

Cork County Council

Cork to Kinsale Greenway

Constraints and Opportunities Report

Reference: CKG-ARP-PMG-P1-RP-004 Constraints and Opportunities Report

Rev01 | 25 June 2024



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 297194-00

Arup Ireland Partner Limited
One Albert Quay
Cork
T12 X8N6
Ireland
arup.com

Contents

1.	Introduction and Description	6
1.1	Introduction	6
1.2	General Description	6
1.3	Background	6
1.4	Previous Studies	7
2.	Project Need, Strategic Fit and Priority	8
2.1	Project Context	8
2.2	Project Specific Need	8
2.3	Strategic Fit and Priority	9
3.	Existing Conditions	11
3.1	Study Area Overview	11
3.2	Settlements	12
4.	Constraints and Opportunities Study	13
4.1	Designated Sites	13
4.2	Other Ecological Constraints	16
4.3	Geology	33
4.4	Hydrology	38
4.5	Hydrogeology	43
4.6	Landscape and Visual	48
4.7	Land Use and Planning	50
4.8	Engineering	53
4.9	Archaeological, Architectural and Cultural Heritage	56
4.10	Material Assets – Agricultural	71
4.11	Air, Noise and Vibration	77
4.12	Population and Human Health	81
4.13	External Parameters	82
5.	Conclusions and Recommendations	85

Tables

Table 3-1 Summary of Settlements	12
Table 4-1 Relevant Policy Objectives Project Ireland 2040	19
Table 4-2 Relevant Policy Objectives Cork County Development Plan	20
Table 4-3 Relevant Policy Objectives Cork County Development Plan	21
Table 4-4 Relevant Policy Objectives Cork City Development Plan	21
Table 4-5 Relevant Policy Objectives Cork City Development Plan	21
Table 4-6 Habitat types (as described by Fossitt 2000) within the Study Area	23
Table 4-7 Priority Habitats & Annex 1 Habitats occurring within the boundary or 2km buffer of the Study Area	23
Table 4-8 Protected flora and bryophyte species within the hectads overlapping the Study Area	27
Table 4-9 NBDC records for Third Schedule, Medium Impact or High Impact Invasive Species within the hectads overlapping the Study Area	27

Table 4-10 NBDC records for protected mammal species in hectads that overlap the Study Area	28
Table 4-11 NBDC records for bat species recorded within the hectads that overlap the Study Area	28
Table 4-12 NBDC records for aquatic species within the hectads that overlap the Study Area	29
Table 4-13 NBDC records for invertebrates within the hectads that overlap the Study Area	29
Table 4-14 NBDC records for reptiles and amphibians within the hectads that overlap the Study Area	29
Table 4-15 NBDC records for birds within the hectads that overlap the Study Area	29
Table 4-16 GSI Aquifer Classification	45
Table 4-17 Aquifer Vulnerability Categories (GSI)	46
Table 4-18 Groundwater Wells and Springs (GSI) within the Study Area used for Public Supply (Cork Co. Co.)	46
Table 4-19 EPA Registered Groundwater Abstractions within the Study Area	47
Table 4-20 Land Use within the Study Area	51
Table 4-21 Roads within Study Area (non-exhaustive)	54
Table 4-22 Designed Landscapes (DL) in the Study Area	62
Table 4-23 NIICH potentially located within the Study Area	67
Table 4-24 Farm Sensitivity	73
Table 4-25 Land Use within the Study Area	74
Table 4-26 Soil Types within the Study Area	75
Table 4-27 Farm Enterprise Types in County Cork	76
Table 4-28 Annual Mean Background Pollutant Concentrations for Zone D	78
Table 4-29 Annual Mean Background Pollutant Concentrations for Zone B	78
Table 4-30 Cork Study Area Population 2022	81

Figures

Figure 3-1 Cork to Kinsale Greenway Study Area	11
Figure 4-1 Protected sites within 2km of the Study Area boundary.	18
Figure 4-2 Annex 1 habitats dataset overlayed on Study Area, including a 2km buffer around the Study Area	24
Figure 4-3 Designated sites within 2km of the Study Area	26
Figure 4-4 Topography in Study Area. Source: ArcGIS Enterprise	34
Figure 4-5 Population Centres in Study Area. Source: GSI	34
Figure 4-6 Bedrock Geology in Study Area	36
Figure 4-7 Soils in Study Area. Source: GSI.	37
Figure 4-8 Historic Flood Events in Study Area. Source: OPW, www.floodmaps.ie .	40
Figure 4-9 Fluvial Flood Extent. Source: OPW, www.floodmaps.ie .	41
Figure 4-10 River water quality and WFD Status. Source: EPA Maps.	42
Figure 4-11 Land Use	51
Figure 4-12 Recorded archaeological sites within the northern section of the Study Area	59
Figure 4-13 Recorded archaeological sites within the central section of the Study Area	60
Figure 4-14 Recorded archaeological sites within the southern section of the Study Area	60
Figure 4-15 Built heritage sites within the northern section of the Study Area	69
Figure 4-16 Built heritage sites within the central section of the Study Area	69
Figure 4-17 Built heritage sites within the southern section of the Study Area	70

Figure 4-18 Land Use within Study Area	75
Figure 4-19 Soil Types within Study Area	76
Figure 4-20 Agricultural Constraints within Study Area	77
Figure 4-21 Strategic EPA Noise Round 4 Road (Lden) (daytime) within the northern section of the Study Area	80
Figure 4-22 Strategic EPA Noise Round 4 Road (Lden) (daytime) within the southern section of the Study Area	80

Appendices

Appendix A	A-1
Overview of Phase 1 Study Area	A-1
Appendix B	B-1
Cork Harbour SPA Site Synopsis	B-1

1. Introduction and Description

1.1 Introduction

Cork County Council are in the early stages of developing the Cork to Kinsale Greenway. This project which is funded by Transport Infrastructure Ireland (TII), will seek to provide a Greenway between Cork City and Kinsale. Arup has been appointed by Cork County Council to provide multi-disciplinary engineering and other specialist consultancy services to progress the project through phases 1-4 of the design process, in line with the TII Project Management Guidelines.

This Constraints and Opportunities Report is an extract from the Phase 1 Feasibility Report and has been developed to outline the various constraints and opportunities that have been identified to date within the Study Area for the project *“The project promoter will prepare a Constraints Study Report which will outline the various constraints, including physical (e.g. mountains, rivers, lakes), archaeological, cultural and environmental constraints, that have the potential to affect the design and location of the Greenway. The report will also identify the towns, villages, desirable amenities, points of interest and rest areas within the study area that could be potential stopping points for users of the Greenway, have the facilities required for a good visitor experience or provide scenic viewing points. Having regard to the requirements of the Rural Cycleway Design Standards (see <https://www.tiipublications.ie/library/DN-GEO-03047-02.pdf>), the constraints study may also identify unsuitable terrain due to the topography of the area.”* [TII, Code of Best Practice National and Regional Greenways, December 2021]

1.2 General Description

The Cork to Kinsale Greenway project is to provide an active travel route which will create connectivity between Cork City and Kinsale. The project will seek to link and improve accessibility to local settlements and key services.

The Greenway will be developed in accordance with the Department of Transport’s Strategy for the Future Development of National and Regional Greenways and Code of Best Practice for National and Regional Greenways (CBPN&RG) and delivered in line with TII Project Managers Manual for Greenway Projects [<https://www.tiipublications.ie/document/?id=3200>].

“The emerging preferred route corridor will be identified based on the respective advantages and disadvantages of the various options, as well as consideration of the various route Corridor Options in relation to the scheme objectives and Five S criteria (Scenic, Sustainable, Strategic, Segregated and lots to See and do).” [CBPN&RG, December 2021]

In seeking to provide a public walking / cycling trail from Cork to Kinsale, the Cork to Kinsale Greenway Project will comply with these documents and all appropriate options will be examined.

1.3 Background

The Cork to Kinsale Greenway Project forms part of an overall vision and strategy for the development of an integrated network of Greenways and Blueway’s, as outdoor recreational amenities, for the Southern region. Examples of adjacent projects which may provide connectivity with this Greenway are the proposed West Cork Greenways and the Cork City to Viaduct Greenway. Aligned with national policy this project also seeks to provide a new Greenway which will not only provide an amenity for tourism and leisure but also seek to create an alternative sustainable mode connectivity between Cork City and Kinsale for commuting and other purposeful journeys by active travel. It will establish a structure for future Greenway routes in the area.

Phase 0 identified a need to link two important tourist destinations, Kinsale and Cork City via a corridor for non-motorised journeys. As noted above, it will also seek to provide a local amenity, an active travel route for local communities and facilitate commuter journeys.

This project will build on Phase 0 work to formally appraise all identified options that would provide a greenway linking the two destinations. Consideration will be given to the constraints and opportunities of the various options to ensure that the emerging preferred option represents the best solution.

1.4 Previous Studies

1.4.1 Previous Feasibility Report

In 2011 WSP were appointed by Cork County Council to undertake a Preliminary Feasibility Assessment to investigate the possibility of developing Greenways along abandoned rail lines in West Cork. Following the completion of ‘West Cork Abandoned Rail Line Greenways Preliminary Feasibility Assessment Report’ a further, more detailed analysis of the feasibility of the line from Cork City to Kinsale was commissioned. The following sets out the findings and recommendations of the Cork City to Kinsale Feasibility study.

- The predominant classification is On Rail Alignment, accounting for 65% or 23km of proposed Greenway.
- There are sections along the route where the original rail alignment is no longer evident, and the original route now runs across open farmland. The preferred solution is to retain the Greenway along the former rail alignment where possible.
- Impressive rail structures such as Chetwynd, Halfway and Ballinhassig have the potential to generate significant interest whilst the remainder of the route is enhanced by smaller understated rail bridges adding authenticity and gentle reminders of the former use.
- Properties have been built on or in close proximity to the rail line and where these are residential properties the route will need to be diverted around the property.
- Provision of casual and formal access to the route will be an important consideration in attracting users to the Greenway.

1.4.2 Strategic Assessment Report

In 2023, Fehily Timoney prepared a Strategic Assessment Report for the proposed Cork to Kinsale Greenway Project. The following are the conclusions of this Strategic Assessment Report:

- There is strong investment rationale for this Scheme stemming particularly from the predicted growth in tourism and growth in walking/cycling holidays in Ireland.
- Based on a review of International, national, regional, and local planning objectives, it is concluded that the development of the Cork to Kinsale Greenway is fully aligned with policy and is a suitable project for delivering on the National Strategic Outcomes contained in the National Planning Framework.
- Demand analysis indicates that this Greenway is likely to be attractive for both tourism and leisure trips as well as commuting and utility trips. The usability and attractiveness of the proposed Greenway will be reinforced by the network effects arising from its strong connectivity with the planned wider urban and regional cycle networks.
- This SAR recommends proceeding to the next Phase of project development where the feasibility of the various route options will be assessed in further detail. This recommendation is not in itself confirmation of project feasibility, but rather that this initial study concludes that the project warrants further scrutiny.
- Future stages, as outlined in TII PE-PMG-02047 of the project, will make further recommendations as to the continued development of the Scheme.

2. Project Need, Strategic Fit and Priority

2.1 Project Context

With the Irish Government's strong commitment to active travel, the Cork to Kinsale Greenway is an ideal opportunity to further efforts of developing a safe and environmentally resilient recreational transport network which connects and strengthens rural economies and communities in the process.

The 'Programme for Government 2020' was published in October 2020 and aims to address the issues that arose during the pandemic, outlining the government's immediate approach to capitalise on the positives that arose during this time over the following five years (up to 2025). Within the 'Programme for Government 2020' a commitment to allocate "... 10% of the total transport capital budget for cycling projects and an allocation of 10% of the total capital budget for pedestrian infrastructure" is made, as is a commitment to cycling and pedestrian projects noting "... 20% of the 2020 capital budget (€360 million) per year for the lifetime of the Government."

The Programme for Government advised that greenways have the potential to transform modal shift and improve air quality and public health. This commitment to cycling will enable us to achieve the huge ambition of developing an integrated national network of greenways to be used by commuters, leisure cyclists and tourists.

This project aims to grasp an opportunity as well as solve a problem. That opportunity is focussed on encouraging both walking and cycling as modes of transport and leisure pursuits, and around developing links between local towns and the surrounding countryside. The increasing need to reduce carbon emissions is driving the shift in policy towards more sustainable methods of travel. Greenways are an attractive means of emission free travel which can connect rural communities and provide an economic boost to rural areas through activity tourism.

The proposed greenway will be a scenic, strategic link that is substantially segregated from vehicular traffic, offering lots to see and do for a wide variety of users. It will be developed sustainably in co-operation with, and offering real benefits to, local communities.

In October 2023, the 'Key Tourism Facts 2022' was published by Fáilte Ireland, showing that domestic holidaymakers engaged in the following activities.

- 54% for hiking/walking < 5km & 13% for hiking/walking + 5km
- 6% cycling short distance & 3% cycling long distance.
- 27% visited a nature reserve/national park.
- 28% visited a historic house/castle.

The 'Travel Profile 2022' illustrates that there is a clear focus on tourism at local and national level and the development of a Greenway Project in this area would add to the region and the broader island's attractions.

2.2 Project Specific Need

The National Investment Framework for Transport in Ireland (NIFTI) recognises that decarbonising the transport infrastructure is an urgent priority in the context of climate change while enhancing regional and rural connectivity. The Cork to Kinsale Greenway is a feasible alternative solution to motorised vehicle travel.

The proposed Greenway will enable physical activity in a safe environment for all, together with the benefit of connecting rural communities using sustainable modes for short trips. This should help to strengthen rural economies and communities, whilst enhancing access to employment centres and amenity/ heritage features.

The proposed scheme will seek to connect with existing and planned active travel routes, Greenways and Blueways and make provision for links to other local cycling and walking trails, tourism attractions/experiences and towns and villages along its route.

Combined with the proposed West Cork Greenway projects the Cork to Kinsale Greenway could form part of one of the longest Greenway networks in the country and would be a significant attraction for international visitors and from other parts of Ireland, creating economic opportunities for the region. This approach to the development of tourism and recreation is fully aligned with national, regional, and local policy.

The Department of Transport released the National Cycle Network Plan in 2023. The National Cycle Network (NCN) plan states that it “will integrate with other cycle infrastructure including EuroVelo, greenways, regional and urban networks.” The Cork to Kinsale corridor has been included in the NCN Plan and can form an integral part of the National Cycle Network as it has the potential to link into the proposed West Cork Greenway and subsequently provide a branch off the EuroVelo 1 — The Atlantic Coast Route and the Wild Atlantic Way.

In February 2023 the Irish Minister for Transport reiterated the Irish Government’s commitment to Active Travel in a Press Release where he stated, “*Continuous and substantial funding for active travel across the country is a key commitment in the Programme for Government and a cornerstone of our Transport Strategies.*” as part of a €290M funding initiative. The Minister went on to advise that “*. People very often think that greenways, cycleways, or walkways are primarily tourism amenities. Of course, they serve that purpose really well, but first and foremost they are about local people and improving local life, connecting suburbs, local villages or townlands that have often become disconnected from one another because of busy and dangerous roads.*”

The development of the Cork to Kinsale Greenway will increase the region’s outdoor recreation infrastructure and boost its reputation as a destination for adventure activity. In doing so, the Greenway will offer a significant opportunity to increase visitor numbers, which would have a positive impact upon rural communities and economies. Moreover, the Greenway will provide connectivity to local activities, attractions, and cultural heritage sites, whilst also aiding connectivity for locals to places of employment, schools, and urban centres.

2.3 Strategic Fit and Priority

The policies below demonstrate how the Irish Government places a significant emphasis on active travel and activity tourism as a means of supporting regional growth. The following National, Regional and Local policy documents either reference the Cork to Kinsale Greenway or the Project aligns with the objectives of the strategy.

- Project Ireland 2040 — National Planning Framework (2019), Department of Housing Planning and Local Government
- Project Ireland 2040 — National Development Plan 2021 — 2030 (2021), Department of Public Expenditure and Reform
- Programme for Government — Our Shared Future (2020), Department of the Taoiseach
- Our Rural Future — Rural Development Policy 2021-2025 (2021), Department of Rural and Community Development
- Climate Action Plan 2024 (2024), Department of the Environment, Climate and Communications
- National Investment Framework for Transport in Ireland (NIFTI), (2021), Department of Transport
- National Physical Activity Plan (2019), Department for Health
- National Sustainable Mobility Policy, Action Plan 2022-2025 (2022), Dept. of Transport
- The National Cycle Network Plan (2023), Department of Transport
- Cycle Connects, Ireland’s Cycle Network (2022), National Transport Authority
- Strategy for the Future Development of National and Regional Greenways (2018), Department of Tourism, Transport and Sport

- Code of Best Practice for National and Regional Greenways (2021), Department of Transport
- Ireland’s Government Road Safety Strategy 2021-2030, Department of Transport
- Our Rural Future; Rural Development Policy 2021-2025
- Tourism Action Plan 2019-2021, Department of Tourism, Culture, Arts, Gaeltacht, Sport, and Media
- Shared Island Initiative Report 2023 Action on a Shared Future, Government of Ireland
- Cork County Local Economic and Community Plan 2023 — 2029
- Regional Spatial and Economic Strategy for the Southern Region (2020), Southern Regional Assembly
- Cork County Development Plan 2022-2028, Cork County Council
- Cork Metropolitan Area Transport Strategy (CMATS) 2040
- National Roads 2040 (2023), Transport Infrastructure Ireland
- Sustainability Implementation Plan, Our Future (2024), Transport Infrastructure Ireland

The above are important for the development and direction of this Scheme. For context the following references have been included to demonstrate how the Cork to Kinsale Greenway aligns with the National Development Plan 2021-2040, National Investment Framework for Transport in Ireland, Regional Spatial and Economic Strategy for the Southern Region (2020), Southern Regional Assembly & Cork County Development Plan 2022, Cork County Council.

Project Ireland 2040, National Development Plan 2021-2030

The National Development Plan 2021-2030 has identified active travel as a strategic investment priority and represents a step change in the approach towards funding of active travel projects in Ireland. It is anticipated that approximately €360m per annum will be invested in walking and cycling infrastructure including Greenways. This investment has the potential to substantially increase the numbers choosing to make active travel a part of their daily life.

It seeks to create an “... island-wide greenway network linking the Atlantic coast with the Eastern Seaboard through Greenway projects across the border region, creating a transformational green infrastructure asset, benefitting residents and growing sustainable tourism”.

National Investment Framework for Transport in Ireland

NIFTI is the Department of Transport’s high-level strategic framework for future investment in the land transport network. It is designed to guide the development of the transport network in the decades ahead to enable the National Planning Framework and promote positive social environmental and economic outcomes throughout the country. It identifies that the Irish Transport Sector will have to significantly decarbonise to meet climate change goals and minimise the damage from climate breakdown. It is noted that considerable investment in walking, cycling and public transport will be required to achieve this. NIFTI sets out a hierarchy of travel modes to be accommodated and encouraged when investments and other interventions are made, sustainable modes, starting with active travel are prioritised in this hierarchy.

Regional Spatial & Economic Strategy for the Southern Region (2020)

The Regional Spatial and Economic Strategy (RSES) for the Southern Region contains a number of specific objectives to develop Greenways throughout the region and to strengthen connectivity between rural communities. One objective of the strategic is to “Facilitate appropriate tourism development and in particular a National Greenways, Blueways and Peatways Strategy, prioritising sustainable projects that achieve maximum impact and connectivity at national and regional level.” and to safeguard “disused railway alignments for possible future use, for example conversion to greenways”. The RSES for the Southern Region recognises the importance of improved intra-regional connectivity between networked settlements - public transport, rail, inter-urban walking and cycling routes, greenways, and e-mobility initiatives.

Cork County Development Plan 2022-2028

Cork County Development Plan sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the County over the plan period from 2022 to 2028. The Plan sets out an approach centred on the core principle of sustainability with a focus on creating vibrant, liveable, climate resilient communities.

Sustainable transport and significant modal shift are key objectives of the transport strategy within the plan and Greenways have been referenced as significant infrastructure developments with a range of economic, social, and environmental benefits. The plan specifically refers to the development of Greenways along abandoned rail lines, utility corridors or other natural linear spaces such as riverbanks. *“County Cork has a large number of abandoned rail lines and while some of these routes are being brought back into use with commuter rail services as part of the Cork Suburban Rail Network Project, there is no immediate prospect that many of these routes will revert to rail use. They could, however, make a highly valuable contribution to the recreation and tourism infrastructure of the county if developed as multi-user recreational trails.”*

Cork Metropolitan Area Transport Strategy (CMATS) 2040

CMATS seeks to identify and maximise opportunities for high quality greenways and quietways. This is identified as a key priority for development of the Cycle Network Plan within CMATS. The *“Old Bandon/Kinsale Railway incorporating the Chetwynd Viaduct”* is referenced within the plan as a key indicative area for a greenway. A visualisation of the Chetwynd Viaduct in use as a Greenway is also included in this strategy.

3. Existing Conditions

3.1 Study Area Overview

The current Study Area is 153 km². Disregarding the vagaries of intervening terrain, the Study Area is 11.6 km wide at its widest point and approximately 20 km long. The Study Area includes the towns and villages of Waterfall, Ballinhassig, Halfway, Crossbarry, Riverstick, Belgooly, Dunderrow and Kinsale as well as other settlements in the rural hinterland. Outside of the urban areas the primary land use within the Study Area is agricultural, with limited areas of woodlands. The proposed Study Area for this Project is shown in Figure 3-1 below.

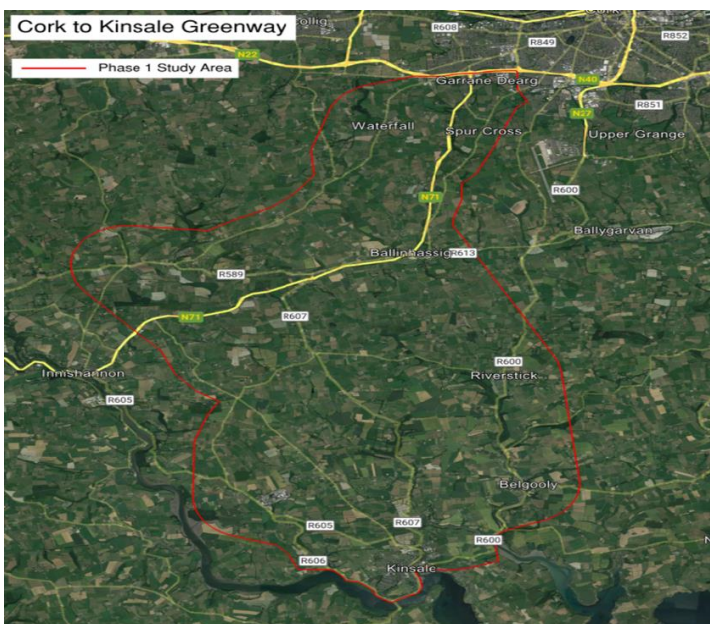


Figure 3-1 Cork to Kinsale Greenway Study Area

The Study Area was set out on the assumption that “... average urban commuter cycling speeds are up to 20 km/h.” [Chapter 1.7.4.5 of the National Cycle Manual]. On this basis a radius of 1.5km was set from the centre of each of the settlements listed above which translates to a less than or equal to 10-minute cycle to and from the Greenway to the centre of each town / village. These population centres were then used as nodes to generate a consistent boundary for the Study Area.

Northern boundary - The N40 and Sarsfield Road are used to define the Study Area boundary to the northeast.

Eastern boundary - An offset of 500m was taken from Spur Hill to link the tie in at Eagle Valley and the population node for Ballinhassig. An offset of 500m from the R600 was used on the eastern approach to Kinsale with the exception of areas where this would extend into adjacent water bodies.

Southern boundary - An offset of 500m from the R606 was used for linkage between Kinsale and Dunderrow and the River Bandon was used to define the boundary on approach to Kinsale.

Western boundary - An offset of 500m from the L3205 & Killeens Road was used for linkage between Dunderrow and Crossbarry populations nodes. An offset of 500m from the L2230 (Curra Rd) was used for linkage between Cross Barry and Waterfall populations nodes.

The Rivers Owenabue, Stick, Glasheen, Curragheen, and Bandon are identified as the main rivers flowing through the Study Area.

Overview plans of the Study Area, including constraints are included in Appendix A.

3.2 Settlements

The Study Area is largely rural in nature with relatively low-lying population density between towns, villages, and hamlets. Rural housing is scattered in the area with ribbon developments common along regional and local routes. A summary of settlements within the Study Area is outlined in Table 3-1.

Table 3-1 Summary of Settlements

Settlement	Type	Population (CSO, 2022) *
Waterfall	Village	Data unavailable
Crossbarry	Village	399
Halfway	Village	252
Ballinhassig	Village	459
Dunderrow	Village	213
Belgooly	Village	823
Riverstick	Village	772
Kinsale	Town	5991

* CSO, 2022 - Central Statistics Office, Table F101 5, Population and Average Age by Sex and List of Towns (number and percentage), 2022

4. Constraints and Opportunities Study

The following section outlines the Constraints and Opportunities that have been identified within the Study Area. Study Area Plans (CKG-ARP-PDV-P1-DR-001 to 02) include selected Constraints and Opportunities and are included in Appendix A.

4.1 Designated Sites

4.1.1 Existing Environment

Designated sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs). No designated sites were identified within the Study Area for the Project or within 2km of the Study Area boundary. However, a hydrological connectivity has been identified between the Study Area and the Cork Harbour SPA (refer to Section 4.1.2).

While not statutorily designated, Proposed Natural Heritage Areas (pNHAs) are noted as Environmentally Sensitive Areas. No pNHAs were identified within the Study Area for the Project. However, a number of pNHAs were identified within 2km of the Study Area boundary.

An overview of the above sites located within the Study Area and the wider area is presented in the following sections.

SACs

A Special Area of Conservation (SAC) is established under the European Union Habitats Directive (92/43/EEC), designated by the Irish Government, and established to conserve natural habitats and wild fauna and flora.

No SACs are located within the Study Area and / or the wider environmental assessment area.

SPAs

A Special Protection Area (SPA) is established under the European Union Birds Directive (2009/147/EC), designated by the Irish Government, and established for the protection of endangered species of wild birds.

A hydrological connectivity has been identified between the Study Area and the below SPA. The Qualifying Interests (species listed under Article 4 of the EU Birds Directive) for this SPA are listed below. The detailed site synopsis for this SPA is presented in Appendix B.

Cork Harbour SPA (Site Code: 004030)

Qualifying Interests:

- Little Grebe (*Tachybaptus ruficollis*) [A004]
- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]

- Red-breasted Merganser (*Mergus serrator*) [A069]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Lesser Black-backed Gull (*Larus fuscus*) [A183]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

NHAs

A Natural Heritage Area (NHA) is established under Section 18 of the Wildlife (Amendment) Act, 2000, to protect habitats, species, or geology of national importance.

No NHAs are located within the Study Area and / or the wider environmental assessment area.

pNHAs

A proposed Natural Heritage Area (pNHA) is a site of significance for wildlife and habitats but has not been statutorily proposed or designated.

The below pNHAs are located within 2km of the Study Area:

Bandon Valley Below Inishannon pNHA (Site Code: 001515)

Bandon Valley Above Inishannon pNHA (Site Code: 001740)

Cork Lough pNHA (Site Code: 001081)

James Fort pNHA (Site Code: 001060)

Other Sites

No Ramsar sites or National Parks are located within the Study Area and / or the wider environmental assessment area.

4.1.2 Appropriate Assessment

When determining whether Appropriate Assessment (AA) is required, Article 6(3) of the EU Habitats Directive states:

‘Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives’.

Following the precautionary principle and given that a hydrological connectivity has been identified between the Study Area and the Cork Harbour SPA, an Appropriate Assessment Screening Report will be prepared for the Project and an Appropriate Assessment determination will subsequently be made by Cork County Council.

No definition of the content or scope of AA is given in the Habitats Directive, but the concept and approach are set out in Commission guidance (EC, 2000, 2002, 2006). AA is an impact assessment process that fits within the decision-making framework and tests of Articles 6(3) and 6(4) of the EU Habitats Directive.

In respect of AA, Article 6(3) of the EU Habitats Directive states:

'In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'

Thus, an assessment of the potential for the Project to adversely affect the integrity of the aforementioned SPAs will be undertaken.

In order to proceed, the Competent Authority can only grant approval for the Project if they are satisfied that there will be no adverse effects on the relevant European Sites – in respect of their conservation objectives.

Please note that Article 6(4) of the above Directive provides a mechanism for proceeding with a development even when it may result in an adverse effect on a European Site. However, this mechanism is specifically for projects that can demonstrate an 'Imperative Reason of Overriding Public Interest' (IROPI). It is unlikely that the currently proposed Project would satisfy the criteria to take this route.

4.1.3 Identified Constraints

It must be demonstrated that the Project will not prevent the individual Conservation Objectives for the designated site from achieving or maintaining favourable conservation status. Typical ways that this may be achieved are listed below:

- Avoiding loss or deterioration of the habitats for which the European Site is designated.

European Sites are designated for the protection of particular habitats or species. They do not occur in all areas within the site and any direct or indirect loss or deterioration of these habitats within the SAC or SPA must be avoided.

- Avoiding pollution of watercourses.

Cork Harbour SPA is designated for various species that could be potentially affected by water pollution from construction activity. It will be important to provide detailed construction methodologies and details of all measures that will be employed to prevent pollution. It would be advisable to avoid the requirement for instream works wherever possible. It should be noted that works outside the SPA but upstream of it (i.e., within the Study Area) should also be subject to these same considerations.

- Avoiding disturbance to species for which the European Site is designated.

Cork Harbour SPA is designated for various species that could be potentially subject to disturbance resulting from the Project. An example of a measure to avoid disturbance of the species is the avoidance of instream works (or if they cannot be avoided, timing them to avoid sensitive periods for the species).

4.1.4 Conclusion

Any development that is located within or nearby a SAC or SPA carries an inherent associated planning risk, and at this stage of the design and route selection process it is not possible to conclude that there is no potential for any of the long list of routes to result in adverse effects on the Cork Harbour SPA. However, it is possible to conclude that through careful design and compliance with the route selection processes, it is likely that a Greenway can be designed within the Study Area that overcomes the constraints identified.

- Review of Environmental Protection Agency (EPA) Maps to identify WFD catchment areas that the survey area overlapped with².
- Review of National Land Cover Map data (Tailte Éireann, 2023)¹⁷ and cross examined using most recent aerial imagery on Google Maps; and
- ‘*A guide to habitats in Ireland*’ (Fossitt, 2000) published by The Heritage Council of Ireland was used to identify and organise habitats¹⁸.

Designated Sites

Initially, the most up to date GIS spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie). The datasets were utilised to identify Designated Sites which could feasibly be affected by the Project.

These sites include the following:

- Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) which are designated under the EU Habitats Directive and EU Birds Directive, respectively, and are collectively known as ‘European Sites’. These comprise the Natura 2000 network.
- Natural Heritage Areas (NHAs)– these are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy; and
- Proposed Natural Heritage Areas (pNHAs)- A list of pNHAs was published on a non-statutory basis in 1995 but has not since been statutorily proposed or designated.

No designated sites were identified within the boundary of proposed development area. The following designated sites were identified within 2km of the site boundary:

- Bandon Valley Below Inishannon pNHA
- Bandon Valley Above Inishannon pNHA
- Cork Lough pNHA; and
- James Fort pNHA

Figure 4-1 outlines the location of these sites.

A hydrological connectivity has also been identified between the Study Area and the Cork Harbour SPA, despite it being located greater than 2km from the site boundary.

¹⁷ Tailte Éireann, 2023. National Land Cover Map.

¹⁸ A Guide to Habitats in Ireland, Fossitt 2000. Available at [A Guide to Habitats in Ireland – Fossitt.pdf \(npws.ie\)](#). Accessed 18 December 2023.

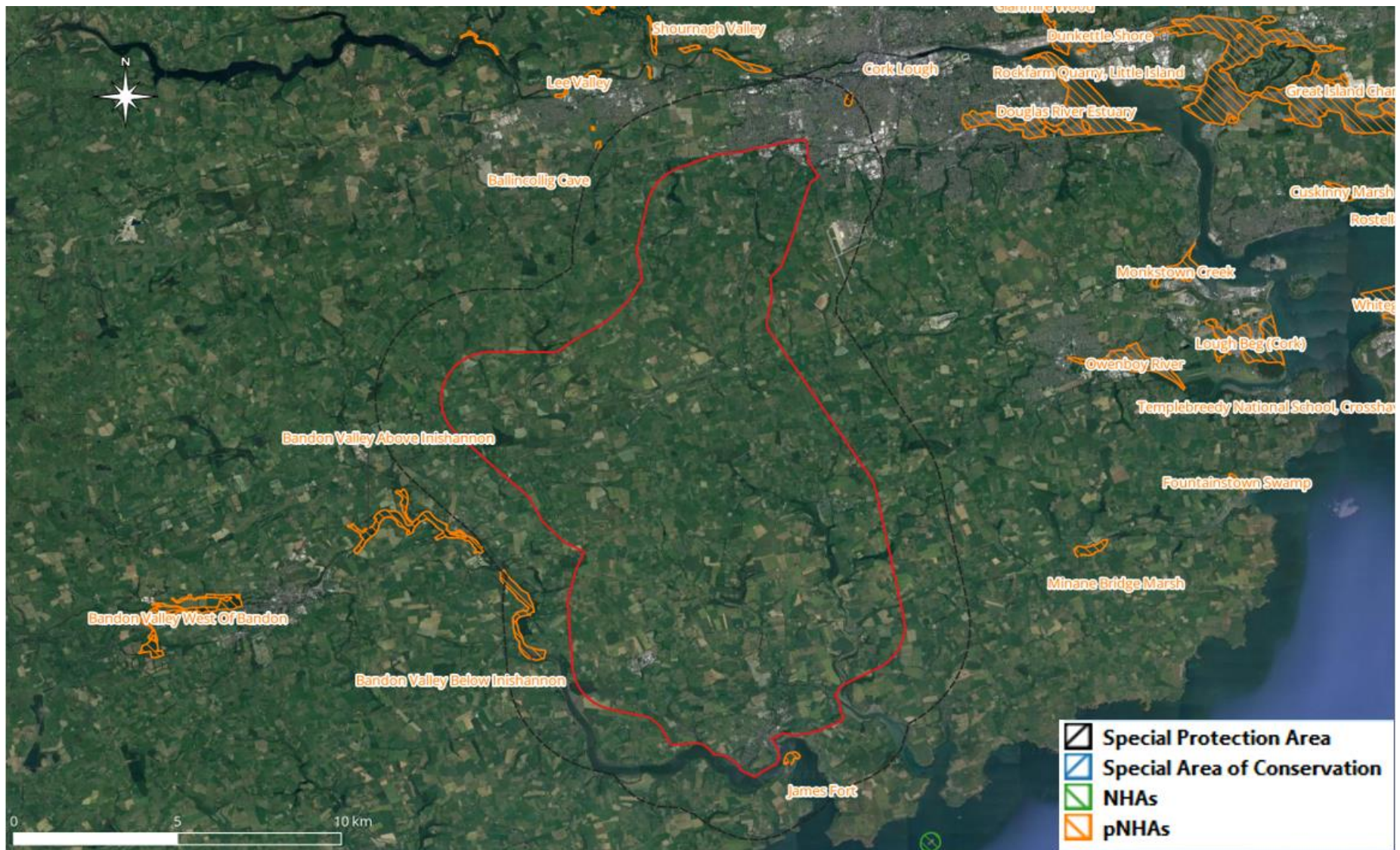


Figure 4-1 Protected sites within 2km of the Study Area boundary.

Legislation

A number of legislative acts, directives and international conventions aim to conserve biodiversity and nature conservation interest in Ireland. Relevant legislation and international agreements are listed below:

- The Bonn Convention
- The Bern Convention
- The Convention on Biological Diversity (CoP15)
- The Habitats Directive (Council Directive 92/43/EEC)
- The Water Framework Directive (Directive 2000/60/EC)
- The Birds Directive (Directive 2009/147/EC)
- EU Regulation on Invasive Alien Species (1143/2014)
- Wildlife Acts 1976 to 2021
- The European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011))
- Heritage Act 2018 (no.15 of 2018), Part 3
- Planning and Development Acts 2000 to 2019; and
- Flora (Protection) Order 2022

These pieces of legislation include offences relating to protected species, habitats and designated sites and requirements for mitigation and licences to allow construction works to proceed. The EC Birds and Natural Habitats Regulations set out the requirement for the consideration of the potential effects of a proposed development on SACs and SPAs.

For the purposes of this report, all sites designated as an SAC or SPA shall be referred to as a Natura 2000 site.

Statutory Planning Policy

Project Ireland 2040 – National Planning Framework

The National Planning Framework (NPF) is the Irish Government’s high-level strategic plan for shaping the future growth and development of Ireland to the year 2040. It is a framework to guide public and private investment, to create and promote opportunities for the country’s citizens, and to protect and enhance the environment. Two objectives are directly relevant to the Project – refer to Table 4-1.

Table 4-1 Relevant Policy Objectives Project Ireland 2040

National Policy Objective 59
Enhance the conservation status and improve the management of protected areas and protected species by: <ul style="list-style-type: none">• Implementing relevant EU Directives to protect Ireland’s environment and wildlife.• Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans.• Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites; and• Continued research, survey programmes and monitoring of habitats and species.
National Policy Objective 60
Conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance.

Cork County Development Plan 2022-2028

The relevant local planning policies have been extracted from the Cork County Development Plan 2022-2028, specifically Volume 1 – Chapter 12: Transport and Mobility and Volume 1 – Chapter 15: Biodiversity and Environment).

Transport and Mobility

Transport Demand Management - Liveable Towns

Active travel infrastructure includes hard measures such as infrastructure design (foot and cycle paths) as well as measures such as safety, attractive environment, greening of routes and a high-quality public realm. Some locations, due to their sensitivity, might not accommodate minimum active travel standards such as minimum cycleway widths. This may be due to environmental, nature conservation, landscape, or other heritage considerations. The identification, design and construction of new cycling and walking routes will be subject to an Ecological Impact Assessment at the project inception stage.

Biodiversity and Environment

Managing Local Authority Developments and Projects

Cork County Council is a significant developer within the county and is responsible for delivering new housing and infrastructure projects, sustainable transport networks and projects to improve the public realm of towns and villages. The Council also supports tourism, recreational and amenity projects including the development of new greenways and blueways, many of which are located within areas of high biodiversity value.

As a developer, Cork County Council has a responsibility to ensure that new development it progresses is carried out in a manner which is sustainable and does not harm our natural resources.

Table 4-2 Relevant Policy Objectives Cork County Development Plan

Cork County Development Plan Objective
BE15-4: Local Authority Development and Projects
<p>a. <i>Ensure that biodiversity protection is considered at design stage for works and development planned and progressed by Cork County Council and that all such projects comply with nature conservation legislation and policy as required; b) Fulfil Appropriate Assessment and Environmental Impact Assessment requirements and carry out Ecological Impact Assessment in relation to Local Authority plans and projects as appropriate.</i></p> <p>b. <i>Fulfil Appropriate Assessment and Environmental Impact Assessment requirements and carry out Ecological Impact Assessment in relation to Local Authority plans and projects as appropriate.</i></p>

Biodiversity Considerations for New Development or Other Activities

Cork County Council has a significant role to play in the protection of biodiversity through its roles in the management and control of new development as well as its roles in licensing discharges to water courses and issuing waste management permits. This role emanates from legal requirements as set out in planning and nature conservation legislation which provide strict protection to European and nationally important sites, wetlands, protected species as well as protection to features of the countryside which act as ecological stepping stones linking designated areas. The Planning Authority has produced a useful guidance document 'Biodiversity and the Planning Process – guidance for developments on the management of biodiversity issues during the planning process'.

Table 4-3 Relevant Policy Objectives Cork County Development Plan

Cork County Development Plan Objective
BE15-6: Biodiversity and New Development
<p>Provide for the protection and enhancement of biodiversity in the development management process and when licensing or permitting other activities by:</p> <ol style="list-style-type: none"> a. Providing ongoing support and guidance to developers on incorporating biodiversity considerations into new development through preplanning communications and the Council’s guidance document ‘Biodiversity and the Planning Process – guidance for developments on the management of biodiversity issues during the planning process’ and any updated versions of this advice. b. Encouraging the retention and integration of existing trees, hedgerows, and other features of high natural value within new developments. c. Requiring the incorporation of primarily native tree and other plant species, particularly pollinator friendly species in the landscaping of new developments. d. Fulfilling Appropriate Assessment and Environmental Impact Assessment obligations and carrying out Ecological Impact Assessment in relation to development and activities, as appropriate. e. Ensuring that an appropriate level of assessment is completed in relation to wetland habitats subject to proposals which would involve drainage or reclamation. This includes lakes and ponds, watercourses, springs and swamps, marshes, heath, peatlands, some woodlands as well as some coastal and marine habitats. f. Ensuring that the implementation of appropriate mitigation (including habitat enhancement, new planting, or other habitat creation initiatives) is incorporated into new development, where the implementation of such development would result in unavoidable impacts on biodiversity - supporting the principle of biodiversity net gain

Table 4-3 requires consideration. The Local Development Plan (LDP) outlines the need for an Appropriate Assessment and an Ecological Impact Assessment for all Greenway projects. In addition, it outlines support for “the principle of biodiversity net gain” which should be noted and considered from the outset. This has been a requirement in previous developments (e.g., the Carrigaline project). Qualitative and quantitative measures are available in the absence of an official biodiversity metric to incorporate this.

Cork City Development Plan 2022-2028

The relevant local planning policies have been extracted from the Cork City Development Plan 2022-2028, specifically Volume 1 – Chapter 4: Transport and Mobility and Volume 1 - Chapter 15: Biodiversity and Environment).

Table 4-4 Relevant Policy Objectives Cork City Development Plan

Cork City Development Plan Objective
Transport and Mobility
<p><i>Objective 4.6: Corridor and Route Selection Process</i></p> <p><i>Policies and Objectives relating to new roads and other transport infrastructure projects (including greenways, walkways, cycleways and blueways) that are not already provided for by existing plans/ programmes or are not already permitted, are subject to the undertaking of feasibility assessment having regard to normal planning considerations and environmental sensitivities as identified in the SEA Environmental Report and the objectives of the Plan relating to sustainable mobility.</i></p>

Table 4-5 Relevant Policy Objectives Cork City Development Plan

Cork City Development Plan Objective
Green and Blue Infrastructure, Open Space and Biodiversity
<ol style="list-style-type: none"> a. To protect and enhance the City’s tree and urban woodlands in public and private ownership. Cork City Council will seek to survey, map, and maintain existing important individual and groups of trees, using Tree Preservation Orders as appropriate. b. To encourage the planting of new urban woodlands and trees where appropriate throughout the city and particularly where there are deficiencies in tree coverage as identified in the Cork City Green and Blue Infrastructure Study. c. To support the preparation of a City Tree Strategy which provides a vision for long term planting, protection and maintenance of trees, hedgerows, and woodlands. d. To support retaining existing trees and the planting of new trees as part of new developments subject to care on the species of tree and the siting and management of the trees to avoid conflict with transport safety and residential amenity in particular. e. To promote the planting of pollinator friendly native deciduous trees and mixed forestry to benefit biodiversity.

Objective 6.6 Rivers, Waterway and Wetlands

To protect and maintain the integrity, and maximise the potential, of the natural heritage and biodiversity value of rivers, associated watercourses, and wetlands in Cork City, and to

- a. To promote an integrated approach to optimising opportunities associated with rivers, waterways and wetlands generate biodiversity, recreation, tourism, and economic benefits.*

Objective 6.22 Natural Heritage and Biodiversity

- a. To protect, promote and enhance Cork City's natural heritage and biodiversity.*
- b. To support the implementation of the National Biodiversity Plan and the All-Ireland Pollinator Plan and successor publications in Cork City.*
- c. To support and implement the biodiversity actions from the Cork City Heritage and Biodiversity Plan (2021-2026) in partnership with all relevant stakeholders.*
- d. Cork City Council will seek to establish and use a city biodiversity database, accessible across all council departments for consideration in land management decision-making.*
- e. Cork City Council will work with communities to enhance existing, and the delivery of new, biodiversity-rich areas throughout the City including individual buildings, streets, public and private spaces by supporting the provision of green roofs and walls, rain gardens, biodiversity-rich parklets, rainwater harvesting, natural banks, and naturalised SUDS.*
- f. Cork City Council will seek, where appropriate, to enhance the linear habitat connectivity, including the interconnection and enhancement of:
 - Woodlands, gardens, open spaces, fields, and hedgerows.
 - Coastal habitats, river catchments, lakes, streams, ponds.
 - Aquatic, marginal and bank side habitats.
 - Parks, playing fields and recreational areas.
 - Upstream of mapped flood zones.
 - City transport routes.*

Non-Statutory Planning Policy

Ireland's 4th National Biodiversity Action Plan (NBAP)

Ireland's 4th National Biodiversity Action Plan (NBAP) will set the national biodiversity agenda for the period 2023-2027 and aims to deliver changes to the ways in which we value and protect nature. While the Plan is currently out for consultation it has the following objectives:

1. Adopt a Whole of Government, Whole of Society Approach to Biodiversity
2. Meet Urgent Conservation and Restoration Needs
3. Secure Nature's Contribution to People
4. Embed Biodiversity at the Heart of Climate Action; and
5. Enhance the Evidence Base for Action on Biodiversity

This plan will operate across statutory and non-statutory policy realms.

The All-Ireland Pollinator Plan 2021-2025

The All-Ireland Pollinator Plan 2021-2025 has been adapted by many statutory and non-statutory bodies throughout the island of Ireland, including Cork City Council and Cork County Council and promotes the importance of native pollinator species and habitats in Ireland.

4.2.2 Existing Environment

The following sections provide a baseline of the ecology known to occur in the Study Area.

Habitats

Aerial photography and National Land Cover (Tailte Éireann, 2023) data was used in order to identify the habitats within the Study Area.

All habitats recorded via aerial photography have been classified in accordance with Fossitt (2000). This is a widely used system for identifying and classifying the many different habitat types in Ireland.

A total of 36 habitat types were identified through aerial photography images. These are outlined in Table 4-6.

Table 4-6 Habitat types (as described by Fossitt 2000) within the Study Area

Habitat	Fossitt (2000) Habitat Code	Habitat	Fossitt (2000) Habitat Code
Arable crops	BC1	Sand shores	LS2
Stone walls and other stonework	BL1	Mud shores	LS3
Earth banks	BL2	Dry-humid acid grassland	GS3
Buildings and artificial surfaces	BL3	Wet grassland	GS4
Spoil and bare ground	ED2	Sea caves	LR5
Recolonising bare ground	ED3	Sea inlets and bays	MW2
Active quarries and mines	ED4	Estuaries	MW4
Upper salt marsh	CM2	Mixed broadleaved woodland	WD1
Tidal rivers	CW2	Mixed broadleaved/conifer woodland	WD2
Exposed siliceous rock	ER1	Conifer plantation	WD4
Exposed calcareous rock	ER2	Scattered trees and parkland	WD5
Depositing lowland rivers	FW2	Hedgerows	WL1
Drainage ditches	FW4	Treelines	WL2
Improved agricultural grassland	GA1	Semi-natural woodland	WN
Amenity grassland (Improved)	GA2	Scrub	WS1
Dry calcareous and neutral grassland	GS1	Immature woodland	WS2
Shingle and gravel shores	LS1	Recently felled woodland	WS5

A number of these habitats have potential to conform to Annex I habitats. To identify which, if any, of these habitats have such potential a Phase 1 habitat survey will be required. A map of known Annex I habitats in the area is outlined in Figure 4-2.

NPWS Article 17 Reporting and Survey Datasets

A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), the Irish Semi-Natural Grassland Survey datasets, National Survey of Native Woodlands and Ancient and Long-Established Woodland datasets was conducted to identify potential habitat constraints in the Study Area.

Available NPWS datasets were downloaded and overlain on the Study Area. The following priority habitats were noted to occur within the boundary or 2km buffer zone of the Study Area. These have been listed in Table 4-7 and illustrated in Figure 4-2.

Table 4-7 Priority Habitats & Annex 1 Habitats occurring within the boundary or 2km buffer of the Study Area

Habitat	
Residual Alluvial Woodland	Sea Caves
Estuaries	Mediterranean Salt Meadows
Tidal Mudflats and Sandflats	Atlantic Salt Meadows
Coastal Lagoons	Vegetated Sea Cliffs
Large Shallow Inlets and Bays	

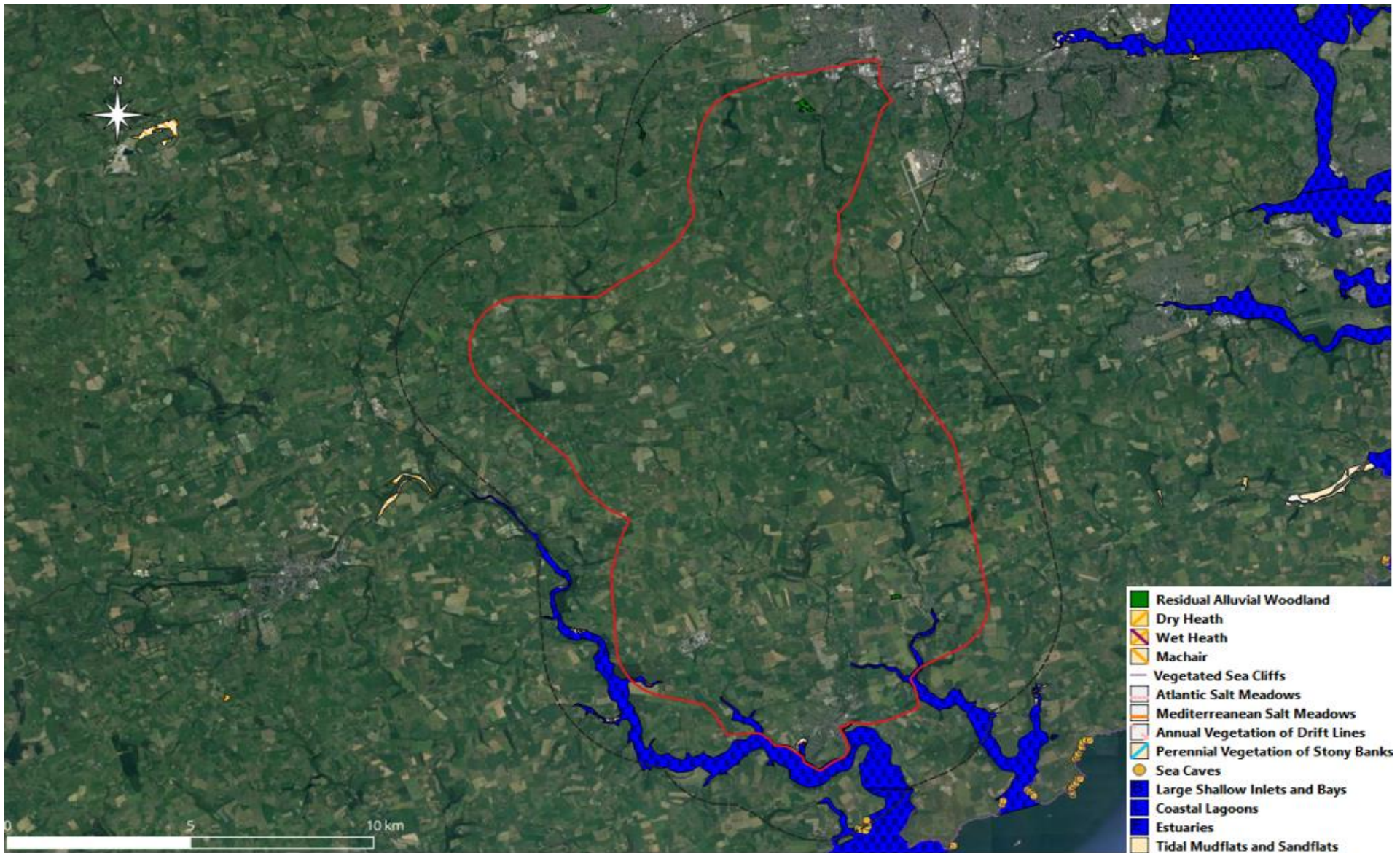


Figure 4-2 Annex 1 habitats dataset overlaid on Study Area, including a 2km buffer around the Study Area

Baseline Hydrology

Regionally, the Study Area is located in the Bandon Ilen (ID: 20) and Lee, Cork Harbour & Youghal Bay (ID: 19) WFD surface water catchments within the Southwestern Basin District.

Numerous watercourses overlap with the Study Area. These have been illustrated in Figure 4-2. Some of the main watercourses within the Study Area include the Owenboy River (EPA Code 19O01), Strick River (EPA Code 20S03) and the river Lee (EPA Code: 19L03).

These watercourses support habitat for a number of aquatic species. No SACs are present in the survey area or its 2km buffer. However, there is hydrological connectivity between the survey area and Cork Harbour SPA. There is potential for habitats such as turloughs, alkaline fens and alluvial forests, and aquatic species such as brook lamprey (*Lampetra planeri*) and European eel (*Anguilla anguilla*) to be indirectly and directly impacted by the Project due to the number of watercourses within the Study Area.

Vascular Plants and Bryophytes

A search of the National Biodiversity Data Centre (NBDC) website for any rare or unusual plant species listed under Annex II of the EU Habitats Directive, All-Ireland Red List – No. 10 Vascular Plants (Wyse Jackson et al., 2016) or the Flora (Protection) Order (1999, as amended 2022) within the hectads that overlap the Study Area was conducted. These records are provided in Table 4-8.

Table 4-8 Protected flora and bryophyte species within the hectads overlapping the Study Area

Common Name	Scientific Name	Status
Little-robin	<i>Geranium purpureum</i>	Threatened Species: Endangered
Yellow Bartsia	<i>Parentucellia viscosa</i>	Threatened Species: Near threatened
Greater Knapweed	<i>Centaurea scabiosa</i>	Threatened Species: Near threatened
Meadow Crane's-bill	<i>Geranium pratense</i>	Threatened Species: Vulnerable
Green Field-speedwell	<i>Veronica agrestis</i>	Threatened Species: Near threatened
Vervain	<i>Verbena officinalis</i>	Threatened Species: Near threatened
Round-leaved Crane's-bill	<i>Geranium rotundifolium</i>	Threatened Species: Endangered

Invasive Species

A search of the NBDC website was undertaken for records of invasive species listed under the Third Schedule to the EC Birds and Natural Habitats Regulations 2011 (SI No. 477/2011) or as a Medium or High Impact invasive by Biodiversity Ireland within the hectads the Study Area overlies. These records are provided in Table 4-9.

Table 4-9 NBDC records for Third Schedule, Medium Impact or High Impact Invasive Species within the hectads overlapping the Study Area

Common Name	Scientific Name	Classification
Fauna		
American Mink	<i>Mustela vison</i>	Third Schedule
Arthurdendyus triangulatus	<i>Arthurdendyus triangulatus</i>	High impact
Bank Vole	<i>Myodes glareolus</i>	Medium impact
Brown Rat	<i>Rattus norvegicus</i>	Third Schedule
European Rabbit	<i>Oryctolagus cuniculus</i>	Medium impact
Greater, White-toothed Shrew	<i>Crocidura russula</i>	Medium impact
Harlequin Ladybird	<i>Harmonia axyridis</i>	Third Schedule
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>	Medium impact
Flora		
Black Currant	<i>Ribes nigrum</i>	Medium impact
Brazilian Giant-rhubarb	<i>Gunnera manicata</i>	Third Schedule
Butterfly-bush	<i>Buddleja davidii</i>	Medium impact
Canadian Waterweed	<i>Elodea canadensis</i>	High impact
Cherry Laurel	<i>Prunus laurocerasus</i>	High impact
Giant Hogweed	<i>Heracleum mantegazzianum</i>	Third Schedule
Giant-rhubarb	<i>Gunnera tinctoria</i>	Third Schedule
Himalayan Balsam	<i>Impatiens glandulifera</i>	Third Schedule
Japanese Knotweed	<i>Fallopia japonica</i>	Third Schedule
Salmonberry	<i>Rubus spectabilis</i>	Third Schedule

Common Name	Scientific Name	Classification
Spanish Bluebell	<i>Hyacinthoides hispanica</i>	Third Schedule
Sycamore	<i>Acer pseudoplatanus</i>	Medium impact
Three-cornered Garlic	<i>Allium triquetrum</i>	Third Schedule

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) include legislative measures to deal with the introduction, dispersal, dealing in and keeping of non-native species.

Fauna

A search of the NBDC website was undertaken for records of protected fauna within the hectads that overlap the Study Area. These records are provided in the sections below.

Non-volant Mammals

Non-volant mammals protected under the Wildlife Act and EU Habitats Directive records are provided in Table 4-10.

Table 4-10 NBDC records for protected mammal species in hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Bottle-nosed dolphin	<i>Tursiops truncatus</i>	Habitat's Directive (HD) Annex IV, Wildlife Acts (WA)
Common dolphin	<i>Delphinus delphis</i>	HD Annex IV, WA
Eurasian badger	<i>Meles meles</i>	WA
Eurasian red squirrel	<i>Sciurus vulgaris</i>	WA
European otter	<i>Lutra lutra</i>	HD Annex II, IV, WA
Pine martin	<i>Martes martes</i>	HD Annex V, WA
West European hedgehog	<i>Erinaceus europaeus</i>	WA

Bats

All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites, and resting places. The Lesser horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of Annex-listed species.

This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2022). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat or disturb its roost. Any work at a roost site must be carried out with the agreement of the National Parks and Wildlife Service (NPWS) and a derogation licence must be granted before works commence.

Three bat species were found to have been recorded in the hectads that overlap the Study Area as provided in Table 4-11.

Table 4-11 NBDC records for bat species recorded within the hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	HD Annex IV, WA
Lesser Noctule	<i>Nyctalus leisleri</i>	HD Annex IV, WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HD Annex IV, WA

Aquatic Species

Aquatic species protected under the Wildlife Act and EU Habitats Directive are provided in Table 4-12.

Table 4-12 NBDC records for aquatic species within the hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Brook Lamprey	<i>Lampetra planeri</i>	HD Annex II
European Eel	<i>Anguilla anguilla</i>	Threatened: Critically Endangered

Invertebrates

Terrestrial invertebrates protected under the Wildlife Act and EU Habitats Directive are provided in Table 4-13.

Table 4-13 NBDC records for invertebrates within the hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Andrena fucata	<i>Andrena fucata</i>	Threatened Species: Near threatened
Gatekeeper	<i>Pyronia tithonus</i>	Threatened Species: Near threatened
Gipsy Cuckoo Bee	<i>Bombus bohemicus</i>	Threatened Species: Near threatened
Large Red Tailed Bumble Bee	<i>Bombus lapidarius</i>	Threatened Species: Near threatened
Megachile centuncularis	<i>Megachile centuncularis</i>	Threatened Species: Near threatened
Scarce Blue-tailed Damselfly	<i>Ischnura pumilio</i>	Threatened Species: Vulnerable
Tawny Mining Bee	<i>Andrena fulva</i>	Threatened Species: Regionally Extinct
Wall	<i>Lasiommata megera</i>	Threatened Species: Endangered

Amphibians

Amphibians protected under the Wildlife Act and EU Habitats Directive are provided Table 4-14.

Table 4-14 NBDC records for reptiles and amphibians within the hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Common Frog	<i>Rana temporaria</i>	HD Annex V, WA
Smooth Newt	<i>Lissotriton vulgaris</i>	WA

Birds

Table 4-15 lists the protected bird species records. This list specifically contains bird species protected under Annex I of the Birds Directive 2009/147/EC in addition to Red Listed species of the Birds of Conservation Concern in Ireland (BOCCI).

Table 4-15 NBDC records for birds within the hectads that overlap the Study Area

Common Name	Scientific Name	Designation
Bar-tailed Godwit	<i>Limosa lapponica</i>	WA, EU Annex 1 species, BOCCI Red List
Barn Owl	<i>Tyto alba</i>	WA, BOCCI Red List
Barn Swallow	<i>Hirundo rustica</i>	WA, BOCCI Amber List
Black-tailed Godwit	<i>Limosa lapponica</i>	WA, EU Annex 1 species, BOCCI Red List
Black-headed Gull	<i>Larus ridibundus</i>	WA, BOCCI Amber List
Common Coot	<i>Fulica atra</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Amber list
Common Grasshopper Warbler	<i>Locustella naevia</i>	WA, BOCCI Amber List
Common Greenshank	<i>Tringa nebularia</i>	WA, BOCCI Amber List

Common Name	Scientific Name	Designation
Common Guillemot	<i>Uria aalge</i>	WA, BOCCI Amber List
Common Kestrel	<i>Falco tinnunculus</i>	WA, BOCCI Red List
Common Kingfisher	<i>Alcedo atthis</i>	WA, EU Annex 1, BOCCI Amber list
Common Linnet	<i>Carduelis cannabina</i>	WA, BOCCI Amber List
Common Redshank	<i>Tringa totanus</i>	WA, BOCCI Red List
Common Shelduck	<i>Tadorna tadorna</i>	WA, BOCCI Amber List
Common Snipe	<i>Gallinago gallinago</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 3, BOCCI Amber List
Common Starling	<i>Sturnus vulgaris</i>	WA, BOCCI Amber List
Common Swift	<i>Apus apus</i>	WA, BOCCI Amber List
Dunlin	<i>Calidris alpina</i>	WA, EU Annex 1 BOCCI Amber List
Eurasian Curlew	<i>Numenius arquata</i>	WA, EU Annex 2 Section 2, BOCCI Red List
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	WA, BOCCI Amber List
Eurasian Teal	<i>Anas crecca</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Amber List
Eurasian Wigeon	<i>Anas penelope</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Amber List
Eurasian Woodcock	<i>Scolopax rusticola</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Amber list
European Golden Plover	<i>Pluvialis apricaria</i>	WA, EU Annex 1, EU Annex 2 Section 2, EU Annex 3 Section 3, BOCCI Red List
European Shag	<i>Phalacrocorax aristotelis</i>	WA, BOCCI Amber list
Great Black-backed Gull	<i>Larus marinus</i>	WA, BOCCI Amber list
Great Cormorant	<i>Phalacrocorax carbo</i>	WA, BOCCI Amber list
Great Northern Diver	<i>Gavia immer</i>	WA, BOCCI Amber list
Herring Gull	<i>Larus argentatus</i>	WA, BOCCI Amber list
House Martin	<i>Delichon urbicum</i>	WA, BOCCI Amber list
House Sparrow	<i>Passer domesticus</i>	WA, BOCCI Amber list
Jack Snipe	<i>Lymnocyptes minimus</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 3, BOCCI Amber List
Lesser Black-backed Gull	<i>Larus fuscus</i>	WA, BOCCI Amber list
Little Egret	<i>Egretta garzetta</i>	WA, EU Annex 1
Little Grebe	<i>Tachybaptus ruficollis</i>	WA, BOCCI Amber list
Mediterranean Gull	<i>Larus melanocephalus</i>	WA, BOCCI Amber list
Merlin	<i>Falco columbarius</i>	WA, EU Annex 1, BOCCI Amber list
Mew Gull	<i>Larus canus</i>	WA, BOCCI Amber list
Mute Swan	<i>Cygnus olor</i>	WA, BOCCI Amber list
Northern Gannet	<i>Morus bassanus</i>	WA, BOCCI Amber list
Northern Lapwing	<i>Vanellus vanellus</i>	WA, EU Annex 2 Section 2, BOCCI Red list
Northern Pintail	<i>Anas acuta</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Red list
Northern Shoveler	<i>Anas clypeata</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 3, BOCCI Red list

Common Name	Scientific Name	Designation
Northern Wheatear	<i>Oenanthe oenanthe</i>	WA, BOCCI Amber list
Peregrine Falcon	<i>Falco peregrinus</i>	WA, EU Annex 1
Pink-footed Goose	<i>Anser brachyrhynchus</i>	WA, EU Annex 2 Section 2
Red-billed Chough	<i>Pyrrhorax pyrrhorax</i>	WA, BOCCI Red list
Rock Pigeon	<i>Columba livia</i>	WA, EU Annex 2 Section 1
Ruff	<i>Philmachus pugnax</i>	WA, BOCCI Amber list
Sand Martin	<i>Riparia riparia</i>	WA, BOCCI Amber list
Sky Lark	<i>Alauda arvensis</i>	WA, BOCCI Amber list
Spotted Flycatcher	<i>Muscicapa striata</i>	WA, BOCCI Amber list
Stock Pigeon	<i>Columba oenas</i>	WA, BOCCI Amber list
Tufted Duck	<i>Aythya fuligula</i>	WA, EU Annex 2 Section 1, EU Annex 3 Section 2, BOCCI Amber list
Water Rail	<i>Rallus aquaticus</i>	WA, BOCCI Amber list
Yellowhammer	<i>Emberiza citrinella</i>	WA, BOCCI Red list

4.2.3 Identified Constraints

The most significant ecological constraints for the Study Area are the parcels of Annex I habitat that occurs throughout the site and the various watercourses that offer hydrological connectivity to designated sites (SACs, SPAs, NHAs, pNHAs) in the vicinity of the Study Area.

There are records of a wide range of protected flora and fauna species located within the Study Area. These include species protected under the Wildlife Act, as well as the EU Habitats Directive and Birds Directive. There are habitats within the Study Area that conform to habitats listed under Annex I of the EU Habitats Directive or are considered as priority habitat.

At further stages of development, habitat surveys may identify additional constraints when preliminary ecological surveys are undertaken. Where works are proposed within or in close proximity to any significant ecological constraints highlighted within the report, appropriate design and mitigation will be required to ensure there are no significant impacts on these receptors.

4.2.4 Recommendations

CCC Development Plan Requirements

The Cork County Council Development Plan requires all greenway projects to provide the following:

- Plans for Biodiversity Net Gain
- Appropriate Assessment; and
- Ecological Impact Assessment.

Protected Sites

The site is not adjacent to any protected sites but given the scale of the project and identified hydrological connectivity between the Study Area and Cork Harbour SPA, an Appropriate Assessment Screening Report will be prepared for the Project and an Appropriate Assessment determination will subsequently be made by Cork County Council.

Priority Habitats

Any Ecological Impact Assessment will quantify impacts to habitat throughout the greenway. The creation of habitats of ecological value would help the project to deliver on Biodiversity Net Gain requirements.

The following habitat types and features are recommended for creation:

- Native, species rich hedgerow
- Deciduous woodland – in particular utilising areas to create riparian woodland.
- Species rich grassland; and
- Freshwater ponds

Notable Species

Non-volant Mammals

Any habitat survey should assess the Study Area for breeding and foraging non-volant mammals. Particular attention should be given to otter, badger and hedgehog given the suitability of the Study Area. Additional surveys may be required.

Bats

Planting habitats consisting of woody vegetation such as native species rich woodland and hedgerow will provide foraging and commuting habitat for bats identified in the area.

Care should be undertaken when designing lighting for the area, and adherence should be given to appropriate guidance to minimise the impact of the developments operational phase on bats¹⁹.

The installation of bat boxes made from woodcrete will support additional bat roosts with an extended lifespan for bats throughout the area and contribute towards evidencing Biodiversity Net Gain.

Aquatic Species

Riparian planting will help waterways to support European eel and brook lamprey by improving foraging habitat at the sub-adult phases. In addition, riparian planting will help to protect water quality that is important for the breeding and larval stages of brook lamprey and for foraging European eel.

Invertebrates

Scarce blue tailed damselfly is a notable species that has been recorded in the Study Area. The creation of new ponds or pools along the greenway will support populations of scarce blue-tailed damselfly. These freshwater habitats should aim to ensure early successional stages of vegetation, possibly through forms of mechanical disturbance.

Bee banks²⁰ and bee posts²¹ should be incorporated throughout the project. Bee banks in particular can benefit a range of invertebrates.

Amphibians

New ponds will support breeding populations of common frog and smooth newt. These ponds should be kept fish free and landscaped appropriately for both species²².

Birds

Vegetation removal should only be taken outside of the bird breeding season (1st March to 31st August), though it should be noted that bird nests are protected at any time of the year and birds are nesting frequently outside of this period. It is therefore recommended that an Ecological Clerk of Works should be on site during any vegetation removal to ascertain if any nesting birds are at risk.

¹⁹ <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

²⁰ <https://cdn.buglife.org.uk/2020/04/Bee-bank-booklet-4.pdf>

²¹ <https://www.greenandblue.co.uk/products/beepest>

²² <https://content.freshwaterhabitats.org.uk/2013/09/Amphibians-Common-Toad-Great-Crested-Newt-and-Grass-Snake-new-logo.pdf>

4.3 Geology

4.3.1 Introduction

This section details the geological aspects and constraints within the Study Area. The aim of this section is to better inform the design of the project and thus avoid and / or minimise impacts on geologically sensitive areas.

4.3.2 Methodology

The review of the geological environment for the project was prepared in accordance with the requirements by the Transport Infrastructure Ireland (TII), formerly National Roads Authority (NRA), Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes²³. The assessment also addresses guidance from the Institute of Geologists Ireland (IGI) on the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements²⁴. Sources of data included the following:

- Geological Survey Ireland (GSI)
- Ordnance Survey Ireland (OSI)
- Environmental Protection Agency (EPA)
- National Parks and Wildlife Service (NPWS)
- Review of the Teagasc Subsoil Mapping (2004); and
- Ireland Peatland Map (2021).

Both TII and IGI guidance have been reviewed and summarised into sub-divisions, which are identified below:

- Topography and geomorphology: these include viewing topographic base mapping and aerial imagery.
- Designated Sites / Geological Heritage: these include identified Geological Heritage Sites and National Nature Reserves, RAMSAR sites, Natura 2000 Sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Proposed Heritage Areas (pNHAs) and National Heritage Areas (NHAs).
- Economic geology: identified active quarries, pits, and mines in Ireland.
- Geology and soils: viewing the bedrock geology including any identified faults and formation boundaries, outcropping or karst features, superficial geology, and any landslide events. Areas of peatland also identified; and
- Landfills and contaminated sites: these include historical and current waste permits and licences and recognised aggregate potential or mineral areas. Several datasets were not freely available or accessible at the time of writing and may require further investigation at a later stage.

4.3.3 Existing Environment

Topography and Geomorphology

Topographic base mapping shows the Study Area to vary in height. From north to south the topography gradually decreases from approximately 100mOD at Waterfall to approximately 11mOD at Kinsale due to it being located by the coast. The highest point of elevation lies to the northern boundary of the site between Cross Barry and Waterfall with several hills reaching heights of around 170mOD. Refer to Figure 4-4 below.

²³ NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

²⁴ IGI (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.

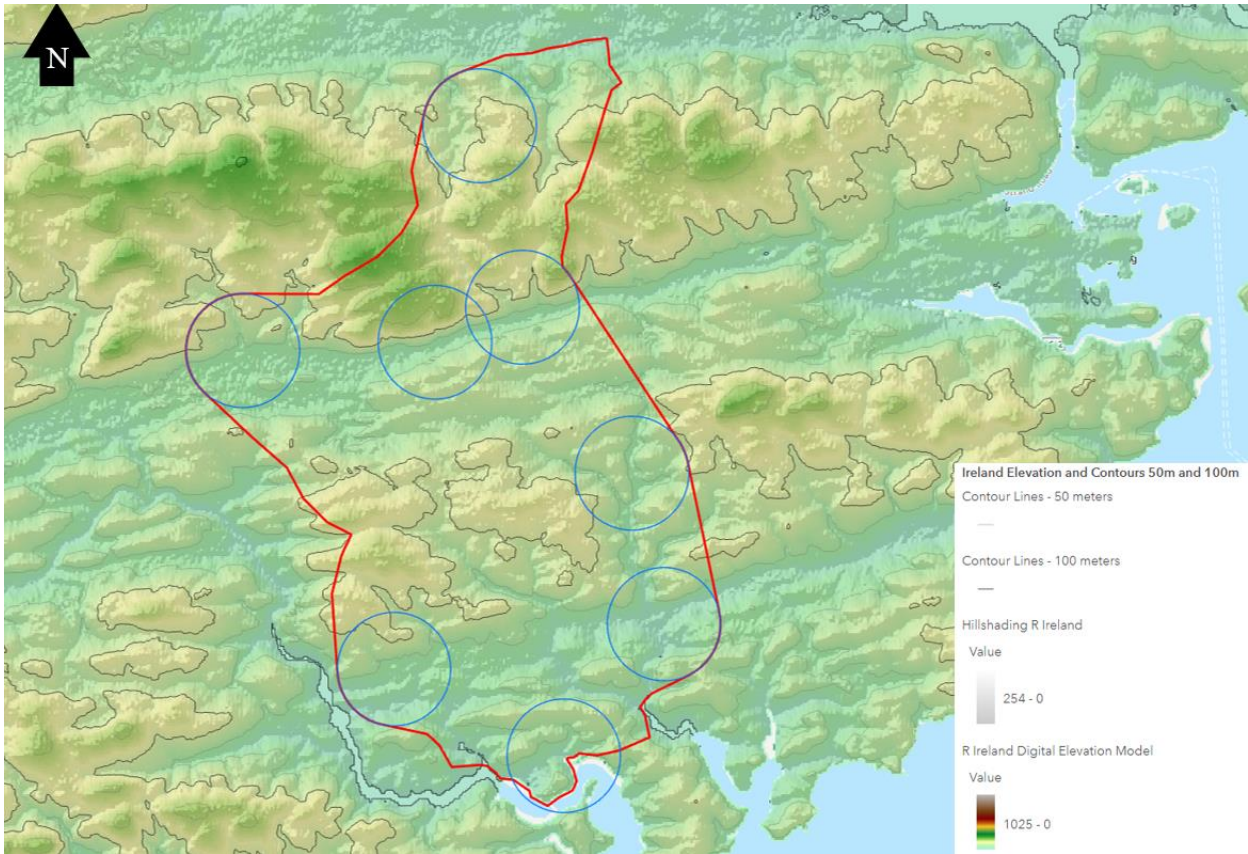


Figure 4-4 Topography in Study Area. Source: ArcGIS Enterprise

Aerial imagery shows the Study Area is predominately agricultural green space. Several towns and villages are included within the Study Area. Both Kinsale (south) and Waterfall (north) are at the boundaries of the Study Area connected by the N71 and R600.

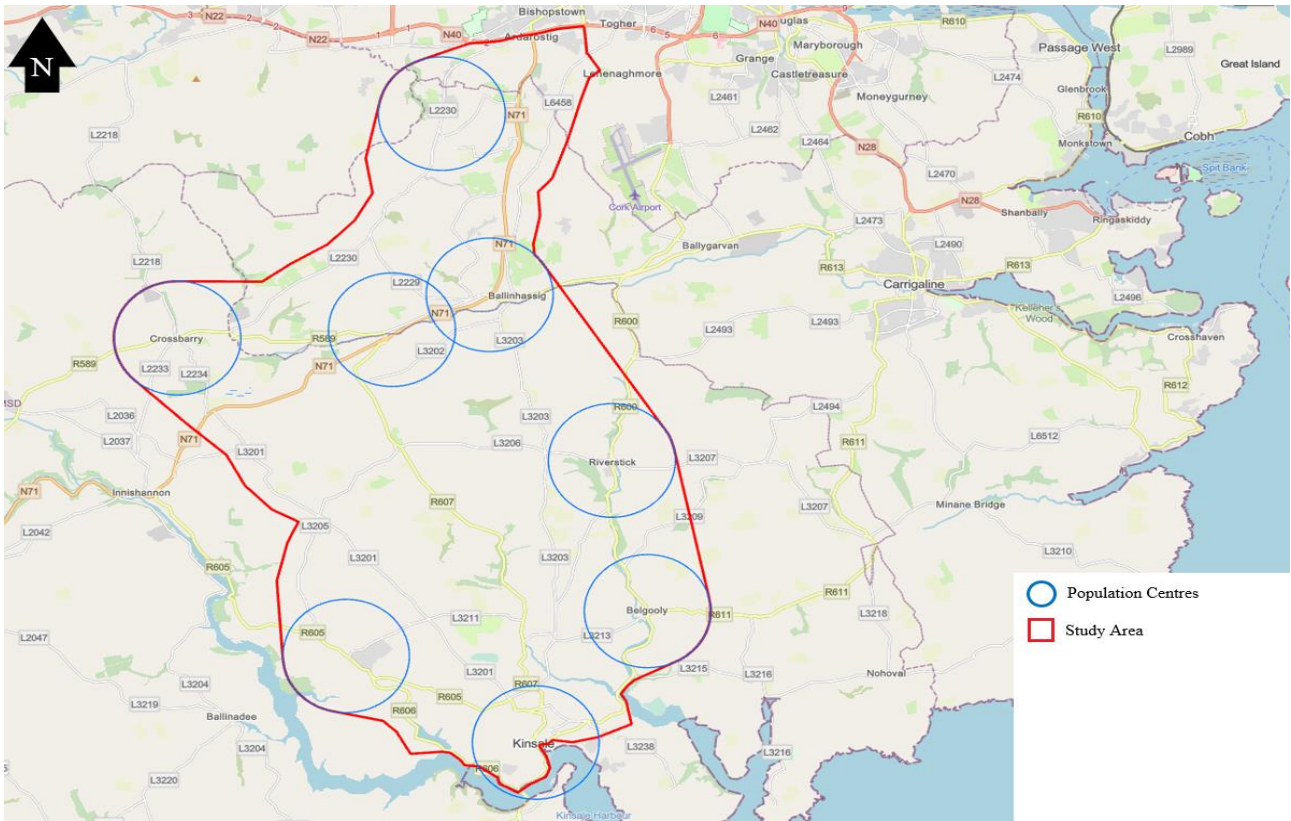


Figure 4-5 Population Centres in Study Area. Source: GSI

Historic landslide events have taken place within the Study Area. Two have been recorded in Kinsale. The first landslide was in November 2001, with a second occurring again at the same spot in March 2002. There were no injuries.

Another landslide was recorded just outside of Belgooly in November 2009 which resulted in a road closure for a short time. One landslide is also documented just south of Crossbarry, outside of the Study Area.

Designated Sites / Geological Heritage

From a review of the datasets listed in Section 4.3.2, there are no natural parks, SPAs, SACs or RAMSAR sites located in the Study Area. Specimens of a fossil fish were found at Irish Grid Coordinates 160650, 60125, located southwest of Ballinhassig, near Ballyheady (Huxley, T.H. 1866).

Geology and Soils

The NRA (TII) Guidance highlights how soil properties can determine whether material can be reused later in construction. Bedrock outcropping can become a constraint if significant volumes of material are required to be excavated. During the construction phase, a material management plan may also be required for the correct disposal or reuse of the material excavated. In areas of limestone where karst features may be present, stability of the ground may also be a constraint.

Bedrock

Listing from the north of the Study Area to the south of the Study Area, the following bedrock units are present:

- Gyleen Formation composed of sandstone with mudstone and siltstone.
- Ballytrasna Formation composed of purple mudstone and sandstone.
- Gyleen Formation composed of sandstone with mudstone and siltstone.
- Old head sandstone formation composed of flaser-bedded sandstone and minor mudstone.
- Cuskinny Member formation composed of flaser-bedded sandstone and mudstone.
- Lispatrick formation composed of pyritic cherty mudstone with dolomite.
- White strand formation composed of sandstone and interbedded pyritic mudstone.
- Lispatrick formation composed of pyritic cherty mudstone with dolomite.
- Kinsale formation composed of grey mudstone and subordinate sandstone; and
- Courtmacsherry formation composed of calcareous mudstone with limestone.

Bedrock outcrops are present throughout the Study Area. However, there are no significantly large areas of bedrock outcropping. The more frequent outcrops are located in the southern section of the Study Area between Riverstick and Kinsale. Several smaller locations are present in the northern section of the Study Area between Ballinhassig and Cork. The majority of the southern outcropping is derived from the grey mudstone and subordinate sandstone of the Kinsale Formation (lower), with some also present within the Ballytrasna Formation to the north, which contains purple mudstone and sandstone.

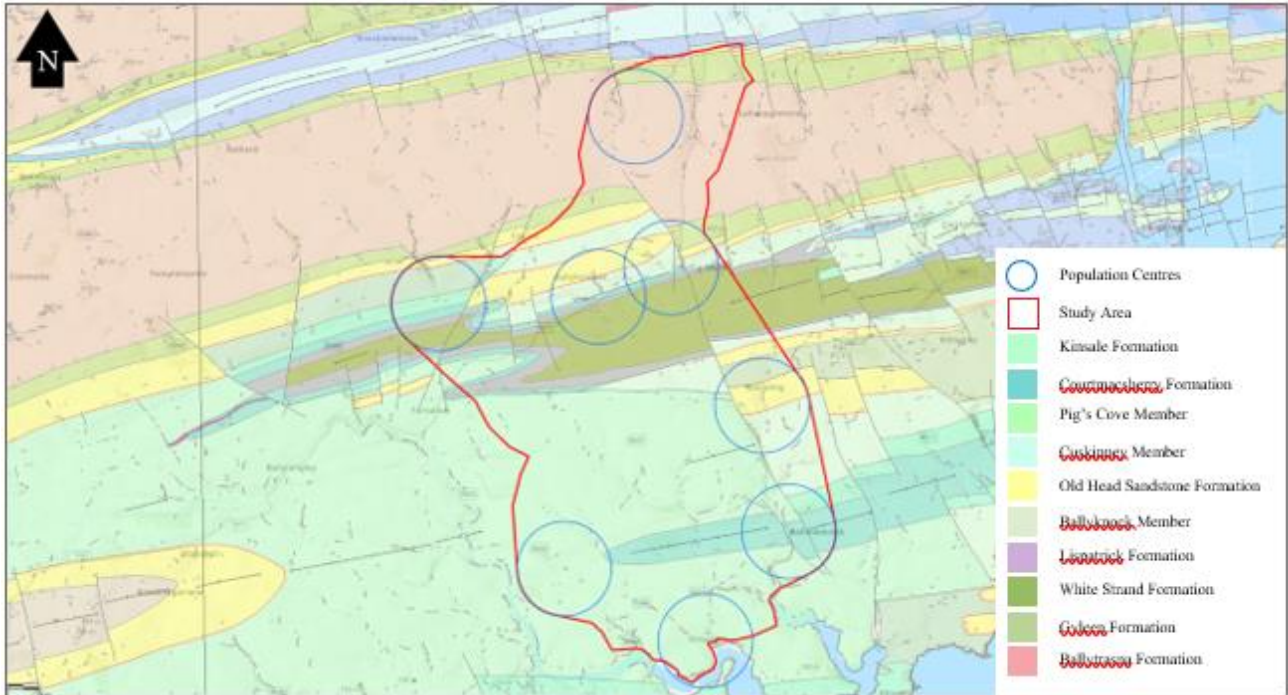


Figure 4-6 Bedrock Geology in Study Area

Identified Faults and Formation Boundaries

Two faults are identified within the Study Area. One is located to the east of Ballinhassig, Ballymartle and Belgooly along the eastern boundary of the Study Area, and it runs northwest to southeast. The other runs northeast to southwest along the western boundary of the Study Area beside Crossbarry.

Karst Features

Karstic areas are those where the bedrock is more readily dissolved by water relative to other rock types such as limestone. A considerable proportion of the Study Area is made up of the Kinsale Formation. No records of any groundwater from karst have been identified in the Study Area.

Superficial Geology and Soils

Superficial geology within the Study Area is predominately till derived from Devonian, Carboniferous, Namurian sandstones and shales. Alluvium is present in areas where watercourses run throughout the Study Area. Bedrock outcrops are also frequent across a lot of the Study Area in small areas.

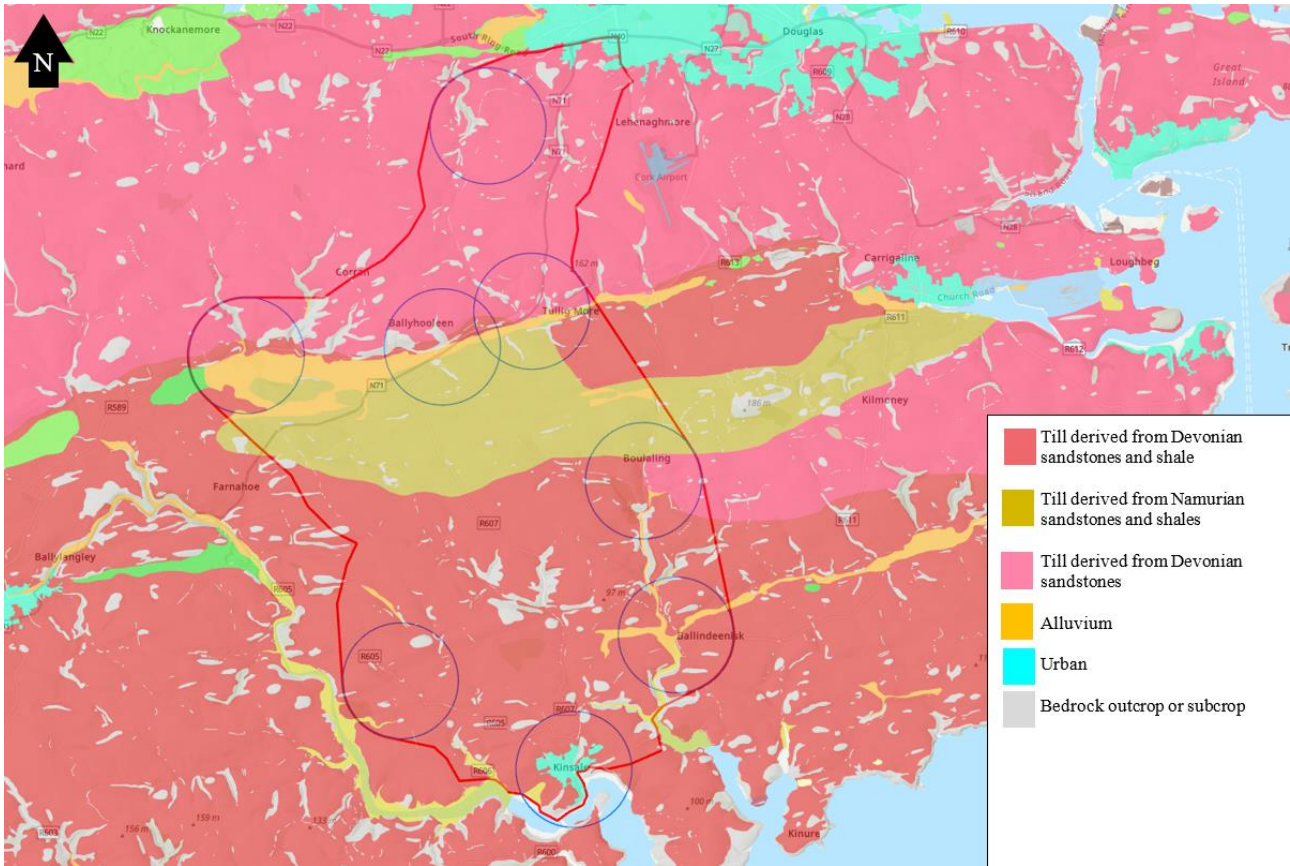


Figure 4-7 Soils in Study Area. Source: GSI.

‘River Alluvium’ is located along existing watercourses including the River Stick to the southeast beside Belgooly, and Owenabue to the northwest beside Crossbarry.

Where ‘Urban’ areas are highlighted above, this refers to Cork to the north and Kinsale to the south.

Peatlands

Peat presents poor strength and high compressibility characteristics making it generally unsuitable for potential embankment or pavement constructions. Peatlands also contain numerous native species of flora and fauna which are often associated with Special Areas of Conservation (SACs), and therefore constrain development proposals.

There are no identified peatlands within the Study Area.

Planning and Quarrying

A mineral deposit is located 2 km east of Inishannon, lying just inside the boundary of the Study Area. The minerals are identified as lead and zinc.

A historic quarry is located to the north of Ballinhassig. Smooth blue slates from the quarry were used for roofing during the last century.

Surface Water Drainage and Flood Risk

Most of the Study Area lies within areas of at least a high level of groundwater vulnerability, with some areas having rock at or near surface or karst. The southern section of the Study Area has more areas at extreme vulnerability due to it overlying the Kinsale Formation.

Landfills and Contaminated Sites

Material deposited on or within the ground particularly in an uncontrolled manner can present the risk of contamination. There are two different waste licenses documented by EPA (Environmental Protection Agency) for the same site in Ballyphehane, Curraghconway, Inchisarsfield, South City Link Road, Cork.

Although this location does not lie within the Study Area it is noted that it is found approximately 2.5km Northeast of the boundary.

There is a third license for the same site discussed above, this license is deemed as an IE (Industrial Emissions) license.

Recognised aggregate potential or minerals.

In Ireland, the exploration and development of certain minerals is controlled by the Minerals Developments Acts, 2017²⁵. Minerals are generally avoided in schemes to avoid sterilising known aggregate reserves which are currently being exploited or could potentially be exploited in the future.

Most of the northern half of the Study Area contains land that ranges from having moderate to very high aggregate potential. The southern half of the Study Area, particularly south of Ballymartle, ranges from containing very low up to moderate aggregate potential.

4.3.4 Identified Constraints

A significant proportion of the site is underlain by limestone which typically presents karst characteristics. The karst features may constrain the suitability of the future corridor and may require specific design considerations to ensure the stability of a greenway.

Rock outcropping has been identified in small sections throughout the Study Area and may constrain the alignment of future development. The more frequent outcrops are located in the southern section of the Study Area between Riverstick and Kinsale.

There are significant areas of alluvium present in the site. These are located where watercourses cross the Study Area. The engineering properties of alluvium can vary between and within locations and may provide a constraint to construction.

Landslides have been recorded within the Study Area. There may be material which has been placed in an uncontrolled way and is poorly drained in these areas, resulting in areas of soft ground. Areas containing soft ground as the result of landslides may require future excavation or removal dependent on their thickness. However, avoidance of these areas should be prioritised.

Unregulated landfills and fly tipping can present constraints to human health and environmental receptors if encountered during construction works. Additionally, many historic landfills were poorly engineered, constructed on peat or poorly drained. Additional information, if obtainable, on any potential unregulated landfills would be useful in later stages of the Project to provide an insight into potentially constraining areas.

Area where minerals or aggregate reserves are located should be avoided to allow these reserves to be utilised in the future.

Considering the above, potential ground investigations may be useful to gain information on the ground conditions and to better understand the risks posed to the Project.

4.4 Hydrology

4.4.1 Introduction

This section of the report outlines the hydrological aspects and constraints within the Study Area. As detailed in the “*TII Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Roads*”, the following aspects of the water environments have been investigated:

- Catchment physical characteristics, drainage systems and flood risk.
- Surface water resources; and

²⁵ Minerals Development Act, 2017. Available from: <https://www.irishstatutebook.ie/eli/2017/act/23/enacted/en/html> [Accessed: 15 January 2024]

- Water quality of natural watercourses.

The assessment was carried out in accordance with the above mentioned TII guidelines. The following sources of information were consulted in carrying out this assessment:

- Aerial photography, Historic OSI Maps, Google Earth Map, GSI Maps, etc.
- The Office of Public Works (OPW) – www.floodmaps.ie & www.floodinfo.ie; and
- Environmental Protection Agency – EPA Maps.

4.4.2 Existing Environment

There are a variety of surface water features located within the Study Area, with the majority being rivers and streams. Any proposed route has the potential to interact with these features. The following rivers, streams and tributaries are located within the Study Area or hydrologically connected to it:

- Bandon River
- River Stick River
- Owenboy River
- Farranamoy River
- Owenboy River
- Ballymartle Branch
- Two Pot River; and
- Derrynagasha River.

A review of OPW flood hazard mapping suggests that there are numerous areas within the Study Area with a history of flooding as shown in Figure 4-8.

A list of flood events within the Study Area is as follows:

- Flood ID-10903: Flooding at Owenboy River, east of Ballinhassig, because of channel overtopping.
- Flood ID-5076: Flooding at Ballinhassig because of low-lying land.
- Flood ID-3855: Flooding at N71 viaduct – Recurring – 2002
- Flood ID-13558: Flooding at Belgooly – Recurring
- Flood ID-10902: Flooding at Crossbarry - 30/12/2009; and
- Flood ID-13562: Flooding at Riverstick west of Arlinstown – Recurring.

Further investigation should be carried out to make an informed decision on the extent and level of the existing flood risk and its potential impact on the Project. A climate change risk assessment should be carried out in Phase 2 of the Project in accordance with PE-ENV-01104.

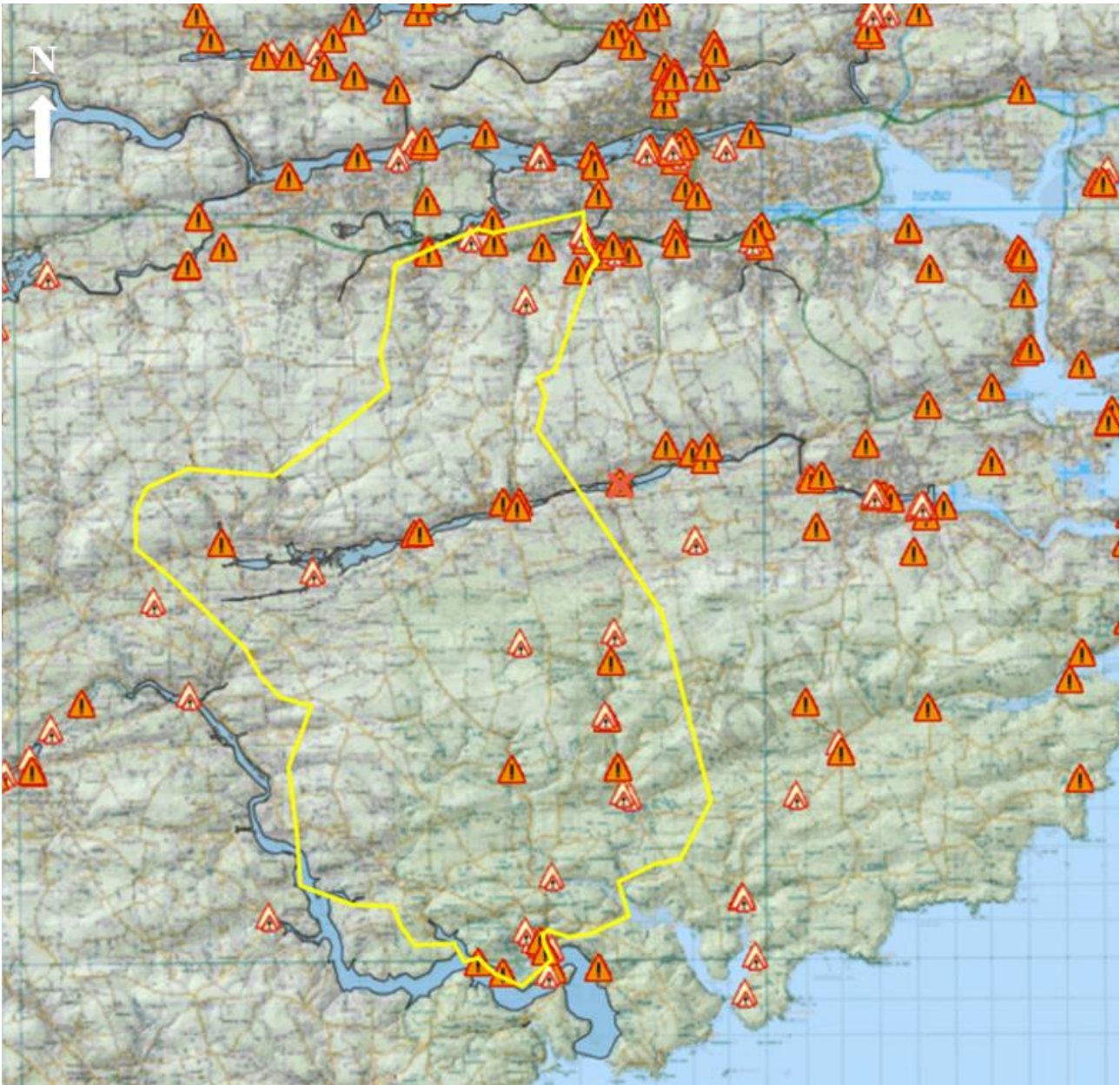


Figure 4-8 Historic Flood Events in Study Area. Source: OPW, www.floodmaps.ie.

4.4.3 Identified Constraints

The most significant flood risk comes from a fluvial source that follows a large section of the Owenboy River (Figure 4-8).

It should be noted that a significant stretch of both the N71 and R613 run adjacent to this river. However, little overlap between flood extent and transport infrastructure is present between the 10% and 0.1% Annual Exceedance Probability (AEP) Catchment Flood Risk Assessment Management (CFRAM) River Flood Extents. Minor overlap is observed at the R613, west of Ballinhassig.

Large swathes of floodplains and farmland adjacent to the river and its upstream tributaries fall within these flood extents, with properties in the community of Cross Barry overlapping this area. A mid-range future scenario (20% rainfall increase, 500mm of sea level rise) that represents the effects of predicted climate change shows that a greater proportion of the R613, Crossbarry, and the floodplains / farmland surrounding the Owenboy River lie within the flood extents between the 10% and 0.1% AEP events.

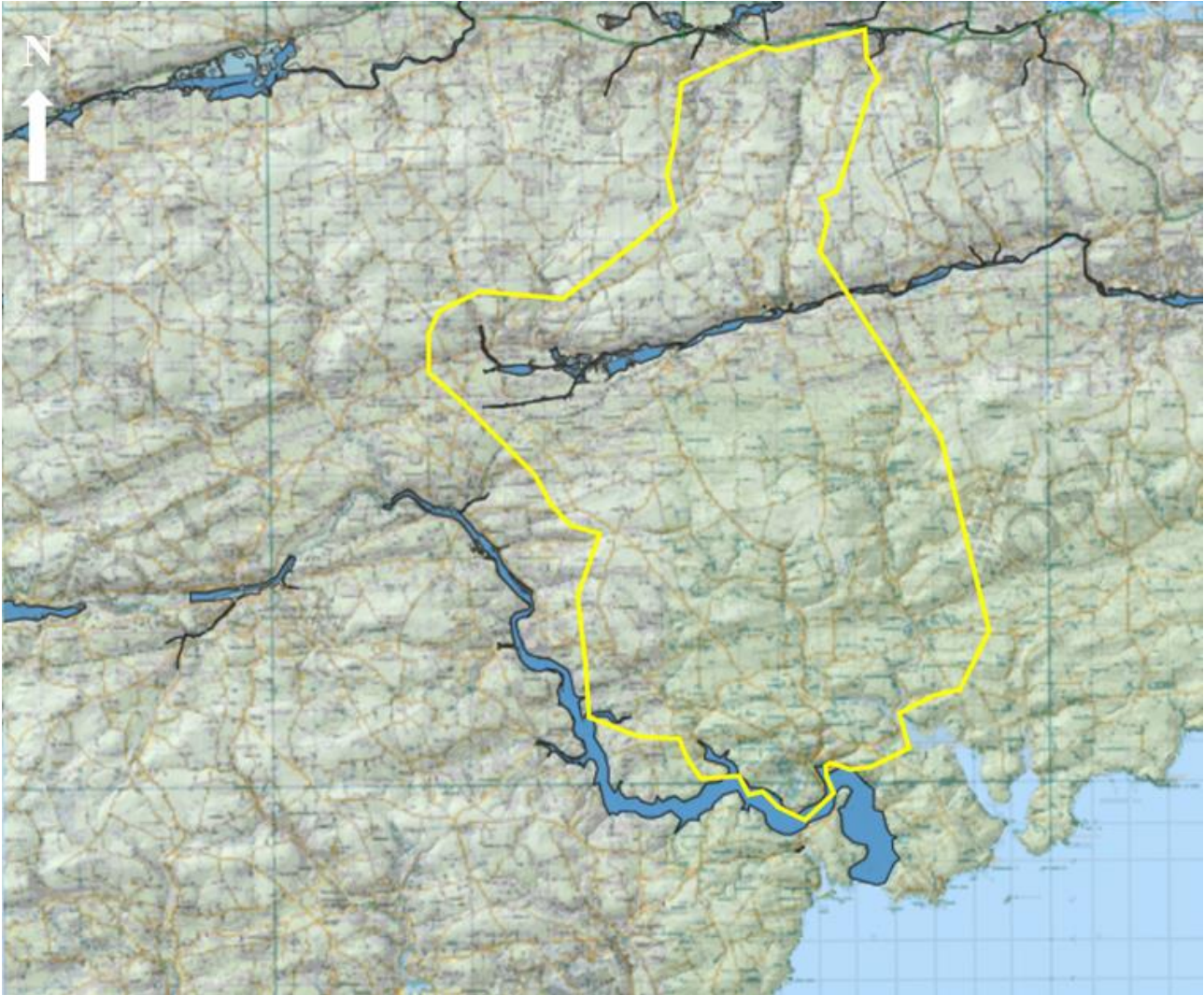


Figure 4-9 Fluvial Flood Extent. Source: OPW, www.floodmaps.ie.

National indicative fluvial mapping data shows a significant stretch of the River Stick, spanning from Belgooly to both upstream areas of Riverstick and Ballymartle, at risk of flooding. These extents align with many of the recorded historical floods in the area (refer to Figure 4-9).

Where there is a flood risk, the following mitigation measures can be applied:

- Watercourse realignments
- Implementation of sustainable drainage systems (SuDS), where possible
- Elevation of base above flood level, where necessary; and
- Avoidance of stock piling resources near floodplains

An assessment of surface water bodies and their quality and risk shows a variety of results. The latest EPA water quality status and WFD water bodies risk status within the Study Area is shown below and in Figure 4-10.

- OWENBOY (CORK)_020 (Q3-4) – At risk
- AUGHNABOY (CORK)_010 (Q4) – At risk
- TWO POT (CORK)_010 – At risk
- STICK (CORK)_010 (Q4) – Not at risk.
- FARRANAMOY (CORK)_010 – Not at risk; and

- DERRYNAGASHA (CORK)_010 – Review



Figure 4-10 River water quality and WFD Status. Source: EPA Maps.

A greenway would be considered a “Less Vulnerable Development” as it would consist of leisure / local transport infrastructure. Such development is “appropriate” in Flood Zones B and C. However, a “Development Management Justification Test” would be required where the development section lies within Flood Zone A.

Consultation will be undertaken with Transport Infrastructure Ireland in future phases related to flood risk assessment and TII’s guidance in relation to same.

The following criteria must be satisfied to pass the Justification Test for Development Management:

- The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of the requirements of the Flood Risk Management Guidelines.
- The proposal will be subject to an appropriate Flood Risk Assessment that demonstrates:
 - The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk.
 - The development proposal includes measures to minimise flood risk to people, property, the economy, and the environment as far as reasonably practicable.
 - The development proposed includes measures to ensure that residual risks to the area and / or development can be managed to an acceptable level with regards to the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and

- The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

Both elements of the Justification Test will have to be passed for development to progress.

To mitigate the impacts on the floodplains and watercourses, it is recommended that:

- Where possible, the proposed route should be routed away from sensitive streams. Activities within the floodplain should be kept to a minimum and construction material storage should be located outside of the floodplain as far as reasonably practicable.
- Attenuation ponds or wetlands, where required, should be constructed early in the programme.
- Construction works should be phased such that any required flood mitigation measures are implemented prior to construction, where necessary.
- Temporary diversions should be designed to manage flood risk from all sources including stormwater runoff; and
- Attenuation storage areas, where required, should be designed to take account of groundwater levels and status.

4.5 Hydrogeology

4.5.1 Introduction

This section details the hydrogeological aspects and constraints within the Study Area. This review of the existing hydrogeological environment was prepared using the following guidelines:

- Institute of Geologists of Ireland (IGI) (2013). Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impacts Statements²⁶; and
- National Roads Authority (NRA) (2009) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes²⁷ (hereafter referred to as the NRA Guidelines).

Although the NRA is now known as Transport Infrastructure Ireland (TII), for the purpose of this chapter the guidelines mentioned above are referred to as the NRA Guidelines.

The following hydrogeological aspects have been assessed:

- Aquifers and groundwater bodies
- Karst features
- Groundwater supply
- Groundwater contamination
- Groundwater dependant ecosystems; and
- Groundwater flooding

The following sources of data were used in carrying out this assessment:

- Ordnance Survey Discovery (Tailte Éireann) series Mapping (1:50,000)

²⁶ Institute of Geologists of Ireland (IGI) (2013). Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impacts Statements

²⁷ National Roads Authority (NRA) (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

- Geological Survey Ireland (GSI) data and maps²⁸
 - Bedrock geology map (1:100,000)
 - Groundwater resources (aquifers)
 - Hydrostratigraphic rock unit groups
 - Groundwater vulnerability
 - Groundwater source protection areas
 - Groundwater wells and springs
 - Karst features and tracer test database; and
 - Groundwater flood data.
- Water Framework Directive (WFD) Groundwater Body descriptions produced by the GSI²⁹;
- Environmental Protection Agency (EPA) data³⁰
 - Water Framework Directive (WFD) – WFD risk and status
 - EPA Licensed Facilities (IPC, IEL and Waste)
 - Urban wastewater treatment plants and emission points; and
 - Licensed historic landfills.
- EPA Water Abstraction Register – August 2023³¹
- National Parks & Wildlife Services (NPWS)³²
 - Special Areas of Conservation (SAC)
 - Special Protection Areas (SPA)
 - Natural Heritage Areas (NHA); and
 - proposed NHAs (pNHA)

4.5.2 Existing Environment

4.5.2.1 Aquifer Type and Classification

The GSI classifies aquifers in Ireland based on the hydrogeological characteristics and on their groundwater resource potential. There are three groups based on their resource potential (regionally and locally important and poor) corresponding to whether they are major, minor, or unproductive resources whereby:

- Regionally Important Aquifers are capable of supplying regionally important abstractions (e.g., large public water supplies), or excellent yields (>400m cubed per day (m³/d)).

²⁸ Geological Survey Ireland (GSI) | Data and Maps | Available from: <https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx> [Accessed 06/12/2023]

²⁹ Geological Survey Ireland (GSI). Groundwater Bodies. Available from: <https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx> [Accessed 07/12/2023]

³⁰ Environmental Protection Agency (EPA) EPA Geo Portal. Available from: <https://gis.epa.ie/GetData/Download> [Accessed 06/12/2023]

³¹ EPA. EPA Water Abstraction Register - August 2023. Available from: <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/epa-water-abstraction-register.php> [Accessed 06/12/2023]

³² NPWS. Designated Sites. Available from: <https://www.npws.ie/maps-and-data/designated-site-data> [Accessed 06/12/2023]

- Locally Important Aquifers are capable of supplying locally important abstractions (e.g., smaller public water supplies, group schemes), or good yields (100m³/d to 400m³/d); and
- Poor Aquifers are capable of supplying small abstractions (e.g., domestic supplies), or moderate to low yields (<100m³/d).

These are further subdivided into nine aquifer categories based on the type of openings through which groundwater flows as outlined in Table 4-16.

Table 4-16 GSI Aquifer Classification

Aquifer Type	Subcategory	Code
Regionally Important Aquifers	Karstified Bedrock Aquifer dominated by diffuse flow	Rkd
	Karstified bedrock dominated by conduit flow	Rkc
	Fissured Bedrock Aquifer	Rf
	Sand/Gravel Aquifer	Rg
Locally Important Aquifers	Bedrock which is Generally Moderately Productive	Lm
	Bedrock which is Moderately Productive only in Local Zones	LI
	Karstified Bedrock Aquifer	Lk
	Sand/Gravel Aquifer	Lg
Poor Aquifers	Bedrock which is Generally Unproductive except in Local Zones	PI
	Bedrock which is Generally Unproductive	Pu

Devonian Old Red Sandstones, Dinantian Mudstones and Sandstones (Cork Group) and Namurian Sandstones underlie the Study Area. These bedrock units are classified as a Locally Important Bedrock Aquifer (LI) which is Moderately Productive only in Local Zones. A small area in the northeast of the Study Area is underlain by Dinantian Pure Unbedded Limestones which are part of the Waulsortian Limestone Formation. The bedrock is classified as Regionally Important Karstified Bedrock Aquifer (Rkd) dominated by diffuse flow.

Two Locally Important gravel aquifers (Lg) are located within the Study Area. The Brinny gravel aquifer is situated in the western part of the Study Area around Crossbarry, and the Tramore River Valley gravel aquifer is situated in the northeast at Ardarostig.

Under the Water Framework Directive (WFD), groundwater bodies (GWB) have been delineated and described by the GSI in order for them to be effectively managed. The Study Area extends over three GWBs, including the Ballinhassig East GWB, which extends over the northern part of the Study Area, the Brinny Gravels East GWB, located in the western part of the Study Area, and the Bandon GWB, located in the southern part of the Study Area. The three GWBs are classified by the EPA as being at *good status* under the WFD 2016-2021 reporting cycle. The risk of failing to achieve good status in the subsequent WFD cycle for all three GWBs is defined as *Not at Risk*.

4.5.2.2 Aquifer Vulnerability

Aquifer vulnerability is the term used to describe the intrinsic geological and hydrogeological characteristics which determine the ease with which a groundwater body may be contaminated by human activities.

Aquifer vulnerability is determined mainly by the permeability and thickness of the subsoils that underlie the topsoil. For example, bedrock with a thick, low permeability overburden is less vulnerable than bedrock with a thin, high permeability, gravel overburden. This is due to the ability of potential contaminants to reach the aquifer in a relatively short period and with little or no contaminant attenuation due to the thin or absent overburden.

The GSI aquifer vulnerability classification guideline is outlined in Table 4-17.

Table 4-17 Aquifer Vulnerability Categories (GSI)

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and thickness			Unsaturated zone	Karst Features
	High permeability (sand/gravel)	Moderate Permeability (e.g., sandy subsoils)	Low Permeability (e.g., clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0-3 m	0-3 m	0-3 m	0-3 m	n/a
High (H)	>3 m	3-10 m	3-5 m	>3 m	n/a
Moderate (M)	n/a	>10 m	5-10 m	n/a	n/a
Low (L)	n/a	n/a	>10 m	n/a	n/a
n/a = not applicable					

Groundwater vulnerability within the Study Area ranges from ‘Extreme’, where the bedrock is close or near the surface, and ‘X’ extreme, where rock is at or near surface or karst is present, to ‘Low’ vulnerability in areas where thick subsoil is present.

The Study Area is predominantly underlain by areas with high and extreme vulnerability, with areas where rock is at or near the surface. In the central region, south of Ballinhassig, an area of Low and Moderate vulnerability is associated with low permeability subsoils.

4.5.2.3 Karst Features

Karst is a type of geological feature characterised by caves, caverns and other types of underground drainage resulting from the dissolution of calcareous bedrock. This typically occurs in areas of high rainfall with soluble rock.

The GSI karst database does not include any karst features within the Study Area.

4.5.2.4 Groundwater Resources

Groundwater resources include springs, wells or boreholes which are used for groundwater abstraction by domestic, agricultural, commercial, industrial, local authority or group water scheme users.

The GSI maintains a record of water wells and springs which are submitted to it on a voluntary basis by drillers and consultants and is therefore not a complete record of water wells or their current usage. The mapping indicates that there are numerous wells within the Study Area which are used for domestic, agricultural, and industrial use, while others are of unknown use. Several abstractions identified within the Study Area are identified as public supply, as outlined in Table 4-18. Although this shows that there may be public water supplies within the Study Area, further consultation will be required with Uisce Éireann in future phases to identify current operational abstractions.

Table 4-18 Groundwater Wells and Springs (GSI) within the Study Area used for Public Supply (Cork Co. Co.)

GSI Name	Source Name	Townland	Yield Class
1405SEW176	Cork County Council (Brown’s Hill W.S.)	Knocknahilan	Poor
1405SEW195	Cork County Council	Mitchelstown East	Good
1405SEW196	-	Ballythomas	Good
1405SEW175 1405SEW179	Cork County Council (Riverstick W.S.)	Boulaling	Low (Spring) Good (borehole)
1405NEW149	Cork County Council (Old Handpump)	Rigsdale	Moderate
1405NEW160	Cork County Council (Ballinhassig W.S.)	Gogganshill	-

GSI Name	Source Name	Townland	Yield Class
1405NEW146	Cork County Council (Old Handpump)	Sraleigh	Moderate
1405NEW148	Cork County Council (Old Handpump)	Ballynora	Poor

The EPA maintains a register of groundwater abstractions of more than 25m³/day under the Water Abstraction Regulations (S.I. 261 of 2018). However, the location is not provided for all the abstractions. There are two locations within the Study Area, Kinsale Golf Club and Eli Lilly Kinsale Limited, with registered groundwater abstractions as summarised in Table 4-19.

Table 4-19 EPA Registered Groundwater Abstractions within the Study Area

Registration No	Organisation Name	Number of Abstraction Points	Cumulative Maximum Daily Volume Estimate for Registration (m ³ /d)	Purpose	Waterbody
R00022-01	Eli Lilly Kinsale Limited	2	2,300	Industrial	Bandon
R01512-01	Kinsale Golf Club	3	32	Recreation	Bandon

Source Protection Zone (SPZ) reports have been produced by the GSI and the EPA which aim to guide development planning and regulation to provide protection to groundwater sources. There are no SPZs delineated within the Study Area.

4.5.2.5 Groundwater Contamination

Water discharges and emissions such as percolation areas from on-site treatment systems (septic tanks), leakage from urban wastewater and wastewater treatment plants, licenced trade effluent discharges and industrial emissions, and quarries and mining locations, have the potential to impact groundwater quality. The EPA maintain a register of areas of contaminated land, historic and active landfill sites which are also potential sources of groundwater contamination.

There is one Urban Wastewater Treatment (UWWT) plant, Annaghmore, County Cork (A0434), located within the Study Area which discharges to the Brinny Gravels East groundwater body.

There are four industries within the Study Area, three under Industrial Emissions Licensing (IEL) and one under Integrated Pollution Control (IPC) Licensing. The emissions points from these industries do not discharge to groundwater. Therefore, these facilities do not present constraints in relation to groundwater.

There are no historic landfills, waste facilities, dumpsites, or active quarries within the Study Area.

4.5.2.6 Groundwater Flooding

Groundwater flooding occurs when the level of water in the ground rises as a consequence of long periods of rainfall. The GSI Groundwater Flood Data Maps have identified some areas of historic groundwater flooding or potential groundwater flooding. There are no mapped areas of historical or probable groundwater flooding within the Study Area.

4.5.2.7 Hydro-Ecology

Designated environmentally protected sites within Ireland are compiled by the National Parks and Wildlife Service (NPWS). These sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs). In addition to these sites, the NPWS also maintains a database of proposed Natural Heritage Areas (pNHAs). There are no designated sites located within the Study Area.

4.5.3 Identified Constraints

Potential hydrogeological constraints within the Study Area include aquifers, groundwater abstractions and areas of potential groundwater contamination.

The removal of a proportion of an aquifer can reduce its ability to provide baseflow to groundwater receptors and results in an irreversible loss of the in-situ characteristics of the hydrogeology. Where excavations reduce the thickness of the overburden this has the potential to increase the vulnerability of the underlying aquifer. The predominant aquifers identified within the Study Area are the Locally Important bedrock (LI) and gravel (Lg) aquifers which are of moderate importance.

Groundwater abstractions may be impacted through removal, changes to the groundwater regime or contamination. Several potential public groundwater supplies have been identified within the Study Area. However, due to the lack of accuracy of the abstraction locations, these should not be considered at this stage of the assessment. Further assessment and consultation with Uisce Éireann in the next phases are required to identify current public water supplies. Industrial and recreational water abstractions have also been identified and should be considered in an appropriate design.

Excavations within areas of groundwater contamination present a risk to the mobilisation of contamination within the aquifer. The UWWT plant, Annaghmore, County Cork, which discharges to the Brinny Gravels East groundwater body, presents a potential source groundwater contamination, and should be considered when considering an appropriate design.

Karst features, groundwater flooding and groundwater dependant habitats are not identified as being a significant constraint at this stage. However, it is recommended that further analysis should be undertaken during the next phases of the Project.

Considering the above, the most significant hydrogeological constraints identified at this stage and for which mitigations measures should be considered, are related to the potential for the Project to impact on the LI aquifers, the groundwater abstractions and the UWWT plant, Annaghmore, County Cork discharge to ground.

4.6 Landscape and Visual

4.6.1 Introduction

A high-level overview of the primary landscape and visual constraints and opportunities associated with the Project is set out below. The designated scenic amenity and protected landscapes located within the Study Area are included, as well as the main sensitive landscape features within the Study Area that may be impacted by the Project.

4.6.2 Existing Environment

Cork County Development Plan 2022-2028

The Cork County Development Plan (CDP) contains a Landscape Character Assessment which divides the county into approximately 26 Landscape Character Types (LCT). Landscape sensitivity is assigned by way of a High Value Landscape (HVL) designation. The associated CDP landscape maps indicate that the north-eastern tip of the Study Area within Cork City environs is contained within ‘LCT 1 – City Harbour and Estuary’. This LCT corresponds directly with a HVL designation within the relevant area. However, the inland urban context of this area does not display the attributes that are core to the HVL zoning i.e., the harbour and estuary.

Moving south and west of Cork airport, the Study Area transitions into ‘LCT 6a – Broad Fertile Lowland Valleys’, which is not contained within a HVL designation. South of approximately the settlement of Riverstick the landscape is contained within ‘LCT 7b – Rolling Patchwork Farmland’ and again, this is not subject of a HVL designation. Nearing the southern section of the Study Area inland of Kinsale, the Study Area transitions into LCT 3 – Indented Estuarine Coast, which corresponds directly with a HVL designation.

The other potentially relevant landscape designation within the Cork CDP is the ‘Prominent and Strategic metropolitan Greenbelt’ areas identified around Cork City.

Whilst the northern portion of the Study Area is contained within a greenbelt zoning, it is considered that a greenway development is entirely compatible and complimentary to the principle of the greenbelt designation so it should be considered more of an opportunity than a constraint.

In terms of scenic designations, the Cork CDP contains well over 100 designated scenic routes. There are several contained within the Study Area, one of which is in the northern portion and the remainder around Kinsale in the southern portion. These include:

- S56 - Road between Frankfield and Ballygarvan Townland
- S60 - Road from Kinsale to Ringville and to Ballinaclashet and Oysterhaven
- S61 - Road between Kinsale and Clonleigh via Summercove
- S62 - Road between Kinsale and Ballythomas (Coast Road); and
- S63 - Road between Innishannon and Kinsale via Shippool

Whilst it will be important that any infrastructure associated with the Project does not unduly obstruct or intrude on any sections of these designated scenic routes, there is also a strong degree of compatibility and opportunity for the greenway route to avail of the recognised scenic amenity afforded by these scenic routes.

Non-Designated Receptors

Landscape and Visual Impact Assessment (LVIA) includes consideration of a range of receptor types, including ‘Centres of Population’, ‘Major Transport Routes’, ‘Local Community Views’, ‘Designated Scenic routes / views’ and ‘Amenity, Tourism and Heritage sites. These receptor types may present as either constraints or opportunities in respect of the Project.

Key settlements within the Study Area include (from north to south); Cork City (southwestern extents), Waterfall, Ballinhassig, Halfway, Crossbarry, Riverstick, Belgooly, Dunderrow and finally Kinsale. Settlements represent an opportunity in landscape and visual terms as robust areas to host staging points and trail heads for the greenway. The opportunity to connect as many communities as possible, whilst not strictly relating to landscape and visual factors will be an element of good design and there will also be opportunities for consistent design language for greenway features to enhance placemaking at settlements.

Major routes within the Study Area include: The N40 Cork Ring Road at the northern edge of the Study Area, the N71 national secondary road which links between Cork City and West Cork and passes through the northern and central portions of the Study Area, the R589 which branches westwards from the N71 at the settlement of Halfway, and the R607 which branches south towards Kinsale from the same settlement, the R600 which passes through Riverstick and Belgooly heading south to Kinsale, the R611 which connects from the east to Belgooly, and the R605 / R606 which traverse the southwestern portion of the Study Area. These road corridors represent both a constraint and opportunity to the Project. They represent established corridors of travel that can be coupled to. However, this can result in cumulative effects of two closely associated travel corridors, areas of leftover land between them and frequent crossing points. For greenway users, a higher degree of perceived safety and tranquillity is likely to be afforded with greater separation from established and busy road corridors.

For the purposes of this constraints exercise, Local Community Views can be considered those from settlements and houses that are closely aligned to the greenway corridor. Adjacent residents can be a major constraint to greenway developments particularly where the alignment passes to the rear of the property placing them in an ‘island’ situation between the road they gain access to their property from, and the greenway to the other side. This can generate significant and negative privacy and residential visual amenity effects often requiring specific mitigation measures to be employed.

There are numerous amenity and heritage features within or immediately adjacent to the Study Area, particularly at the southern end within and around the settlement of Kinsale, which itself is a major tourist draw. These include the likes of local loop walks, Kinsale Golf Club, Charles Fort, James Fort, and Rumley’s Open Farm.

These generally represent an opportunity for connectivity and points of interest for the selected greenway route rather than sensitive landscape and visual receptors. However, due design consideration of greenway elements and placemaking features will need to be had, particularly in the context of sensitive heritage features.

4.6.3 Identified Constraints

The Study Area is composed of urban, rural, and coastal landscapes in that order from north to south. Whilst the norther (urban) portion is contained within both a High Value Landscape designation as well as a Prominent and Strategic Greenbelt designation from the Cork CDP, it is not considered to be unduly constrained by these in a landscape and visual sense. The rural Landscape Character Types from the Cork Landscape Character Assessment that occupy the central portions of the Study Area are not designated in terms of landscape sensitivity and are considered to be typical rolling rural landscapes. The southern portion of the Study Area around the settlement of Kinsale is subject of a HVL zoning, a series of scenic route designations and also hosts the greatest concentration of heritage and amenity features. These are generally considered to be more of an opportunity than a constraint for the proposed greenway, albeit with due consideration to design elements.

4.7 Land Use and Planning

4.7.1 Introduction

The Study Area is located within the administrative area of Cork, with Cork City Council and Cork County Council representing the local planning authorities. Alongside all relevant national and regional planning policy, all local planning policy associated with Cork City Council and Cork County Council must also be considered in the route selection process and in the preparation of any future planning application.

It is anticipated that the application for planning permission will be made to An Bord Pleanála in accordance with the Planning and Development Regulations, 2001 (as amended).

4.7.2 Existing Environment

The Study Area for the Project is approximately 15,340 hectares in size.

The land use within the Study Area is illustrated in Figure 4-11 with a breakdown of the various land use types provided in Table 4-20. The land use mapping data was derived from the National Land Cover database (Tailte Éireann, 2023¹⁷).

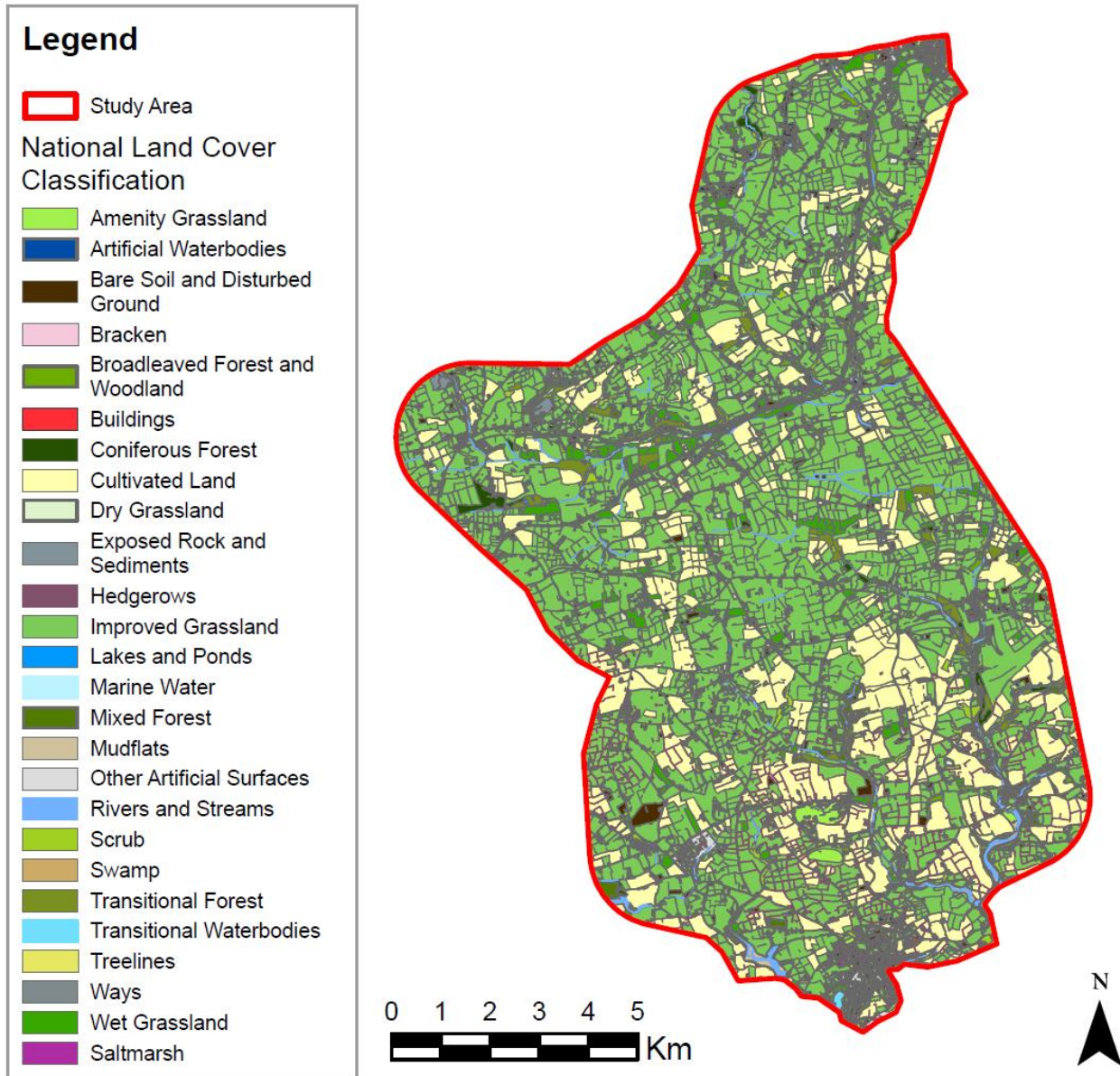


Figure 4-11 Land Use

Table 4-20 Land Use within the Study Area

Land use category	Hectares / % of Study Area
Total area (ha)	15,340
Improved Grassland	53%
Cultivated Land	19%
Hedgerows	4%
Wet Grassland	3%
Amenity Grassland	3%
Ways	3%
Scrub	2%
Broadleaved Forest and Woodland	2%
Other Artificial Surfaces	2%
Bare Soil and Disturbed Ground	1%
Dry Grassland	1%

Land use category	Hectares / % of Study Area
Transitional Forest	1%
Treelines	1%
Buildings	1%
Mixed Forest	<1%
Coniferous Forest	<1%
Bracken	<1%
Artificial Waterbodies	<1%
Lakes and Ponds	<1%
Marine Water	<1%
Mudflats	<1%
Rivers and Streams	<1%
Saltmarsh	<1%
Swamp	<1%
Transitional Waterbodies	<1%
Exposed Rock and Sediments	<1%

The largest land use within the Study Area is agricultural land, with the largest land use categories being ‘improved grassland’ and ‘cultivated land’.

4.7.3 Identified Constraints and Opportunities

The key land use and planning constraints are specific to Cork, Cork City Council and Cork County Council. The initial constraints which should be noted are listed in the following section.

A number of constraints that are local to the Project are identified within the Cork City Development Plan 2022-2028³³ and the Cork County Development Plan 2022-2028³⁴.

Constraints within the Study Area include:

- There are green belts surrounding area of Cork City and its suburbs and other towns in Cork.
- Flood risk
- Natura 2000 sites
- National Monuments (a National Monument receives statutory protection and is described as ‘*a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto*’ (National Monuments Act, 1930, Section 2)
- Recorded Monuments (i.e., sites listed on the Record of Monuments and Places (RMP) and the Sites and Monuments Record (SMR))
- Sites with Preservation Orders (or Temporary Preservation Orders); and
- National Inventory of Architectural Heritage (NIAH) structures.

There are a number of Landscape Preservation Zones, Areas of High Landscape Value and Scenic Routes in the Cork City Council jurisdiction of the Study Area. These features are described in the Cork City Development Plan 2022-2028 as follows:

³³ Cork City Council (2022). Cork City Development Plan 2022-2028.

³⁴ Cork County Council (2022). Cork County Development Plan 2022-2028.

- Landscape Preservation Zones: ‘areas zoned in order to protect their character and amenity value. These areas are considered to be highly sensitive to development and as such have limited or no development potential’.
- Areas of High Landscape Value: ‘display an intrinsic landscape character and a special amenity value. Development will be appropriate only where it results in a neutral / positive impact on the landscape’; and
- Scenic Routes: ‘vantage points from which views and prospects of great natural beauty may be obtained over both seascape and rural landscape. This scenery and landscape is of enormous amenity value to residents and tourists and constitutes a valuable economic asset’.

There are a number of Sensitive Landscapes, High Value Landscapes and Scenic Routes in the Cork County Council jurisdiction of the Study Area. These features are described within the Cork County Development Plan 2022-2028 as follows:

- Sensitive Landscapes: ‘Sensitivity is evaluated using criteria ranging from Very High to Low. A highly sensitive landscape is likely to be vulnerable to change whereas a landscape with a low sensitivity is likely to be less at risk to change.
- High Value Landscapes: ‘the location, siting, and design of large-scale developments within these areas will need careful consideration and any such developments should generally be supported by an assessment including a visual impact assessment which would involve an evaluation of visibility and prominence of the proposed development in its immediate environs and in the wider landscape; and
- Scenic Routes: ‘vantage points from which views and prospects of great natural beauty may be obtained over both seascape and rural landscape. This scenery and landscape are of enormous amenity value to residents and tourists and constitutes a valuable economic asset. The protection of this asset is therefore of primary importance in developing the potential of the County’.

In summary, the key constraints of relevance to land use and planning for Study Area include green belts, flood risk, Natura 2000 sites, national monuments, recorded monuments, sites with preservation orders or temporary preservation orders and NIAH structures. Landscape preservation zones, sensitive landscapes, high value landscapes and scenic routes are also considered constraints. While the above listed constraints may limit development, some, such as the heritage features and scenic routes, may also be considered as an opportunity for the proposed greenway.

4.8 Engineering

4.8.1 Introduction

This section details the engineering and infrastructural aspects and constraints within the Study Area.

4.8.2 Existing Environment

Topography

The northern end of the Study Area near the N40 consists of low-lying land (10 – 40m AOD). The terrain working south from there gradually rises into a complex landscape of hills and valleys (80 – 180m AOD). This band of elevated landscape runs from east to west across the Study Area until just north of Ballinhassig, Halfway and Crossbarry, where the terrain falls sharply towards the valley floor created by the river Owenabue. Continuing south the levels gently undulate between 30m and 90m above Ordnance Datum (AOD), until just north of Riverstick where another complex landscape of hills and valleys (60 – 140m AOD) runs from east to west across the Study Area. This landscape ends just north of Belgooly and Dunderrow. The remaining section south of here undulates between 20m and 80m AOD, before the terrain drops close to sea level at the southern boundary of the Study Area.

Road Network

The existing road network within the Study Area is generally rural in nature and consists of a combination of National Primary, Regional, Local, and private roads. Note that there are also a number of unnamed local roads within the Study Area. A non-exhaustive list of the National, Regional, and local roads within the Study Area are listed in Table 4-21 below:

Table 4-21 Roads within Study Area (non-exhaustive)

Route	Classification	Summary
N71	National Primary	N40 at Bandon Road Junction to Killarney (via Bandon, Bantry, Kenmare)
L2230	Local	R849 at Bishopstown to R589 at Curra
Spur Hill	Local	Togher Cross to R613 at Ballinhassig
R589	Regional	N71 at Halfway to Bandon
R605	Regional	N71 at Innishannon to R600 at Kinsale
R606	Regional	R605 at Dunderrow to R600 at Kinsale
R607	Regional	N71 at Halfway to R605 at Kinsale
L3205	Local	R605 at Knocksmall to R607 at Ballinaloughy
L3206	Local	R607 at Ballinaloughy to R600 at Riverstick
L3201	Local	L3205 at Ballycoghlan to R605 at Kinsale North
L2231	Local	R589 at Halfway to L2231 at Ballinhassig
R613	Regional	L2231 at Ballinhassig to N28 at Ringaskiddy
Goggins Hill	Local	L2230 at Ballyleigh to Barrett's Hill at Ballinhassig
Castlewhite Road	Local	N71 at the Viaduct to L2230 Inishkenny

Generally, footways and cycle facilities are restricted to towns and villages with the exception of a footpath located along the R600 from the R600/L3215 junction continuing into Belgooly Village. Outside of population centres, narrow local and regional roads do not present a safe cycling or walking environment and the lack of segregated facilities is likely a barrier for encouraging active travel in the area.

Access to rural schools and local amenities within the Study Area is likely to be by car. Currently there are no active travel facilities for schools such as Ballinora national school, Ballyheeda national school and Gogginshill national school. Furthermore, Belgooly National School lacks sufficient infrastructure for active travel, despite the presence of footpaths on both sides of Belgooly Bridge. The bridge itself is inaccessible to pedestrians, creating an inadequate connection for the village and the school. In addition, local amenities, and attractions such as Killeady soccer pitch, Ballinora GAA Club, Coolcorron equestrian centre, Rumleys Open Farm and Chetwynd Viaduct have no active travel infrastructure for users to avail off.

Structures

There are a number of notable structures along the historic railway route within the Study Area. Several of these are listed below.

- Viaduct (Stone Arch) – Halfway
- Viaduct (Steel) – Chetwynd Viaduct
- Tunnel – Ballinhassig Tunnel

- Bridge (Stone Arch) – Waterfall; and
- Bridge (Stone Arch) – Abbeybridge.

If the proposed route incorporates any of the structures listed above or any other notable structures of interest, any construction works deemed necessary to these structures as part of the project design will ensure that the character and significance of these structures are preserved.

4.8.3 Identified Constraints

The main constraint for the provision of active travel infrastructure as per TII Rural Cycleway Design guidance document DN-GEO-03047 is the horizontal and vertical alignment. There are a number of limitations noted within the Study Area boundary that could potentially impact the alignment of a greenway.

The undulating topography of the region as noted in 4.8.2 will influence the choice of the proposed route to ensure suitable horizontal and vertical alignment designs while minimising the need for extensive earthworks.

The presence of the N71 national road in the northern half of the Study Area could present a physical barrier to the development of the Greenway options. Additionally, watercourses such as Owenabue, Stick, Curragheen, and Bandon rivers have been identified as potential constraints. Crossing features such as national roads and rivers would likely require structures adding additional cost and environmental concerns to a project.

4.8.4 Identified Opportunities

The existence of the historic railway line provides a chance to create a greenway that connects different urban centres formerly serviced by the railway. These disused railway lines, commonly characterised by gentle slopes, alignments that balance with the environment, and competent ground, prove to be ideal for transformation into greenway infrastructure. However, the railway line within the project Study Area is largely back in private ownership which may impede its use for a greenway in its entirety.

There are a number of greenway and cycle route projects that have been proposed in the adjacent areas, presenting an opportunity for connectivity. The proposed Cork City to the Viaduct Greenway project has the potential to connect with the northern alignment at Chetwynd Reservoir. The Greenway scheme from Crossbarry to Clonakilty, currently in its initial proposal stage, has the potential to establish a connection from Crossbarry to the southern regions of West Cork. Additionally, this project will seek to provide connectivity with the existing EuroVelo 1 route at Kinsale, enhancing the integration with the Atlantic Coast Cycle route.

Separately to the proposed Greenways in the area, there is also the potential to link into the existing walkway Northeast of Kinsale from the R600/L3215 junction into Belgooly Village. The recent active travel and traffic calming upgrades in Belgooly Village establish a clear opportunity for connectivity.

4.8.5 Proposed / Planned Schemes

As the project progresses it may benefit and/or supplement other planned schemes and projects within the Study Area.

The following proposed projects have been identified and could provide the opportunity to link with the Cork to Kinsale Greenway:

- Cork City to the Viaduct Greenway; and
- Crossbarry to Clonakilty Greenway.

The Cork to Kinsale Greenway design team will coordinate with the respective design teams for these developments as required.

4.9 Archaeological, Architectural and Cultural Heritage

4.9.1 Introduction

This section describes the archaeological, architectural, and cultural heritage constraints and opportunities identified within the Study Area for the Cork to Kinsale Greenway in County Cork. Recorded archaeological sites are shown in Figure 4-12, Figure 4-13, Figure 4-14, and built / cultural heritage sites are shown on Figure 4-15, Figure 4-16 and Figure 4-17.

Methodology and Sources of Information

This study has been carried out in accordance with the TII Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes (2005a)³⁵, the TII Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes (2005b)³⁶ and the Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (2024)³⁷.

Research for this constraints study was undertaken as a desktop exercise. The following sources were consulted in order to identify archaeological, built heritage and cultural heritage constraints:

- UNESCO World Heritage Sites and Tentative List
- Record of Monuments and Places (RMP) for County Cork³⁸
- Sites and Monuments Record (SMR) for County Cork⁴
- Monuments in State Care Database³⁹
- List of Preservation Orders (2019)⁴⁰
- Cartographic and written sources relating to the Study Area^{41,42,43}
- Cork County Development Plan 2022-2028, incl. County Cork Record of Protected Structures⁴⁴
- Excavations Bulletin (1970–2023)⁴⁵
- Summary Accounts of Archaeological Excavations in Ireland (1987-2010)⁴⁶
- Historic Ordnance Survey mapping (1845, 1900)⁴⁷

³⁵ National Roads Authority. 2005a. *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes*.

³⁶ National Roads Authority. 2005b. *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes*.

³⁷ Transport Infrastructure Ireland (TII). 2024. *Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects*.

³⁸ www.archaeology.ie – DoHLGH website listing all SMR sites. (Accessed January 2024)

³⁹ National Monument Service, Department of Housing, Local Government and Heritage. *Sites and Monuments Record, County Cork*.

⁴⁰ <https://www.archaeology.ie/sites/default/files/media/publications/po19v1-all-counties.pdf> - Preservation Orders

⁴¹ www.heritagemaps.ie – The Heritage Council web-based spatial data viewer which focuses on the built, cultural, and natural heritage. (Accessed January 2024)

⁴² www.bingmaps.com – Website containing aerial photographic datasets. (Accessed January 2024)

⁴³ www.googleearth.com – Satellite imagery of the Study Area. (Accessed January 2024)

⁴⁴ Cork County Council (CCC). 2022. *Cork County Development Plan 2022-2028*.

⁴⁵ www.excavations.ie – Summary of archaeological excavation from 1970-2023. (Accessed January 2024)

⁴⁶ Bennett, I. (ed.) 1987–2010. *Excavations: Summary Accounts of Archaeological Excavations in Ireland*. Bray. Wordwell.

⁴⁷ www.osiemaps.ie – Ordnance Survey aerial photographs dating to 1995-2013 and 6-inch/25-inch OS maps. (Accessed January 2024)

- Framework and Principles for the Protection of the Archaeological Heritage⁴⁸, and Excavation⁴⁹
- National Inventory of Architectural Heritage (NIAH): Architectural & Garden Survey, County Cork⁵⁰; and
- Ireland’s National Inventory of Intangible Cultural Heritage⁵¹

Once all recorded archaeological heritage (RMP/SMR) and recorded built heritage (Protected Structures and NIAH structures) sites had been identified during the initial research, the sites were plotted into GIS in order to generate Figure 4-12, Figure 4-13, Figure 4-14 and Figure 4-15, Figure 4-16 and Figure 4-17.

The zones of notification were examined in both the statutory legislative instrument (the RMP maps) and those shown on the Historic Environment Viewer (archaeology.ie). Those shown on Figure 4-12, Figure 4-13, Figure 4-14 represent the maximum extent of the zones when both sources are considered. In addition, all Designed Landscapes (DL), which often include the site or ruins of a former country house, were identified, and mapped. Significant Cultural Heritage sites, which may not be included in any existing archive, are also described below.

Definitions

In order to assess, distil and present the findings of this study, the following definitions apply:

- ‘Archaeological heritage’ is applied to objects, monuments, buildings, or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).
- The term ‘architectural heritage’ is applied to structures, buildings, their contents, and settings of an (assumed) age typically younger than AD 1700 which may or may not be recorded.
- Tangible ‘cultural heritage’ constraints (which do not otherwise have statutory protection), can comprise a variety of constraints such as buildings, sculptures and memorials, extant townland boundaries (or those likely to have associated sub-surface remains), historical sporting grounds and industrial heritage; and
- Intangible ‘cultural heritage’ represents aspects of cultural heritage within today’s society that are of cultural heritage value but may not have a directly associated physical landscape element. Intangible heritage is therefore formed by activities or traditions associated with a particular area, such as the St Patrick’s Day parades (17th March) that take place across the country.

4.9.2 Existing Environment

The Study Area is largely rural in nature with the exception of the settlements of Cork, Kinsale, Ballinhassig, Crossbarry, Riverstick, Belgooly and Dunderrow. The Study Area includes substantial stretches of woodland. There are a total of 179 townlands within the Study Area, all within County Cork. The overall cultural heritage resource is characterised by Recorded Monuments from the prehistoric period, early medieval, medieval, and post-medieval periods, recorded buildings and a number of designed landscapes dating to the 18th and 19th centuries.

⁴⁸ Department of Arts, Heritage, Gaeltacht, and the Islands. 1999a. Framework and Principles for the Protection of the Archaeological Heritage. Government Publications Office, Dublin

⁴⁹ Department of Arts, Heritage, Gaeltacht, and the Islands. 1999b. Policy and Guidelines on Archaeological Excavation. Government Publications Office, Dublin

⁵⁰ www.buildingsofireland.ie – Website listing the results of the NIAH building and garden survey for Cork (Accessed January 2024)

⁵¹ www.nationalinventoryich.chg.gov.ie – National Inventory of Intangible Cultural Heritage

UNESCO World Heritage Properties (WHP)

The function of a UNESCO World Heritage list is to encourage member states to protect and manage their natural and cultural heritage. Properties considered for inclusion have cultural, historical, scientific, or other significance, considered to be of outstanding value to humanity.

There are three sites inscribed onto the UNESCO World Heritage List on the island of Ireland. These comprise the Giant's Causeway and Causeway Coast, *Brú na Bóine* and Skellig Michael, none of which lie within the Study Area.

In July 2022, the Department of Housing, Local Government and Heritage (DoHLGH) announced a revised 'Tentative List', containing three sites, or landscapes that may become World Heritage Properties on the island of Ireland. A precondition for the inclusion of World Heritage status is 'Outstanding Universal Value'. None of the three sites lie within the Study Area of the proposed greenway.

National Monuments and Sites with Preservation Orders

A National Monument receives statutory protection and is described as '*a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto*' (National Monuments Act, 1930, Section 2).

Preservation Orders and / or Temporary Preservation Orders, can be assigned to a site or sites that are deemed to be in danger of injury or destruction. These are allocated under the National Monuments Act, 1930. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Amendment to the National Monuments Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister (DoHLGH).

There is one National Monument within the Study Area: Desmond Castle in Kinsale Town (RMP CO112-034006). The town defences of Kinsale (CO112-034002) are also afforded protection as a National Monument. None of the sites within the study area possess a Preservation Order.

Record of Monuments and Places and the Sites and Monuments Record

Section 12 (1) of the National Monuments Act (1994 amendment) provides that the Minister for Arts, Heritage, Gaeltacht, and the Islands (now the Minister for Department of Housing, Local Government and Heritage) shall establish and maintain a Record of Monuments and Places (RMP) where it is known that such monuments exist. The record comprises of a list of monuments and relevant places with supporting mapping showing each monument and relevant place in respect of each county in the State. The mapping comprises annotated versions of the third edition Ordnance Survey maps (OS), the last revision of which dates to 1996. Sites recorded on the Record of Monuments and Places all receive statutory protection under the National Monuments Act.

The Sites and Monuments Record (SMR) holds documentary evidence and records of field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as 'un-located sites' and cannot be afforded legal protection. As a result, these are omitted from the Record of Monuments and Places.

It should be noted that revisions are proposed to the RMP and SMR, with some sites listed as redundant records and proposed for removal and other, newly discovered sites, proposed for inclusion. Some of the recorded sites within the Study Area fall into these categories. As the revisions have yet to take place, all current RMP / SMR sites are listed within this assessment.

There are 313 individual Recorded Monuments located within the Study Area, including 12 records that are classified as Redundant Records. Redundant Records are included within the assessment, as in the past, sites that have been made redundant have later been found to be archaeological in nature (refer to Figure 4-12, Figure 4-13, Figure 4-14).

The largest category of sites is represented by *fulachtaí fia*, of which 60 are recorded within the Study Area, as well as a further eight burnt mounds and a burnt spread. Such sites can date from any period from the prehistoric to medieval but are most commonly associated with Bronze Age activity.

The second largest category of sites date to the early medieval period and represent ringforts. There are 55 such sites, all of which are raths (earth-built ringforts) within the Study Area. They represent secular habitation sites of the period and can contain the remains of houses and storage structures, along with souterrains. Sites of higher status often possess multiple enclosing elements and can cover a large area. There are also three ecclesiastical enclosures within the Study Area, which indicate another important aspect of the early medieval period in Ireland, when Christianity was adopted.

The medieval period is also well represented with castles, churches and other structures recorded within the Study Area. Desmond Castle (CO112-034006), also known as ‘The French Prison’, is a National Monument in State Ownership (No. 360). The historic town defences of Kinsale (CO112-034002) fall within the Study Area, such defences are also accorded protection as National Monuments.

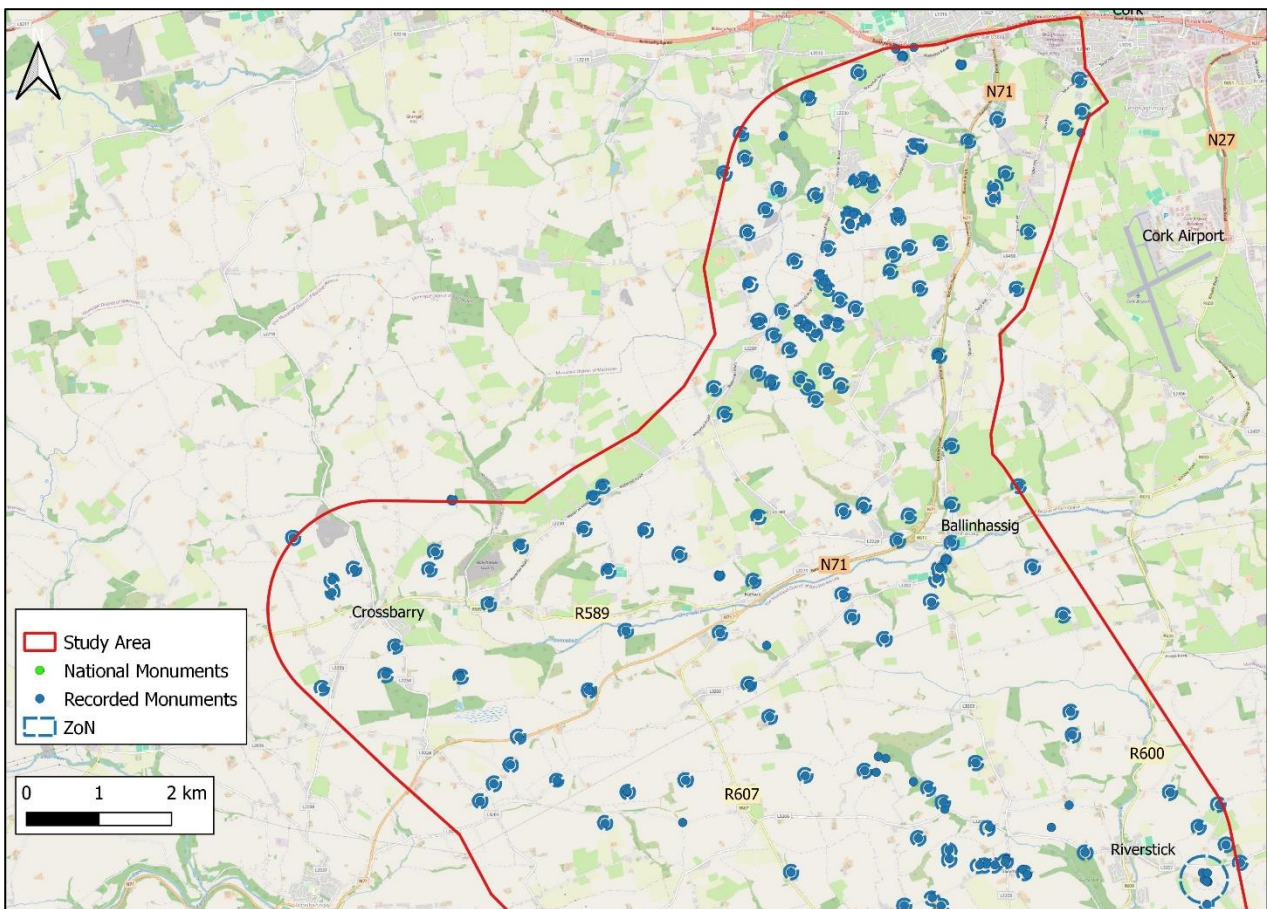


Figure 4-12 Recorded archaeological sites within the northern section of the Study Area

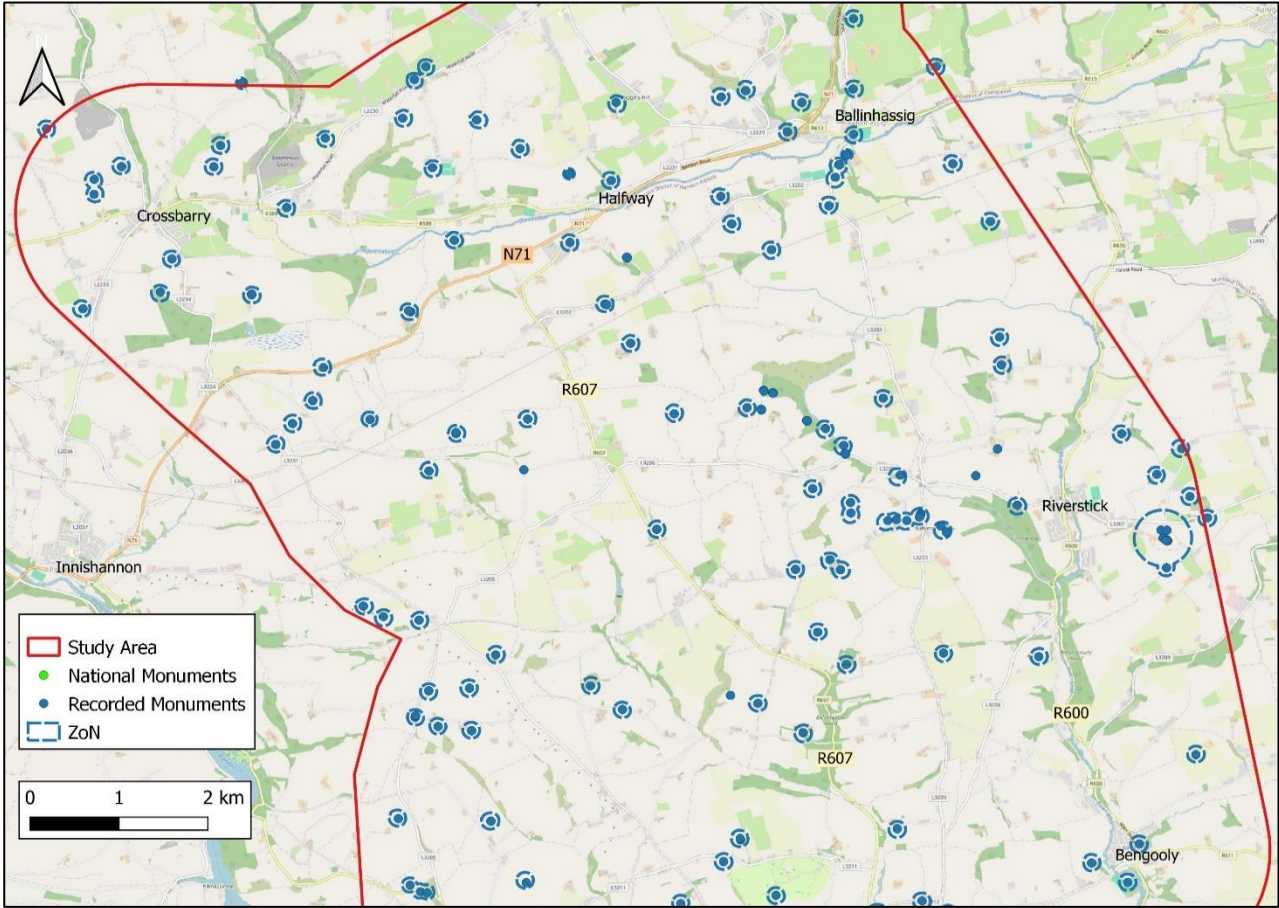


Figure 4-13 Recorded archaeological sites within the central section of the Study Area

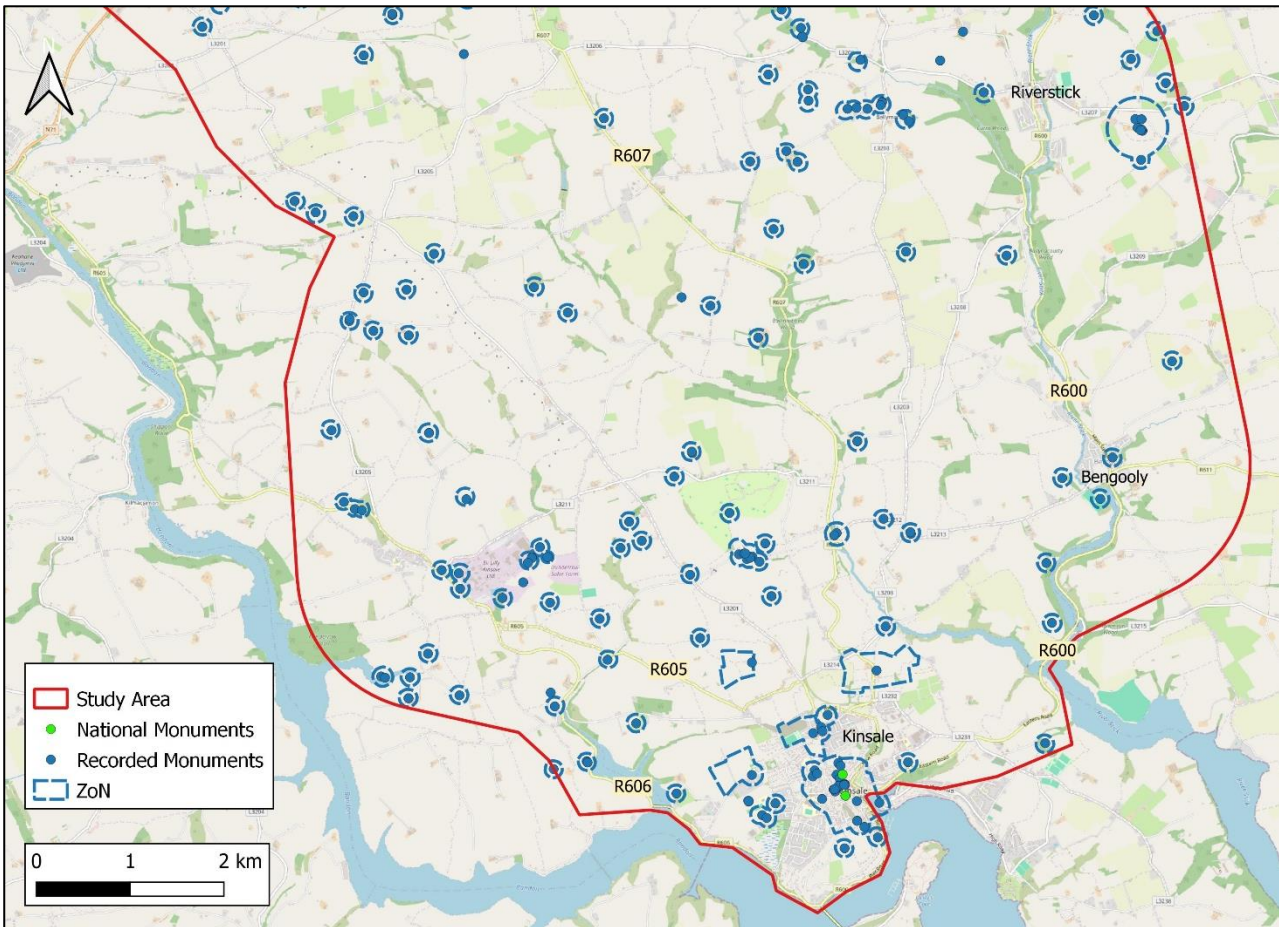


Figure 4-14 Recorded archaeological sites within the southern section of the Study Area

Architectural Heritage

A total of 248 individual structures of architectural heritage significance have been identified within the Study Area. These are either listed within the Record of Protected Structures (RPS) (Cork County Development Plan 2022-2028) or have been identified as part of the architecture survey carried out by the National Inventory of Architectural Heritage (NIAH) (refer to Figure 4-15, Figure 4-16, Figure 4-17).

Of the 248 structures, 65 are listed as Protected Structures and of these, 44 are also listed in the NIAH. A further 183 structures listed in the NIAH only.

Structures of architectural, cultural, scientific, historical, or archaeological interest are protected under the Planning and Development Act, 2000, where the conditions relating to the protection of architectural heritage are set out in Part IV of this Act. The Act defines a protected structure as *'(a) a structure, or (b) a specified part of a structure which is included in a Record of Protected Structures (RPS), and, where that record so indicates, includes any specified feature which is in the attendant grounds of the structure, and which would not otherwise be included in this definition.'* Protection of the structure or part thereof, includes conservation, preservation, and improvement compatible with maintaining its character and interest⁵².

Buildings recorded in the RPS can include Recorded Monuments, structures listed in the NIAH or buildings deemed to be of architectural, archaeological or artistic importance by the Minister of DoHLGH. All of these records have been considered as constraints. It is noted that inclusion within the NIAH survey does not automatically afford statutory protection, although it is an objective (Ref HE 16-15) of the Cork County Development Plan to protect structures listed in the NIAH. Structures and sites that are included within the RMP and RPS are subject to statutory protection under both the National Monuments Act, 1930 and the Planning and Development Act, 2000.

The NIAH rating values are: International, National, Regional, Local and Record Only (I, N, R, L, O). Structures which are considered of International, National and Regional significance are recommended by the Minister to the relevant Local Authority for inclusion in their RPS (NIAH Handbook 2017, DoCHG⁵²).

International: Structures or sites of sufficient architectural heritage importance to be considered in an international context. These are exceptional structures that can be compared to and contrasted with the finest architectural heritage in other countries.

National: Structures or sites that make a significant contribution to the architectural heritage of Ireland. These are structures and sites that are considered to be of great architectural heritage significance in an Irish context.

Regional: Structures or sites that make a significant contribution to the architectural heritage within their region or area. They also stand in comparison with similar structures or sites in other regions or areas within Ireland. Increasingly, structures that need to be protected include structures or sites that make a significant contribution to the architectural heritage within their own locality. Examples of these would include modest terraces and timber shop fronts.

Local: These are structures or sites of some vintage that make a contribution to the architectural heritage but may not merit being placed in the RPS separately. Such structures may have lost much of their original fabric.

Record Only: These are structures or sites that are not deemed to have sufficient presence or inherent architectural or other importance at the time of recording to warrant a higher rating. It is acknowledged, however, that they might be considered further at a future time.

There are three architectural sites of National Significance located within the Study Area, all in Kinsale town.

⁵² Department of Culture, Heritage, and the Gaeltacht. 2017. NIAH Handbook

Desmond Castle (RPS 2295, NIAH Ref.: 20851013) is located at the junction of Cork Street and Chairmans Lane; St Multose Church (RPS 2978, NIAH Ref.: 20851091) is located on Church Street, and Kinsale Town Walls (NIAH Ref.: 20851167, RMP CO112-034002), upstanding remains of which are located c. 100m west of Carmel Avenue and at Higher O’Connell Street / Convent Hill. The castle and town walls are also listed as National Monuments.

Architectural Conservation Areas (ACAs)

An Architectural Conservation Area is defined as:

‘A place, area, group of structures or townscape, taking account of building lines and heights, that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or that contributes to the appreciation of a protected structure, and whose character it is an objective of a development plan to preserve.’ (DoAHG, 2011, 40).

Chapter II of Part IV of the Planning and Development Act, 2000 states that that all development plans must now include objectives for preserving the character of ACAs. As such ACAs are subject to statutory protection, they are identified as constraints.

The Kinsale ACA is the only ACA located within the Study Area.

Designed Landscapes

The first edition Ordnance Survey map of County Cork (1845) shows the extent of demesne landscapes as shaded areas of land. These were established as a naturalised landscaped setting for the large houses of the landed gentry. Later OS mapping (1900) can also indicate demesne extent, although they are not shaded. Not all demesne landscapes are subject to statutory protection, but where a demesne exists in association with a Protected Structure (dependant on the preservation of the landscape), protection can be interpreted as extending to the limits of the curtilage and as such falls within the remit of the Planning and Development Act, 2000.

Objective HE 16-14 of the Cork County Development Plan aims to ‘Protect the curtilage and attendant grounds of all structures included in the Record of Protected Structures’.

A total of 46 Designed Landscapes (DL) have been identified in the Study Area from the desktop survey (refer to Table 4-22 and Figures 15-17). The NIAH have carried out a desk-based survey of identifiable demesnes within County Cork. Of these 46 identified landscapes, 21 are detailed within the NIAH survey. The historic mapping and aerial photographic coverage, along with the NIAH garden descriptions have been utilised in order to provide a summary statement on the condition of the landscapes, as described in Table 4-22.

Table 4-22 Designed Landscapes (DL) in the Study Area

DL No:	Name	NIAH Ref.	Description
DL01	Doughcloyne House	3348	Entirely redeveloped as an industrial estate, principal structure survives but not recorded on RPS or NIAH.
DL02	Garrane	3346	Parkland in the southern half of demesne remains undeveloped and principal structure survives; associated buildings have gone. Northern half of demesne is heavily developed and traversed by South Ring Road.
DL03	Doughcloyne / Philippine House	3350	Demesne is well preserved, and principal structure survives, along with a walled garden and driveway / avenue leading from Spur Hill. Principal structure remains but is not recorded on the RPS or NIAH.
DL04	Doughcloyne House	-	Small, lightly wooded demesne associated with Doughcloyne House (separate from the Doughcloyne House of DL01). House marked as in ruins on 1900 OS map. Now a single field with no apparent structural remains surviving.
DL05	Chetwynd	-	Farm complex and small garden. Structures remain but not recorded on RPS or NIAH.
DL06	Ashgrove	-	Small building complex with walled garden and tree lined driveway indicated on first edition OS map, a gate lodge is also marked, outside the Study Area. No structural remains survive with the exception of a possible section of garden wall.

DL No:	Name	NIAH Ref.	Description
DL07	Waterfall House	-	Small demesne, principal structure as depicted on 1900 OS map survives, although not recorded on RPS or NIAH. A gate lodge is marked on the first edition OS map but is no longer extant. Modern houses constructed in southwestern quadrant and farm buildings in southeastern.
DL08	Castle White	3338	Principal structure and associated buildings survive and are recorded on NIAH. Formal gardens indicated on first edition OS, now occupied by farm buildings. Parkland relatively undeveloped.
DL09	Greybrook	5934	Principal structure remains, not recorded on RPS or NIAH. A tuck mill and mill pond are indicated on the first edition OS map in the northern part of the demesne, now occupied by a modern house and garden. Further houses constructed to west of principal structure.
DL10	Ballynora House	-	House and small gardens. Principal structure as depicted on 1900 OS map remains, although not recorded on RPS or NIAH. Southeastern portion of garden relatively well preserved.
DL11	Glenview	5925	Relatively well preserved including principal structure, although not recorded on RPS or NIAH. Large farm building and yard area constructed in northern half of demesne.
DL12	Glenview Cottage	5926	Small demesne / large garden depicted on first edition OS map, with a waterfall marked. House marked as in ruins on 1900 OS map, now replaced with modern structure. Garden well preserved including wooded area to south, although no apparent garden features survive.
DL13	Tullig House	-	Principal structure no longer present, area occupied by farmyard although at least one outbuilding remains as depicted on 1900 OS map. Residential development and Ballinhassig GAA ground occupy western portion of the demesne, the remainder is largely undeveloped.
DL14	Mount Mary	5988	Ruins of principal structure appear to survive, not recorded on the RPS or NIAH. Waterfalls, sluice, and weirs marked along watercourse through the demesne on 1900 OS map. Central portion heavily disturbed by construction of N71 Bandon Road.
DL15	Clash Cottage / Dunkereen House	5856	Small demesne, well preserved with exception of three modern houses constructed at eastern edge. Principal structure remains as depicted on 1900 OS map (Dunkereen House) and is recorded on RPS and NIAH. This replaced original structures of Clash Cottage as depicted on first edition OS.
DL16	Dunkereen Cottage	3306	Well preserved demesne including principal structure recorded on NIAH. A gate lodge and recessed entrance depicted on historic OS mapping also appear to remain.
DL17	Annaghmore House	-	House and outbuildings depicted on historic OS mapping with associated gardens and orchards and a tree lined driveway. Principal structures do not survive although an associated chimney and forge are recorded on the RPS and NIAH.
DL18	Ballinaboy House	3342	Large well-preserved demesne including principal structure, which is recorded on the NIAH, as is a church within the demesne. A gate lodge marked on historic OS mapping has been replaced with a modern house. Associated farm buildings depicted on historic mapping also remain, modern farm buildings have been constructed to the south.
DL19	Glinny House	3359	Well preserved demesne including principal structure recorded on RPS and NIAH and walled gardens. Ruins of an additional range of farm buildings depicted on historic OS mapping also survive. A gate lodge appears to have been replaced by a modern building.
DL20	Coolkirky House	-	Parkland is largely undeveloped although principal building complex has been replaced by large farm complex.
DL21	Casino	-	House and outbuildings depicted on historic OS mapping within a small associated garden. Principal structure as depicted on 1900 OS map remains, along with ruins of outbuildings. Garden remains, large farm building constructed to west of house.

DL No:	Name	NIAH Ref.	Description
DL22	Arlinstown House	3339	Principal structure and outbuilding as depicted on first edition OS map remain along with driveway. Later structures depicted on 1900 OS map have been replaced by modern farmyard, as has formal garden depicted on first edition. Parkland relatively undeveloped.
DL23	Glebe House	-	Glebe House, church, and schoolhouse depicted within small garden on first edition OS map. By the time of the 1900 OS map only the graveyard of the church is depicted. The church and graveyard are recorded on the RMP, no other elements survive.
DL24	Coolcullitha House	-	Principal structure remains and is recorded on the RPS and NIAH. Ruins of outbuildings depicted on the 1900 OS map also survive, which replaced earlier formal garden. The demesne is largely unchanged since the 1900 OS map, with the exception of farm buildings constructed in the northern portion.
DL25	Knockanerable	-	Elements of the principal building complex as depicted on the 1900 OS map survive, outside the Study Area. Only the eastern tip of the demesne falls within the Study Area.
DL26	Hawthorne Hill	-	Small demesne, parkland in the northern half remains undeveloped. Principal structure and several outbuildings remain, not recorded on RPS or NIAH. Formal gardens depicted on first edition OS map have been replaced by farmyard.
DL27	Ballymartle House	3345	Large, well-preserved demesne. Ruins of the principal structure remain and are recorded on the RMP, although not on the RPS or NIAH. A walled garden and farm buildings also survive, as does a gate lodge, which is recorded on the NIAH. The walled garden and farm buildings are also recorded on the RMP.
DL28	Heathfield	3324	Large well-preserved demesne, ruins of principal structure survive although not recorded on the RPS or NIAH.
DL29	Ballintober House	3336	Large well-preserved demesne including formal garden and extensive woodland. Ruins of principal structure survive and are recorded on the RPS and RMP. An associated gateway is also recorded on the NIAH. Demesne is largely unchanged with the exception of the construction of a farmyard to the northeast of the principal structure.
DL30	Glendooneen	3341	Demesne is essentially unchanged since the first edition OS map with the exception of extension to the principal house, depicted on the 1900 OS map. The house and an associated gate lodge are both recorded on the NIAH. An altar rock recorded on the RMP is located within the northern corner of the demesne.
DL31	Scart House	-	Small demesne depicted with building complex and orchards on first edition OS map. Principal structure as depicted on 1900 OS map remains, with associated outbuilding, although not recorded on RPS or NIAH. Modern farm buildings constructed to the northeast of the house.
DL32	Springmount	-	Demesne itself is relatively well preserved, including woodland along western edge. Principal structure and outbuildings appear to have been replaced by modern house and farm buildings.
DL33	Ballindinisk House / Cramers Court	-	Depicted as Ballindinisk House on the first edition OS map, later replaced by Cramers Court with an apparently expanded demesne landscape on the 1900 OS map. The house and western half of the demesne has been heavily redeveloped as a care home, apparently incorporating the Cramers Court house structure. The parkland of the eastern half of the demesne remains relatively undisturbed.
DL34	Belgooley Cottage	-	Small demesne with principal structure named on first edition OS map. By 1900 OS map the house is no longer named. The principal structure remains, although not recorded on the RPS or NIAH and the demesne remains relatively unchanged with the exception of the expansion of the farmyard complex.
DL35	Pallacetown House	3351	Large well-preserved demesne. Principal structure of Pallacetown House originally depicted on the first edition OS map with a range of buildings around a courtyard, extensive gardens, avenues, and woodland. By 1900 the house complex has been much extended. The ranges of buildings on the north and south side of the courtyard remain but the main house on the west side is no longer present. An associated gate lodge is recorded on the NIAH, although the other surviving buildings are not. The remainder of the demesne is largely undeveloped, although a house now occupies the site of the formal garden to the north.

DL No:	Name	NIAH Ref.	Description
DL36	Knockrobin House	3344	Well-preserved demesne with tree-lined avenue running through from north to south. Principal structure, an associated gate lodge and further large buildings at the northern edge of the demesne are all depicted on the first edition OS map. All remain extant although are not recorded on the RPS or NIAH. Scattered houses have been constructed in the northwestern quadrant of the demesne.
DL37	Hetty Ville	-	Small demesne depicted on the first edition OS map comprised of a formal garden, orchard and driveway with gate lodge and a small park. By the 1900 OS map the garden and orchard are no longer depicted. The principal house remains and is recorded on the RPS and RMP. The parkland is largely undeveloped with the exception of farm buildings to the north of the house.
DL38	View Mount	-	Small demesne of which no discernible features now survive with the exception of the overgrown footprint of the principal structure, of which some ruins may remain. The demesne is otherwise returned to agricultural use, with one house constructed in the southeastern corner.
DL39	Ballinacurra House	3323	Large, well-preserved demesne including principal structure recorded on the NIAH. A number of bee-boles within the walls of the house are also recorded on the RMP. The gardens and avenues surrounding the house remain largely unchanged as does the wider demesne. A number of houses have been constructed within the demesne along the northern boundary.
DL40	Tisaxon	-	Small demesne depicted on first edition OS map as a relatively large house with outbuildings and a formal garden. Nothing now remains besides the ruins of two or three of the outbuildings, farm buildings now occupy the site, the wider demesne remaining as two fields.
DL41	Snugmore	3352	Small demesne depicted on first edition OS map with a formal garden to the east of the principal structure. The principal structure remains in ruins and is recorded on the RMP. A modern house now occupies the site of the garden. The northeastern half of the demesne is relatively undisturbed, the southern half appears to be under development.
DL42	Knocknabohilly House	-	Small demesne depicted on the first edition OS map although not yet named. The site of the principal structure and southeastern half of the demesne are now occupied by part of an industrial estate, the northwestern field of the demesne remains undeveloped.
DL43	Abbey, St Mary's Carmelite Friars	-	Gardens associated with St Marys Carmelite Priory which is recorded on the RMP. The cemetery remains extant although much of the remainder of the landscape has been redeveloped for residential usage.
DL44	Unnamed	-	Formal gardens and orchards associated with an unnamed house depicted on the first edition OS map. A 'Turret' is marked to the southeast of the house, which is recorded on the RMP, as are a number of bee-boles in a wall at the southwestern edge of the demesne. The northern part of the demesne is now occupied by a sports and community centre.
DL45	Compass Hill / Dromderrig	-	Small demesne at the southern edge of Kinsale town, associated with a house named Compass Hill on the first edition OS map and Dromderrig on the 1900 OS. The principal structure remains and is recorded on the RPS and NIAH. The remainder of the demesne is now occupied by large residential properties.
DL46	Fairview House	-	Small demesne depicted on the first edition OS map at the southern edge of Kinsale town. By the time of the 1900 OS map the demesne is no longer depicted. Three structures are depicted within the demesne which are recorded on the NIAH, one of which occupies the site of the original Fairview House.

Areas of Archaeological Potential

Whilst specific Areas of Archaeological Potential (AAPs) have not been designated as part of this assessment, they are worth overall consideration at an early design stage. These areas can be defined as part of the landscape that possess the potential to contain archaeological remains due to the presence of topographic features such as rivers, lakes, turloughs, high defendable ground and south-facing slopes. Bodies of water and watercourses are a focus for human habitation due to the obvious transport and food resources. They also have the potential to preserve organic archaeological deposits or artefacts such as wood or leather, which do not usually survive within the alkaline conditions associated with terrestrial archaeology.

Rivers and lakes may have also played a role in prehistoric ritual, as significant artefacts from the prehistoric periods and into the early medieval period, are often found within riverbed deposits. Bogland is also considered to represent areas of archaeological potential, although there are no significant boglands present within the study area.

All of these areas and their margins, within the Study Area should be considered as possessing an overall archaeological potential. The aim, at early design stage, should be to cross any significant watercourses with single span structures or to utilise existing infrastructure.

Cultural Heritage Sites

The term ‘cultural heritage’ can be used as an over-arching term that can be applied to both archaeology and architecture. It also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. The archaeological and architectural features discussed above also constitute cultural heritage features.

The Schools’ Collection is a record of folklore recorded by school children in the 1930s, a number of which relate to the Study Area. One story describes a priest falling from his horse at Goggins Hill, Ballinhassig and landing on a rock. According to the tale the imprint of the priests’ hands and knees can still be seen in the rock where he landed. A very similar story is told concerning a priest falling while pursued by redcoats near Castletownkenneigh, c. 2km to the west of the Study Area⁵³.

Another story recorded in the area of Ballinhassig relates to a battle fought near the village “*in 1600 between the English Invaders and the National Forces under Florence McCarthy. Close by is a glen remarkable for peculiar lights which have often been seen there, and the origin of which, is not, I believe, known. The aspect of the glen is desolate and barren, a small green field set among brakes, marks a disused graveyard, and a rivulet trickling in the hollow is called in Gaelic the Stream of Lights*”. This is likely to refer to the Battle of Kinsale (actually fought in 1601) which ultimately resulted in the Flight of the Earls. A battlefield is recorded on the RMP (CO111-100), although much further to the south, c. 3km northwest of Kinsale town, within the Study Area. Ballinhassig is chiefly noted in popular tradition for a massacre committed there on 29th June 1845, by policemen under the command of an officer by the name of Hodnett, who resided in Kinsale.

At the southern tip of the Study Area near Worlds End Road in Kinsale, a record is made of ‘Policemans Rock’ a natural monument to a policeman who died whilst trying to save the life of a small boy. "Carraig Oisín" (the rock of Oisín) is also referred to in the same area, where a giant is supposed to have sat to wash his feet in the sea, and on the opposite side of the road are the ‘Five Stones’, traditionally believed to have been thrown there by giants.

Kinsale itself was historically a strategically important town with a rich maritime history with links to Spain. Traditionally a fishing port, smuggling, piracy, and wrecking were also a part of local life⁵⁴.

The former Cork Bandon and South Coast Railway (CB&SCR) runs through the Study Area and whilst no longer in use, it is a significant cultural heritage and industrial heritage feature, clearly visible within the landscape (refer to Figures 15-17). The CB&SCR began operating in 1849, initially called the Cork and Bandon Railway, the name being changed in 1888. The route ran for c. 151km between Cork and Bantry. The Kinsale Branch ran from Kinsale Junction Station to its terminus at the northeastern edge of Kinsale town, on the north side of Barrack Hill, serving stations at Ballymartle and Farrangalway.

Today several structures originally constructed as part of the railway remain within the landscape that are listed in the RPS or NIAH, including Farrangalway Station, but many more heritage features survive along its length, such as the remains of level crossing infrastructure (including multiple associated cottages), culverts and bridges. Overall, the earthworks associated with the railway line can be clearly followed through large sections of the landscape.

⁵³ www.duchas.ie/en/cbes/4672113/4671379/4672418 - The Schools’ Collection – folklore.

⁵⁴ <https://www.irishexaminer.com/lifestyle/arid-20286469.html> (Accessed January 2024)

Detailed survey and inspection of the railway line would enable the identification of railway heritage features that are not listed in existing archives, and it remains an important part of the cultural heritage landscape.

National Inventory of Intangible Cultural Heritage (NIICH)

In July 2019, the Minister for Culture, Heritage, and the Gaeltacht (now the Minister for DoHLGH) approved the inscription of 30 cultural heritage elements on Ireland’s permanent National Inventory.

This followed the ratification by Ireland of the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, in December 2015. Ireland’s obligations under the 2003 Convention include the establishment of a National Inventory for Intangible Cultural Heritage to protect, promote and celebrate Irish living cultural heritage practices, customs, crafts, and traditions.

A review of the NIICH has been carried out as part of this study in order to identify intangible cultural heritage that may be located within the Study Area. Those practices and traditions that may be located within the Study Area are listed in the below Table 4-23.

Table 4-23 NIICH potentially located within the Study Area

Designation	Location	NIICH Categories
Irish Traditional Travelling Circus and Funfair	Throughout the island of Ireland	Performing arts Social practices, rituals, and festive events Traditional craftsmanship Oral traditions and expressions, including language. Knowledge and practices concerning nature and the universe
Lá an Dreoilín / Wren’s Day	Throughout the island of Ireland	Performing arts Social practices, rituals, and festive events Traditional craftsmanship Oral traditions and expressions, including language. Knowledge and practices concerning nature and the universe
Uilleann Piping	Ireland and worldwide	Performing arts Social practices, rituals, and festive events Oral traditions and expressions, including language. Traditional craftsmanship
Hurling	Ireland and worldwide	Knowledge and practices concerning nature and the universe. Social practices, rituals, and festive events Oral traditions and expressions, including language. Performing arts Traditional craftsmanship
Irish Harping	Throughout the island of Ireland	Performing arts Social practices, rituals, and festive events Traditional craftsmanship Oral traditions and expressions, including language
Art and Practice of Falconry	Throughout the island of Ireland	Knowledge and practices concerning nature and the universe. Social practices, rituals, and festive events Traditional craftsmanship Performing arts
Can’t / Gammon	Throughout Ireland.	Oral traditions and expressions, including language
Floating Heritage	Throughout the inland waterways of Ireland	Knowledge and practices concerning nature and the universe. Oral traditions and expressions, including language. Traditional craftsmanship
Sea Currach Making	Chiefly along the Atlantic coast, from Donegal to Cork	Traditional craftsmanship

Designation	Location	NIICH Categories
Irish Traditional Music	Throughout the island of Ireland, the diaspora and overseas	Social practices, rituals, and festive events
Native Irish Pedigree Dog Breeds	Throughout Ireland	Knowledge and practices concerning nature and the universe. Social practices, rituals, and festive events
Basket making	Throughout Ireland	Knowledge and practices concerning nature and the universe. Social practices, rituals, and festive events Traditional craftsmanship Performing arts
Dry stone construction	Throughout the island of Ireland; particularly Connemara, the Aran Islands, and the Dingle Peninsula	Traditional craftsmanship
Irish Draught Horse Breeding	Throughout the island of Ireland	Traditional craftsmanship Knowledge and practices concerning nature and the universe. Social practices, rituals, and festive events
Loy Digging	At local and national ploughing championships in Ireland	Knowledge and practices concerning nature and the universe
Letterpress Printing in Ireland	Ireland and abroad	Traditional craftsmanship
Beekeeping	Throughout the island of Ireland	Knowledge and practices concerning nature and the universe
Native Irish Cattle Breeding	Throughout the island of Ireland	Knowledge and practices concerning nature and the universe
Traditional Sheep Farming and Sheepdog Training	Throughout Ireland	Knowledge and practices concerning nature and the universe

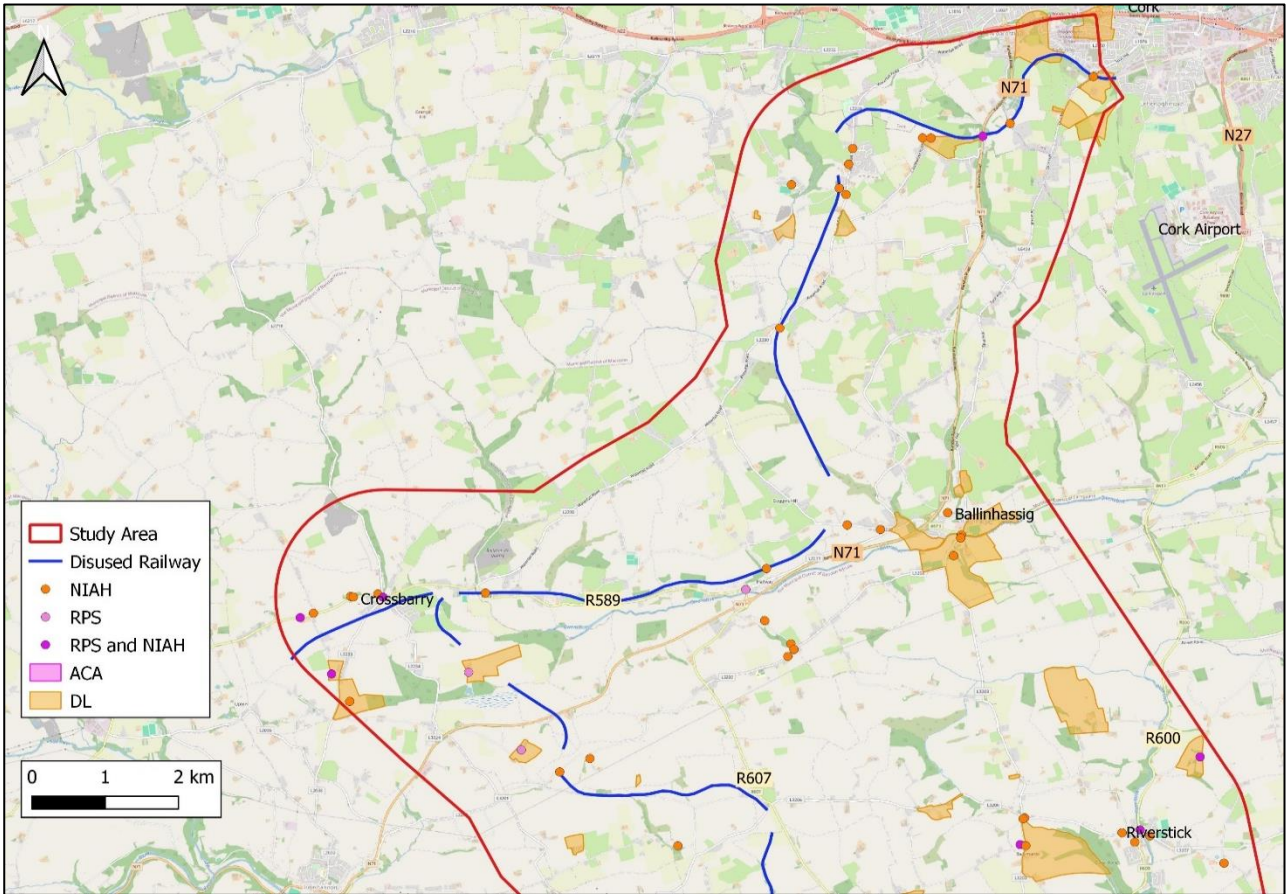


Figure 4-15 Built heritage sites within the northern section of the Study Area

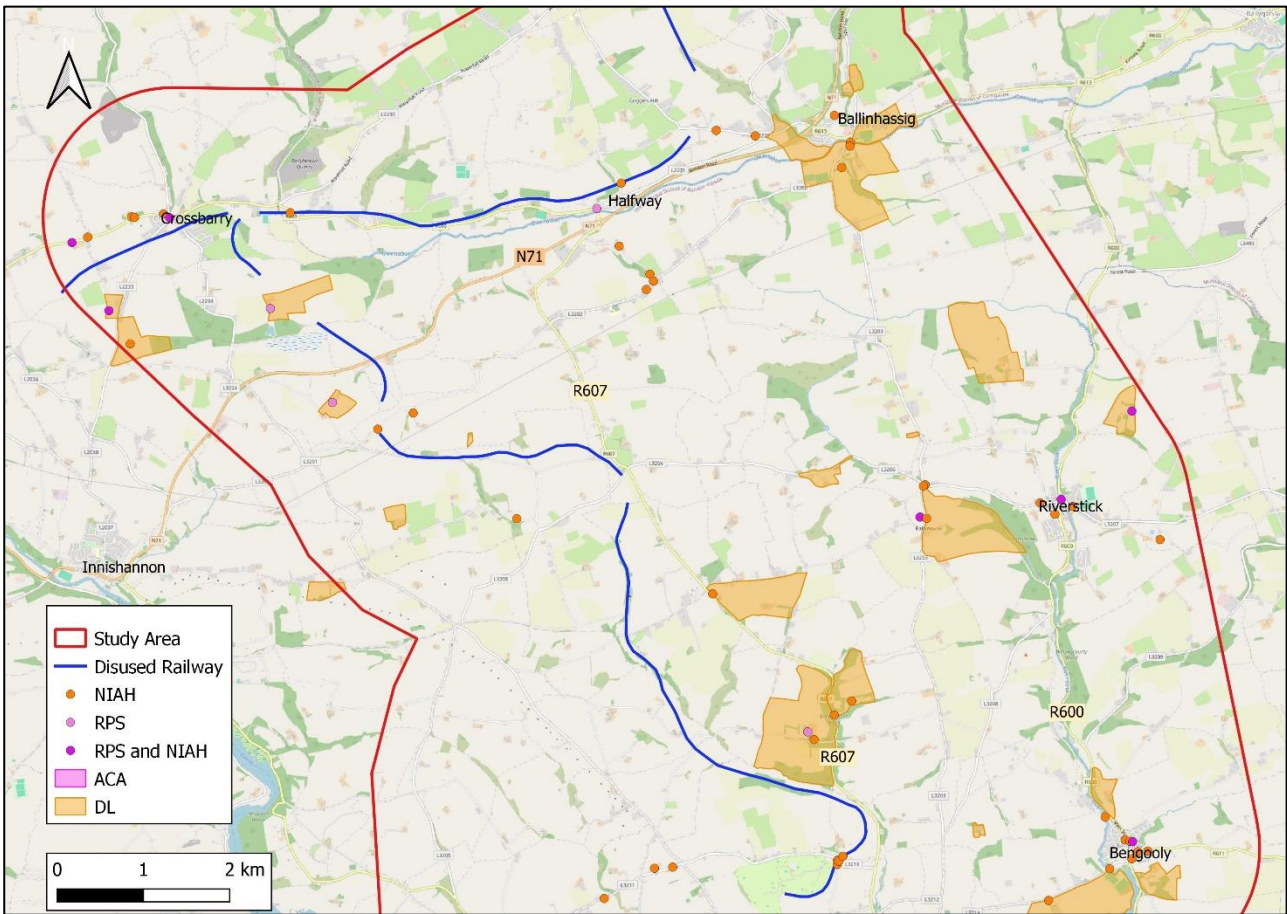


Figure 4-16 Built heritage sites within the central section of the Study Area

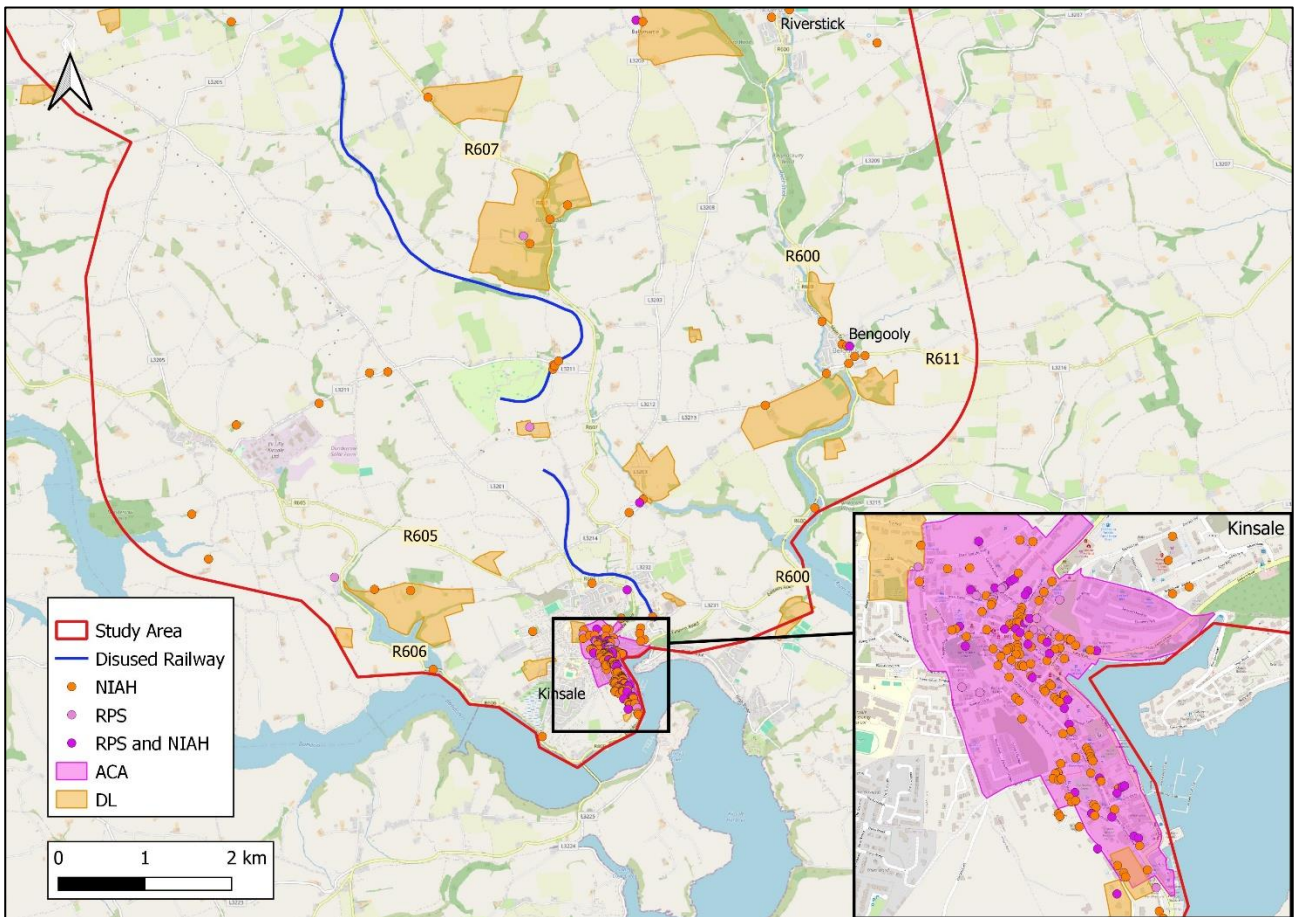


Figure 4-17 Built heritage sites within the southern section of the Study Area

4.9.3 Identified Constraints and Opportunities

The purpose of this assessment is to provide an analysis of the archaeological, architectural, and cultural heritage resources within the Study Area in order to inform the design of feasible Alternatives and Options for the proposed Cork to Kinsale Greenway. The Study Area is located within County Cork and contains all or part of 179 townlands. The study has shown that there is a significant cultural heritage resource within the area.

The Study Area is largely rural in nature with the exception of the settlements of Cork, Kinsale, Ballinhassig, Crossbarry, Riverstick, Belgooly and Dunderrow. The path of the former Cork Bandon and South Coast Railway runs within the Study Area and whilst it is not subject to any specific heritage protection as a whole, it is a significant cultural and industrial heritage feature.

There are 313 individual Recorded Monuments located within the Study Area, including 12 sites which are classified as Redundant Records. These recorded sites are of varying dates, although with a significant number from the prehistoric and early medieval periods, and are listed within the current Study Area, indicating a continuance of activity and settlement from the prehistoric period. Of the 313 sites falling within the Study Area, two are afforded further protection as National Monuments: Desmond Castle (No. 360) and the historic town defences of Kinsale (CO112-034002). All recorded archaeological sites should be considered as cultural heritage constraints during the design of the proposed Project and negative impacts should be avoided, where possible.

There are a number of Areas of Archaeological Potential (AAPs) within the Study Area, consisting largely of rivers and streams. All AAPs should be considered as potential archaeological constraints with careful consideration given to same during the formulation of route options. Potential impacts should be minimised through design. This includes the use of clear span structures across waterways.

An analysis of the built heritage within the Study Area provides a holistic overview of the built heritage resource, with the later years of the post medieval period well-illustrated by the presence of a number of country houses and demesnes, terraced workers houses, vernacular houses, bridges, railway infrastructure and churches. Structures that are architecturally and socially important are listed within the Cork County Development Plan 2022-2028 and the NIAH survey for County Cork. Protected structures receive statutory protection that helps to ensure their preservation for the future. A total of 248 structures of architectural merit are located within the Study Area. All Protected Structures and NIAH structures should be considered as cultural heritage constraints during the design of the proposed Project, with direct impacts and indirect impacts on their settings avoided, where possible. Where avoidance is not possible, potential impacts should be minimised through design.

The Kinsale ACA is located entirely within the Study Area.

A total of 46 Designed Landscapes (DL) have been identified within the Study Area, 21 of which are included on the NIAH Garden Survey. Many of these still retain their principal building and / or outbuildings and may be associated with a Protected Structure and can therefore be viewed as attendant grounds to the same, whilst others have been lost over the course of time.

A review of the NIICH has also been undertaken in relation to Ireland's intangible cultural heritage. A total of 20 practises or traditions have been identified from the survey that may be located within the Study Area.

Whilst the main purpose of this assessment is to identify and describe key archaeological, architectural, and cultural heritage constraints in order to prevent negative impacts during design, the nature of the Project – a greenway through the landscape – means that there are also opportunities to promote heritage sites and make them more accessible to members of the public. It is noted that many heritage sites are located within land that is privately owned and any such opportunities for the exploration of heritage narratives would be subject to agreement with landowners. Any such proposals would require detailed analysis as to whether increased public visitation would lead to indirect negative impacts, such as ground erosion caused by foot fall or interference with sites or structures due to increased accessibility. However, given the nature of greenway projects, there is more scope to avoid negative direct impacts on cultural heritage sites, whilst also providing opportunities.

Whilst it is not possible to access and promote all cultural heritage sites across the Study Area, the opportunity to tie heritage narratives into the greenway, as a linear route accessible to the public, should be explored during the formulation of route options, in order to promote understanding of key and significant sites and structures, or for the greenway to provide a vehicle for this to be carried out in the future.

The most obvious heritage feature that could be utilised for this is the route of the former railway, which possesses multiple associated heritage features and could be utilised to provide additional information on the surrounding landscape. This may not necessarily mean accessing sites from the greenway route, but simply providing heritage information on adjacent sites and landscapes within the wider landscape. The utilisation of former railway infrastructure as part of accessible greenways has proven successful within the country. The concept of tying the heritage landscape together as part of the greenway should not be seen as a concept that relates purely to the former railway. This concept can be utilised with existing road infrastructure or any new sections of routes that are required.

The identification of heritage narrative opportunities will be further assessed at route option assessment stage when defined Study Areas for each option are available (based on constraints and opportunity assessments from all environmental and engineering disciplines). This stage will identify potential negative impacts upon the archaeological, architectural, and cultural heritage resource and also assess for potential positive heritage impacts and opportunities that may arise due to increased public access and promotion of same.

4.10 Material Assets – Agricultural

4.10.1 Introduction

This section describes the material assets - agricultural constraints identified within the Study Area for the Project.

The following guidelines and legislation were referred to when writing this report:

- Environmental Protection Agency (EPA) (May 2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports⁵⁵
- Code of Best Practice for National and Regional Greenways (TII) (Dec 2021)⁵⁶.

In line with these TII and EPA guidelines, the constraints study seeks to identify the issues that are likely to be important at this stage of the environmental assessment process and to inform the design team so that preventative action can be pursued. This constraints study has comprised a desktop collation and interpretation of published data and on-line resources such as aerial photography. The constraints study identifies features which reflect the agricultural potential and agricultural sensitivity of the Study Area. The desktop study has considered the following sources of information:

- Data from the Central Statistics Office (CSO).
 - The 2020 Census of Agriculture⁵⁷ was referred to for enterprise types and this data is presented in Table 4.27.
- Soil mapping data from the Teagasc Irish Soil Information System⁵⁸ was used to identify the soil types within the Study Area. For example, rock and low-lying alluvial soils are generally poor quality. The soil quality and type varies within a small area and the mapping data used is consistent over large areas - thus the information is indicative only;
- 2023 National Land Cover data for Southern Ireland¹⁷ was examined for the Study Area; and
- Google⁵⁹ aerial maps were used to farm enterprises, identify yards, farm facilities, forestry, scrub, and rough boggy land.

The following features have been identified from desktop information sources:

- Yards and farm facilities - farm yards and other yards and facilities such as sand arenas and training facilities used by horses and farm paddocks and roadways typical of dairy farms have been identified from aerial photography.
- Dairy and equine farms are generally high sensitivity and equine enterprises are within the high to very high range of enterprise sensitivity (see Table 4-24). Pig farms and horticultural farms are also high or very high sensitivity. As explained, Google Earth aerial imagery and the PRAI⁶⁰ open database has been used to identify folios and land parcels where dairy herds were noted.
- Areas with good quality soils generally have a higher agricultural potential than poor quality land. Good quality land was initially identified by using the Teagasc Irish Soils Information System and aerial photography; and
- Areas of woodland, forestry and scrub have been identified from aerial photography.

The sensitivity of farms is described using the criteria outlined in Table 4-24.

⁵⁵ Environmental Protection Agency (May 2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf

⁵⁶ Transport Infrastructure Ireland (December 2021) Code of Best Practice for National and Regional Greenways. Available from: <https://www.tii.ie/news/press-releases/code-best-practice-greenways/>

⁵⁷ Central Statistics Office, 2020, <https://www.cso.ie/en/statistics/agriculture/censusofagriculture/>

⁵⁸ Teagasc (2022), Irish Soil Information System. Available from <http://gis.teagasc.ie/soils/> [Accessed in October 2022]

⁵⁹ Google Aerial Mapping (2022). Available from: <https://www.google.com/maps> [Accessed January 2023]

⁶⁰ Property Registration Authority of Ireland available @ <https://www.landdirect.ie/index>

Table 4-24 Farm Sensitivity

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

Where farm enterprises are identified, the information in Table 4-24 is used to categorise the sensitivity. This table provides an indication of the range of sensitivity for common enterprise types in Ireland and has been adopted based on the professional judgement of the author.

For example, horses can be highly sensitive to construction activity such as noise and traffic movement and this is a consideration where horses are being trained and rode by jockeys. The economic value and importance of individual horses increases the sensitivity of stud farm and racehorse enterprises. While adverse effects may arise where agricultural enterprises are directly affected, there may be positive effects due to increased tourist traffic where equestrian centres and open farms are in close proximity to the Project.

The range of sensitivity for equine enterprises will generally vary from high to very high depending on the degree of specialisation, scale, and intensity of the enterprise.

Dairy farms are categorised as high sensitivity because dairy cows have to access the milking parlour twice daily and therefore are sensitive to the potential severance impact of a new greenway. The movement of livestock is less frequent in beef and sheep farms where livestock can graze severed land parcels without the necessity of frequent access to the farmyard and these enterprises are generally categorised as medium sensitivity.

Tillage farms can operate in severed land parcels provided there is adequate access for machinery and this enterprise is also generally categorised as medium sensitivity. Land quality is a factor that affects the intensity of an enterprise and is considered in the assessment of sensitivity.

Enterprises such as pigs and poultry have very high livestock numbers in relatively small sites and are generally very high sensitivity. These enterprises are capital and labour intensive; the building layout is often critical to the successful operation of the enterprise. Also, it may be very difficult to replace a site for a pig and/or poultry farm where the existing site offers separation distance from adjoining properties which mitigates odour impacts.

Horticultural sites are generally labour intensive and have high output from small areas (e.g. glasshouses and nurseries) and therefore are high and very high sensitivity.

4.10.2 Existing Environment

The Study Area of the project is approximately 15,340 hectares.

The land use within the Study Area is summarised in Table 4-25 and illustrated in Figure 4-18 from mapping data derived from the National Land Cover Map database (Tailte Éireann, 2023).

The largest land use within the Study Area is agricultural land, with the largest land use categories being ‘improved grassland’ and ‘cultivated land’. Generally, land quality is good, and farming is intensive.

Table 4-25 Land Use within the Study Area

Land use category	Hectares / % of Study Area
Total area (ha)	15,340
Improved Grassland	53%
Cultivated Land	19%
Hedgerows	4%
Wet Grassland	3%
Amenity Grassland	3%
Ways	3%
Scrub	2%
Broadleaved Forest and Woodland	2%
Other Artificial Surfaces	2%
Bare Soil and Disturbed Ground	1%
Dry Grassland	1%
Transitional Forest	1%
Treelines	1%
Buildings	1%
Mixed Forest	<1%
Coniferous Forest	<1%
Bracken	<1%
Artificial Waterbodies	<1%
Lakes and Ponds	<1%
Marine Water	<1%
Mudflats	<1%
Rivers and Streams	<1%
Saltmarsh	<1%
Swamp	<1%
Transitional Waterbodies	<1%
Exposed Rock and Sediments	<1%

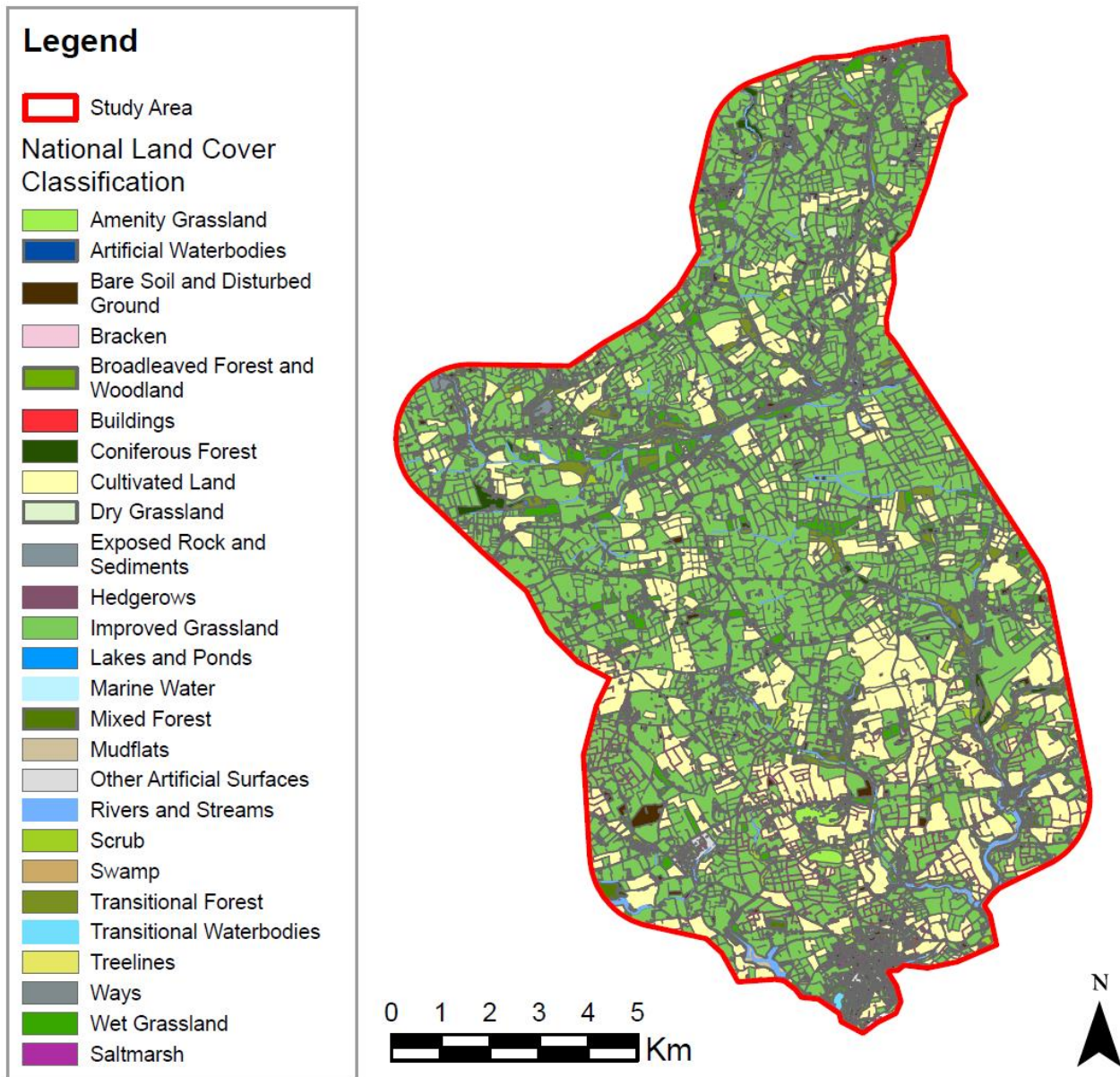


Figure 4-18 Land Use within Study Area

Teagasc soil data and aerial photography (Google Earth)⁵⁹ were examined to determine soil types and land quality in the Study Area. The main soil types are shown in Table 4-26 and Figure 4-19.

Table 4-26 Soil Types within the Study Area

General Soil Type (<i>Teagasc Code</i>)	% of Study Area
Brown Podzolics (<i>0900</i>)	76.5%
Brown Earths (<i>1100</i>) and Luvisols (<i>1000</i>)	15.5%
Alluvial (<i>05RIV</i>), Fluvisols and Inland Marsh *	5.5%
Rock (<i>Rk</i>), Tidal Marsh, Urban *	2.5
* Generally, poor-quality land	

The main soil type within the Study Area is a Brown Podzol soil (76.5% of the Study Area). It occurs throughout the Study Area. This soil tends to be well drained, derived from sandstone and often associated with rolling lowland. Where an adequate drainage outfall is achieved these soils often support intensive grassland enterprises such as dairying. In general, this soil is medium - good quality.

Brown Earth (15.5% of the Study Area – northern and central parts of the Study Area) are generally fertile free draining soils associated with the lower and undulating parts of the landscape. This soil supports intensive grassland and tillage enterprises within the Study Area and is good quality.

Alluvial soils (5.5% of the Study Area) are mainly located along riverbanks and watercourses and in areas of low-lying flat reclaimed / drained land. They are often subject to seasonal flooding and within this Study Area their quality is poor or medium.

Based on the soil mapping and examination of aerial photography, the majority of the land within the Study Area is categorised as good quality.

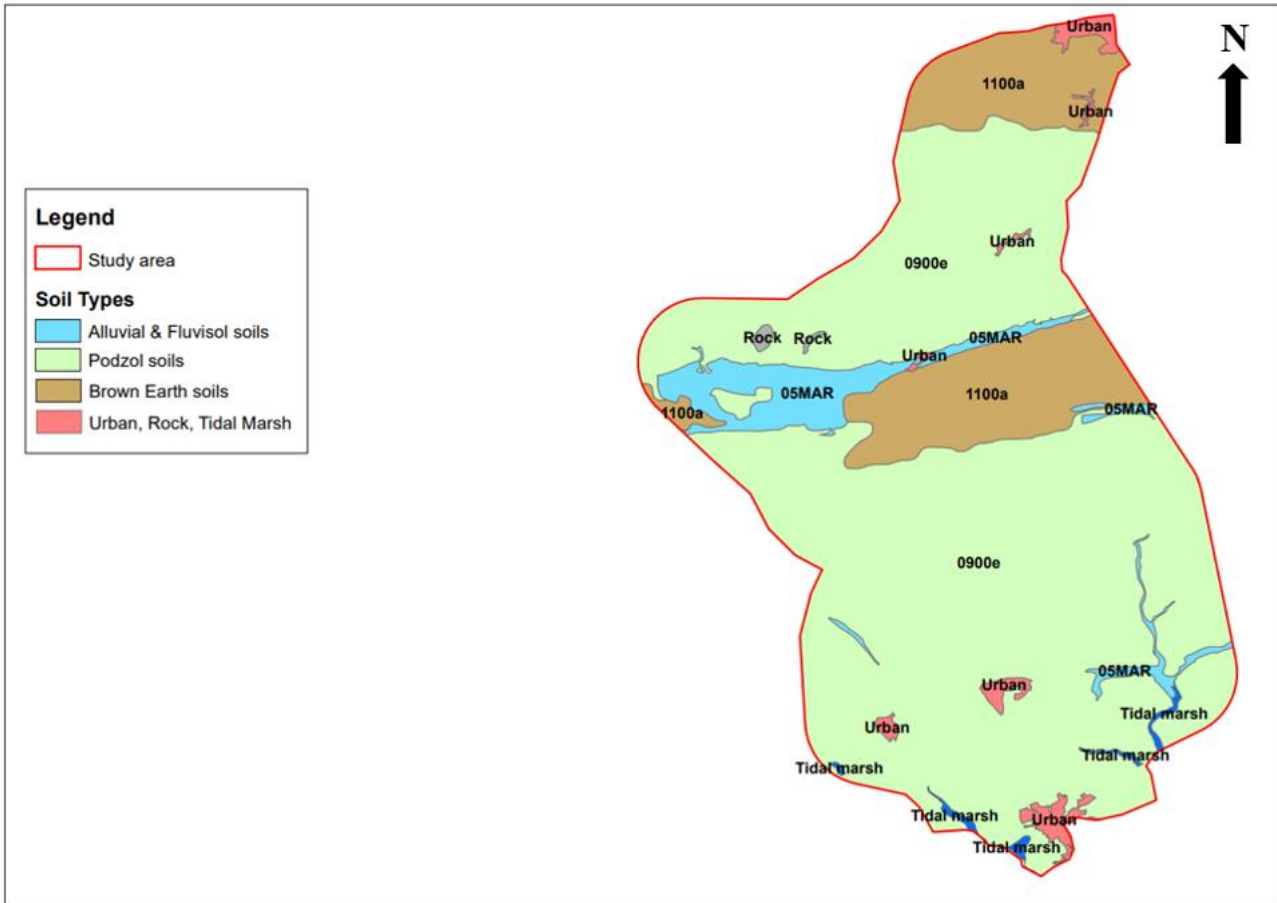


Figure 4-19 Soil Types within Study Area

Table 4-27 provides a breakdown of the farm enterprise types in County Cork.

Table 4-27 Farm Enterprise Types in County Cork

Enterprise Type	County Cork	National
Average farm size (ha)	38.7	33.4
Specialist Dairy (%)	28	11.5
Beef, sheep, grass cropping (%)	63	83
Tillage and Mixed crops and livestock (%)	7	5
Other (including equine farms and pig farms) (%)	2	1.5

The sensitivity of the farm enterprises is presented in Table 4-24. The national averages for specialist dairy farmers in Ireland is 11.5%. Table 4-27 shows that there is a higher proportion of dairy farmers within County Cork when compared to the national averages.

The land-use data indicates a low proportion of forestry and other non-agricultural uses. From the examination of aerial photography, a large number of dairy enterprises were noted, and these are illustrated in Figure 4-20. This CSO data combined with land use data, soils data and examination of aerial photography indicates a medium - high sensitivity for the Study Area.

4.10.3 Identified Constraints

The constraints include dairy and equine farms. The farming intensity in the Study Area is generally high throughout. However, there is variation. There are a large number of folio land parcels where dairy herds were noted, and these are presented as constraints in Figure 4-20. Severing a dairy farm would have high potential effects.

Farmyards are identified as agricultural constraints. Approximately 351 farmyards / facilities were identified - 93 dairy farmyards, 10 equine yards / facilities and one open farm (2 yards), along with 247 other farmyards which are assumed to be beef and or tillage and or sheep.

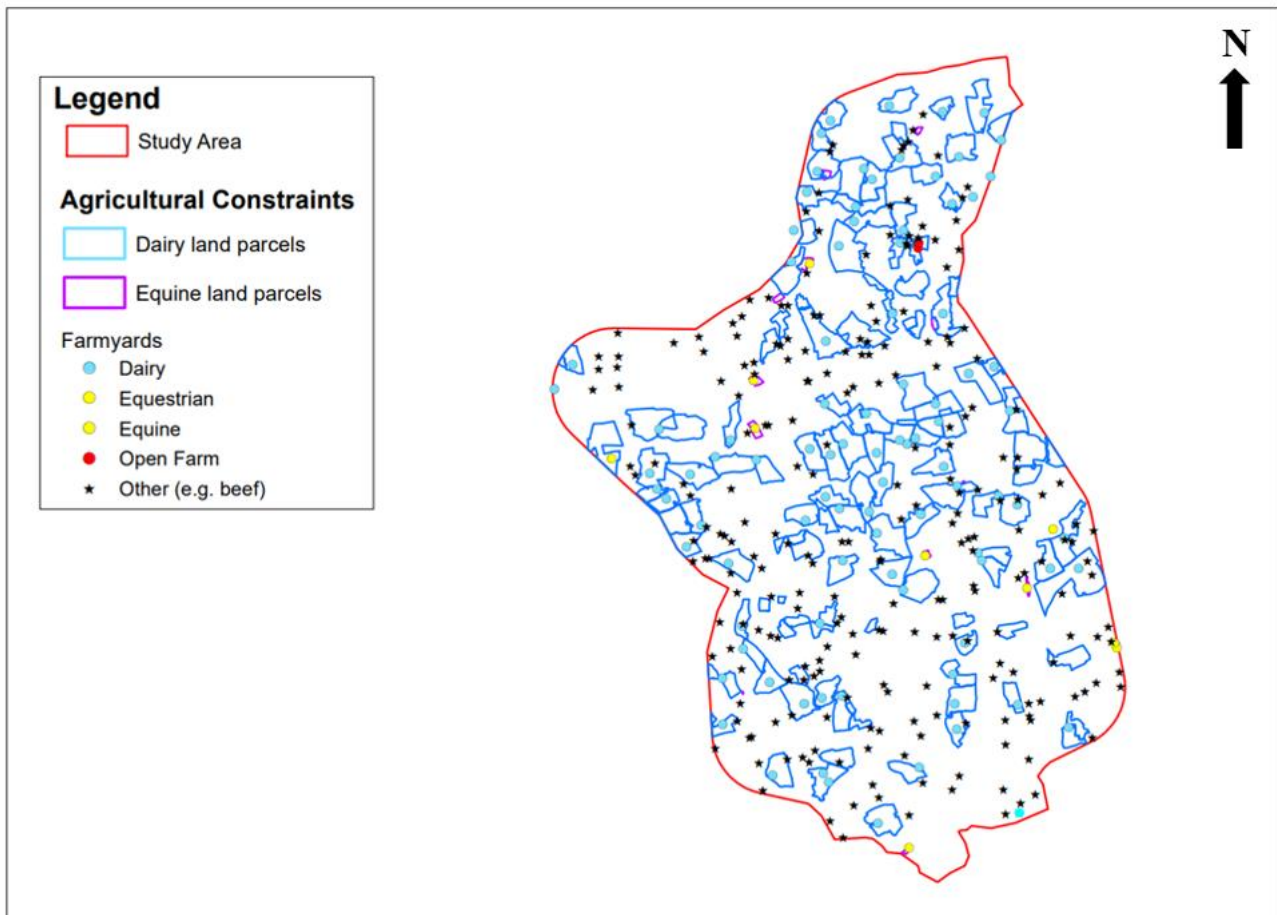


Figure 4-20 Agricultural Constraints within Study Area

In summary, the agricultural land quality is good overall. There are a high number of high sensitivity constraints such as dairy farms. Land quality is good within the Study Area. Farmyards are identified as agricultural constraints. Overall, the agricultural sensitivity of the Study Area is medium – high.

4.11 Air, Noise and Vibration

4.11.1 Introduction

This section details the air quality, noise and vibration aspects and constraints within the Study Area.

4.11.2 Existing Environment

The Environmental Protection Agency (EPA) Air Quality in Ireland 2022 Report (EPA, 2023)⁶¹ describes the air quality zoning adopted in Ireland under the Ambient Air Quality Standards Regulations, 2022⁶² as follows:

- Zone A (Dublin conurbation)
- Zone B (Cork conurbation)
- Zone C (24 cities and towns); and
- Zone D (rural Ireland: areas not in Zones A, B and C).

The majority of the Study Area falls within Zone D. However, the northern sections of the Study Area, which is located closer to Cork City, is located within Zone B.

Background pollutant levels from 2022, 2021, 2020, 2019 and 2018 air quality monitoring of NO₂, NO_x, PM_{2.5} and PM₁₀ for Zone D, as provided by the EPA, are presented in Table 4.28. Maximum annual concentrations are also highlighted.

Table 4-28 Annual Mean Background Pollutant Concentrations for Zone D

Year	Annual Average NO ₂ (µg/m ³)	Annual Average PM ₁₀ (µg/m ³)	Annual Average PM _{2.5} (µg/m ³)	Annual Average NO _x (µg/m ³)
Limit	40 µg/m ³	40 µg/m ³	25 µg/m ³	30 µg/m ³
2018	4.7	11.8	9.4	6.7
2019	5.7	14.3	9.3	7.8
2020	7.6	11.2	7.8	15.9
2021	7.5	11.9	8.7	14.2
2022	7.3	12.6	8.4	13.9
Maximum	7.6	14.3	9.3	15.9

The background concentrations listed in Table 4-28 are within the air quality standard limits for all pollutants.

Background pollutant levels from 2022, 2021, 2020, 2019 and 2018 air quality monitoring of NO₂, NO_x, PM_{2.5} and PM₁₀ for Zone B, as provided by the EPA, are presented in Table 4-29. Maximum annual concentrations are also highlighted.

Table 4-29 Annual Mean Background Pollutant Concentrations for Zone B

Year	Annual Average NO ₂ (µg/m ³)	Annual Average PM ₁₀ (µg/m ³)	Annual Average PM _{2.5} (µg/m ³)	Annual Average NO _x (µg/m ³)
Limit	40 µg/m ³	40 µg/m ³	25 µg/m ³	30 µg/m ³
2018	4.7	11.8	9.4	6.7
2019	5.7	14.3	9.3	7.8
2020	7.6	11.2	7.8	15.9
2021	7.5	11.9	8.7	14.2
2022	18.7	14.0	8.0	29.3
Maximum	18.7	14.3	9.3	29.3

⁶¹ Environmental Protection Agency (EPA (2023). Air Quality in Ireland 2022.

⁶² S.I. No. 739/2022 - Ambient Air Quality Standards Regulations 2022.

The background concentrations listed in Table 4.29 are within the air quality standard limits for all pollutants.

The EPA is the responsible body for coordinating the development of noise maps. These noise maps are used by the respective local authorities to prepare noise action plans. Transport Infrastructure Ireland (TII) is the noise mapping body responsible for preparing the strategic noise mapping.

The strategic noise maps give a graphical representation of weighted predicted annual average sound levels for road, rail, and airport noise sources. The purpose of the maps is that they be used as a strategic tool for large scale planning or policy matters. They are typically not suitable for local noise assessments. However, in the context of this feasibility study they are used indicatively to determine the approximate noise levels in the vicinity.

L_{den} is the day-evening-night noise indicator, and it represents the noise indicator for overall annoyance. It is 'weighted' to account for extra annoyance in the evening and night periods.

The Environmental Noise Directive⁶³ defines a L_{den} threshold of 55dB for reporting on the numbers of people exposed. These indicators are based on year-long averages of the day (07:00-19:00), evening (19:00-23:00) and night (23:00-07:00) time periods.

Based on the EPA road noise map data⁶⁴, the nearest National Primary Roads to the Study Area are the N71 and the N40. The R600 Regional Road which is located in the Study Area also appears on the EPA road noise map. These roads will likely contribute to the local noise environment within the Study Area. Refer to Figure 4-21 and Figure 4-22.

Strategic noise mapping of the N71 and the N40 shows how average decibel values within those road corridors are predicted to vary from >75dB within the carriageway to 55-60dB at a distance of up to approximately 900m from the carriageway (light orange).

Strategic noise mapping of the R600 shows how average decibel values within this road corridors are predicted to vary from >75dB within the carriageway to 55-60dB at a distance of up to approximately 250m from the carriageway (light orange).

Noise levels along the remaining sections of the Study Area are expected to be lower due to the provision of lower traffic volumes.

For context, 75dB is comparable to being next to a vacuum cleaner or a toilet flushing, 65dB is comparable to an acoustic piano, 60dB is comparable to a standard conversation or a boiling pot of water and 40dB would be the upper limit of barely audible.

⁶³ Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise.

⁶⁴ EPA (2023). EPA Maps.

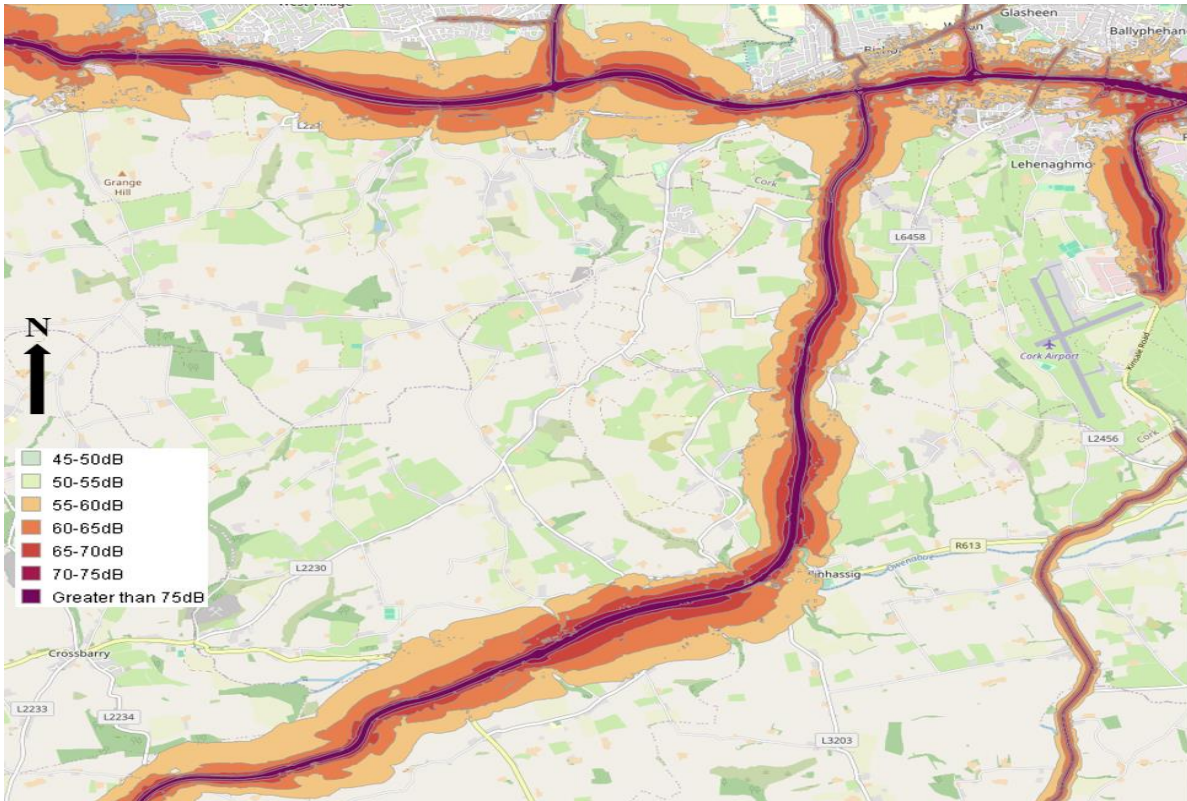


Figure 4-21 Strategic EPA Noise Round 4 Road (Lden) (daytime) within the northern section of the Study Area

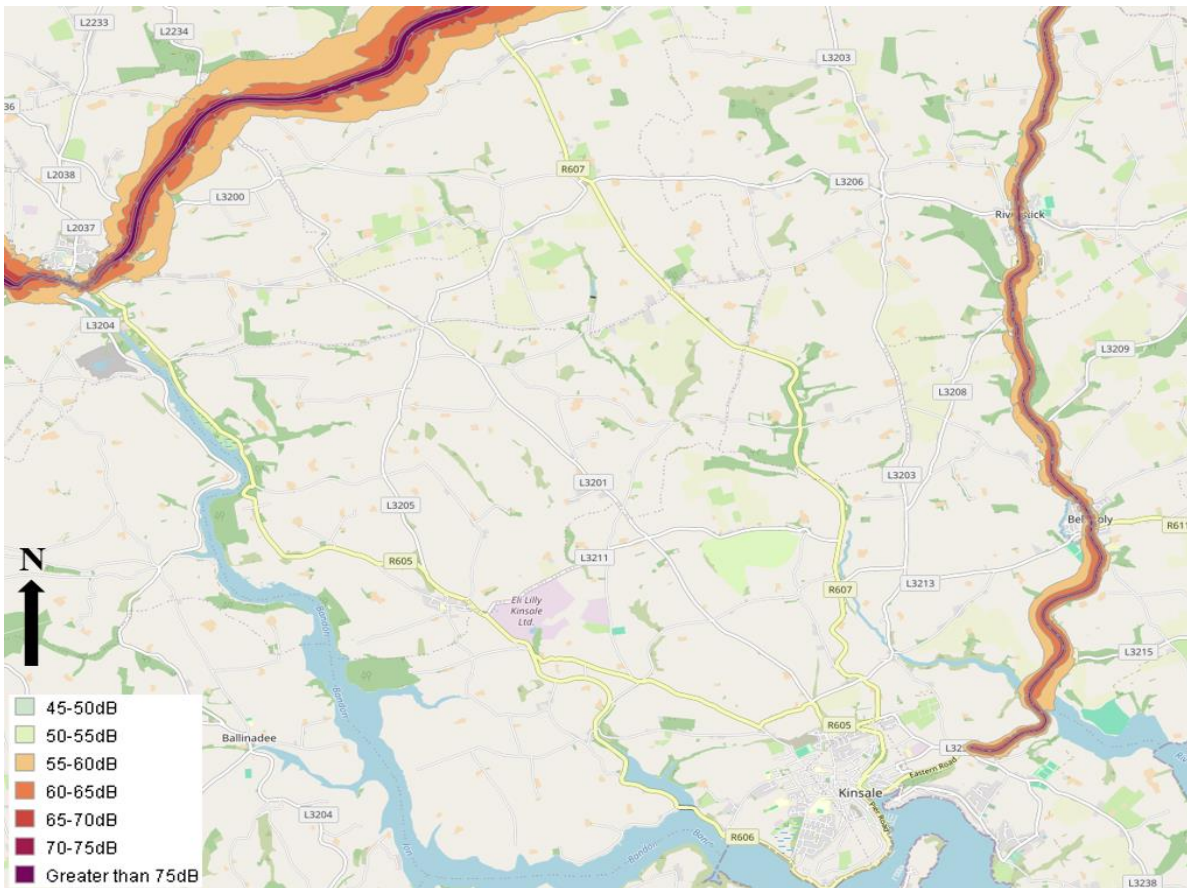


Figure 4-22 Strategic EPA Noise Round 4 Road (Lden) (daytime) within the southern section of the Study Area

4.11.3 Identified Constraints

Air pollution and noise levels within the Study Area are elevated in the areas of higher traffic volumes but are expected to improve where lower traffic volumes are present.

The Project has the potential to reduce noise and vibration impacts and improve air quality due to the potential for reductions in traffic volumes realised by the scheme, and as people are provided with facilities to pursue more sustainable transport modes.

Construction activities will have the greatest potential to generate dust, noise, and vibration. These activities will need to be assessed and managed to ensure that the Project will not have a significant impact on local sensitive receptors.

4.12 Population and Human Health

4.12.1 Introduction

One of the principal concerns in the progression of any linear development is to ensure that people, as individuals or communities, do not experience a decrease in their quality of life due to any direct, indirect, or cumulative effects arising from the construction, operation, and decommissioning of a development. Ultimately, all the impacts of a development impinge on human beings, directly and indirectly, positively, and negatively.

4.12.2 Existing Environment

This socio-economic study of the receiving environment included an examination of the population and employment characteristics of the Study Area. Information regarding population and general socio-economic data was sourced from the Central Statistics Office (CSO).

In order to assess the population in the vicinity of the proposed development, the Study Area for the population section was defined in terms of the census towns in County Cork. Seven towns included in the census are located within the Study Area.

According to the 2022 Census results⁶⁵, the Cork City Council local authority area has a population of 224,004, while the Cork County Council local authority area has a population of 360,152.

Seven towns included in the census (including Cork City and suburbs) are located within the Study Area. Refer to Table 4-30 for the population breakdown in the seven towns.

Table 4-30 Cork Study Area Population 2022

Census Town	Population (2022)
Cork City and suburbs	222,526
Halfway	252
Crossbarry	399
Riverstick	772
Belgooly	823
Dunderrow	213
Kinsale	5,991

4.12.3 Identified Constraints

During the construction phase of the proposed development, there is the potential for negative impacts on sensitive receptors (houses, hospitals, schools etc.) in proximity to the Study Area, due to the construction works.

⁶⁵ CSO, 2022 – Central Statistics Office, Table F1001, Population at Each Census, 2022

However, during the operational phase of the proposed development, the quality of residential amenity will be improved through the provision of a positive recreational amenity in proximity to those receptors. The cycleway will also encourage active travel (walking and cycling) in the Study Area, thereby potentially improving human health.

4.12.4 Benefits and Opportunities

One of the principal health benefits of the Project is the provision of facilities which enable physical activity in a safe environment for all, by the need to connect rural communities using sustainable modes for short trips and strengthen rural economies and communities, whilst enhancing amenity, heritage, and provision of an alternative mode of transport for commuters.

Increasing the levels of walking and cycling is widely regarded as beneficial because of the improvements in public health. In broad terms, the Project presents the following benefits and opportunities from a human health and population perspective:

- Improved health and wellbeing
- Provision of convenient, accessible, inclusive, and inexpensive space for physical activity, thereby increasing opportunities for daily exercise.
- Economic growth
- Stimulation of job growth and revenue in tourism and recreation.
- Reversal of rural decline
- Tourism benefits; and
- Improved access to rural and cultural heritage.

4.13 External Parameters

4.13.1 Funding and scope

The project is currently being brought through Phase 1 – Concept and Feasibility of the TII Project Management Guidelines (PMG's).

Cork County Council is the Sponsoring Agency for this Greenway project. Transport Infrastructure Ireland are the Approving and Funding Authority. The aim of this project is to provide a public walking / cycling trail from Cork City to Kinsale.

The cost of the Project is dependent on the preferred solution and will be developed as the project progresses.

4.13.2 Technical Standards

This Project shall be delivered using the following (non-exhaustive list of) standards, codes of practice and guidance documents:

- TII's Design Standards including:
 - DN-GEO-03047 Rural Cycleway Design (Offline & greenway)
- Transport Infrastructure Ireland's (TII) Project Management Guidelines (PMGs) including:
 - PE-PMG-02047 Project Manager's Manual for greenway projects
 - PE-PMG-02041 Project Management Guidelines
- TII's Project Appraisal Guidelines (PAGs) including:
 - PE-PAG-02036 Project Appraisal Guidelines for National Roads Unit 13.0 – Appraisal of Active Modes

- PE-PAG-02041 Project Appraisal Guidelines for National Roads Unit 2.2 - Strategic Assessment Reports for Active Modes and greenways
- PE-PAG-02012 Project Appraisal Guidelines Unit 3.0 - Feasibility Report
- TII’s Planning & Evaluation Guidance including:
 - PE-ENV-01104 Climate Guidance for National Roads, Light Rail, and Rural Cycleways (Offline & Greenways) - Overarching Technical Document
 - PE-ENV-01105 Landscape and Visual Impact Assessment Standards
- TII’s Cost Management Manual - PE-PMG-02044 Cost Management Manual
- TII Research including:
 - RE-ENV-0708 Environmental Planning of National Road and greenway projects
- Code of Best Practice for National and Regional Greenways
- Greenways and Cycle Routes Ancillary Infrastructure Guidelines, Jan 2022
- Strategy for the Future Development of National and Regional Greenways by the Department of Transport
- NTA’s National Cycle Manual
- Design Manual for Urban Roads & Streets
- Creation and Impact of Quiet Roads Briefing Paper, Dec 2020

4.13.3 Access Control

The Project need is underpinned by the necessity to provide facilities which enable physical activity in a safe environment for all, by the need to connect rural communities using sustainable modes for short trips and strengthen rural economies and communities, whilst enhancing amenity and heritage.

Control measures will be required to prevent access to the Greenway by motorised users, horses and/or other unpermitted users. However, control measures must provide “Universal Access” and be considerate of the needs of a variety of different modes (e.g. cargo bikes, tandems, special bikes, wheelchairs, etc.) and abilities.

The following “*Access Control Principles*” are set out in the *Greenways and Cycle Routes Ancillary Infrastructure Guidelines*:

- “*Routes are designed for a specific range of users. The inappropriate use of the Route may be prevented through the use of access controls.*”
- “*Route users should be able to travel unimpeded along the Route. Access control features should not impede travel by requiring cyclists to dismount, prevent access for prams, wheelchairs, or particular bike types such as cargo bikes and bikes with panniers.*”
- “*Access control infrastructure should not industrialise or overwhelm the recreation and green theme of the Route concept.*”
- “*Community ownership of the Route is preferable, and it is potentially more effective at preventing the inappropriate use of the Route than access controls.*”
- “*Local byelaws should be referred to when considering the location and design of access control points*”.

4.13.4 Policy Documents

The policies discussed in Section 2.3 of this document demonstrate that the Government places a significant emphasis on Active Travel and activity tourism.

4.13.5 Procedural and Legal Requirements

As part of any Constraints Study, consideration of procedural and legal issues, which may arise during the design and construction process, must be considered as early as possible so as not to delay the timely completion of the Project. On this basis the following should be noted at the appropriate stages:

- European and Irish environmental legislation
- Amendments to and new Local Authority Development Plans
- Developments and amendments to guidelines, codes of practice, design documents and standards relating to design, environmental assessment / mitigation and/or legal aspects of Greenway design and construction.
- Amendments to the land acquisition process including amendments to the process set out in the Code of Best Practice for National and Regional Greenways.
- Requirements under Section 50 of the 1945 Arterial Drainage Act for the construction or alteration of any bridge or culvert over any watercourse.
- Rights of statutory undertakers
- Wayleaves, public and private rights of way
- Site investigation notices and rights of access

5. Conclusions

This Constraints and Opportunities Report introduced the Study Area, outlined previous studies and summarised the list of constraints and opportunities identified within the Study Area to date. The constraints and opportunities database for the project will be continuously updated as the project progresses based upon more detailed studies and information gained through feedback from landowners within the study area, the general public and other stakeholders.

As set out in Section 2.3 there is a significant amount of National, Regional and Local policy which either reference the Cork to Kinsale Greenway or the project aligns with the objectives of the strategies.

The Study Area developed as part of this report covers approximately 153 km² between Cork City and Kinsale and includes the towns and villages of Waterfall, Ballinhassig, Halfway, Crossbarry, Riverstick, Belgooly, Dunderrow and Kinsale as well as other settlements in the rural hinterland.

A non-exhaustive summary of constraints and opportunities identified in Section 4 of this report is provided below.

The study demonstrates that a public walking / cycling trail has the potential to connect to a number of settlements, features of interest and facilities within the Study Area. A review of existing facilities returned that the absence of continuous non-motorised road user facilities is a barrier to Active Modes and a continuous public walking / cycling trail would offer the opportunity to address this constraint.

The constraints and opportunities study identifies that there are no Designated Sites (SACs SPAs or NHAs) within the Study Area or within 2km of the Study Area boundary. However, a hydrological connectivity has been identified between the Study Area and the Cork Harbour SPA. Additionally, no pNHAs were identified within the Study Area for the Project. However, a number of pNHAs were identified within 2km of the Study Area boundary. Any development that is located within or nearby a SAC or SPA carries an inherent associated planning risk, and at this stage of the design and route selection process it is not possible to conclude that there is no potential for any of the Corridor Options to result in adverse effects on the Cork Harbour SPA.

The study identified records of a wide range of protected flora and fauna species located within the Study Area. These include species protected under the Wildlife Act, as well as the EU Habitats Directive and Birds Directive. At further stages of development, ecological surveys will be required to inform the proposed route of the Greenway.

The study includes a cultural heritage review which identified a number of National Monuments and Recorded Monuments from the prehistoric period, early medieval, medieval and post-medieval periods, recorded buildings and a number of designed landscapes dating to the 18th and 19th centuries within the Study Area. The most obvious heritage feature identified is the route of the former railway, which possesses multiple associated heritage features and could be utilised to provide additional information on the surrounding landscape. The review advises that a Greenway located in the immediate vicinity of a National Monument, Recorded Monument, NIAH structure or area of archaeological, architectural or cultural heritage merit has the potential to impact directly or indirectly on same. However, it also goes on to acknowledge that these sites also offer opportunities to enhance local amenity and a visitor's experience.

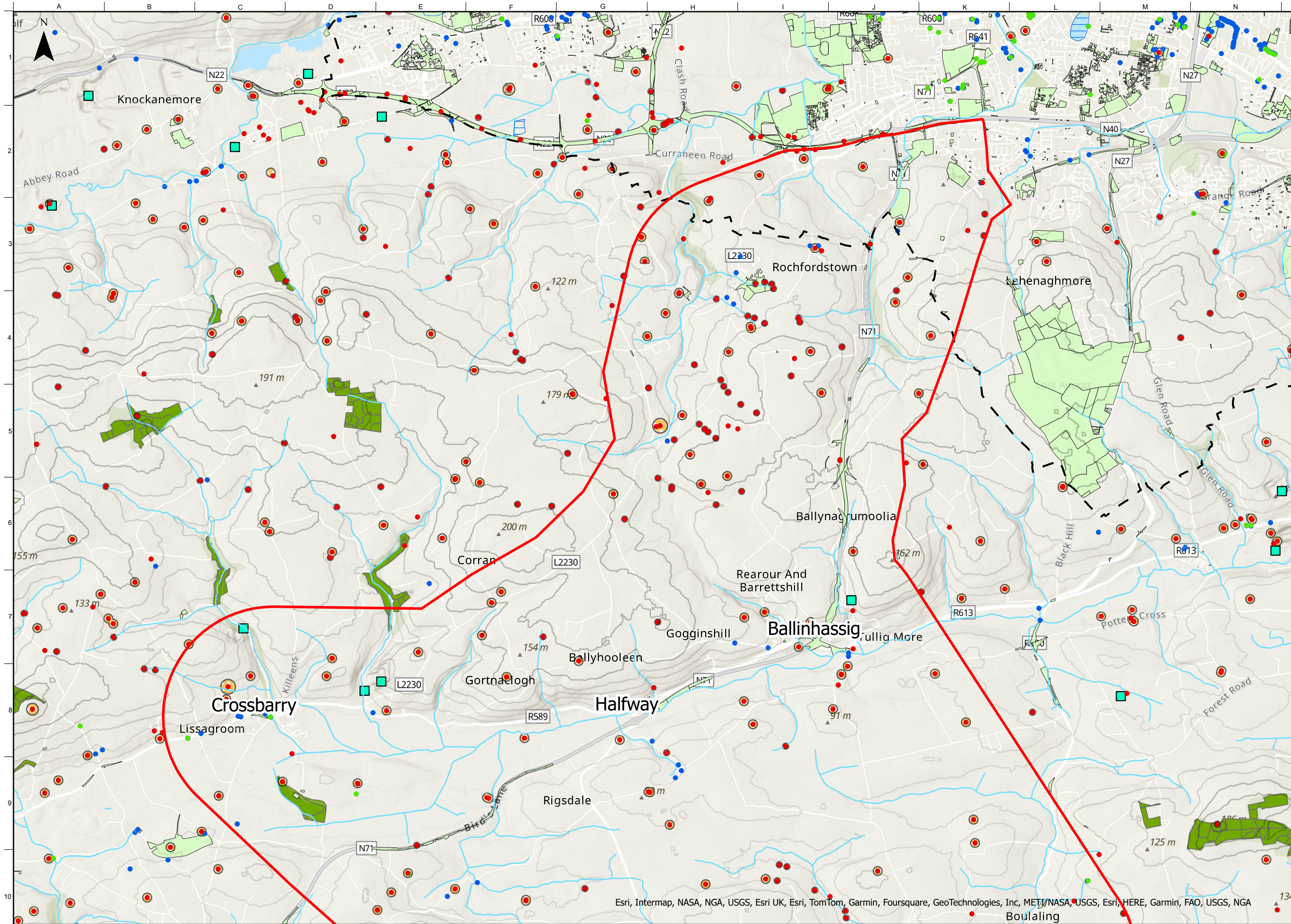
The constraints study has identified that farming intensity in the Study Area is generally high throughout and that the agricultural land quality is good overall. There are a high number of high sensitivity constraints such as dairy farms. Land quality is also good within the Study Area and farmyards have identified as agricultural constraints.

The study identifies that a greenway has the potential to connect a significant number of destinations and attractions through direct connection or short spurs and would guarantee users lots to see and do along the route and would be a welcome boost for the region both in terms of local amenity and visitor related revenue.

To develop a solution that can minimise the impacts on the identified constraints as much as is practicable, whilst maximising the benefits associated with the opportunities, a robust route selection process will be adhered to in line with the relevant guidance referenced within this report, including appropriate stakeholder engagement and consultation throughout the process.

Appendix A

Overview of Phase 1 Study Area

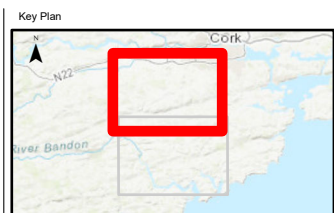


- FOR INFORMATION**
- Study Area
 - Cork City Boundary
 - Contour
 - 0 - 40
 - 41 - 80
 - 81 - 120
 - 121 - 180
 - National Monuments Service - SMR Sites
 - Record of Protected Structures
 - National Inventory of Architectural Heritage
 - Historic Pit Quarry Locations
 - Rivers
 - Proposed Natural Heritage Area (pNHA)
 - SMR Zones of Notification
 - Property Registration Authority (PRA) State Assets
 - Coillte Forest Inventory

Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Esri, HERE, Garmin, FAO, USGS, NGA

© Tailte Éireann Surveying. All rights reserved. Licence number CYAL50369199

Notes
Disclaimer Note:
 The Constraints shown is draft only and subject to change. More detailed assessments, on-going studies and the information received from the public may result in changes to the Constrains display and Proposed Study Area.



Job Title
Cork to Kinsale Greenway

Scale 1:50000 @A3

Role PDV - Planning Development & Legal

Date January 2024

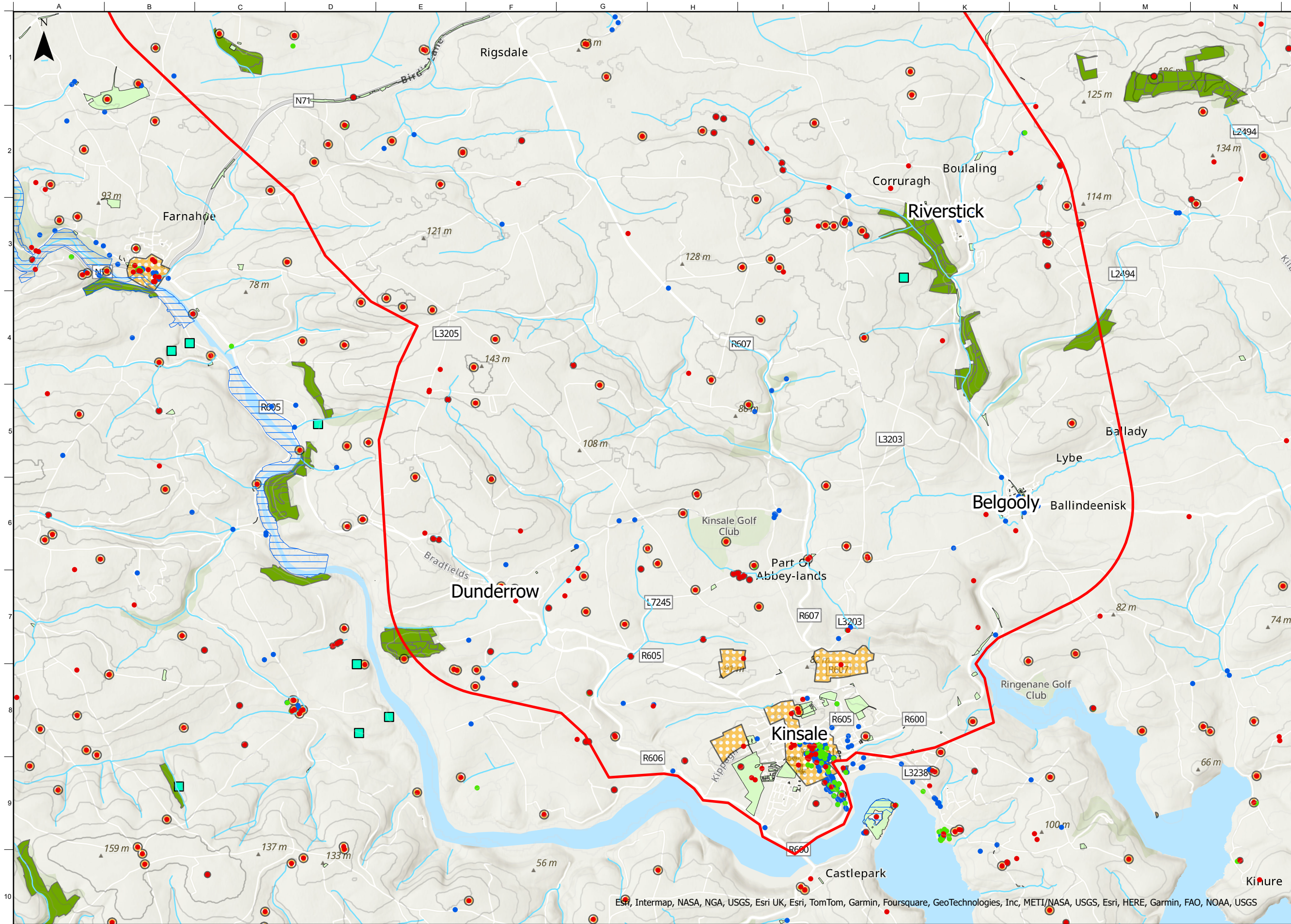
Issue	Date	By	Chkd	Appd
P01	30/01/2024	DMcF	AM	MA

Drawing Title
Study Area Plan Sheet 1 of 2

Suitability
S2 - Suitable for Information

Job No 297194 Figure ID Rev. P01

Drawing No
CKG-ARP-PDV-P1-DR-001



- FOR INFORMATION**
- Study Area
 - Cork City Boundary
 - Contour
 - 0 - 40
 - 41 - 80
 - 81 - 120
 - 121 - 180
 - National Monuments Service - SMR Sites
 - Record of Protected Structures
 - National Inventory of Architectural Heritage
 - Historic Pit Quarry Locations
 - Rivers
 - Proposed Natural Heritage Area (pNHA)
 - SMR Zones of Notification
 - Property Registration Authority (PRA) State Assets
 - Coillte Forest Inventory

Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS

© Tailte Éireann Surveying. All rights reserved. Licence number CYAL50369199

Notes
Disclaimer Note:
 The Constraints shown is draft only and subject to change. More detailed assessments, on-going studies and the information received from the public may result in changes to the Constrains display and Proposed Study Area.



Job Title
Cork to Kinsale Greenway

Scale 1:50000 @A3

Role PDV - Planning Development & Legal

Date January 2024

Issue	Date	By	Chkd	Appd
P01	30/01/2024	DMcF	AM	MA

Drawing Title
Study Area Plan Sheet 2 of 2

Suitability
S2 - Suitable for Information

Job No 297194 Figure ID Rev. P01

Drawing No
CKG-ARP-PDV-P1-DR-002

Appendix B

Cork Harbour SPA Site Synopsis

SITE SYNOPSIS

SITE NAME: CORK HARBOUR SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poul nabibe inlets.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Some shallow bay water is included in the site. Rostellan Lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank, Black-headed Gull, Common Gull, Lesser Black-backed Gull and Common Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl. Of particular note is that the site supports internationally important populations of Black-tailed Godwit (1,896) and Redshank (2,149) - all figures given are five year mean peaks for the period 1995/96 to 1999/2000. Nationally important populations of the following 19 species occur: Little Grebe (57), Great Crested Grebe (253), Cormorant (521), Grey Heron (80), Shelduck (2,009), Wigeon (1,791), Teal (1,065), Mallard (513), Pintail (57), Shoveler (103), Red-breasted Merganser (121), Oystercatcher (1,809), Golden Plover (3,342), Grey Plover (95), Lapwing (7,569), Dunlin (9,621), Bar-tailed Godwit (233), Curlew (2,237) and Greenshank (46). The Shelduck population is the largest in the country (over 10% of national total). Other species using the site include Mute Swan (38), Whooper Swan (5), Pochard (72), Gadwall

(6), Tufted Duck (64), Goldeneye (21), Coot (53), Ringed Plover (73), Knot (26) and Turnstone (113). Cork Harbour is an important site for gulls in winter and autumn, especially Black-headed Gull (3,640), Common Gull (1,562) and Lesser Black-backed Gull (783), all of which occur in numbers of national importance. Little Egret and Mediterranean Gull, two species which have recently colonised Ireland, also occur at this site.

A range of passage waders occurs regularly in autumn, including such species as Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

Cork Harbour has a nationally important breeding colony of Common Tern (102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its populations of Black-tailed Godwit and Redshank. In addition, it supports nationally important wintering populations of 22 species, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Little Egret, Golden Plover, Bar-tailed Godwit, Ruff, Mediterranean Gull and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it. Cork Harbour is also a Ramsar Convention site and part of Cork Harbour SPA is a Wildfowl Sanctuary.