7115m to 7350m) and associated ramped sections.*
- *Excavation and construction of an underpass beneath Castleknock Road on the southern side of Granard Bridge (Ch. +7770).*
- *Development of a Pocket Park at Hansfield, incorporating a wildflower meadow, native hedgerow, embankment slide, informal play area, benches and associated landscaping.*
- *Provision of rest areas along the route, including bicycle parking stands, benches and associated landscaping.*

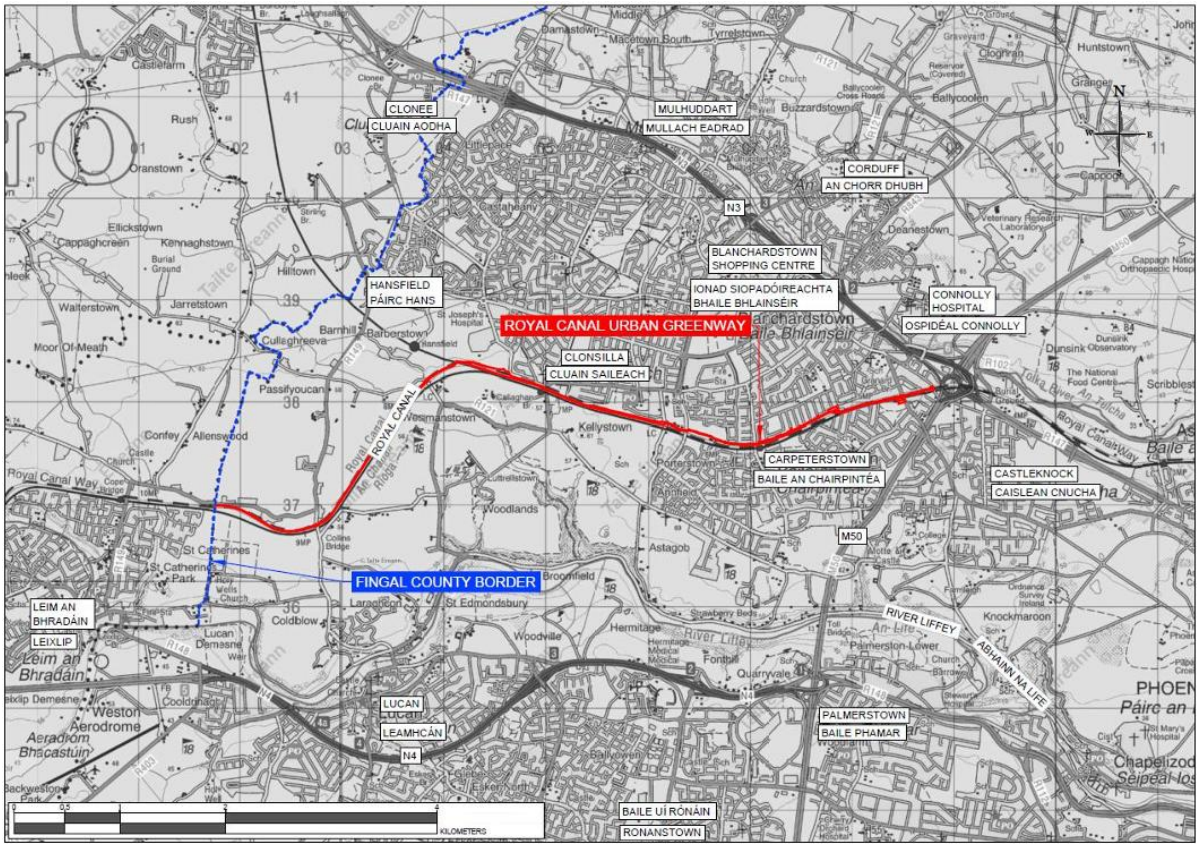
- *Removal of two existing residential properties and associated ancillary structures in the vicinity of Hansfield Road in order to facilitate the delivery of the greenway alignment and associated pocket park infrastructure.*
- *Landscape and reinstatement works, including removal of selected trees, hedgerows and vegetation, where required and replacement planting using native and naturalised species.*
- *Temporary site compounds, storage areas, and construction access arrangements will be reinstated upon completion of the works.*
- *All associated and ancillary works, including excavation and earthworks, installation, diversion and protection of utilities and services including drainage, fencing, boundaries, roadworks including signage, public lighting, road markings and traffic signals.*

The Proposed Development is for the exclusive use of pedal cyclists and pedestrians. An Environmental Impact Assessment Report has been submitted to the Commission in accordance with section 50 (of the Roads Act, 1993 (as amended) in respect of the proposed road development. The Royal Canal is a Protected Structure (RPS 944a, including 10th Lock 944b, 11th Lock 944c and 12th Lock 944d), along with Callaghan Bridge (RPS 706).

A copy of the Environmental Impact Assessment Report and the Plans & Particulars of the Proposed Development will be available for inspection or purchase at a fee not exceeding the reasonable cost of making a copy between the hours of 9am to 1pm and 2pm to 4pm Monday to Friday (exclusive of public holidays), for a period of not less than 6 weeks at: The Planning Section, Fingal County Council, County Hall, Main Street, Swords, Co Dublin, K67 X8Y2, and at the Reception Desk of An Coimisiún Pleanála, 64 Marlborough St, Dublin 1, D01 V902. A copy of the Environmental Impact Assessment Report and the Plans & Particulars of the Proposed Development are also available for inspection online during the above timeframe at www.pleanala.ie and at consult.fingal.ie/en/browse

An Coimisiún Pleanála may, in relation to an application for approval under Section 51 of the 1993 Roads Act (as amended), by order, approve the proposed development with or without modifications or it may refuse such development or any part thereof. Submissions and observations may be made in writing to An Coimisiún Pleanála, 64 Marlborough Street, Dublin, D01 V902 from Monday the 16th of November 2026 until the close of business on Monday the 11h of January 2027 in relation to: 1) The implications of the Proposed Development for proper planning and sustainable development in the area concerned; 2) The likely effects on the environment of the Proposed Development; and 3) The likely significant effects of the Proposed Development on a European Site, if carried out. Any submission/observation must be accompanied by a fee of €50.This fee does not apply to certain prescribed bodies or to property owners and others with a legal interest in land who are objecting to compulsory acquisition of land in with they have such an interest in a compulsory acquisition case. Submissions with a fee can be made via post (to: An Coimisiún Pleanála, 64 Marlborough Street, Dublin, D01 V902), in person and via the Commission's online submission portal https://online.pleanala.ie/en-ie/sid/observation. Submissions where, as set out above, a fee is not required can be made via post, in person and via email to laps@pleanala.ieand must be received by An Coimisiún Pleanála not later than 17:30 hours on Monday the 11h of January 2027. A person may question the validity of any such decision by An Coimisiún Pleanála by way of an application for judicial review under Order 84 of the Rules of the Superior Courts (S.I. No. 15 of 1986) in accordance with Section 50 of the Planning and Development Act, 2000, as amended. Practical information on the review mechanism can be accessed on the Board's website www.pleanala.ie or on the Citizens Information website www.citizensinformation.ie

It should be noted that the Freedom of Information Act applies to all records held by Fingal County Council



1.4 Proposed Development

The proposed greenway route runs along the Royal Canal for approximately 8.1km, 5km of which is proposed along the canal towpath, while 3.1km of the greenway will be away from the towpath to minimise impacts on trees and habitats along the canal. The scheme will provide a shared pedestrian and cycle route. The Proposed Development will provide the missing link between the urban and rural sections of the Greenway already completed by tying in with the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the county boundary in the west. The greenway route will integrate recently constructed pedestrian/cycle routes at St. Joseph's and Windmill Court residential developments (combined length of approx. 800m).

An overview of proposed works for each section of the route is provided below.

- **Section 1 – Kildare County Border to Hansfield Railway Bridge (**Ch. 0000m – 3200m)

The Proposed Development will follow the existing towpath along the northern side of the Royal Canal from the Kildare/Fingal County Council boundary to Hansfield Railway Bridge. The Greenway will comprise a 2-3m wide granular unbound surface, accommodated within the existing embankment widths. The route will continue through the existing pedestrian underpass at Hansfield Railway Bridge.

Toucan signalised crossings will be provided at Collins Bridge and Pakenham Bridge to allow safe transition between the existing pedestrian footpath and the proposed Greenway. Six Sheffield stands, providing 12 cycle parking spaces, are proposed in Section 1.

- **Section 2 – Hansfield Railway Bridge to Kennan Bridge (Porterstown Road)** (Ch. 3200m – 5300m)

The greenway will be constructed on the northern side of the Royal Canal from Hansfield to Kennan Bridge via Porterstown Schoolhouse lands between Callaghan and Kennan bridges. Following the Hansfield Railway Bridge, the greenway route will enter the St. Joseph's Clonsilla Residential Development and follow a recently constructed pedestrian and cycle facility through these lands. The route will then continue through the adjacent wooded area as a new 3-4m wide route, requiring localised clearance of existing trees and the removal of two existing residential properties and associated ancillary structures in the vicinity of Hansfield Road to facilitate the Proposed Development and Pocket Park.

From here, the route will again link into an existing pedestrian route, which will be widened to 3-4m along the northern side of the Royal Canal from the Hansfield Road access to the point where it ramps up onto the Old School House lands. A bituminous surface will be laid for the majority of this section, with the exception of a pre-cast concrete cantilevered boardwalk to the east of Clonsilla on the approach to the Old Schoolhouse lands (Ch.4235-4610).

The Pocket Park proposed at Hansfield, south of the St. Joseph's residential development, will include a wildflower meadow, native hedgerow, an embankment slide, an informal play area, benches and associated landscaping. Eight Sheffield stands, providing 16 cycle parking spaces, are proposed in Section 2.

- **Section 3 – Kennan Bridge (Porterstown Road) to Talbot Bridge (Navan Road)** (Ch 5300m – 8100m)

A 4m wide bituminous surface is proposed for the majority of the section with in-situ concrete surfacing and portions of raised boardwalk due to local topography.

The Greenway route continues onwards on the northern side of the canal from Kennan Bridge to Kirkpatrick Bridge via Sheepmoor Lane. The proposed route is located north of the wooded area along the northern embankment from Kennan Bridge to Sheepmoor Lane which will reduce the impact on trees.

The scheme will follow pedestrian/cycle facilities proposed as part of the Windmill Court Residential Development followed by the existing roadway along Sheepmoor Lane. The Greenway will be situated on the upper level of the northern embankment, from Coolmine Road (Kirkpatrick Bridge) to the Brompton green area (Ch. 6280-6960), which has the benefit of minimising tree removal and the potential visual impact of the scheme on the Canal.

The Proposed Development is routed near the top of the northern embankment (adjacent to Delwood Park residential back gardens) and into the open space at Brompton which has the benefit of minimising the potential impact on trees and habitats.

To prevent overlooking of the rear gardens of properties at Delwood Park and address security considerations, the level of the greenway will be lowered to match, or be lower than, the existing ground level of the adjacent rear gardens. A 2m high timber palisade fence with anti-climb mesh will also be provided. This fencing, along with defensive planting, will enhance security and reduce visual intrusion for residents.

A 30m single span composite steel beam and concrete deck bridge, referred to as the 'Quarry Bridge', will be constructed to enable the proposed greenway to cross a steep section of historic quarry area on the northern bank of the Royal Canal (Ch. +6530m).

A 4m wide paved Greenway will be provided along the southern side of the Brompton green area. A 2m high fence line will be maintained along the southern side of the Greenway, with additional planting and railings provided on the Brompton side to protect residential privacy. The scheme will provide access to the Brompton and Roselawn estates.

The route then crosses from the northern side to the southern side of the Royal Canal. The Greenway will cross the Canal over an architecturally designed pedestrian and cycle bridge – referred to as the 'Landmark Bridge' (approx Ch. 7115m to Ch. 7350m). The proposed new bridge will be approximately 235m in length and have a maximum single span of 30m. The bridge has been designed to respect existing uses along the Canal and existing and future operations on the Dublin to Maynooth rail line.

The greenway will continue on the southern side of the Royal Canal, past Castleknock Station and under Castleknock Road through a proposed new greenway underpass on the southern side of Granard Bridge (Ch. + 7820). A paved 4m wide greenway will be provided on the southern towpath from Granard Bridge to the 12th Lock Hotel. Due to a pinch point between the hotel and the canal, a 3m wide greenway is only feasible from the 12th Lock Hotel to Talbot Bridge/Old Navan Road (150m). The greenway will tie into the current Ashtown section of the Royal Canal Greenway at Talbot Bridge providing continued linkage onwards to Dublin City.

A toucan signalised crossing is proposed at Kirkpatrick Bridge, and a zebra crossing will be installed at Talbot Bridge. Four Sheffield stands, providing eight cycle-parking spaces, are proposed in Section 3.

Lighting Arrangements for the Proposed Development

New public lighting will be provided along the greenway from Hansfield to the Old Navan Road (Talbot Bridge) (largely comprising Section 2 and 3). New public lighting is not proposed to be provided on the western section of the greenway from the Kildare/Fingal County Boundary to the Hansfield Railway Bridge due to its rural nature (largely comprising Section 1). Underground ducting and associated infrastructure will be installed along section 2 and 3 to facilitate future public lighting installation subject to ecological and user safety requirements. Details of lighting proposals are set out in Section 5.4 of the Preliminary Design Report and Public Lighting Layout Drawings (ref. SES 08322) enclosed.

1.5 Construction Phase Overview

The principal construction activities associated with the Proposed Development are anticipated to include site establishment, fencing of works areas, temporary traffic management, temporary surface water management, vegetation clearance, topsoil stripping, earthworks, utilities works, pavement construction, construction of the proposed bridges, boardwalks and underpass, ancillary roadworks, accommodation works, landscaping and reinstatement. These activities are described at a level appropriate to the scheme description, with further detail provided in the Outline Construction Management Plan and the relevant technical chapters of the EIAR.

1. Fencing of construction areas and establishment of temporary site compounds.
2. Implementation of temporary traffic management measures.
3. Establishment of temporary surface water management and pollution prevention measures.
4. Stripping and management of topsoil and existing surfacing, as required.
5. Earthworks to formation level, including excavation, filling, regrading, profiling and management of surplus or unsuitable material.
6. Clearance of selected trees, hedgerows and vegetation where required to facilitate the works.
7. Construction of Quarry Bridge and associated boardwalk sections.
8. Construction of Landmark Bridge and associated ramped sections.
9. Excavation and construction works at Granard Bridge to facilitate the proposed underpass, including associated reinstatement works.
10. Installation, diversion and protection of utilities and services, including associated drainage works.
11. Construction of pavement foundations, concrete surfaces, kerbs and surfacing.
12. Implementation of environmental design and mitigation measures identified in the EIAR, including badger underpasses and compensatory planting, where required.
13. Ancillary roadworks, including signage, public lighting, road markings and traffic signals.
14. Accommodation works associated with affected properties, including fencing, boundary treatments and planting.
15. Landscaping and reinstatement works, including verge formation, seeding, tree and shrub planting, and permanent boundary treatments.
16. Temporary site compounds, storage areas, and construction access arrangements will be reinstated upon completion of the works.

1.6 Environmental Impact Assessment Legislation Context

The Proposed Development falls within the definition of a "road" for the purposes of the Roads Act, 1993 (as amended) (Roads Act). Section 2 of the Roads Act, 1993 (as amended) defines a "road" as including:

(a) any street, lane, footpath, square, court, alley or passage,

(b) any bridge, viaduct, underpass, subway, tunnel, overpass, overbridge, flyover, carriageway (whether single or multiple and whether or not designated for a particular class of vehicle), pavement or footway,

(c) any weighbridge or other facility for the weighing or inspection of vehicles, toll plaza or other facility for the collection of tolls, service area, emergency telephone, first aid post, culvert, arch, gulley, railing, fence, wall, barrier, guardrail, margin, verge, kerb, lay-by, hard shoulder, island, pedestrian refuge, median, central reserve, channelliser, roundabout, gantry, pole, ramp, bollard, pipe, wire, cable, sign, signal or lighting forming part of the road, and

(d) any other structure or thing forming part of the road

(i) F11used, or the use of which is reasonably required, for the safety, convenience or amenity of road users or for the construction, maintenance, operation or management of the road or for the protection of the environment, or

(ii) prescribed by the Minister.

The Proposed Development will constitute a "*public road*" for the purposes of the Roads Act as a public right of way will exist over the Proposed Development and the responsibility for the maintenance of the Proposed Development will lie with the road authority.

Section 68(1) of the Roads Act, 1993 (as amended), defines "cycleway" in the following manner:

"*In this section "cycleway" means a public road or proposed public road reserved for the exclusive use of*

(a) pedal cyclists, or

(b) a combination of pedal cyclists and either or both people driving powered personal transporters and pedestrians."

The Proposed Development is a proposed public road reserved for the exclusive use of pedal cyclists and pedestrians,

Section 68(2)(a) of the Roads Act, 1993 (as amended), states that:

"*A road authority may construct (or otherwise provide) and maintain a cycleway."*

According to the TII Technical Document entitled "*Environmental Planning of National Road and Greenway Projects (TII, 2023)*", "*it appears that road authorities have the power to provide greenway projects as cycleways*."

This EIAR has been prepared in accordance with the European Union EIA Directive 2011/92/EU as amended by Directive 2014/52/EU. The following key guidelines and guidance produced by EU and other government agencies were consulted in the preparation of this EIAR:

- Government of Ireland (2000) *Planning and Development Act 2000* (No. 30 of 2000), as amended.
- Government of Ireland (2001) Planning and Development Regulations 2001 (S.I. No. 600 of 2001), as amended.
- Government of Ireland (1993) Roads Act 1993 (No. 14 of 1993), as amended.
- Government of Ireland (1994) Roads Regulations 1994 (S.I. No. 119 of 1994), as amended.
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017).
- Environmental Impact Assessment of Projects – Guidance on Screening (European Commission 2017).
- Environmental Impact Assessment of Projects – Guidance on Scoping (European Commission 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).
- Environmental Impact Assessment Screening Practice Note 02 (Office of Planning Regulator, 2021).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022).
- Environmental Impact Assessment of Rural Cycleways (Offline & Greenway) – A Practical Guide (TII, 2024)
- Environmental Planning of National Road and Greenway Projects (TII, 2023)
- TII's Project Manager's Manual of Greenway Projects (PE-PMG-02047).

1.6.1 Definition of Environmental Impact Assessment

The 2014 EIA Directive (2014/52/EU) defines 'Environmental Impact Assessment' as a process consisting of the preparation of an environmental impact assessment report by the developer, for the examination of the competent authority to reach a reasoned conclusion on the significant effects of the

project on the environment. EIA Directives have been transposed into the Irish law by way of the *Planning and Development Act 2000, as amended* and *Planning and Development Regulations* 2001, as amended.

Directive 2014/52/EU (amending Directive 2011/92/EU) was adopted on 16 April 2014 and defines 'environmental impact assessment' in Article 1(2)(g) as follows: -

> "*Environmental impact assessment" means a process consisting of:*
>
> *(i) The preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
>
> *(ii) The carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
>
> *(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
>
> *(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
>
> *(v) The integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."*

The Guidelines on the information to be contained in an EIA (2022) by the Environmental Protection Agency (EPA) refers to the EIAR as "a statement of the effect if any, which proposed development if carried out would have on the environment."

> *"The EIAR is prepared by the developer and is submitted to a CA as part of a consent process. The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to help determine if consent should be granted. The information in the EIAR is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA."*

1.6.2 Content of Environmental Impact Assessment Report

The required contents of an EIAR are set out in Article 5(1) and expanded upon in Annex IV of the EIA Directive. Article 5(a) states as follows: -

> *"Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least:*
>
> *(a) a description of the project comprising information on the site, design, size and other relevant features of the project;*
>
> *(b) a description of the likely significant effects of the project on the environment;*
>
> *(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022) describe the following as good practice in the preparation of an EIAR:

- Key alternatives considered;
- Proposed project;
- Receiving environment;
- Likely significant effects; and
- Mitigation and monitoring measures and residual effects.

A non-technical summary is also required. This is provided as a separate volume to this report. This section will provide core information on the assessments, in non-technical language, to ensure that the public and local community are aware of the likely significant environmental impacts of the proposed development.

Annex IV of Directive 2011/92/EU (as amended by Directive 2014/52/EU) sets out the following requirements:

"1. A Description of the project, including in particular:

(a) a description of the location of the project;

(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;

(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;

(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.

2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example

land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro morphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia:

(a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

(g) the technologies and the substances used. The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium- term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on

the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report."

1.6.3 National EIA Legislation and Guidance

The 2014 EIA Directive has principally been transposed into Irish planning law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

Additionally, for the purpose of road development, the EIA Directive has been transposed into Irish legislation by the Roads Act, 1993 (as amended) and the Roads Regulations 1994 (S.I. No. 119 of 1994, as amended), Section 50 and Section 51 of the Roads Act provide the legal basis and thresholds for EIAR preparation and EIA procedure for road developments.

The Department of Housing, Planning and Local Government (DHPLG) issued *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*, in August 2018. The Environmental Protection Agency (EPA) prepared revised guidance to respond to the 2014 EIA Directive, the '*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' which was published in May 2022'*.

This EIAR has been prepared in accordance with, but not limited to, the legislation and guidance set out above and, in particular, the *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*, which were published in August 2018.

1.7 EIA Screening and Mandatory EIAR

Screening is the first stage of the EIA process, whereby a decision is made on whether an EIAR is required. The requirement for Environmental Impact Assessment is mandatory on specified project types which have a high likelihood of impacting the receiving environment.

Section 50 of the Roads Act, 1993 (as amended) is concerned with the requirement for EIA of road development. Section 50(1)(a) provides that road development that is proposed that comprises any of the following shall be subject to an EIA:

(i) The construction of a motorway

(ii) The construction of a busway;

(iii) The construction of a service area;

(iv) Any prescribed type of road development consisting of the construction of a proposed public road or the improvement of an existing public road.

Under Article 8 of the Road Regulations 1994 (as amended) the prescribed type of road development for the purposes of Section 50(1)(a)(iv) of the Roads Act are:

'(a) The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area'; and

'(b) The construction of a new bridge or tunnel which would be 100 metres or more in length.'

The proposed pedestrian and cycle bridge between Kirkpatrick Bridge and Granard Bridge in 'Section 3' of the Proposed Development spans over 100 metres in length, Therefore, the Proposed Development meets the threshold as set out in Article 8 of the Road Regulations 1994, in that it includes the construction of a new bridge which would be 100 metres or more in length. Therefore, an EIA must be carried out in respect of the Proposed Development.

In any event, having regard to the nature, scale and location of the Proposed Development and the potential for significant effects on the receiving environment, Fingal County Council determined that the Proposed Development should be subject to Environmental Impact Assessment.

1.7.1 Sub-Threshold EIA

Following on from the above, the Proposed Development is not deemed sub-threshold and therefore a mandatory EIAR is required in this instance, as per Article 8 of the Roads Regulations 1994.

1.8 Scoping of EIAR

The purpose of scoping is to identify the information to be contained within the EIAR and the methodology to be used in gathering and assessing the information. The scoping exercise involved deciding what key issues may be considered to have likely significant effects on the environment and the information that should be contained within the report. Furthermore, it also involved deciding what methods should be used to gather and assess information.

The EPA '*Guidelines on Information to be contained in Environmental Impact Assessment Reports (2022)'*, subsequently referred to as the 'EPA Guidelines' provide advice on the preparation of EIARs to support compliance with the EIA Directive. The EPA Guidelines recommend that the scoping process uses 'likely' and 'significant' as the principal determining criteria for which issues should be assessed in the EIAR. Any issues which do not pass the test are omitted or 'scoped out' from further assessment.

A description of the likely significant effects of the project on the environmental factors listed in Article 3(1) of the 2014 Directive is included in this EIAR under the chapters, as listed in Section 1.9 below.

1.9 Format and Structure of this EIAR

In accordance with Section 3.8.4 of the EPA Guidelines, this EIAR includes technical studies which address the likely environmental impacts of the construction and operation of the Proposed Development, as described in Table 1.1. The disciplines identified for inclusion in this EIAR, along with the technical content, were determined based on site visits, completion of an environmental scoping exercise (to inform the content and extent of matters covered in the environmental information) and consultation with statutory bodies, where relevant. The EIAR also addresses all of the environmental topics required by the EIA Directive and implementing legislation.

As detailed in Table 1.1. Chapter 1 of the EIAR sets out the Introduction and Methodology, Chapter 2 describes the Proposed Development and background to the scheme, Section 3 outlines the Planning Policy Context and Chapter 4 describes Alternatives. Environmental topics are addressed in Chapters 5 to 17, each of which includes an assessment of the baseline environment, predicted potential impacts,

recommendations for mitigation measures to reduce or eliminate any significant negative impacts; and an assessment of the residual impact that will remain, assuming that recommended mitigation measures are fully and successfully implemented. Cumulative impacts are also addressed in each chapter (please also refer to summary overview of cumulative impacts provided in Section 1.12). Chapter 18 provides an overview of interactions between environmental topics and Chapter 19 provides a Summary of Mitigation and Monitoring Measures. Further details of the methodology and discipline specific best practice and guidance are presented in the relevant Chapters included within this report.

Table 1-1 Format and structure of EIAR chapters

	Title	**VOLUME** 1 **Contents and Purpose**
-	Non – Technical Summary	A concise overview of the EIAR in non-technical language which allows the public and key stakeholders to understand the Proposed Development and the likely significant effects of the Proposed Development on the environment.
No.	Title	**VOLUME 2** **Contents and Purpose**
1.	Introduction	Provides an overview of the Proposed Development, including its location, statutory context, detailed scheme description and principal construction activities. This chapter outlines the legislative and policy framework for Environmental Impact Assessment (EIA), the methodology adopted in preparing the EIAR, the significance criteria used in the assessment, and the overall structure of the EIAR. It also summarises relevant planning history, other projects and plans considered as part of the cumulative effects assessment, the risk of major accidents and disasters, and identifies the competent experts responsible for preparation of the EIAR.
2.	Background to the Proposed Development	Describes the strategic context, objectives and need for the Proposed Development and its role in completing a key missing link in the Royal Canal Greenway network. This chapter outlines the international, national, regional and local significance of the scheme, including its relationship with EuroVelo 2, the National Cycle Network and the Greater Dublin Area cycle network. It explains the social, economic, environmental and accessibility benefits of the Proposed Development, the rationale for its delivery, and summarises the consultation and stakeholder engagement undertaken during scheme development.
3.	Policy Context	An overview of the Proposed Development in the context of all relevant local, regional and national policies and objectives from statutory and guidance documents.
4.	Alternatives Considered	A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
5.	Air Quality	The likely significant impacts with regard to air quality associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved

		projects are also considered in combination with the predicted impacts of the Proposed Development.
6.	Climatic Factors	The likely significant impacts with regard to climate associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
7.	Noise & Vibration	The likely significant impacts with regard to noise and vibration associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
8.	Biodiversity	The likely significant impacts with regard to biodiversity associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
9.	Archaeological, Architectural and Cultural Heritage	The likely significant impacts with regard to archaeological, architectural and cultural heritage associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
10.	Landscape & Visual	The likely significant impacts with regard to landscape and visuals associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the Proposed Development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
11.	Land, Soils & Geology	The likely significant impacts with regard to land and soils associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse impacts of the development are proposed, and residual impacts are described.
12.	Water	The likely significant impacts with regard to hydrological and hydrogeological associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse impacts of the development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
13.	Population and Human Health	The likely significant impacts with regard to population and human health associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved

		projects are also considered in combination with the predicted impacts of the Proposed Development.
14.	Material Assets: Traffic and Transportation	The likely significant impacts with regard to traffic and transportation associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the development are proposed, and residual impacts are described. Cumulative impacts from other proposed plans and projects are also considered in combination with the predicted impacts of the Proposed Development.
15.	Material Assets: Waste Management	The likely significant impacts with regard to waste management associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the development are proposed, and residual impacts are described. Cumulative impacts from other existing and / or approved projects are also considered in combination with the predicted impacts of the Proposed Development.
16.	Material Assets: Utilities	The likely significant impacts with regard to utilities associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse effects of the development are proposed, and residual impacts are described. Cumulative impacts from other proposed plans and projects are also considered in combination with the predicted impacts of the Proposed Development.
17.	Material Assets: Land Use and Property	The likely significant impacts with regard to land use and property associated with both the construction and operational phases of the Proposed Development. Measures to mitigate the likely significant adverse impacts of the development are proposed, and residual impacts are described.
18.	Interactions	The assessment of environmental inter-relationships of effects of the Proposed Development having regard to current knowledge and methods of assessment.
19.	Summary of Mitigation & Monitoring Measures	A summary of all mitigation and monitoring measures proposed throughout the EIAR and
VOLUME 3		
	Appendices	**<u>Volume 3 Appendix Part 1</u>** ***Chapter 3 Policy Context*** Appendix 3.1 Land Use Zoning Map ***Chapter 8 Biodiversity*** Appendix 8.1 NBDC records of protected species within 2km of the Proposed Development since 2016 Appendix 8.2 NBDC records of invasive species within 2km of the Proposed Development since 2016 Appendix 8.3 Habitat Maps A-O of the Proposed Development Appendix 8.4: Royal Canal Tree Removal Plan (with m² values per area) Appendix 8.5:Additional Non-JBA surveys • 8.5.1. BEC (2013), Ecological Study of the Royal Canal between Talbot Bridge and Maynooth Train Station • 8.5.2. Natura Environmental Consultants (2018), Royal Canal Urban Greenway Biodiversity Assessment 2018 Report To Fingal County Council

		• 8.5.3. Triturus Environmental Ltd (2024) Royal Canal (1st to 16th lock) macrophyte survey 2023. • 8.5.4. Triturus Environmental Ltd (2025) Royal Canal (1st to 16th lock) macrophyte survey 2024. • 8.5.5. Triturus Environmental Ltd (2024) Royal Canal (1st to 16th lock) aquatic macro-invertebrate survey 2023 • 8.5.6. Moorkens E.A. and Killeen, I (2025) Survey of the Royal Canal east of Kilcock for freshwater molluscs with particular reference to the glutinous snail, *Myxas glutinosa*, Spring 2024. • 8.5.7. Triturus Environmental Ltd (2025c) Royal Canal Urban Greenway glutinous snail (*Myxas glutinosa*) survey 2025 • 8.5.8. Royal Canal Bat Assessment – 8km Section, Co. Dublin & Co. Kildare. 2026. Bat Eco Services **Volume 3 Appendix Part 2** ***Chapter 8 Biodiversity*** Appendix 8.5:Additional Non-JBA surveys • 8.5.9. Royal Canal Urban Greenway Badger (*Meles meles*) stage 1 & 2 survey 2025. Triturus Environmental Ltd • 8.5.10.1 Royal Canal Urban Greenway otter (Lutra lutra) survey 2025. Triturus Environmental Ltd • 8.5.10.2 Royal Canal (1st to 16th lock) Otter survey 2025. Triturus Environmental Ltd Appendix 8.6: Environmental Impact Assessment Report (EIAR) BNG Report in respect of Royal Canal Urban Greenway **Volume 3 Appendix Part 3** ***Chapter 9 Archaeological, Architectural and Cultural Heritage*** Appendix 9.1: Legislation Protecting the Archaeological Resource Appendix 9.2: Legislation Protecting the Architectural Resource **Volume 3 Appendix Part 4.1** ***Chapter 10 Landscape and Visual*** Appendix 10.1: Arboricultural Report Appendix 10.2: Landscape Report **Volume 3 Appendix Part 4.2** ***Chapter 10 Landscape and Visual*** Appendix 10.3: Verified Views (Photomontages) and Methodology Appendix 10.4 DART+ WEST Technical Note for FCC **Volume 3 Appendix Part 5** ***Chapter 14 Traffic and Transport*** Appendix 14.1: Demand Analysis Appendix 14.2: Parking Survey ***Chapter 15 Material Assets: Waste Management*** Appendix 15.1 Site Specific Resource and Waste Management Plan

1.10 EIAR Methodology

The methodology adopted for the preparation of this EIAR comprised a systematic analysis of the impact of the Proposed Development and the likely significant effects on existing environment. The environmental assessments documented in chapters 5-17 of this EIAR follow a consistent methodology covering the following:

- Establishment of the Baseline Environment;

- Impact assessment and mitigation / monitoring measures;
- Residual Impacts and
- Significance of environmental issues.

1.10.1 Baseline Environment

The impact assessment examines the existing baseline conditions of the receiving environment within the study area for each environmental aspect and then determines the potential impacts associated with the Proposed Development during its construction and operational phases. The receiving environment is described and characterised using available baseline information, surveys, published datasets, policy documents and other relevant sources, as appropriate to each environmental topic. This process identifies the key environmental characteristics, sensitivities, constraints and resources within the study area and provides the basis for the assessment of likely significant effects.

The study area considered within this EIAR differs for each environmental aspect and extends to incorporate all areas where there is potential for significant impact. Sensitive receptors and environmental resources that could be affected by the Proposed Development are identified and assessed having regard to the nature, extent and characteristics of the proposed works. Further information on the receiving environment and the extent of the study area considered for each topic is provided within the relevant EIAR chapter. The assessment then evaluates the likely effects of the Proposed Development during both the construction and operational phases relative to the established baseline conditions.

1.10.2 Impact Assessment

The preparation of the EIAR was an iterative process, which progressed in parallel with the development of the design. The potential impact of the emerging design on the receiving environment was identified and assessed through the design process. The impact assessment presented in this EIAR considers the likely effects of the Proposed Development both with and without mitigation measures, where relevant.

1.10.3 Mitigation

Mitigation measures are identified to avoid, prevent, reduce or, where appropriate, offset significant adverse effects. Where required, monitoring measures are also identified to verify the effectiveness of mitigation measures and to ensure that any significant residual effects are appropriately managed. Measures identified during the assessment process have been incorporated into the design of the Proposed Development, where feasible. The approach adopted in the impact assessment and preparation of this EIAR is based on the recommendations set out in the EPA Guidelines.

1.10.4 Residual Impacts

Residual impacts relate to environmental change(s) which will remain after the proposed mitigation measures have been implemented and taken effect. These are the remaining environmental effects of the Proposed Development that could not be reasonably avoided.

1.10.5 Significance of Environmental Issues

In '*Appendix 1 - Glossary of Terms'* of the EPA Guidelines, an 'impact' is described as '*change resulting from the implementation of project*.' The following factors were considered when determining the

significance of the impact (both positive and negative) of the Proposed Development on the receiving environment:

- The quality and sensitivity of the existing/baseline receiving environment;
- The relative importance of the environment in terms of national, regional, county, or local importance;
- The degree to which the quality of the environment is enhanced or impaired;
- The scale of change in terms of land area, number of people impacted, number and population of species affected, including the scale of change resulting from cumulative impacts;
- The consequence of that impact/change occurring;
- The certainty/risk of the impact/change occurring;
- Whether the impact is temporary or permanent; and
- The degree of mitigation that can be achieved.

The criteria outlined in the EPA Guidelines have also been followed when quantifying the duration and magnitude of impacts. The quality of the impact is described as 'negative', 'neutral' or 'positive'. Consideration is also given to whether significant impacts are 'Direct' or 'Indirect'. Further information on the specific methodologies utilised for the assessment of each environmental aspect are included in the relevant EIAR chapters.

Where no impact or a positive impact was predicted to occur, the design of the Proposed Project remains unchanged. Where significant adverse effects are predicted, mitigation measures are proposed to avoid or minimise effects. Where feasible, these measures are then incorporated into the design of the Proposed Development.

In terms of the assessment of the significance of potential environmental effects, the EPA Guidelines sets out that the assessment of significance should be based on clear and unambiguous criteria, and that significance should be defined in a way that reflects what is valued in the environment by public and private stakeholders. A common approach to this would be the application of multi-criteria analysis. Common criteria used to evaluate significance include the magnitude of the predicted effect and the sensitivity of the receiving environment:

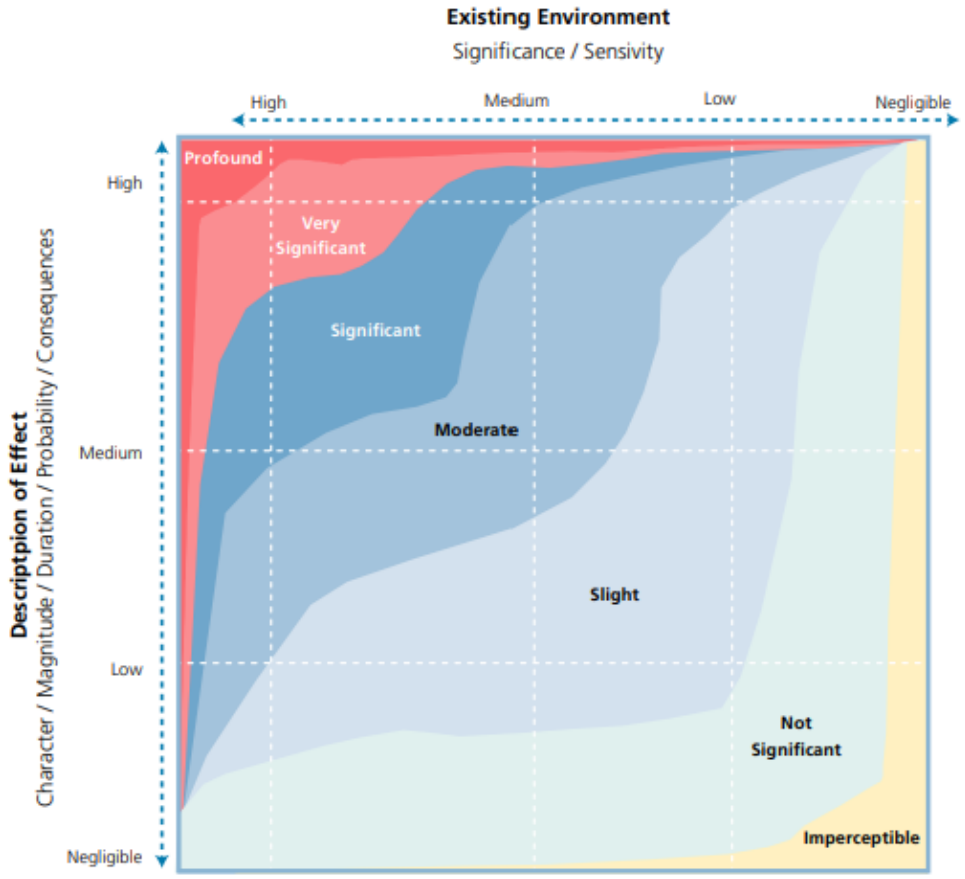
- *'Magnitude' considers the characteristics of the change (timing, scale, size, and duration of the impact) which would probably affect the target receptor as a result of the proposed Project;*
- *'Sensitivity' is understood as the sensitivity of the environmental receptor to change, including its capacity to accommodate the changes the Projects may bring about.*

The European Commission (EC) '*Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report'* also notes that significance is context-specific and hence, tailored criteria should be developed for each Project and its settings. The EC Guidance further advises that assessment methods should define clear thresholds or criteria for determining whether an impact is significant, based on the characteristics of an impact, in a clear and unambiguous manner.

The assessment method, hence, follows the commonly used approach of 'multi-criteria analysis' to evaluate significance – which includes consideration of the magnitude of the predicted effects and the sensitivity of the receiving environment. In order to scale and weigh the two criteria (on sensitivity and magnitude), a matrix similar to Figure 3.4 of the EPA Guidelines (as shown here in Figure 1.9), has been considered to evaluate the significance of effects (Table 1.2).

Table 1-2 Matrix of Significance

Impact Magnitude	Environmental Sensitivity			
	High	**Medium**	**Low**	**Negligible**
High	Profound	Very Significant or Significant	Significant or Slight	Slight
Medium	Very Significant or Significant	Significant	Slight	Slight or Non-Significant
Low	Significant or Slight	Slight	Slight or Non-Significant	Slight or Non-Significant
Negligible	Slight	Slight or Non-Significant	Slight or Non-Significant	Imperceptible



There are seven generalised degrees of effect significance that are commonly used in EIA. Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in Table 3.4. When more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions. (ref. Advice Notes[68].)

Figure 3.4 Chart Showing Typical Classifications of the Significance of Effects[69]

Figure 1-9 Extract showing Figure 3.4 of the EPA Guidelines, 2022

Generalised definitions of the above scale of effects, as provided in Table 3.4 of the EPA Guidelines (2022), are presented below in Table 1.3.

Table 1-3 Description of Significance of Effects (as per the EPA Guidelines 2022)

Terminology Describing Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences

Non-Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity, alters a sensitive aspect of the environment.
Very Significant Effects	An effect which, by its character, magnitude, duration, or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.

In line with the above, the section on impact assessment in each chapter, has set out in detail the impacts resulting from the Proposed Development and the extent of significance on the receiving environment.

The construction of the development will be undertaken in accordance with the conditions of any forthcoming approval received for the scheme. The final Proposed Development and construction will comply with all relevant statutory approvals.

1.11 Other Projects and Plans

This section provides an overview of relevant planning permissions, developments and plans within and surrounding the Proposed Development which have informed the cumulative effects assessment.

An overview of planning activity within 500m either side of the proposed route between November 2020 and August 2026 is shown in Figure 1.10. Each competent expert responsible for the environmental topic chapters of this EIAR considered relevant planning activity within 500 m of the Proposed Development as part of the cumulative effects assessment, where appropriate. In addition, where relevant to the receiving environment and as determined by the respective competent expert, permitted plans and projects located beyond this study area were also considered. The main outcomes of these cumulative effects assessments are summarised in Section 1.12 and presented in detail within the relevant chapters of this EIAR.

1.11.1 Relevant Planning History of the Application Area

A review of planning history (approved planning applications between November 2020 and August 2026) has been undertaken and shows there are no planning applications within the Proposed Development redline boundary which are awaiting decision, at Further Information Stage or appeal stage, or with extant permission. FCC Ref. FW25A/0416E [ACP-PL-500971-DF-26] is identified as awaiting ACP decision within the wider catchment, however, does not intersect with the Proposed Development redline boundary.

1.11.2 Consented Schemes

Residential Development

A record of planning applications within 500m of the subject site since November 2020 and up to August 2026 indicate that a total of 1,838 no. residential units have been granted planning permission of which 780 no. residential units have commenced construction2 (Fingal County Council Planning Register, reviewed August 2026). The location of permitted developments, including commenced and uncommenced schemes, is shown in Figure 1.10 and set out in Table 1.4.

[2] Record of planning applications of 10 no. units and over in a 5-year period up to June 2026

The majority of residential schemes permitted since 2020 are located to the north of the proposed route within the Hansfield Strategic Development Zone and surrounding lands. Several large residential schemes exceeding 150 units have been permitted or commenced, including developments at Hansfield Orchard, St. Joseph's Phase 2 and 3, Porterstown and Winterwood. Additional medium-sized developments ranging from approximately 40 to 100 units are distributed throughout the study area.

The Proposed Development also connects with existing and planned active travel infrastructure associated with nearby residential developments. In particular, it interfaces with the permitted canal-side pedestrian and cycle route associated with the Hansfield SDZ lands (FCC Reg. Ref. FW17A/0234/E1) and will provide improved connectivity for a number of major residential schemes located along the corridor, including the permitted 419-unit apartment development at Hansfield (FCC Reg. Ref. FW23A/0013).

The scale of residential development within the surrounding area highlights the growing demand for recreational amenities and sustainable transport infrastructure.

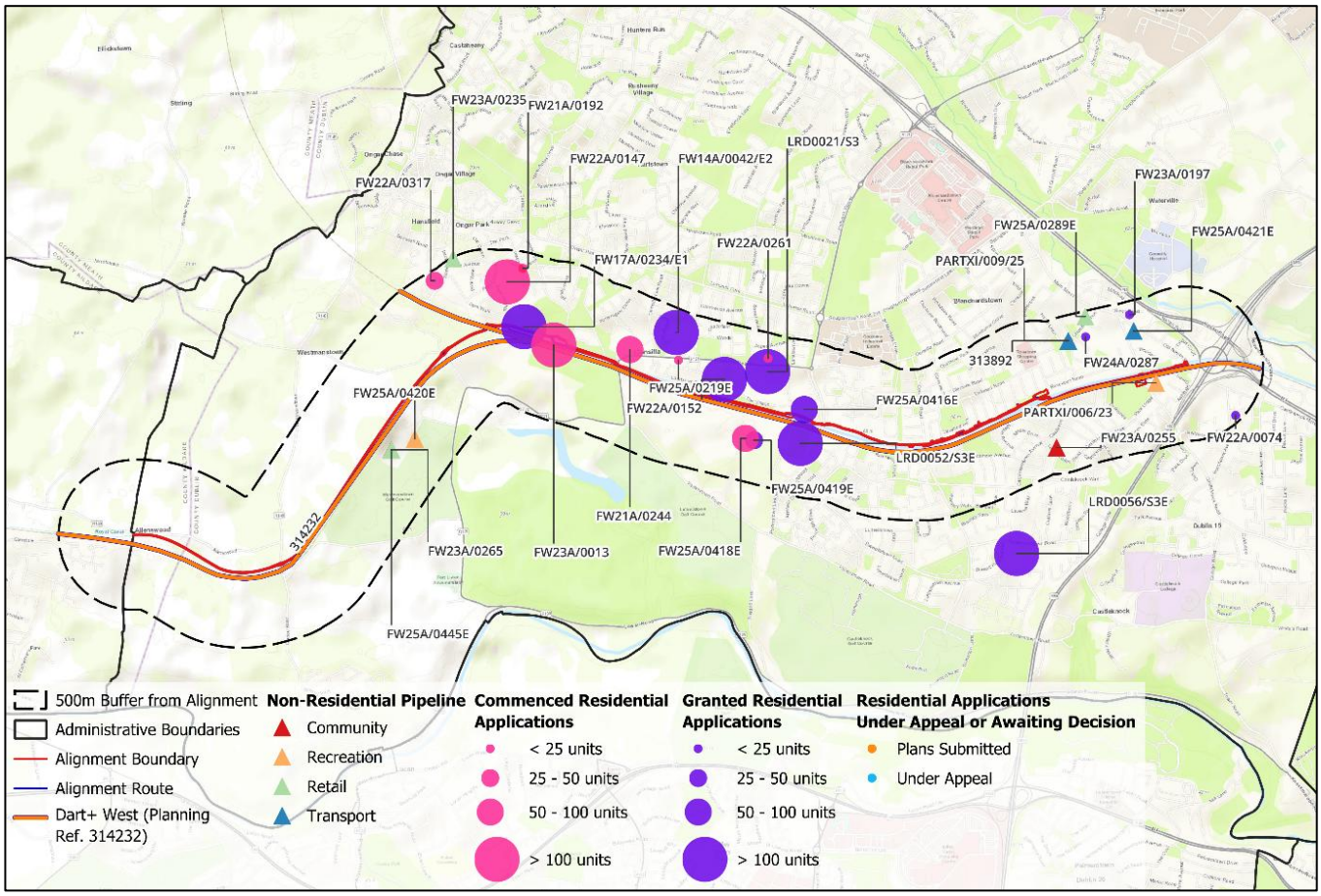


Figure 1-10 Residential and non-residential planning activity within 500m of the proposed development from Nov 2020 to August 2026 ((Fingal County Council Planning Records, ACP Records)

Table 1-4 Planning History – Residential Schemes

Reference	Address	Description	Status	Decision Date	Units
Planning History – *Residential Schemes*					
FW21A/0192	The Daughters of Charity, St Joseph's Centre, Clonsilla	Construction of a single-storey building containing two apartments and a staff office. The development is located at the Daughters of Charity, St Joseph's Centre, Clonsilla.	Completed	09/12/2021	2
FW14A/0042/ E2	Site bounded by the New Ongar Road to the North, Castlefield Court Estate, to the South, Mount Symon Estate to the West and Charnwood Estate, to the East	Construction of 124 two-storey, three- and four-bedroom houses on a 4.26 ha site. Includes a detached childcare facility serving this scheme and 166 nearby permitted homes. Provides communal and on-curtilage parking, open space and optional roof-mounted solar panels. Vehicular access is from Clonsilla Link Road, with landscaping, drainage and ancillary works.	Plans Granted	28/02/2022	124
FW21A/0244 [ACP-313792-22]	The Lodge, Clonsilla Road, Clonsilla, Dublin 15	Demolition of the existing house and outbuilding and construction of a 59-unit apartment block. The scheme includes 23 one-bedroom, 34 two-bedroom and 2 three-bedroom apartments with balconies or terraces. Provides undercroft and surface car parking, cycle parking, open space and access from Clonsilla Road. Landscaping, boundary treatments, bin storage, services and ESB infrastructure are included.	Commenced	ACP Grant 15/12/2023	59
FW22A/0074	52 Beechpark Avenue, Castleknock, Dublin 15	Demolition of the existing dwelling and outbuildings and construction of five three-storey detached houses. Includes realignment of the existing access and a new one-way road with three parking spaces. The exit onto Beechpark Avenue will accommodate the existing Montessori school set-down. New roads, paths, boundaries, landscaping and associated site works are included.	Plans Granted	05/12/2022	5
FW22A/0147	townland of Clonsilla Dublin 15 Apartment Development , and is partially occupied by formerly associated with St. Joseph's Hospital., The site is bounded to the south-west by Park Heights road, to the north-west by Park Crescent road, Clonsilla	A residential development comprised of 174 no. apartments and duplex units, together with a childcare facility, on a site measuring c. 3.6 Ha which is part of Zone 5 "Hospital" of the Hansfield Strategic Development Zone (SDZ) Planning Scheme 2006. The application site is in the townland of Clonsilla, Dublin 15, and is partially occupied by buildings formerly associated with St. Joseph's Hospital. The site is bounded to the south-west by Park Heights road, to the north-west by Park Crescent road, to the north-east by Hansfield Wood Lawn estate, and to the east and south by St Joseph's Hospital. The proposed development includes for the demolition of existing buildings on site (c. 2,791 sq.m total) and the construction of 174 no. apartments and duplex units, together with a childcare facility, in 8 no. three to six storey blocks…* **Significant F.I notices*	Commenced	14/12/2022	174
FW22A/0261	Alencon, Weaver's Row, Clonsilla Road, Dublin 15	Construction of seven two-storey, three- and four-bedroom houses. The scheme comprises a terrace of four houses, one detached house and two semi-detached houses. Also includes retention of boundary walls, front hoarding and gate, a stoned entrance and ancillary site works.	Completed	11/01/2023	7
FW22A/0152	Weavers Row, Clonsilla Rd, Clonsilla, Dublin 15	Mixed-use development comprising a two-storey foodstore, three retail units and provides 191 car spaces, 326 cycle spaces and revised/new access points from Weavers Row. Also includes demolition, signage, landscaping, boundary treatments and ancillary site works… Construction of 72 no. dwellings	Plans Granted	12/01/2023	72
FW22A/0317	A site area of 0.924ha within Zone 7 of the Hansfield Strategic Development Zone, bounding Barnwell Park, Station Street and Station Road, Hansfield, Dublin 15	Construction of 41 homes within Zone 7 of Hansfield SDZ. The scheme comprises 34 two- and three-storey houses and 7 apartment/duplex units in a three-storey building. Includes private and public car and bicycle parking, landscaped open space and internal roads. Lighting, utilities, drainage, surface-water attenuation and associated infrastructure are included.	Commenced	16/06/2023	41
FW17A/0234/ E1	Zone 6 Hansfiled, SDZ Lands, Dublin 15	Construction of 155 homes comprising houses, apartments and duplex units within Hansfield SDZ. Includes a four-storey apartment block, two three-storey duplex blocks and a childcare facility. Provides 292 parking spaces, new vehicular access to Hansfield Road and pedestrian/cycle connections. Also includes demolition, public open space, landscaping, lighting and associated works.	Plans Granted	01/11/2023	155

Reference	Address	Description	Status	Decision Date	Units
Planning History – *Residential Schemes*					
FW23A/0197	River Road, Dublin 15	Demolition of the existing buildings and construction of three detached dwellings. Includes new vehicular and pedestrian entrances, a roadside boundary wall and new boundaries between houses. Landscaping and ancillary works are also proposed.	Plans Granted	27/11/2023	3
FW23A/0013	Zone 6 within the Hansfield SDZ Planning Scheme 2006, Formerly part of St. Joseph's Hospital, Clonsilla, Dublin 15	Construction of 419 apartments in four blocks of four to six storeys within Hansfield SDZ. Includes residential amenity space, balconies/terraces and a two-storey childcare facility. Provides 213 car spaces, 1,445 bicycle spaces, five vehicular accesses and public open space. The scheme also amends elements of St Joseph's Phase 1, including buildings and road layout.	Commenced	20/02/2024	419
ACP-320560	Barberstown, Barnhill and Passifyoucan, Clonsilla, Dublin 15	Ten-year permission for demolition of existing buildings and construction of 1,243 homes. The scheme comprises 804 apartments and 439 houses. A creche and associated site development works are also included.	[Lodged 15/08/24 ACP Decision Due 4/12/24]	NA	1243
LRD0021/S3E [ACP-320886-24]	Lands to the Front & Rear of Clonsilla Inn, Porterstown, Dublin 15	Demolition of existing structures and construction of 170 apartments/duplexes in seven blocks of one to five storeys. Includes a cafe, childcare facility, public park, two plazas, play areas and a nature walk. Provides undercroft and surface car and bicycle parking, internal roads and pathways. Landscaping, lighting, drainage, utilities and Porterstown Road upgrades are included.	ACP Plans Granted	ACP Grant 21/01/2025	170
FW24A/0287	Site to the rear of 16 Church Avenue, Blanchardstown, Dublin 15	Construction of two semi-detached, two-storey houses to the rear of 16 Church Avenue. Includes associated site works, sustainable drainage and off-street parking.	Plans Granted	03/03/2025	2
LRD0056/S3E [ACP-322813-25]	Winterwood, Carpenterstown Road, Dublin 15	Demolition of Winterwood house and outbuildings and construction of 175 homes on a 1.87 ha site. The scheme comprises 30 houses and 145 apartments in three six-storey blocks, plus a creche. Provides open space, 111 car spaces, 387 bicycle spaces and a new Carpenterstown Road access. Landscaping, drainage, internal roads, green/blue roofs and photovoltaic panels are included.	ACP Plans Granted	ACP Grant 19/09/2025	175
FW25A/0219E	Old Cottage Site, Clonsilla Road, Kellystown, Clonsilla, Dublin 15	Construction of four two-storey, three-bedroom terraced houses. Includes new boundary treatments, landscaping and all associated site works.	Commenced	21/10/2025	4
PARTXI/009/25	Fortlawn, Blanchardstown, Dublin 15	Demolition of four existing houses and construction of 21 homes across two sites. Site A provides 7 terraced houses and 12 apartments; Site B provides 2 semi-detached houses. Works include new roads and footpaths, parking, landscaping and incidental play areas. Associated drainage, utilities, lighting and site development works are also proposed.	Plans Submitted	NA	21
FW25A/0418E [ACP- PL-500488-DF-25]	Lands in the Townlands of Kellystown and Porterstown, Dublin 15	Construction of 56 dwellings with all associated site works	Commenced	ACP appeal decided 12/06/2026	56
FW25A/0416E [ACP-PL-500971-DF-26]	Porterstown Road, Dublin	Demolition of structures, construction of 87 dwellings and a creche with all associated site works	ACP Decision awaited	ACP Decision awaited	87
FW25A/0419E [ACP- PL-500486-DF-25]	Luttrellstown Gate, Lands in the Townlands of Kellystown and Porterstown, Dublin 15	Construction of 47 dwellings with all associated site works	Plans Granted	ACP appeal decided 12/06/2026	47

Reference	Address	Description	Status	Decision Date	Units
Planning History – *Residential Schemes*					
LRD0052/S3E [ACP-324182-26	Townland of Porterstown, Clonsilla	Large Residential Development (LRD) Construction of 302 dwellings with all associated site works. EIAR submitted with application	ACP Plans Granted	ACP appeal decided 22/06/2026	302
Total Residential Applications Awaiting Decision					**1330**
Total Identified Residential Applications					**3168**
Total Permitted Residential Units					**1,838**

Other Development

A review of non-residential development activity identified a number of significant transport, community and commercial projects within the study area (Table 1.5). Of particular relevance are the BusConnects Blanchardstown to City Centre Core Bus Corridor Scheme and the DART+ West Railway Order, both of which support sustainable transport objectives and have potential interactions with the Royal Canal corridor. Other permitted developments include neighbourhood and community facilities within the Hansfield SDZ and mixed-use developments at Clonsilla which will support the growing population of the area.

Table 1-5 Planning Pipeline – Other Schemes (Non-Residential) Consultation

Reference	Address	Description	Status	Decision Date
Planning History – *Non-residential*				
FW23A/0235	Part of Zone 1 'Main Street North' of the Hansfield SDZ Planning Scheme 2006., The site is located on lands to the east side of Station Road, Hansfield, immediately south and west of Block A of the existing Neighbourhood Centre, Hansfield	Amendments to a previously permitted neighbourhood centre within Hansfield SDZ. Includes a two-storey supermarket, ancillary retail unit, café, community centre, staff facilities, warehouse and service areas. Provides 92 car spaces, 32 cycle spaces, signage, new pedestrian/cycle links, public realm works and associated landscaping.	Completed	20/09/2023
FW23A/0255	Community Credit Union, Laurel Lodge Road, Castleknock, Dublin 15	Change of use of the former Community Credit Union building to community use. Works include removal of internal counters and partitions, interior fit-out, service upgrades and associated external works for use by Castleknock Community Centre.	Completed	16/10/2023
FW23A/0265	GAA Grounds, Westmanstown Sports and Conference Centre, Clonsilla, Dublin 15	Outline permission for a two-storey sports clubhouse with a floor area of 600 sq m. Facilities include changing rooms, equipment storage, gym, meeting room and associated club uses.	Outline Permission Granted	31/10/2023
PARTXI/006/23	Laurel Lodge, Castleknock Road, Blanchardstown	Development of a 400 sq m Local Equipped Area for Play (LEAP) playground designed in accordance with universal design principles. Includes play equipment, safety surfacing, fencing, bicycle parking, landscaping, drinking fountain and ancillary site works.	Plans Granted	12/02/2024
ACP-313892	Blanchardstown to Dublin City Centre	Bus Connects Blanchardstown to City Centre Core Bus Corridor Scheme	Plans Granted	ACP Grant 21/06/2024
ACP-314232	County Dublin, County Meath, County Kildare	DART+ West Railway Order covering the Dublin to Maynooth and M3 Parkway corridor	Plans Granted	ACP Railway Order Dated 18/07/2024

FW25A/0289E	Rear of 7 Church Avenue, Blanchardstown, Dublin 15	Demolition of an existing single-storey garage building and construction of a two-storey detached commercial building for retail use as a beauty salon. Includes rooflight, new signage and associated site works.	Plans Granted	28/08/2025
FW25A/0421E	Tesla EV Charging Hub, Castleknock Road, Dublin City	Development of a Tesla electric vehicle charging hub. Includes 8 high-power charging bays, Tesla charging units, power cabinet equipment, modular substation, signage, relocated bin store and associated site development works.	Plans Granted	19/11/2025
FW25A/0445E	Garda/Westmanstown Gaels GAA Club, Westmanstown Sports & Conference Centre, Dublin 15	Construction of a single-storey modular multifunctional building for sports and club use. Facilities include changing rooms, toilets, wheelchair-accessible toilet, storage space and a general-purpose room.	Commenced	21/11/2025
FW25A/0420E	Westmanstown Sports Centre, Dublin 15	Construction of two padel tennis courts with artificial grass surfaces. Includes perimeter fencing, lighting columns and all associated ancillary site works.	Plans Granted	06/01/2026

Other Plans

In combination with local plans including Barnhill LAP, Kellystown LAP, Clonsilla Framework Plan, Old School House, Clonsilla Masterplan and Hansfield SDZ, the Proposed Development will contribute to the coordinated delivery of planned residential growth, active travel infrastructure, green infrastructure and enhanced connectivity across the wider study area. While these plans will facilitate additional development and associated changes in land use, the Proposed Development will support the integration of existing and future communities by providing a strategic walking and cycling corridor linking residential areas, schools, employment locations, public transport nodes and recreational amenities.

1.12 Summary of Cumulative Impacts

The cumulative impact assessment comprises: (i) an assessment of interactions between the environmental factors considered in this EIAR; and (ii) an assessment of the likely significant effects of the Proposed Development arising from the cumulation of impacts with other existing, permitted, approved and reasonably foreseeable developments and projects.

The main findings of the cumulative assessment undertaken for each environmental topic are summarised in Table 1.6. Each Chapter of the EIAR includes a cumulative impact assessment of the Proposed Development with other existing, permitted, and planned projects in the immediate area. Potential cumulative effects primarily relate to construction activities, including traffic, dust, noise, vibration and other temporary disturbances that may arise where the Proposed Development overlaps with other developments or infrastructure projects. Each relevant EIAR chapter considers these potential cumulative effects and identifies appropriate mitigation measures, where required.

Table 1-6 Cumulative Impacts

No.	Title	Summary of Cumulative Impacts

5	Air Quality	**Construction Phase:** A review of committed and permitted developments within the study area identified a number of residential, mixed-use and strategic infrastructure projects with the potential to overlap temporally with the construction of the Proposed Development. These include residential developments at Clonsilla, Hansfield, Porterstown and Kellystown, together with the BusConnects Blanchardstown Core Bus Corridor Scheme and the DART+ West Railway Order project. While concurrent construction activities may result in temporary increases in dust and construction-related emissions, all developments are required to implement industry-standard dust and air quality management measures. Consequently, the Proposed Development is not expected to give rise to significant cumulative air quality effects. The cumulative effect is assessed as direct, short-term, negative, localised and not significant. **Operational Phase:** No significant operational air quality impacts have been identified for the Proposed Development. Accordingly, no significant cumulative operational air quality effects are predicted in combination with other existing, permitted or proposed developments in the study area.
6	Climate	**Construction Phase:** In accordance with applicable ISEP and TII guidance, greenhouse gas emissions are assessed as inherently cumulative, with the global climate identified as the receptor. The Proposed Development's contribution has been assessed in the context of Ireland's carbon reduction trajectory and national climate objectives. The cumulative effect is considered direct, long-term, negative and slight, and not significant in EIA terms. **Operational Phase:** The operational greenhouse gas impact has similarly been assessed in the context of Ireland's net-zero pathway and carbon budgets. The cumulative effect is considered direct, long-term, negative and slight, and not significant in EIA terms.
7	Noise & Vibration	**Construction Phase:** Construction noise associated with the Proposed Development will be localised and is expected to be the primary noise source at nearby noise-sensitive receptors. Cumulative noise effects may arise where construction activities overlap with other active construction sites in close proximity, particularly at receptors located between the respective sites. In such circumstances, liaison between contractors and coordinated scheduling of works is recommended to minimise the duration and magnitude of any cumulative effects. **Operational Phase:** No cumulative operational noise or vibration effects have been identified.
8	Biodiversity	**Construction Phase:** **Operational Phase:**
9	Archaeological, Architectural and Cultural Heritage	**Construction Phase:** A review of consented residential and non-residential developments within the study area was undertaken to identify potential cumulative effects on archaeological, architectural and cultural heritage resources. No negative cumulative impacts on the archaeological resource have been identified, as any archaeological deposits or features encountered as part of the Proposed Development will be preserved either by record or in situ. **Operational Phase:** No cumulative impacts are predicted on architectural, archaeological or cultural heritage resources, as no other developments within the study area are expected to result in direct or indirect effects on the sites, structures or heritage features considered within this assessment.

10	Landscape & Visual	**Construction Phase:** The cumulative assessment considered the Proposed Development in combination with DART+ West, permitted and proposed residential developments within the Hansfield SDZ, Kellystown and Barnhill LAP areas, and other active travel and public realm projects throughout the Royal Canal corridor. Temporary cumulative effects may arise where construction activities occur concurrently, resulting in localised vegetation clearance, construction compounds, temporary hoarding, plant and machinery, stockpiles and short-term disruption to visual amenity. The most pronounced cumulative effects are likely to occur in locations where construction activities associated with the Proposed Development and DART+ West are visible simultaneously, particularly along sections of the canal corridor adjacent to the railway line and at key crossing points. However, these effects would be temporary, reversible and confined to the construction period. Given the linear and dispersed nature of the identified projects, together with the implementation of project-specific environmental management and reinstatement measures, no significant adverse cumulative construction landscape or visual effects are anticipated. The cumulative construction effect is assessed as direct, short-term, negative, slight and not significant. **Operational Phase:** The operational assessment identified generally positive cumulative effects arising from the Proposed Development in combination with planned residential growth, active travel infrastructure, public realm improvements and the DART+ West project. The Proposed Development will improve access to and appreciation of the Royal Canal corridor, while providing enhanced landscape infrastructure, native planting, public realm improvements and recreational amenity for existing and future communities. The photomontage assessment demonstrates that the majority of viewpoints experience imperceptible to slight, or slight to moderate, visual effects, with moderate effects occurring at a limited number of more sensitive locations associated with bridge structures, boardwalks and urban interfaces. Cumulative assessment of the DART+ West project at representative viewpoints indicates effects ranging from imperceptible to slight to moderate, with no significant adverse cumulative impacts identified. In combination with substantial residential growth within Hansfield, Clonsilla, Porterstown and Kellystown, the Proposed Development will deliver positive cumulative effects through improved accessibility, recreational opportunities, green infrastructure connectivity and enhancement of the public realm. Overall, the cumulative operational effect is assessed as direct, long-term, positive, moderate and significant.
11	Land, soils and Geology	**Construction Phase:** A review of other plans and projects within the wider area, including DART+ West, the Barnhill and Kellystown Local Area Plan lands, and adjoining sections of the Royal Canal Greenway, identified potential cumulative interactions relating to excavation works, earthworks, demand for imported aggregates, management of excavated materials and temporary disturbance of soils and made ground. While overlapping construction activities may result in increased demand on construction supply chains and waste recovery facilities, effects would remain localised to individual project footprints and would be managed through project-specific environmental controls and construction management measures. No likely significant cumulative effects on land, soils or geology are predicted. **Operational Phase:** No likely significant cumulative effects on land, soils or geology are predicted during the operational phase. No regionally or nationally important soils, mineral resources, geological heritage sites or significant geological features have been identified that would be subject to cumulative loss or degradation, and operational effects would remain confined to the individual developments concerned.

12	Water	**Construction Phase:** The cumulative assessment considered the Proposed Development in combination with existing, permitted and reasonably foreseeable developments within the study area, including other sections of the Royal Canal Greenway and major infrastructure projects such as DART+ West. Potential cumulative effects relate primarily to sediment release, accidental pollution incidents, construction runoff and temporary deterioration in surface water quality where construction activities occur concurrently. However, due to the localised and temporary nature of the works, together with the implementation of mitigation measures and environmental controls, significant cumulative effects on water quality, hydrology, hydrogeology, the Royal Canal, the Rusk River or the wider hydrological environment are not anticipated. **Operational Phase:** The Proposed Development incorporates surface water drainage measures designed in accordance with GDSDS and SuDS principles to control runoff rates and maintain water quality. While other existing, permitted and reasonably foreseeable developments may also generate surface water runoff, all developments are required to comply with applicable drainage standards and environmental protection objectives. The Proposed Development will not result in significant increases in runoff volumes, pollutant loading or flood risk, either individually or in combination with other developments. Consequently, significant cumulative impacts on surface water quality, hydrology, hydrogeology or flood risk are not anticipated during the operational phase.
13	Population and Human Health	**Construction Phase:** The Proposed Development may overlap with the construction of permitted residential developments and strategic infrastructure projects within the study area. In such circumstances, cumulative effects may arise in relation to construction traffic, dust, noise, vibration, emissions, temporary access restrictions and general construction disturbance. Given the dispersed nature of the identified developments, the temporary duration of construction activities and the implementation of standard construction management and mitigation measures, these cumulative construction effects are considered Negative, Slight and Temporary. **Operational Phase:** The Proposed Development will operate alongside existing and planned residential developments, public transport improvements and active travel schemes, including DART+ West and BusConnects. In combination with these projects, the Proposed Development will improve accessibility, connectivity, recreational opportunities and sustainable travel choices, while supporting access to employment, education, community facilities and services. The cumulative interaction between the Proposed Development, planned residential growth and strategic transport initiatives is expected to increase opportunities for physical activity, strengthen social and recreational connections, support local businesses and encourage healthier and more sustainable travel behaviours. Overall, the cumulative impacts are considered Positive, Significant and Permanent.

14	Material Assets: Traffic and Transportation	**Construction Phase:** The cumulative assessment considered the Proposed Development in combination with existing, permitted and planned developments within the study area, including DART+ West and other projects affecting the Royal Canal corridor and surrounding transport network. Temporary cumulative effects may arise where construction activities overlap, resulting in additional construction traffic, HGV movements, temporary traffic management measures, road or lane restrictions, and pedestrian or cyclist diversions. These effects will be managed through coordination with relevant stakeholders and implementation of the Construction Stage Temporary Traffic Management Plan. No significant adverse cumulative construction traffic and transport effects are anticipated. The cumulative construction effect is assessed as negative, slight and temporary. **Operational Phase:** The Proposed Development will operate in combination with the wider Royal Canal Greenway, EuroVelo 2, DART+ West and other existing and planned walking, cycling and public transport infrastructure. Together, these projects will improve active travel network continuity, accessibility, connectivity and integration between walking, cycling and public transport modes. While additional demand may arise from surrounding residential and commercial development, the Proposed Development is intended to accommodate this growth and support a shift towards sustainable travel. The cumulative operational effect is assessed as positive, moderate and long-term, with no significant adverse cumulative traffic and transport effects anticipated.
15	Material Assets: Waste Management	**Construction Phase:** The cumulative assessment considered the Proposed Development in combination with other existing, permitted and proposed developments, including DART+ West, BusConnects and residential, commercial and mixed-use developments within the wider Dublin Metropolitan Area. While overlapping construction programmes may increase demand for waste recovery, recycling, treatment and disposal facilities, the Proposed Development is relatively modest in scale and is expected to generate comparatively small quantities of waste. Waste will be managed in accordance with the CDRWMP, the waste hierarchy and applicable legislative requirements using authorised contractors and facilities. Given the availability of established waste management infrastructure and regional capacity, no significant cumulative effects on waste management infrastructure are anticipated. **Operational Phase:** No significant cumulative effects on waste management infrastructure, waste recovery capacity, recycling capacity or landfill capacity are anticipated during the operational phase. The operational waste generated by the Proposed Development can be accommodated within the existing regional waste management network.

16	Material Assets: Utilities	**Construction Phase:** The cumulative assessment considered the Proposed Development in combination with committed residential and mixed-use developments, BusConnects and DART+ West. Cumulative effects could arise where utility diversion works, new service connections, utility upgrades or maintenance activities associated with these developments occur concurrently with construction of the Proposed Development. Potential interactions relate principally to utility diversions, protection works, temporary service interruptions and increased temporary utility demand associated with construction activities. Utility works will be coordinated with the relevant utility providers and managed through consultation, programme coordination and advance notification procedures. The cumulative construction effect is assessed as adverse, not significant and temporary. **Operational Phase:** The Proposed Development will generate only limited utility demand associated primarily with public lighting, traffic signals, signage and ancillary infrastructure. While other permitted and approved developments within the study area will also generate operational utility demands, these are expected to be accommodated through the normal planning, connection and network reinforcement processes of the relevant utility providers. Consequently, no material reduction in available network capacity or service provision is anticipated. The cumulative operational effect is assessed as adverse, imperceptible and long-term.
17	Material Assets: Land Use and Property	**Construction Phase:** Temporary cumulative effects may arise where construction activities associated with the Proposed Development coincide with other projects in the area, resulting in short-term disruption to access, movement and land use activities. These effects are expected to be Negative, Slight and Temporary. **Operational Phase:** The Proposed Development will operate alongside existing and planned active travel, recreation, transport and regeneration projects, contributing to enhanced accessibility, connectivity, public realm improvements and recreational amenity within the study area. No significant adverse cumulative effects on land use or property are anticipated. The overall cumulative effect is considered Positive, Moderate and Permanent.

Overall, while temporary adverse cumulative effects may arise during the construction phase in conjunction with other developments and infrastructure projects, these effects are generally localised, short-term and not significant following the implementation of mitigation measures. During operation, the Proposed Development is expected to act cumulatively with existing and planned development, active travel infrastructure and public transport projects to support improved accessibility, connectivity, recreation and sustainable mobility. The overall cumulative effect is therefore considered positive and supportive of the sustainable development objectives for the area.

1.13 Risk of Major Accidents and/or Disasters

In accordance with Article 3(2) and Annex IV of the 2014 EIA Directive, the vulnerability of the project to risks of major accidents and/or disasters, as well as likely significant effects on the environment if it did occur, are considered.

Article 3(2) of the 2014 EIA Directive states that an EIAR should consider the following: -

> *"The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."*

In addition, an EIAR should also contain the following information prescribed in 5(d) of Annex IV of the 2014 EIA Directive: -

> *"A description of the likely significant effects of the project on the environment resulting from, inter alia:*
>
> *(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);"*

The 2018 *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* sets out two key considerations to address this: -

> • *"The potential of the project to cause accidents and/or disasters, including implications for human health, cultural heritage, and the environment;*
>
> • *The vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters (e.g. flooding) and man-made disasters (e.g. technological disasters)."*

In respect of the vulnerability of the project to risk of major accidents and/or disasters, the following is noted:

Proximity to Seveso Sites

A review of Upper-Tier and Lower-Tier SEVESO establishments within the wider study area has been undertaken, including an assessment of their distances from the Proposed Development. The nearest SEVESO sites are located approximately 3 km to the north of the development lands, as shown on Figure 1.11 (Contract & General Warehousing Ltd., Barclays Chemicals, and Clarochem Ireland) and approximately 3.5 km to the northeast (Intel, Leixlip).

No SEVESO Tier 1 or Tier 2 sites fall within the statutory consultation distance for the Proposed Development. In accordance with HSE (2021) guidance and the Fingal County Development Plan 2023–2029, the maximum consultation distance for a SEVESO establishment is 1 km.

As the Proposed Development is located well beyond this threshold, it does not lie within the consultation zone of any SEVESO site. Given the distance and extent of land uses in the intervening area between the Proposed Development and the Seveso sites, no specific risks due to accident or disaster are identified.

In respect of the risks to human health, cultural heritage or the environment, the following is noted:

Traffic and Transport

While the proposed greenway is largely segregated from road traffic, there are five junctions where road crossings are proposed, as follows:

- Collins Bridge (Ch. 1090);
- Pakenham Bridge (Ch. 2880);
- Kennan Bridge (Ch. 5330);
- Kirkpatrick Bridge (Ch. 6250); and
- Talbot Bridge (Ch. 8095).

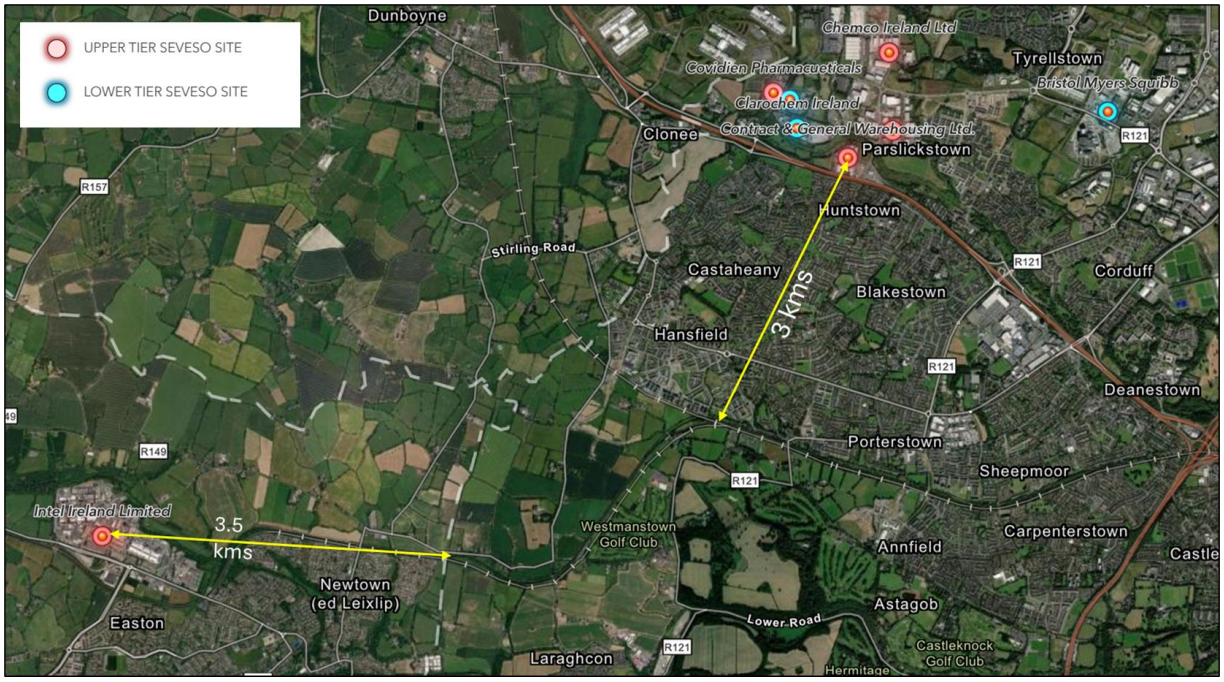


Figure 1-11 Proximity to Seveso sites

As detailed in the Preliminary Design Report (170239-DBFL-XX-XX-RP-C-0001) prepared by DBFL Consulting Engineers, the junctions are designed as 4m wide toucan crossings featuring tactile paving at the signalised crossings and on the transition area from the existing pedestrian footpaths to the proposed greenway.

There are also interfaces with surrounding pedestrian and cycle links, at the locations listed below, for which appropriate signage and tactile paving will be introduced to safeguard the transition from shared pedestrian/ cyclist greenway space and pedestrian only footpath space:

- Connections from Hansfield Road (Ch. 3770 & 4040);
- Connection from Weaver's Wood (Ch. 4400);
- Connections from Windmill Court Residential Development (Ch. 5550 to 5930);
- Connections along Sheepmoor Lane (Ch. 5930 to 6240)
- Connection from Delwood Close (Ch. 6650);
- Connection from Brompton Grove, & Brompton Green (Ch. 6890, 6940, & 7100);
- Connections at Granard Bridge (Ch. 7720 to 7810); and
- Connections at 12th Lock (Ch. 8000 to 8090).

Flood Risk

A Site-Specific Flood Risk Assessment (SSFRA) Report (170239-X-X-XXX-RP-DBFL-CE-0002) has been prepared in respect of the proposed development, as detailed in Chapter 12 Water and associated Appendix 2 (of Chapter 12) of this EIAR. The proposed site is not significantly at risk from fluvial, tidal, pluvial or groundwater flooding due to its geographic location and topography. There is negligible or no predicted coastal flooding risk. The SSFRA concludes that the Proposed Development is considered to be in compliance with the relevant planning and flood risk management guidelines.

Utilities

Please refer to Chapter 16 of this EIAR on Utilities which details that the majority of utilities are buried beneath public roads in the vicinity as opposed to along the Royal Canal within the scheme extents.

The main interactions occur at bridges along with a number of localised crossings. The chapter concludes that there will be no significant residual impacts on major infrastructure and utilities during the construction and operational phases of the Proposed Development.

Construction Stage

During the construction stage, the risk of an accidental spillage of construction materials into water courses will be managed through the adoption of strict best practice construction management, as detailed in relevant chapters of this EIAR and in the Outline Construction Management Plan (170239-DBFL-XX-XX-RP-C-0003) which accompanies this application as a separate enclosure to this EIAR.

1.14 Contributors/Subject Matter Experts: EIAR Team

Table 1.7 below outlines the team of qualified experts who have contributed to preparation of this EIA Report.

Table 1-7 EIA Team

Chapter	Company	Role & Relevant Experience
Non – Technical Summary	KPMG Planning	All
VOLUME 1		
Introduction	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI Maria has 15 years of professional experience in EIAR and town planning. Working across local, national and pan-European projects, she has coordinated multi-disciplinary property development teams to secure consent for thousands of residential units, significant commercial, retail and mixed-development schemes and led Environmental Impact Assessment processes. On EIAR, Maria has coordinated multiple EIAs for development projects and has authored introductory chapters, cumulative impact assessments and Population and Human Health assessments.
Background to the Proposed Development	DBFL Consulting Engineers (DBFL) & KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI
Planning Policy	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI
Alternatives Considered	DBFL	Robert Kelly BA, BAI(Hons), MA, PG DipConstLaw, CEng, MIEI Robert has over 20 years' experience in Transportation Engineering & Planning and has been Project Director & Manager of a number of infrastructure schemes in Ireland and abroad, with particular expertise in the delivery of sustainable & active travel infrastructure schemes in urban and rural environments. Robert has significant experience in designing for cyclists, pedestrians and various modes of public transport, including buses/trams. Robert holds a postgraduate diploma in construction law and contract administration and has acted as Employer's Representative on several NTA funded schemes. His traffic

		engineering experience includes the design of cycle infrastructure, roads and junctions, in conjunction with traffic analysis. Mark Kelly BA (Hons), BAI, MSc, MA, PGDipPM., CEng, MIEI Mark is a Chartered Engineer and Associate director with DBFL Consulting Engineers and has over 12 years post graduate experience working in the areas of traffic engineering and transport planning, with considerable knowledge and experience in strategic transport planning and traffic engineering, public transport infrastructure, cycle infrastructure design and road safety. Mark has been involved in environmental impact assessments for transport infrastructure schemes, flood relief schemes and Strategic Housing developments. Mark was Lead Design Engineer for the Boyne Greenway scheme, where the design of the scheme was highly sensitive owing to the greenway routing through the Boyne Coast & Estuary SAC and the River Boyne & Blackwater SPA. Mark's relevant environmental impact assessment project experience includes schemes such as: Balyhale Flood Relief Scheme Co. Kilkenny, Proposed Local Distributor Road 1A (LDR1A) in Navan, Co Meath, Mount Avenue LRD (1,058 units) in Dundalk, Taylors Lane Residential development (514 units) in Dublin 16 and Crodaun Residential Development (372 houses) Co. Kildare.
Air Quality	AWN Consulting (AWN)	Carl Ramskill BSc, MSc, MIAQM, MIEnvSc Carl Ramskill is a Principal Environmental Consultant in the Air Quality section of AWN Consulting with 8 years' experience in Air Quality Consulting. He holds a BSc (Hons) in Chemistry and MSc (with Merit) in Air Pollution Management and Control from the University of Birmingham. He is a Member of the Institution of Environmental Science (MIEnvSc), Member of the Institute of Air Quality Management (MAIQM) and specialises in the fields of air quality, EIA and air dispersion modelling and monitoring. Carl has prepared air quality impact assessments for EIARs, planning application support and permitting/licencing support. He has worked on a diverse range of projects including large scale infrastructure road and rail schemes, residential developments, commercial developments, data centres and energy centres.
Climate	AWN Consulting (AWN)	Ciara Nolan BSc Eng, MSc, MIAQM, MIEnvSc Ciara 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 9 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for various development types. 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.
Noise & Vibration	AWN	Leo Williams (Senior Acoustic Consultant) graduated from TCD with a BA, BAI (Mechanical and Manufacturing Engineering) and a MAI (Mechanical and Manufacturing Engineering). Leo is a Member of the Institute of Acoustics (IOA) and has extensive experience in environmental noise impact assessment, in

		particular industrial/manufacturing and renewable energy noise sources. He has experience in room and building acoustics modelling and assessment. He completed the IOA Diploma in Acoustics and Noise Control and is a registered sound insulation tester under the Sound Insulation Testing Register, Ireland (SITRI).
Biodiversity	JBA Consulting (JBA)	Patricia Byrne BSc (Hons), PhD, Dip. EIA Mngt UCD, MCIEEM Patricia is a Senior Ecologist with JBA Consulting and has over 20 years' experience in the ecological and environmental sector within both consultancy and academia. She has authored and reviewed numerous ecological assessments under the Habitats Directive; and prepared EcIAs and biodiversity chapters for EIARs, from Flood Relief Schemes to residential developments, within both the public and private sector. Patricia was supported by Ecologist William Mulville BSc (Hons), MSc, AMCIEEM, and Assistant Ecologist Mark Desmond BSc (Hons), MSc, both of whom have extensive experience of ecological survey work and authoring ecological impact assessments for Local Authorities, Government Agencies and private developers.
Archaeological, Architectural and Cultural Heritage	IAC Archaeological Consultancy (IAC)	Faith Bailey MA, BA (Hons), MIAI, MCIfA, IAC Archaeology Faith is an Associate Director, Project Manager and Senior Archaeologist and Cultural Heritage Consultant with IAC Archaeology. She holds an MA in Cultural Landscape Management (archaeology and built heritage) and a BA in single honours archaeology from the University of Wales, Lampeter. She is a licence eligible archaeologist, a member of the Chartered Institute of for Archaeologists, a member of the Institute of Archaeologists of Ireland and has over 18 years' experience working in the commercial archaeological and cultural heritage sector. Faith joined IAC in 2004 and in her capacity as Senior EIAR Archaeologist and cultural heritage consultant, she has been responsible for the production and delivery of a large number of archaeological and built heritage desk top assessments, EIAR, master plans, LAP/SEA and management plans associated with all sectors of development in the Republic and Northern Ireland.
Landscape & Visual	Áit Urbanism + Landscape Ltd.	Margaret Egan B.Sc. ERM, DIT 1993, B. Agr.Sc. (Land.Hort.),UCD, 1999, Dip. EIA Mgnt., UCD, 2003. Margaret Egan (MILI) is a Director of Áit Urbanism + Landscape Ltd with over twenty five years' experience working as a Landscape Architect and LVIA Specialist, undertaking Landscape and Visual Impact Assessments for a vast range of project types and complexities in both the public and private sectors. Margaret has overseen the design, construction and project management of wide spectrum of projects in her career. She has specialist skills in Landscape and Visual Impact Assessment, Expert Witness, Environmental Planning and Management as well as Landscape Character Assessment. She has liaised with numerous organisations including the NPWS, Waterways Ireland, OPW, The Heritage Council, the DoEHLG, NRA, RPA and An Taisce as well as numerous local authorities. Margaret also has expertise in the co-ordination and facilitation of public consultations and workshops.
Land, Soils and Geology	DBFL	David Bourke BE, MSc, CEng, MIEI David is a Chartered Civil Engineer and design team lead with over 13 years' experience as a consulting engineer. David has an array of consultancy experience across a number of engineering disciplines, including civil, geotechnical, marine, and

		subsea engineering. David's academic experience includes civil and environmental engineering, sustainable energy systems (including onshore and offshore renewable energy devices, such as wind, wave and tidal), and structural and geotechnical engineering. David has undertaken the role of design lead, technical advisor, and project manager on a number of high-value strategic infrastructure projects in Dublin Port and Rosslare Europort. David was also involved in the Design and Build (D&B) team for Ulster Canal Phase 2, delivering civil and geotechnical engineering services on this challenging infrastructure project. David also has experience on various roads, active travel, commercial, residential, heritage, offshore (oil & gas), and renewable energy schemes. David is also qualified to undertake the role of PSDP.
Water	DBFL	Declan Haugh CEng MIEI MEng BSc (Eng) Declan is a Chartered Engineer with 10 years' experience, working as an Associate Director in DBFL as part of the Civil & Infrastructure team. Declan is also a Certified Project Management Associate (IPMA Level D), certified by PMI. Declan is constantly building his real-world experience and expertise in Active Travel schemes, public realm design, and masterplanning at both large and local scales. Before leaving Arup, Declan was Assistant Scheme Manager and Senior Engineer on the BusConnects Belfield / Blackrock Core Bus Corridor Scheme, comprising two routes, which included cycle track provision, alongside bus and highway design – with direct involvement in the preparation and review of the Environmental Impact Assessment Report and associated documentation. He has also worked on numerous EIARs within DBFL through involvement in private developments. Vincenzo Koopman (BEng, CEng, MIEI) of DBFL Consulting Engineers also contributed to this Chapter. Vincenzo is a Chartered Engineer with 7 years' professional experience in the development and implementation of drainage and surface water management solutions. Experience includes the delivery of sustainable drainage approaches for active travel schemes, urban public realm projects, and large-scale masterplanning developments, contributing to projects from concept design through to detailed delivery.
Population and Human Health	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI
Material Assets - Traffic and Transportation	DBFL	Robert Kelly BA, BAI(Hons), MA, PG DipConstLaw, CEng, MIEI Mark Kelly BA (Hons), BAI, MSc, MA, PGDipPM., CEng, MIEI
Material Assets - Waste Management	DBFL	Declan Haugh CEng MIEI MEng BSc (Eng) Vincenzo Koopman (BEng, CEng, MIEI)
Material Assets: Utilities	DBFL	Declan Haugh CEng MIEI MEng BSc (Eng) Vincenzo Koopman (BEng, CEng, MIEI)
Material Assets: Land	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI

Use and Property		
Interactions	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI
Summary of Mitigation and Monitoring Measures	KPMG Planning	Maria Rochford BSc (Hons), MRUP MIPI
VOLUME 2		
Appendices	All (as relevant)	All

1.15 Difficulties Encountered During the Study

Difficulties encountered in the preparation of the EIAR are outlined in each chapter as they relate to the various environmental topics.

2 Background to the Proposed Development

2.1 Overview

The Proposed Development consists of the construction of an approximately 8.1km shared pedestrian and cycle greenway along and adjacent to the Royal Canal towpath, extending from the Kildare County Council boundary in the west to Talbot Bridge (Old Navan Road) in the east, where it will connect with the completed Ashtown Greenway. The cycleway is for the exclusive use of pedal cyclists and pedestrians.

The Proposed Development is promoted by Fingal County Council (FCC) in conjunction with the National Transport Authority (NTA) as the funding body and Waterways Ireland (WI) as the principal property owner.

The Royal Canal links the River Shannon in County Longford to the River Liffey in Dublin City's Docklands. It passes close to a number of towns, including Mullingar, Kilcock, Maynooth and Leixlip, before entering Fingal where it passes through the built-up areas of Clonsilla, Coolmine, Castleknock and Blanchardstown on its way towards Dublin city. As shown in Figure 2.1, approximately 134km of the Royal Canal Greenway has now been completed – stretching from Leixlip in Kildare to Cloondara in Co. Longford. To the east, a 4km section from Ashtown to Phibsborough is completed.

The Proposed Development of 8.1km will provide the missing link between the urban and rural sections of the Greenway already completed.

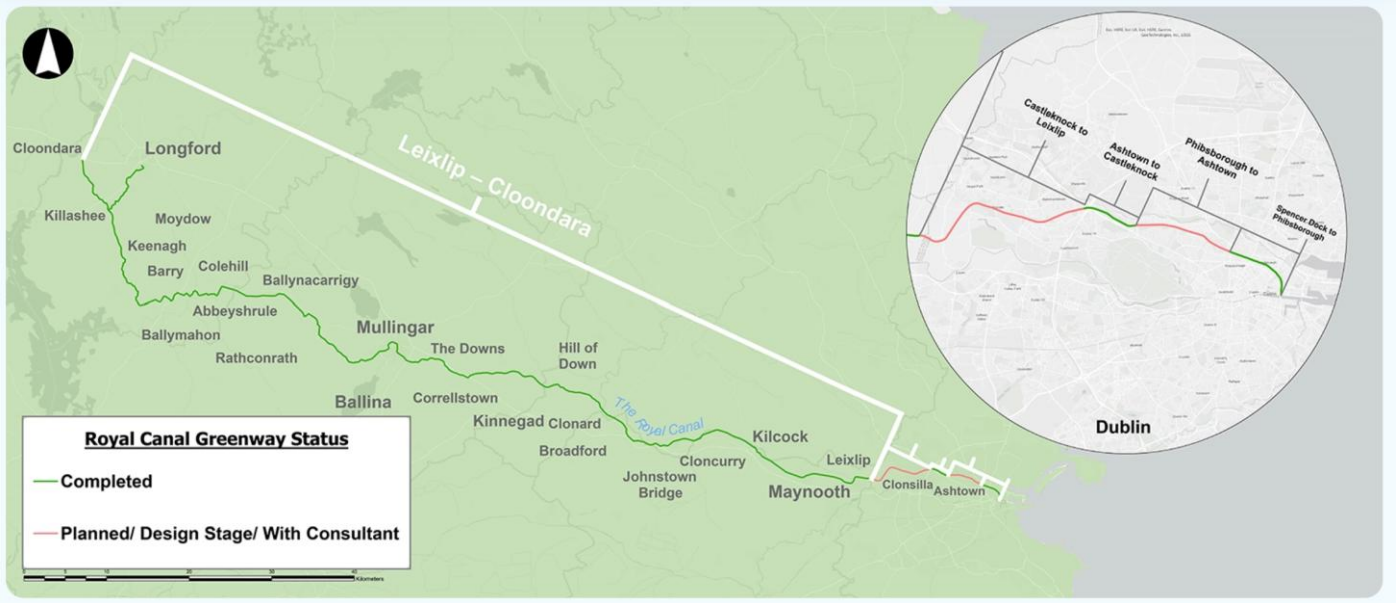


Figure 2-1 The Royal Canal Greenway Status Map Source: Waterways Ireland (Available at: [Waterways Ireland - Royal Canal Status Update](), Accessed 05/06/26)

2.2 Proposed Development Objectives

The Proposed Development aligns with and delivers on key elements of Fingal Development Plan 2023-2029 including the key strategic objective of '*inclusiveness and a high-quality of life for all, through healthy placemaking and social justice. An integrated approach will align housing and public transport provision'.*

The Proposed Development delivers a high quality, safe, attractive and environmentally sympathetic combined pedestrian and cycle route, based on integrated and sustainable transport network that is

inclusive and accessible for all. The Proposed Development seeks to meet the standards set out for a Greenway in the NTA's "Cycle Design Manual" (published in September 2023) and TII Publication "Rural Cycleway Design (Offline & Greenway), DN-GEO-03047, February 2025", subject to detailed engineering design and the mitigation measures presented in the SEA and Natura Impact Statement accompanying the Greater Dublin Area Cycle Network Plan'[3].

The following specific objectives, which are consistent with the various policy documents outlined in the EIAR 'Chapter 3 – Planning Policy', have also been established for the Proposed Development:

- To deliver a high-quality, safe and accessible active travel corridor comprising a shared walking and cycling route that meets existing and future commuter and recreational demand.
- To transform the Royal Canal corridor into an attractive and welcoming public space, enhancing local amenity, recreation and quality of life, including the provision of a pocket park at Hansfield.
- To improve connectivity and permeability between communities, key destinations and public transport infrastructure, including rail stations, DART+ West and the wider regional active travel network.
- To promote walking and cycling as attractive, viable and sustainable transport choices, supporting healthier lifestyles, reducing reliance on private cars and contributing to reduced traffic congestion.
- To support tourism, local economic activity and community wellbeing through the provision of a high-quality Greenway and active travel facility.
- To protect and enhance the environmental, ecological, heritage and landscape value of the Royal Canal corridor, while respecting existing uses and operational requirements.
- To ensure the Greenway is planned, designed and delivered in accordance with relevant national guidance, statutory requirements and stakeholder objectives, including the implementation of appropriate mitigation measures identified through environmental assessment.

2.3 Overall Scheme Context

The Proposed Development is a section of the major route corridor Dublin to Galway (266km) proposed initially in the National Cycle Network Scoping Study 2010 and will complete the link between the Royal Canal Greenway from Maynooth to Spencer Dock, Dublin.

FCC as the Contracting Authority is responsible for the delivery of a pedestrian and cycle route which is to be constructed along /adjacent to the Royal Canal as it heads eastwards from the Kildare County Boundary to the Old Navan Road (near the12th Lock) to connect with a previously constructed section of the Greenway.

The Proposed Development will provide a shared pedestrian and cycle route on/adjacent to the Royal Canal towpath over an approximate length of 8.1km which will tie in with the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the county boundary in the west. The Kildare section of the greenway which the Proposed Development will link into was completed in Q3 2025 and now continues on connecting into a continuous route that runs for 134km across Kildare, Meath, Westmeath and onto Cloondara in Co, Longford (Figure 2.1). The Proposed Development will mark significant progress towards completion of the full Royal Canal Greenway route which once completed will run from Cloondara on the River Shannon in Longford to Spencer Dock in Dublin City.

The extent of the scheme associated with the Proposed Development is illustrated in Figure 2.2 with information on each section of the route set out below.

[3] Greater Dublin Area Cycle Network Plan - National Transport

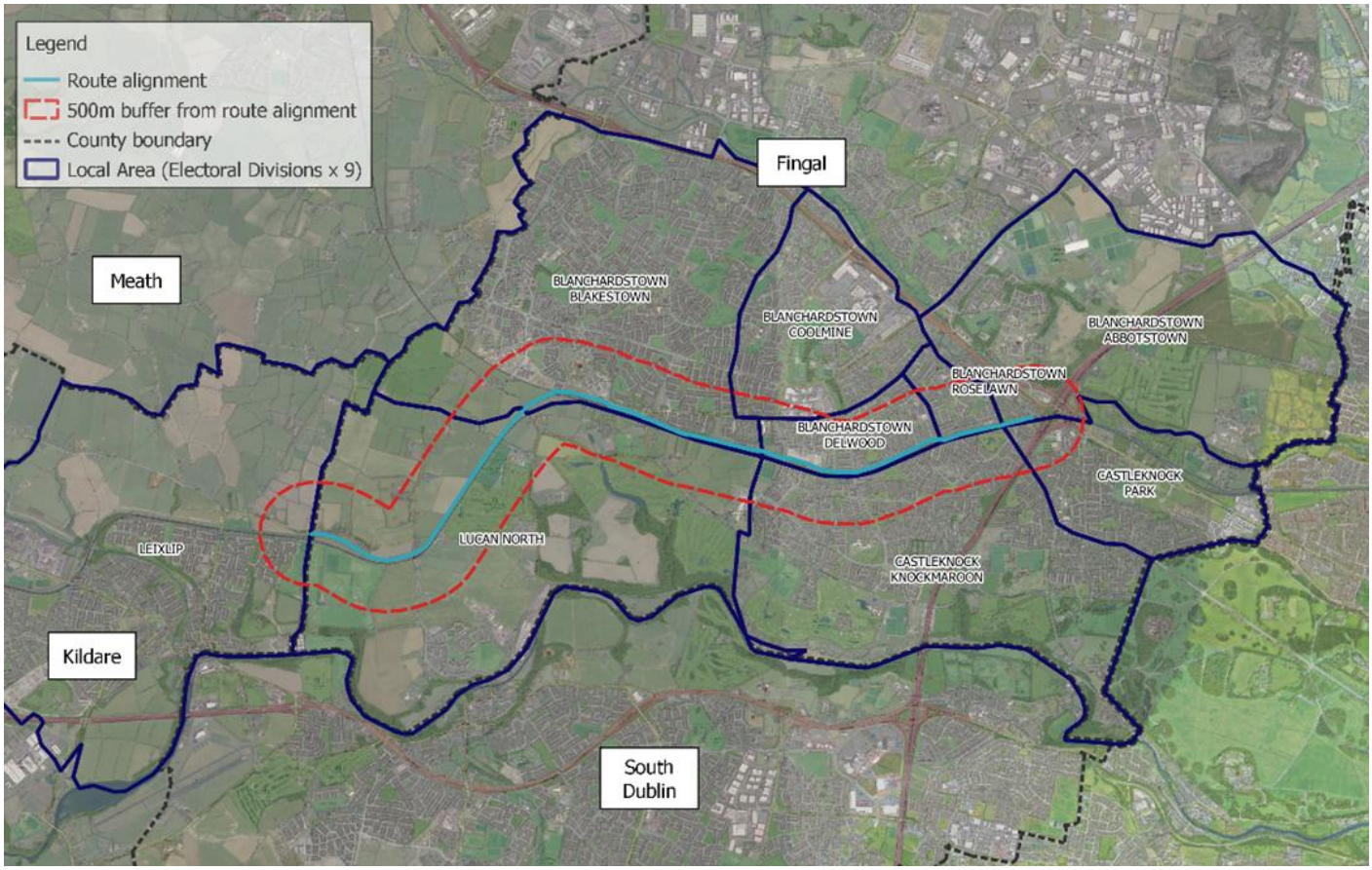


Figure 2-2 The Royal Canal Urban Greenway (indicative extents shown in orange)

The scheme has been divided into three distinct sections, as described in Section 1.2 and reiterated below:

- Section 1 – Kildare County Border to Hansfield Railway Bridge (Ch. 0000m – 3200m)

Section 1 extends from Kildare-Fingal County boundary line to Hansfield Railway Bridge. This section is rural/peri-urban in nature, predominately farm / agricultural land with some local amenities adjoining the lands, including Westmanstown Golf Club and Westmanstown Sports Centre. Protected Structures located within the Section 1 of the Study Area include the Royal Canal itself and the Collins Bridge and Pakenham Bridge (refer to Chapter 9 Archaeological, Architectural and Cultural Heritage for details).

- Section 2 – Hansfield Railway Bridge to Kennan Bridge (Ch. 3200m – 5300m)

Section 2 extends from Hansfield Railway Bridge, through Clonsilla under Callaghan Bridge to Kennan Bridge at Porterstown Road. In Section 2, the character of the area changes from rural to predominantly suburban in nature. This section is predominately residential on the northern side of the canal with farmlands on the southern side. The Hansfield Strategic Development Zone (SDZ) is located adjacent to the proposed route as it moves through this section. Protected Structures within the vicinity of the scheme in the Section 2 area include Callaghan Bridge, Kennan Bridge, Porterstown School House, Clonsilla Signal Box, and Porterstown Crossing Keeper's House (former) - (refer to Chapter 9 Archaeological, Architectural and Cultural Heritage for details).

The removal of 2 no. properties at Hansfield Road is proposed to facilitate the route in this area. Additional land take is required as the route passes through the Old School House Lands. Further detail is provided in Chapter 17 Material Assets – Land Use & Property.

- Section 3 – Kennan Bridge to Talbot Bridge (Ch 5300m – 8100m)

Section 3 runs from Kennan Bridge (Porterstown Road) to Talbot Bridge (Old Navan Road). This section is predominately urban with extensive residential catchments on both sides of the Canal. Several employment and retail uses are also located within this area along with community and amenity facilities. The 'Deep Sinking' section is situated within this section between Clonsilla Road and Castleknock Road.

For further information on the Proposed Development please refer to Section 1.4 of the EIAR and Section 2.4 of the Planning Report accompanying this application.

2.3.1 International Importance - EuroVelo

The EuroVelo network was first developed by the European Cyclists' Federation (ECF) in the 1990s. The aim was to create a network of high-quality, long-distance cycling routes that would span the entire European continent, promoting sustainable travel, tourism, and cycling culture. EuroVelo is now a network of 17 (EuroVelo 1 to 19) long-distance cycle routes that cross and connect Europe. The routes can be used by long-distance cycle tourists, as well as by local people making daily journeys. Only routes approved by the European Cyclists' Federation can be called EuroVelo.

The key four objectives of the EuroVelo Strategy 2030 are to offer sustainable cycle tourism development:

- First, it aims to increase cycling levels by enhancing the quality of the EuroVelo network, engaging new user groups, and expanding route monitoring, delivering environmental, health, and social benefits.
- Second, it seeks to promote sustainable transport and tourism policies by supporting cycle-oriented planning, sharing usage data to guide investments, and ensuring a geographically balanced network.
- Third, the strategy supports the growth of sustainable tourism by integrating cycling with public transport, encouraging bookable travel offers, and collaborating with local authorities to raise the profile of cycling tourism.
- Fourth, it emphasizes the need for a strong organizational and financial foundation to sustain and expand EuroVelo's impact.

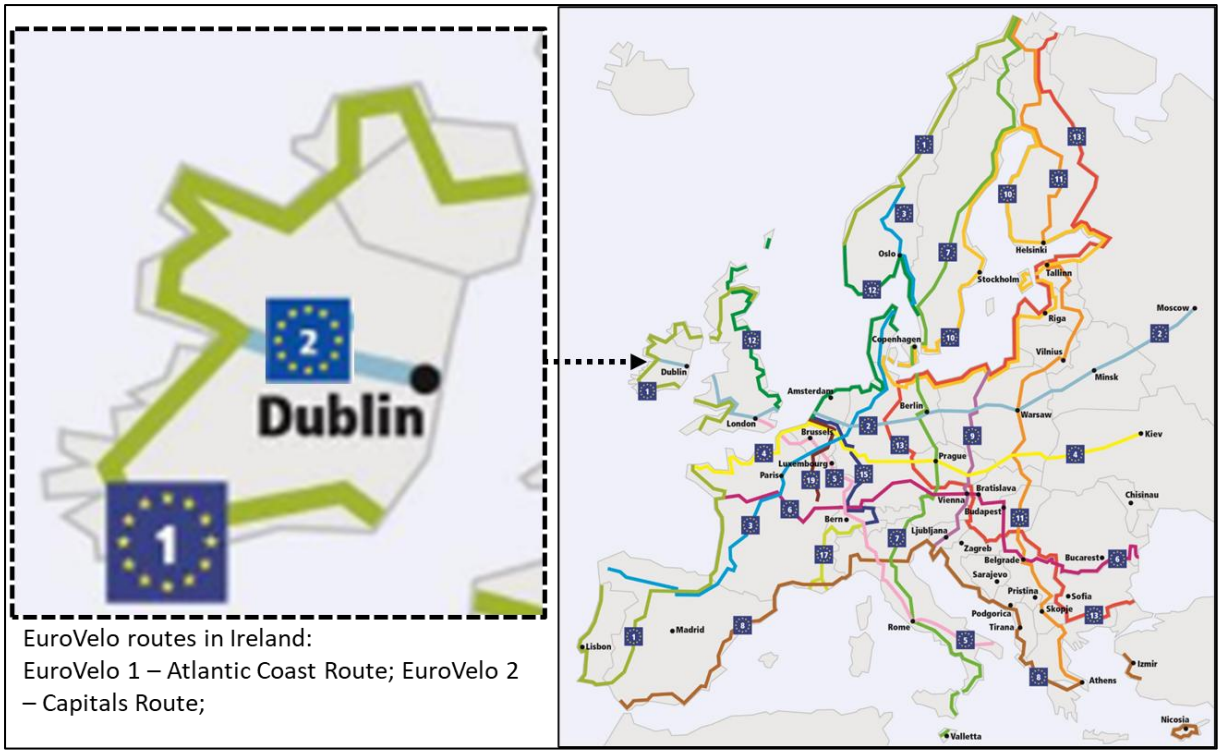


Figure 2-3 EuroVelo Schematic Diagram; Source: EuroVelo, 2025.

There are two EuroVelo routes in Ireland: EuroVelo 1 – Atlantic Coast Route and EuroVelo 2 – Capitals Route. EuroVelo 2 is partially complete, with over 110 km of the route fully open. In addition to these specific EuroVelo routes, Ireland has introduced several major greenways, including the Waterford Greenway, Midleton–Youghal Greenway, Limerick Greenway, Great Western Greenway, Royal Canal Greenway, and the Old Rail Trail Greenway.

The proposed Royal Canal Urban Greenway will provide a key part of EuroVelo 2 connecting Dublin to Galway, which contextualises the importance of the scheme.

2.3.2 National Importance

2.3.2.1 National Cycle Network Plan 2024

Transport Infrastructure Ireland (TII), on behalf of the Department of Transport (DoT), Ireland prepared a National Cycle Network (NCN) Plan in 2023 (published in January 2024), which comprises 85 corridors across approximately 3500 kms and connects to over 200 settlements, with a combined population of over 2.8 million people. The plan represents a continuation of the National Cycle Network first outlined in the National Cycle Network Scoping Study undertaken by the National Roads Authority (now TII) in 2010.

The NCN Plan establishes a core spine of infrastructure to encourage further development of cycling projects in the future, thereby optimising the potential for people to cycle part of their daily activities, such as travel to work or education. This NCN Plan links destinations such as transport hubs, centres of education, centres of employment, leisure, and tourist destinations with the intention of facilitating greater cycling and walking amongst students, leisure users, tourists, and commuters alike.

The NCN aligns with the NTA's Cycle Connects programme of urban and county-level cycle networks, as well as other cycle routes and networks in various stages of development, including the CycleConnects, EuroVelo routes, national and regional greenways, and the Strategic Plan for Greenways in Northern Ireland.

Implementation of the NCN Plan will be undertaken in three phases from 2023 to 2040. Various corridors have been assigned to a delivery phase following a multi-criteria assessment, which considered a range of factors, including potential demand along each corridor length, network coherence, safety and social benefits. **Proposed Corridors as shown in Figure 2.4 below**

The **Proposed Development is located within *Corridor 74 – Celbridge to Dublin (Figure 2.5)*. The Celbridge to Dublin Corridor has two options, Option A via the Grand Canal and Option B via Tallaght. Option A is the preferred corridor due to its integration with the Grand Canal Greenway.**

Notwithstanding that Corridor 74 (Celbridge to Dublin) is not yet fully complete, the Proposed Development is aligned with its preferred Grand Canal (Option A) alignment and contributes to its phased implementation as envisaged under the NCN.



Figure 2-4 National Cycle Network; Source – TII, 2023.

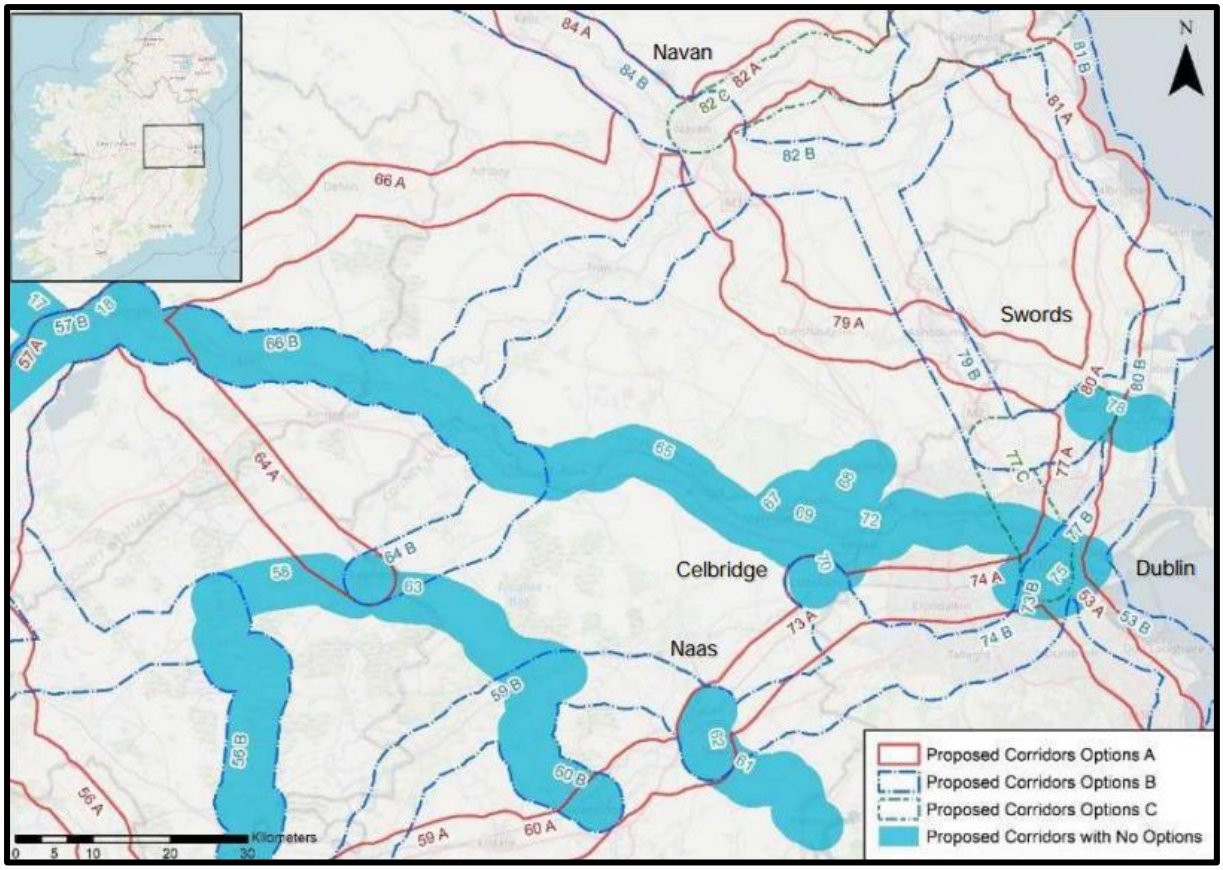


Figure 2-5 Corridor 74 Celbridge to Dublin; Source: National Cycle Network Plan 2023

2.3.2.2 Transport Strategy for the Greater Dublin Area 2022 - 2042

The Greater Dublin Area (GDA) Transport Strategy 2022-2042 features a Cycle Network Plan that will serve as a strategic framework for the planning and phased implementation of cycling infrastructure across the GDA.

The Plan delineates a hierarchical network structure comprising Primary, Secondary, Feeder, Greenway, and Inter-urban route classifications, each defined by function, connectivity, and anticipated demand. It includes integrated urban cycle networks tailored to individual settlements and incorporates the segments of the EuroVelo 2 (Dublin–Galway) trans-European cycle route that traverse the GDA. The Plan is intended to inform infrastructure investment decisions by the NTA and associated stakeholders, ensuring a coherent and interconnected regional cycling network.

As illustrated in Figure 2.6, **the Proposed Development is designated as a Greenway–Utility route and is also partially classified as a Secondary Route within the GDA Cycle Network. This dual classification reflects the route's multifunctional role, serving both recreational and utility purposes, while also contributing to the broader secondary network connectivity.**

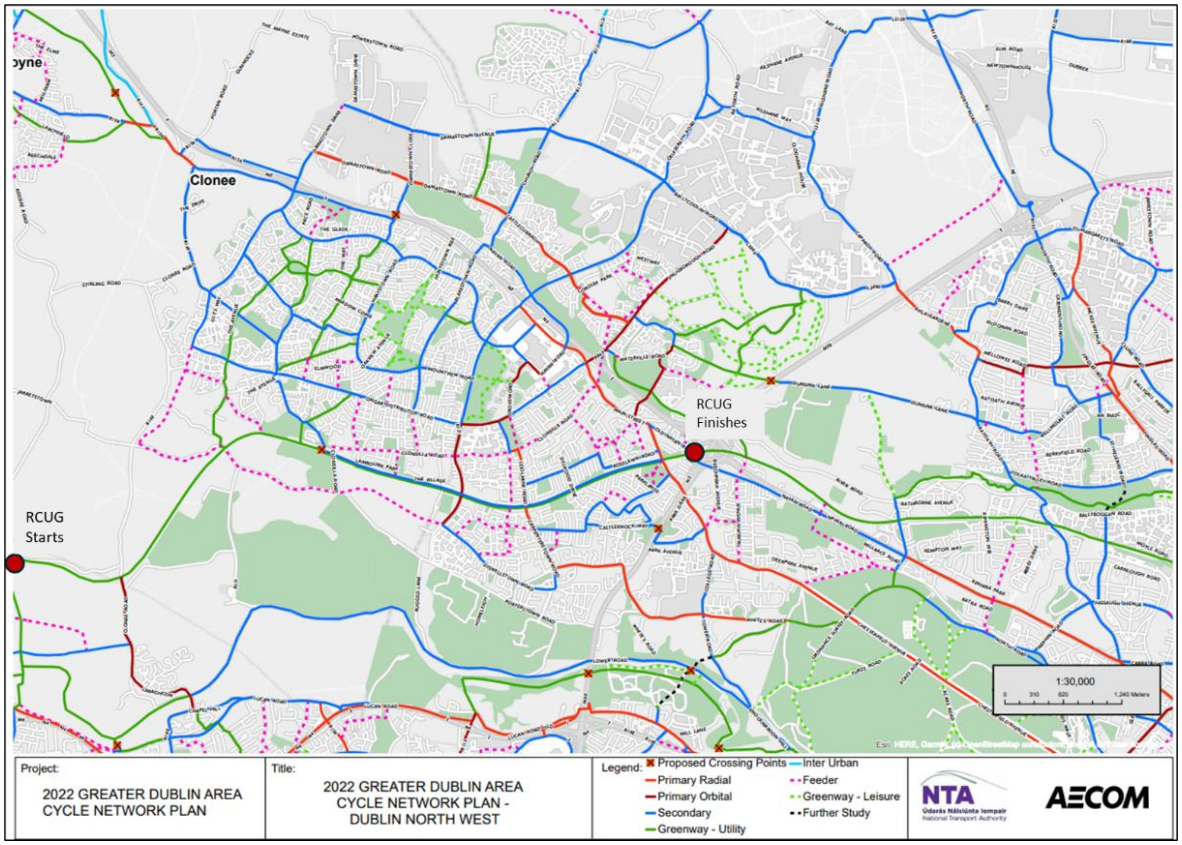


Figure 2-6 Proposed Development in GDA CNP

2.3.2.3 Greater Dublin Area Cycle Network Plan (2022)

In January 2023, the GDA Cycle Network Plan was adopted as part of the GDA Transport Strategy 2022–2042. Covering all seven local authorities in the GDA - Dublin City, South Dublin, Dun Laoghaire-Rathdown, Fingal, Meath, Kildare, and Wicklow, the plan outlines a comprehensive cycling infrastructure. It defines three interconnected networks:

- Urban Cycle Network: Includes primary, secondary, and feeder routes within urban areas.
- Inter-Urban Cycle Network: Connects urban networks and links to key transport hubs like airports and ports, incorporating parts of the National Cycle Network.
- Green Route Network: Focuses on recreational and tourist cycling routes.

The plan ensures a consistent and logical approach to cycling infrastructure across the region.

The Proposed Development is identified in the GDA Cycle Network Plan for Dublin Northwest. It is a strategic project that interconnects County Dublin with County Kildare along the royal canal. The Proposed Development will play an anchoring role in the cycle network within the GDA and will support the provision of Urban Cycle Network along Primary Radial, Orbital and Secondary routes.

2.4 Need for the Proposed Development

The Proposed Development delivers on a broad range of strategic policy ambitions at national, regional and local level and will make an important contribution to the delivery of plans for sustainable compact growth, sustainable mobility, climate action plans, recreation, amenity and tourism.

The Proposed Development will complete a critical missing link within the Royal Canal Greenway corridor between the existing Ashtown Greenway to the east and the completed Royal Canal Greenway in County Kildare to the west. In doing so, it will provide a continuous walking and cycling route along

the Royal Canal and improve connectivity between existing and planned communities, employment areas, schools, recreational facilities and public transport infrastructure.

As further described in Chapter 13 Population and Human Health, the Proposed Development will provide a significant new recreational and active travel amenity serving the communities of Clonsilla, Coolmine, Castleknock and Blanchardstown, together with the wider Dublin Metropolitan Area and east Kildare. The scheme will support walking and cycling for both commuter and recreational purposes and contribute to improved accessibility, social connectivity, health and wellbeing, and overall quality of life.

The Proposed Development is mainly located within the highly populated suburban area of Dublin 15, a primary growth area for housing and population expansion, as per the Fingal County Development Plan 2023-2029 and local planning frameworks including Hansfield Strategic Development Zone and Kellystown Local Area Plan. In this context, the provision of high-quality active travel infrastructure is essential to support sustainable movement patterns, reduce dependency on private vehicle use and improve connectivity to key destinations and public transport services, including rail stations located along the corridor.

The Royal Canal corridor is currently used extensively as a recreational route and the popularity for greenway schemes in general have increased significantly in recent years. The Proposed Development will provide an excellent sustainable travel option whilst also enhancing public transport accessibility and interchange, most notably at train stations along the route.

With fulfilling local functional requirements, the Proposed Development constitutes a critical component of broader regional and national transport infrastructure. As referenced in the preceding sections, it serves a strategic role in enhancing a regional active travel network plan and supporting the development of cycle tourism through improved network integration and multimodal connectivity for EuroVelo 2.

2.4.1 Economic Benefits and Impacts

The Proposed Development has the potential to generate economic benefits through improved accessibility, enhanced connectivity and the provision of high-quality active travel infrastructure. By linking existing and planned residential communities with employment areas, local services, public transport facilities and recreational destinations, the scheme will support economic activity and improve access to opportunities across the wider Dublin 15 area.

There are also significant benefits at individual household level. The proposed development provides a safe, easily accessible alternative to private car travel and removes the costs associated with this. A significant proportion of household transport expenditure is associated with private vehicle ownership and use. By providing a viable alternative to car travel, active travel infrastructure can help reduce transport-related costs for households. This highlights the potential of active travel infrastructure to alleviate transport-related financial burdens at the household level.

Congestion costs people money, time and wellbeing. In its report ‘The Economic Cost of Congestion in the Greater Dublin Area 2022-2040’, The Department of Transport estimates that, in the Greater Dublin Area, congestion was estimated to cost the economy €358 million in 2012 and is projected to rise to €2.08 billion by 2033. There are also many significant environmental, health and social costs, including poor air quality and the negative impacts of stress, inactivity or time away from family or community.

The Proposed Development, forming part of the Dublin to Galway Cycle Route, has the potential to have a significant and positive impact on both international (EuroVelo initiative) and domestic tourism and general economic activity in the County of Fingal providing a stimulus to the local economy of the adjoining towns and businesses.

Further, there will be socio-economic benefits in terms of transport efficiency (User benefits associated with more efficient transport and lower journey times), shorter travel distance, modal shift, alternative route options, journey quality (such as width, gradient, surface type of setting, that influence users' journey quality and likeliness to use infrastructure), reduced gender disparity, accessibility of transport infrastructure to vulnerable groups and quality of life improvements.

2.4.2 Environmental Benefits and Impacts

A full overview of the environmental benefits and impacts of the Proposed Development is provided in Chapters 5-17 of this EIAR. Among the most important benefits of the scheme are the recreational and amenity functions it will deliver, and its value as a major sustainable mobility asset.

As there is currently an absence of traffic free active travel routes within the immediate surrounding area of the Proposed Development, most cycling trips (whether they are recreational, leisure-based, commuter, business or school) are undertaken on the regional and local road network. Whilst the Proposed Development will facilitate leisure and recreational trip purposes, it will also serve an important function as a strategic commuter route. The Proposed Development will encourage walking and cycling to schools and train stations whilst also providing a direct route eastward to Dublin City Centre and westwards to Leixlip & Maynooth which are key areas of employment for residents of Dublin 15. Therefore, the Proposed Development has the potential to encourage a modal shift from the private car to the sustainable modes of walking and cycling for commuting purposes.

In reducing trips by motorised transport vehicles, particularly private car, there will be an associated reduction in fossil fuels emissions and positive benefits for air quality and climate. For a full assessment of the likely positive impacts on air, climate and the noise environment, please refer to relevant chapters of this EIAR.

The Proposed Development will also strengthen connections between the local community with nature and enhance accessibility to the natural world.

2.4.3 Health and Safety

The Proposed Development will provide a safe, accessible travel route for cyclists and pedestrians encouraging a healthy, active lifestyles for residents within proximity of the route. The route will be a major activator for the community to socialise and exercise which will enhance quality of life for local residents.

In general, current facilities for pedestrians and cyclists along the canal are poor. Pedestrians and cyclists walk and cycle along the existing unsurfaced and narrow towpath. Sections of the existing towpath, particularly within an area known as the 'Deep Sinking' area (between Porterstown & Castleknock), are not suitable to walk or cycle and typically consist of a 2 - 3m wide unsurfaced trail, with local pinch points of approx. 1.3m width, flanked by a deep cutting of 1.0 - 9.0m to the canal. In addition, there is very little passive surveillance along the towpath resulting in an uncomfortable environment to walk or cycle.

The Proposed Development will improve the baseline conditions significantly by providing a safe and comfortable route for users. It will provide a fully segregated pedestrian and cycle route with much improved lighting and accessibility, helping to minimise collisions and enhance the perception of safety and security.

2.4.4 Social Inclusion

With 15.4% of the population of Fingal aged 60 or over, 21% at school going age (aged 5-18 years) and 19% considered to have a disability as per CSO 2022[4], it is strategically important to ensure that the built environment of the county is accessible and inclusive to all.

The Proposed Development will provide a dedicated high quality recreational and leisure walking and cycling route that will accommodate users of all abilities, encourage physical activity and offer a space for social interaction. Well-designed public spaces that attract high footfall, such as the Proposed Development, offer strong opportunities to build community networks, reduce isolation and exclusion and build social cohesion.

The Proposed Development will provide a safe and comfortable route linking key services, facilities, amenities and attractions as much as possible without losing the vital proximity to the Royal Canal and its associated scenery.

2.4.5 Accessibility and Physical Integration

In terms of regional integration, the Proposed Development will form part of a national greenway route along the Royal Canal that links the River Liffey in Dublin City's Docklands to the River Shannon in County Longford and eventually on to Galway. Also, the proposed Canal Loop Greenway will link the Grand Canal and the Royal Canal. The proposed route is likely to go through Lucan and join the Royal Canal at Collins Bridge. This scheme will also improve access to international transport gateways given its integration with the EuroVelo Route 2.
The Proposed Development will tie in with the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway at the County boundary in the west.

In terms of a local integration and connectivity perspective, the scheme will provide access to jobs, retail centres, educational facilities, healthcare facilities for the towns of Clonsilla, Coolmine, Castleknock directly. The route will encompass large population catchments in suburban areas and rural areas which are currently more isolated, and in doing so, local schools, playing fields and other amenities will become more accessible.

Currently, there is relatively poor connectivity and integration of existing services and amenities with active travel infrastructure, resulting in limited accessibility and reduced modal coherence for non-motorised users. The possibility of connection of these amenities to nearby train stations and bus facilities is a significant benefit that the Proposed Development will bring to the Dublin 15 area.

2.5 Key Benefits of the Proposed Development

The key benefits of the Proposed Development are listed below:

- Delivery of a high-quality, integrated active travel route for pedestrians and cyclists, serving both recreational and commuter demand.
- Transformation of the canal corridor into a safe, attractive and welcoming public amenity space, incorporating high-quality pedestrian and cycle infrastructure alongside a pocket park at Hansfield.
- Facilitation of increased levels of active travel, delivering associated environmental benefits and supporting the health and wellbeing of users.
- Enhancement of permeability through sustainable modes of movement, in a manner that balances user safety with the need to respect adjacent landowners and residents, in accordance with best practice in urban design.
- Promotion of sustainable transport modes, including integration with existing public transport.

[4] https://www.cso.ie/en/releasesandpublications/ep/p-cpsr/censusofpopulation2022-summaryresults/

- Delivery of a significant new amenity and transport asset for residents and commuters, designed to respond sensitively to environmental, conservation and heritage considerations.
- Provision of high-quality cycling infrastructure with the potential to attract visitors, support tourism and enhance local economic activity.
- Completion of a key link between the existing Ashtown Greenway at Talbot Bridge (Old Navan Road) and the completed Royal Canal Greenway at the Kildare County boundary, thereby contributing to a wider regional active travel network aligned with the Greater Dublin Area Transport Strategy.
- Raising the profile of cycling and encouraging increased participation in active travel.
- Improving safety for cyclists and pedestrians through the provision of dedicated, cycle-friendly infrastructure.
- Contributing to a reduction in congestion and reliance on private car travel within the surrounding area.

2.6 Stakeholder Engagement and Consultation

Over the course of preparing the Proposed Development since project inception in 2018, extensive consultation and stakeholder engagement have been undertaken which has informed the evolution of the scheme. Consultation has been undertaken by the Project Team with various departments in Fingal County Council (FCC), the National Transport Authority (NTA) and Waterways Ireland (WI), in order to discuss the feasibility of particular route options.

Consultation was also undertaken with the general public, residents' groups, elected representatives, state bodies including An Garda Síochána, the National Parks and Wildlife Service (NPWS), Inland Fisheries Ireland and Iarnród Éireann, as well as other interested parties. A non-statutory public consultation on the emerging preferred route was held in February 2019. This included meetings with elected members and residents' groups following the consultation. A second non-statutory public consultation on the Preferred Route Option was then held in 2021, as detailed below.

2.6.1 First Non-Statutory Public Consultation (2019)

The Emerging Preferred Route was presented during a non-statutory public consultation held between February and March 2019. A total of 602 submissions were received. The majority of the submissions from the general public related to a c.1km section of route between Kirkpatrick Bridge (Coolmine Road) and 400m west of Castleknock Train Station. The principal concerns raised included potential increases in traffic, anti-social behaviour and crime and impacts on biodiversity. While a number of submissions expressed support for the Emerging Preferred Route, there was a clear preference for the greenway to be located on the southern side of the canal between Kirkpatrick Bridge and Granard Bridge at Castleknock Station.

The issues raised were reviewed in the context of relevant local and national policy, together with the overall project objectives, and informed the subsequent option development and assessment process leading to the identification of the Preferred Route. In response to the 2019 consultation, preliminary design work examined route options on both the northern and southern sides of the canal between Kirkpatrick and Granard Bridges, including consideration of constructability. This assessment is documented in the Route Options Assessment Main Report (Document Ref. p170239-Rep-001).

2.6.2 Second Non-Statutory Public Consultation (2021)

A second non-statutory public consultation on the Preferred Route was subsequently undertaken in 2021. Submissions were received via the FCC online consultation portal and by post. A total of 1,143 submissions were received.

This consultation was carried out during the Covid-19 pandemic, and due to public health restrictions, in-person consultation events could not be facilitated. In response, letters were issued to owners of potentially affected properties, providing information on the proposed scheme and offering one-to-one meetings to discuss likely impacts, issues and concerns.

The consultation generated significant public engagement and submissions were grouped under a number of principal themes, including preferred route, environmental considerations, safety and anti-social behaviour, traffic and access, and scheme design. Environmental matters were raised in 679 submissions and included concerns relating to potential impacts on woodland, trees and habitats, biodiversity, bats and birds, invasive species, lighting impacts on wildlife, the Royal Canal pNHA, ecological surveys, tree loss, replacement planting and the need for environmental assessment. Traffic management, parking and access issues were raised in 506 submissions, while 284 submissions commented on elements of the scheme design (individual submissions often referencing several issues). These submissions informed the ongoing assessment and refinement of the Preferred Route.

The feedback received through the consultation process, together with ongoing engagement with stakeholders, informed a number of revisions to the scheme design. In particular, environmental considerations informed route selection and design development within the Deep Sinking section, including the preference for the upper northern bank route to reduce impacts on trees and habitats and retain woodland where possible. Consultation feedback also informed the development of replacement planting proposals and ecology-sensitive lighting measures. Further detail on the submissions received, including responses to recurring and specific issues, is set out in the Public Consultation Reports (Fingal County Council, 2021).

2.6.3 Key Stakeholder Consultation

Ongoing consultation has been undertaken with a range of key stakeholders and has informed both the technical development and strategic direction of the scheme. Engagement was maintained throughout the Route Options Assessment process with the National Transport Authority, relevant departments within Fingal County Council, Waterways Ireland, An Garda Síochána, Iarnród Éireann and the DART+ West project team, as well as stakeholder groups including the Dublin Cycling Campaign and the Royal Canal Amenity Group. Engagement also took place with elected representatives and local residential groups along the route.

In addition to the wider stakeholder and public consultation process, targeted environmental consultation was undertaken during the design and environmental assessment of the Proposed Development. This included engagement between the project team, Fingal County Council, Waterways Ireland and the National Parks and Wildlife Service (NPWS) in relation to biodiversity and ecological constraints. The proposed scheme and the findings of habitat and species-specific surveys were presented to NPWS, with feedback informing the refinement of the scheme and associated mitigation measures. Key issues raised included potential lighting impacts on bats, protection of badger setts, management of calcareous grassland habitats, ecological planting and habitat creation measures, and the protection of sensitive flora. This input informed the lighting strategy, habitat protection measures and ecological enhancement proposals incorporated into the Proposed Development.

Consultation was also undertaken with the Department of Housing, Local Government and Heritage (DHLGH), the National Museum of Ireland and Fingal County Council to inform the archaeological, architectural and cultural heritage assessment. This included review of the Record of Monuments and Places (RMP), Sites and Monuments Record (SMR), National Monuments in State Care Database, National Museum topographical files and relevant planning records. Further details of the consultation undertaken and the archaeological, architectural and cultural heritage assessment are provided in Chapter 9 Archaeological, Architectural and Cultural Heritage.

Consultation feedback also informed a number of design refinements, particularly within the Deep Sinking section and at residential interfaces including Delwood, Brompton and Roselawn. These measures included reducing access points, relocating the Brompton access and bridge ramp, lowering the greenway level adjacent to Delwood Park to reduce overlooking, retaining and enhancing boundary treatments, providing additional screening and planting, and incorporating ecology-sensitive lighting and landscape mitigation measures. These are further detailed in Chapter 4 Alternatives.

2.6.4 Pre-Application Consultation with An Coimisiún Pleanála

In advance of the submission of the proposed Royal Canal Urban Greenway under Section 51 of the Roads Act 1993, as amended, Fingal County Council engaged in statutory pre-application consultation with An Coimisiún Pleanála (ACP). As part of this process, formal consultation meetings were held with ACP in August and September 2026, attended by representatives of Fingal County Council, the project team and relevant technical specialists.

The consultation process provided an opportunity for ACP to identify matters requiring particular consideration prior to lodgement and to provide procedural guidance regarding the preparation and submission of the application. Key matters discussed included the assessment and presentation of significant and residual environmental effects, ecological assessment methodology, Appropriate Assessment and Water Framework Directive requirements, climate and planning policy considerations, protection of biodiversity, landscape and cultural heritage resources, assessment of cumulative effects, construction environmental management measures and statutory application procedures.

The observations and recommendations arising from the pre-application consultation process informed the ongoing design development of the proposed scheme and the preparation and finalisation of the EIAR and accompanying application documentation. Further details of the consultation undertaken with ACP, including a summary of the principal matters raised and how these matters have been addressed within the application documentation, are provided in the Planning Report accompanying this application.

2.7 References

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3 Policy Context

3.1 Introduction

The Proposed Development is consistent with, and delivers on, a broad range of relevant national, regional and local policy, as listed in summary below.

Table 3-1 Policy Overview

National Policies	• National Planning Framework (NPF): Project Ireland 2040 - Revision (2025) • National Development Plan (2021-2030) • Climate Action Plan (2025) • National Sustainable Mobility Policy (2022)
Regional and Sectoral Policies	• Strategy for the Future Development of National and Regional Greenways (2018) • Greenways and Cycle Routes Ancillary Infrastructure Guidelines (2022) • Waterways Ireland Heritage & Biodiversity Plan 2030 • Spatial and Economic Strategy for the Eastern and Midland Region • National Cycle Network Plan 2024 • Transport Strategy for the Greater Dublin Area (2022–2042) - Greater Dublin Area Cycle Network Plan (2022) • National Physical Activity Framework 2024-2040
Local	• Fingal County Development Plan 2023 - 2029

3.2 National Policy

3.2.1 National Planning Framework (NPF): Project Ireland 2040 - First Revision (April 2025)

The National Planning Framework (NPF) sets out the Government's high-level strategy for guiding the future growth and development of the State to 2040. As the overarching national policy document, it provides the strategic basis for planning and development over the coming decades, ensuring that anticipated population growth is accommodated in a sustainable manner across economic, social and environmental dimensions.

The revised NPF, published in April 2025, updates the original 2018 framework to reflect evolving demographic, economic and policy conditions. It projects that Ireland's population will increase by approximately one million people between 2022 and 2040. Within this context, the Eastern and Midland Region (EMRA) is expected to accommodate significant growth, with an increase of approximately 470,000 people over the period 2022–2040 (c. 690,000 over 2016–2040), resulting in a regional population approaching 3 million.

The scale of housing and employment delivery required to support this level of growth is substantial and unprecedented in the Irish context. Accordingly, there is an increased need for supporting infrastructure, including active travel provision such as the Proposed Development. Investment in high-quality walking and cycling infrastructure is critical to responding to population growth, facilitating sustainable mobility choices, and ensuring the provision of appropriate recreational and public amenity spaces.

A core objective of the NPF is to promote and enable more sustainable patterns of travel, particularly within urban and suburban areas. This objective is reflected across the National Strategic Outcomes (NSOs), which represent the ten overarching goals of the NPF and provide the framework for aligning national, regional and local planning and investment decisions. These include outcomes relating to compact growth (NSO 1), enhanced regional accessibility (NSO 2), sustainable mobility (NSO 5),

enhanced amenities and heritage (NSO 7), and the transition to a low-carbon and climate-resilient society (NSO 8).



Figure 3-1 National Strategic Outcomes: The National Planning Framework

NSO 1 (Compact Growth) is supported by principles of sustainable mobility, including the transition towards walking, cycling and public transport within urban areas, alongside more efficient patterns of energy use.

NSO 2 (Enhanced Regional Accessibility) recognises the role of cycling as a viable alternative to more carbon-intensive modes of transport and seeks the development of safe, connected cycle networks linking cities, towns and key destinations.

NSO 3 (Strengthened Rural Economies and Communities) highlights the value of greenways and similar infrastructure, supporting investment in greenways, blueways and peatways as part of a coordinated national approach to outdoor recreation and regional connectivity.

Of particular relevance, NSO 4 (Sustainable Mobility) promotes the development of comprehensive networks of safe cycling routes within metropolitan areas and the improvement of walking connections in accordance with universal design principles, thereby enhancing accessibility, safety and user experience. The Proposed Development directly supports these objectives.

The Proposed Development also aligns with NSO 7 (Enhanced Amenities and Heritage), which promotes the delivery of improved walking and cycling routes, including continuous greenway networks, as part of wider planning and transport strategies, with a focus on enhancing permeability and connectivity.

Furthermore, the Proposed Development contributes to the delivery of NSO 8 (Transition to a Low Carbon and Climate Resilient Society) through the provision of sustainable travel infrastructure, including expanded walking and cycling networks and greenways.

In addition, the Proposed Development supports a range of relevant National Policy Objectives (NPOs). NPO 34 promotes the continued development of tourism infrastructure, including greenways, with an emphasis on environmental sustainability, connectivity and coordinated management of outdoor recreation assets. NPO 37 seeks the integration of safe and convenient alternatives to the private car

within the design of communities, prioritising walking and cycling accessibility and supporting physical activity across all age groups.

NPO 93 further supports improvements in air quality and the reduction of pollution through integrated land use and transport planning that prioritises public transport, walking and cycling, alongside energy-efficient design and green and blue infrastructure.

Overall, the Proposed Development represents a clear and direct response to the strategic direction set out in the NPF, particularly in relation to sustainable mobility, compact growth and climate action.

3.2.2 National Development Plan 2021-2030

The National Development Plan 2021-2030 (NDP), as updated in July 2025, establishes the Government's capital investment framework for the implementation of the National Planning Framework (NPF) and delivery of its National Strategic Outcomes (Government of Ireland, 2021; 2025). The NDP recognises that a significant proportion of future housing growth will be accommodated within existing urban areas and places particular emphasis on investment in sustainable transport infrastructure to support compact growth and the creation of connected communities.

The Plan identifies active travel as a key component of Ireland's transition to a low-carbon transport system, recognising the role that high-quality walking and cycling infrastructure can play in facilitating modal shift, reducing transport emissions, improving public health outcomes and enhancing accessibility. The NDP highlights the need for continued investment in integrated transport networks that improve connections between residential areas, employment centres, community facilities and public transport services.

The NDP further recognises the contribution that greenways and active travel infrastructure make to regional development, tourism, recreation and quality of life. Investment in greenway infrastructure is identified as a continuing national priority, building on the success of established schemes such as the Waterford Greenway and supporting the objectives of the Strategy for the Future Development of National and Regional Greenways. The Plan also reaffirms Government support for the National Active Travel Programme and the delivery of safe, attractive and accessible cycling and walking infrastructure throughout the State.

In this context, the proposed Royal Canal Urban Greenway is consistent with the strategic objectives of the NDP by supporting sustainable mobility, enhancing active travel connectivity, encouraging behavioural change towards more sustainable transport modes and providing a high-quality recreational and community amenity. The proposed development also contributes to wider national policy objectives relating to climate action, compact growth, healthy placemaking and the enhancement of sustainable tourism and recreation infrastructure.

3.2.3 Climate Action Plan (2025)

The *Climate Action Plan 2025* (CAP 25) is the third plan prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. It provides an update on progress to date and, critically, sets out the programme of measures required to address the challenges associated with the second carbon budget period (2026–2030).

In the transport sector, CAP25 highlights the strong public response to climate action measures, including record levels of public transport usage. Notwithstanding this progress, the sector remains one of the most significant contributors to national emissions, with greenhouse gas (GHG) emissions increasing from 8.5% of total emissions in 1990 to approximately 19.5% in 2023. This trajectory underscores the need for a sustained and expanded programme of interventions to reduce transport-related emissions.

To address this, CAP25 sets out a suite of targets and measures, including a 20% reduction in total vehicle kilometres travelled relative to business-as-usual, a 50% reduction in fuel usage, and a significant increase in sustainable transport mode share. While fleet electrification and low-carbon fuels

are expected to deliver a substantial proportion of emissions reductions in the medium term, the Plan also emphasises the importance of behavioural change and modal shift towards public transport, walking and cycling.

The transport strategy within CAP25 is structured around the "Avoid–Shift–Improve" hierarchy, with particular emphasis on avoiding unnecessary trips and shifting travel towards more sustainable modes. **Within this framework, a number of interventions are directly relevant to the Proposed Development, including the integration of land-use and transport planning through compact growth and transit-oriented development, the delivery of enhanced active travel infrastructure, and the provision of high-quality public realm and connectivity with existing public transport networks.**

CAP25 also introduces a national demand management strategy (*Moving Together*), which seeks to embed demand management measures within statutory planning and transport frameworks, including Metropolitan Area Transport Strategies and Development Plans. In parallel, the forthcoming *Sustainable Mobility Policy Action Plan (2026–2030)* will build on the implementation of the current Sustainable Mobility Policy, placing further emphasis on "supply-side" interventions such as improved public transport services, shared mobility, and active travel infrastructure.

Local authorities are identified as having a central role in transport decarbonisation, including through the spatial planning system, the promotion of compact growth and permeability, the delivery of active travel infrastructure, and the implementation of demand management and sustainable mobility measures. **In this context, the Proposed Development directly supports the objectives of the Climate Action Plan 2025 by facilitating a modal shift from private car use towards active, zero-emission travel modes.** The provision of a high-quality greenway will enhance connectivity, improve permeability, and support integration with existing and planned public transport infrastructure, thereby contributing to reduced car dependency and associated emissions.

CAP25 also aligns with a range of Sustainable Development Goals (SDGs), several of which are directly relevant to the Proposed Development. In particular:

- **SDG 7 – Affordable and Clean Energy:** The Proposed Development supports reduced reliance on fossil fuel-based transport by promoting walking and cycling, thereby contributing to lower emissions and improved air quality.
- **SDG 5 – Gender Equality:** The provision of a safe, well-designed and accessible greenway supports inclusive mobility, particularly for women, who are proportionally more reliant on safe and accessible transport options.
- **SDG 11 – Sustainable Cities and Communities:** The Proposed Development will enhance connectivity and permeability through sustainable modes, integrating with existing and proposed public transport infrastructure, including schemes such as DART+ West.
- **SDG 12 – Responsible Consumption and Production:** The design approach incorporates measures to protect existing uses and environmental sensitivities along the canal corridor, ensuring the sustainable management of the resource.
- **SDG 13 – Climate Action:** The Proposed Development will contribute to the decarbonisation of the transport sector by enabling a shift to active travel, thereby reducing transport-related emissions.
- **SDG 10 – Reduced Inequalities:** The Proposed Development will improve equitable access to safe and affordable transport options for all users, including those without access to private vehicles and those with reduced mobility.

- **SDG 15 – Life on Land:** The Proposed Development has been designed to respect and complement the existing environmental and ecological sensitivities of the corridor, supporting biodiversity protection and enhancement where feasible.

Overall, the Proposed Development is consistent with, and supports, the objectives of CAP25 by contributing to a transition towards a low-carbon, sustainable transport system in line with national climate policy.

3.2.4 National Sustainable Mobility Policy 2022

The National Sustainable Mobility Policy 2022 sets out the Government's strategic framework for increasing the use of active travel and public transport as part of Ireland's transition to a low-carbon transport system. The policy promotes safe, accessible and inclusive mobility options, encourages a shift away from private car dependency, and supports the delivery of high-quality walking and cycling infrastructure. In this regard, the Proposed Development is consistent with the objectives of the Policy by enhancing active travel connectivity, improving accessibility, promoting healthier travel choices and contributing to more sustainable travel patterns within the Dublin Metropolitan Area.

3.3 Regional and Sectoral Policies

3.3.1 Strategy for the Future Development of National and Regional Greenways (2018)

The Strategy for the Future Development of National and Regional Greenways (2018) was developed by the Department of Transport, Tourism and Sport to guide the planning and construction of greenways across Ireland. Its vision is to create a network of high-quality walking and cycling routes that boost tourism and local economies, promote health and wellbeing, and support sustainable travel and eco-tourism.

The strategy focuses on delivering projects of scale, typically 40 km or more, that can attract visitors and generate overnight stays. It emphasizes the development of greenways of national or regional significance while allowing for local linkages. Routes must provide safe, scenic, and accessible experiences for all users, including older people and families, and incorporate age-friendly design and universal accessibility.

Economic and social benefits are central to the strategy, aiming to stimulate rural economies through tourism, provide recreational amenities for local communities, and encourage active lifestyles. Community and landowner engagement is a priority, with early and widespread consultation recommended to minimise land severance and ensure appropriate accommodation works. Environmental and cultural considerations are also highlighted, with a commitment to protecting landscapes and biodiversity and showcasing local heritage.

The Proposed Development has gone through an extensive public consultation process and the proposed route is considered the most suitable in terms of having the least impact on existing landowners, whilst also utilising the maximum amount of scenic amenity for future pedestrians and cyclists.

3.3.2 Greenways and Cycle Routes Ancillary Infrastructure Guidelines 2018 (Updated on 2022)

The design of the Proposed Development has been informed by these Guidelines, published by the Department of Transport in partnership with Sport Ireland, which provide detailed recommendations for ancillary infrastructure that complements the main greenway or cycle route. While primary standards focus on the path itself (width, surface, gradient), this document sets out guidance on features that bring routes to life, making them more attractive, engaging, and enjoyable for all users. These include rest areas, public amenities and signage. An overview of how the Proposed Development integrates these features is set out in the Planning Report accompanying this application.

3.3.3 Waterways Ireland Heritage & Biodiversity Plan 2030

The Waterways Ireland Heritage and Biodiversity Plan 2030 launched in June 2026 aims to protect and celebrate the natural, built, and cultural heritage along Ireland's waterways. It focuses on conserving ecosystems that support diverse flora and fauna, while also promoting community involvement and education to foster awareness and sustainable practices.

The plan encourages strong partnerships with stakeholders and supports research to deepen understanding of biodiversity and heritage sites. Key objectives which the proposed Greenway align with, and support include:

• Work with local authorities to support the development and implementation of green infrastructure strategies and the achievement of green infrastructure objectives by local authorities, in recognition of the importance of the inland waterways as green corridors to local towns and villages as well as compliance under Article 10 of the Habitats Directive.

• Work in partnership with relevant agencies and local angling groups in order to maintain the inland waterways under our jurisdiction as sustainable fisheries.

• Encourage an integrated, measured approach to heritage interpretation at all heritage sites that is sensitive to the special significance of the place (i.e. promote built, natural and cultural heritage aspects of all sites where possible).

• Support efforts to promote heritage-related sustainable tourism and eco-tourism, both domestically and abroad, and seek to meet the European Charter for Sustainable Tourism in Protected Areas standards.

3.3.4 Regional Spatial and Economic Strategy for the Eastern and Midland Region

The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region came into effect on 31 January 2020 and sets out a 12-year strategic framework for the coordinated development of the Region. It identifies key assets, opportunities and challenges and provides a policy response through a suite of Regional Policy Objectives (RPOs) to guide development and investment across the Region.

The RSES recognises the important role of greenways in supporting sustainable mobility, climate action, and regional development. In this regard, greenways are identified as key components of the Region's green infrastructure network, contributing to modal shift towards active travel, reducing carbon emissions, and enhancing connectivity between urban and rural areas. They are also associated with wider objectives relating to health and wellbeing, tourism development, and the creation of attractive and liveable places.

The strategy emphasises greenways as part of a regional green infrastructure network, complementing walking and cycling routes and connecting communities to natural and cultural assets. They are positioned as drivers for tourism development, particularly in rural areas, and as tools for economic diversification by attracting visitors and supporting local businesses. Additionally, the RSES promotes the environmental benefits associated with Greenways, such as biodiversity corridors and climate resilience.

Within the metropolitan area, the RSES is implemented through the Metropolitan Area Strategic Plan (MASP). The MASP translates the high-level objectives of the RSES into a more detailed spatial and investment framework for the Dublin Metropolitan Area, setting out priorities for growth, infrastructure delivery and land use over the plan period to 2031, with a longer-term horizon to 2040.

In this context, the MASP identifies the delivery of sustainable transport infrastructure and supporting green infrastructure as a key priority, including integration with major public transport programmes such as MetroLink, DART and LUAS expansion, BusConnects and the Greater Dublin Area Cycle Network. It also provides for the delivery of metropolitan-scale green infrastructure and amenity provision, within which greenways form an important component

The RSES also supports delivery of the National Cycle Plan within the region inclusive of greenway and blueway projects. This includes the completion of strategic greenway corridors such as those along the Royal and Grand Canals and the development of wider inter-urban and EuroVelo routes, alongside improvements to the national transport network.

Overall, the RSES frames greenways as multifunctional assets that contribute to sustainable mobility, regional economic development, social inclusion, and environmental protection, aligning with national policies like Project Ireland 2040 and the National Planning Framework.

3.3.5 National Cycle Network Plan (NCN Plan) 2024

The National Cycle Network (NCN) Plan 2024, published by the Department of Transport and Transport Infrastructure Ireland, sets out a strategic framework for the delivery of a safe, connected and attractive national cycle network linking cities, towns (with a population of over 5,000) and key destinations across Ireland. The Plan aims to promote active travel, reduce reliance on private vehicles and support Ireland's climate commitments under the Climate Action and Low Carbon Development Act 2025, as amended. It builds on and extends the National Cycle Network first identified in the 2010 Scoping Study.

The NCN Plan establishes a core spine of cycling infrastructure across the State, designed to support daily journeys as well as recreational and tourism-related trips. It seeks to connect key trip generators, including public transport hubs, educational institutions, employment centres, and leisure and tourism destinations, thereby facilitating increased cycling and walking by commuters, students, and visitors.

The Plan is intended to complement and integrate with a range of existing and emerging networks, including the NTA's CycleConnects programme, the Greater Dublin Area Cycle Network, EuroVelo routes, and national and regional greenways. In doing so, it provides a coordinated framework to support the progressive expansion of cycling infrastructure across urban and inter-urban corridors.

Implementation of the NCN Plan will be undertaken in three phases from 2023 to 2040, as shown below. Corridors have been assigned to a delivery phase following a multi-criteria assessment, which considered a range of factors, including potential demand along each corridor, corridor length, network coherence, safety and social benefits.

Table 3-2 National Cycle Network Plan – Phasing plans

	Phase 1 (2023–2025)	Phase 2 (2026–2030)	Phase 3 (2031–2040)
Approx. Kilometres Delivered	330 km	660 km	2,510 km



Figure 3-2 National Cycle Network; Source – TII, 2023.

The Proposed Development is identified within the NCN Plan as part of *Corridor 74 – Celbridge to Dublin (Figure 3.3).* This corridor includes two route options: Option A via the Grand Canal and Option B via Tallaght. Option A is identified as the preferred route, reflecting its integration with the Grand Canal Greenway and its ability to contribute to a coherent and connected active travel corridor within the wider network. While elements of Corridor 74 (Celbridge to Dublin) have been delivered, the route is not yet fully completed. The corridor remains under phased implementation, with key sections within the Dublin metropolitan area still progressing through design, planning and construction.

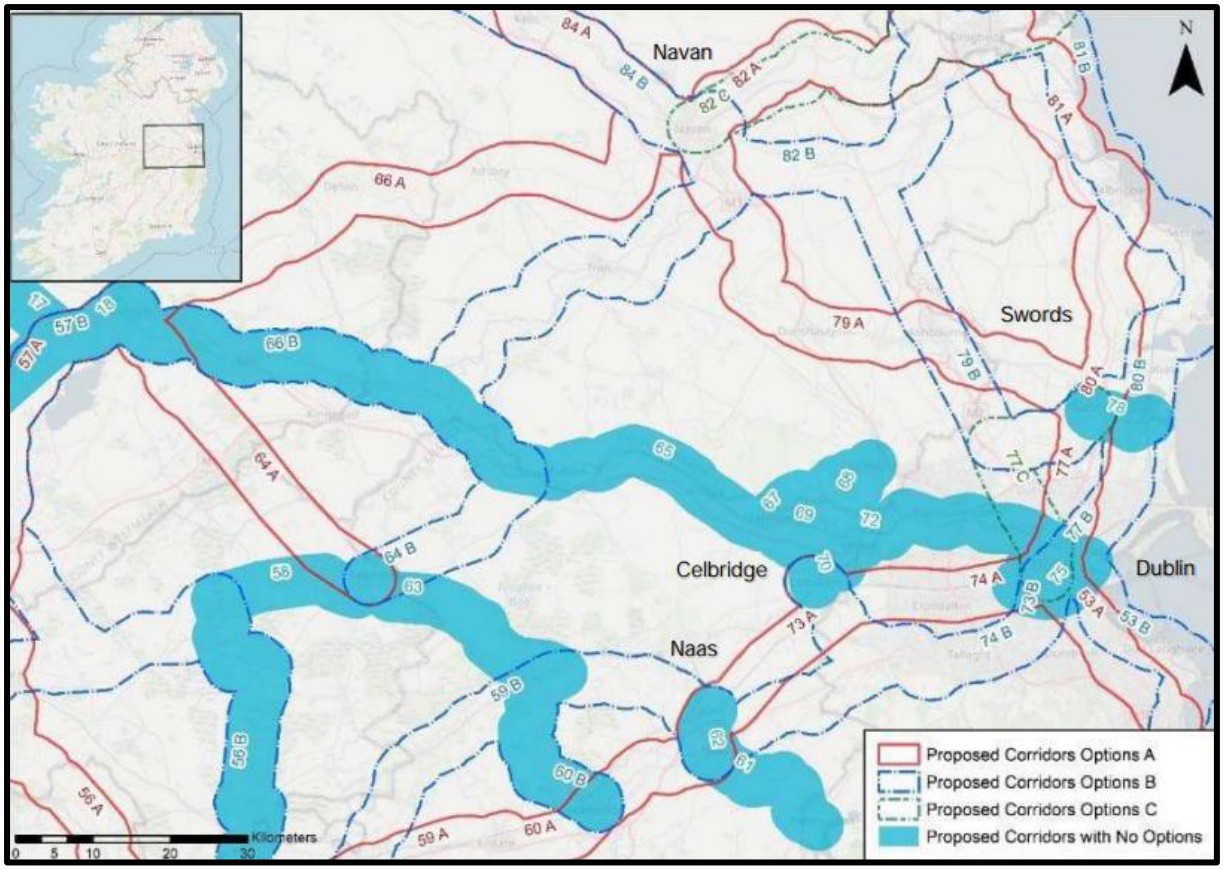

Figure 3-3 Corridor 74 Celbridge to Dublin; Source: National Cycle Network Plan 2023;

3.3.6 Transport Strategy for the Greater Dublin Area 2022 - 2042

The Transport Strategy for the Greater Dublin Area 2022–2042 sets out a statutory framework for transport planning and investment over the next two decades. Its vision is to create a sustainable, integrated, and efficient transport system that supports compact growth, climate action, and improved connectivity. The strategy aligns with the NPF, Project Ireland 2040, and national climate targets, including a 51% reduction in transport emissions by 2030.

The strategy aims to increase the share of trips by public transport, walking, and cycling, expand active travel infrastructure, and integrate transport planning with land use and regional development. Greenways are highlighted as a core component of the updated Greater Dublin Area Cycle Network Plan, providing safe, scenic, and segregated routes for commuting, leisure, and tourism. The plan emphasises inclusive design to ensure greenways are accessible for all ages and abilities.

The Royal Canal Greenway is identified as a strategic corridor within this network. It forms part of the inter-urban network, linking Dublin city to the Midlands and ultimately to the Shannon. The urban section, from Spencer Dock to Ashtown and beyond, is integrated into Dublin's Active Travel Network, offering high-quality walking and cycling facilities.

The strategy supports completing remaining sections of the greenway along the Royal Canal, as the Proposed Development seeks to do, and upgrading of existing infrastructure to meet national greenway standards, ensuring connectivity with other greenways and public transport hubs. In alignment with the Strategy, the Proposed Development will facilitate a connected greenway network that improves accessibility, reduces car dependency, and enhances tourism and recreation opportunities while delivering climate and health benefits.

3.3.6.1 Greater Dublin Area Cycle Network Plan (2022)

In January 2023, the Greater Dublin Area (GDA) Cycle Network Plan was adopted as part of the GDA Transport Strategy 2022–2042. Covering all seven local authorities in the GDA -Dublin City, South Dublin, Dun Laoghaire-Rathdown, Fingal, Meath, Kildare, and Wicklow, the plan outlines a comprehensive cycling infrastructure. It defines three interconnected networks:

- Urban Cycle Network: Includes primary, secondary, and feeder routes within urban areas.
- Inter-Urban Cycle Network: Connects urban networks and links to key transport hubs such as airports and ports, incorporating parts of the National Cycle Network.
- Green Route Network: Focuses on recreational and tourist cycling routes.

The plan ensures a consistent and logical approach to cycling infrastructure across the region.
The Proposed Development is identified in the Greater Dublin Area Cycle Network Plan (2022) for Dublin Northwest (Figure 3.4). It is described as a strategic project that interconnects County Dublin with County Kildare along the royal canal. The Proposed Development will play an anchoring role in the cycle network within the GDA and will support the provision of Urban Cycle Network along Primary Radial, Orbital and Secondary routes.

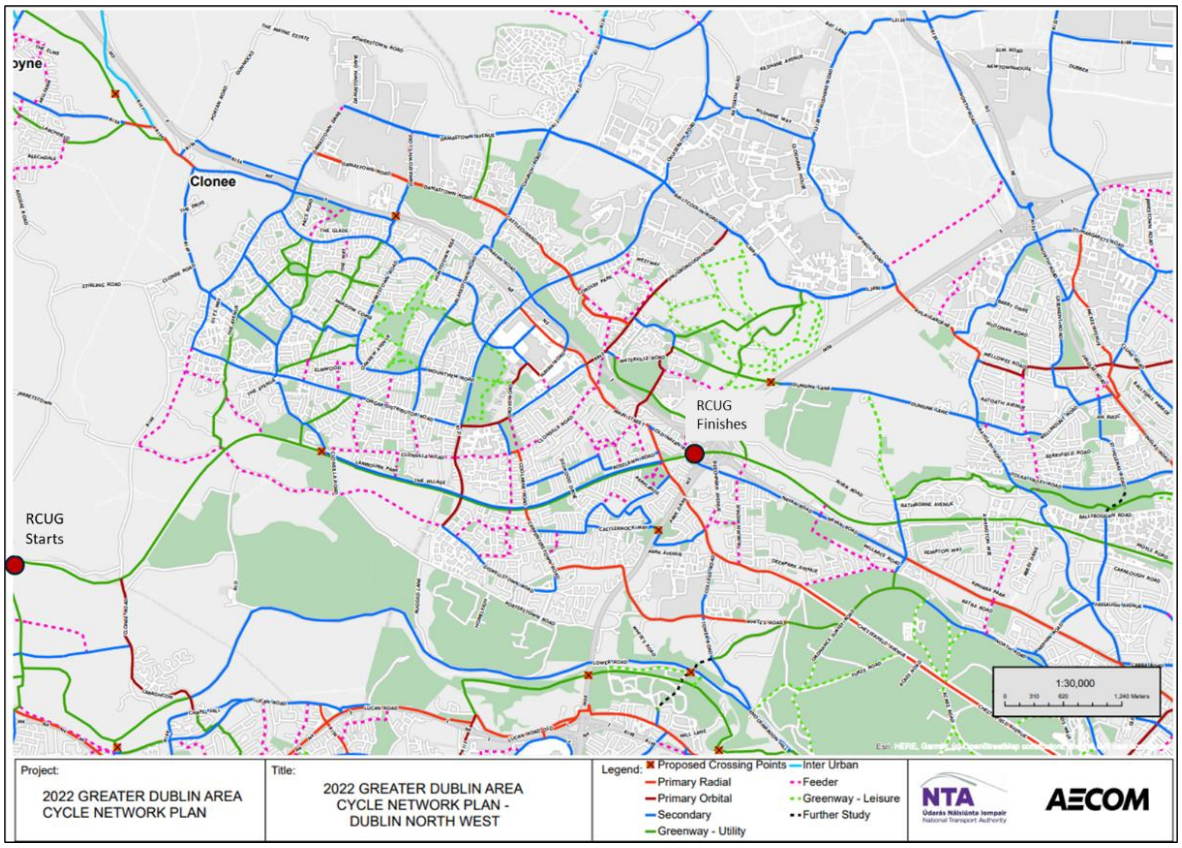

Figure 3-4 Proposed Development in GDA CNP

3.3.7 NTA Active Travel Programme 2026

The National Transport Authority (NTA) allocated €290 million in 2026 under its Active and Sustainable Transport Investment Programme to support the delivery of walking and cycling infrastructure by local authorities throughout Ireland. The programme provides funding for a wide range of active travel projects and forms part of the Government's wider investment in sustainable transport and climate action. The NTA notes that the Active Travel Programme is underpinned by the objectives of the Climate Action Plan, including increasing the share of journeys undertaken by walking, cycling and public

transport and facilitating a transition towards lower-carbon modes of transport. Funding allocations to local authorities within the Greater Dublin Area, including Fingal County Council, Dublin City Council and South Dublin County Council, support the continued development of strategic active travel infrastructure and regional greenway connections. The proposed Royal Canal Urban Greenway is consistent with the objectives of the programme by delivering a strategic walking and cycling corridor that enhances connectivity, supports modal shift and contributes to the expansion of the regional active travel network.

3.3.8 National Physical Activity Framework 2024-2040

The National Physical Activity Framework 2024-2040 establishes a long-term vision of creating the most physically active population in Europe by 2040 through the provision of enabling environments that support active lifestyles across all age groups and sectors of society. The Framework recognises that increasing physical activity delivers significant physical, mental, social, economic and environmental benefits, and highlights the important role of the built environment, transport infrastructure and public spaces in facilitating active everyday behaviours. It promotes a cross-sectoral approach to increasing participation in physical activity, including through active travel, community recreation and improved access to safe, attractive and inclusive infrastructure for walking and cycling.

Of particular relevance to the Proposed Development, the Framework identifies walking and cycling for transport, recreation and leisure as important forms of physical activity and emphasises the need to create "active environments" that encourage people to incorporate physical activity into their daily lives. The Framework also highlights the role of active travel infrastructure in supporting public health, reducing sedentary behaviour, improving mental wellbeing, encouraging social inclusion and contributing to wider sustainability objectives. The Proposed Development supports these objectives through the provision of a high-quality, accessible and safe active travel corridor that will facilitate both recreational and commuter journeys, improve opportunities for physical activity, enhance connectivity between communities and public transport services, and contribute to healthier and more sustainable travel patterns across the study area.

3.4 County/ Local Area Policies

3.4.1 Fingal County Development Plan 2023 - 2029

The Fingal County Development Plan 2023–2029 (‘The Plan’) sets out a strategic framework for sustainable development in Fingal, focusing on healthy placemaking, climate action, and integrated communities. It envisions Fingal as a network of vibrant urban settlements and rural areas connected by green infrastructure, including greenways, parks, and open spaces. The Plan is underpinned by the following cross cutting core themes which the Proposed Development makes a strong contribution to:

- Climate action,
- Healthy place-making and sustainable development,
- Social inclusion;
- High-quality design;
- Resilience.

The Plan sets out interlinked strategic objectives to support the cross-cutting themes. An overview of relevant strategic objectives which have guided the planning and design of the proposed greenway and to which the Proposed Development directly contribute is provided below:

- Strategic Objective 2: Continue the development of a network of **well-serviced, well-connected, sustainable neighbourhoods** which have a range of facilities, a choice of tenure and universally designed adaptable house types, promote social inclusion and integration of all minority communities.
- Strategic Objective 5: Protect the unique character of Fingal. Support and facilitate revitalization and consolidation of our towns, urban and rural villages and neighbourhoods, **through**

placemaking and public realm initiatives, which encompasses a multi-faceted approach to planning, design and management.

- Strategic Objective 7: Ensure the highest quality of public realm and urban design principles are applied to all new developments, ensuring developments contribute to a positive **sense of place and local distinctiveness of an area and facilitate the universal design approach into all developments.**
- Strategic Objective 9: Reduce **car dependency and promote and facilitate sustainable modes of transport. Prioritize walking, cycling and public transport,** while supporting an efficient and effective transport system.
- Strategic Objective 11: **Protect, enhance and connect areas of natural heritage, green infrastructure and open space for the benefits of quality of life**, biodiversity, protected species and habitats, while having the potential to facilitate climate change adaptation and flood risk measures.
- Strategic Objective 13: Continue to **support the development of the tourism industry** in the County and work to sustain Fingal as a high quality and competitive tourism destination.

The plan highlights greenways as multifunctional corridors that support walking and cycling, reduce car dependency, and enhance tourism. They are also intended to serve as ecological corridors, improving habitat connectivity and contributing to climate resilience. Strategic objectives include safeguarding existing greenway routes, delivering new ones as part of the Greater Dublin Area Cycle Network, and integrating them with public transport and local amenities.

In Chapter 9, **Green Infrastructure and Natural Heritage**, the Fingal Development Plan 2023-2029 recognises greenways as important components of the County's green infrastructure network, providing benefits for active travel, recreation, biodiversity and ecological connectivity. Objectives GINH09 and GINH030 set out requirements for greenway developments to contribute to biodiversity net gain.

The Plan supports the expansion of Fingal's greenway network to strengthen connections between towns, villages, communities, parks, open spaces and other natural amenities, while promoting linkages with adjoining counties, including Kildare and Meath. Greenways are identified as multifunctional corridors that support sustainable mobility, enhance access to recreational opportunities, contribute to climate resilience and strengthen the integration of ecological networks throughout the County.

Additionally, in relation to Climate Action, there is a strong onus on a low carbon economy which the Proposed Development directly facilitates:

> *"Given the importance of climate change, climate action is included as an overarching and cross-cutting theme across this Plan in line with International, National and Regional policies and objectives. Chapter 5 Climate Action details Fingal's position in relation to this key issue, in terms of a policy approach to the transition to a **low carbon** economy and to Fingal becoming climate resilient, with a strong emphasis on reduction in energy demand and emissions, through a combination of effective mitigation and adaptation responses to climate change."*

The Proposed Development includes the construction of 8.1km of greenway stretching from the Kildare County Boundary to the Old Navan Road (near the 12th lock). The development will encourage and facilitate more active modes of travel (walking and cycling) and will therefore align directly with the core theme of Climate Action in the Plan as set out above.

Land Use Zoning

The full route of the Proposed Development is predominantly designated as 'OS-Open Space' land use zoning, the objective of which is to '*Preserve and provide for open space and recreational amenities*'.

Permitted in principle uses set out for OS areas include 'community facility', 'open space' and 'recreational/sports facility'. The Proposed Development aligns with the interpretation of all of these uses in providing a new sustainable mobility route available for walking, cycling, and general recreation and amenity.

Figure 3.5 shows the interaction with land-use zonings along the route (please refer to Appendix 3.1 for zoning map also and Chapter 17 for more details in land use zoning). While the route is predominantly located within the OS zoning, small sections intersect lands zoned **GB – Green Belt**, **RA – Residential Area** and **RS – Residential**. Table 3.3 outlines the relationship between the Proposed Development and the relevant zoning objectives. A more detailed assessment of land use zoning is provided in Chapter 17 of this EIAR - *Material Assets: Land Use and Property*.

The lands surrounding **Section 1** of the Proposed Development are characterised predominantly by **OS – Open Space**, **GB – Green Belt** and **HA – High Amenity** zoning designations. Lands to the south-east are zoned **HA – High Amenity**, while lands adjoining the northern bank are zoned **GB – Green Belt**. This area also falls within the Barnhill Local Area Plan (LAP 13A).

The lands surrounding **Section 2** are predominantly zoned **OS – Open Space**, with **RA – Residential Area**, **RS – Residential** and **TC – Town and District Centre** zonings located on adjoining lands. The southern side of the route interfaces with the Kellystown Local Area Plan (LAP 13B), while part of the section also adjoins the Hansfield Strategic Development Zone (SDZ).

The lands surrounding **Section 3** are also predominantly zoned **OS – Open Space**, with the adjoining lands largely designated for residential development.

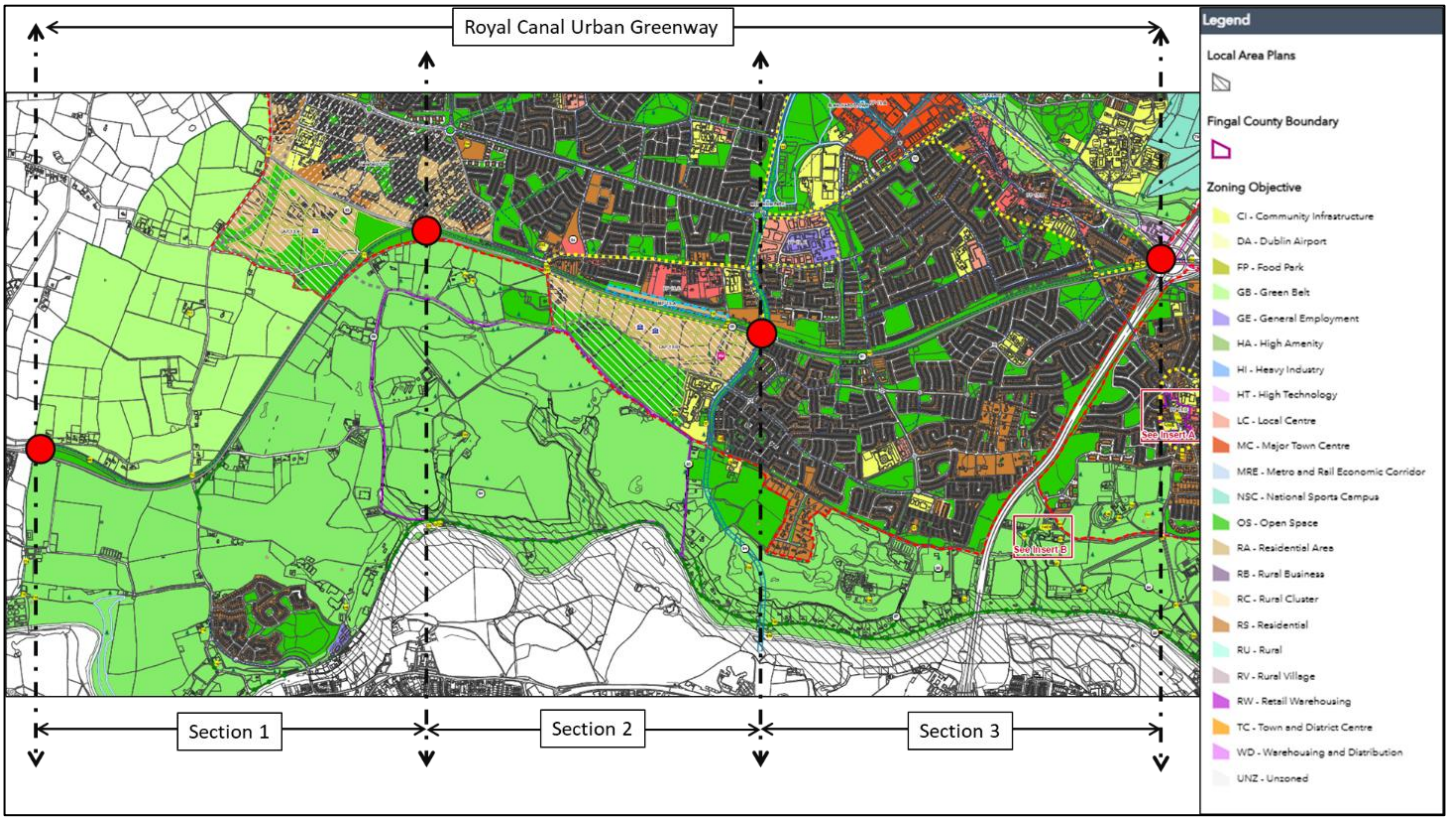

Figure 3-5 Zoning Map as per Fingal Development Plan 2023-2029 (Section 1 to Section 3)

Table 3-3 ***Interactions with adjoining land uses***

Land Use Zoning Interactions Fingal County Development Plan 2023 - 2029		
Zoning Category	**Objective**	**Proposal**
Open Space	OS	The majority of the Proposed Development is located within lands zoned OS – Open Space, the objective of which is to preserve and provide for open space and recreational amenities. The Greenway represents an open space, recreation and active travel use that is inherently compatible with this zoning designation. By enhancing accessibility to the Royal Canal corridor, improving opportunities for walking and cycling, and strengthening the area's green infrastructure network, the Proposed Development directly supports and advances the objectives of the zoning designation. The proposal will therefore contribute positively to the recreational, amenity and environmental value of the corridor and is fully consistent with the OS zoning objective.
Greenbelt	GB	A small section at the start of Section 1 close to the boundary with Kildare County Council is located directly adjacent to and alongside the southern boundary of the Greenbelt zone, located near Allenswood. The Proposed Development is fully compatible with the existing green belt zone and will form a natural boundary between the green belt and high amenity zone uses alongside the canal and existing railway tracks.
High Amenity	HA	The Royal Canal is designated as a proposed Natural Heritage Area (pNHA) and represents an important ecological, landscape and recreational resource. While the Proposed Development does not pass directly through lands zoned HA (High Amenity), which are predominantly located within the south-eastern area surrounding RCUG Section 1, it has been designed in a manner that is consistent with the objective to protect and enhance areas of high amenity value.
Residential Area	RA	A small portion of the RCUG route in Section 1 passes through the RA zone, located near Hansfield Wood. The Proposed Development will support existing and future residential communities by providing high-quality active travel and recreational infrastructure along the Royal Canal corridor. The Greenway will enhance pedestrian and cycle connectivity, improve accessibility to local services and public transport, and provide a valuable recreational and amenity resource for residents. Accordingly, the proposal will contribute positively to residential amenity and support the sustainable development of lands zoned for residential use.
Residential	RS	The Proposed Development will support existing and future residential development by providing high-quality walking and cycling infrastructure, improved connectivity and enhanced access to recreational amenities. As such, the Greenway will contribute positively to residential amenity and is fully compatible with the objectives of residentially zoned lands.

The Proposed Development is consistent with Local Objectives 106, 110, 113 and 114, which seek to promote enhanced pedestrian and cyclist connectivity across the Royal Canal and the Dublin-Maynooth railway line in the vicinity of Granard Bridge, Castleknock, while prohibiting the provision of a road bridge

at this location. The scheme includes the delivery of a dedicated walking and cycling route through the Granard Bridge area, including a proposed greenway underpass and associated connections, thereby improving permeability and active travel connectivity across existing physical barriers.

Sustainable Mobility, Active Travel and other relevant Policies

The Proposed Development represents a key piece of strategic active travel and green infrastructure, delivering an integrated walking and cycling route along the Royal Canal corridor. The scheme will provide a safe, accessible and attractive alternative to private car travel, improve connectivity between existing and planned communities, enhance access to public transport, recreational facilities and local services, and support wider modal shift objectives. In addition to its transport function, the Greenway will strengthen the County's green infrastructure network, provide opportunities for biodiversity enhancement and ecological restoration, and contribute to the protection and enjoyment of the Royal Canal as an important recreational, heritage and environmental asset.

The proposed Development directly supports a broad range of active travel, green infrastructure, placemaking and heritage objectives set out in Development Plan. The scheme will provide a high-quality, safe and accessible walking and cycling corridor along the Royal Canal, thereby contributing to the delivery of an integrated pedestrian and cycling network in accordance with Policies CMP7, CMP8, CMP9 and CMP10.

The Proposed Development will improve connectivity between existing and planned residential communities, schools, employment areas, recreational destinations and public transport services, including rail stations and future public transport infrastructure, consistent with Objectives CMO6, CMO7, CMO8 and CMO13.

The Greenway will form part of Fingal's wider active travel and greenway network, contributing to strategic east-west connectivity between Dublin City, Fingal and County Kildare while supporting broader regional active travel objectives. The scheme will enhance permeability for pedestrians and cyclists, promote a modal shift towards more sustainable forms of transport, improve access to local services and amenities, and support tourism and recreation opportunities in accordance with Objectives CMO11 and CMO13.

The Proposed Development has also been designed as an integral component of the County's green infrastructure network, incorporating landscaping, habitat enhancement and sustainable drainage measures, where appropriate, in line with Objective CMO12, Policy GINHP25 and Objectives GINHO9 and GINHO30. The design process has sought to protect and enhance the environmental, ecological, landscape and heritage value of the Royal Canal corridor, while maintaining its function as a strategic recreation and biodiversity resource. The scheme includes measures to avoid, reduce and mitigate potential environmental effects and seeks to deliver biodiversity enhancement opportunities as part of the overall project.

The Proposed Development is also consistent with Objective HCAO49 and GIM Objective 9, which seek the protection and enhancement of the Royal Canal as a significant heritage, ecological and recreational asset. By providing a continuous active travel route along the canal corridor while respecting its historic character, natural heritage value and operational requirements, the scheme will strengthen the role of the Royal Canal as a key public amenity and green infrastructure resource. The proposal further supports local connectivity objectives, including improved pedestrian and cyclist links within Dublin 15 and between surrounding communities, recreational facilities and the Royal Canal corridor.

The Proposed Development also supports Policy CMP10 and Objective CMO10 through the provision of supporting cycling infrastructure, including cycle parking and associated active travel facilities at key access points, where appropriate. It has been developed having regard to current NTA and TII guidance and contributes to the delivery of a safe and attractive cycling environment.

Consistent with Objectives GINHO9 and GINHO30, biodiversity enhancement measures have been incorporated into the design process with a view to achieving biodiversity gains and strengthening the ecological function of the Royal Canal corridor.

Finally, the Proposed Development also contributes to the achievement of Local Objectives 107 and 111 through the enhancement of strategic pedestrian and cyclist connectivity between the Royal Canal and surrounding communities, amenities, recreational facilities and green infrastructure networks within the Dublin 15 area.

Local Plans

A number of local planning frameworks apply to lands adjoining or in close proximity to the Proposed Development. These include the Barnhill Local Area Plan, Kellystown Local Area Plan, Clonsilla Framework Plan, Old School House Clonsilla Masterplan and the Hansfield Strategic Development Zone (SDZ). Collectively, these plans seek to facilitate significant residential and mixed-use growth, supported by the delivery of high-quality walking and cycling infrastructure, enhanced connectivity, green infrastructure and accessible open space.

The Royal Canal Urban Greenway forms a key element of this wider strategic network and will support the delivery of the objectives of these local plans by improving connectivity between existing and planned communities, public transport nodes, employment areas, schools, community facilities and recreational destinations. The Proposed Development will also contribute to the creation of an integrated green infrastructure corridor along the Royal Canal, enhancing opportunities for active travel, recreation and placemaking across the area.

The principal local plans relevant to the Proposed Development include:

- **Barnhill LAP (LAP 13A)** – the western section of the Greenway passes through the Barnhill LAP area and supports the Plan's objectives relating to sustainable movement, recreation and green infrastructure.
- **Kellystown LAP (LAP 13B)** – the Greenway interfaces directly with the Kellystown growth area and will support planned development through the provision of strategic walking and cycling connections.
- **Clonsilla Framework Plan (LAP 13C)** – the Greenway is identified as an important active travel and placemaking asset within the wider canal corridor.
- **Hansfield SDZ** – sections of the route adjoin the Hansfield SDZ, where the Greenway will support sustainable transport objectives and improve connectivity between existing and future communities.
- **Old School House, Clonsilla Masterplan (2025) –** the Greenway will support the delivery of the Masterplan through enhanced active travel connectivity, improved accessibility and the provision of a high-quality recreational and amenity asset along the Royal Canal corridor.

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4 Alternatives Considered

4.1 Introduction

The Proposed Development will provide a shared pedestrian and cycle route along, and in places adjacent to, the Royal Canal towpath. The route will extend for approximately 8.1 km, connecting the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east to the Dublin-Kildare county boundary in the west. The recently completed Confey-Maynooth Greenway, approximately 7.5 km in length and opened in 2025, is located approximately 1 km further west at Confey Bridge. The Proposed Development is being promoted by Fingal County Council (FCC), in conjunction with the National Transport Authority (NTA) as funding body and Waterways Ireland as principal property owner.

The Proposed Development seeks to provide a continuous, safe and attractive active travel corridor that supports walking, cycling, recreation, tourism and sustainable transport objectives. It also forms part of the wider active travel network identified in the National Cycle Network Plan, the Greater Dublin Area Cycle Network Plan (GDA Cycle Network Plan) and the EuroVelo 2 route between Dublin and Galway.

This Chapter of the EIAR provides a description of the reasonable alternatives studied by FCC which are relevant to the Proposed Development, and the main reasons for the selection of the Proposed Development, taking into account the effects of the Proposed Development on the environment

Article 5(1)(d) of Directive 2011/92 EU as amended by Directive 2014/52/EU ("**EIA Directive**") requires:

"[A] description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment ".

Given that the Proposed Development is road development for the purposes of 50(1)(a)(iv) of the Roads Act, 1993 (as amended) ("**Roads Act**"), section 50(1B)(2)(b)(iv) of the Roads Act requires:

"*a description of the reasonable alternatives studied by the road authority or the Authority, as the case may be, which are relevant to the proposed road development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed road development on the environment*."

In addition, Annex IV to the EIA Directive provides that the EIAR shall include:

"*A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics and an indication of the main reasons of selecting the chosen option, including a comparison of the environmental effects.*"

Section 50(2)(b)(vi) of the Roads Act also requires the EIAR to include any additional information specified in Annex IV to the EIA Directive that is relevant to the specific characteristics of the proposed road development and to the environmental features likely to be affected.

In accordance with the above and theEnvironmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)("**EPA Guidelines**"), this chapter describes the reasonable alternatives studied which are relevant to the Proposed Development and its specific characteristics. It also sets out the main reasons for selecting

the preferred option, having regard to environmental effects, engineering feasibility, land use constraints, policy requirements and the objectives of the Proposed Development.

Accordingly, this chapter of the EIAR describes the reasonable alternatives studied and the main reasons for selecting the Proposed Development, taking into account the likely effects on the environment.

The alternatives considered in this EIAR are limited to those considered reasonable having regard to the objectives, nature, location and scale of the Proposed Development. Alternatives that would not meet the fundamental objective of providing a continuous active travel and recreational corridor along or adjacent to the Royal Canal, or which were not reasonably considered technically, environmentally or economically feasible, were not assessed further.

The alternatives considered during the development of the Proposed Development included:

- 'Do-Nothing' Alternative;
- Alternative locations and route alignments;
- Alternative layout and design solutions;
- Alternative construction approaches,
- Alternative mitigation measures; and
- Alternative transport solutions.

The assessment of alternatives has been proportionate to the nature, scale and objectives of the Proposed Development.

4.2 Scheme Objectives and Basis for Considering Alternatives

The Royal Canal links the River Shannon in County Longford to the River Liffey in Dublin City's Docklands. It passes close to a number of towns, including Mullingar, Kilcock, Maynooth and Leixlip before entering Fingal where it passes through the built-up areas of Clonsilla, Coolmine, Castleknock and Blanchardstown on its way towards the north City.

The Proposed Development comprises a shared pedestrian and cycle route adjacent to the Royal Canal towpath over an approximate length of 8.1 km which will tie in with the completed section of the Ashtown Greenway at 12th Lock/Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the county boundary in the west. The extent of the Proposed Development is illustrated in Figure 4.1**Error! Reference source not found.** below.

FCC's overall objective is to deliver a high quality, safe, attractive and environmentally sympathetic walking and cycling corridor serving Castleknock, Blanchardstown, Clonsilla, Coolmine and the wider Dublin 15 area that will tie in with the completed section of the Ashtown Greenway at 12th Lock/Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the county boundary in the west. The Proposed Development will encourage recreation while offering an attractive sustainable transport choice for school children and commuters, bringing significant environmental, economic and health benefits to the wider community.

The basis for considering reasonable alternatives is therefore defined by the objectives of the Proposed Development, to ensure that all alternatives considered are relevant to the Proposed Development and its specific characteristics. In that regard, reasonable alternatives were those capable of delivering a continuous active travel and recreational route, improving connectivity between communities and public transport, enhancing access to the Royal Canal amenity, supporting modal shift, and responding appropriately to environmental, engineering, land use, heritage and community constraints.

Alternatives which would not deliver a Royal Canal greenway, or which would not meet the active travel, recreation, connectivity and amenity objectives of the Proposed Development, were not considered reasonable alternatives for the purposes of this chapter.

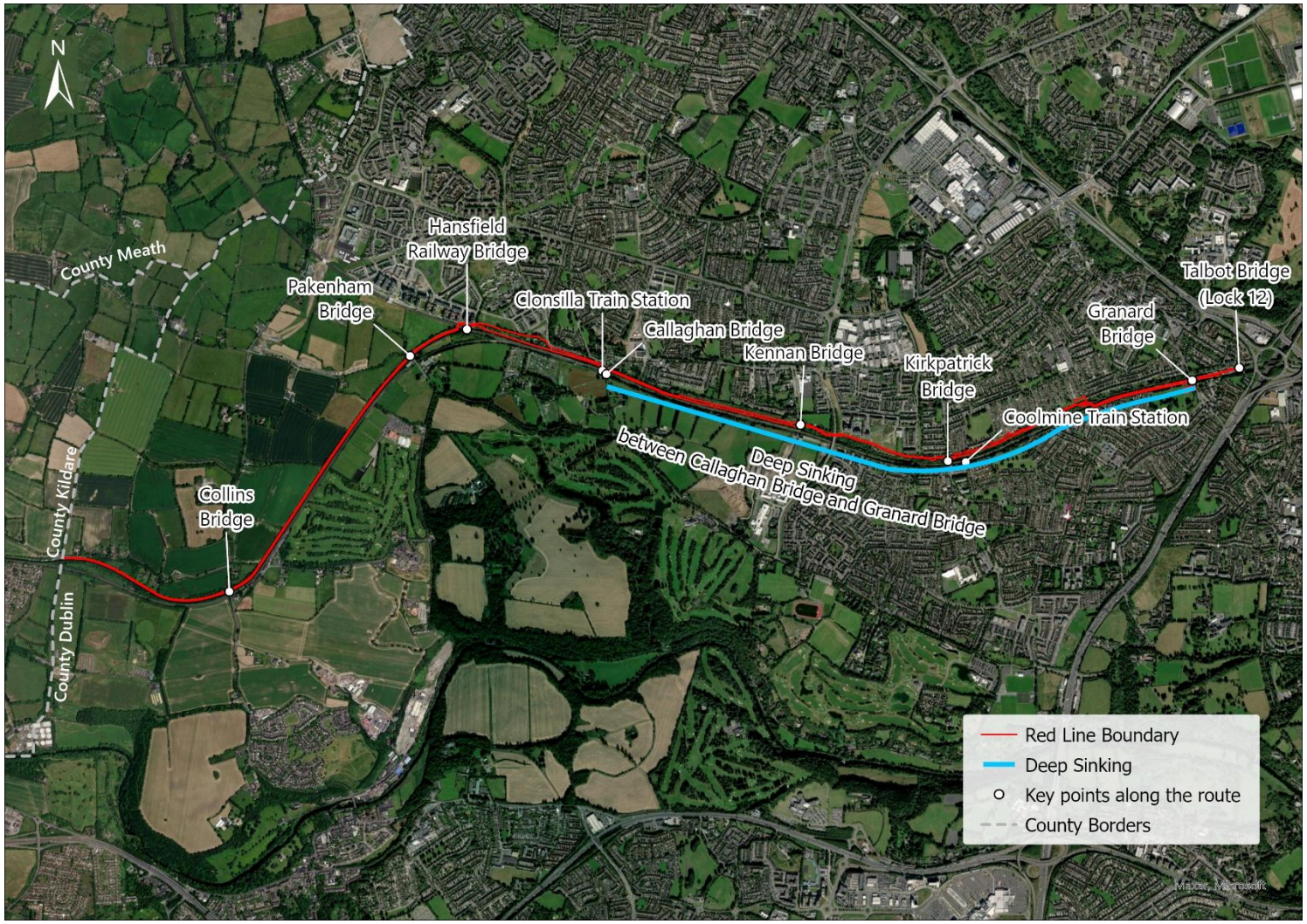


Figure 4.1 Proposed Development extents

4.3 Approach to the Assessment of Alternatives

4.3.1 Assessment Process and Information Sources

The assessment of alternatives was undertaken through an iterative process. It began with the 2012 feasibility and constraints assessment and continued through route options development, survey work, environmental review, design refinement, stakeholder engagement and non-statutory public consultation. The process was used to identify reasonable alternatives, compare their relative merits and inform the selection and refinement of the Preferred Route Option.

Reasonable alternatives were identified by reviewing the physical and environmental constraints and opportunities within each section of the Study Area and considering the practicable means of providing a continuous pedestrian and cycle route. This included potential routes along either side of the Royal Canal, alternative alignments through adjacent lands, open spaces and residential areas, use of existing or planned pedestrian and cycle infrastructure, and alternative structural or engineering solutions where the towpath was constrained. The alternatives were developed through the Feasibility Report 2012, subsequent desktop studies, site inspections, surveys, engineering and environmental input, stakeholder engagement and public consultation. The reasonable alternatives identified through this process were then taken forward for comparative assessment and refinement.

The assessment was informed by the following:

- Royal Canal Greenway Feasibility Report (FCC, 2012)(the Feasibility Report 2012);
- Route options development and assessment between 2018 and 2023;
- Topographical surveys;
- Arboricultural and tree surveys;
- Habitat and ecological surveys, including surveys for relevant protected species;
- Ground investigations;
- Engineering feasibility and constructability review;
- Independent expert technical review;
- Engagement with FCC, the NTA, Waterways Ireland and other stakeholders;
- Consultation with An Garda Síochána and relevant consultees;
- Public feedback received during two rounds of non-statutory public consultation; and
- Environmental input from the relevant EIAR specialists.

This information was used to identify environmental, engineering, land use, access, safety and community constraints and to refine the route alignment, layout, design solutions and mitigation approach for the Proposed Development. The main stages in the assessment process are summarised below.

1) **The Feasibility Report 2012: prepared** by Atkins on behalf of FCC, this was a high-level feasibility, constraints and route options assessment for the upgrading of the existing Royal Canal towpath between the 12th Lock area and the Kildare County boundary. The study combined desktop assessment, site walkovers, stakeholder engagement and public consultation to identify key engineering, environmental and stakeholder constraints, assess route options, and establish the overall feasibility of the Proposed Development. The report identified significant constructability challenges along the “Deep Sinking”, a section of the Royal Canal between Callaghan Bridge and Granard Bridge where the canal passes through a deep cutting. This section is characterised by steep embankments, a narrow and constrained towpath, and the close proximity of the Dublin–Maynooth railway line along the southern side of the canal. The Deep Sinking, which is identified in Figure 4.1, presents particular engineering, environmental and access constraints for the provision of a continuous greenway. While potential approaches to addressing these challenges were considered, the detailed evaluation

and design of engineering solutions were outside the scope of the study. Overall, the report provides a robust understanding of the route characteristics, key constraints and preferred route corridor, forming an important foundation for the subsequent design development and environmental assessment of the scheme.

2) **Route Options Assessment and Surveys (2018–2023):** Building upon the findings of the Feasibility Report 2012, route options development, assessment and design refinement was undertaken between 2018 and 2023. This process was informed by a combination of desktop studies and on-site surveys, including topographical surveys, tree surveys, ground investigations (GI), habitat surveys, breeding waterbird surveys, terrestrial mollusc surveys, and subsequent ecological surveys for otter, badger, bats, breeding birds, grassland habitats and pollinator activity. The purpose of these investigations was to identify environmental, engineering and land-use constraints, assess route alternatives and support the progressive refinement of the design of the Proposed Development.

3) **Stakeholder and Community Engagement (2018–2023):** Ongoing engagement was undertaken with key stakeholders, landowners, statutory bodies, local communities and interest groups throughout the route selection process. This engagement, together with consultation with An Garda Síochána and feedback received during public consultation periods, informed the identification, assessment and refinement of route options and design solutions.

4) **Draft Emerging Preferred Route (2018–2019):** Drawing on the route options assessment, stakeholder and community engagement, and the availability of additional survey and design information, a Draft Emerging Preferred Route was developed. This represented the first consolidated route proposal and formed the basis for wider public consultation.

5) **First Non-Statutory Public Consultation (February–March 2019):** A first round of non-statutory public consultation was undertaken on the Emerging Preferred Route between 25 February 2019 and 27 March 2019. Feedback received during this consultation informed subsequent design development and route refinement.

6) **Preferred Route Option Development (April 2019–May 2021):** Following the first public consultation, the Emerging Preferred Route was further developed and refined. This process was informed by public feedback, ongoing stakeholder and community engagement, consultation with An Garda Síochána, additional topographical surveys, ground investigations, ecological studies and an independent expert peer review undertaken by GDG Consultants. A number of route alternatives and engineering solutions were considered during this stage, resulting in the evolution of the Preferred Route Option.

7) **Second Non-Statutory Public Consultation (May–July 2021):** A second round of non-statutory public consultation on the Preferred Route Option was undertaken between 25 May 2021 and 7 July 2021. The consultation provided stakeholders and members of the public with an opportunity to review the updated design and provide further feedback.

8) Finalisation of the **Preferred Route Option (2021–2023):** Drawing on feedback from the public consultation process, continued stakeholder engagement, and the availability of further survey and design information, the Preferred Route Option has been refined and finalised. This process included consideration of additional ecological, arboricultural and engineering information, particularly in the Hansfield area and other environmentally sensitive sections of the route, together with the development of appropriate mitigation measures. The resulting Preferred Route Option represents the culmination of the route selection process undertaken between 2018 and 2023.

The assessment was iterative in nature. Route options and design alternatives were reviewed and refined as additional survey data, technical information, stakeholder feedback and consultation responses became available.

The progression from the Draft Emerging Preferred Route to the Preferred Route Option was informed by public consultation feedback, ongoing engagement with stakeholders and statutory consultees, topographical surveys, ground investigations, independent expert peer review, arboricultural assessments and ecological surveys.

Environmental specialists worked with the engineering design team throughout the route development process to identify constraints, avoid or reduce potential effects where practicable, and inform the selection and refinement of the preferred route and associated mitigation measures.

4.3.2 Assessment Criteria and MCA Methodology

The Route Options Assessment was undertaken between 2018 and 2022 in accordance with the Common Appraisal Framework (CAF), which was the applicable national transport appraisal guidance at the time. A Multi-Criteria Analysis (MCA) approach was used to compare route alternatives against a consistent set of criteria, including economy, integration, safety and environment. The outcome of this process informed the identification of the Emerging Preferred Route and subsequently the Preferred Route Option, which was approved by the NTA in March 2023.

In June 2023, the Department of Transport introduced the Transport Appraisal Framework (TAF), which superseded the CAF as the national framework for the appraisal and evaluation of transport projects, programmes and policies. The TAF introduced updated guidance, governance arrangements and appraisal requirements across the project lifecycle. However, it retained the core principles of evidence-based option assessment and proportionate appraisal.

The principal differences between the CAF and TAF relate to the structure of the appraisal process, strategic alignment, climate action, monitoring and evaluation, and the integration of appraisal throughout the project lifecycle. The introduction of TAF did not invalidate route options assessments completed under the CAF.

As the Route Options Assessment, public consultation process and selection of the Preferred Route Option were completed prior to the introduction of the TAF, and the Preferred Route Option received NTA approval in March 2023, the assessment remains valid and relevant. The route selection process was undertaken in accordance with the national guidance in force at the time and was informed by engineering, environmental, stakeholder and public consultation inputs. On that basis, it was not considered necessary to repeat the earlier route options appraisal under TAF, and the Preferred Route Option continues to provide an appropriate basis for subsequent design development, environmental assessment and statutory approval of the Proposed Development.

The MCA provided a structured basis for comparing reasonable alternatives. It did not replace professional judgement or the environmental assessments undertaken by the relevant specialists. Instead, it was used as a decision-support tool to identify the relative advantages and disadvantages of each route option and to support the selection of the preferred option.

4.3.2.1 Route Option Assessment Methodology

The 'Common Appraisal Framework for Transport Projects and Programmes' published by the Department of Transport, March 2016 (updated October 2021), requires schemes to undergo a MCA under the following criteria: -

- Economy;
- Integration;
- Physical Activity;
- Accessibility and Social Inclusion;
- Safety; and
- Environment.

An appreciation of constraints and opportunities within the Study Area as well as the defined project objectives, led to the establishment of project-specific route options assessment criteria. These were tailored to have commonality to the CAF guidelines. The two criteria described below have been excluded from the analysis for the described reasons.

The physical activity criterion relates to the health benefits derived from using different transport modes. The Proposed Development options under consideration relate to the same modes of travel (walking and cycling). As such, this criterion will not produce any relative differences between the options. Therefore, this criterion will not be applied in the MCA for the Proposed Development.

However, the physical activity benefits associated with the Proposed Development have been quantified as part of the Cost–Benefit Analysis included in the Business Case submitted as part of this planning application. Further information on potential effects on population and human health is provided in Chapter 13 'Population and Human Health' .

The Accessibility and Social Inclusion criterion, relates to the level of priority that should be given to benefits that accrue to those suffering from social deprivation, geographic isolation and mobility and sensory deprivation. A review of the Pobal Deprivation Index Map indicated that the majority of areas within the Study Area along the Royal Canal had similar affluence. As such, this criterion will not produce any relative differences between the options. Therefore, this criterion will not be applied in the MCA for the Proposed Development.

A summary of the assessment criteria and sub-criteria for the options assessment process is shown in Error! Reference source not found..

Table 4.1 Summary of the assessment criteria and sub criteria for the options assessment process

Assessment Criteria	Assessment Sub-Criteria
1. Economy	1a. Capital Cost
	1b. Constructability
	1c. Quality of Service
2. Integration	2a. Cycling Network Integration
	2b. Traffic Network Integration
	2c. Potential Impact on Rail Network
	2d. Potential Impact on Canal Users
	2e. Potential Impact on Communities/Residents
3. Safety	3a. Road Safety
	3b. Pedestrian Safety
4. Environment	4a. Archaeology and Cultural Heritage

	4b. Architectural Heritage
	4c. Flora & Fauna
	4d. Soils, Geology & Hydrology
	4e. Landscape and Visual
	4f. Land Use Character

The assessment criteria are organised under four main headings.

Economy comprises three sub-criteria:

- **Capital Cost** – for which estimates consist of both the indicative infrastructure costs and land acquisition costs.
- **Constructability** - ease at which the Proposed Development option can be constructed.
- **Quality of service** - which analyses the route in regards of Segregation & Traffic Volumes, Comfort, Directness and Attractiveness.

Integration includes five sub-criteria:

- **Cycle Network Integration** - practicality of achieving greenway segregation and potential to integrate high quality cycle facilities.
- **Traffic Network Integration** - expected traffic impact of each option on the routes.
- **Potential Impact on Rail Network** - potential impact each option has on the Rail network.
- **Potential Impact on Canal Users** - potential impact each option has on canal users such as anglers, walkers and barges.
- **Potential Impact on Communities/Residents** - potential impact each route option has on communities and residents.

Safety comprises:

- **Road Safety** - the number of junctions along the route has been used as a proxy for road safety.
- **Pedestrian Safety** - safety of pedestrians within the Proposed Development.

For the **Environment** criterion the following sub-criteria were considered in the assessment:

- **Archaeology and Cultural Heritage, Architectural Heritage** – there is the potential for impacts on archaeological, architectural and cultural heritage when providing greenway infrastructure. The assessment had regard to Recorded Monuments and Protected Structures (RMPs), Sites of Archaeological or Cultural Heritage and on buildings listed on the National Inventory of Architectural Heritage adjacent to the corridor;
- **Flora and Fauna** - The provision of the greenway could have negative impacts on flora and fauna, for example, through construction of new infrastructure through green field sites;
- **Soils and Geology** - Construction of infrastructure necessary for the provision of the greenway has the potential to negatively impact on soils and geology,for example, through land acquisition and ground excavation. There is also the potential to encounter ground contamination from historical industries;
- **Hydrology** - The provision of the greenway infrastructure may include aspects (for example structures) with the potential to impact on hydrology;
- **Landscape and Visual** - Provision of the greenway infrastructure has the potential to negatively impact on the landscape and visual aspects of the area, for example, by the removal of front gardens or green spaces or the altering of streetscapes, character and features;
- **Land Use Character** - This criterion assesses the impact of an option on land use character, and measured impacts which would prevent land from achieving its intended use, for example, through land acquisition, removal of parking spaces or severance of land.

Each of the assessment criteria are described in further detail in the Route Options Assessment Main Report, January 2025 (Document Ref. p170239-Rep-001)(the Route Options Assessment Main Report) which is presented as part of this application.

4.3.2.2 Route Options Summary Table

The Scheme has been divided into three sections. The route options identified for each section were assessed using the MCA process described in Section 4.3.2.

Summary tables have been prepared to present the outcome of the appraisal of all route options for each section against the assessment criteria. These summary tables are included in the Route Options Assessment Main Report.

The detailed MCA assessments for the route options within each section (Sections 1–3) are provided in Appendices A–F of the Route Options Assessment Main Report .

For each assessment criterion, the route options were compared against each other using a five-point scale ranging from significant advantages to significant disadvantages. For illustrative purposes, the five-point scale is colour coded in Table 4-2, with advantageous routes graded dark green and disadvantaged routes graded red.

Table 4.2 Route Options Colour Coded Ranking Scale

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

The level of reporting varies across the three Sections, reflecting the relative importance of specific criteria in distinguishing between route options.

Following the individual assessments for each Section, an overall MCA table was prepared, summarising the performance of all options across the criteria.

The results of the MCA were then considered holistically to determine the preferred route.

No numerical weighting was applied to the four main criteria or their sub-criteria. The colour-coded rankings provide a comparative assessment rather than a points-based score, and the preferred option was selected through a holistic review of the differences between the options. In this EIAR, particular regard is given to the comparative environmental effects and to whether those effects can be avoided or reduced, while also considering safety, route quality, integration, constructability and land requirements.

4.3.3 Study Area Sections

The Study Area has been divided into three distinct sections as illustrated below in Figure 4.2:

- Section 1 – between the Kildare/Fingal County Council boundary line (Royal Canal Amenity Group) and Hansfield Railway Bridge (Ch. 0 – 3200).
- Section 2 – between Hansfield Railway Bridge and Kennan Bridge (Porterstown Road) (Ch. 3200 – 5300).
- Section 3 – between Kennan Bridge (Porterstown Road) and Talbot Bridge (Old Navan Road) (Ch. 5300 – 8100).

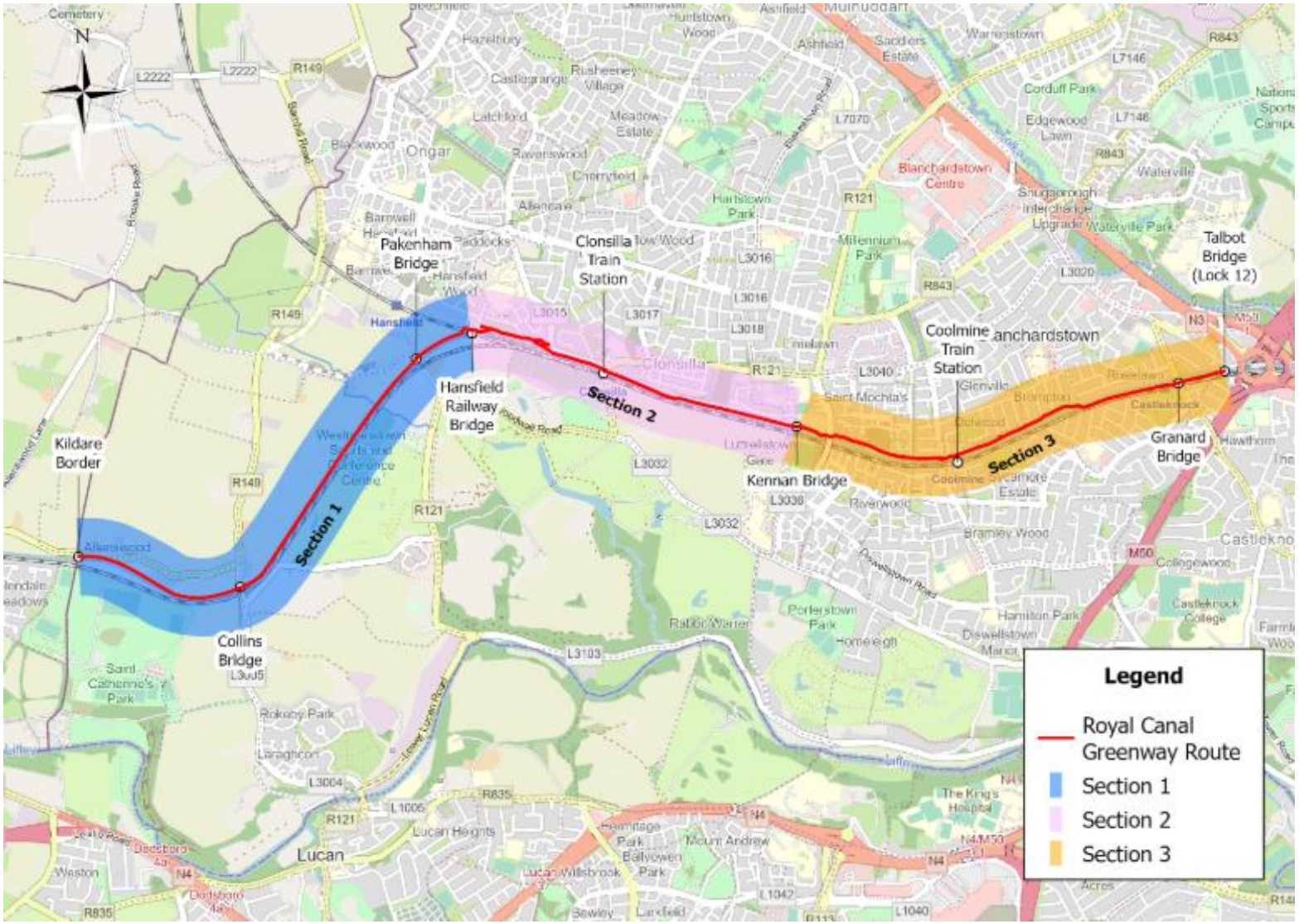


Figure 4.2 Proposed Development Sections

4.4 ‘Do-Nothing’ Alternative

With reference to the EPA Guidelines , the consideration of a 'Do- Nothing' Alternative provides a baseline against which the environmental, social, accessibility and economic benefits of the Proposed Development can be assessed.

The need for the Proposed Development arises from a range of international, national, regional and local policy objectives relating to active travel, sustainable mobility, climate action, recreation, tourism and healthy communities. The Royal Canal corridor currently provides an important recreational amenity and strategic linear corridor through Fingal and the wider Dublin Metropolitan Area. The Proposed Development also forms part of the wider active travel network identified within the National Cycle Network Plan, the GDA Cycle Network Plan and EuroVelo 2 (Further information in Chapter 2 'Background to the Scheme'). The route has a strategic function in connecting communities, employment areas, educational facilities, public transport services and recreational destinations while contributing to national objectives for increased levels of walking and cycling.

The 'Do-Nothing' Alternative assumes that the existing infrastructure would be retained and that only routine maintenance works would be undertaken. While localised improvements may be implemented over time by various stakeholders, no strategic investment would occur within the corridor and the existing route would continue to operate in its current form.

Under this scenario, pedestrians and cyclists would continue to use the existing towpath which varies considerably in quality and accessibility along its length. In many locations, the route is narrow, unsurfaced and constrained by existing topographical and infrastructural features. In particular, the section of the Deep Sinking between Kennan Bridge and Kirkpatrick Bridge comprises a narrow towpath within a deep canal cutting, with localised pinch points and limited opportunities for users to pass comfortably. Existing tree roots protrude through the towpath surface in several locations, creating trip hazards and reducing accessibility for users.



Figure 4.3 Deep Sinking" section: Existing towpath on the southern side of the canal between Kennan Bridge and Kirkpatrick Bridge (adjacent to the railway line)



Figure 4.4 Mature roots crossing the towpath

Accessibility to sections of the canal corridor is also constrained by the adjacent railway line, particularly between Kennan Bridge and Granard Bridge, where permeability between surrounding residential areas and the canal corridor is limited. This reduces connectivity, passive surveillance and perceived security along the route and limits the potential for the corridor to function as an attractive and accessible active travel route.

It is noted that Waterways Ireland has recently completed maintenance and improvement works to approximately 700m of the towpath immediately west of Coolmine Railway Station. These works included restoration of the towpath surface to provide a more level walking route and modifications to the path alignment in constrained sections to improve user experience. While these works have improved local conditions for pedestrians and other users, they are limited in extent and do not address the wider issues of route continuity, accessibility, connectivity and capacity that have been identified along the corridor. Consequently, these works do not remove the need for the Proposed Development.

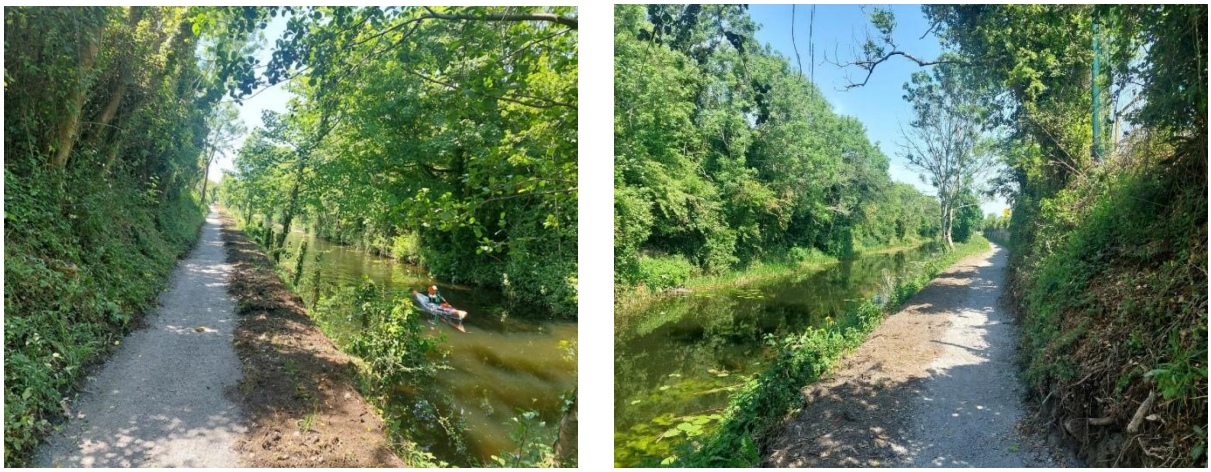


Figure 4.5 Improvements made to the towpath by Waterways Ireland

As a result, the existing towpath environment does not provide a continuous, safe, comfortable or attractive facility for pedestrians and cyclists. The latent demand for walking and cycling within the corridor is likely to remain suppressed due to existing infrastructure constraints, particularly within the more constrained sections of the route. The corridor would therefore continue to function primarily as a limited recreational route rather than a strategic active travel connection.

The likely consequences of the 'Do-Nothing' Alternative would include:

- Continued reliance on private car travel for short and medium-distance journeys;
- Reduced opportunities for modal shift towards walking and cycling;
- Failure to realise the strategic objectives of the National Cycle Network Plan, GDA Cycle Network Plan and EuroVelo 2;
- Reduced opportunities to support climate action objectives through sustainable transport;
- Reduced opportunities to improve public health and wellbeing through increased levels of physical activity;
- Continued accessibility constraints along the existing canal corridor;
- Reduced opportunities to improve connectivity between residential areas, schools, employment centres and public transport services; and
- Failure to maximise the recreational, tourism and economic potential of the Royal Canal corridor.

In the context of human health, the benefits associated with walking and cycling are well established and include improved cardiovascular fitness, reduced risk of chronic disease, enhanced mental wellbeing and increased levels of physical activity. Under the 'Do-Nothing' Alternative, opportunities to realise these benefits through increased participation in active travel would be significantly reduced.

The 'Do-Nothing' Alternative would also fail to realise the long-standing objectives of FCC and other stakeholders to develop the Royal Canal corridor as a strategic active travel and recreation asset. Furthermore, it would not facilitate the delivery of a continuous greenway corridor connecting communities, schools, employment centres, public transport nodes and recreational destinations, nor would it contribute to the development of the wider strategic active travel network identified in national and regional policy.

Under the ‘Do-Nothing’ Alternative, the environmental effects associated with the construction and operation of the Proposed Development would not occur. These include the effects identified in the relevant EIAR chapters in relation to Air Quality; Climatic Factors; Noise and Vibration; Biodiversity; Archaeological, Architectural and Cultural Heritage; Landscape and Visual; Land, Soils and Geology; Water; Population and Human Health; Traffic and Transportation; Waste Management; Utilities; Land Use and Property; and Interactions between Environmental Factors. In broad terms, the Do-Nothing Alternative would avoid construction-related emissions, noise, habitat and vegetation loss, ground disturbance, water-quality risks, landscape and heritage changes, land requirements, waste generation and construction traffic. However, the long-term benefits associated with improved walking and cycling infrastructure, accessibility, connectivity, recreation and public health would also not arise. Detailed assessments of these effects, including mitigation and residual effects, are provided in the relevant specialist chapters.

Accordingly, the 'Do-Nothing' Alternative would not address the identified need for the Proposed Development and would represent a loss of opportunity to deliver active travel, accessibility, safety, recreation, health, tourism and environmental benefits. For these reasons, the 'Do-Nothing' Alternative was not selected.

4.5 Alternative Locations and Route Alignments

Alternative locations and route alignments were considered along the Royal Canal corridor and, where necessary, through adjacent lands, open spaces, existing residential streets and existing or proposed active travel links. The route options assessment considered the relative performance of each option in terms of environmental effects, engineering feasibility, constructability, land acquisition, user safety, integration with the existing and planned network, impacts on canal users, impacts on communities and consistency with the objectives of the Proposed Development.

The assessment was undertaken by section to reflect the different constraints along the route. The preferred route was then assembled from the preferred option for each section.

4.5.1 Section 1

When assessing the route options for Section 1, generally there are 2 principal routes (Option S1-1 and Option S1-2) as shown in Figure 4.6**.**

Based on the identified constraints, two route options were selected for detailed MCA assessment:

- **Option S1-1** - Greenway along the northern side of the Royal Canal from the Kildare County Border (Royal Canal Amenity Group) to Hansfield Railway Bridge; and
- **Option S1-2** - Greenway along the northern side of the Royal Canal from the Kildare County Border (Royal Canal Amenity Group) to the proposed Kellystown Bridge which then switches to the southern side of the Railway Line.

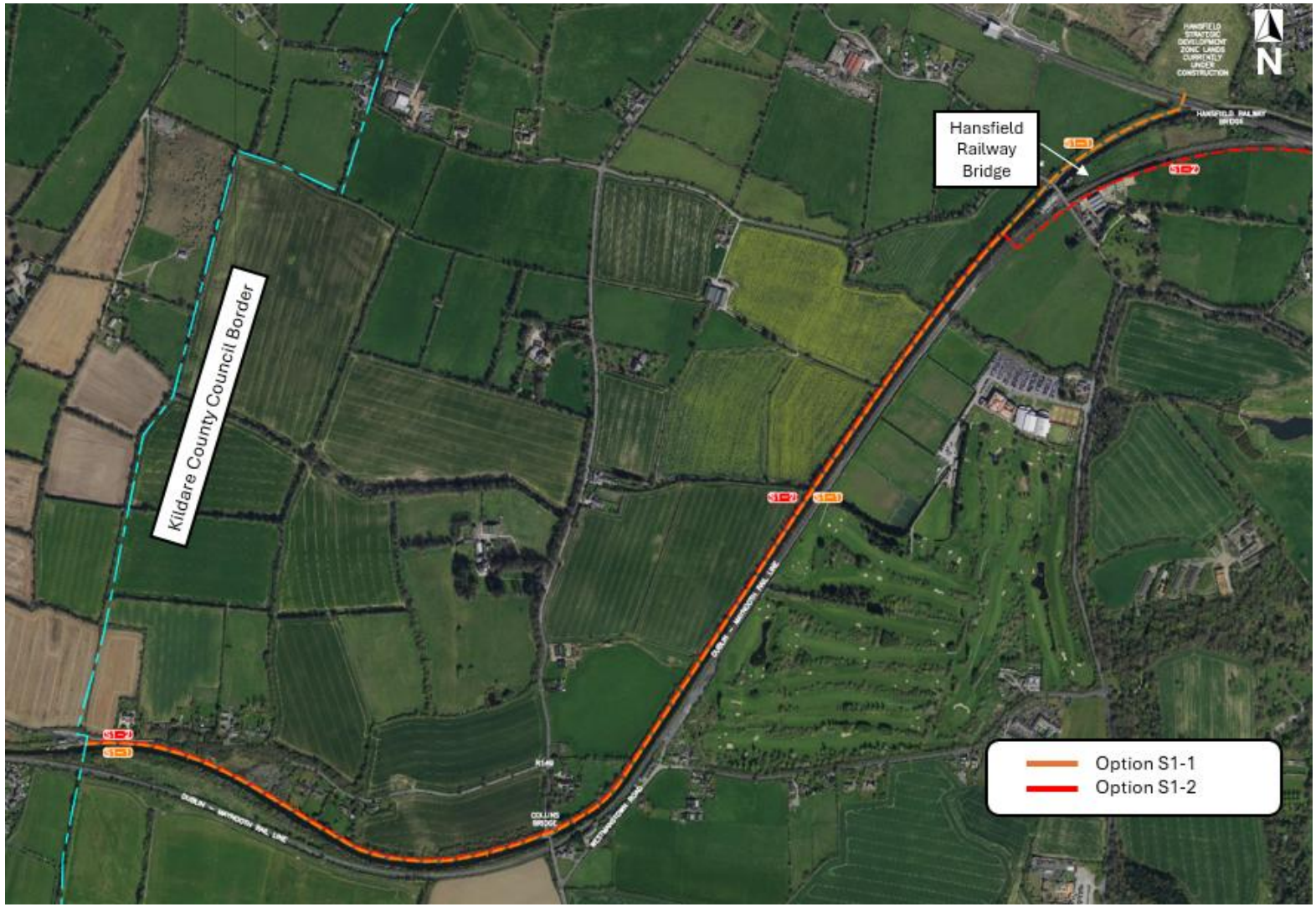


Figure 4.6 Section 1 Route Option

As outlined earlier, each route option was assessed using a MCA, including environment as one of the primary criteria, under which several sub-criteria were used to compare the options.

The relative ranking of route options against the scheme assessment sub-criteria are summarised in Table 4.3 below. The colour coding used in this table is explained in Table 4.2.

Table 4.3 Principal Route Options MCA Summary (Sub-Criteria)

Royal Canal Urban Greenway Route Options for section 1			
Appraisal Criteria	**Sub-Criteria**	**Option S1-1 Greenway on the Northern side of the Royal Canal.**	**Option S1-2 Greenway on the Northern side of the Royal Canal which then switches to the southern side of the Railway Line.**
1 Economy	1A Capital Cost		
	1B Constructability		
	1C Quality of Service		
2 Integration	2A Cycle Network Integration		
	2B Traffic Network Integration		
	2C Potential Impact on Rail Network		
	2D Potential Impact on Canal Users		
	2E Potential Impact on Communities/Residents		
3 Safety	3A Road Safety		
	3B Pedestrians Safety		
4 Environment	4A Archaeology and Cultural Heritage		
	4B Architectural Heritage		
	4C Flora & Fauna		
	4D Soils, Geology & Hydrology		
	4E Landscape and Visual		
	4F Land Use Character		

Key aspects of the assessment are summarised below:

- **Capital Cost**: Option S1-1 ranks highest. The main differentiator is land acquisition: Option S1-2 requires land from several farms and facilities on the proposed Kellystown Bridge, while Option S1-1 requires no land acquisition.

- **Constructability:** Option S1-1 is more straightforward to construct because it follows the existing northern towpath and avoids the additional bridge and railway-side works required by Option S1-2.
- **Quality of Service:** Option S1-1 provides the more direct and continuous towpath route. Option S1-2 diverts via Kellystown Bridge and runs alongside traffic for part of the route.
- **Cycle Network Integration:** Both options provide a continuous cycle route, but Option S1-1 follows the canal corridor more directly.
- **Traffic Network Integration:** Option S1-1 has less interaction with the traffic network. Option S1-2 would run alongside traffic on Kellystown Bridge.
- **Potential Impact on Rail Network:** Option S1-2 has greater potential to interact with the rail network due to its alignment at Kellystown Bridge and along the southern side of the railway. Option S1-1 avoids railway infrastructure.
- **Potential Impact on Canal Users**: Option S1-1 performs better as it follows the existing towpath and avoids direct effects on adjoining farms and landowners. Option S1-2 would require land from several farms, pass through a farmyard and potentially affect access and agricultural operations
- **Potential Impact on Communities/Residents:** No material difference was identified. The principal land-use difference is addressed under Land Use Character.
- **Road Safety**: Option S1-1 performs better because users are segregated from traffic, with interactions limited to controlled toucan crossings. Option S1-2 runs alongside traffic on Kellystown Bridge.
- **Pedestrian Safety:** Option S1-1 performs better because pedestrians remain segregated from traffic except at controlled crossings.

Environment

- **Archaeology and Cultural Heritage:** Both options rank neutral, as no material difference was identified.
- **Architectural Heritage**: Option S1-2 performs better as it may affect only Pakenham Bridge, whereas Option S1-1 may directly affect Collins Bridge and Pakenham Bridge.
- **Flora and Fauna**: Both options rank neutral, as no material difference was identified.
- **Soils, Geology and Hydrology**: Option S1-1 performs better as it largely follows the existing towpath and would involve less disturbance of undeveloped ground. Option S1-2 would pass through agricultural and greenfield lands, resulting in greater potential disturbance of soils.
- **Landscape and Visual**: Option S1-1 performs better because the new Kellystown Bridge forming part of Option S1-2 may have a visual effect on the Royal Canal.
- **Land Use Character**: Option S1-2 requires up to approximately 3,500 m² of land over 700 m and passes through a farmyard, potentially affecting one farm. Option S1-1 avoids private land acquisition.

4.5.1.1 Summary of route options assessment

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Error! Reference source not found. below.

The colour coding used in this table is explained in Table 4.2.

Table 4.4 Section 1 MCA Summary of the Main Criteria

Royal Canal Urban Greenway (main criteria) Route Options for section 1		
Appraisal Criteria	Option S1-1 Greenway on the Northern side of the Royal Canal.	Option S1-2 Greenway on the Northern side of the Royal Canal which then switches to the southern side of the Railway Line.
1 Economy		
2 Integration		
3 Safety		
4 Environment		

Based on the extensive assessment undertaken, route Option S1-1 offers more benefits over the Option S1-2.

Overall, Option S1-1 provides the better balance across the MCA. Its main advantages are lower land requirements and cost, a direct towpath alignment, segregation from traffic and avoidance of the railway interface. Although Option S1-2 performs better in architectural heritage terms, that advantage does not outweigh its additional land acquisition, traffic interaction, railway interface and landscape and visual effects.

This option proposes an unbound greenway route follows the existing towpath along the northern side of the Royal Canal from the Kildare County Council boundary line to Hansfield. The greenway will continue through the existing pedestrian underpass by Hansfield Railway Bridge.

Option S1-1 is the Preferred Route Option for the following reasons:

- It is more economical, as it does not require private land-take;
- It provides a better quality of service by maintaining a direct route along the canal towpath;
- It has less interaction with vehicular traffic than Option S1-2;
- It avoids potential interaction with Iarnród Éireann infrastructure;
- It performs better in safety terms because users are segregated from vehicular traffic, except at controlled crossings; and
- It has lower potential landscape, visual and land-use effects, although Option S1-2 performs better in architectural heritage terms.

4.5.2 Section 2

The approved Route Options Assessment included an assessment of the route options through the Hansfield subsection between Hansfield Railway Bridge and Hansfield Road. Following approval of the Preferred Route Option by the NTA in March 2023, a supplementary localised assessment was undertaken to account for the completion of pedestrian and cycle facilities through Piper's Court and St. Joseph's, together with updated land availability and access constraints and the physical constraints along the Royal Canal towpath. The supplementary assessment applied the same MCA methodology as the main Route Options Assessment and did not reopen the approved scheme-wide route selection. Figure 4.7 illustrates the extent of the Hansfield subsection within the overall Section 2 study area.



Figure 4.7 Appraisal sections within section 2

4.5.2.1 Assessment of Subsection 2

Based on the identified land availability, access and towpath constraints, four route options were selected for an initial MCA assessment to identify the preferred layout for incorporation into the subsequent assessment of the principal Section 2 route options.

- **Option 2-A**: Greenway along the northern towpath from Hansfield Railway Bridge to the existing maintenance access at Hansfield Road;
- **Option 2-B**: Greenway via the existing pedestrian/cycle routes through Piper's Court and St. Joseph's residential development to Hansfield Road;
- **Option 2-C**: Greenway along the towpath on the north of the Royal Canal from the Hansfield Railway Bridge for 250m, before diverting through the residential property between the towpath and Hansfield Road; and
- **Option 2-D**: Greenway via the existing pedestrian/cycle routes through the Piper's Court and St. Joseph's residential development, before diverting through the residential property between the towpath and Hansfield Road.

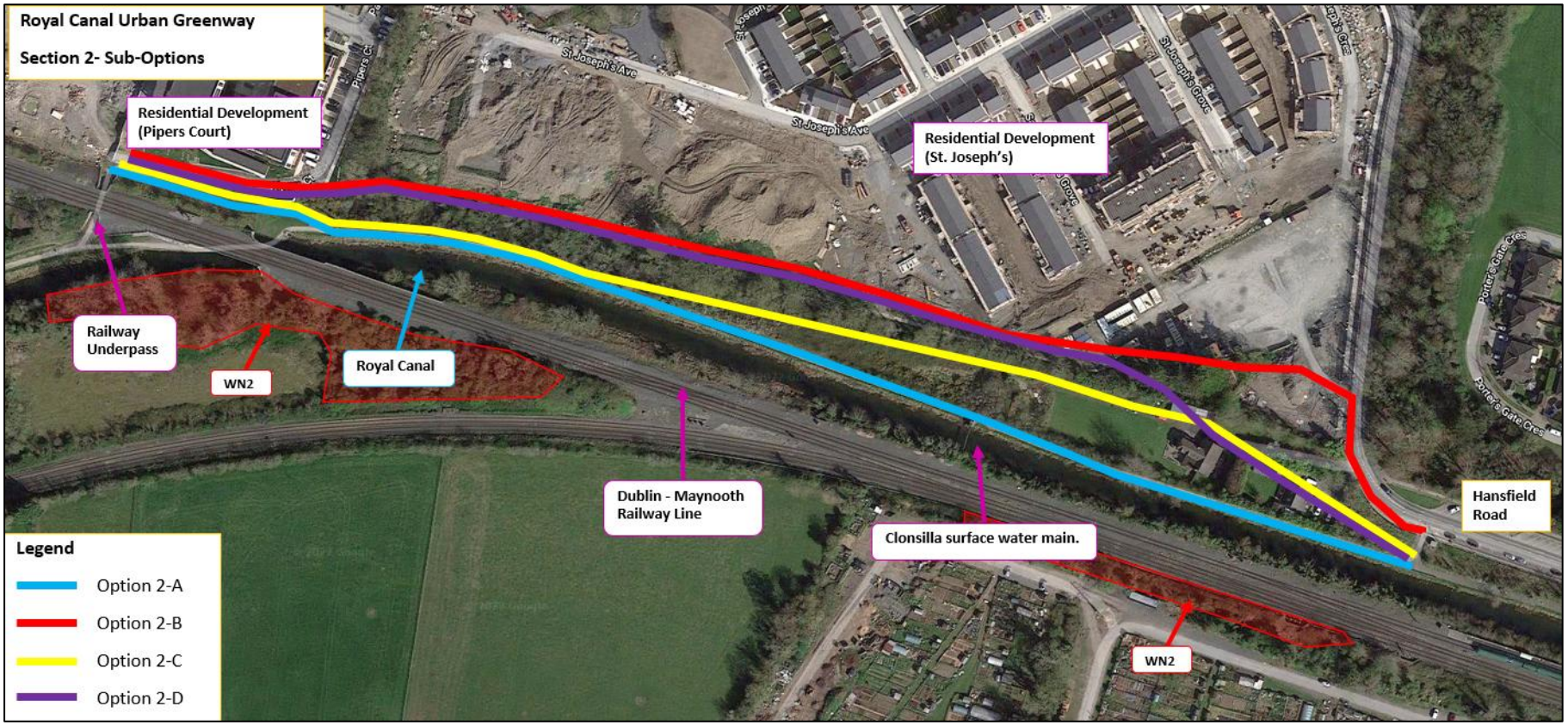


Figure 4.8 Subsection 2 Sub-Options

4.5.2.2 Subsection 2 Sub-options MCA

As outlined earlier, each route option was assessed using a MCA, including environment as one of the primary criteria, under which several sub-criteria were used to compare the options.

The relative ranking of route options against the Proposed Development assessment sub-criteria are summarised in Table 4.5 below.

The colour coding used in this table is explained in Table 4.2.

Table 4.5 Subsection 2 Route Options MCA Summary (Sub-Criteria)

Royal Canal Urban Greenway Section 2 – Sub-Options					
Appraisal Criteria	Sub-Criteria	Option S2-A Greenway via the existing towpath along the Northern embankment of the Royal Canal.	Option S2-B Greenway via two residential pedestrian/cycle routes on the northern side of the Royal Canal.	Option S2-C Greenway along the existing towpath on the northern embankment of the Royal Canal from the Hansfield Railway Bridge for 95m, greenway detours via residential property to Hansfield Road.	Option S2-D Greenway diverts via St. josephs pedestrian/cycle route along the Northern embankment.
1 Economy	1A Capital Cost				
	1B Constructability				
	1C Quality of Service				
2 Integration	2A Cycling Integration				
	2B Traffic Network Integration				
	2C Potential Impact on Rail Network				
	2D Potential Impact on Canal Users				
	2E Potential Impact on Communities/Residents				
3 Safety	3A Road Safety				
	3B Pedestrian Safety				
4 Environment	4A Archaeology & Cultural Heritage				
	4B Architectural Heritage				
	4C Flora & Fauna				
	4D Soils, Geology & Hydrology				
	4E Landscape & Visual				
	4F Land Use Character				

Key aspects of the Section 2 Sub-Options assessment are summarised below:

- **Capital Cost**: The main differences relate to land acquisition, use of existing infrastructure and towpath works. S2-A requires approximately 580 m of towpath widening but no land acquisition. S2-C has the highest cost because of residential land acquisition. S2-D requires more localised acquisition, while S2-B requires a short shared facility along Hansfield Road.

- **Constructability**: S2-A and S2-C perform least favourably because of constrained towpath widening. S2-B and S2-D make greater use of existing or proposed facilities, with works focused on tie-ins, access points and boundary treatments.
- **Quality of Service:** S2-A provides the highest quality of service as the most direct canal-side route. S2-B performs least favourably because it diverts through residential developments and includes a section adjacent to Hansfield Road. S2-C and S2-D also divert from the towpath but provide a more continuous and segregated route than S2-B.
- **Cycle Network Integration:** S2-A aligns most directly with the GDA Cycle Network Plan. The other options are less direct, although S2-D retains route continuity using existing and proposed active travel infrastructure.
- **Traffic Network Integration**: S2-B has the greatest interaction with the traffic network because of its Hansfield Road section, private accesses and tie-in arrangements.
- **Potential Impact on Rail Network:** No material comparative effect was identified.
- **Potential Impact on Canal Users:** S2-A performs best because it upgrades the existing towpath and provides improved facilities for canal users. Under S2-B, S2-C and S2-D, some cyclists may continue to use the more direct existing towpath, potentially increasing conflicts with walkers and anglers.
- **Potential Impact on Communities/Residents:** S2-B performs least favourably because it redirects greenway users through Piper's Court and St. Joseph's residential developments, increasing activity within residential areas, and affects residential accesses along Hansfield Road. S2-C and S2-D require residential land acquisition, with S2-C requiring the greatest land take.
- **Road Safety:** S2-B performs least favourably because of greater interaction with traffic, private accesses and the tie-in to an existing one-way cycle track. S2-A, S2-C and S2-D are largely segregated.
- **Pedestrian Safety:** S2-B performs least favourably because pedestrians would have greater interaction with traffic and private accesses. S2-A, S2-C and S2-D are largely segregated.

Environment

- **Archaeology and Cultural Heritage:** No material difference was identified and this sub-criterion did not determine the preferred option.
- **Architectural Heritage:** S2-A performs least favourably because towpath widening would introduce works within the protected Royal Canal corridor. S2-B, S2-C and S2-D have less direct effect on the canal.
- **Flora and Fauna:** S2-A may require the greatest tree removal. S2-B has limited effects, while S2-C and S2-D may require more localised vegetation removal.
- **Soils, Geology and Hydrology:** No material comparative difference was identified.
- **Landscape and Visual:** S2-A performs least favourably because towpath widening and tree removal would alter the enclosed canal corridor. Effects under S2-C and S2-D would be more localised, while S2-B mainly uses existing facilities.
- **Land Use Character**: S2-C performs least favourably because of residential acquisition. S2-D requires localised acquisition but avoids the greater towpath intervention of S2-A and the more extensive acquisition of S2-C.

4.5.2.3 *Summary of route options assessment*

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Table 4.6 below.

The colour coding used in this table is explained in Table 4.2.

Table 4.6 Section 2 Sub-Options MCA Summary of the Main-Criteria

Royal Canal Urban Greenway Section 2– Sub-Options				
Appraisal Criteria	Option S2-A Greenway via the existing towpath along the Northern embankment of the Royal Canal.	Option S2-B Greenway via two residential pedestrian/cycle routes on the northern side of the Royal Canal.	Option S2-C Greenway along the existing towpath on the northern embankment of the Royal Canal from the Hansfield Railway Bridge for 95m, greenway detours via residential property to Hansfield Road.	Option S2-D Greenway diverts via St. josephs pedestrian/cycle route along the Northern embankment.
1 Economy				
2 Integration				
3 Safety				
4 Environment				

Overall, Option S2-D provides the best balance for Subsection 2. Although S2-A is more direct, it requires the greatest intervention within the canal corridor. S2-B has the least environmental impact but performs less well for safety and directness, while S2-C requires the most residential land. S2-D provides a continuous, largely segregated route, makes practical use of existing infrastructure and limits canal-side works, vegetation removal and residential land acquisition.

Option S2-B performs best under the Environment criterion because it mainly uses existing pedestrian and cycle facilities, requiring the least intervention within the Royal Canal corridor and the least tree removal. However, it was not selected because it performs less favourably for safety and integration. The route would have greater interaction with traffic along Hansfield Road, including at private accesses and the tie-in to an existing one-way cycle track, and would be less direct because it diverts from the canal corridor. Option S2-D performs slightly less favourably environmentally due to localised land acquisition and potential vegetation removal. However, these effects are limited and less extensive than those associated with S2-A, which requires greater towpath widening, tree removal and intervention within the protected Royal Canal corridor. S2-D also avoids the greater residential land acquisition required for S2-C.

Option S2-D is therefore the preferred route for Subsection 2 because it provides the best overall balance, taking particular account of the comparative environmental effects, while also providing a safe, continuous and constructible route. The reasons are:

- It performs well in constructability and quality of service terms, as it uses existing and proposed pedestrian and cycle facilities, with construction works mainly required at tie-ins, access points and local boundary treatments.
- Safety: It provides segregated pedestrian and cycle facilities away from vehicular traffic along much of the route, including within Piper's Court and St Joseph's residential developments, and avoids the greater interaction with vehicular traffic where Option S2-B runs adjacent to Hansfield Road.
- It reduces direct intervention along the canal corridor compared with S2-A, thereby reducing potential effects on architectural heritage, trees, landscape character and visual amenity.

- It avoids the greater residential land acquisition associated with S2-C and the less favourable safety issues associated with S2-B.

Based on the MCA undertaken, Option S2-D was identified as the Preferred Route Option for sub-section 2 between Hansfield Railway Bridge and Hansfield Road.

4.5.2.4 Assessment of overall Section 2 Options MCA

Seven principal route options were identified for Section 2 between Hansfield Railway Bridge and Kennan Bridge (Porterstown Road). These options were developed having regard to the identified environmental, engineering, land use, access and constructability constraints. Additional options considered during the initial option development process were not regarded as reasonable alternatives where they were technically infeasible, could not provide a continuous and safe route, involved disproportionate environmental or land-use impacts, or did not meet the objectives of the Proposed Development. The seven options that passed this initial screening were selected for detailed MCA assessment. The western part of the Deep Sinking extends through Section 2 between Callaghan Bridge and Kennan Bridge and is characterised by limited towpath width. This constraint was carefully considered in the development of the options, which include solutions such as a cantilevered boardwalk and, at certain locations, diversions away from the canal towpath. The following seven route options were taken forward:

- ***Option S2-1*** – Greenway along the northern side of the Royal Canal from the Hansfield Railway Bridge to Kennan Bridge;
- ***Option S2-2*** – Greenway along the northern side of the Royal Canal from Hansfield Railway Bridge via Hansfield Road and Clonsilla Road;
- ***Option S2-3*** – Greenway along the northern side of the Royal Canal from Hansfield Railway Bridge via Hansfield Road, Clonsilla Road and via Weavers Walk;
- ***Option S2-4*** – Greenway route via Clonsilla Road, Weavers Walk and through both Lambourn Park and The Village green areas;
- ***Option S2-5*** – Greenway along the northern side of the Royal Canal from the Hansfield Railway Bridge to Kennan Bridge via Porterstown School House lands;
- ***Option S2-6*** – Greenway along the northern side of the Royal Canal from Hansfield Railway Bridge to Kennan Bridge via Weavers Walk and Porterstown School house lands; and
  Option S2-7 – Greenway on the Northern side of the Royal Canal from Hansfield Railway Bridge to Kennan Bridge through residential back gardens and Porterstown School house lands.

The principal route options for Section 2 are illustrated in **Error! Reference source not found.**.

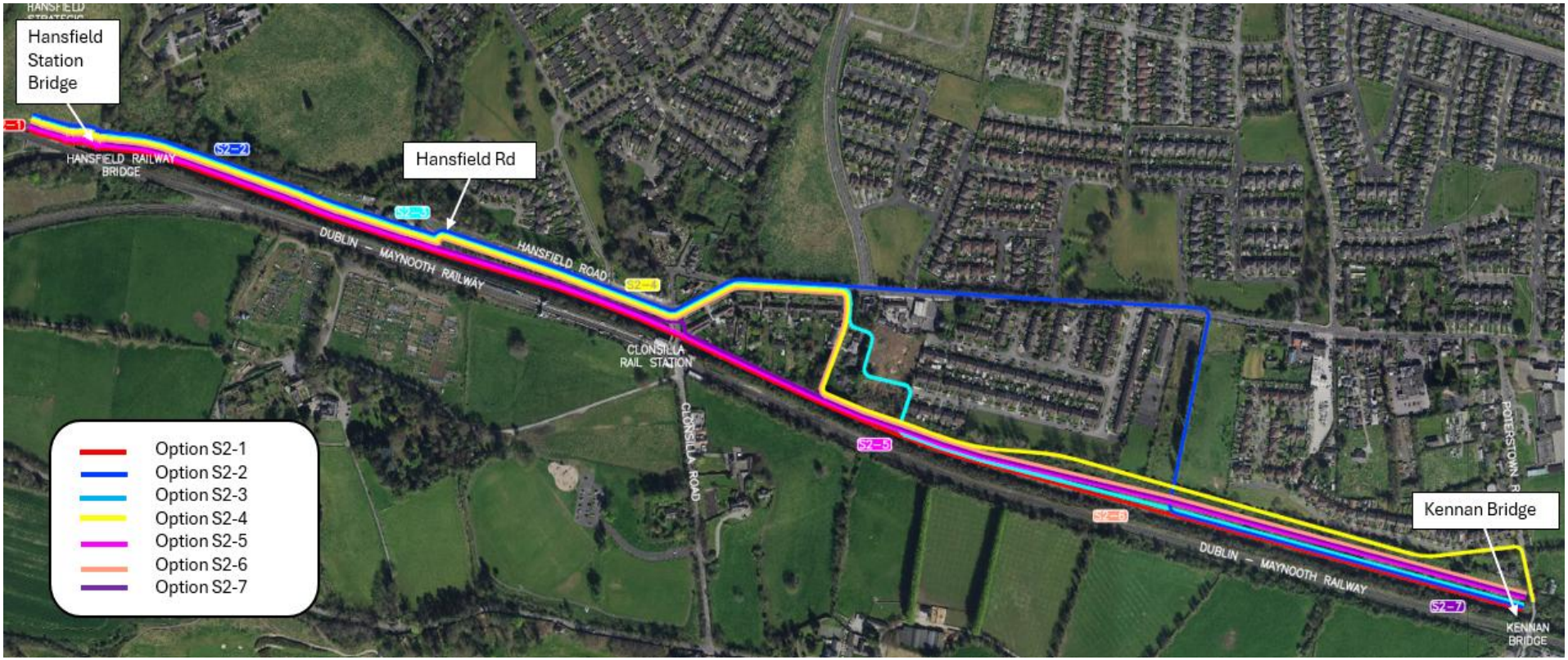


Figure 4.9 Overall Section 2 Route Options

4.5.2.5 *Route Options MCA*

The relative ranking of route options against the scheme assessment sub-criteria are summarised in Table 4.7 below.

The colour coding used in the MCA tables is explained in Table 4.2.

Table 4.7 Section 2 Principal Route Options MCA Summary (Sub-Criteria)

Royal Canal Urban Greenway Route Options for section 2								
Appraisal Criteria	Sub-Criteria	Option S2-1 Greenway on the Northern side of the Royal Canal.	Option S2-2 Greenway via land zoned as Town & District Centre and Clonsilla Road.	Option S2-3 Greenway Route via new development at Weavers Walk and Clonsilla Road.	Option S2-4 Greenway Route via Weavers Walk and Clonsilla Road.	Option S2-5 Greenway on the Northern side of the Royal Canal (via Porterstown School house).	Option S2-6 Greenway on the Northern side of the Royal Canal (via Weavers Walk and Porterstown School house).	Option S2-7 Greenway on the Northern side of the Royal Canal (via residential properties at Callaghan Bridge and Porterstown School house).
1 Economy	1A Capital Cost							
	1B Constructability							
	1C Quality of Service							
2 Integration	2A Cycle Network Integration							
	2B Traffic Network Integration							
	2C Potential Impact on Rail Network							
	2D Potential Impact on Canal Users							
	2E Potential Impact on Communities/Residents							
3 Safety	3A Road Safety							
	3B Pedestrian Safety							
4 Environment	4A Archaeology and Cultural Heritage							
	4B Architectural Heritage							
	4C Flora & Fauna							
	4D Soils, Geology & Hydrology							
	4E Landscape and Visual							
	4F Land Use Character							

For the overall Section 2 Option Assessment, the seven route options for the Study Area between the Hansfield Railway Bridge and Kennan Bridge (Porterstown Road) were assessed and summarised as follows:

- **Capital Cost**: The key differences are land acquisition and structural works in the Deep Sinking. S2-1 requires a cantilevered boardwalk, while S2-7 requires substantial residential back-garden acquisition.

- **Constructability**: S2-1 performs least favourably because of retaining works and approximately 1.2 km of cantilevered boardwalk. Options using existing roads and paths are easier to construct. S2-5 avoids the most constrained section but requires a shorter boardwalk and ramp at the Old School House lands.

- **Quality of Service:** S2-1 is the most direct canal-side option. S2-2, S2-3, S2-4 and S2-6 involve longer diversions or on-road sections. S2-5 maintains continuity and segregation while improving access from adjacent residential areas.

- **Cycle Network Integration:** S2-1 provides the most direct integration with the GDA Cycle Network Plan. S2-5 also performs well by maintaining continuity and improving residential permeability.

- **Traffic Network Integration**: S2-1 and S2-5 perform best, with no appreciable impacts on the traffic network. S2-2, S2-3, S2-4 and S2-6 perform least favourably because they include cycle facilities along or adjacent to Clonsilla Road and/or increased use of existing or proposed toucan crossings.

- **Potential Impact on Rail Network**: S2-1 has the greatest potential interface because of the scale of structures in the constrained canal corridor. S2-5 avoids a material rail impact.

- **Potential Impact on Canal Users:** S2-1 has the greatest potential effect because of extensive towpath construction and the cantilevered boardwalk. Options diverted from the canal have less effect.

- **Potential Impact on Communities/Residents:** S2-4 performs least favourably because it redirects greenway users through Weavers Wood, Lambourn Park and The Village green areas, where concerns were raised about opening cul-de-sacs and increasing movements through established residential communities. The other options have more limited or localised community and residential effects.

- **Road Safety**: S2-2 performs least favourably because of greater interaction with traffic. S2-1, S2-5 and S2-7 are generally segregated.

- **Pedestrian Safety:** S2-1, S2-5 and S2-7 perform jointly best because they provide routes that are generally segregated from vehicular traffic. S2-2, S2-3, S2-4 and S2-6 perform only slightly less favourably due to sections along Hansfield Road and Clonsilla Road and associated crossing points.

  Environment

- **Archaeology and Cultural Heritage:** No material distinction was identified beyond the architectural heritage effects below.

- **Architectural Heritage:** S2-1 has the greatest potential effect on the Royal Canal corridor and associated protected structures. S2-4 and S2-6 avoid direct effects on protected bridges and have less direct effect on the canal.

- **Flora and Fauna**: S2-2 has substantially less tree impact than S2-1. S2-1 may require tree removal associated with the cantilevered boardwalk and may affect suitable bat-roost features at Callaghan Bridge, although no bats were recorded during the 2022 survey.
- **Soils, Geology and Hydrology**: S2-1 performs least favourably because of retaining structures, soil nailing and tensile rods into rock.
- **Landscape and Visual**: S2-1 performs least favourably because retaining works, barriers and the cantilevered boardwalk would materially alter the canal corridor.
- **Land Use Character**: S2-7 performs least favourably because of residential back-garden acquisition. S2-3, S2-4 and S2-6 may affect the character of Weavers Wood and Weavers Walk.

4.5.2.6 Summary of route options assessment

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Table 4.8 below. The colour coding used in this table is explained in Table 4.2.

Table 4.8 : Principal Route Options MCA Summary (Main Criteria)

Royal Canal Urban Greenway (main criteria) Route Options for section 2							
Appraisal Criteria	Option S1-1 Greenway on the Northern side of the Royal Canal.	Option S2-2 Greenway via land zoned as Town & District Centre and Clonsilla Road.	Option S2-3 Greenway Route via new development at Weavers Walk and Clonsilla Road.	Option S2-4 Greenway Route via Weavers Walk and Clonsilla Road.	Option S2-5 Greenway on the Northern side of the Royal Canal (via Porterstown School house).	Option S2-6 Greenway on the Northern side of the Royal Canal (via Weavers Walk and Porterstown School house).	Option S2-7 Greenway on the Northern side of the Royal Canal (via residential properties at Callaghan Bridge and Porterstown School house).
1 Economy							
2 Integration							
3 Safety							
4 Environment							

No option performs best against every sub-criterion. Option S2-1 provides the most direct canal-side route but requires the greatest structural intervention and has the highest potential ecological, heritage, geological and visual effects. Options S2-2, S2-3, S2-4 and S2-6 reduce canal-side works but are less direct and involve greater interaction with traffic or residential areas. Option S2-7 avoids extended on-road routing but requires substantial acquisition from residential properties.

Option S2-5 provides the best overall balance of environmental effects, safety, directness, network integration, constructability and land requirements. It avoids the extensive canal-side structures, tree removal, ground disturbance and landscape and visual effects associated with Option S2-1. It also avoids the greater traffic interaction of Option S2-2, the residential amenity effects of Option S2-6 and the substantial residential land acquisition required for Option S2-7.

Option S2-5 uses the existing pedestrian and cycle route through Piper's Court and St Joseph's before reconnecting to the towpath. It also includes widening of the existing pedestrian route along the northern side of the Royal Canal from Hansfield Road to the proposed ramp within the Porterstown Old School House lands. A cantilevered boardwalk is proposed between Callaghan Bridge and the Old School House lands.

A greenway ramp, together with associated earthworks, would be required to provide access from the towpath to the higher level of the Old School House lands. A paved cycle route is proposed within the Old School House lands.

Option S2-5 is identified as the Preferred Route Option for Section 2 between Hansfield Railway Bridge and Kennan Bridge. This option:

- Has no impact on the Iarnród Éireann network;
- Performs well in safety terms, as it is generally segregated from vehicular traffic; and
- Provides strong network integration by improving permeability and linkages from existing residential catchments and the proposed residential area within the Old School House lands.

4.5.3 Section 3

Section 3 extends from Kennan Bridge (Porterstown Road) to Talbot Bridge (Old Navan Road). This section is predominately bordered by an urban environment with extensive residential catchments on both sides of the Canal. The existing towpath is along the southern side of the Royal Canal directly adjacent to the railway line/stations. The Deep Sinking continues through Section 3 from Kennan Bridge to Granard Bridge and presents significant constraints to the provision of a continuous 4 m wide greenway. The layout of the existing towpath typically consists of a 2-3m wide track flanked by a deep cutting of 1.0 – 9.0m to the canal on a varying height embankment adjacent to the Dublin – Maynooth Railway.

Section 3 has been divided into three sub-sections due to the complexity of the 'Deep Sinking' section and to simplify the option assessment process:

- ***Section 3a*** – between Kennan Bridge (Porterstown Road) and Kirkpatrick Bridge (Coolmine Road).
- ***Section 3b*** – between Kirkpatrick Bridge (Coolmine Road) and Granard Bridge (Castleknock Road).
- ***Section 3c*** – between Granard Bridge (Castleknock Road) and Talbot Bridge (Old Navan Road).

The preferred route option for each sub-section (Section 3a, 3b and 3c) will be combined to create the preferred route option for Section 3.

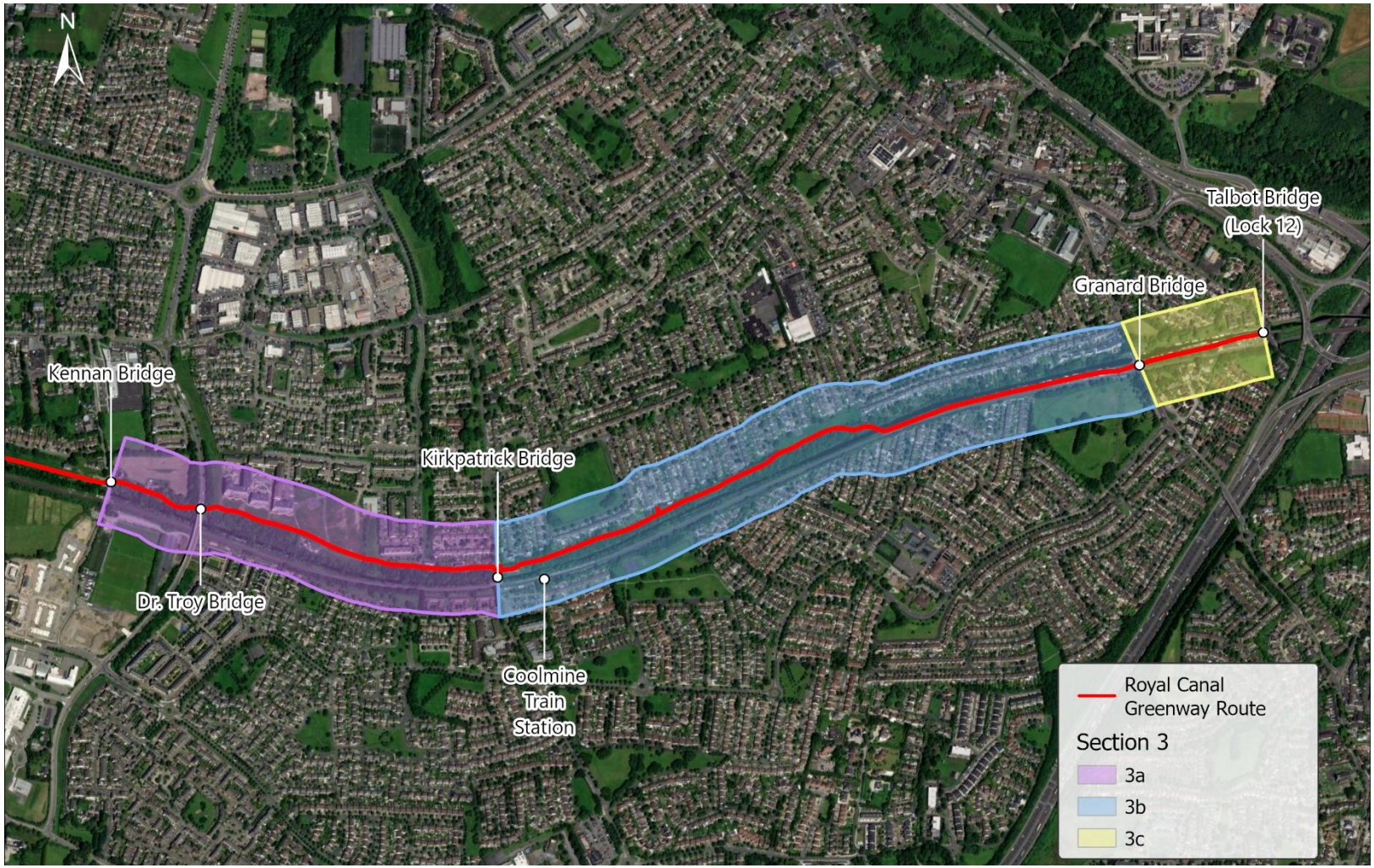


Figure 4.10 Section 3 Sub-Sections

4.5.3.1 Section 3a

Having regard to the environmental, engineering, land use, access and constructability constraints within Section 3a, six route options were identified as reasonable alternatives and selected for detailed MCA assessment between Kennan Bridge (Porterstown Road) and Kirkpatrick Bridge (Coolmine Road):

- ***Option S3a-1*** - Greenway along the southern side of the Royal Canal from Kennan Bridge to Kirkpatrick Bridge;
- ***Option S3a-2*** - Greenway on the northern bank of the Royal Canal from Kennan Bridge and via Sheepmoor Lane to Kirkpatrick Bridge;
- ***Option S3a-3*** – Greenway on the southern side of the Royal Canal from Kennan Bridge via St. Mochta's Football Club to Riverwood and Kirkpatrick Bridge. Greenway users will be routed via Riverwood Dale and Riverwood Hall residential estates which is away from the main corridor of the canal.
- ***Option S3a-4*** - Greenway on the northern side of the Royal Canal from Kennan Bridge to Kirkpatrick Bridge via Windmill Court and Sheepmoor Lane;
- ***Option S3a-5*** - Cycle route on the northern side of the Royal Canal from Kennan Bridge to Kirkpatrick Bridge (via Windmill Court and Sheepmoor Lane) and upgrades to the existing pedestrian facilities on the existing southern towpath; and
- ***Option S3a-6*** - Greenway on the southern embankment from Kennan Bridge to new pedestrian/cycle bridge. Greenway on the northern side of the canal from Sheepmoor Lane to Kirkpatrick Bridge.

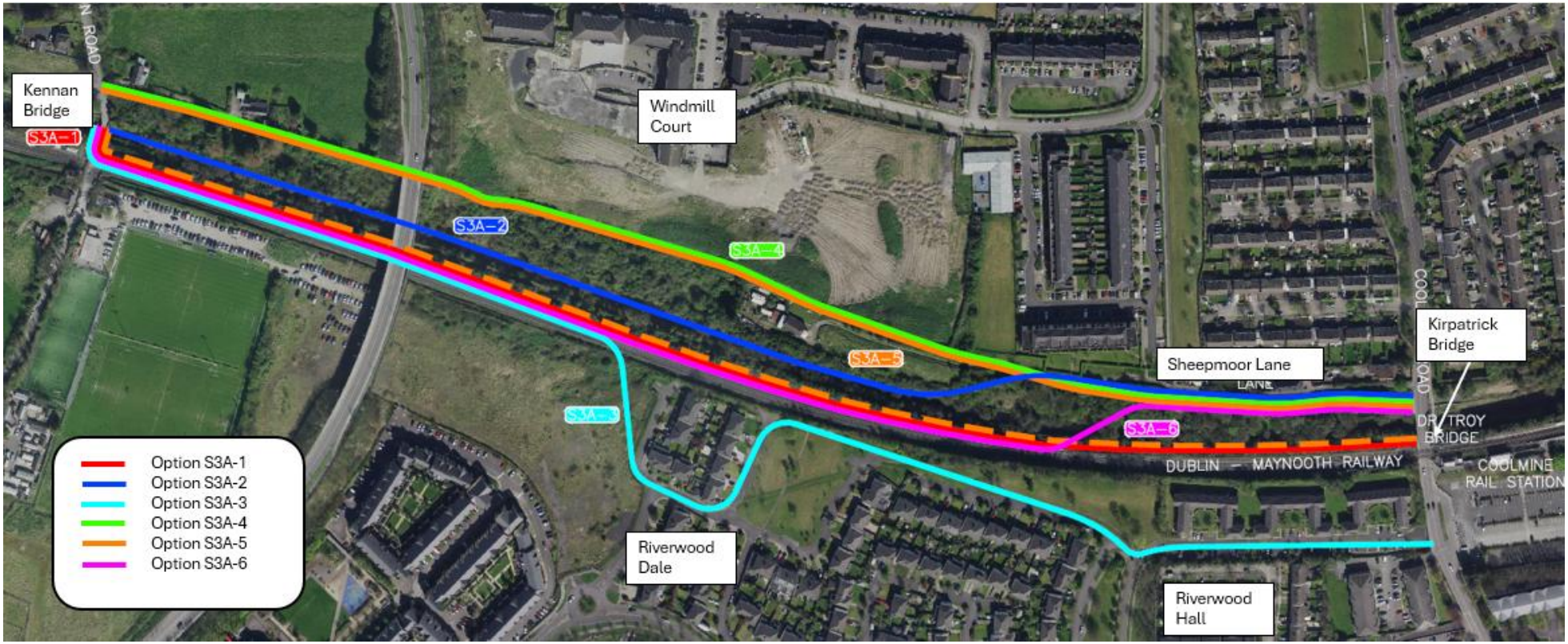


Figure 4.11 Section 3a Route Options

The relative ranking of route options against the scheme assessment sub-criteria are summarised in Table 4.9 below.

The colour coding used in the MCA tables is explained in Table 4.2.

Table 4.9 Subsection 3a Options MCA Summary (Sub-Criteria)

Royal Canal Urban Greenway – Sub-Section 3a Kennan Bridge to Kirkpatrick Bridge							
Appraisal Criteria	Sub-Criteria	Option S3a-1 Greenway on the southern side of the Royal Canal.	Option S3a-2 Greenway on the northern side of the Royal Canal.	Option S3a-3 Greenway via St.Mochta's Football Club, Riverwood Dale & Riverwood Hall.	Option S3a-4 Greenway via Windmill Court and Sheepmoor lane.	Option S3a-5 Option Cycle route on the northern side of the Royal Canal (via Windmill Court and Sheepmoor Lane) and upgrades to the existing pedestrian facilities on the existing southern towpath.	Option S3a-6 Greenway on the southern embankment from Kennan Bridge to new ped/cycle bridge. Greenway on the northern side from Sheepmoor Lane to Kirkpatrick Bridge.
1 Economy	1A Capital Cost						
	1B Constructability						
	1C Quality of Service						
2 Integration	2A Cycle Network Integration						
	2B Traffic Network Integration						
	2C Potential Impact on Rail Network						
	2D Potential Impact on Canal Users						
	2E Potential Impact on Communities/Residents						
3 Safety	3A Road Safety						
	3B Pedestrian Safety						
4 Environment	4A Archaeology and Cultural Heritage						
	4B Architectural Heritage						
	4C Flora & Fauna						
	4D Soils, Geology & Hydrology						
	4E Landscape and Visual						
	4F Land Use Character						

- **Capital Cost**: S3a-4 is the most economical. The main differences are the extent of boardwalk and bridge works; S3a-1 requires a full-length cantilevered boardwalk and S3a-6 requires a boardwalk and new canal bridge.
- **Constructability:** S3a-1 and S3a-6 perform least favourably because of extensive cantilevered boardwalk works within the constrained canal corridor and, for S3a-6, the additional pedestrian and cycle bridge. S3a-3 performs best because it largely uses conventional paved construction and existing residential streets, avoiding extensive canal-side structural works.
- **Quality of Service:** S3a-1 performs best because it provides a direct, continuous and fully segregated canal-side route. S3a-3 performs least favourably because it is the most circuitous option, is segregated from traffic for only part of the route and passes through residential streets away from the canal.
- **Cycle Network Integration**: S3a-1, followed by S3a-2 and S3a-6, aligns most closely with the canal route. S3a-3 is more circuitous and S3a-5 separates pedestrian and cycle routes. Routes via Sheepmoor Lane improve links north of the canal.
- **Traffic Network Integration:** S3a-1 performs best, with no appreciable impact on traffic. S3a-3 performs least favourably because the route passes through Riverwood residential areas and has the greatest potential interaction with vehicular traffic.
- **Potential Impact on Rail Network:** Canal-side structural options have the greatest potential interface. S3a-4 has limited rail impact.
- **Potential Impact on Canal Users:** S3a-1 performs least favourably because the full-length cantilevered boardwalk and associated barriers may affect Waterways Ireland maintenance, barge operations and use of the towpath for towing. S3a-3 and S3a-4 perform jointly best because they do not affect Waterways Ireland maintenance of the canal banks or the operation of barges.
- **Potential Impact on Communities/Residents:** S3a-1 performs least favourably because the railway prevents permeability and access from adjoining residential catchments along the full section. S3a-4 performs best because it improves permeability and access for existing and proposed residential areas, including Windmill Court, while using the low-traffic Sheepmoor Lane.
- **Road Safety**: S3a-3 performs least favourably because it increases interaction with traffic through Riverwood. Other options are generally segregated, with limited sharing on Sheepmoor Lane.
- **Pedestrian Safety:** S3a-5 performs best because pedestrians use an upgraded route along the southern towpath that is segregated from vehicular traffic for the full section. S3a-3 performs least favourably because pedestrians pass through Riverwood Dale and Riverwood Hall, increasing potential interaction with vehicles.

Environment

- **Archaeology and Cultural Heritage:** No material distinction was identified beyond the architectural heritage effects below.
- **Architectural Heritage**: S3a-1, S3a-2 and S3a-6 perform least favourably because of constructed elements within the protected Royal Canal corridor and possible effects on Kennan Bridge and Kirkpatrick Bridge.
- **Flora and Fauna**: S3a-3 performs best, with approximately 250 m² of tree removal. S3a-2 may remove approximately 1,700 m² of sensitive oak-ash-hazel woodland.
- **Soils, Geology and Hydrology**: S3a-2 performs least favourably because of piling for a boardwalk along the northern canal bank.
- **Landscape and Visual**: S3a-1, S3a-2 and S3a-6 perform least favourably because of extensive boardwalks and, for S3a-6, a new canal bridge.

- **Land Use Character**: S3a-3, S3a-4 and S3a-5 perform least favourably because of effects on Riverwood Hall or the residential laneway between Kennan Bridge and Dr Troy Bridge.

4.5.3.2 Summary of route options assessment

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Table 4.10 below.

The colour coding used in the MCA tables is explained in Table 4.2.

Table 4.10 Section 3a Options MCA Summary of the Main Criteria

Royal Canal Urban Greenway Sub-Options for section 3a						
Appraisal Criteria	Option S3a-1 Greenway on the southern side of the Royal Canal.	Option S3a-2 Greenway on the northern side of the Royal Canal.	Option S3a-3 Greenway via St.Mochta's Football Club, Riverwood Dale & Riverwood Hall.	Option S3a-4 Greenway via Windmill Court and Sheepmoor lane.	Option S3a-5 Option Cycle route on the northern side of the Royal Canal (via Windmill Court and Sheepmoor Lane) and upgrades to the existing pedestrian facilities on the existing southern towpath.	Option S3a-6 Greenway on the southern embankment from Kennan Bridge to new ped/cycle bridge. Greenway on the northern side from Sheepmoor Lane to Kirkpatrick Bridge.
1 Economy						
2 Integration						
3 Safety						
4 Environment						

Overall, Option S3a-4 provides the best balance across the assessment criteria. Option S3a-3 performs better for flora and fauna but is more circuitous, increases interaction with traffic and affects the amenity of Riverwood Hall. Options S3a-1, S3a-2 and S3a-6 follow the canal more closely but require more extensive structures and would have greater heritage, geological, landscape and visual effects. Option S3a-5 separates pedestrian and cycle movements.

Option S3a-4 was selected because it offers the best overall balance of environmental effects, cost, safety, route directness, network integration and constructability. The alignment is positioned north of the sensitive woodland to reduce tree loss and avoids the extensive canal-side structures and associated heritage, geological and visual effects of Options S3a-1, S3a-2 and S3a-6.

This option provides a greenway along the northern side of the Royal Canal from Kennan Bridge to Kirkpatrick Bridge via Sheepmoor Lane.

To minimise impacts on highly sensitive trees, the proposed route is positioned to the north of the wooded area along the northern embankment between Kennan Bridge and Sheepmoor Lane, with the route passing beneath Dr Troy Bridge.

The greenway would connect to the existing pedestrian and cycle facilities within the Windmill Court residential development. Where feasible, a paved greenway is proposed as the primary solution, with a standard 4m wide boardwalk structure used as a secondary solution in areas of steep terrain.

Along Sheepmoor Lane, greenway users would share the road carriageway with vehicles, reflecting the low volume of vehicular use on this section.

Option S3a-4 is the preferred route option for the following reasons:

- It is the most economical option.
- It has limited impact on the rail network or canal users.
- It provides a continuous route for pedestrians and cyclists, unlike Option S3a-5, which separates the pedestrian and cycle routes.
- It avoids the greater architectural heritage, soils and geology, landscape and visual effects associated with Options S3a-1, S3a-2 and S3a-6.
- It has a lower potential for visual effects on the Royal Canal than the canal-side structural options.

Based on the MCA undertaken for this section of the Study Area, Option S3a-4 is identified as the Preferred Route Option for Section 3a, from Kennan Bridge to Kirkpatrick Bridge.

4.5.3.3 Section 3b

For Section 3b, eleven route options were identified, to connect between Kirkpatrick Bridge (Coolmine Road) and Granard Bridge (Castleknock Road):

- ***Option S3b-1*** - Greenway along the southern towpath of the Royal Canal (Cantilevered Boardwalk with retaining structure provided halfway up the railway embankment);
- ***Option S3b-2*** - Greenway along the southern towpath of the Royal Canal (Cantilevered Boardwalk with anti-erosion geocell on the railway embankment);
- ***Option S3b-3*** - Greenway on the northern side of the Royal Canal via the northern side of the wooded area by Delwood, Brompton and along the northern canal bank at Roselawn;
- ***Option S3b-4*** - Greenway on the northern side of the Royal Canal via the northern side of the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge;
- ***Option S3b-5*** - Greenway on the northern side of the Royal Canal through the middle of the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge;
- ***Option S3b-6*** - Greenway on the northern bank of the Royal Canal to the south of the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge;
- ***Option S3b-7*** - Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and Roselawn Road;
- ***Option S3b-8*** - Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and along the southern canal bank via proposed new pedestrian/cycle bridge;
- ***Option S3b-9*** - Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and along the northern bank of the Royal Canal by Roselawn Road;
- ***Option S3b-10*** - Cycle route on the northern side of the canal via the northern side of the wooded area by Delwood and Brompton. Pedestrian route on the southern towpath. New ped/cycle bridge between Kirkpatrick Bridge and Granard Bridge connects the two routes on the southern embankment; and
- ***Option S3b-11*** - Greenway on the northern side of the Royal Canal through the residential back gardens of both Delwood Park and Roselawn Road.

The relative ranking of route options against the scheme assessment sub-criteria are summarised in Table 4.11 below. The colour coding used in the MCA tables is explained in Table 4.2.



Figure 4.12 Section 3b Route Options

Table 4.11 Subsection 3b Route Options MCA Summary (Sub-Criteria)

Royal Canal Urban Greenway – Sub-Options for Section 3 Kirkpatrick Bridge to Granard Bridge												
Appraisal Criteria	**Sub-Criteria**	**Option S3b-1** Greenway on the Southern side of the Royal Canal (Cantilevered Boardwalk Option A).	**Option S3b-2** Greenway on the Southern side of the Royal Canal (Cantilevered Boardwalk Option B).	**Option S3b-3** Greenway on the northern side of the Royal Canal via the northern side of the wooded area by Delwood, Brompton and along the northern canal bank via Roselawn.	**Option S3b-4** Greenway on the northern side of the Royal Canal via the northern side of the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge.	**Option S3b-5** Greenway on the northern side of the Royal Canal through the middle of the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge.	**Option S3b-6** Greenway on the northern bank of the Royal Canal below the wooded area by Delwood, Brompton and along the southern canal bank via proposed new pedestrian/cycle bridge.	**Option S3b-7** Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and Roselawn.	**Option S3b-8** Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and along the southern canal bank via proposed new pedestrian/cycle bridge.	**Option S3b-9** Greenway on the northern side of the Royal Canal via Delwood Lawn, Delwood Road, Brompton Court and along the northern bank of the Royal Canal by Roselawn.	**Option S3b-10** Cycle route on the northern side of the canal via the northern side of the wooded area by Delwood, Brompton. Pedestrian route on the southern towpath. New ped/cycle bridge between Kirkpatrick Bridge and Granard Bridge connects the two routes on the southern embankment.	**Option S3b-11** Greenway on the northern side of the Royal Canal through the residential back gardens of both Delwood Park and Roselawn Road.
1 Economy	1A Capital Cost											
	1B Constructability											
	1C Quality of Service											
2 Integration	2A Cycle Network Integration											
	2B Traffic Network Integration											
	2C Potential Impact on Rail Network											
	2D Potential Impact on Canal Users											
	2E Potential Impact on Communities/Residents											
3 Safety	3A Road Safety											
	3B Pedestrian Safety											
4 Environment	4A Archaeology and Cultural Heritage											
	4B Architectural Heritage											
	4C Flora & Fauna											
	4D Soils, Geology & Hydrology											
	4E Landscape and Visual											
	4F Land Use Character											

- **Capital Cost**: S3b-7 is the most economical. Structural works, steep terrain, canal crossings and residential land requirements drive the differences; S3b-11 requires substantial residential acquisition.
- **Constructability:** S3b-7 performs best because it mainly uses existing residential roads and open spaces and requires conventional paved works. S3b-1, S3b-2, S3b-5 and S3b-6 perform least favourably due to constrained working areas, extensive boardwalk or embankment works, difficult construction access and, for S3b-5 and S3b-6, a new pedestrian and cycle bridge.
- **Quality of Service:** Canal-side options are generally more direct. S3b-7, S3b-8 and S3b-9 are less direct due to local-road routing, while S3b-10 separates pedestrian and cycle movements. S3b-4 remains relatively direct and continuous.
- **Cycle Network Integration:** S3b-1, S3b-2 and S3b-6 align most closely with the canal route. S3b-7, S3b-8 and S3b-9 are less direct due to local-road and residential routing.
- **Traffic Network Integration:** S3b-7 performs least favourably because it has the greatest interaction with the traffic network, including cycle facilities through Delwood Lawn, Delwood Road, Brompton Court and Roselawn Road, together with Castleknock Road and the Kirkpatrick Bridge crossing.
- **Potential Impact on Rail Network**: S3b-1 and S3b-2 perform least favourably because of proximity to the live railway, restricted working space and possible tie-backs beneath the railway. Northern options avoid this interface.
- **Potential Impact on Canal Users**: S3b-1 and S3b-2 perform least favourably because the extensive cantilevered works, retaining or embankment treatments and likely barge-based construction may affect Waterways Ireland maintenance access, canal navigation, towpath use and canal availability during construction.
- **Potential Impact on Communities/Residents**: S3b-3, S3b-4, S3b-10 and S3b-11 perform least favourably because of effects on residential amenity, privacy, security or residential land, particularly near Delwood Park and Roselawn Road. S3b-8 performs best because it improves permeability through Delwood and Brompton while avoiding the more significant residential property effects of those options.
- **Road Safety**: S3b-7 performs least favourably because it increases interaction with traffic on Delwood Road and Roselawn Road. Other options are generally segregated.
- **Pedestrian Safety:** S3b-7 performs least favourably because pedestrians would interact more with traffic on local roads. Other options are generally segregated.

Environment

- **Archaeology and Cultural Heritage**: No material distinction was identified beyond the architectural heritage effects below.
- **Architectural Heritage**: S3b-1, S3b-2 and S3b-6 perform least favourably because of boardwalk structures within the protected canal corridor and possible effects on Kirkpatrick Bridge.
- **Flora and Fauna**: S3b-7 performs best, with approximately 109 m² of moderate-value tree removal. S3b-1 and S3b-3 may remove larger areas of high-value and moderate-value woodland.
- **Soils, Geology and Hydrology**: S3b-1 and S3b-2 perform least favourably because of tensile rods, retaining works and embankment treatment. S3b-5 also affects soils and geology through woodland removal, boardwalk and bridge works.

- **Landscape and Visual**: S3b-1 and S3b-6 perform least favourably because of canal-side boardwalks and tree loss. S3b-2 has a lower visual effect than S3b-1 where geocell treatment can be vegetated, while S3b-3 may affect canal views behind Roselawn.
- **Land Use Character**: S3b-3, S3b-9 and S3b-11 perform least favourably because they require acquisition from residential back gardens.

4.5.3.4 Summary of route options assessment

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Table 4.12 below.

The colour coding used in this table is explained in Table 4.2.

Table 4.12 Section 3b Options MCA Summary of the Main Criteria

Royal Canal Urban Greenway – Sub-Options for Section 3 Kennan Bridge to Kirkpatrick Bridge											
Appraisal Criteria	Option S3b-1	Option S3b-2	Option S3b-3	Option S3b-4	Option S3b-5	Option S3b-6	Option S3b-7	Option S3b-8	Option S3b-9	Option S3b-10	Option S3b-11
1 Economy											
2 Integration											
3 Safety											
4 Environment											

Overall, the southern canal-side options provide a direct route but have the greatest constructability, railway, canal-user, heritage, geological, ecological and visual constraints. The local-road options reduce canal-side intervention but are less direct and introduce greater traffic and residential amenity effects. Options requiring residential back-garden acquisition perform poorly in land-use terms. Option S3b-4 provides the best overall balance by maintaining a relatively direct and largely segregated route, avoiding the operational railway interface and extensive southern cantilevered works, limiting residential land requirements and reducing effects on the canal corridor relative to the southern options.
Due to the considerable constraints within the part of the Deep Sinking between Kirkpatrick Bridge and Granard Bridge, and the level of public consultation feedback received in relation to Section 3b in 2019 and 2021, additional field surveys and ground investigations were undertaken between Coolmine and Castleknock stations.

Following the 2019 non-statutory public consultation, FCC requested further preliminary design and assessment of the northern and southern embankment alternatives between Coolmine and Castleknock stations. This assessment was separate from, but informed the wider MCA and route options assessment. The resulting Deep Sinking Preliminary Designs Technical Note (Document Ref. 170239/14), included as Appendix I in the Route Options Assessment Report, compares the Northern Embankment Option, which broadly corresponds to Option S3b-4, with the Southern Embankment Option, which examines the structural solutions underlying Options S3b-1 and S3b-

2. The Technical Note addresses constructability, railway and canal operations, community integration, safety, heritage, ecology, landscape and land-use considerations.

As set out in Appendix I of the Route Options Assessment Report, the Northern Embankment Option was preferred to the Southern Embankment Option for the following reasons:

- The Northern Embankment Option provides better construction access, using the Waterways Ireland access gate at Coolmine Road and the Brompton green area. The Southern Embankment Option has limited working width for construction plant on the towpath and would likely require a barge-based working platform. It would also involve working beside the canal and close to the live railway, including the 1–2 m pinch point approximately 400 m west of Castleknock Station (Ch. 7000–7160).
- The Northern Embankment Option avoids impacts on existing and proposed Iarnród Éireann infrastructure. Under the Southern Embankment Option, particularly where tie-back anchors would extend beneath the railway line, there is greater potential to affect existing Iarnród Éireann operations and future DART+ proposals.
- The Northern Embankment Option would have limited impact on canal users. By comparison, the cantilevered boardwalk forming the Southern Embankment Option may affect Waterways Ireland maintenance access and barge movements due to the extent of the cantilever. Construction from a barge could also require canal closure for an estimated period of 8–12 months.
- The Northern Embankment Option improves permeability and linkages from residential catchments, consistent with the Design Manual for Urban Roads and Streets (DMURS). The Southern Embankment Option is constrained by the railway line between Kirkpatrick Bridge and Granard Bridge, over approximately 1.5 km, and provides no opportunity for additional access points along the southern embankment. This would reduce passive surveillance and could create security concerns for greenway users.
- The Northern Embankment Option would have a lower visual impact on the Royal Canal because the route would be partly screened from the canal by existing woodland. The Southern Embankment Option would require a cantilevered boardwalk along approximately 1 km of the southern towpath, with greater potential visual effects on the Royal Canal, which is a protected structure. See Figure 4.13 below.



Figure 4.13 Photograph of existing southern embankment (left) Vs Photomontage of cantilevered boardwalk (right), facing west towards Kirkpatrick Bridge

- In architectural heritage terms, the Northern Embankment Option would not directly affect Kirkpatrick Bridge or result in significant physical or visual alterations to the fabric of the Royal Canal, which is a protected structure. The Southern Embankment Option would require substantial intervention within the protected canal corridor.
- To minimise impacts on highly sensitive trees, the Northern Embankment Option is positioned close to the rear gardens of Delwood Park and extends into the Brompton open space. By comparison, the Southern Embankment Option would require removal of the treeline and hedgerow between the railway line and the southern towpath over approximately 1 km.
- To reduce security and visual intrusion effects associated with the Northern Embankment Option, the route would be lowered to limit overlooking of rear gardens at Delwood Park. Approximately 2 m high security fencing and defensive planting would also be provided.

Based on the MCA and the additional technical assessment in Appendix I of the Route Options Assessment Report, Option S3b-4 offers the best overall balance across the assessment criteria. It avoids the substantial railway, canal-user, heritage, geological, ecological, landscape and visual constraints associated with the southern cantilevered boardwalk options. Option S3b-7 performs better in flora and fauna, capital cost and constructability terms because it mainly uses existing roads and open spaces. However, it is less direct, has greater interaction with vehicular traffic and performs less favourably for road and pedestrian safety. Option S3b-4 provides a relatively direct and largely segregated route on the northern side of the Royal Canal, north of the wooded area at Delwood and Brompton, before crossing to the southern canal bank via a proposed new pedestrian and cycle bridge.

The route is positioned north of the wooded area to minimise impacts on existing trees, before crossing to the southern canal bank. It then continues along the southern embankment to Granard Bridge, where an underpass is proposed.

Option S3b-4 is the preferred route option for the following reasons:

- It provides a more direct route than the local-road alternatives, Options S3b-7, S3b-8 and S3b-9, while maintaining a relatively continuous alignment along the Royal Canal corridor.
- It provides a largely segregated route with less interaction with vehicular traffic than Option S3b-7, which follows Delwood Lawn, Delwood Road, Brompton Court and Roselawn Road and performs less favourably for road and pedestrian safety.
- It avoids the operational railway interface, restricted working areas, barge-based construction and potential disruption to canal users associated with the southern towpath structural options, Options S3b-1 and S3b-2.
- It avoids the greater architectural heritage, soils and geology, landscape and visual effects associated with the southern canal-side structural options, including extensive cantilevered boardwalk and embankment works within the protected Royal Canal corridor.
- Its alignment north of the wooded area avoids routing through the woodland associated with Options S3b-5 and S3b-6 and reduces tree loss where practicable.
- Although Option S3b-7 performs better for flora and fauna, capital cost and constructability, those advantages do not outweigh its reduced directness, greater interaction with vehicular traffic and less favourable road and pedestrian safety performance. Option S3b-4 therefore provides the best overall balance across the MCA criteria.

Based on the MCA undertaken for this section of the Study Area, Option S3b-4 is identified as the preferred route option for Section 3b from Kirkpatrick Bridge to Granard Bridge.

4.5.3.5 Section 3c

The following two route options were taken forward between Granard Bridge (Castleknock Road) and Talbot Bridge (Old Navan Road):

- **Option S3c-1** - Greenway on the northern side of the Royal Canal; and
- **Option S3c-2** - Greenway along the southern towpath of the Royal Canal.

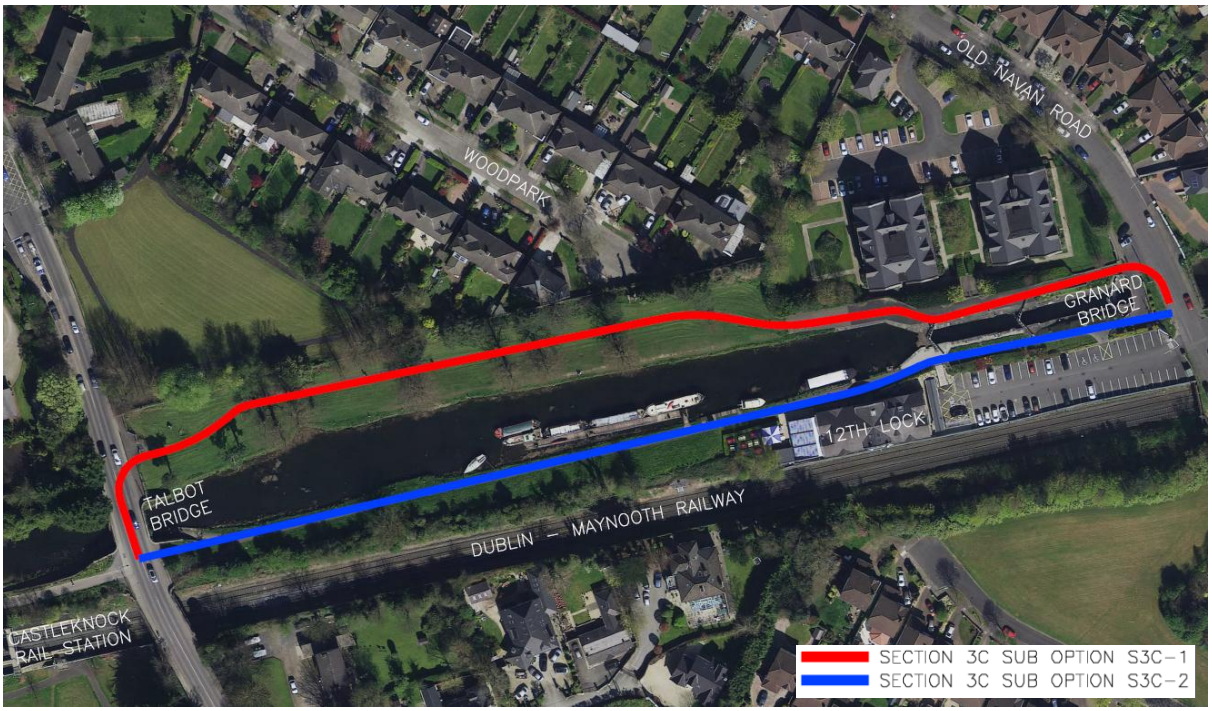


Figure 4.14 Section 3c Route Options

The relative ranking of route options against the scheme assessment sub-criteria are summarised in Table 4.13 below.

The colour coding used in this table is explained in Table 4.2.

Table 4.13 Section 3c Options MCA Summary of the Main Criteria

Royal Canal Urban Greenway – Sub-Options for Section 3 Granard Bridge to Talbot Bridge			
Appraisal Criteria	**Sub-Criteria**	**Option S3c-1 Greenway on the northern side of the Royal Canal.**	**Option S3c-2 Greenway on the southern side of the Royal Canal.**
1 Economy	1A Capital Cost		
	1B Constructability		
	1C Quality of Service		
2 Integration	2A Cycle Network Integration		
	2B Traffic Network Integration		
	2C Potential Impact on Rail Network		
	2D Potential Impact on Canal Users		
	2E Potential Impact on Communities/Residents		
3 Safety	3A Road Safety		
	3B Pedestrian Safety		
4 Environment	4A Archaeology and Cultural Heritage		
	4B Architectural Heritage		
	4C Flora & Fauna		
	4D Soils, Geology & Hydrology		
	4E Landscape and Visual		
	4F Land Use Character		

For Section 3c, the options assessment is summarised below:

- **Capital Cost**: S3c-2 is more economical. S3c-1 requires a new pedestrian and cycle bridge beside Granard Bridge and associated traffic management, while S3c-2 requires an underpass.
- **Constructability:** S3c-1 requires the new bridge and associated traffic management. S3c-2 requires an underpass but avoids a separate bridge structure and is simpler in overall route operation.
- **Quality of Service:** S3c-2 provides the more direct and continuous towpath alignment. S3c-1 includes roadside sections and a toucan crossing of Castleknock Road.
- **Cycle Network Integration**: Both options rank equally for cycle network integration.
- **Traffic Network Integration**: S3c-1 has greater interaction with traffic because it requires a toucan crossing on Castleknock Road. S3c-2 passes beneath the road.
- **Potential Impact on Rail Network:** S3c-2 performs less favourably because the route runs along the southern towpath adjacent to the railway line for the full section and includes underpass works at Granard Bridge in close proximity to the railway line. S3c-1 has no appreciable impact on the rail network.
- **Potential Impact on Canal Users:** No material comparative difference was identified.
- **Potential Impact on Communities/Residents:** Neither option gives rise to a material comparative effect. The small land requirement for S3c-2 is addressed under Land Use Character.
- **Road Safety:** S3c-1 performs less favourably because it includes roadside sections and a toucan crossing of Castleknock Road. S3c-2 is segregated from traffic at Castleknock Road by an underpass.
- **Pedestrian Safety:** S3c-2 performs better because the underpass avoids the Castleknock Road toucan crossing and roadside sections required by S3c-1.

Environment

- **Archaeology and Cultural Heritage**: No material comparative difference was identified beyond the architectural heritage effects below.
- **Architectural Heritage**: S3c-1 performs least favourably because the proposed bridge would be close to the protected Granard Bridge wall and works would also occur near Talbot Bridge.
- **Flora and Fauna:** S3c-1 performs least favourably because tree removal may be required for the new bridge.
- **Soils, Geology and Hydrology**: No material comparative difference was identified and this sub-criterion did not influence the selection.
- **Landscape and Visual**: S3c-1 performs least favourably because of the new bridge beside Granard Bridge. The S3c-2 underpass avoids that additional structure and associated visual effect.
- **Land Use Character:** S3c-2 ranks slightly lower because it may require a small area of paved land at the 12th Lock Hotel and Restaurant to provide the 3 m greenway at the pinch point.

4.5.3.6 Summary of Route Options Assessment

A summary of the assessment and relative ranking of route options against the four main assessment criteria is presented in Table 4.14 below.

The colour coding used in this table is explained in Table 4.2.

Table 4.14 Principal Route Options MCA Summary (Main Criteria)

Royal Canal Urban Greenway – Sub-Options for Section 3 Granard Bridge to Talbot Bridge		
Appraisal Criteria	**Option S3c-1 Greenway on the northern side of the Royal Canal.**	**Option S3c-2 Greenway on the southern side of the Royal Canal.**
1 Economy		
2 Integration		
3 Safety		
4 Environment		

Overall, Option S3c-2 provides the better balance. Both options integrate with the cycle network, but S3c-2 is more direct, less costly and safer because it avoids a new bridge and toucan crossing at Castleknock Road. It also has lower architectural heritage, ecological, landscape and visual effects. Its identified disadvantages are the small land requirement at the 12th Lock Hotel and proximity to the railway line, but these do not outweigh its wider benefits.

A paved 4m wide greenway would be provided on the southern towpath from Granard Bridge to the 12th Lock Hotel. Due to a pinch point between the hotel and the canal, a 3m wide greenway is only feasible between the 12th Lock Hotel and Talbot Bridge/Old Navan Road, over approximately 150m. An underpass is proposed at Granard Bridge and a zebra crossing would be provided at Talbot Bridge.

Option S3c-2 is the preferred route option for the following reasons:

- It provides a more direct route along the Royal Canal than Option S3c-1;
- It is more economical, as Option S3c-1 would require a new pedestrian/cycle bridge and associated traffic management;
- It performs better in safety terms, as it avoids the Castleknock Road toucan crossing required for Option S3c-1;
- It has lower potential impact on architectural heritage, as it avoids the proposed new bridge structure adjacent to Granard Bridge;
- It has lower potential environmental effects than Option S3c-1, as it avoids the proposed bridge adjacent to Granard Bridge, associated tree removal and greater landscape and visual effects on the Royal Canal corridor.
- It has a lower potential for visual effects on the Royal Canal and Granard Bridge than Option S3c-1.

Based on the MCA undertaken for this section of the Study Area, Option S3c-2 is identified as the preferred route option for Section 3c, from Granard Bridge to Talbot Bridge.

The preferred route option for each sub-section (Section 3a, 3b and 3c) was combined to create the Preferred Route Option for Section 3.

4.5.4 Preferred Route Option

This option proposes a 2–3m wide greenway with an unbound pavement surface where it follows the existing towpath on the northern side of the Royal Canal, extending from the Kildare County Council boundary to Hansfield. The route will continue through the existing pedestrian underpass at Hansfield Railway Bridge.

The proposed alignment will utilise the existing pedestrian and cycle route through Piper's Court and St. Joseph's before reconnecting with the canal towpath. The scheme also includes widening the existing pedestrian route along the northern side of the Royal Canal from Hansfield Road to the proposed ramp within the Porterstown Old School House lands. A cantilevered boardwalk is proposed between Callaghan Bridge and the Old School House lands.

A new greenway ramp, together with associated earthworks, will be required to facilitate access from the towpath to the elevated level of the Old School House lands. Within the School House lands, a paved cycle route is proposed as the primary design solution.

From Kennan Bridge to Kirkpatrick Bridge, the Proposed Development is proposed along the northern side of the Royal Canal via Sheepmoor Lane. To minimise impacts on highly sensitive trees, the alignment has been positioned north of the wooded area along the northern embankment between Kennan Bridge and Sheepmoor Lane, with the route passing beneath Dr Troy Bridge.

The Proposed Development will connect into the existing pedestrian and cycle facilities within the Windmill Court residential development. Where feasible, a paved greenway will be provided as the primary solution, while a standard 4m-wide boardwalk structure is proposed in areas of steeper terrain where required. Along Sheepmoor Lane, Greenway users will share the carriageway with vehicles, reflecting the relatively low traffic volumes on this section of the route.

From Coolmine Road (Kirkpatrick Bridge) to the Brompton green area (Ch. 6250–6850), the Proposed Development will be situated on the upper level of the northern embankment in order to minimise tree removal and reduce the visual impact of the scheme on the canal corridor. To further minimise impacts on highly sensitive trees and habitats, including Oak-Ash-Hazel Woodland (WN2), the Preferred Route has been positioned near the crest of the northern embankment, adjacent to the rear gardens of Delwood Park residences, before continuing into the open space at Brompton.

A bridge structure will be required to facilitate the crossing of a historic quarry area on the northern embankment (Ch. +6500m). In addition, a 4m-wide paved greenway will be provided along the southern side of the Brompton green area (Ch. 6850–7100). Planting and railings will be incorporated along this section of the route, and the Proposed Development will provide opportunities for users to access the Brompton and Roselawn estates.

The route will transition from the northern side to the southern side of the Royal Canal between chainages 7100 and 7200, prior to Roselawn Road. The crossing will be facilitated by an architecturally-designed pedestrian and cycle bridge that will respect existing canal uses as well as current and future operations on the Dublin to Maynooth rail line.

Further east, the Proposed Development will continue along the southern embankment towards Granard Bridge. A paved 4m-wide greenway will be provided along the southern towpath from Granard Bridge to the 12th Lock Hotel. Due to a constrained section between the hotel and the canal, a reduced greenway width of 3m is considered feasible for approximately 150m between the 12th Lock Hotel and Talbot Bridge/Old Navan Road. An underpass is proposed at Granard Bridge, while a zebra crossing will be provided at Talbot Bridge to facilitate safe crossing movements.

Ongoing consultation has been undertaken with Iarnród Éireann regarding the interaction between the DART+ West proposals and the Emerging Preferred Route for the Proposed Development. The interface between the DART+ West overbridges and the Proposed Development has been considered throughout the scheme development process, and FCC will continue to engage with Iarnród Éireann to determine the most appropriate and mutually agreeable solutions.

4.6 Alternative Layout and Design Solutions

In addition to alternative route alignments, alternative layout and design solutions were considered during the development of the Proposed Development. These alternatives were considered where required to respond to physical, environmental, heritage, access, land ownership, safety and constructability constraints along the Royal Canal corridor.

The layout and design alternatives included use of the existing towpath, off-line alignments through adjacent lands, use of existing pedestrian and cycle infrastructure, underpasses, bridge crossings, boardwalks, cantilevered structures, retaining structures, ramps, tie-ins to existing streets and local access arrangements. These alternatives were considered where they were relevant to the constraints and opportunities within each route section.

The use of the existing towpath was preferred where it could provide a safe, accessible and continuous route without unacceptable environmental, heritage, safety or constructability effects. In more constrained locations, particularly within the "Deep Sinking" section, alternative design solutions were considered to avoid or reduce impacts on the canal, railway, protected structures, woodland, residential properties, canal users and the wider landscape setting.

In some locations, off-line routes or routes through existing residential areas, open spaces and established active travel infrastructure were considered as alternatives to new structures within the canal corridor. These options were assessed having regard to route directness, user safety, passive surveillance, land acquisition, residential amenity, existing access arrangements and environmental effects.

Structural solutions, including boardwalks, cantilevered sections, retaining structures, ramps, underpasses and new bridges, were considered where existing ground levels, towpath width, embankment stability, canal heritage, railway interface or access constraints limited the feasibility of an at-grade route. These options were assessed having regard to constructability, safety, maintenance, effects on Waterways Ireland and Iarnród Éireann operations, visual impact, heritage impact, ecology, tree loss, soil and geological effects, and user experience.

The design response also included unbound surfacing in the more rural section where appropriate, elevated boardwalks in areas of undulating ground, and boardwalk or similar lightweight solutions where width constraints or ecological sensitivities limited the feasibility of widening. These measures were considered to reduce impacts on habitats, trees and existing ground conditions while maintaining route continuity.

The preferred layout and design was therefore developed through an iterative process that sought to balance the objectives of the Proposed Development with the need to avoid or reduce likely significant environmental effects where practicable.

Following the non-statutory public consultation on the Emerging Preferred Route, which was undertaken in 2019, and having regard to subsequent on-site investigations, a number of amendments were made to the scheme proposals. These amendments were incorporated into the design and informed the Draft Preferred Route Option.

Additional design development took account of the following:

- Ground Investigations;
- Independent Peer Review of the Design Options on the southern embankment between Coolmine and Castleknock Train Stations by Gavin & Doherty Geosolutions Ltd (GDG);
- Additional Ecological Surveys;
- Consultation with stakeholders such as Waterways Ireland, Iarnród Éireann, the NTA, An Garda Síochána and FCC officials;
- Output from engagement and consultation activities on the Emerging Preferred Route and draft Preferred Route Option proposals; and
- Further design development and options assessment.

Where material revisions to the Emerging Preferred Route were required, the revised design was reviewed against the previously identified Emerging Preferred Route, having regard to relevant environmental, engineering, land use, safety and community considerations. The principal design revisions and the specific considerations that informed them are described below.

Following concerns raised by residents during the 2019 non-statutory consultation, a number of local design changes were made in the Delwood, Brompton and Roselawn areas:

1. In response to resident concerns regarding increased pedestrian and cycle movements through residential areas, potential security issues and effects on residential amenity and privacy, the number of accesses to the greenway via Delwood and Brompton was reduced from seven to three, as shown in Figure 4.15 and Figure 4.16.

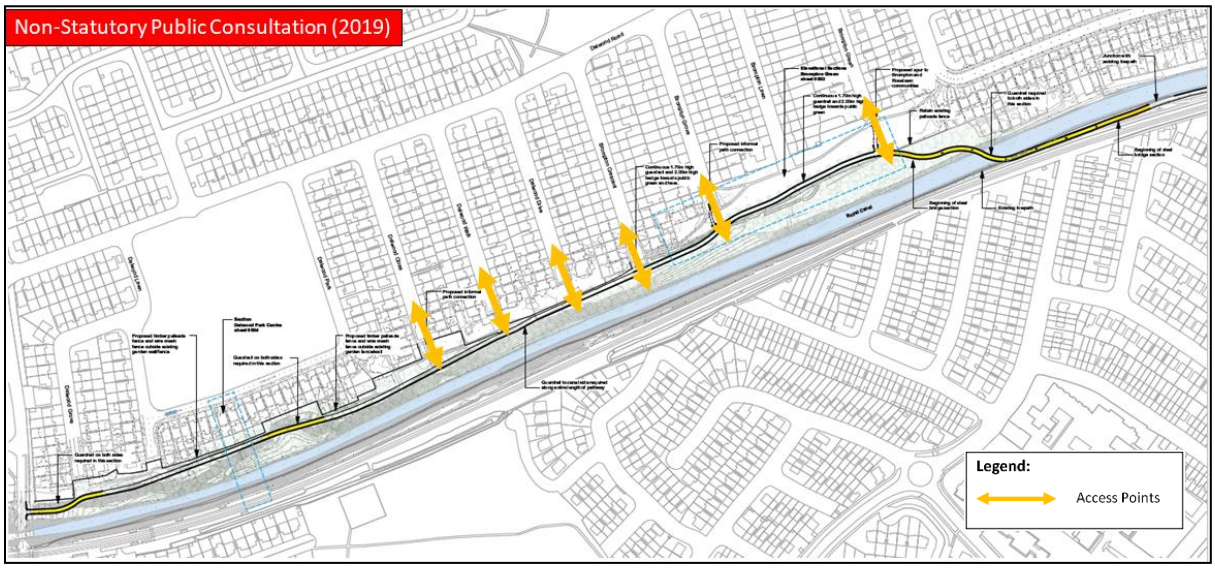


Figure 4.15 Access points to the greenway proposed in the Emerging Preferred Route Option (Non-Statutory Public Consultation 2019).

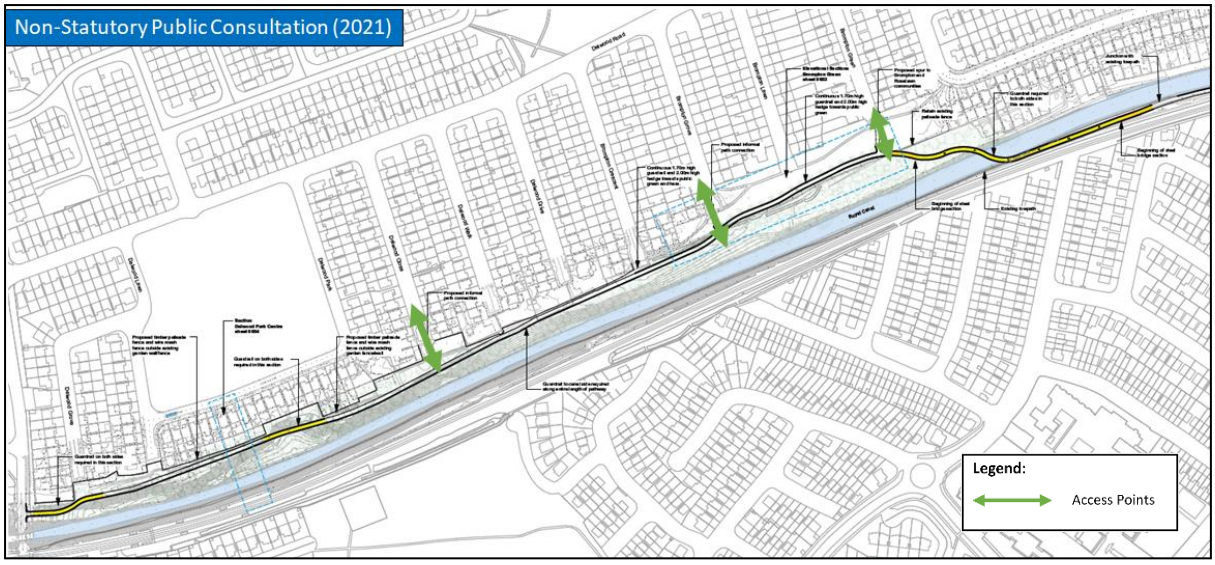


Figure 4.16 Access points to the greenway proposed in the Preferred Route Option (Non-Statutory Public Consultation 2021).

These local design revisions were not subject to a separate scored MCA. Each revision was reviewed against the relevant MCA considerations and supporting environmental information. The changes improved separation from residential properties and reduced potential effects on privacy, amenity and third-party lands. However, the revised alignments generally extended further into the wooded area and therefore had greater potential effects on trees and woodland than the earlier alignments through the open green area. These environmental effects were considered alongside the residential amenity and land use benefits and informed the detailed alignment and mitigation measures.

2. To respond to privacy concerns from adjacent properties, the access point into the Brompton green area was shifted eastwards from the 2019 consultation drawings, as shown in Figure 4-17. The revised access location improved separation from adjacent properties but had slightly greater potential effects on the wooded area.

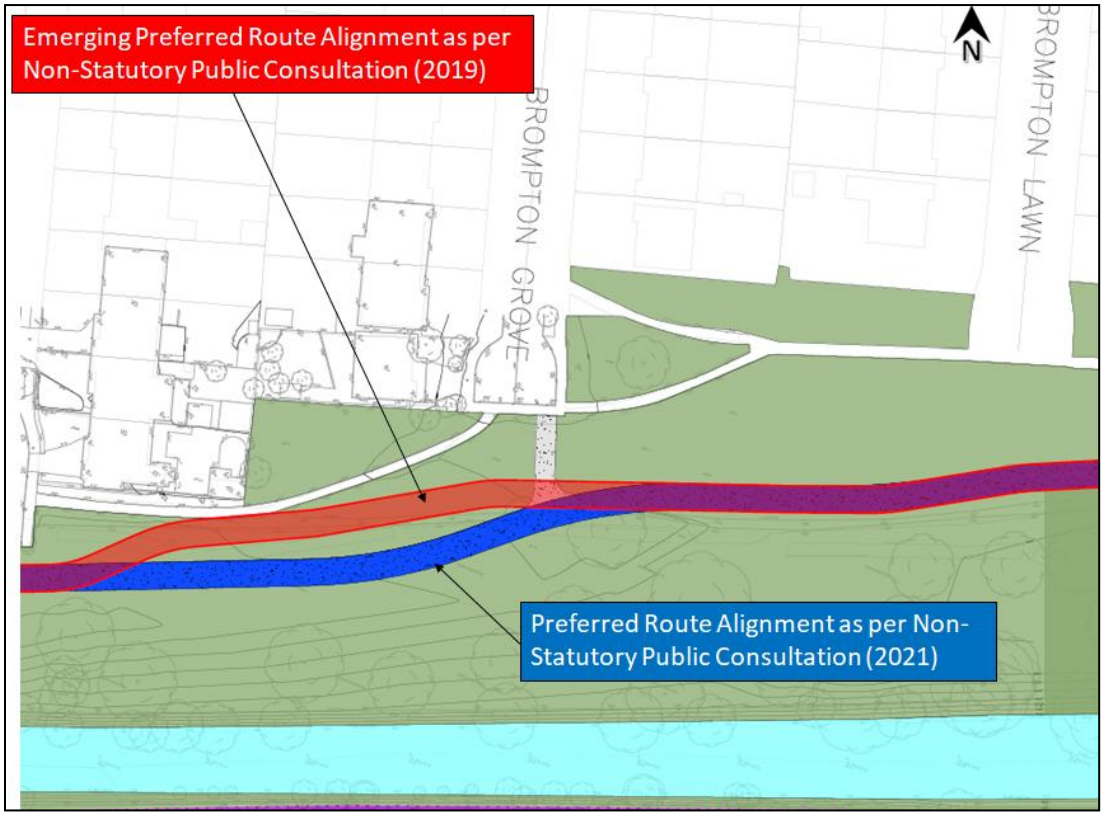


Figure 4.17 Comparison between the greenway entry point into the Brompton green area for both Public Consultation periods 2019 & 2021.

3. Roselawn residents raised concerns regarding the potential impact on privacy associated with the proximity of the proposed bridge over the canal. The bridge access ramp from the Brompton Green area was shifted further west, with the ramp meandering through the wooded area to assist in screening the ramp from Roselawn properties. A minimum separation distance of approximately 16m is provided, as shown in Figure 4.18. The proposed bridge has also been architecturally designed to respond to its surrounding environment. The alignment through the wooded area has been designed to retain trees where practicable, informed by arboricultural and ecological surveys. However, some tree loss and disturbance to woodland cannot be avoided and are assessed in the relevant EIAR chapters, together with the proposed mitigation and replacement planting.

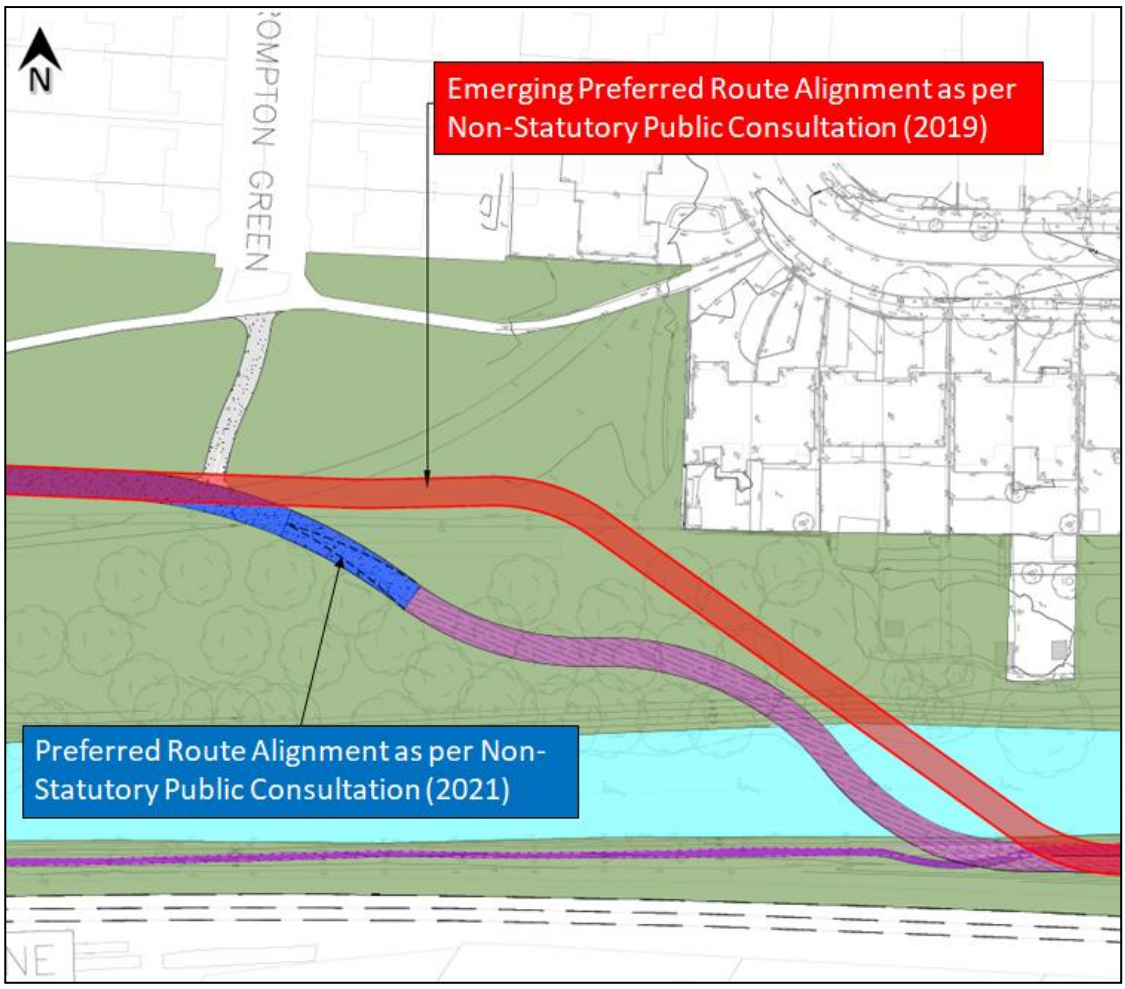


Figure 4.18 Comparison between the Landmark Bridge Alignment for both Public Consultation periods 2019 & 2021.

4. Following a 2026 change in land ownership at Roselawn, whereby lands previously held by Waterways Ireland transferred to third-party ownership, the bridge alignment and associated access ramp were further reviewed. The alignment has been shifted further west, where practicable, to avoid direct impacts on third-party lands, maintain separation from adjacent residential properties and further reduce the potential for overlooking. The revised alignment also reflects other local constraints, including the southern embankment, the existing Iarnród Éireann retaining wall, the operational railway corridor and the need to maintain the towpath function. The updated alignment is illustrated in Figure 4.19 below. The revised alignment has been designed to retain trees where practicable, informed by arboricultural and ecological surveys. However, its extension further into the wooded area has greater potential effects on trees and woodland than the earlier alignment, and some tree loss and disturbance cannot be avoided. These effects and the associated mitigation and replacement planting are assessed in the relevant EIAR chapters.

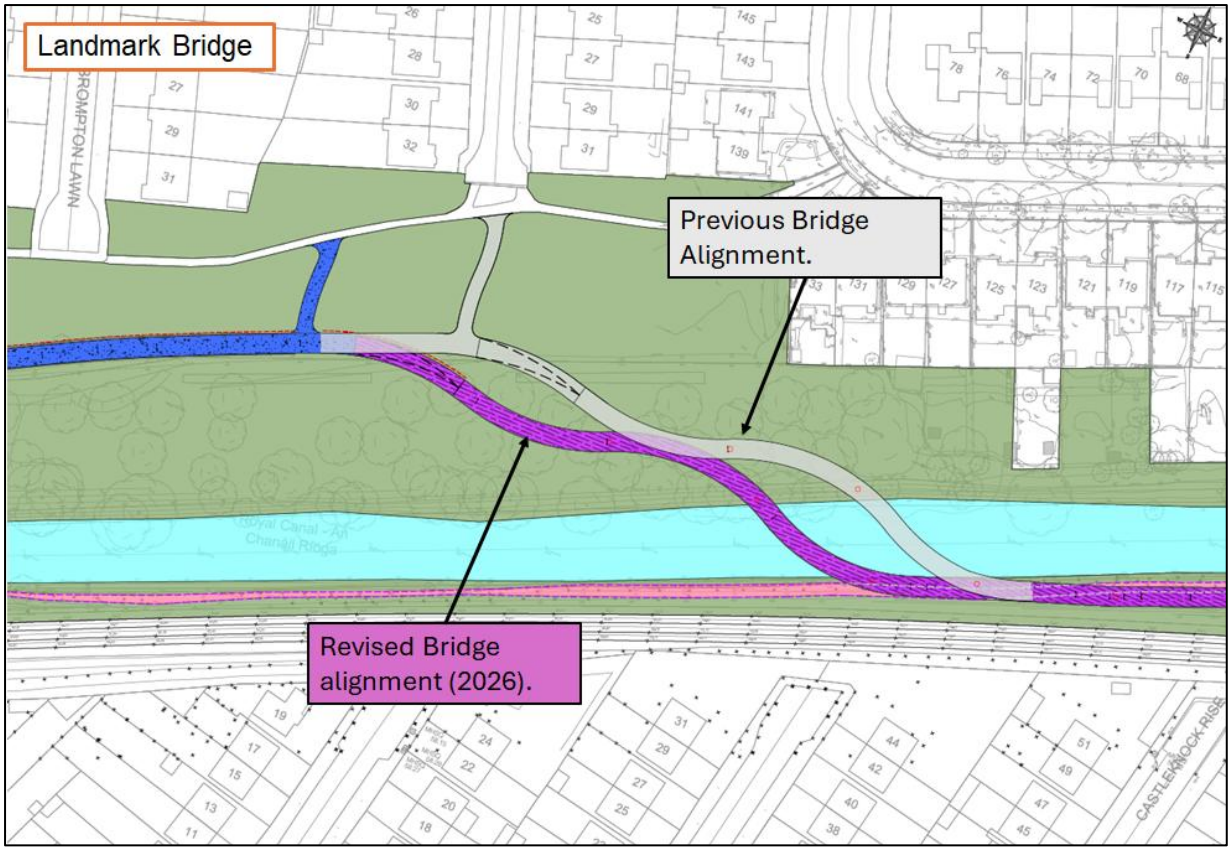


Figure 4.19 Comparison of the previous and revised 2026 Landmark Bridge alignment.

5. Concerns were raised regarding the opening of the existing fence line on the southern side of the Brompton green area and the potential for anti-social behaviour within the wooded area. The design therefore includes a 2m high fence line along the southern side of the greenway in this location. Planting and railings are also proposed on the Brompton side of the greenway through the Brompton green area to provide further screening, as shown in Figure 4.20.



Figure 4.20 Photomontage illustrating the greenway adjacent to the Brompton green area with fencing/planting provided.

6. To reduce potential overlooking of the rear gardens of Delwood Park and to address security concerns, the greenway level is proposed to be lowered to match, or sit below, the existing level of the adjacent rear gardens. A 2m high timber palisade fence with anti-climb wire mesh is proposed, with a maximum height difference of approximately 2.5m between the top of the fence and the Proposed Development level. Defensive planting is also proposed to provide additional screening and security, as shown in Figure 4.21.

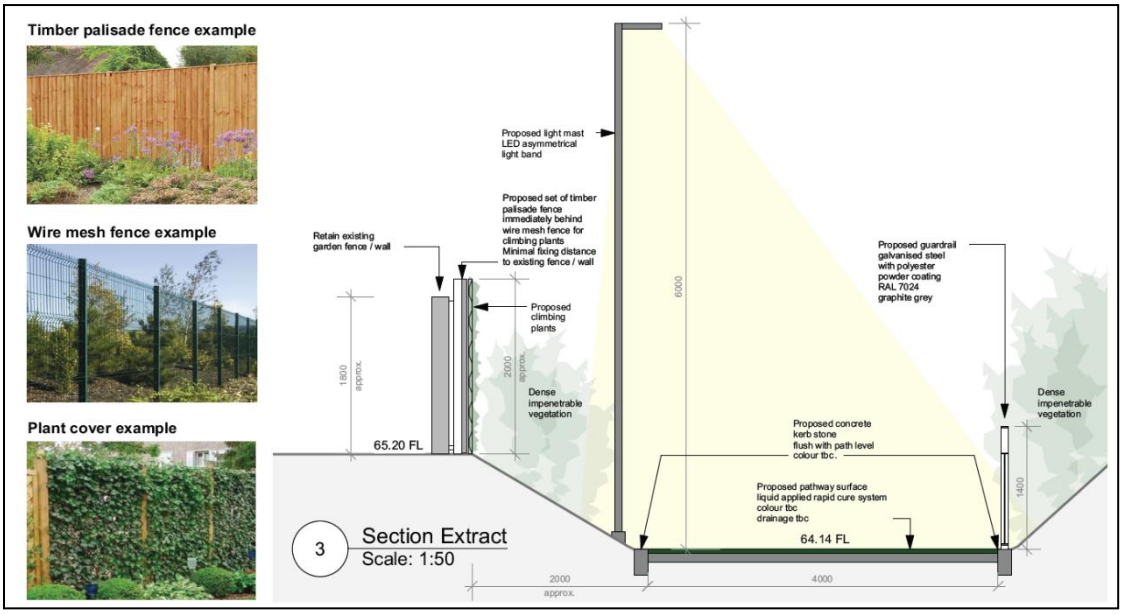


Figure 4.21 Cross section of Greenway behind Delwood Park (Source: Architectural Drawings – Appendix B, Public Consultation Document).

The second round of non-statutory public consultation on the Preferred Route Option was undertaken over a six-week period from 25 May 2021 to 7 July 2021. Observations were submitted online via the FCC Consultation Portal or by post.

Further design changes were made following feedback received during the second round of public consultation, dialogue with stakeholders, recommendations from an independent road safety audit, and additional ecological and arboricultural information. The additional ecological surveys included bat, bird, otter, badger, habitat and grassland surveys.

Additional ecological surveys and tree surveys were also used to inform the design development and associated mitigation measures.

Key changes included the following:

- The route alignment east of Hansfield Road, between Chainage 3300 and 3750, was amended to avoid constrained sections of the canal towpath and to make use of existing pedestrian and cycle infrastructure within St. Joseph's residential development. The route will now detour from the canal towpath and connect with the existing pedestrian and cycle route in St. Joseph's residential development.

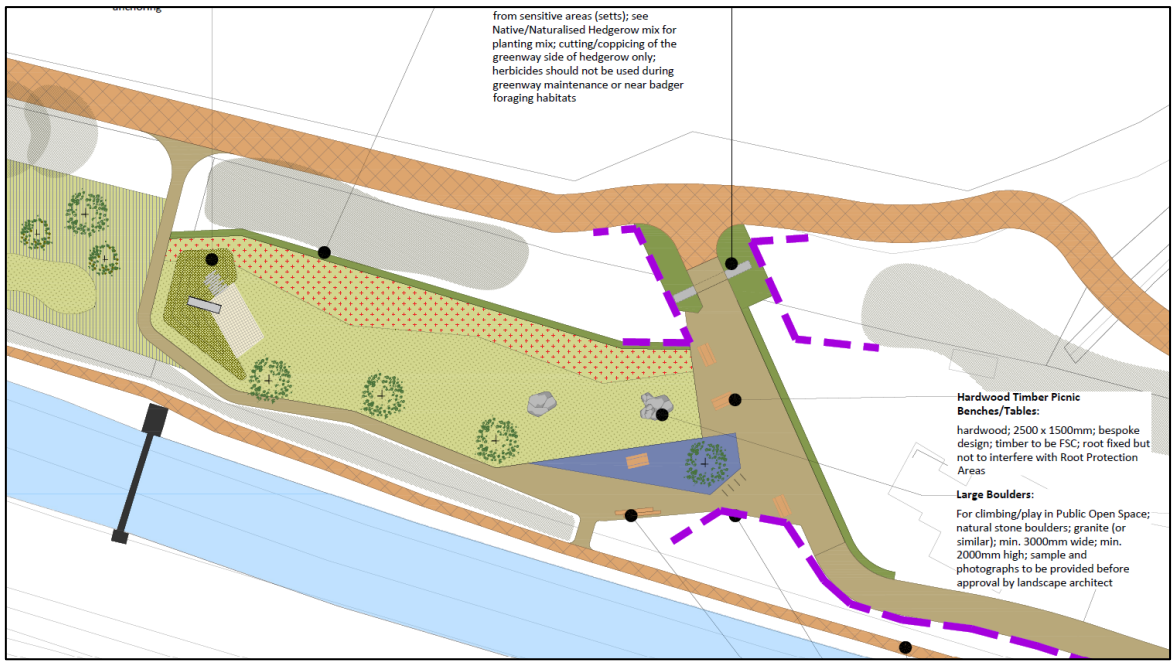


Figure 4.22 Pocket park created where the Proposed Development diverts east of Hansfield Road

- Mitigation measures for badgers were incorporated into the design, including badger culverts and earth berms.

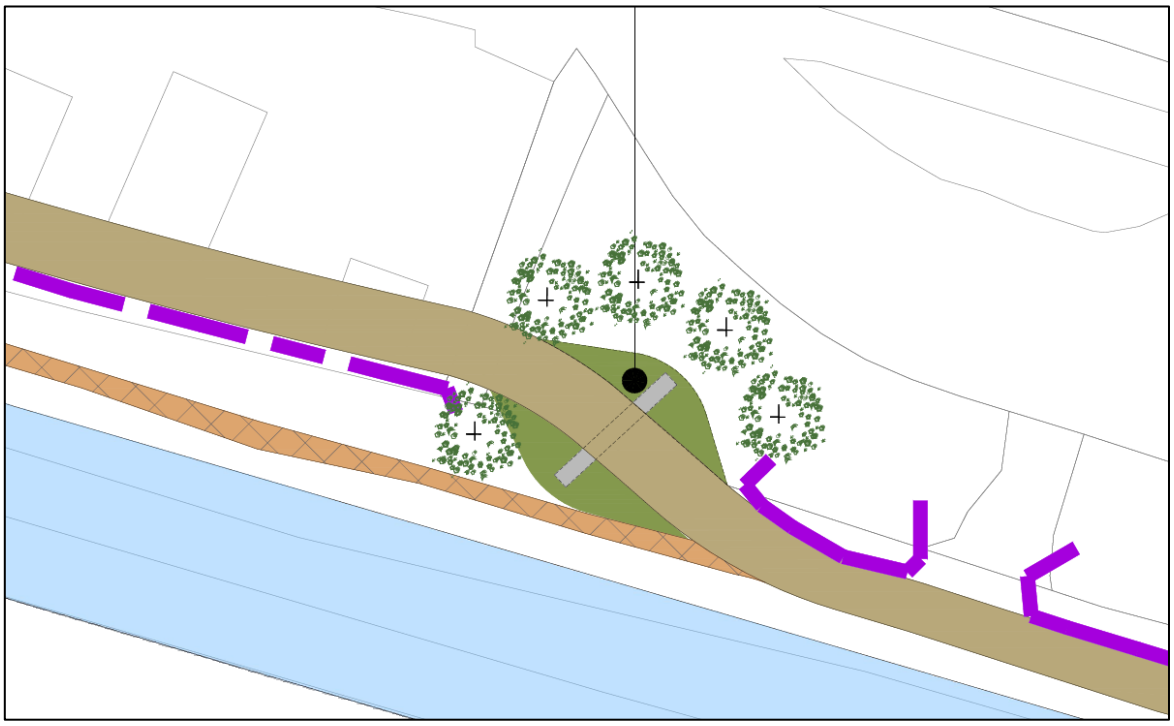


Figure 4.23 Mitigation measure introduced for badgers throughout the Proposed Development alignment (underpass)

- Landscape design was incorporated south of St. Joseph's residential development between Chainage 3300 and 3750, including a pocket park. This forms part of the landscape response to the revised alignment and formalises residual space created by the route adjustment as local amenity space.
- Minor updates were made following recommendations from the independent Road Safety Audit undertaken by PMCE Consultants in 2025. These included additional road signage, parking deterrent measures at or close to toucan crossings, updates to road markings, provision of a footpath on the eastern side of Porterstown Road to link the towpath to the proposed toucan crossing, and the slight northward relocation of the toucan crossing at 12th Lock to improve visibility to the signal heads and reduce the potential for vehicles to mount the kerb.

Overall, the iterative layout and design process sought to avoid or minimise environmental impacts where practicable through the consideration of alternatives and design refinement.



Figure 4.24 Royal Canal Urban Greenway Preferred Option

4.7 Alternative Construction Approaches

Alternative construction approaches were considered where the method of construction could affect environmental outcomes, constructability, safety, access or stakeholder operations. This included consideration of construction access, temporary working areas, sequencing, use of prefabricated or lightweight elements, and works in constrained areas such as the "Deep Sinking" section, wooded areas, residential interfaces, Waterways Ireland lands and locations adjacent to the operational railway.

In constrained canal and railway interface locations, construction approaches were reviewed having regard to working width, safe access, embankment stability, stakeholder operations, ecology, tree protection, noise, vibration, visual effects and residential amenity. Where practicable, approaches that reduced excavation, tree removal, temporary land take, disruption to canal users and works close to sensitive receptors were preferred.

The construction approach will be developed further by the appointed contractor, subject to the mitigation measures and commitments set out in this EIAR, the Outline Construction Environmental Management Plan (OCEMP) (170239-DBFL-XX-XX-RP-C-0004) and any requirements of FCC, Waterways Ireland, Iarnród Éireann and other relevant stakeholders. The construction approaches considered did not alter the preferred route alignment but informed the refinement of design solutions and mitigation measures.

The Route Options Assessment was undertaken under the CAF, which was the applicable appraisal framework at the time, and the Preferred Route Option was approved before the introduction of the TAF. The route options were therefore not subject to a separate comparative carbon assessment. Climate considerations informed the subsequent review of construction approaches and design development. Where practicable, consideration was given to reducing excavation, material quantities, transport movements and the extent of new structural works, and to reusing excavated material within the Proposed Development. The greenhouse gas emissions and climate change vulnerability of the final Proposed Development, including embodied carbon associated with construction materials and activities, are assessed in Chapter 6, Climatic Factors.

Three potential construction compound locations have been identified at Hansfield, Sheepmoor Lane and Laurel Lodge Park in Castleknock, as described in Chapter 14, Traffic and Transportation, and the Outline Construction Traffic Management Plan, included as an appendix to the OCEMP. These locations were identified to provide suitable access and storage close to the different work areas along the approximately 8.1 km route. Hansfield would operate as the main compound and provide worker parking, storage and welfare facilities. Sheepmoor Lane and Laurel Lodge Park would operate as smaller satellite compounds serving adjacent works, with HGV and large plant access limited at Laurel Lodge Park. The locations were not assessed as competing alternatives, as each serves a separate geographical and operational function. Their suitability was considered having regard to land availability, proximity to the works, access from the public road network, construction traffic, environmental constraints and reinstatement requirements.

4.8 Alternative Mitigation Measures

Mitigation measures are set out in the relevant technical chapters of this EIAR and summarised in Chapter 19 'Summary of Mitigation Measures and Residual Impacts'. Each specialist identified mitigation having regard to the potential impacts assessed in their chapter and the mitigation hierarchy of avoidance, prevention, reduction and, where relevant, offsetting.

Where relevant, specialists considered different ways to mitigate the predicted impacts. The preferred mitigation measures were selected having regard to the likely residual effects, the sensitivity of the

receiving environment and receptors, and whether the measures could be implemented without creating adverse effects under another environmental topic.

In many instances, mitigation was incorporated through design development, including route refinement, use of existing pedestrian and cycle infrastructure, retention of towpath function, screening and boundary treatments near residential areas, badger mitigation measures and construction-stage controls.

The alternative mitigation measures considered did not give rise to a different preferred route alignment. Instead, they informed the design refinement and specific mitigation measures presented in the relevant EIAR chapters.

4.9 Alternative Transport Solutions

Alternative transport solutions were considered at a strategic level having regard to the objectives and specific characteristics of the Proposed Development. As set out in Section 4.2, the scheme objectives arise from the strategic policy context described in Chapter 3, including the Fingal Development Plan, the Greater Dublin Area Cycle Network Plan, the National Cycle Network Plan and related national and regional policies supporting active travel, sustainable mobility, recreation and improved access to public transport. The primary objective of the Proposed Development is therefore to provide a continuous active travel and recreational corridor along, and in places adjacent to, the Royal Canal.

Other transport measures, including enhanced bus services, rail-based transport improvements, road capacity improvements, demand management measures and emerging transport technologies, may contribute to wider sustainable transport objectives. However, they would not deliver the specific Royal Canal pedestrian and cycle corridor proposed, nor would they address the existing accessibility, continuity and safety constraints along the towpath.

At a strategic level, alternative transport solutions would have a different environmental profile from the Proposed Development. They could avoid some construction effects within the Royal Canal corridor. However, depending on their form and location, bus, rail or road-based measures could result in land-take, construction emissions, noise, ecological disturbance and landscape effects elsewhere. Unlike the Proposed Development, these measures would not provide a continuous pedestrian and cycle route or deliver the associated benefits for recreation, local permeability, sustainable travel, population and human health. As they would not meet the specific scheme objectives, they were not considered functionally equivalent reasonable alternatives and were not subject to detailed comparative environmental assessment.

Improvements to walking and cycling infrastructure outside the Royal Canal corridor were considered where they could support local connectivity or form short sections of the preferred route. Stand-alone off-corridor transport improvements were not progressed as reasonable alternatives, as they would not deliver the strategic canal-side active travel link identified in the scheme objectives.

For these reasons, alternative transport solutions were not progressed as reasonable alternatives to the Proposed Development. The assessment of alternatives therefore focused on the 'Do-Nothing' Alternative, route alignments, layout and design solutions, construction approaches and mitigation measures relevant to delivery of the Proposed Development.

4.10 Conclusion

Reasonable alternatives were considered throughout the development of the Proposed Development through an iterative assessment process. The assessment was informed by the feasibility and constraints assessment, subsequent route options assessment, design feasibility review, environmental surveys, ground investigations, stakeholder engagement and non-statutory public consultation. This information was used to identify constraints and opportunities and to inform the assessment of alternative locations, route alignments, layouts, design solutions, construction approaches and mitigation measures.

The assessment considered both environmental and practical factors. These included likely environmental effects, engineering feasibility, constructability, land ownership, access, user safety, accessibility, integration with existing and planned active travel infrastructure, stakeholder operations, residential amenity and deliverability.

The level of assessment was proportionate to the nature and scale of the Proposed Development. It focused on alternatives that could reasonably meet the core objective of providing a continuous active travel and recreational corridor along, and in places adjacent to, the Royal Canal.

Having regard to the assessment undertaken, the preferred route alignment and design are considered to represent an appropriate and balanced solution. The alignment, layout and design have been developed to avoid or reduce environmental effects where practicable, while responding to constraints associated with the canal corridor, the operational railway, existing residential areas, land ownership, heritage assets, ecology, topography and constructability.

The Proposed Development will deliver a shared pedestrian and cycle greenway that responds to recreational use and active travel demand. It will enhance permeability and sustainable transport connectivity while balancing user safety, residential amenity, landowner considerations, Waterways Ireland operational requirements and the existing function and character of the Royal Canal corridor.

Overall, this chapter identifies the reasonable alternatives considered during the development of the Proposed Development and explains the main reasons for selecting the preferred option, having regard to environmental effects and the objectives and specific characteristics of the Proposed Development.

4.11 References

- Department of Transport (2016). *Common Appraisal Framework for Transport Projects and Programmes.*
- Environmental Protection Agency (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.*
- European Commission (2017). *Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report.*
- Fingal County Council (2012). *Royal Canal Greenway Feasibility Report.*
- Fingal County Council (2023). *Fingal Development Plan 2023–2029.*
- Fingal County Council (2024). *Fingal County Council Climate Action Plan 2024–2029*
- National Transport Authority (2023). *Greater Dublin Area Cycle Network Plan.*
- National Transport Authority (2023). *Cycle Design Manual.*

5 Air Quality

5.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses the likely effects of the Proposed Development on Air Quality during the construction phase and operational phase.

This Chapter describes and assesses the likely direct and indirect significant effects of the Proposed Development on Air Quality in accordance with the requirements of Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (i.e., the EIA Directive) (European Union 2014a). This Chapter also provides a characterisation of the receiving environment within the Proposed Development.

The Royal Canal Urban Greenway (hereafter referred to as the 'Proposed Development') is a shared pedestrian and cycle route (approx. 8.1 km in length) which is to be constructed along and adjacent to the Royal Canal towpath extending from the Kildare County boundary in the west to Talbot Bridge (the Old Navan Road near 12th Lock) to connect with a completed section of the Ashtown Greenway. The Development has been divided into three distinct sections based on their different geographical and physical characteristics. However, because the air quality mitigation is assessed as worst-case and applied across the entirety of the Proposed Development, the three sections are all assessed together. A full description of the Proposed Development is available in Chapter 2.

In relation to air quality the assessment has focussed on:

- Potential construction dust emissions and impacts to nearby sensitive receptors such as residential properties, schools, hospitals, etc.
- Potential vehicle emissions from traffic accessing the site for construction works and changes in traffic during operation.

This chapter was completed by Carl Ramskill, a Principal Environmental Consultant in the Air Quality and Climate section of AWN Consulting. Carl Ramskill is a Principal Environmental Consultant in the Air Quality section of AWN Consulting with 9 years' experience in air quality consulting. He holds a BSc. in Chemistry and MSc. in Air Pollution Management and Control from the University of Birmingham. He is a Member of the Institution of Environmental Science (MIEnvSc), Member of the Institute of Air Quality Management (MIAQM) and specialises in the fields of air quality, EIA and air dispersion modelling and monitoring. Carl has prepared air quality impact assessments for EIARs, planning application support and permitting/licencing support. He has worked on a diverse range of projects including large scale infrastructure road and rail schemes, residential developments, commercial developments, wind farms, data centres and energy centres.

5.2 Methodology

5.2.1 Guidance and Policy

5.2.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of the likely significant effects of the Proposed Development on air quality are summarised below.

In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission 2017).

The assessment has made reference to national air quality guidelines where available, in addition to international standards and guidelines relating to the assessment of air quality impacts. These are summarised below:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland (TII), 2025);
- Guidance on the Assessment of Dust from Demolition and Construction V2.2 (Institute of Air Quality Management (IAQM) IAQM 2024) (hereafter referred to as the IAQM Guidelines); and
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM 2020).

5.2.1.2 Policy

The Fingal Development Plan 2023 – 2029 (FCC, 2022) contains a number of objectives in relation to air quality within Section 11.9.1. Objective IUO57 is of relevance to the Proposed Development and states,

"IUO57: Monitor, pro-actively manage and improve air quality in the County through integrated land use and spatial planning measures to avoid, mitigate and minimise unacceptable levels of air pollution in accordance with national and EU policy Directives on air quality and, where appropriate, promote compliance with established targets".

In addition to specific air quality objectives, the development plan also makes reference to the development of greenways and their relationship with air quality as outlined below,

"W*e are developing a network of high-quality Greenways as part of our wider sustainable transport infrastructure programme. This sustainable infrastructure will improve quality of life for our residents as they will increase the numbers of people who will chose to cycle and walk thereby reducing dependency on private car use and lowering carbon emissions, improving air quality levels and reducing congestion.*"

The objectives of the development plan also align with the objective of the National Policy Objective for air quality within the Nations Planning Framework which includes "Improving air quality and helping to prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning".

5.2.2 Criteria for Rating of Impacts

Ambient Air Quality Standards

National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland and the European Parliament and Council of the European Union, have set limit values or *"Air Quality Standards"* in ambient air for a range of air pollutants to reduce the risk to health from poor air quality.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 *of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast)*. This directive supersedes EU Directive 2008/50/EC *of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe* (CAFE Directive). It

sets out new air quality standards for pollutants to be reached by 2026 and 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines and also includes limit values applicable until 2030.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011 (S.I. 180 of 2011), as amended. With the adoption of Directive (EU) 2024/2881, Ireland must similarly transpose this directive into national law, i.e. update the Air Quality Standards Regulations, before December 2026.

The ambient air quality limit values for pollutants are set out in Annex I of Directive (EU) 2024/2881. Table 1 of Annex I in Directive (EU) 2024/2881 sets out the updated air quality limit values for pollutants to be achieved by 1 January 2030, these are more closely aligned with the WHO air quality guidelines than the value set out in the preceding directives. Table 2 of Annex I in Directive (EU) 2024/2881 sets out the limit values for air pollutants which are to be achieved by 11 December 2026 and are also applicable up to 2030. The limit values in Table 2 of Annex I are the same as the limits set under Directive 2008/50/EC and the Air Quality Standards Regulations 2022.

In relation to the Proposed Development, the applicable limit values are for nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$), as these are the common pollutants that are considered to have the greatest effect on human health. Table 5.1 outlines the pre-2030 and post-2030 limit values for the specified pollutants.

Table 5.1 - Ambient Air Quality Limit Values

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (to be attained by 2026 and applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
NO_2	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m^3
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
PM_{10}	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
$PM_{2.5}$	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m^3
	Annual limit for protection of human health	25 µg/m^3	Annual limit for protection of human health	10 µg/m^3

WHO Air Quality Guidelines and Clean Air Strategy

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (Table 5.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final WHO $PM_{2.5}$ annual target of 5 µg/m^3. The strategy also acknowledges that "*meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2*".

Annex II of Directive (EU) 2024/2881 gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that *"Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II."*

These assessment thresholds relate to monitoring of ambient air quality by Member States, where *"exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years."*

Table 5.2 - WHO Air Quality Guidelines (WHO, 2021)

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	WHO Air Quality Guidelines	24-hour limit for protection of human health	-	-	25 µg/m^3
		Annual limit for protection of human health	20 µg/m^3	-	10 µg/m^3
PM (as PM_{10})		24-hour limit for protection of human health	75 µg/m^3	50 µg/m^3	45 µg/m^3
		Annual limit for protection of human health	30 µg/m^3	20 µg/m^3	15 µg/m^3
PM (as $PM_{2.5}$)		24-hour limit for protection of human health	37.5 µg/m^3	25 µg/m^3	15 µg/m^3
		Annual limit for protection of human health	15 µg/m^3	10 µg/m^3	5 µg/m^3

The applicable air quality limit values for the purposes of this assessment are those set out in Table 5.1. The limit values stipulated in Table 2 of Annex I of Directive (EU) 2024/2881 are applicable for the construction phase for the Proposed Development.

Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 5.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to dust soiling, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a scheme in Ireland. Furthermore, no specific criteria have been stipulated for dust soiling with respect to this Development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the TA Luft limit of 350 mg/m^2/day to the site boundary of quarries. This limit value will also be implemented with regard to dust impacts from construction of the Proposed Development.

5.2.3 Construction Phase

Dust Assessment

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 an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025).

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into large, medium or small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in Table 5.3, these are based on the IAQM guidance (IAQM, 2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 5.3 - IAQM Criteria to Determine Dust Emissions Magnitude (IAQM, 2024)

Dust Emission Magnitude		
Small	Medium	Large
Demolition		
• Total building volume <12,000 m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <6 m above ground • Demolition during wetter months	• Total building volume 12,000 - 75,000 m^3 • Potentially dusty construction material • Demolition activities 6 – 12 m above ground level	• Total building volume >75,000 m^3 • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities >12 m above ground level
Earthworks		

Dust Emission Magnitude		
Small	Medium	Large
• Total site area <18,000 m^2 • Soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <3 m in height • Earthworks during wetter months	• Total site area 18,000 m2 - 110,000 m^2 • Moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • Formation of bunds 3 – 6 m in height	• Total site area >110,000 m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • Formation of bunds >6 m in height
Construction		
• Total building volume <12,000 m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)	• Total building volume 12,000 - 75,000 m^3 • Potentially dusty construction material (e.g. concrete) • On-site concrete batching	• Total building volume >75,000 m^3 • On-site concrete batching • Sandblasting
Trackout		
• <20 HDV (>3.5 t) outward movements in any one day • Surface material with low potential for dust release • Unpaved road length <50 m	• 20 – 50 HDV (>3.5 t) outward movements in any one day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50 – 100 m	• >50 HDV (>3.5 t) outward movements in any one day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length >100 m

The sensitivity of the area to dust must be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity.

Dust emissions also have the potential to impact sensitive ecology. Dust can affect vegetation through chemical means such as chemical changes like increased acidity in soils or watercourses. Physical effects include reduced photosynthesis, respiration and transpiration through smothering. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease. High sensitivity ecological receptors are those with international or national designation (SPAs, SACs, NHAs) and where the designated feature is dust-sensitive. Effects to ecology can occur up to 50 m from the source.

Table 5.4 outlines the criteria for determining the sensitivity of the area to dust soiling, dust-related human health effects and dust-related ecological effects as per the IAQM guidance (IAQM, 2024). As per Table 5.4, the study area for the purposes of the assessment extends to 250 m from the Proposed Development boundary in the context of potential dust soiling or human health effects. The study area in relation to potential ecological effects from dust emissions extends to 50 m from the Proposed Development boundary.

Table 5.4 - Criteria for Determining the Sensitivity of the Area (IAQM, 2024)

Sensitivity of the Area to Dust Soiling Effects on People and Property					
Receptor Sensitivity	Number of Receptors	Distance From Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Sensitivity of the Area to Human Health Impacts						
Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Once the dust emission magnitude and sensitivity of the area have been determined, the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling, human health and ecological effects. The level of risk associated with each activity is determined using the criteria in Table 5.5.

Table 5.5 - IAQM Criteria to Determine Risk of Dust Impacts (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025), 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. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- 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.

The transport consultant has confirmed that construction stage traffic in respect of the Proposed Development is predicted to consist of approximately 9 HDVs AADT (Chapter 14 Material Assets - Traffic and Transport). As construction traffic does not exceed any of the thresholds above for a detailed assessment, a detailed air quality assessment of construction stage traffic emissions has been scoped out in accordance with TII guidance as there is no potential for significant impacts to air quality.

5.2.4 Operational Phase

Air Quality Assessment of Traffic Emissions

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the Proposed Development. The TII scoping criteria detailed in Section 5.2.3 were used to determine if any road links are affected by the Proposed Development and require inclusion in a detailed air dispersion modelling assessment.

As the Proposed Development is a greenway with no associated increase in traffic, there is no potential for air quality impacts from operational traffic and no further assessment is required.

5.2.5 Consultation

Consultation with various relevant bodies was undertaken as part of the EIA process. No specific responses in relation to air quality were received.

5.3 Baseline Environment

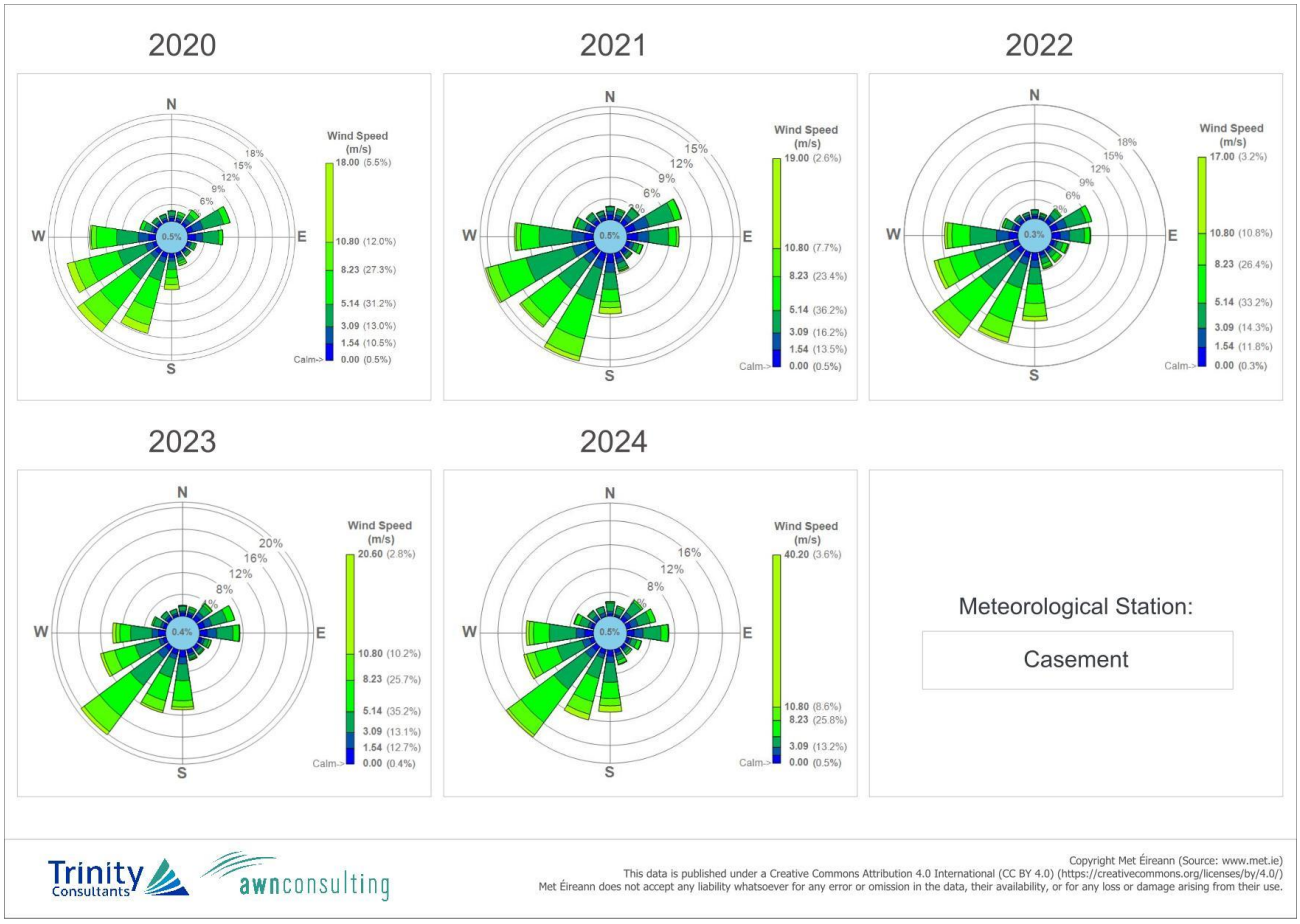
5.3.1 Meteorological Data

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) (WHO, 2006). 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}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station to the Proposed Development collating detailed weather records is Casement Aerodrome meteorological station, which is located approximately 7.4 km south of the site. Casement Aerodrome meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 5.1) (Met Éireann, 2025). For data collated during five representative years (2020 – 2024), the predominant wind direction is westerly

to south-westerly with a mean wind speed of 5.2 m/s over the 30-year period 1991 – 2020 (Met Eireann, 2025).

Figure 5.1 - Wind Roses for Casement Aerodrome Meteorological Station (Met Éireann, 2025)



5.3.2 Baseline 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 2024'* (EPA, 2025). 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, 2025). 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 is within Zone A (EPA, 2025). 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.). The use of publicly available long-term datasets is recommended by TII in their PE-ENV-0016 guidance (TII, 2025). This use of long-term data sets is preferred over on-site baseline air monitoring surveys as it gives a better indication of long-term trends in air quality. In addition, the TII PE-ENV-01106 guidance states that site-specific baseline monitoring is not usually required for developments such as greenways which do not cause significance changes in traffic levels. The use of long-term monitoring data from the EPA is considered appropriate for determining the background air quality in the area of the Proposed

Development. Representative EPA suburban background monitoring stations have been used to determine an estimate of the background air quality in the region of the Proposed Development.

NO_2

Long-term NO_2 monitoring was carried out at the representative Zone A suburban background locations of Ballyfermot, Dún Laoghaire, Swords and Tallaght over the period 2020 – 2024 (EPA, 2025).

Long term average NO_2 concentrations are significantly below the annual mean limit value of 40 µg/m^3. Average results range from 10 – 16 µg/m^3 over the period 2020 – 2024 for the Zone A sites. The 5-year average NO_2 concentration for all representative sites suggests an average concentration of 13 µg/m^3 as a background concentration. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the Proposed Development is 13 µg/m^3.

Table 5.6: Trends in Air Quality - NO_2 (EPA, 2025)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Zone A Suburban Background)	Annual Mean NO_2 (µg/m^3)	12	13	13	13	12
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Dun Laoghaire (Zone A Suburban Background)	Annual Mean NO_2 (µg/m^3)	13	16	16	13	11
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Swords (Zone A Suburban Background)	Annual Mean NO_2 (µg/m^3)	11	11	12	10	10
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Tallaght (Zone A Suburban Background)	Annual Mean NO_2 (µg/m^3)	14	13	14	14	12
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0

PM_{10}

Continuous PM_{10} monitoring was carried out at the representative Zone A suburban background locations of Ballyfermot, Dún Laoghaire, Finglas, Marino, Phoenix Park, St Anne's Park and Tallaght over the period 2020 – 2024 (EPA, 2025).

Long-term PM_{10} concentrations are in compliance with the annual mean limit value of 40 µg/m^3. Levels range from 9 - 14 µg/m^3 over the five-year period at the Zone A sites, with at most 3 exceedances (in Marino) of the 24-hour limit value of 50 µg/m^3 (35 exceedances are permitted per year) (EPA, 2025). The 5-year average PM_{10} concentration at the sites suggests an average concentration of no more than 12 µg/m^3. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 12 µg/m^3.

Table 5-7: Trends in Air Quality - PM_{10} (EPA, 2025)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Zone A Suburban Background)	Annual Mean PM_{10} (µg/m^3)	12	12	13	11	11
	24-hr Mean > 50 µg/m^3 (days)	2	0	1	0	0
Dun Laoghaire (Zone A Suburban Background)	Annual Mean PM_{10} (µg/m^3)	12	11	12	12	12
	24-hr Mean > 50 µg/m^3 (days)	0	0	1	0	1

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Finglas (Zone A Suburban Background)	Annual Mean PM_{10} ($\mu g/m^3$)	12	12	12	12	12
	24-hr Mean > 50 $\mu g/m^3$ (days)	0	0	1	0	0
Marino (Zone A Suburban Background)	Annual Mean PM_{10} ($\mu g/m^3$)	13	12	14	12	12
	24-hr Mean > 50 $\mu g/m^3$ (days)	0	0	3	0	0
Phoenix Park (Zone A Suburban Background)	Annual Mean PM_{10} ($\mu g/m^3$)	10	10	11	9	10
	24-hr Mean > 50 $\mu g/m^3$ (days)	0	0	0	0	0
St. Anne's Park (Zone A Suburban Background)	Annual Mean PM_{10} ($\mu g/m^3$)	11	11	13	11	11
	24-hr Mean > 50 $\mu g/m^3$ (days)	0	0	1	0	0
Tallaght (Zone A Suburban Background)	Annual Mean PM_{10} ($\mu g/m^3$)	10	10	11	11	10
	24-hr Mean > 50 $\mu g/m^3$ (days)	1	0	1	1	0

$PM_{2.5}$

Continuous $PM_{2.5}$ monitoring was carried out at the representative Zone A suburban background locations of Ballyfermot, Dún Laoghaire, Finglas, Marino, Phoenix Park, and St Anne's Park over the period 2020 – 2024 (EPA, 2025).

$PM_{2.5}$ concentrations range from 6 - 9 $\mu g/m^3$ over the five-year period at the Zone A sites (EPA, 2025). The 5-year average $PM_{2.5}$ concentration at the sites suggests an average concentration of no more than 7 $\mu g/m^3$. Based on the EPA data, a conservative estimate of the current background $PM_{2.5}$ concentration in the region of the Proposed Development is 7 $\mu g/m^3$.

Table 5.8: Trends in Air Quality - $PM_{2.5}$ (EPA, 2025)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	8	8	8	7	7
Dun Laoghaire (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	8	8	8	7	7
Finglas (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	7	8	7	7	7
Marino (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	8	8	9	7	8
Phoenix Park (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	7	6	6	6	7
St. Anne's Park (Zone A Suburban Background)	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	7	7	8	7	6

Summary

Based on the above information the air quality at suburban background sites in the Zone A area is generally good, with concentrations of the key pollutants generally well below the relevant limit values set out in Table 2 of Annex I of Directive (EU) 2024/2881. The current pollutant concentrations at all of

the monitoring sites are also in compliance with the 2030 limit values set out in Table 1 of Annex I in Directive (EU) 2024/2881 and the clean air strategy.

5.3.3 Sensitivity of the Receiving Environment to Dust

The impact to air quality from construction phase activities is assessed at sensitive receptors within 250 m of the development boundary. As mitigation will be applied across the whole site, as per IAQM guidance (2024), the entirety of the Proposed Development route has been assessed together.

In terms of receptor sensitivity to dust soiling, there are more than 10 residential properties (high sensitivity receptors) within 20 m of the proposed works area. Based on the IAQM criteria outlined in Table 5.4, the sensitivity of the area to dust soiling is considered high.

In addition to the sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the Proposed Development is 12 µg/m^3 and as discussed above, there are more than 10 high sensitivity receptors within 20 m of the site boundary. Based on the IAQM criteria outlined in Table 5.4, the worst-case sensitivity of the area to dust-related human health impacts is considered low.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust from construction sites deposited on vegetation may create ecological stress within the local plant community. The guidance states that dust impacts to vegetation can occur up to 50 m from the site and 50 m from site access roads, up to 250 m for the site entrance. The Royal Canal Proposed Natural Heritage Area (pNHA) is within this zone.

Based on the IAQM criteria outlined in Table 5.4 the worst-case sensitivity of the area to ecology is considered high.

The above steps have been reproduced in Table 5.9 to show the criteria used (in bold).

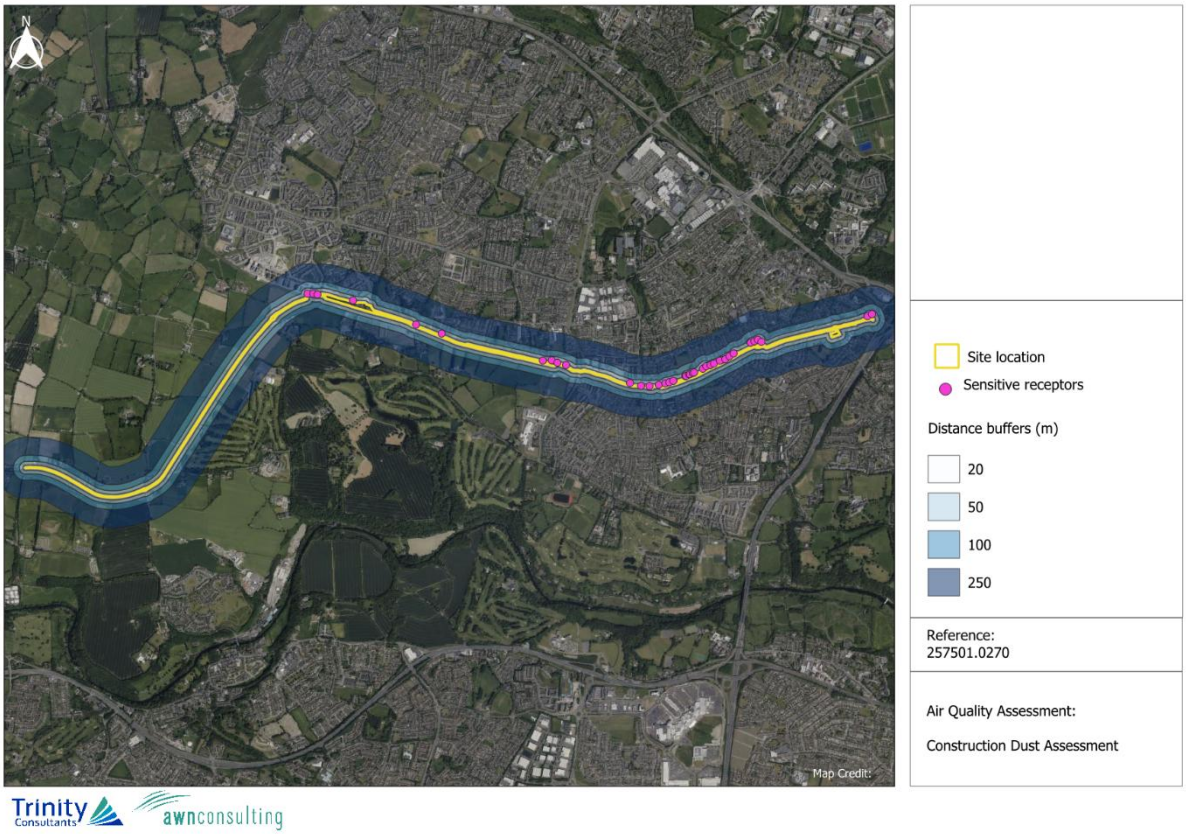
Table 5.9 - Criteria Used to Determine the Sensitivity of the Area (IAQM, 2024)

Sensitivity of the Area to Dust Soiling Effects on People and Property					
Receptor Sensitivity	Number of Receptors	Distance From Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10 - 100	**High**	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low
Sensitivity of the Area to Human Health Impacts					
Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)		
			<20	<50	<100	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10 - 100	**Low**	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	**High**	Medium
Medium	Medium	Low
Low	Low	Low

Figure 5.2 shows the construction dust study area, with the worst-case receptors within 20 m of the site boundary.

Figure 5.2 – Construction Dust Study Area



5.4 Characteristics of the Proposed Development

The Royal Canal Urban Greenway (hereafter referred to as the 'Proposed Development') is a shared pedestrian and cycle route (approx. 8.1 km in length) which is to be constructed along and adjacent to the Royal Canal towpath extending from the Kildare County boundary in the west to Talbot Bridge (the Old Navan Road near 12th Lock) to connect with a completed section of the Ashtown Greenway. During the construction phase, construction dust emissions have the potential to impact air quality. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. Site compounds and soil storage piles are also sources of dust emissions. There is also the potential for engine emissions from site vehicles and machinery to impact air quality. Construction phase impacts will be short-term in duration. No operational phase impacts are predicted as there are no significant air emission sources once the Proposed Development is operational.

For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 - Background to the Scheme.

5.5 Predicted Impacts

5.5.1 Proposed Development

Construction Stage

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors. A review of Casement Aerodrome meteorological data indicates that the prevailing wind direction is westerly to south-westerly (Section 5.3.1). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Casement Aerodrome meteorological station indicates that on average 194 days per year have rainfall over 0.2 mm (Met Eireann, 2025) and therefore it can be determined that 53% of the year dust generation will be reduced.

To determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (Section 5.3.3). The main dust generating activities are divided into four types within the IAQM (IAQM, 2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity (Table 5.10) has been determined below for the Proposed Development using the criteria in Table 5.3. The assessment includes the entirety of the Proposed Development area as well as site compounds.

Table 5.10 - Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Small	Total demolition volume is less than 12,000 m^3
Earthworks	Medium	Total earthworks area is between 18,000 m^3 and 110,000 m^3
Construction	Small	Total construction volume at any one time will be less than 12,000 m^3
Trackout	Small	Less than 20 outward HDV movements per day

Determining the Sensitivity of the Area

As determined in Section 5.3.3, there are more than 10 residential properties within 20 m of the proposed works area. The Royal Canal pNHA is present within 50 m of the Proposed Development boundary. The sensitivity of the area to dust soiling, human health impacts and ecological impacts from dust are shown in Table 5.11.

Table 5.11 - Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium

Human Health	Low	Low	Low	Low
Ecology	High	High	High	High

Determining the Risk of Dust Impacts

As detailed in Table 5.5, the predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation.

Table 5.12 below provides a summary of the risk of dust impacts for the Proposed Development.

The Proposed Development will result in a medium risk of dust soiling and dust-related ecological impacts from demolition and earthworks activities. There is a low to negligible risk of dust soiling and dust-related ecological impacts from construction and trackout activities. There is a low to negligible risk of dust-related human health impacts from the construction phase activities. These risks are based on the number of receptors within 250 m of the Proposed Development boundary and the magnitude of the construction works required as outlined in the previous sections. Without mitigation in place, construction dust will have a ***short-term, direct, localised, negative*** and ***moderate*** impact on air quality, which may potentially have a significant effect. As a result, best practice dust mitigation measures associated with medium risk works will be implemented to ensure there are no significant effects at nearby sensitive receptors (see Section **Error! Reference source not found.**).

Table 5.12 - Risk of Dust Impacts used to Define Site-Specific Mitigation

Potential Impact	Risk of Dust Impacts			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Low Risk	Negligible
Human Health	Negligible	Low Risk	Negligible	Negligible
Ecology	Medium Risk	Medium Risk	Low Risk	Low Risk

Traffic

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. Traffic emissions have the potential to impact air quality which can affect both human health and sensitive ecology, such as species within the Royal Canal pNHA. The construction stage traffic has been reviewed, as discussed in Section 5.2.3 construction stage traffic is predicted to consist of approximately 9 HDVs AADT. Due to this low level change in traffic volumes a detailed air quality assessment has been scoped out as none of the road links impacted by the Proposed Development satisfy the TII assessment criteria in Section 5.2.3.

Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the working day and, as such, will not impact traffic significantly during the peak traffic periods.

It can therefore be determined that the construction stage traffic will have a ***short-term, direct, localised, negative*** and ***not significant*** effect on air quality.

Operational Stage

As the Proposed Development is a greenway with no associated traffic increase (the traffic will decrease slightly, but not by enough to meet the TII scoping criteria), there is no potential for significant air quality effects from operational phase traffic and no further assessment is required.

Do Nothing Impact

In the Do-Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc). In the absence of the Proposed Development there will be a ***neutral*** effect on ambient air quality, which is ***not significant***.

5.5.2 Cumulative

Construction Stage

According to the IAQM guidance (2024), should the construction phase of the Proposed Development coincide with the construction phase of any other developments within 500 m (including other sections of the greenway) then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. However, provided the mitigation measures outlined in Section **Error! Reference source not found.** are implemented throughout the construction phase of the Proposed Development significant cumulative air quality effects from dust are not predicted, as best practice mitigation is required at all constructions sites that may exist within 500 m of the Development. Cumulative construction phase effects are predicted to be ***short-term, direct, localised, negative*** and ***not significant***.

Operational Stage

As no effects are predicted for the operational phase of the Proposed Development, no significant cumulative effects are predicted.

Do Nothing Impact

As no effects are predicted for the Do Nothing scenario, no significant cumulative effects for the scenario are predicted.

5.6 Mitigation Measures

5.6.1 Proposed Development

Construction Stage

As determined in Section 5.5, the Proposed Development has been assessed as having a medium risk of dust soiling impacts and dust-related ecological impacts, and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities. Therefore, the following dust mitigation measures shall be implemented during the construction phase of the Proposed Development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The measures are based on the recommended measures from the IAQM guidance (2024) as well as Dublin City Council guidance *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Table 5.13 – Construction Phase Site-Specific Mitigation

Mitigation Measure	
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
	Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Preparing and Maintaining the Site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 20 kmph on surfaced and 15 kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Mitigation Measure	
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	Bonfires and burning of waste materials are legally prohibited.
Measures Specific to Demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible to provide a screen against dust
	Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.
	Bag and remove any biological debris or damp down such material before demolition.
Measures Specific to Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.
	Only remove the cover in small areas during work and not all at once.
Measures Specific to Construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Measures Specific to Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Record all inspections of haul routes and any subsequent action in a site logbook.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Operational Stage

There is no mitigation required for the operational phase of the development as no significant impacts to air quality are predicted.

5.6.2 Cumulative

Construction Stage

Committed developments within the study area were identified as having the potential for a cumulative air quality effect during construction (see Table 5.14).

Table 5.14 – Cumulative Developments within the Study Area

Reference	Address	Description	Status	Decision Date	Units
FW14A/0042/E2	Site bounded by the New Ongar Road to the North, Castlefield Court Estate, to the South, Mount Symon Estate to the West and Charnwood Estate, to the East	Construction of 124 two-storey, three- and four-bedroom houses on a 4.26 ha site. Includes a detached childcare facility serving this scheme and 166 nearby permitted homes. Provides communal and on-curtilage parking, open space and optional roof-mounted solar panels. Vehicular access is from Clonsilla Link Road, with landscaping, drainage and ancillary works.	Plans Granted	28/02/2022	124
FW21A/0244 [ACP-313792-22]	The Lodge, Clonsilla Road, Clonsilla, Dublin 15	Demolition of the existing house and outbuilding and construction of a 59-unit apartment block. The scheme includes 23 one-bedroom, 34 two-bedroom and 2 three-bedroom apartments with balconies or terraces. Provides undercroft and surface car parking, cycle parking, open space and access from Clonsilla Road. Landscaping, boundary treatments, bin storage, services and ESB infrastructure are included.	Commenced	ACP Grant 15/12/2023	59
FW22A/0147	Townland of Clonsilla Dublin 15 Apartment Development , and is partially occupied by formerly associated with St. Joseph's Hospital., The site is bounded to the south-west by Park Heights road, to the north-west by Park Crescent road, Clonsilla	A residential development comprised of 174 no. apartments and duplex units, together with a childcare facility, on a site measuring c. 3.6 Ha which is part of Zone 5 “Hospital” of the Hansfield Strategic Development Zone (SDZ) Planning Scheme 2006. The application site is in the townland of Clonsilla, Dublin 15, and is partially occupied by buildings formerly associated with St. Joseph’s Hospital. The site is bounded to the south-west by Park Heights road, to the north-west by Park Crescent road, to the north-east by Hansfield Wood Lawn estate, and to the east and south by St Joseph’s Hospital. The proposed development includes for the demolition of existing buildings on site (c. 2,791 sq.m total) and the construction of 174 no. apartments and duplex units, together with a childcare facility, in 8 no. three to six storey blocks…* *Significant F.I notices	Commenced	14/12/2022	174
FW22A/0152	Weavers Row, Clonsilla Rd, Clonsilla, Dublin 15	Mixed-use development comprising a two-storey foodstore, three retail units and provides 191 car spaces, 326 cycle spaces and revised/new access points from Weavers Row. Also includes demolition, signage, landscaping, boundary treatments and ancillary site works… Construction of 72 no. dwellings	Plans Granted	12/01/2023	72
FW22A/0317	A site area of 0.924ha within Zone 7 of the Hansfield Strategic Development Zone, bounding Barnwell Park, Station Street and Station Road, Hansfield, Dublin 15	Construction of 41 homes within Zone 7 of Hansfield SDZ. The scheme comprises 34 two- and three-storey houses and 7 apartment/duplex units in a three-storey building. Includes private and public car and bicycle parking, landscaped open space and internal roads. Lighting, utilities, drainage, surface-water attenuation and associated infrastructure are included.	Commenced	16/06/2023	41
FW17A/0234/E1	Zone 6 Hansfiled, SDZ Lands, Dublin 15	Construction of 155 homes comprising houses, apartments and duplex units within Hansfield SDZ. Includes a four-storey apartment block, two three-storey duplex blocks and a childcare facility. Provides 292 parking spaces, new vehicular access to Hansfield Road and pedestrian/cycle connections. Also includes demolition, public open space, landscaping, lighting and associated works.	Plans Granted	01/11/2023	155
FW23A/0013	Zone 6 within the Hansfield SDZ Planning Scheme 2006, Formerly part of St. Joseph's Hospital, Clonsilla, Dublin 15	Construction of 419 apartments in four blocks of four to six storeys within Hansfield SDZ. Includes residential amenity space, balconies/terraces and a two-storey childcare facility. Provides 213 car spaces, 1,445 bicycle spaces, five vehicular accesses and public open space. The scheme also amends elements of St Joseph's Phase 1, including buildings and road layout.	Commenced	20/02/2024	419

Reference	Address	Description	Status	Decision Date	Units
LRD0021/S3 E [ACP-320886-24]	Lands to the Front & Rear of Clonsilla Inn, Porterstown, Dublin 15	Demolition of existing structures and construction of 170 apartments/duplexes in seven blocks of one to five storeys. Includes a cafe, childcare facility, public park, two plazas, play areas and a nature walk. Provides undercroft and surface car and bicycle parking, internal roads and pathways. Landscaping, lighting, drainage, utilities and Porterstown Road upgrades are included.	ACP Plans Granted	ACP Grant 21/01/2025	170
LRD0056/S3 E [ACP-322813-25]	Winterwood, Carpenterstown Road, Dublin 15	Demolition of Winterwood house and outbuildings and construction of 175 homes on a 1.87 ha site. The scheme comprises 30 houses and 145 apartments in three six-storey blocks, plus a creche. Provides open space, 111 car spaces, 387 bicycle spaces and a new Carpenterstown Road access. Landscaping, drainage, internal roads, green/blue roofs and photovoltaic panels are included.	ACP Plans Granted	ACP Grant 19/09/2025	175
PARTXI/009/25	Fortlawn, Blanchardstown, Dublin 15	Demolition of four existing houses and construction of 21 homes across two sites. Site A provides 7 terraced houses and 12 apartments; Site B provides 2 semi-detached houses. Works include new roads and footpaths, parking, landscaping and incidental play areas. Associated drainage, utilities, lighting and site development works are also proposed.	Plans Submitted	NA	21
FW25A/0418 E [ACP- PL-500488-DF-25]	Lands in the Townlands of Kellystown and Porterstown, Dublin 15	Construction of 56 dwellings with all associated site works	Commenced	ACP appeal decided 12/06/2026	56
FW25A/0416 E [ACP-PL-500971-DF-26]	Porterstown Road, Dublin	Demolition of structures, construction of 87 dwellings and a creche with all associated site works	ACP Decision awaited	ACP Decision awaited	87
FW25A/0419 E [ACP- PL-500486-DF-25]	Luttrellstown Gate, Lands in the Townlands of Kellystown and Porterstown, Dublin 15	Construction of 47 dwellings with all associated site works	Plans Granted	ACP appeal decided 12/06/2026	47
LRD0052/S3 E [ACP-324182-26	Townland of Porterstown, Clonsilla	Large Residential Development (LRD) Construction of 302 dwellings with all associated site works. EIAR submitted with application	ACP Plans Granted	ACP appeal decided 22/06/2026	302
ACP-313892	Blanchardstown to Dublin City Centre	Bus Connects Blanchardstown to City Centre Core Bus Corridor Scheme	Plans Granted	ACP Grant 21/06/2024	ACP-313892
ACP-314232	County Dublin, County Meath, County Kildare	DART+ West Railway Order covering the Dublin to Maynooth and M3 Parkway corridor	Plans Granted	ACP Railway Order Dated 18/07/2024	ACP-314232

The cumulative effect of the Proposed Development in terms of construction dust is unlikely to be any worse than the effect from the Proposed Development alone, as best practice mitigation is required at all constructions sites that may exist within 500 m of the Development. Therefore, the construction phase cumulative effect will be ***direct***, ***short-term***, ***negative***, ***localised*** and ***not significant*** at nearby receptors.

Operational Stage

There is no mitigation required for the operational phase of the development as no significant impacts to air quality are predicted.

5.7 Residual Impacts

5.7.1 Proposed Development

Construction Stage

Provided the mitigation measures outlined in Section **Error! Reference source not found.** are implemented throughout the construction phase of the Proposed Development, construction phase effects are predicted to be ***short-term, direct, localised, negative*** and ***not significant.***

Operational Stage

As the Proposed Development is a greenway with no associated traffic increase (the traffic will decrease slightly, but not by enough to meet the TII scoping criteria), there is no potential for significant air quality effects from operational traffic. Therefore, the operational phase effects are predicted to be ***long-term***, ***direct***, ***localised***, ***neutral*** and ***not significant***.

Worst Case Impact

The worst-case impact has been assumed as part of the construction and operational phase assessments, and therefore the worst-case effects are predicted to be ***not significant*** for both the construction and operational phases.

5.7.2 Cumulative

Construction Stage

Once the dust mitigation measures outlined in Section **Error! Reference source not found.** are implemented, the cumulative effect of the Proposed Development will be ***direct***, ***short-term***, ***negative***, ***localised*** and ***not significant*** at nearby receptors.

Operational Stage

As no significant effects to operational stage air quality are predicted, no significant cumulative effects to air quality are predicted.

5.8 Difficulties Encountered

No difficulties were encountered as part of the air quality assessment.

5.9 Interactions

5.9.1 Air Quality and Population & Human Health

An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the Proposed Development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits. Therefore, the predicted air quality effect is ***direct, short-term, negative, localised*** and ***not significant*** with respect to Population and Human Health during the construction phase.

5.9.2 Air Quality and Climate

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

5.9.3 Air Quality and Land & Soils

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land & Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

5.9.4 Air Quality and Biodiversity

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. The Royal Canal pNHA is within 250 m of the Proposed Development site area. Significant dust impacts are not predicted beyond this distance. A medium risk of dust impacts are predicted in the absence of mitigation. However, dust mitigation measures will be implemented on site as set out in Section **Error! Reference source not found.**. With the implementation of these mitigation measures dust emissions will be minimised and the air quality effect will be ***direct, short-term, negative, localised*** and ***not significant*** with respect to biodiversity.

5.9.5 Air Quality and Material Assets – Traffic & Transport

Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the Proposed Development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are linked but there is no potential for significant impacts from traffic on air quality. The air quality effect are considered to be ***direct, short-term, neutral, localised*** and ***not significant*** during the construction phase.

5.10 Monitoring

5.10.1 Construction Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site visual inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Monitoring of construction dust deposition along the site boundary during the construction phase of the Proposed Development is recommended to ensure mitigation measures are working satisfactorily. Given the length of the construction site, monitoring locations should be

close to nearby sensitive receptors, where prolonged construction activity is taking place or at construction compounds. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2 m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

5.10.2 Operational Phase

There is no monitoring recommended for the operational phase of the Proposed Development as impacts to air quality are predicted to be not significant.

5.11 References

Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2025) Air Quality in Ireland 2024 (& previous annual reports, 2020-2023)

European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

Fingal County Council (2022) Fingal Development Plan 2023 - 2029

German VDI (2021) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)

Met Éireann (2025) Met Éireann website: https://www.met.ie/

Transport Infrastructure Ireland (2025) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

World Health Organisation (2021) Air Quality Guidelines 2021 (and previous Air Quality Guideline Reports 1999, 2000, 2006)

6 Climatic Factors

6.1 Introduction

This chapter assesses the likely significant effects of the Proposed Development on climate during the construction phase and operational phase. This chapter described and assesses the likely direct and indirect effects of the Proposed Development on climate, in accordance with the requirements of Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the "**EIA Directive**"). This chapter also provides a characterisation of the receiving environment. The Proposed Development is a a pedestrian and cycle route approximately 8.1km in length to be constructed along and adjacent to the Royal Canal. The route extends eastwards from the Kildare County Boundary to the Old Navan Road, near the 12th Lock, where it will connect with the previously constructed Ashtown Greenway. A full description of the Proposed Development is outlined in Chapter 2 'Background to the Scheme' of this EIAR.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.
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6.1.1 Aspects Relevant to this Assessment

Construction and operational greenhouse gas (GHG) emissions have been assessed with respect to the Proposed Development. During the construction phase, greenhouse gas (GHG) emissions will be generated due to embodied carbon associated with construction materials, transport of materials, clearance, demolition and excavation of existing land, construction waste and disposal routes. These sources of GHG emissions have been calculated as part of this assessment as these activities have the potential to impact climate). Impacts to climate are assessed against the requirements of the most recent Climate Action Plan (CAP) CAP2025, Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

During the operational phase, maintenance activities and vehicle use both contribute GHG emissions and have been calculated as part of this assessment. In addition, the vulnerability of the Proposed Development in relation to future climate change has been considered during the operational phase. The Proposed Development has been designed to minimise the impact on climate where possible in reference to measures within the Climate Action Plan 2025 (Government of Ireland, 2025).

6.2 Methodology

6.2.1 Relevant Guidance, Legislation & Policy

6.2.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has referred to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Carbon Management in Infrastructure and Built Environment - PAS 2080 (BSI, 2023);
- Environmental Protection Agency (2024a) National Climate Change Risk Assessment (NCCRA), Technical Guidance on Sectoral Assessment
- International Organization for Standardization (ISO) (2021) ISO 14091:2021. Adaptation to climate change — Guidelines on vulnerability, impacts and risk assessment;
- Institute of Sustainability and Environmental Professionals (ISEP) (formerly known as Institute of Environmental Management & Assessment (IEMA)) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the ISEP 2022 GHG Guidance) (ISEP, 2022);
- Assessing Greenhouse Gas Emissions and Evaluating their Significance Edition 2.1, April 2026 with Supplementary Guidance (ISEP 2026);
- ISEP Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the ISEP 2020 EIA Guide) (ISEP, 2020a);
- ISEP GHG Management Hierarchy (hereafter referred to as the ISEP 2020 GHG Management Hierarchy) (ISEP, 2020b);
- ISEP Principles Series: Climate Change Mitigation & EIA (ISEP, 2010);
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (TII, 2022b); and
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2025).

6.2.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was, inter alia, to enable Ireland "to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050" (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'National Transition Objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The fifth and most recent climate action plan, CAP25, was published in April 2025 (Government of Ireland, 2025).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is, inter alia, to provide for the approval of plans "for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050". The 2021 Climate Act also provides for "carbon budgets and a decarbonisation target range for certain sectors of the economy". The 2021 Climate Act defines the carbon budget as "the total amount of greenhouse gas emissions that are permitted during the budget period".

In relation to carbon budgets, the 2015 Act (as amended) states "*a carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'Budget Period')*". The carbon budget is defined as the total amount of greenhouse gas emissions that are permitted during the budget period. The carbon budget is to be produced for 3 sequential budget periods (Table 6-1). The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period, and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2025 (CAP25) (Government of Ireland, 2025) (Table 6-2).

Table 6-1: 5-Year Carbon Budgets

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 6-2: Sectoral Emission Ceilings 2030

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	*Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.*			
Total	**68**				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

Section 15 of the 2015 Act (as amended), sets out the duties imposed on relevant bodies including local authorities and An Coimisiún Pleanála. Section 15 of the 2015 Act (as amended) states:

"(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(a) the most recent approved climate action plan,

(b) the most recent approved national long term climate action strategy,

(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.".

The recent Supreme Court decision of 4 February 2026, in *Coolglass Wind Farm Limited v An Coimisiún Pleanála* [2026] IESC 5, addressed the obligations of competent authorities under s.15 of the 2015 Act. In particular, the real and enforceable duty on public bodies to act "insofar as practicable" in a manner consistent with national climate objectives.

This EIAR will assess and describe the likely significant effects of the Proposed Development on climate in light of the obligations on relevant bodies to, as far as practicable, exercise their functions in a manner consistent with the above-mentioned relevant plans, strategies and objectives.

6.2.1.3 Policy

In 2024, the Government published its Long-Term Strategy on Greenhouse Gas Emissions Reductions (Government of Ireland, 2024a). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the CAP.

In December 2023, CAP24 was published, establishing key actions to deliver a 51% reduction in GHG emissions by 2030 (compared to 2018 levels) and achieve climate neutrality by 2050 (Government of Ireland, 2023). The updated and current CAP25, published in April 2025, builds on the progress of the previous four iterations of the CAP, with CAP23 first publishing carbon budgets and sectoral emission ceilings, and reaffirms Ireland's climate ambition, with a focus on delivery, implementation and measurable outcomes, particularly ahead of the second carbon budget period (2026–2030). 2025 is the last year in the first 5-year carbon budget period. During the initial 5-year budget period the average annual reduction in GHG emissions required was 4.8%, this requirement increases to 8.3% per annum in the second budget period (2026-2030) and 3.5% per annum for the third budget period (2031-2035). CAP25 retains the high-impact sectors where the biggest savings can be achieved, while emphasising public sector leadership and green procurement. These sectors include renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and land-use change.

CAP25 also includes targeted actions to decarbonise industrial heat and support the transition to carbon-neutral manufacturing processes. Public sector leadership is strengthened through a new Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027), the development of mandatory Climate Action Roadmaps, and enhanced emissions monitoring and reporting across government operations. To support innovation and ensure future economic resilience, IDA Ireland continues to attract and support businesses investing in climate technologies and low-carbon solutions.

CAP25 also reinforces targets first outlined in CAP24 to reduce the embodied carbon of construction materials, with a 10% reduction by 2025 and 30% reduction by 2030 for materials produced and used in Ireland. Cement and high embodied carbon construction materials can be reduced through product substitution, reduced clinker content in cement and uptake of low-carbon construction methods, including those outlined in the Construction Industry Federation 2021 report Modern Methods of Construction (Construction Industry Federation, 2021). Public bodies are now required under the Public Sector Mandate to use best practice project design to reduce embodied carbon; procure concretes with clinker replacements (lower carbon); and require that large construction projects produce a whole life cycle GHG emissions assessment.

6.2.1.3.1 Local Policy

The Proposed Development is located within the functional area of Fingal County Council (FCC). The FCC Climate Action Plan 2024-2029 (FCC and Codema, 2024) outlines FCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The FCC Climate Action Plan states that FCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. FCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

The FCC Climate Action Plan highlights the risks that climate change poses to the transportation network, with risks mainly associated with extreme weather events. The FCC Climate Action Plan notes that cold spells and flooding (pluvial, fluvial coastal, etc) have the greatest future risk when both the likelihood and consequence are accounted for. Increases in flooding will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

6.2.1.3.2 Climate Change Vulnerability Policy

The Second National Adaptation Framework (NAF) (Government of Ireland, 2024b), published in June 2024 under the Climate Action and Low Carbon Development Act 2015 (as amended), outlines a comprehensive, whole-of-government and whole-of-society approach to climate adaptation. Its core objective is to enhance Ireland's resilience to a wide range of climate risks, including extreme weather events, flooding, drought, biodiversity loss, sea level rise, and rising temperatures.

Building on the principles of a "Just Transition", the NAF introduces the concept of "Just Resilience'', envisioning a climate-resilient Ireland that ensures fairness, equity, and inclusivity in adaptation planning and implementation. It promotes reduced reliance on fossil fuels, the expansion of electrified

and accessible public transport, and the integration of sustainability and climate resilience across all sectors. These include energy, water, wastewater, agriculture, transport, health, built environment, and biodiversity, with a strong emphasis on mainstreaming adaptation practices into policy, planning, and operations.

With respect to the transport sector, the second NAF highlights several potential climate impacts and risks and adaptation measures:

- Projected extreme precipitation may increase pluvial and fluvial flooding, impacting the transport sector with service disruptions, hazardous travel conditions, bridge scour and infrastructure deterioration. Flooding may also affect active travel routes such as cycleways and footpaths, reducing accessibility and safety.
- Intensified windstorms may disrupt transport hubs, causing delays and cancellations, and affecting transport networks with fallen trees and debris. Active travel corridors could also be blocked, creating hazards for pedestrians and cyclists.
- Sea level rise and intensified storms may significantly impact transport infrastructure in low-lying coastal areas, eroding coastlines and estuaries. Coastal walking and cycling paths are particularly vulnerable to damage or loss.
- Heatwaves and drought may degrade transport infrastructure, affect road surfaces and rail networks, and require temperature control measures in hubs. For active travel, prolonged heat events may necessitate shaded rest areas, hydration points, and heat-resilient surfacing to maintain safe conditions for walking and cycling.

As part of the 2024 NAF, there is a requirement for development and publication of sectoral adaptation plans (SAP) for 13 key sectors. The SAPs are a key deliverable of the NAF and set out actions across the 13 sectors to ensure that Ireland's society, ecosystems, infrastructure, economy, and competitiveness are resilient to the impacts of climate change.

The Transport Sectoral Adaptation Plan (T-SAP II) 2025 – 2030 (Government of Ireland, 2025b) identified the key climate impacts for the transport sector as: fluvial flooding, changes in precipitation and pluvial flooding, storms and high winds, cold spells and droughts.

Flooding can make roads impassable at times and structures like bridges within rivers experiencing flood events can become unstable due to the erosion of sediment around the foundations. New infrastructure is built with good drainage in place, however, the SAP states that flood risk is expected to increase in the future with projected changes in winter precipitation and more heavy rainfall.

Strong winds and stormy conditions can result in roadside trees/vegetation falling over and in debris blocking roads. Trees blocking roads can have significant traffic disruptions.

The National Climate Change Risk Assessment Main Report (NCCRA) was published in June 2025 (EPA, 2025b). The NCCRA was required to be developed under Action 457 from the 2021 CAP (Government of Ireland, 2021). Action 457 seeks to "Further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland'. The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC, 2023):

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.

- **Sensitivity** - refers to the degree to which a system or asset is affected by climate hazards. It reflects how vulnerable something is to changes such as temperature extremes, flooding, or drought, based on its physical, functional, or ecological characteristics.
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- **Risk** - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assess exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- **RCP4.5** was selected as it represents a scenario aligned with the global temperature trajectory
- **RCP8.5** was selected as it represents a high-emissions scenario and achieves the highest level of modelled temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

These scenarios align with a conservative approach to assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (Government of Ireland, 2024f). In addition to the future climate scenarios, as referenced above, the NCCRA assesses the risk from future climate change during the following timeframes:

- Present (~2030)
- Medium term (2040-2070) (~ 2050)
- Long term (2070-2100) (~2100)

It is recommended that the Environmental Impact Assessment (EIA) for climate risk and vulnerability evaluates risks across the lifecycle of the Proposed Development – construction and operational phases. For this project, future climate risk has been assessed using the 2050s timeframe (2040-2070) and the 2100s timeframe (2070-2100) which aligns with design life of the Proposed Development.

6.2.2 Greenhouse Gas Assessment (GHGA)

As per the EU guidance document "Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment" (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 6.3).

Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland.

6.2.2.1 Construction Phase

The GHG assessment undertaken for the Proposed Development accounts for various components relating to the project during different life stages to determine the total impact of the Proposed Development on climate. Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

To provide a consistent approach to GHG assessments TII have developed the Carbon Assessment Tool (TII 2025) for carbon accounting. PE-ENV-01104 (TII 2022a) states that the Climate Practitioner shall use the TII Carbon Tool for the calculation of emissions arising from the construction and maintenance of a proposed project. The tool uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments. The tool aligns with PAS 2080.

The assessment followed the lifecycle stage terminology consistent with widely used industry standards (based on BS EN 15978:2011, BS EN 15804:2012):

Stage A1 – A3: Product Carbon The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.

Stage A4 – A5: Construction Carbon These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.

Stage B1 – B5: In Use Carbon – use of the building (B1), maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5).

Stage B6, B7, B8: In Use Phase operational use energy (B6), water (B7) and User Utilitisation of Infrastructure (B8).

Stage C1 – C4: End of Life Carbon The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

Stages A1 to A5 (Product Carbon and Construction Carbon, including construction traffic) and B2 (Maintenance) to B5 (Refurbishment) have been included in this assessment. Due to the nature of the Proposed Development, Stage B1 (Building Use) is likely insignificant and has therefore been screened out. Stage B8 (User Utilisation of Infrastructure) has been screened out as per TII guidance (2022a), see Section 6.2.2.2.2, user emissions would be as a result of traffic emissions and the Proposed Development will not result in a significant change in traffic. Stage B6 (Operational Energy Use) and B7 (Operational Water Use) have been excluded as the Proposed Development is not expected to require significant energy during operation, energy use is limited to lighting along the scheme. The Proposed Development is also unlikely to require large quantities of water during its operation as there are no significant operational water uses proposed (see Chapter 16 Material Assets – Utilities for further detail), therefore the B6 and B7 emissions are considered insignificant. It is assumed that end-of-life demolition (Stage C1 – C4) is not relevant, or likely due to the nature of the Proposed Development as it is the intention to maintain the infrastructure into the future. Ongoing maintenance is accounted for in Stage B2. Therefore, potential GHG emissions associated with Stage C1-C4 do not require quantification. A list of assumptions can be found in Table 6-3.

Table 6-3: GHG Assessment Elements Considered and Assumptions

GHG Assessment Category	Elements Considered
Materials	Materials for pavements, roads, traffic signs, fences, etc. Data provided by design team.
Material transport	Where the exact distances travelled were not precisely known at this stage, an estimated 100km radius was used in order to quantify to the total distance travelled during the Construction Phase of the Proposed Project.
Clearance and demolition	Site preparation and clearance. Data provided by design team.
Land use change and vegetation loss	Land is mainly categorised as 'continuous urban fabric' which is associated with a 0 $kgCO_2e$ emissions factor according to the TII Carbon Tool. Land use change from removal of mixed forest has been quantified.
Excavation	General excavation category assumed in TII carbon tool. Data provided by design team.
Construction energy	Data includes generator use for construction compounds and assumes compounds are not connected to the grid. All fuel use is standard diesel fuel.

GHG Assessment Category	Elements Considered
Construction worker travel to site	50 workers on average per day, assumed half of worker trips via car and half via van. Assumed 50km trip distance twice per day.
Construction waste disposal	Includes materials associated with demolition works. Majority of construction waste is recycled/ reused - emissions associated with recycling materials should be attributed with the new material that is made (GHG Protocol). Emissions are from disposed materials- assumed landfill.
Construction waste transport	Distances to local waste facilities provided by project team (see Chapter 15 Material Assets – Waste Management). Where no data was provided or a specific facility was unknown, an assumed HGV load of 20t and 50km round trip distance to waste facility was included.
Construction water	Assuming 50 litres per day
Maintenance	Material maintenance and replacement assumed over the typical 120-year lifespan
Landscaping and vegetation	Data includes general site clearance and removal of trees / hedgerows. Also included is replanting of trees and hedgerows.

The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that would be used over the entire construction/maintenance phase. The TII Carbon Assessment Tool (TII 2025) has been commissioned by TII to assess GHG emissions associated with road, rail and greenway infrastructure projects and thus is the appropriate tool for use on the Proposed Development. 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 infrastructure planning, construction and operation. This engagement aims to ensure carbon savings are made and to assist in ensuring the project is consistent with and aligned to Ireland's CAP25 goal of Net Carbon Zero by 2050.

The Proposed Development is expected to have a construction phase of approximately two years; an operational phase lifespan of 120 years has been used in this assessment based on guidance from EN17472:2022 Sustainability of construction works - Sustainability Assessment of Civil Engineering Works - Calculation Methods (BSI 2022).

The assessment has been divided into the following categories:

- Pre-Construction (A5) – this includes site clearance works and land-use change.
- Embodied Carbon of materials (A1 – A3) – this includes the quantities of construction materials required for the Proposed Development, e.g., steel, concrete, asphalt and aggregates.
- Construction Activities (A4 – A5) – GHG emissions associated with excavation works, water use, fuel usage.
- Construction Waste (A5) – GHG emissions associated with demolition and construction waste materials.
- Transport (A4 – A5) – GHG emissions from transport of materials to site and transport of waste materials to a waste facility. Construction worker travel to site is also included within this category
- Maintenance (B2 – B5) – GHG emissions associated with ongoing maintenance of the Proposed Development over an assumed 120-year operational lifespan. This is based on the default maintenance cycles in the TII Carbon Tool.

Material quantities, wastes quantities and transport volumes were supplied by the project team and incorporated into the TII Carbon Tool in order to complete the assessment.

6.2.2.2 Operational Phase

6.2.2.2.1 Material Maintenance

The TII Carbon Tool (TII, 2025) allows for quantification of GHG emissions associated with ongoing maintenance and replacement of materials over the lifetime of the Proposed Development. These are default values based on the assumed 120-year lifespan of the Proposed Development.

6.2.2.2.2 Traffic Emissions

Emissions from road traffic associated with the operational phase of the Proposed Development may have the potential to emit carbon dioxide (CO_2) which will impact climate.

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022b), 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, and also the climate assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- 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.

The Proposed Development is a greenway route, which provides facilities for pedestrians and cyclists. As a result, the Proposed Development is not predicted to cause a significant change in traffic. The change in traffic was reviewed against the above TII screening criteria and it was determined that an assessment of traffic-related GHG emissions could be screened out as none of the criteria are met. There is no potential for significant effects on climate from operational phase traffic emissions associated with the Proposed Development. Construction phase traffic is included within the TII Carbon Tool (TII, 2025).

6.2.2.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on ISEP guidance (ISEP, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

In accordance with ISEP and TII guidance, the significance of the impacts of GHG emission resulting from a given project is based on how it contributes to the overall GHG emissions within the sectoral and national carbon budgets and whether that project contributes or not to the CAP25 objective for Ireland to achieve carbon neutrality by 2050, that is that a project contributes to reducing GHG emissions. This process requires an assessment of the quantified GHG emissions against the sensitivity of receptors (Ireland's national GHG targets or National Climate Objective), qualification of the potential measures that might mitigate against GHG emissions, and a degree of professional judgement that takes account of the balance of all of these factors. Both the ISEP and TII guidance documents are explicit in this concept.

ISEP Supplementary Guidance (Assessing Greenhouse Gas Emissions and Evaluating their Significance) (ISEP, 2026) highlights the importance of mitigation in determination of significance, committing the project to go further than minimum regulatory compliance. This is particularly relevant in the context of the severity of the current climate position and potential exceedance of the 1.5°C Paris

Agreement target. It explains it is no longer sufficient for developments to comply with national policies or regulatory standards as mitigation and achieve non-significant effects. It determines embodied carbon must be addressed and generalised measures found in a Construction Environmental Management Plan (CEMP) cannot be relied upon to materially reduce significance. Where no sufficient and meaningful mitigation is proposed which supports an applicable 1.5°C or net zero compatible trajectory, beyond minimum compliance with current regulations, this would typically indicate a major or moderate, significant adverse effect.

The ISEP 2026 guidance points set out above and the TII significance criteria set out in Table 6-3 below are well aligned but the ISEP 2026 guidance goes a step further in requiring mitigation beyond 'good practice'.

Acknowledging the ISEP 2026 guidance, the primary criteria used in determining the significance of effects on climate are those set out in Table 6-4 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Where possible, additional mitigation beyond current regulatory requirements have also been included to further reduce the impact to climate.

Table 6-4: Significance Criteria for GHGA

Effects	Significance Level	Description
Significant Adverse	Major Adverse	• The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	• The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	• The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

6.2.3 Climate Change Risk Assessment (CCRA)

As per the TII PE-ENV-01104 guidance (2022a), an initial screening of risk during the operational phase is conducted. This is carried out by determining the sensitivity of Proposed Development assets (i.e. receptors) and their exposure to climate change hazards.

The Proposed Development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development-by-development basis.

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

First an initial screening of physical hazards is carried out based on the proposed site location. This is a qualitative screening which intends to only proceed with relevant hazards (e.g., sea level rise is not an applicable hazard to inland areas or wildfire is not considered a hazard in an urban location). Following this, all-relevant hazards are assessed on their exposure under future climate change.

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 irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. 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.

6.2.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the Proposed Development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the Proposed Development to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 6-5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the Proposed Development can be considered as not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

The screening and Climate Change Vulnerability Assessment detailed in Section 6.4.3.1 did not identify any residual medium or high risks to the Proposed Development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were screened out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in as outlined in Section 6.5.1.

Table 6-5: Climate Change Vulnerability Matrix

		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

6.2.4 Study Area

Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland.

In relation to climate change vulnerability, the study area comprises the Proposed Development assets and is confined to the boundary of the Proposed Development.

6.2.5 Consultation

Consultation with various relevant bodies was undertaken as part of the EIA process. No specific responses in relation to climate were received.

6.3 Baseline Environment

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline. Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland, and the baseline is determined in relation to this study area.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

6.3.1 Current GHG Baseline

The existing climate baseline can be determined by reference to data from the Environmental Protection Agency (EPA) on Ireland's total greenhouse gas (GHG) emissions and compliance with the European Union's (EU) Effort Sharing commitment. Data published in July 2026 (Environmental Protection Agency, 2026a), indicates that Ireland exceeded, without the use of flexibilities, its 2025 annual limit set under EU's Effort Sharing Regulation (ESR) (EU 2018/842) by 5.01 $MtCO_2e$. However, the reported emissions for 2025 represent the third consecutive year in which Ireland's emission were below 1990 levels by 5.5%. Emissions Trading Scheme emissions have decreased by 52.4% or 11.8 $MtCO_2e$ compared to 2005 and Effort Sharing Regulation emissions decreased by 11.8% or 5.6 $MtCO_2e$. Ireland is now a net 3,198 $ktCO_2e$ distant from its target under the Effort Sharing Regulation.

The EPA estimate that 2025 total national GHG emissions, excluding LULUCF, have decreased by 2.3% on 2024 levels to 52.65 $MtCO_2e$. The sector with the highest emissions in 2025 was agriculture at 38.7% of the total, followed by transport at 22.0%. For 2025, total national emissions (including LULUCF) were 55.16 $MtCO_2e$ (Table 6-6). Agriculture emissions decreased by 0.2% in 2025, primarily due to a 3.3% reduction in cattle herd numbers. However, a 12.7% increase in fertilizer nitrogen lessened the impact of the herd reduction on emissions. Greenhouse gas emissions from the transport sector decreased by 1.5% in 2025, the increase in the use of biofuels contributed to the majority of this emission reduction in addition to the increasing number of electric vehicles on Irish roads. Emissions from the energy industries sector decreased for the fourth consecutive year by 7.1% in 2025. This reduction can be attributed to an increase in imported electricity as well as increased renewable generation. Renewables accounted for 40.6% of electricity generation in 2025.

The current estimates of National greenhouse gas emissions (including LULUCF) in 2025 are 14.5% below 2018 levels, at considerable variance from the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021 to 2025 Ireland has used 99.6% or 293.9 $MtCO_2e$ of the 295 $MtCO_2e$ Carbon Budget for the five-year period 2021-2025. This leaves 1.1 Mt CO_2e of the budget available to be carried over into budget 2 for 2026-2030. In order to achieve Ireland's climate ambition of a 51% reduction by 2030, annual emission reductions of over 10% are required for the next 5 years.

In relation to compliance with the sectoral emissions ceilings (SECs), the provisional GHG emissions estimates (see Table 6-6) indicate that four sectors, Buildings (Residential), Buildings (Commercial and Public), Agriculture and Other, have stayed within their sectoral emissions ceilings. The other three sectors, Electricity, Transport and Industry have exceeded their sectoral emissions ceilings. The EPA state that the National Climate objective of a 51% reduction by 2030 will be unattainable unless every sector meets its indicative percentage reduction target.

Table 6-6: Trends in Total National GHG Emissions 2021 – 2025

Sector *Note 1*	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**	**Sectoral Emissions Ceiling 2021-2025**	**% SEC 2021-2025 Used**
	$MtCO_2e$							
Electricity	9.82	9.62	7.50	6.89	6.30	40.12	40	100.3%
Transport	11.19	11.88	11.93	11.78	11.61	58.40	54	108.1%
Buildings (Residential)	6.71	5.62	5.23	5.49	5.21	28.26	29	97.4%

Sector *Note 1*	2021	2022	2023	2024	2025	Total	Sectoral Emissions Ceiling 2021-2025	% SEC 2021-2025 Used
Buildings (Commercial and Public)	1.42	1.38	1.34	1.44	1.39	6.97	7	99.6%
Industry	7.25	6.82	6.47	6.20	6.00	32.74	30	109.1%
Agriculture	21.97	21.78	20.72	20.44	20.40	105.30	106	99.3%
Other *Note 2*	1.82	1.85	1.73	1.64	1.75	8.79	9	97.6%
LULUCF	2.87	2.47	2.97	2.51	2.51	13.33	-	N/A
National Total (incl. LULUCF)	**63.05**	**61.42**	**57.89**	**56.38**	**55.16**	**293.90**	**295**	**99.6%**
Note 1 Reproduced from latest emissions data from the EPA (EPA, 2026).								
Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).								

6.3.2 Future GHG Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and ISEP Guidance (ISEP, 2022; 2026l) 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 whether Ireland meets its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted 'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013' (hereafter referred to as the "**Regulation**") (European Union, 2018) to meet the commitments under the Paris Agreement. The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023, and Ireland must now limit its ETS and non-ETS greenhouse gas emissions by at least 42% by 2030 compared to 2005. The ETS is an EU-wide scheme which regulates the GHG emissions from installations and operators covered under the scope of the scheme including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In May 2026, the EPA released the report Ireland's Greenhouse Gas Emissions Projections 2025-2030 (EPA, 2026b), which includes total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA projections indicate that currently implemented measures (With Existing Measures) will achieve a reduction of 12.7% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures

in the higher ambition (With Additional Measures) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 23.4% by 2030, still short of the 42% reduction target.

The EPA GHG emissions projections report for 2025 - 2030 (EPA, 2026b) states that Ireland is not on track to meet the 51% emissions reduction target by 2030 (compared to 2018). Full implementation of a wide range of policies and plans across all sectors that deliver carbon savings is required to achieve a projected reduction of 25%.

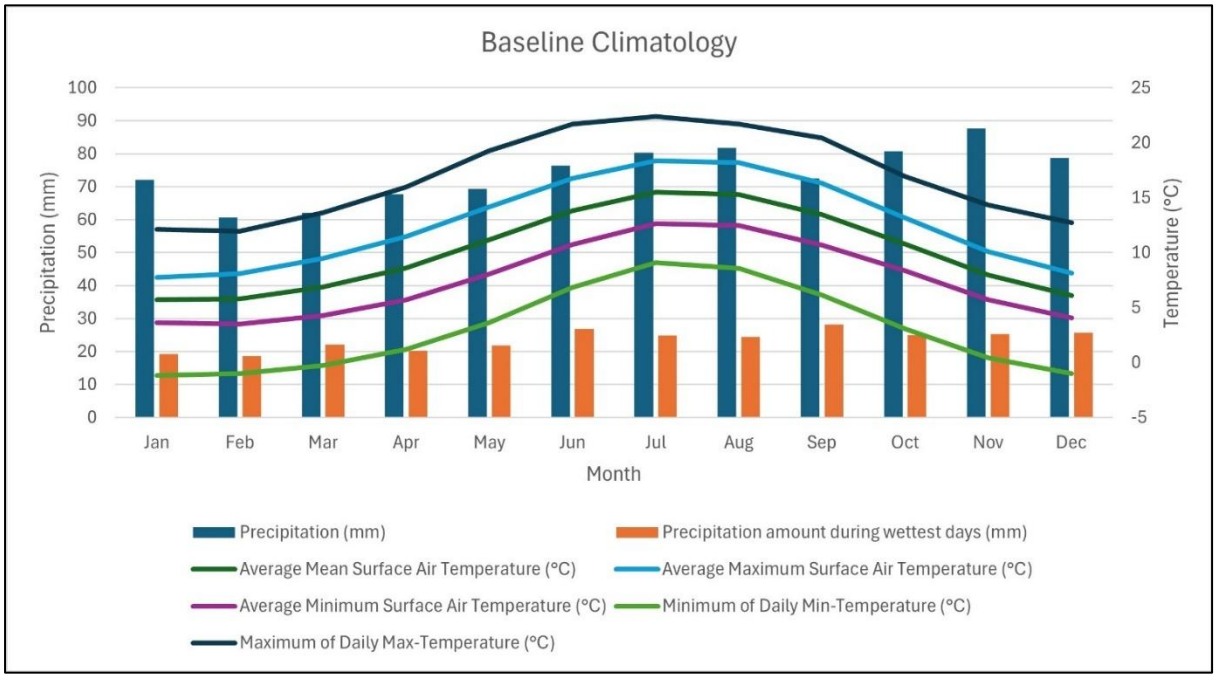
The estimates of GHG emissions from the EPA for the 2021 – 2025 period indicate that the first carbon budget for 2021 – 2025 will be met but that Budget period 2 (2026-2030) of 200 $MtCO_2e$ is expected to be exceeded by 53 to 81 $MtCO_2e$.

6.3.3 Current CCRA Baseline

The study area for the Proposed Development has a temperate, oceanic climate, resulting in mild winters and relatively cooler summers when compared with continental Europe. This baseline data is derived from the European Centre for Medium-Range Weather Forecasts (ECMWF) ERA5 data reanalysis (ECMWF, 2023) which includes observed data from individual meteorological weather stations across Ireland operated by Met Eireann such as that at Dublin Airport. The ERA5 data from the ECMWF is based on the current climatological period (1991–2020) and the historical record dating back to 1950. This data is reanalysed to model a complete picture of Ireland's historical climate. This method has been chosen to ensure data can be analysed at the daily level and harmoniously compared with future scenarios. The baseline time-period referred to for the *Current CCRA Baseline* assessment was from 1991-2020 and is specific to county Dublin and the location of the development in question.

Figure 6.1 below shows the climatology for the 30-year baseline period from 1991 to 2020 indicating the wettest months are from October through to January with November (87mm) being the wettest on average. July and August are also markedly wetter than other months both <80mm on average. Spring and Summer (Feb-Jun) are markedly drier compared to the wettest months with average monthly precipitation 60mm-76mm respectively. The driest month on average was February (60mm), with March through to May also experiencing lower than average rainfall (~64mm). Ireland and Dublin's precipitation patterns are strongly influenced by its oceanic climate, with the wettest months typically coinciding with periods of frequent low-pressure Atlantic storm systems. In the cases of July and August however, this may be a factor of convection and frontal rainfall, whereby warm continental summer air is pressed against colder air moving across the Atlantic.

Figure 6.1: Baseline Climatology (Dublin County) 1991-2020



July was the warmest month with a mean temperature of 15.5°C with average mean surface temperatures across the summer months (July – August) >13°C. July is also the warmest month for maximum daily temperatures (22°C) which showcases the higher value ranges recorded during a particular month. Across May – September average maximum daily temperatures exceed 19°C.

January and February are the coldest months with average mean surface air temperatures of 5.7°C and average minimum temperatures of 3.3-3.6°C. For daily minimum temperatures which reference the lowest range values (10th percentile range) of the data, January (-1.9°C) and February (-1.0°C) also remain the coldest with marginal difference. Several other winter and early spring months (December - March) also experience daily minimums of below 0°C.

Historical records show that Dublin has experienced several severe storms, with wind speeds exceeding 100 km/h, including a record set during Storm Éowyn in January 2025, which reached 142 km/h in Galway. Storm activity is concentrated in winter (December–February), with an average of eight named storms annually (Met Éireann, 2025). Analysis of data from Dublin Airport (1976 – 2005) (Met Eireann, 2025) indicates a mean 10m wind speed of 10 knots (18 km/hr) and maximum gusts ≥57 knots (105 km/h).

Overall, the baseline climatology for the area of the Proposed Development and Dublin region shows evidence of high rainfall across the year high. Mild winters with average minimums >3°C and relatively mild summers with average maximums of 18°C however, this maximum is not significant for extreme heat or prolonged drought impacts.

6.3.4 Future CCRA Baseline

Climate Change Impacts and Projections for Ireland

There has been increased annual rainfall in the north and west of Ireland, with more variable patterns in the south and east which includes the area of the Proposed Development (EPA, 2021). Key risks identified by the EPA relevant to the proposed project include:

- Increased likelihood of more frequent and intense North Atlantic low-pressure systems bringing high rainfall and high winds.
- More intense rainfall periods which may lead to pluvial flooding and elevated fluvial levels.

- Longer dry spells and increased temperatures.

Climate Modelling and Planning

International best practice and national policy such as the NCCRA (2024), and Transport Infrastructure Ireland (TII, 2022a) recommends using two emission scenarios to project future climate change. This includes a moderate and high emission scenarios (RCP4.5 and RCP8.5) for future planning. These Representative Concentration Pathways (RCPs) reflect varying levels of global climate mitigation and are explained below.

- RCP 4.5 (a 'moderate' scenario) represents an approximate 2.4°C increase in global average temperatures (1.7-3.2°C). It assumes moderate mitigation efforts leading to stabilisation of emissions by mid-century and is generally aligned with current policies for emission reduction.
- RCP 8.5 (a 'worst case' / high emissions scenario) represents an approximate 4.3°C increase in global average temperatures (3.2-5.4°C) and assumes continued high emissions with minimal mitigation. This high-end scenario is useful for understanding potential impacts of current emission trends continue. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

This climate change assessment uses the latest climate change projections standardised and bias corrected for Ireland available through the EPA and the TRANSLATE project (EPA, 2025b). Baseline climatology is derived from Climate Ireland TRANSLATE project using a baseline period of 1976-2005. This baseline period differs from the *Current CCRA Baseline* of 1991-2020 due to the variation in sources, with Climate Ireland utilising a baseline of 1976-2005.

6.3.4.1 Key Findings from Future Climate Change Projections

Projected changes include:

- Summer temperatures rising by over 2°C and overall mean temperatures increasing 1.1°C and 1.6°C by mid-century under RCP4.5 and RCP8.5 respectively.
- Summer rainfall is decreasing while winter rainfall increases sharply, attributing to an overall increase in rainfall annually for the Proposed Development location.
- Fewer cold winter nights and more frequent short heatwaves (≥5 days >25°C).
- Increased likelihood of extended dry spells and possible drought which may elevate the risk of wildfire.
- Increased likelihood of more storms which may increase the risk of flooding due to deluge of rainfall which may be a factor in increased Max 1 day projections (+10mm).

Table 6-7: Site Specific - Future Climate Change Summary of Projections under both RCP scenarios for 2050 period (2041-2070) and 2100 period (2071-2100)

Climate Hazard	Indicator	Baseline	RCP4.5		RCP8.5	
		(1976-2005)	(2041-2070)	(2071-2100)	(2041-2070)	(2071-2100)
Temperature	*Mean temp (°C)*	9.76	10.9 (+1.1)	11.3 (+1.5)	11.3 (+1.6)	12.5 (+2.8)
	Mean Max temp (°C)	13.48	14.6 (+1.1)	15.0 (+1.5)	15.0 (+1.5)	16.2 (+2.7)
	Mean Min temp (°C)	6.04	7.2 (+1.2)	7.6 (+1.6)	7.7 (+1.6)	8.9 (+2.9)
	Average of Daily Max temp (°C)	25.54	27.5 (+2.0)	27.7 (+2.2)	28.1 (+2.5)	29.6 (+4.0)
	Frost Days (Nr.)	36.52	21.5 (-15.1)	17.0 (-19.5)	16.6 (-20.0)	7.9 (-28.6)

Climate Hazard	Indicator	Baseline	RCP4.5		RCP8.5	
		(1976-2005)	(2041-2070)	(2071-2100)	(2041-2070)	(2071-2100)
Precipitation and Flooding	*Annual precipitation (mm)*	838	878 (4.8%)	900 (7.5%)	899 (7.3%)	939 (12.1%)
	Max 1-day (mm)	39	48 (24.4%)	49 (27.7%)	50 (28.9%)	55 (43.2%)
Storms and high winds	*Storm Frequency and Average speed*	On Average 8 named storms annually with speeds exceeding 100km/hr[N.1]	Winter storm frequency is projected to increase, with a possible extension of the storm season. While the intensity of individual storms cannot be accurately projected, storm wind speeds are likely to remain above 100 km/hr.			
	Max gust Speed	80				
Wildfire	*No. of Wildfires (Descriptive)*	Various	Rising temperatures and prolonged dry spells can cause increased wildfire risk.			
Drought	*Absolute Drought (≥15 days with less than 1mm)*	Rare	Marginal increase	Increased Likelihood	Marginal increase	Increased Likelihood
Lightning	*Qualitative (Descriptive)*	Occurring during summer periods	This hazard may modestly increase in the future due to more favourable conditions, such as rising temperatures and extended warm periods beyond the traditional summer season			
Source: EPA Climate Ireland Translate Projections Note 1: Data from Met Éireann						

Impacts resulting from climate change hazards will evolve and have the potential to include increases in global temperatures and increases in the intensity and frequency of rainfall days per year combined with increases in the intensity and frequency of low-pressure systems in the north Atlantic during the winter storm period. Therefore, it is expected that the climate over the Proposed Development in Dublin will evolve over time and consideration is needed with respect to this within the design of the Proposed Development.

6.4 Predicted Impacts

6.4.1 'Do Nothing' Scenario

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc). The Do-Nothing scenario is considered neutral in terms of the assessment of effects on climate and climate change vulnerability. Due to the nature of the Proposed Development, the benefits of active travel, such as the modal shift from GHG emitting vehicle use, health related benefits and tourism potential will not be applicable in the Do-Nothing scenario.

6.4.2 Greenhouse Gas Assessment

Using the online TII Carbon Tool (TII, 2025), the GHG emissions associated with the different activities during the construction phase and operational phase of the Proposed Development have been quantified and assessed, the results of the assessment are presented in Table 6-8. As shown in Table 6-8, the assessment indicates that the key elements associated with GHG generation during the construction phase of the Proposed Development are the fuel usage for site plant, machinery and generators (61% of total) as well as the embodied carbon of the construction materials (27.5% of total). Steel and concrete are the two materials with the most significant embodied carbon and account for approximately 97% of the material emissions. The carbon assessment has assumed an appropriate conservative approach and has not accounted for lower carbon materials selected later in the detailed design stage.

It is intended that excavated material will be re-used on the site rather than being transported to landfill however a conservative approach has been taken for this assessment and therefore the associated avoided carbon has not been quantified.

Ongoing maintenance of the Proposed Development over the 120-year lifespan is equal to 1,082 tCO_2e, or 9 tCO_2e annually over the 120-year lifespan.

As set out in Table 6-8, the Proposed Development is estimated to result in total GHG emissions of 37,817 tCO_2e. This is equivalent to an annualised (over 2-year construction period) total of 18,368 tCO_2e. Emissions are annualised as the Proposed Development's construction is predicted to occur over a two-year period and the emissions targets are targets per year. Over a predicted 120-year lifespan (based on guidance in EN 17472:2022) the annualised emissions due to the Proposed Development are predicted to be 315 tCO_2e.

Table 6-8: Proposed Development GHG Assessment Results

Category		Elements Considered	Emissions (tCO_2e)	% of Total	Sector
A5	**Pre-Construction**	Site clearance works	4.2	0.01%	Industry
A5		Land use change due to site clearance	32.1	0.1%	LULUCF
A1-A3	**Embodied Carbon (Materials)**	Asphalt, concrete, aggregate, steel	10,390	27.5%	Industry
A4	**Material Transport**	HGV movements associated with material deliveries	1,030	2.7%	Transport
A5	**Construction Activities**	Excavation	5.5	0.01%	Industry
A5		Water use	0.016	0.00004%	Other (including waste and wastewater)
A5		Fuel use on-site (diesel)	23,072	61.0%	Energy industries (including electricity generation)
A5		Construction worker travel to site	2,754	7.3%	Transport
A5	**Construction Waste**	Recycling of mixed construction & demolition wastes, metals, concrete	521	1.4%	Other (including waste and wastewater)
A5	**Waste Transport**	HGV movements associated with waste transported off-site	8	0.02%	Transport
B2-B5	**Maintenance**	Maintenance materials over 120 year lifespan	1,082	2.9%	Industry
Total			**37,817**		
Total Annualised over 2-year construction phase (excluding operational phase maintenance)			**18,368**		

Category	Elements Considered	Emissions (tCO_2e)	% of Total	Sector
Total Annualised over 120-year lifespan (including maintenance)		**315**		

The GHG emissions from the Proposed Development as a total cannot be compared against one specific sector 2030 carbon budget. The emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budget. The predicted GHG emissions (as shown in Table 6-8) have been averaged over the full lifespan of the Proposed Development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In Table 6-9, GHG emissions have been compared against the carbon budget for the industry, transport and waste sectors in 2030 (Government of Ireland, 2025), against Ireland's total GHG emissions in 2025, against Ireland's EU 2030 target of a 42% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 120-year Proposed Development lifespan, are a small fraction of the relevant sectoral emissions ceilings and National 2030 target.

Table 6-9: Annualised Proposed Development GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Annualised Development GHG Emissions (tCO_2e)		% of Relevant Target/Budget
Ireland's 2025 Total GHG Emissions (existing baseline)	55,160,000	Total GHG Emissions	315	0.0006%
Non-ETS 2030 Target	27,722,000	Total GHG Emissions	315	0.0011%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	96	0.0024%
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	32	0.0005%
2030 Sectoral Budget (Energy Industries (including electricity generation))	3,000,000	Total Electricity Emissions	192	0.01%
2030 Sectoral Budget (Waste Sector, including wastewater)	1,000,000	Total Waste Emissions	4	0.0004%

6.4.2.1 GHGA Significance of Effects

In addition to the TII significance criteria in Table 6-4, the TII guidance (TII, 2022) and ISEP guidance (2022, 2026) states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Therefore, prior to mitigation, any impact to climate as a result of GHG emissions is considered significant.

6.4.3 Climate Change Risk Assessment

6.4.3.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out. However, consideration has been given to the Proposed Development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 6.5.1.

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding.
- Increased temperatures potentially causing water scarcity and prolonged periods of hot weather
- Reduced temperatures resulting in ice or snow and [possible hazard to working conditions].
- Major Storm Damage, including wind damage and coastal flooding from storm surge.
- Wildfire resulting from dry spells and elevated temperatures.

6.4.3.2 Operational Phase

To determine the vulnerability of the Proposed Development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. Table 6-10 presents the initial qualitative climate hazards screening relevant to the Proposed Development. A number of climate hazards have been screened out of the assessment as discussed in Table 6-10.

Table 6-10: Climate Hazard Screening

Climate-related Hazard	Hazard Screening Rationale	Screening
Extreme Heat temperatures	High temperatures are a key consideration for both construction and long-term operation of the proposed project. Historical data shows rising temperatures in Ireland. Heat and thermal expansion can damage buildings, materials, and road surfaces, and affect the lifecycle of assets.	Screen in
Extreme Cold Temperature	Snow and ice events pose significant risks to health, safety, and site operations. Road access may be disrupted, and low temperatures can affect assets such as fuel tankers, workers, and infrastructure. Freeze-thaw cycles may cause cracking in concrete and road surfaces, requiring snow clearance and ice management.	Screen in
High precipitation and pluvial flooding	Surface water remains a key vulnerability for any Proposed Development during both construction, and operational phases due to the sensitivity of construction materials, site access, and site assets to water exposure.	Screen in
Fluvial flooding	The Proposed Development is adjacent to the Royal Canal and in proximity to other watercourses and therefore the risk of fluvial flooding has been included in the assessment.	Screen in
Drought	Droughts have occurred across Ireland, previously impacting water supply. Future reductions in water availability would not directly impact the Proposed Development and its operation.	Screen out
Wildfire	The area surrounding the site is largely urban and wildfire is not considered a risk for the Proposed Development.	Screen out
High winds and storms	While the site itself isn't significantly elevated, existing and proposed assets and design components may be exposed to high winds. Historically, Ireland has experienced several notable storm events including Storm Éowyn and Storm Darragh (2024), which caused widespread damage across Ireland. These storms often bring heavy rainfall and flood warnings, increasing overall risk.	Screen in
Fog	Fog is not considered a significant hazard for the Proposed Development, as it does not involve road transport, aviation, or activities requiring high visibility.	Screen out
Lightning	The proposed design is not elevated, and no extra risk is considered above what already exists under the existing design codes of the site and buildings.	Screen out
Landslides and Subsidence	The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed	Screen out

Climate-related Hazard	Hazard Screening Rationale	Screening
	to determine the low risk from landslides at the Proposed Development location. Consideration has been given to subsidence and adequate engineering measures are in place to ensure stability.	
Sea level rise and coastal flooding	The Proposed Development is located over 8 km from the nearest indicated coastal flooding extents (see SSFRA for further information).	Screen out

6.4.3.2.1 Climate Change Vulnerability Assessment

The sensitivity and exposure of the Proposed Development to the screened in climate hazards must first be determined to then determine the vulnerability of the Proposed Development to climate change. Flooding (fluvial and pluvial), extreme heat, extreme cold, and extreme wind have been considered as climate hazards in the context of the Proposed Development.

The sensitivity of the Proposed Development to the climate hazards is assessed irrespective of the project location. Table 6-11 details the sensitivity of the Proposed Development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been determined, the exposure of the Proposed Development to each of the climate hazards is determined, this reflects on the possible likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the Proposed Development to each of the climate hazards. The results of the vulnerability assessment are detailed in Table 6-11.

Table 6-11: Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Fluvial, Pluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low)

The sensitivity and exposure of the Proposed Development was determined with input from the various discipline specialists on the project team. It was concluded that the Proposed Development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

Flooding

Future increases in rainfall due to climate change may elevate the risk of surface water (pluvial) flooding. A detailed Site Specific Flood Risk Assessment (SSFRA) was undertaken by DBFL and is included with this planning application (see document reference 170239-X-X-XXX-RP-DBFL-CE-0002). The SSFRA was reviewed to inform this assessment.

The main potential sources of flooding identified in the SSFRA are:

- Fluvial flood risk from the Rusk River, and potentially from River Liffey and its tributaries.
- Pluvial flood risk associated with the proposed Development's new drainage network – confined only to where pipework is proposed in filter drains and outlets.

Initial flood risk mapping using LiDAR information suggested part of the Proposed Development would fall within Flood Zone B. However, using more accurate topographical survey information, it was confirmed that the Proposed Development falls outside this flood zone which indicates a low probability of flooding. The Proposed Development is not considered at risk of flooding from the Royal Canal according to the SSFRA. Where the Proposed Development runs directly along the canal banks, the existing levels are generally a minimum of 0.3m above the canal levels, and the proposed works shall raise levels locally along the greenway. It is considered in the SSFRA that the canal water levels are managed appropriately through the network of locks, and that there is minimal or negligible risk of flooding as a result of rising levels.

The Proposed Development is within fluvial Flood Zone C and is not considered at risk from fluvial flooding.

With regard to pluvial flood risk, the surface water runoff from the proposed unbound and bituminous flexible pavement and concrete surfaced sections of the greenway (including boardwalks) will generally run over the edge and soak naturally to the underlying soil or to a filter drain for treatment and storage if practicable. Even where an unbound surface is proposed, the cycle track will be constructed so that surface water is shed to the sides, notwithstanding the fact that the surface is permeable. This is to prevent the sub-surface from becoming saturated. While the raised section of bridges will drain off to the underlying soil or canal.

According to the assessment in the SSFRA by DBFL, the risk of the Proposed Development impacting on the existing road drainage network will be confined to the 5 no. above ground road crossings and will be mitigated by ensuring that the run-off from any additional hard standing is directed to soakage areas away from the road drainage network. The existing kerb lines and road extents are largely being retained as part of the proposed works.

The risk of pluvial flooding affecting the operation of the greenway itself will be mitigated by ensuring the filter drains and associated pipe networks are sized accordingly for the area being drained, designed based on recommendations made in the Greater Dublin Strategic Drainage Strategy (GDSDS), taking account of flood exceedance e.g., for storms return periods over 1% AEP and incorporating 20% climate change.

Extreme Temperatures (Heat & Cold)

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the construction materials and some related infrastructure. However, construction materials will be selected which meet the relevant design standards and which accommodate high and low extreme temperatures. The likelihood of extreme cold events in the future is projected to decrease reducing their overall exposure and risk. Extreme heat (+30°C) is equally unlikely and building design has incorporated these considerations with thresholds for materials accommodating these extremes. Therefore, both extreme temperatures (cold and heat) are not considered a significant risk.

High Winds and Storms

In relation to extreme winds, there are no large scale buildings proposed as part of the Proposed Development which may be susceptible to high winds.

Wind exposure to landscaping and vegetation has been considered in the design. Native tree species have been selected to enhance overall resilience and reduce the risk of uniform wind damage. The chosen species are known for their strong structure, good wind resistance, and reliable performance in local conditions. Planting layouts, spacing, and maintenance practices will further support tree stability and long-term landscape health.

The selection of tree planting has considered the 30:20:10 rule, as per Objective DMSO136 of the Fingal County Development Plan 2023-2029. Objective DMSO136 states:

"Tree planting within developments shall adhere to the 30:20:10 rule in relation to tree selection in order to prevent an over reliance on certain genera or species in the existing stock and to combat climate change".

The selection of native species allows for the inclusion of well-adapted species selected for their proven tolerance to local soil and climatic conditions.

Summary

Overall, the Proposed Development has low vulnerabilities to the identified climate hazards. Therefore, it has been concluded that no detailed risk assessment is required.

6.4.3.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the Proposed Development due to climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the Proposed Development due to climate change during the operational phase are ***direct***, ***long-term***, ***negative*** and ***not significant***.

6.5 Mitigation Measures

6.5.1 Construction Stage

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Site-won material will be re-used on site, specifically in relation to earthworks, excavated materials will be re-used as fill.
- Re-use and recycling of materials on site as opposed to disposal and landfill will be prioritised in line with TII's Sustainability Implementation Plan and Circular Economy Guidance.
- Fingal County Council will endeavour to maximise the use of recycled products and recycling of materials where possible within the detailed design.
- As FCC is a public body, the procurement process will align with the *Green Public Procurement Strategy and Action Plan 2024 – 2027* (Government of Ireland 2024c). This requires public bodies to seek to procure goods, services and works with a reduced environmental impact throughout their life cycle.
- A suitably competent contractor will be appointed who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Idling of on-site or delivery vehicles will not be permitted, even over short periods.
- All plant and machinery will be well maintained and inspected regularly.
- Waste of materials due to poor timing or over ordering on site will be minimised and will aid to minimise the embodied carbon footprint of the site.
- Materials will be sourced locally where possible to reduce transport related GHG emissions.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible.
- Concrete with a minimum clinker replacement of 30% or higher will be utilised as per the CAP target and as set out in *Reducing Embodied Carbon in Cement and Concrete Through Public Procurement in Ireland* (DETE, 2024).
- A whole-life Carbon Management Plan aligned to PAS 2080 will be implemented to inform the detailed design, build and operation.

6.5.2 Operational Stage

The primary contributor to emissions during the operational phase of the Proposed Development will be maintenance materials. Lower carbon maintenance materials will be the preferred choice throughout the lifetime of the development. Routine monitoring of all infrastructure will be undertaken in line with

best practice to ensure timely repairs and effective maintenance, thereby maximizing the full lifecycle value of all assets.

The Proposed Development has been designed to reduce the impact on climate change through the promotion and opportunity for active travel.

To address climate change vulnerability and risk, the Proposed Development will incorporate permeable surfaces which will help slow runoff rates. For fluvial and pluvial flood risk, the greenway will be constructed using flood-resilient design standards.

The design and landscaping also account for extreme wind events. Bridge structures will be engineered to meet standards for high wind speeds, and landscaping will feature deep-rooted native plants to enhance stability and resilience.

6.6 Residual Impacts

6.6.1 Proposed Development

The impact to climate due to a proposed development must be assessed as a whole for all phases.

The TII guidance (2022) states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 6.5.1 has been considered when determining the significance of the Proposed Development's GHG emissions.

The Proposed Development will facilitate a modal shift and provide facilities for active travel and there will be a reduction in GHG emissions associated with this modal shift. This positive impact has not been quantified as part of this assessment. This positive impact will not completely offset the GHG emissions generated during the construction and, to a lesser extent, the operation, of the Proposed Development. Therefore, the modal shift and associated GHG reduction is not of a great enough magnitude to create a net positive impact to GHG emissions from the Proposed Development.

According to the TII significance criteria described in Section 6.2.2.3 and Table 6-4, the significance of the GHG emissions during the construction and operational phase is minor adverse.

The ISEP GHG guidance (ISEP, 2022) (which has been embraced by the TII Guidance (TII, 2022) in Section 6.7.2) defines minor adverse as follows:

"A minor adverse not significant impact is described with: A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not significant. The project may have residual impacts but is doing enough to align with and contribute to the relevant transition scenario. A 'minor adverse' or 'negligible' non-significant effect conclusion does not necessarily refer to the magnitude of GHG emissions being carbon neutral (i.e. zero on balance) but refers to the likelihood of avoiding severe climate change and achieving net zero by 2050. A 'minor adverse' effect or better is a high bar and indicates exemplary performance where a project meets or exceeds measures to achieve net zero earlier than 2050."

The Proposed Development aligns with the following GHG significance criteria as per Table 6-4:

- The project's GHG impacts are mitigated through 'good practice' measures.

  - The Proposed Development has proposed best practice mitigation measures as well as additional measures beyond best practice (as outlined in Section 6.5) in order to reduce GHG emissions and is committing to reducing climate impacts where feasible.
- The project has complied with existing and emerging policy requirements
  - The Proposed Development is directly aligned with Action TR/25/7 of CAP25 which states "*Advance roll-out of walking/cycling infrastructure in line with National Cycle Network (NCN) and CycleConnects plans*".
  - The Proposed Development is aligned with the key performance indicators (KPIs) in Table 15.5 of CAP24, specifically in relation to facilitating a reduction in total vehicle kilometres, reductions in fuel usage, increasing sustainable transport trips and shifting daily modal share.
- Fully in line to achieve Ireland's trajectory towards net zero.
  - The Proposed Development aligns with the national climate objective of net zero by 2050 and interim GHG reduction targets through its minimal contribution to sectoral budgets (as per Table 6-9) and its commitment to mitigation (see Section 6.5 for further detail).
  - Furthermore, the Proposed Development aligns with the national climate objective as it will provide facilities for active travel and a modal shift thereby reducing transport related GHG emissions. While there will be GHG emissions associated with the construction and operation of the Proposed Development these have been mitigated where possible and the wider objective of the Proposed Development is as a climate-positive scheme.

As per the assessment criteria in Table 6-4 and outlined above, the residual impact of the Proposed Development in relation to GHG emissions is considered minor adverse, this equates to a ***direct, long-term, negative*** and ***slight***, impact which is overall ***not significant*** in EIA terms.

In relation to climate change vulnerability, there are no significant residual risks to the Proposed Development due to climate change if all mitigatory measures are implemented. The most impactful hazard is pluvial flooding. The mitigation measure presented in Section 6.5.2 have reduced the residual risk to 'low'. The residual effect of climate change on the Proposed Development is therefore ***direct***, ***long-term***, ***negative*** and ***not significant***.

Compliance with Section 15 of the Climate Action and Low Carbon Development Act 2015

Section 15 of the 2015 Act (as amended), sets out the duties imposed on relevant bodies, including local authorities and An Coimisiún Pleanála. This section as amended by the 2021 Act states:

"(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(a) the most recent approved climate action plan,

(b) the most recent approved national long term climate action strategy,

(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.".

This chapter demonstrates how the Proposed Development is consistent, as far as practicable, with the objectives of Section 15 of the 2015 Act (as amended). The EIAR has carried out a greenhouse gas emissions assessment and assessed the Proposed Development's resilience/adaptation to climate change.

- Greenhouse Gas Emissions Assessment – This assessment considers the Proposed Development's gross GHG emissions over its lifetime. Mitigation measures have been proposed in order to reduce GHG emissions. The assessment analyses these emissions in the context of the relevant carbon budgets, targets and policies to ensure consistency, as far as practicable, with the most recent approved climate action plan and the most recent approved national long term climate action strategy, and with measures in furtherance of the national climate objective. This complies with subsections 15 (1) (a), (b), and (d) of the Act.

- Climate Change Vulnerability Assessment – This assessment identifies the impact of a changing climate on the Proposed Development and receiving environment in the context of the most recent approved national adaptation framework and approved sectoral adaptation plans. The assessment considers the Proposed Development's vulnerability and adaption to climate change and identifies adaptation measures to increase resilience, as discussed in Section 6.4.3.2.1. This covers sections 15(1)(c) and (e) of the Act.

The above assessment and identified mitigation measures for the Proposed Development pursue the furtherance of the national climate objective and the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State as far as practicable as required by section 15(1)(d) and(e) of the Acts.

6.6.2 Worst Case Impact

Conservative assumptions have been used as part of this assessment. As a result, Section 6.6.1 details the worst-case residual impact for the Proposed Development.

6.6.3 Cumulative

With respect to the requirement for a cumulative assessment the ISEP (ISEP, 2022; 2026) and TII (TII, 2022a) guidance on which the assessment is based states that "*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

As per the above, the cumulative impact of the Proposed Development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

6.7 Difficulties Encountered

The Proposed Development is still in the design stage and therefore materials used, construction and operational activities are subject to change. Data assumptions for the GHG assessment are set out in Table 6-3. Throughout the assessment efforts have been made to provide the most likely or conservative scenario. All assumptions follow a conservative approach.

6.8 Interactions

Climate has the potential to interact with a number of other environmental attributes.

6.8.1 Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed, and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. No significant interactions between climate and land, soils, geology are predicted.

6.8.2 Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

6.8.3 Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the Proposed Development on climate are assessed by quantifying the traffic-related GHG emissions from the construction phase. In this assessment, no significant interactions between climate and traffic and transportation are predicted.

6.8.4 Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered not significant.

6.9 Monitoring

6.9.1 Construction Phase

Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the Proposed Development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the Proposed Development is not meeting its targets, further mitigation will be put in place.

Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

6.9.2 Operational Phase

Ongoing monitoring and reporting of embodied carbon of maintenance materials throughout the operational lifetime of the Proposed Development will be undertaken. As with the construction phase, the aim of monitoring will be to seek further ways to minimise climate impacts.

6.10 References

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7 Noise and Vibration

7.1 Introduction

7.1.1 Overview

This section of the EIAR has been prepared by AWN Consulting Ltd to assess the effects of the Proposed Development on noise and vibration during the Construction Phase and Operational Phase in the context of current relevant standards and guidance.

This chapter describes and assesses the likely direct and indirect significant effects of the Proposed Development on noise and vibration during the construction phase and operational phase in accordance with the requirements of Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the "EIA Directive"). This chapter also provides a characterisation of the receiving environment.

The Proposed Development is a shared pedestrian and cycle route (approx. 8.1km in length) which is to be constructed along and adjacent to the Royal Canal towpath extending from the Kildare County boundary in the west to Talbot Bridge (the Old Navan Road near 12th Lock) to connect with a completed section of the Ashtown Greenway. A full description of the Proposed Development is outlined in Chapter 2 'Background to the Scheme' of this EIAR. The chapter has been informed by Chapter 14 Material Assets – Traffic and Transport, and the Construction Methodology prepared by the project engineers. Only noise and vibration impacts on sensitive human receptors have been considered in this chapter. Biodiversity impacts are considered in Chapter 8 – Biodiversity.

This chapter includes a description of the receiving ambient noise climate in the vicinity of the Proposed Development and an assessment of the potential noise and vibration effects associated with the Proposed Development during both the short-term construction phase and the long-term operational phase on its surrounding environment. Direct, indirect and cumulative noise and vibration effects have been considered as part of the assessment. Mitigation measures are included, where relevant, to ensure that noise and vibration effects associated with the Proposed Development are minimised.

The chapter has been informed by Chapter 14 Material Assets – Traffic and Transport, and the Construction Methodology prepared by the project engineers. Only noise and vibration impacts on sensitive human receptors have been considered in this chapter. Biodiversity impacts are considered in Chapter 8 – Biodiversity.

This assessment has been prepared by Leo Williams (Senior Acoustic Consultant) graduated from TCD with a BA, BAI (Mechanical and Manufacturing Engineering) and an MAI (Mechanical and Manufacturing Engineering). Leo is a Member of the Institute of Acoustics and has 11 years' experience working in the field of acoustics. He extensive experience in environmental noise impact assessment, in particular industrial/manufacturing, infrastructure projects and renewable energy noise sources. He also has experience in room and building acoustics modelling and assessment. He has completed the IOA Diploma in Acoustics and Noise Control and is a registered sound insulation tester under the Sound Insulation Testing Register, Ireland (SITRI).

7.2 Fundamentals of Acoustics

In order to provide a broader understanding of some of the technical discussions in this EIAR chapter, this section provides a brief overview of the fundamentals of acoustics and the basis for the preparation of this noise assessment.

A sound wave travelling through the air is a regular disturbance of the atmospheric pressure. These pressure fluctuations are detected by the human ear, producing the sensation of hearing. To take account of the vast range of pressure levels that can be detected by the ear, it is convenient to measure

sound in terms of a logarithmic ratio of sound pressures. These values are expressed as Sound Pressure Levels (SPL) in decibels (dB).

The audible range of sounds expressed in terms of Sound Pressure Levels (SPL) is 0dB (for the threshold of hearing) to 120dB (for the threshold of pain). In general, a subjective impression of doubling of loudness corresponds to a tenfold increase in sound energy which conveniently equates to a 10dB increase in SPL. It should be noted that a doubling in sound energy (such as may be caused by a doubling of traffic flows) increases the SPL by 3 dB.

The frequency of sound is the rate at which a sound wave oscillates is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250Hz. In order to rank the SPL of various noise sources, the measured level has to be adjusted to give comparatively more weight to the frequencies that are readily detected by the human ear. The 'A-weighting' system defined in the international standard, BS ISO 226:2023 Acoustics – Normal Equal-loudness Level Contours, has been found to provide the best correlations with human response to perceived loudness. SPL's measured using 'A-weighting' are expressed in terms of dB(A). An indication of the level of some common sounds on the dB(A) scale is presented in Figure 7-1.

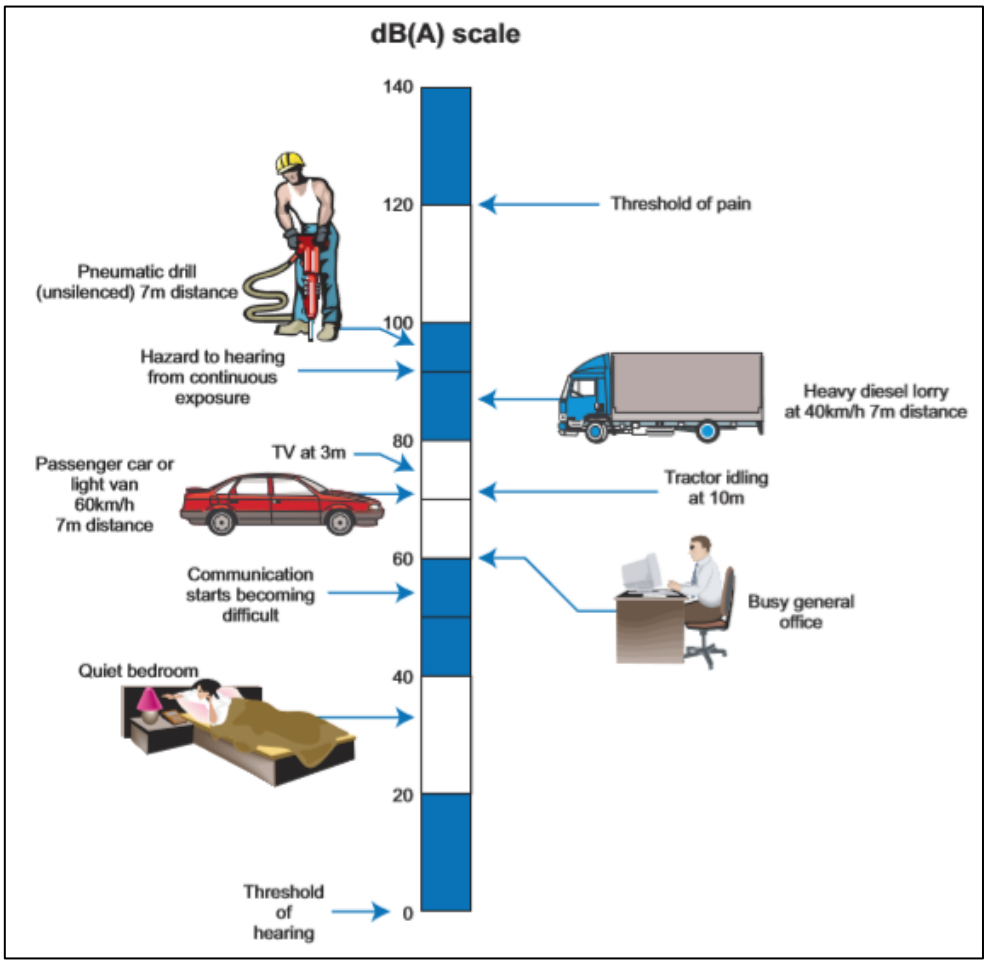

Figure 7.1 The level of typical common sounds on the dB(A) scale (NRA Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004)

7.3 Methodology

7.3.1 Guidance and Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. In addition to

specific noise and vibration guidance documents, the following guidelines were considered and consulted in the preparation of this Chapter:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018).

Reference has also been made to the following documents, which are specific to noise and vibration:

- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 – Noise (2014a);
- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 – Vibration (2014b);
- Design Manual for Roads and Bridges LA 111 Sustainability & Environmental Appraisal. Noise and Vibration Rev 2, Highways England (2020);
- BS 7385: Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration (1993);
- ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise

The noise and vibration assessment has been undertaken using the following methodology:

- A review of baseline noise levels along the Proposed Development route has been undertaken through desktop review of Strategic Noise Mapping, to determine the range of noise levels at locations and noise environments in proximity to the Proposed Development.
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases.
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the project at the nearest sensitive locations (NSLs) to the route.
- Predictive calculations have been performed to assess the potential effects associated with the operation of the development at the most sensitive locations surrounding the development site; and,
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with the construction and operation of the Proposed Development.

7.3.2 Study Area

Noise and vibration impacts associated with the Proposed Development are primarily tied to the construction phase. While there is no specific guidance on the extent of a study area in relation to assessment of greenways, impacts and associated effects of the construction will be centralised along the route of the greenway element. It is typically seen that over distances of up to 100m, predicted construction noise levels diminish to a point whereby they are in line with or below prevailing baseline noise levels. Similarly, during the operational phase, noise sources are localised to the greenway route and therefore noise sensitive locations within a study area up to 200m from the greenway alignment are considered in the following assessments.

7.3.3 Relevant Criteria

7.3.3.1 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 the absence of specific statutory Irish guidelines, in order to set appropriate construction noise limits for the development route, reference has been made to BS 5228:2009+A1:2014. Part 1 of this document, Noise, provides guidance on selecting appropriate noise criteria relating construction works.

ABC Method

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing 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 7-1 sets out the values which, when exceeded, signify a potential significant effect at the facades of residential receptors.

Table 7-1 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 (07:00 – 19:00) and Saturdays (07:00 – 13:00)	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.

For the assessment of daytime periods, the ambient noise level has been determined and rounded to the nearest 5 dB. Taking into account the construction noise criteria threshold values detailed in Table 7-1, and the prevailing baseline noise levels along the proposed route described in Section 7.4, the following category value are appropriate:

- Category A – 65 dB $L_{Aeq,T}$
- Category B – 70 dB $L_{Aeq,T}$

Fixed Limits

When considering non-residential receptors, reference is made to BS 5228-1:2009+A1:2014, which gives several examples of acceptable limits for construction noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

> *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."*

Paragraph E.2 goes on to state: -

> *"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -*
>
> > *70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;*
> >
> > *75 decibels (dBA) in urban areas near main roads in heavy industrial areas".*

Proposed Threshold Noise Levels

Taking into account the guidance set out in BS 5228-1:2009+A1:2014 above and making reference to the baseline noise environment across the Proposed Development site (discussed in Section 7.4), the following Construction Noise Threshold (CNT) levels are proposed for the construction stage assessment: -

- Given the baseline review carried out, it would indicate that Category A and B values are appropriate using the ABC method. For residential NSLs it is considered appropriate to adopt 65 dB(A) CNT as the majority of NSLs located closer to Proposed Development works are located set back from noisy roads, and fall into Category A with respect to existing baseline levels.
- For non-residential NSLs it is considered appropriate to adopt the 75 dB(A) CNT, given the urban environment in which the development resides, in line with BS 5228-1:2009+A1:2014.

7.3.3.2 Construction Traffic

In order to assist with the interpretation of construction traffic noise, Table 7-2 includes guidance as to the likely magnitude of effect associated with changes in traffic noise levels along an existing road. This is taken from Table 3.17 of DMRB: Noise and Vibration.

Table 7-2 Likely Effect Associated with Change in Traffic Noise Level – Construction Phase

Increase in Traffic Noise Level (dB)	Magnitude of Impact	EPA Significance of Effect	Determination
Less than 1.0	Negligible	Imperceptible	Depending on CNT, duration & baseline noise level
Greater than or equal to 1.0 and less than 3.0	Minor	Not significant	
Greater than or equal to 3.0 and less than 5.0	Moderate	Slight, moderate	
Greater than or equal to 5.0	Major	Significant	

7.3.3.3 Consideration of Duration of Effects

In accordance with the DMRB: Noise and Vibration, construction noise and construction traffic noise effects shall constitute a significant effect where it is determined that a major or moderate magnitude of effect will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights;
- A total number of days exceeding 40 in any six consecutive months.

7.3.3.4 Construction Vibration

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of peak particle velocity (PPV) for construction activities.

7.3.3.4.1 Building Damage

Reference is made to BS 7385-2 (1993) regarding acceptable vibration in order to avoid damage to buildings. The standard differentiates between transient and continuous vibration. Surface construction activities are transient because they occur for a limited period of time at a given location. In relation to

transient vibration, BS 7385-2 (1993) and BS 5228-2:2009+A1:2014 recommend 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.

Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in BS 5228-2:2009+A1:2014 Table B.2 might need to be reduced by up to 50%. It is therefore common, on a cautious basis to use this lower value.

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% when applied to protected structures, in line with the BS 7385-2 (1993) and BS 5228-2:2009+A1:2014.

Taking the above into consideration the vibration criteria in Table 7-3 are recommended.

Table 7-3 Recommended Vibration Criteria During Construction Phase

Category of Building	**Vibration Type**	**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	Transient	12 mm/s	20 mm/s	50 mm/s
	Continuous	6 mm/s	10 mm/s	25 mm/s
Protected and /or potentially vulnerable buildings/structures	Transient	6 mm/s	10 mm/s	25 mm/s
	Continuous	3 mm/s	5 mm/s	12 mm/s

7.3.3.5 Human Perception

People are sensitive to vibration stimuli at levels which are orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards which provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

BS5228-2:2009+A1:2014, provides useful guidance relating to the assessment of human response to vibration in terms of the PPV. The document notes that vibration typically becomes perceptible at around 0.15 to 0.3mm/s and may become disturbing or annoying at higher magnitudes. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

Table 7-4 below summarises the range of vibration values and the associated potential effects on humans.

Table 7-4 Guidance on Effects of Human Response to PPV Magnitudes

Vibration Level, PPV	**Effect**
0.14mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.

Vibration Level, PPV	Effect
1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

The values set out in Table 7-4 (BS 5228-2:2009+A1:2014) are referenced in DMRB: Noise and Vibration, which presents likely effects associated with various levels of vibration. These and the associated EPA significance ratings are presented in Section 7.3.4.2.

7.3.3.6 Operational Vibration

With consideration of the activities that are expected during the operational phase of the Proposed Development, it is determined that there will be no impact with respect to vibration.

7.3.4 Criteria for Rating of Impacts

7.3.4.1 Construction Phase – Noise

In order to assist with interpretation of CNTs, Table 7-5 includes guidance as to the likely magnitude of effect associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of DMRB: Noise and Vibration and adapted to include the relevant significance effects from the *EPA Guidelines* (EPA 2022).

Table 7-5 Construction Noise Significance Ratings

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	
	Above CNT +15 dB	Very Significant to Profound	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely effects during the construction stages.

7.3.4.2 Construction Phase – Vibration

Impacts on Humans

In order to assist with interpretation of vibration thresholds, Table 7-6 presents the significance table relating to potential effects to building occupants during construction based on guidance from BS5228-2:2009+A1:2014 and DMRB: Noise and Vibration.

Table 7-6 Guidance on Effects of Human Response to PPV Magnitudes

Criteria	Likely Effect (DMRB)	EPA Significance Rating
≥10 mm/s PPV	Major	Significant to Very Significant
≥1 to <10 mm/s PPV	Moderate	Moderate to Significant
≥0.3 to <1 mm/s PPV	Minor	Not Significant to Slight
≥0.14 to 0.3 mm/s PPV	Negligible	Imperceptible to Not significant
Less than 0.14 mm/s PPV		Imperceptible

Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, ground breaking can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place and timeframes are known. These values refer to the day-time periods only.

During surface construction works (ground breaking etc.) the vibration limits set within Table 7-6 would be perceptible to building occupants and have the potential to cause subjective effects. The level of effect is, however, greatly reduced when the origin and time frame of the works are known and limit values relating to structural integrity are adequately communicated. In this regard, the use of clear communication and information circulars relating to planned works, their duration and vibration monitoring can significantly mitigate vibration effects to the neighbouring properties.

7.3.4.3 Operational Phase – Noise Sources

Once operational, the primary source of noise will be associated with members of the public using the greenway. Any potential noise levels from this activity, however, will be low considering the proposed usage and noise sources will comprise cycling of bicycles and the sound of voices along the proposed route and at the proposed Pocket Park. This is typically in line with surrounding ambient sources in a typical semi-rural and rural environment.

There are no fixed developed areas such as meeting hubs or café / toilet facilities and therefore no noise emitting mechanical services plant is proposed.

As set out in Chapter 14 – Material Assets – Traffic And Transportation, there is potential for vehicle movements to train station carparks as greenway users travel to avail of the Proposed Development. Conversely, operation of the Proposed Development is expected to facilitate a shift from the use of private vehicles to cycling and rail services.

7.3.5 Consultation

Consultation with various relevant bodies was undertaken by the project team as part of the EIA process. No specific responses in relation to noise and vibration were received.

7.4 Baseline Environment

Review of EPA Round 4 Strategic Noise Maps[5] has been undertaken along the route of the proposed development to determine the range of noise levels at various locations and to establish the existing noise climate representative of the nearest noise sensitive locations (NSLs). Figure 7-1 illustrates daytime traffic, rail and airport noise across the proposed development extent.

Review of the route of the Proposed Development indicates that, over its full extent, the surrounding noise environments can be broadly categorised as follows; rural countryside (Section A), a mix of rural and residential environments (Section B) and urban residential (Section C). The indicative sections of the route and summary of baseline noise levels in each are presented below in the following sections.

Section A – From the route start at Kildare County Boundary to Piper's Court.
Section B – From Piper's Court to Diswellstown Road.
Section C – From Diswellstown Road to Talbot Bidge at the route end. Noise levels derived from the EPA noise mapping are expressed in terms of L_{day}. This parameter is an A-weighted continuous sound level (L_{Aeq}) averaged over the designated daytime period (07:00 to 19:00hrs).

[5] Round 4 Strategic Noise Maps, EPA Mapping website http://gis.epa.ie.

7.4.1 Section A

From the route start until the area around Piper's Court, the route passes predominantly through rural countryside, following the canal and the rail line for the majority of its extent in this area. It is expected that ambient daytime noise levels would include traffic on local roads, noise from agricultural machinery, birdsong, aircraft movements and rail movements. Review of the noise map would indicate that existing noise levels at noise sensitive receivers close to the Proposed Development are in the range < 55 to 65 dB L_{day}.

7.4.2 Section B

Between Piper's Court and Diswellstown Road, the area surrounding the route is residential to the north and rural to the south. The expected noise sources in these areas are vehicle movements in housing estates and residential noise (lawnmowers, groups of people gathering, etc.). To the south the rail line continues eastward. Further south is open countryside comprising low density housing and agricultural and amenity space. Review of the noise map would indicate that existing noise levels at noise sensitive receivers close to the Proposed Development are in the range < 55 to 65 dB L_{day}, with a small number of individual houses inside the 65 – 70 dB L_{day} contour.

7.4.3 Section C

Between Diswellstown Road and the route end, the noise environment surrounding the proposed development is predominantly residential in nature to the north and south and representative of a more urban area. Noise sources would be expected to be similar to those in Section B, with additional contribution from busier and larger roads. Review of the noise map would indicate that existing noise levels at noise sensitive receivers close to the Proposed Development are in the range < 55 to 65 dB L_{day}, and where NSLs are located close to main roads noise levels range from 65 – 70 dB L_{day}.

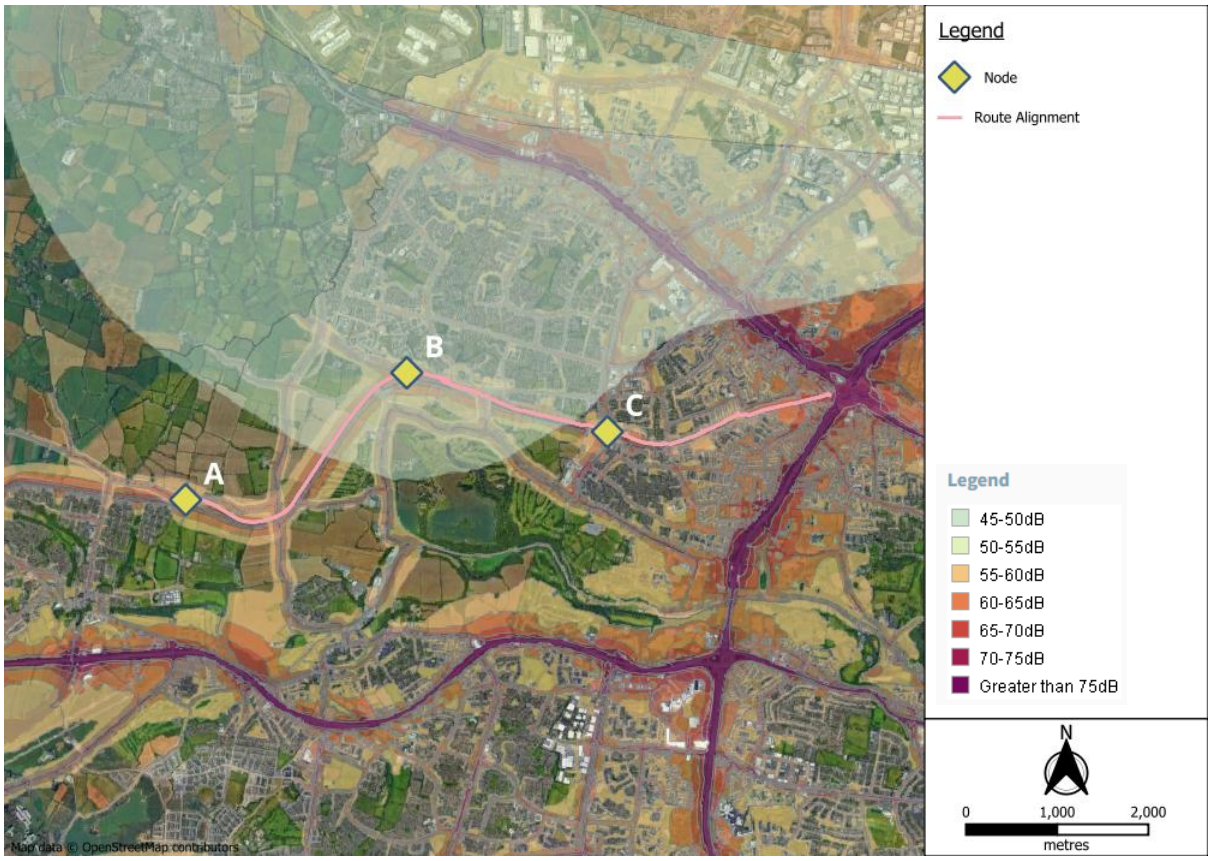

Figure 7-1 *Baseline Daytime Traffic, Rail and Airport Noise Levels (Round 4 Strategic Noise Maps, EPA Mapping website)*

7.5 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a pedestrian and cycle greenway of approximately 8.1km in length running alongside the Royal Canal from the Kildare County Boundary to the Old Navan Road (near the 12th Lock). The Proposed Development will include a 2m-4m wide surface which will accommodate cyclists and pedestrians, as well as the construction of 2 no. pedestrian / cycle bridges located between Kirkpatrick Bridge and Granard Bridge adjacent to Delwood Park and Brompton Green.

A full description of the Proposed Development is contained in Chapter 2 'Background to the Scheme'.

When considering a development of this nature, the potential noise and vibration impact on the surroundings must be considered for each of the two distinct stages:

(a) construction phase, and.

(b) operational phase.

The key features of the Proposed Development which are relevant to noise and vibration are described below for each of these phases.

7.5.1 Construction Phase

Reference has been made to the Construction Methodology document prepared by DBFL Consulting Engineers (170239-DBFL-XX-XX-RP-C-0003) in order to identify noise-generating activities during the construction phase. Construction of the Proposed Development will include the following activities:

- Removal of topsoil layer for pathway.
- Construction of 2-4m wide unbound and bituminous surface.
- Demolition of 2 no. structures and a number of ancillary structures on approach to Hansfield Road.
- Construction of paved cycleway.
- Construction of a bridge at the Brompton green area.
- Construction of pedestrian and cycle bridge at Delwood Park.
- Construction of a greenway underpass at Granard Bridge.
- Construction and landscaping of Pocket Park.

7.5.2 Operational Phase

The day-to-day operation of the Proposed Development will comprise members of the public walking and cycling along the greenway. Periodically, routine maintenance of the route will be required which may include clearing vegetation, inspection of bridges and resurfacing of discrete areas of greenway surface.

7.6 Do Nothing Scenario

In the absence of the Proposed Development being constructed the noise environment at the nearest NSLs near the development site will remain largely unchanged resulting in a neutral effect. Over time the noise environment would change in response to evolving trends, land use changes and operation of other permitted developments.

7.7 Predicted Impacts

7.7.1 Construction Phase – Noise Impact

7.7.1.1 Construction Works

During the construction phase of the Proposed Development, a variety of items of plant will be in use, such as road pavers, piling rigs, dumper trucks, compressors, and generators. Due to the nature of daytime activities undertaken on a construction site, there is potential for generation of significant levels of noise. The potential for vibration at neighbouring sensitive locations during construction is typically limited to excavation works/topsoil stripping, where required, and lorry movements on uneven road surfaces.

Outline construction programme and sequence information has been provided by DBFL Consulting Engineers and are used to calculate the magnitude of noise emissions to the local environment in this assessment. There may be some variations depending on the actual construction methodology implemented by the successful contractor however these are not likely to be changed significantly and will be required to be agreed with the local authority prior to construction.

Using the provided information, it is possible to predict typical noise levels using guidance set out in BS 5228-1:2009+A1:2014. Table 7-7 and Table 7-8 outline typical plant items and associated noise levels that are anticipated for this aspect of the construction programme.

The construction activities can be broadly separated into two groups. The first is the construction of the bridge and boardwalk footings and installation of prefabricated structural elements. This will comprise piling of foundations, assembly and installation of steel and precast concrete structural elements. Bridge construction activity will take place at a limited number of identified locations.

Table 7-7 Reference Plant Noise Emissions – Bridge Construction

Activity	**Item of Plant *(BS5228:2009+A1:2014 Ref)***	**L_{Aeq} at 10m**
Bridge Foundation Work	Tracked excavator (C2.21)	71
	Dump Truck (C2.30)	79
	Diesel Generator (C4.76)	61
	Piling (C.3.14)	83
	Telescopic Handler (C4.54)	79
Supports Construction	Asphalt Paver & Tipping Lorry (C5.30)	75
	Electric Water Pump (C5.40)	68
	Vibratory Roller (C5.20)	75
Superstructure	Tracked excavator (C2.21)	71
	Dump Truck (C2.30)	79
	Tracked Mobile Crane (C3.28)	67
	Hand Tools	81

The second category of activity will be stripping of topsoil and general construction of pathways along the extent of the route. Raised boardwalks will be constructed where required, making use of mini-piles. General construction of the greenway infrastructure is assumed to take place along the entire route.

Table 7-8 Reference Plant Noise Emissions – General Construction

Activity	Item of Plant *(BS5228:2009+A1:2014 Ref)*	L_{Aeq} at 10m
Site Preparation	Tracked excavator (C2.21)	71
	Dump Truck (C2.30)	79
	Diesel Generator (C4.76)	61
Paving and Landscaping Work	Asphalt Paver & Tipping Lorry (C5.30)	75
	Electric Water Pump (C5.40)	68
	Vibratory Roller (C5.20)	75
	T0elescopic Handler (C4.54)	79
Boardwalk Construction	Mini piling rig (C3.18)	75
	Telescopic Handler (C4.54)	79
	Hand tools	81

Noise predictions have been prepared for various distances from the proposed works. Bridge construction is anticipated at three locations some 20m and further from nearby NSLs. General construction and upgrade works will take place some 10m and further from NSLs. The calculations also assume that the equipment will operate for 66% of the 12-hour working day (i.e. 8 hours). It is assumed that construction activities described above will take place during normal working hours only. Typically, activities occur sequentially. Where activities overlap, there is potential for presented noise levels to increase by 3 dB.

As set out in Section 7.3.3.1 and Section 7.4, based on existing noise levels, it is considered appropriate to apply 'Category A' noise criterion (65 dB $L_{Aeq,T}$) to residential NSLs close to the proposed route. The closest NSLs identified are at Piper's Court, St Joseph's Avenue and Windmill Court which are located 10-15m from areas of construction works.

At the sites of the two proposed bridges and proposed underpass, the nearest NSLs are houses located some 20m away. Table 7-9 presents indicative construction noise levels at NSLs during bridge construction.

Table 7-9 Indicative Construction Noise Levels at Nearest Noise Sensitive Locations during bridge construction

Construction Phase	Item of Plant (*BS 5228:2009+A1:2014* Ref)	L_{Aeq} at distance (m)			
		20m	35m	55m	65m
Bridge Foundation Work	Tracked excavator (C2.21)	58	53	49	48
	Dump Truck (C2.30)	66	61	57	56
	Diesel Generator (C4.76)	48	43	39	38
	Piling (C.3.14)	69	64	60	59
	Telescopic Handler (C4.54)	66	61	57	56
Pier Construction	Asphalt Paver & Tipping Lorry (C5.30)	62	57	53	52
	Electric Water Pump (C5.40)	55	50	46	45
	Vibratory Roller (C5.20)	62	57	53	52
Superstructure	Tracked excavator (C2.21)	58	53	49	48
	Dump Truck (C2.30)	66	61	57	56

Construction Phase	Item of Plant (*BS 5228:2009+A1:2014* Ref)	L_{Aeq} at distance (m)			
		20m	35m	55m	65m
	Tracked Mobile Crane (C3.28)	54	49	45	44
	Hand Tools	68	63	59	58

In respect of bridge construction, the predicted noise levels are marginally above the Category A construction noise criterion (65 dB $L_{Aeq,T}$) at the nearest NSLs, approximately 20m from the bridge construction areas. Therefore, in the absence of noise mitigation, a negative, moderate to significant, and temporary effect is likely at NSLs designated Category A.

The predicted noise levels at NSLs that are at distances of 35m and greater are within the construction noise criteria and therefore the expected effect is **negative**, **moderate** and **temporary** in the absence of mitigation.

Table 7-10 presents indicative construction noise levels at NSLs during general construction works.

Table 7-10 Indicative Construction Noise Levels at Nearest Noise Sensitive Locations during General Construction Works

Construction Phase	Item of Plant (*BS 5228:2009+A1:2014* Ref)	L_{Aeq} at distance (m)			
		10m	20m	30m	40m
Site Preparation	Tracked excavator (C2.21)	69	63	60	57
	Dump Truck (C2.30)	77	71	68	65
	Diesel Generator (C4.76)	59	53	50	47
Paving and Landscaping Work	Asphalt Paver & Tipping Lorry (C5.30)	73	67	64	61
	Electric Water Pump (C5.40)	66	60	57	54
	Vibratory Roller (C5.20)	73	67	64	61
	Telescopic Handler (C4.54)	77	71	68	65
Boardwalk Construction	Mini piling rig (C3.18)	73	67	64	61
	Telescopic Handler (C4.54)	77	60	68	65
	Hand tools	79	67	70	67

For general construction works, the predicted noise levels are above the Category A construction noise criterion (65 dB $L_{Aeq,T}$) at the nearest NSLs, some 40m from the general construction areas. Therefore, in the absence of noise mitigation and with reference to Table 7-5, a ***negative***, ***moderate*** to ***very significant***, and ***short-term*** effect is likely at NSLs designated Category A.

At 40m from construction works, the predicted noise levels are below the Category A values and therefore the associated effect is predicted to be ***negative***, ***moderate*** and ***short-term***.

Construction works typically occur at several locations whereby distances to NSLs, and therefore noise levels, will vary. The above predictions represent a worst case scenario whereby noise sources are at the closest point to a NSL.

Mitigation to minimise the effect of construction works are presented in Section 7.8.

7.7.1.2 Construction Traffic

Heavy Goods Vehicles (HGVs) will be used to move materials and plant to the Proposed Development area during the construction phase. These vehicles will unload at designated access points that will be located adjacent to the public road network.

While this represents introduction of additional vehicles onto the road network during the construction phase, in order to increase traffic noise levels by 1 dB, traffic volumes would need to increase by the order of 25%. While construction traffic has not been broken down in detail in Chapter 14, the forecast for Average Annual Daily Traffic (AADT) over the construction phase amounts to 9 HGVs per day. These volumes represent a magnitude far less than the number needed to result in even the smallest changes in noise level.

The expected effect is therefore ***negative***, ***not significant*** and ***short-term***.

7.7.2 Construction Phase – Vibration Impact

In terms of construction vibration, excavations will be made using standard excavation machinery which typically does not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance the sensitive receivers are from the works, i.e. 10m at a minimum, and the attenuation of vibration levels over distance, the resultant vibration levels are expected to be well below a level that would cause disturbance to building occupants or even be perceptible at the locations of NSLs.

Piling is proposed at areas where bridges will be constructed. For the purposes of this assessment, vibration levels during rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock taken from BS 5228-2:2009+A1:2014, Vibration, has been referenced (BS 5228:2 Table D.6, Ref. No. 106). The associated vibration levels are summarised below:

- 0.54mm/s at a distance of 5 m, for auguring;
- 0.22mm/s at a distance of 5 m, for twisting in casing;
- 0.42mm/s at a distance of 5 m, for spinning off, and;
- 0.43mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearby buildings set back at larger distances are not expected to be significant in terms of cosmetic or structural damage to any of the residential or sensitive buildings in proximity to the development works. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

Vibration levels associated with piling works are also orders of magnitudes below the more onerous threshold recommended for protected structures (Table 7-3) however care should be taken to prevent unnecessary excessive generation of vibration when heavy works are taking place in close proximity.

The associated effect of vibration from piling on the surrounding environment is considered to be ***neutral***, ***imperceptible***, and ***temporary***.

7.7.3 Operational Noise – Additional Traffic on Public Roads

Assessment of operational traffic is set out in Chapter 14 - Material Assets - Traffic and Transportation. Chapter 14 identifies a potential increase in the use of train station car parks as the greenway attracts pedestrians and cyclists at these access points. On the basis that a significant increase in traffic

volumes on the local road network (> 25% increase in volume) would be required to result in a 1 dB increase in noise, it is expected that vehicle movements will not have an adverse impact in terms of noise and vibration.

It is also expected that the operation of the Proposed Development will entice vehicle users to avail of other forms of transport such as cycling and nearby rail services thereby reducing the number of vehicles on the local road network.

The expected is therefore ***negative*** to ***positive***, ***imperceptible*** and ***long-term***.

7.7.4 Operational Noise – Routine Maintenance

Routine maintenance will take place during the operational phase of the Proposed Development. This is likely to comprise vegetation cutting equipment and other hand tools. When considering the context of rural, semi-rural and residential settings where agricultural machinery, lawn mowers and minor landscaping is already taking place, these works are not expected to differ significantly from such prevailing noise sources across the study area.

The associated effect is therefore expected to be ***negative***, ***not significant***, and ***temporary***.

7.8 Mitigation Measures

7.8.1 Construction Noise

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. Whist construction noise and vibration effects are expected to vary during the construction phase depending on the distance between the activities and noise sensitive receptors. The contractor will ensure that best practice noise and vibration control methods will be used, as necessary in order to ensure effects at off-site noise sensitive locations are minimised. The best practice measures set out in BS 5228 (2009 + A1 2014) Parts 1 and 2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant.
- noise control at source.
- screening.
- liaison with the public, and
- monitoring.

Detailed comment is offered on these items in the following paragraphs.

7.8.1.1 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

7.8.1.2 Noise Control at Source

If replacing an item of plant which is generating high noise levels is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of

damping compounds; while rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures will be implemented as needed:

- The use of machinery for lifting bulky items, dropping, and loading of materials within work areas will be restricted to normal working hours.
- For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling.
- For compressors, generators, and pumps, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site, as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
- Care will be taken when cleaning augers of piling rigs. Shaking and banging of the auger to loosen earth will be avoided.
- Use of pneumatic hand tools will be avoided at night-time and fixings should be manually tightened where possible.

7.8.1.3 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Where required, the use of temporary hoarding or mobile screens will be used to aid in reducing noise levels from potential high levels of construction activity. The use of screening is recommended when works are occurring in proximity to noise sensitive dwellings, or high amenity areas during high noise activities. This can be undertaken using standard site hoarding or using mobile / demountable screens around noisy items of plant or works.

7.8.1.4 Liaison with the Public

In line with best practice, a designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

7.8.1.5 Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest NSLs to the Proposed Development to check compliance with the construction noise criterion. Monitoring locations will include those representative of the closest dwellings to work areas or those located in proximity to areas where works are forecast for an extended period of time.

Noise monitoring should be conducted in accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.

7.8.1.6 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity e.g. early morning. During excavation, piling or other high noise generating works that are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to minimise disturbance.

7.8.2 Operational Noise

The impact assessment has concluded that the expected effect associated with noise from vehicle movements during the operational phase will be ***negative*** or ***positive*** depending on location, ***imperceptible*** and ***long-term***.

Operational noise sources associated with routine maintenance are expected to be below or on par with existing ambient noise levels within the various prevailing noise environments along the proposed route, and therefore no mitigation is required.

7.9 Residual Impact

7.9.1 Construction Noise

During the construction phase of the Proposed Development there is the potential for significant effects on nearby noise sensitive properties due to noise emissions from construction activities. The application of binding noise limits, defined hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise effect will have a ***negative***, ***moderate*** to ***significant***, and ***temporary*** to ***short-term*** effect on the surrounding environment.

7.9.2 Construction Vibration

Taking into account the low levels of vibration generated at close distances to piling rigs and excavations, the vibration effects are expected to be ***neutral***, ***imperceptible***, and ***temporary*** to ***short-term***.

7.9.3 Operational Stage - Additional Traffic on Public Roads

During the operational phase, there is potential for limited, localised increases in vehicle movements followed by reductions in vehicle use across the wider road network as a result of provision of the Proposed Development. On balance the expected associated impact is ***negative*** to ***positive***, ***imperceptible*** and ***long-term***.

7.9.4 Operational Stage – General Noise Sources

Once operational, potential effects associated with the Proposed Development are expected to be low in noise, such as people walking and talking, and occasional maintenance works along the route. The effects are ***negative***, ***not significant*** and ***long-term***.

7.9.5 Operational Stage – Routine Maintenance

Such works are deemed not to contrast starkly with the prevailing environments surrounding the Proposed Development and therefore, the associated effect is expected to be ***negative***, ***not significant***, and ***temporary***.

7.10 Cumulative Effects

During the construction phase of the Proposed Development, construction noise on site will be localised and will likely be the primary noise source at the nearest noise sensitive receivers.

Should another construction site become active in proximity to the Proposed Development, there is the possibility that cumulative noise impacts could occur at sensitive receptors that are equidistant to both sites. In this scenario, it is recommended that liaison between construction sites be maintained throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors.

Any large scale future projects that are not yet proposed or permitted would likely also be subject to an Environmental Impact Assessment in turn, to ensure that no potential significant effects resulting from noise and vibration would occur as a result.

7.11 Interactions

7.11.1 General

In compiling this Environmental Impact Assessment, reference has been made to the project description provided by the project co-ordinators in Chapter 1 Introduction (Section 1.4) and Chapter 2 Background to the Scheme, project drawings provided by the project architects and information relating to construction activities provided by the DBFL Consulting Engineers.

7.11.2 Human Health

The potential effects on human health in relation to the generation of noise and vibration during the construction phase are discussed in Chapter 13 - Population and Human Health.

The potential impacts on human beings in relation to the generation of noise and vibration during the construction phases are limited to the possibility that high levels of noise and vibration could cause nuisance to people in nearby sensitive locations. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be ***short-term***, ***slight*** to ***significant*** and ***negative*** in nature.

Noise sources during the operational phase are expected to generate low levels of noise and therefore the predicted noise and vibration impact is expected to be ***negative***, ***imperceptible*** to ***not significant***, and ***temporary*** to ***long-term***.

7.11.3 Biodiversity

The potential effects on local wildlife in relation to the generation of noise and vibration during the construction phase are discussed in Chapter 8 -Biodiversity.

7.11.4 Traffic and Transport

The noise impact assessment has been prepared in consultation with the design team and traffic consultant, referring to vehicle movements and projections set out in Chapter 17 - Traffic and Transportation.

The expected residual impact in relation to traffic noise will be ***negative*** to ***positive***, ***imperceptible*** and ***long-term***.

7.12 Difficulties Encountered

No difficulties were encountered during the preparation of this chapter.

7.13 References

Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022)

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Local Government and Heritage, 2018).

Guidelines for the Treatment of Noise and Vibration in National Road Schemes (National Roads Authority, 2004)

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.

BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration.

BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground-borne vibration.

BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.

ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

ISO 226:2023 Acoustics. Normal equal-loudness level contours

Round 4 Strategic Noise Maps – EPA (2021)

National Highways Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (UKHE, 2020)