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Ecological Impact Assessment (EclA)Report

Proposed Cuan na Loinge road coastal flooding mitigation project.

Project Title: Ecological Impact Assessment Report (EclA) for Proposed
Cuan na Loinge road coastal flooding mitigation project.

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1.0 Introduction

It is proposed to undertake road improvement works to alleviate coastal flooding on a c. 200 metre stretch of the L-52214, including its junctions with two side roads, in Cuan Na Loinge, Ceantar na nOileán, Co. Galway.

This stretch of the L-52214 is frequently inundated by seawater during high tides and storm surge events, impacting the access to up to 17 residences in the area.

The objective of the project is to raise the road level to minimise the impact of coastal flooding, without significantly altering the existing road footprint, road safety, tidal patterns or water flows.

Fitzsimons Walsh Environmental Limited has been appointed to prepare this Ecological Impact Assessment (EclA) for the proposed development.

The EclA has been prepared with regard to the Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) guidelines; 'Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine'.

The main objectives of the EclA are:

- To obtain baseline ecological data at the proposed development site
- To assess the potential impacts, including direct, indirect and cumulative impacts which may result from the proposed works during construction and operation
- To recommend mitigation measures as appropriate to avoid and / or reduce impacts to the identified ecological features

The potential impacts of the proposed development on Natura 2000 sites (Special Areas of Conservation and Special Protection Areas) have been evaluated separately in the form of a Natura Impact Statement (submitted separately with the Planning Application documentation). The EclA provides a summary of potential pathways and effects but defers to the conclusions of the NIS in respect of impacts on the integrity of Natura 2000 sites

2.0 Project Description

2.1 Location

The site, located at ITM coordinates (E492947, N729964) on local road L-52214, approximately 4km northeast of Leitir Móir, Co. Galway. The site is bounded by transitional waterbodies to the north and west. The site is bounded by privately owned lands to the south and east. Ref figures 2.1 and 2.2



Figure 2.1 Site Location



Figure 2.2 Aerial view. March 2025

2.2 The Proposed Works

The proposed road improvement project, commissioned by Galway County Council, is located on c. 200 metre stretch of Local Road L-52214, including its junctions with two side roads, in Cuan na Loinge, Ceantar na nOileán, Co. Galway.

The objective of the project is to raise the road level to minimise the impact of coastal flooding without altering the existing road footprint or adversely affecting tidal patterns and water flows within the adjacent lagoonal and saltmarsh system.

The scheme is located entirely within the Kilkieran Bay and Islands SAC (site code 002111) and in immediate proximity to Loch Fhada Upper Pools (IL054), a designated 1150* Coastal Lagoon priority habitat of high conservation value. The ecological sensitivity of this location has been a primary design constraint throughout the development of the scheme.

Road Raising and Embankment

The flood containment solution raises the road to finished levels ranging from EL 3.57 mOD to EL 3.99 mOD, representing an average increase of approximately 0.5 m above the existing level, with a maximum increase of 0.8 m at specific locations as shown on the engineering drawings (Langan Consulting Engineers).

A rock armour embankment with a natural stone roadside wall will be constructed along the route, with a parapet wall height of 0.8 m above the new road surface. The embankment slope is 1:1.5 on the fill face. A critical design constraint is that the proposed road edge, stone wall, and all associated works remain entirely within the existing road and embankment footprint at all points along the scheme length.

The proposed embankment toe will not extend beyond the existing embankment toe on the northern (lagoon/SAC) side at any point. The proposed works do not encroach on the Annex I habitat boundary at any station.

Culvert Works

Five existing culverts pass beneath the road, providing the hydrological connections between the lagoon water bodies and tidal channels on either side of the embankment and maintaining the tidal exchange essential to the ecological integrity of IL054.

The proposed works includes to replace five existing culverts and headwalls on a like-for-like basis if required.

It was not possible to carry out site investigation works on the culverts pre planning. It is intended to expose each culvert during the works. If a culvert is deemed to be functional, it is proposed to retain it. If a culvert is found to be in poor condition, it is proposed to replace it like for like.

The existing pipe diameter, invert level, alignment, gradient, and length will be preserved at each location.

The full hydrological and ecological impact assessment of the culvert works is detailed below and in the accompanying Natura Impact Statement (FWE, 2026).

Table 2.1 Construction Sequence and Methodology

Phase	Detail
Site Preparation and Traffic Management	Erect temporary traffic signage and barriers in accordance with Chapter 8 of the Traffic Signs Manual. Install silt fencing and sediment traps around works areas to protect adjacent aquatic features, particularly on the northern (lagoon) side of the scheme. Identify and mark utilities using a utility survey and Ground Penetrating Radar (GPR) where required. Establish buffer zones around all five culvert locations prior to commencement of culvert works.
Culvert Renovation	Excavate around existing culverts under controlled conditions. If the culvert is in good condition, no further works will be done. If the culvert is in poor condition, it is proposed to replace it like-for-like, preserving existing diameter, invert level, alignment, and gradient. Headwalls will be dealt with similarly. Then the embankment will be backfilled and compacted in 150 mm layers with 6P graded granular fill material. Works at culverts will be carried out at low tide periods. Where this is not possible, bypass pumping will be implemented to maintain tidal flow continuity. Works at each culvert are to be phased sequentially, with flow restored before works commence at the next location.
Road Raising and Layer Construction	Excavate existing road surface to formation level. Construct road build-up using the following layers: Capping Layer: 600 mm of 6F2 material compacted to 95% MDD; Sub-base Layer: 150–225 mm of Type 1 granular material to Clause 804; Base Course: 60 mm Dense Bitumen Macadam (DBM); Wearing Course: 40 mm Close-Graded Macadam or SMA 10 surface. All layers to be tested for compaction and compliance.
Stone Wall and Rock Armour	Construct a natural stone roadside wall to parapet height of 0.8 m above the new road surface. Place rock armour embankment within the existing embankment footprint, at 1:1.5 slope, not extending beyond existing embankment toe on northern side at any station.
Final Works and Restoration	Install fuel and oil interceptors as part of the road drainage design. Install road markings and signage as required. Remove temporary traffic management and demobilise site. Conduct post-construction inspection of all five culverts to confirm tidal flow and prepare as-built records.

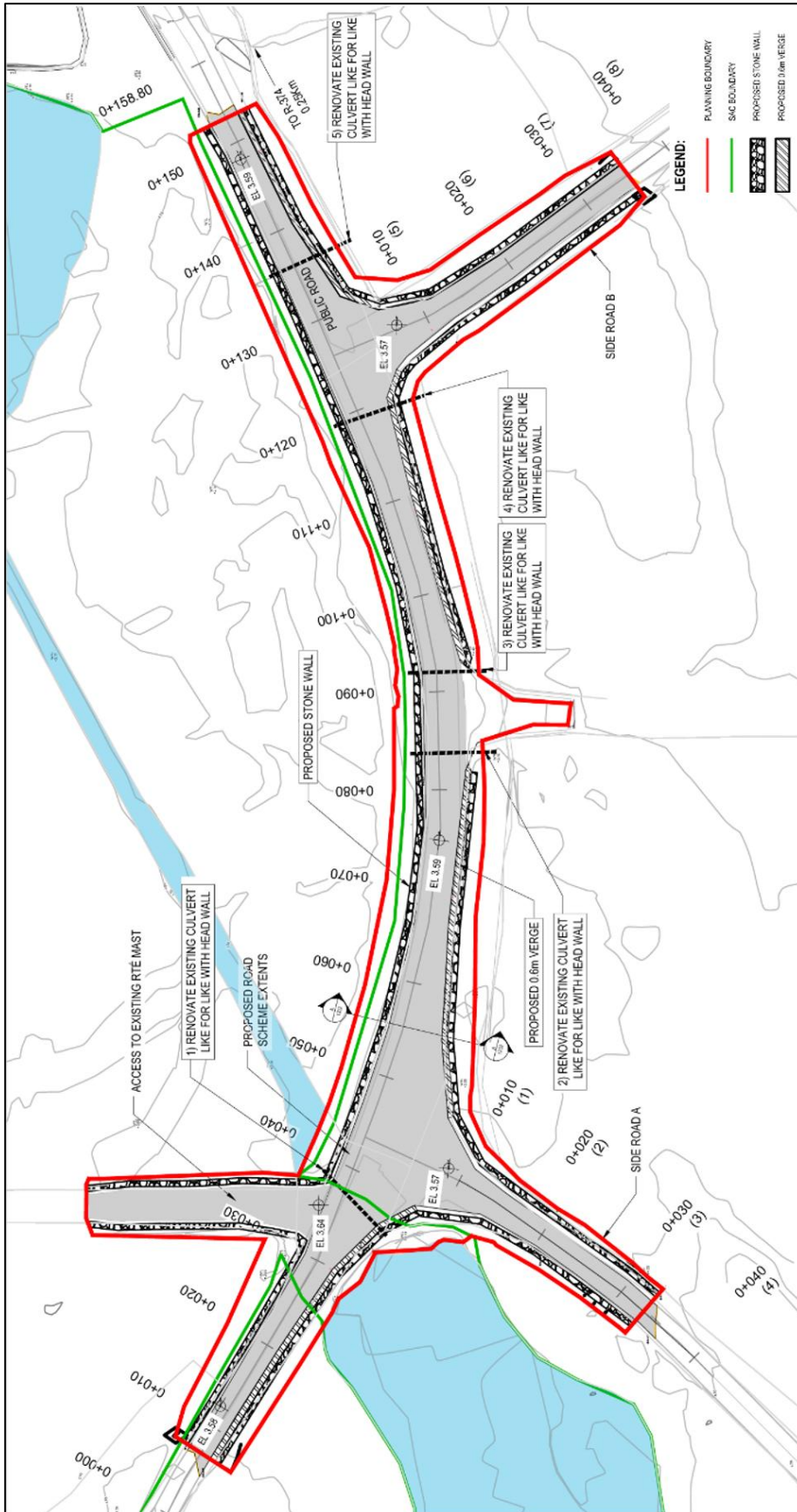


Figure 2.3 Site layout

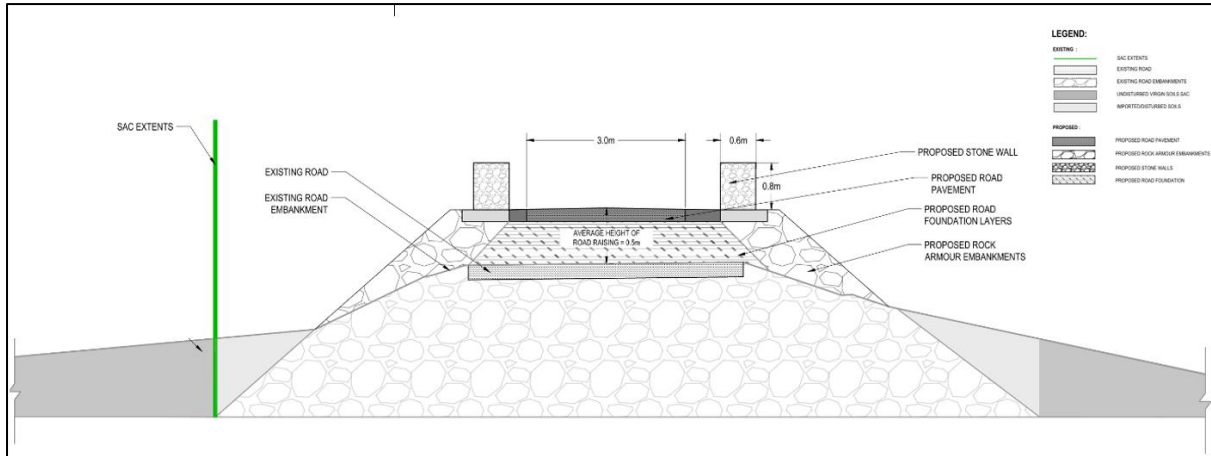


Figure 2.4 Typical cross-section

3.0 Methodology

3.1 Statement of Authority

This report has been prepared by Oliver Fitzsimons BSc and Catherine Howarth BSc. with significant contributions by Roger Goodwillie MSc.

Mr. Fitzsimons holds a bachelor's degree in Environmental Science and Technology from Atlantic Technological University Sligo. Mr. Fitzsimons has been granted a Master of Science degree in Applied Science by the University of Limerick and a Master of Science degree in geographic information systems from the University of Ulster. Mr. Fitzsimons has 25-years' experience in the field of environmental management and impact assessment and control and has participated in the planning of significant projects across the Island of Ireland including mining, wind energy infrastructure and road infrastructure.

Ms. Howarth BSc, Consultant Ecologist holds a bachelor's degree in Conservation Biology and Ecology from the University of Exeter, a Certificate in Ecological Consultancy from ETUK and a PGCE in secondary science from the University of Chester. Catherine has over 16 years' experience in habitat monitoring and surveying, report writing, science communication and education.

Roger Goodwillie B.A.(Mod.), M.Sc., MCIEEM. holds qualifications in Botany from Trinity College Dublin and has over 40 years' professional experience in ecological survey, habitat assessment, and botanical analysis in Ireland, with particular expertise in coastal, wetland and Annex I habitat systems. He is a full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

3.2 Legislation, Policies and Guidance

The EclA has been prepared in accordance with the following legislation and guidelines:

- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), as amended. With particular reference to the Third Schedule of the European Communities Regulations 2011 (S.I. No. 477 of 2011), which deals with invasive species;
- The EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU;
- European Union (EU) (Environmental Impact Assessment and Habitats) (No. 2) Regulations 2015 (S.I. No. 320/2015);
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, herein referred to as the Habitats Directive;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, herein referred to as the Birds Directive;
- The EU Water Framework Directive (2000/60/EC);

- The Wildlife Acts 1976 to 2020 (as amended), herein referred to as the Wildlife Acts;

The potential for effects on nature conservation interests have been assessed, taking into consideration the habitats and species that are likely to be affected by the proposed development. This approach included consideration (as appropriate) of the following guidance documents:

- Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009, February 2010) and the European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011)
- CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester;
- EPA (2017). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Draft, August 2017;
- Fossitt (2000). A Guide to Habitats in Ireland. The Heritage Council;

3.3 Zone of Influence (Zol)

The current guidance on ecological assessments (CIEEM, 2018)¹ states that:

“The ‘zone of influence’ for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries” and that “The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change.”

The Zol has been defined with regard to the sensitivity of habitats and species likely to be present / previously recorded in the locality of the proposed development site, areas with connectivity (physical, hydrological or ecological) and potential impacts which may arise from the proposed development.

The scale of the works is small and will be limited to the road improvement works only. The landscape at and in the vicinity of the proposed works is rural in nature as defined by the 2018 CORINE landcover dataset, is classified as ‘Inland Wetlands (Peat bog)’. The bedrock of the site is Errisbeg Townland Granite (Megacrystic pink/grey monzogranite). The land is primarily used for low-intensity agriculture, such as sheep grazing, and contains extensive areas of blanket bog and heathland. The proposed development intersects and lies adjacent to hydrologically sensitive features including Loch Fhada Upper Pools, Loch Fhada, and downstream transitional waters leading to Camus Bay. The site is classified as having extreme groundwater vulnerability, with a strong surface–groundwater interaction regime. The underlying aquifer is classified as Poor. The River

¹ CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland.

Derrynea emerges from the Loch Fhada Upper Pool system and flows from east to west to Loch an Aibhinn before entering Camus Bay. The river water body status of Derrynea is good.

- With this in mind, the ZOI is the area in the immediate vicinity of the works and the wider downstream surface water network.

3.4 Establishing the Baseline/existing environment

3.4.1 Desktop Study

An ecological desktop study of the proposed development site has been undertaken to inform the assessment. Principal sources of information utilised for the desktop assessment included:

- Existing relevant mapping and databases e.g. species and habitat distribution. (sourced from the EPA), the National Biodiversity Data Centre [NBDC] and the NPWS;
- Published and unpublished NPWS reports on protected habitats and species, including Irish Wildlife Manual reports, Species Action Plans and Conservation Management Plans
- A review of all NPWS site synopses for designated sites within the ZOI of the proposed development
- Conservation Status Assessment Reports (CSARs), Backing Documents and Maps prepared in accordance with Article 17 of the Habitats Directive

3.4.2 Field Surveys

The following Ecological field surveys were carried out:

- Preliminary site visit: 24th October 2024
- Multi-disciplinary walkover survey including Otter survey: 14th February 2025
- Multi-disciplinary walkover and habitat survey 26th May 2025
- Targeted habitat survey (Goodwillie, March 2026)

Surveys objectives:

- To chronicle existing habitats and species in the environs of the proposed works
- To determine the presence or absence of habitats and species of ecological value/significance, including Annex I habitats and Annex II and IV species, bird species protected under the EU Birds Directive, Wildlife Act species and Flora Protection Order (FPO) plant species.
- To assess the suitability of the habitats within the proposed development site to support protected species.

At the request of An Coimisiún Pleanála (ACP), a targeted ecological survey was undertaken in March 2026.

The objective of the 2026 survey was to define the extent of:

- The overlap between the application boundary, extent of the proposed works, the SAC boundary and Annex I habitat.
- The Impact on Annex I habitat, as defined by its attributes and targets as detailed in the site-specific conservation objectives document for Kilkieran Bay and Islands SAC.
- The habitats providing a supporting function to the annex habitat.
- The habitats of biodiversity value beyond the Natura designation(s).

Ecological receptors were surveyed using methodologies outlined in Guidelines for Ecological Impact Assessment in Ireland (CIEEM, 2018). Habitat mapping was carried out by ecologist Catherine Howarth, using Best Practice Guidance for Habitat Survey and Mapping (Smith. Et.al., 2011).

4.0 Baseline Evaluation Criteria

Ecological resources/receptors are evaluated following the NRA (2009) guidelines² which set out the importance of the ecological resource/receptor in a geographic context. The information gathered from desk studies and field surveys was used to carry out an EcIA of the proposed development upon the identified ecological receptors on an importance scale

The following geographic frame of reference is used in determining ‘value’:

- International importance
- National importance
- County importance (or vice-county in the case of plant or insect species)³
- Local importance (higher value)
- Local importance (lower value)

Features identified as being of higher value local importance or greater, are given particular attention in the ecological evaluation as key ecological receptors (KERs) when considering the potential for significant impacts and subsequent requirement for appropriate mitigation.

The significance of ecological effects has been determined in accordance with CIEEM (2018), taking into account the value of the ecological receptor and the magnitude of the predicted impact. Impact magnitude is defined with regard to the scale, duration, frequency and reversibility of the effect, while receptor value reflects conservation status and legal protection. Effects are classified as significant where they result in a measurable adverse change in the integrity or conservation status of a receptor of local importance or higher

Table 4.1 Ecological Evaluation Criteria

International Importance
<ul style="list-style-type: none"> • ‘European Site’ including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Proposed Special Protection Area (pSPA). Site that fulfills the criteria for designation as a ‘European Site’ (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following:

² NRA, 2009. Guidelines for Assessment of Ecological Impacts of National Roads Schemes

- Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
- Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).

National Importance

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing 'viable areas' of the habitat types listed in Annex I of the habitats directive.

County Importance

- Area of Special Amenity.
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level)¹⁰ of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.

- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP,¹¹ if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value)

- Locally important populations of priority species or habitats or natural heritage features
- Resident or regularly occurring populations (assessed to be important at the Local level) of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive
 - Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower Value)

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife
- Sites or features containing non-native species that are of some importance in maintaining habitat links

5.0 Existing Environment

The site is located in the townland of Carrowroe West (bounded by the townland of Bealadangan to the north) at Cuan na Loinge.

Cuan na Loinge is a coastal inlet situated within Ceantar na nOileán a Gaeltacht district comprising interconnected islands and peninsulas. The area is characterised by a rugged, low-lying landscape with a mix of granite outcrops, boglands, and small inlets. The terrain is shaped by glacial activity and is interspersed with narrow local roads and dry-stone walls.

Ceantar na nOileán as a whole has approximately 2,000 residents, with only 17 residences in the immediate area of the proposed works area. The low population density reflects the rural and dispersed settlement pattern typical of the area. The settlement pattern consists of dispersed rural housing clusters, reflecting traditional landholding.

The landscape at and in the vicinity of the proposed works is rural in nature as defined by the 2018 CORINE landcover dataset, is classified as 'Inland Wetlands (Peat bog)'. The bedrock of the site is Errisbeg Townland Granite (Megacrystic pink/grey monzogranite).

The land is primarily used for low-intensity agriculture, such as sheep grazing, and contains extensive areas of blanket bog and heathland.



Figure 5.1 Aerial view 2025

5.1 Surface water system and water quality

The proposed site is located within the Galway Bay North Catchment (31), and the Furnace_SC_010 Sub-Catchment (31_). The site is within the Spiddal Groundwater Body and the status of this groundwater body is good. There is extreme groundwater vulnerability, and the site is located on a Poor aquifer.

The proposed development intersects and lies adjacent to hydrologically sensitive features including Loch Fhada Upper Pools, Loch Fhada, and downstream transitional waters leading to Camus Bay. The site is classified as having extreme groundwater vulnerability, with a strong surface-groundwater interaction regime. The underlying aquifer is classified as Poor.

The River Derrynea emerges from the Loch Fhada Upper Pool system and flows from east to west to Loch an Aibhinn before entering Camus Bay. The river water body status of Derrynea is good.

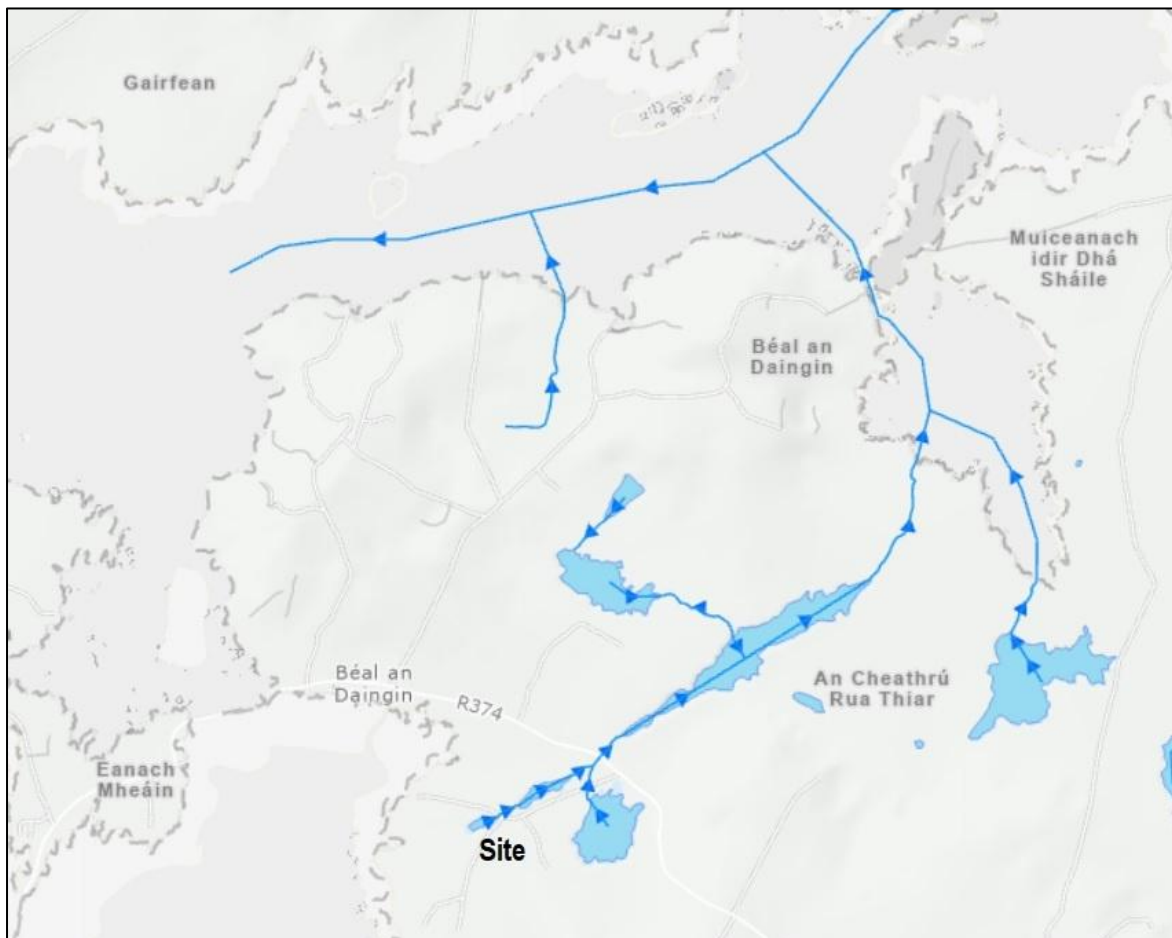


Figure 5.2 Surface water network

5.2 Designated Conservation Sites

5.2.1 Sites of International Importance -Natura 2000 sites.

The “Habitats Directive” (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level.

- A Special Conservation Area (SAC) is a designation under the Habitats Directive.

The “Birds Directive” (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting, and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection.

- A Special Protection Area (SPA) is a designation under the Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites.

The proposed works are within 15km of two SACs and two SPAs that have been designated under the EU Habitats Directive and the EU Birds Directive. Maps and aerial photographs showing the locations of Natura 2000 sites relative to the application site are shown in Figure 5.3 and listed in Table 5.1.

A detailed Article 6(3) Appropriate Assessment and Natura Impact Statement (NIS)³ has been completed for the proposed works.

³ FWE,2025. Natura Impact Statement to inform Appropriate Assessment. Cuan na Loinge Road – Coastal Flooding Mitigation

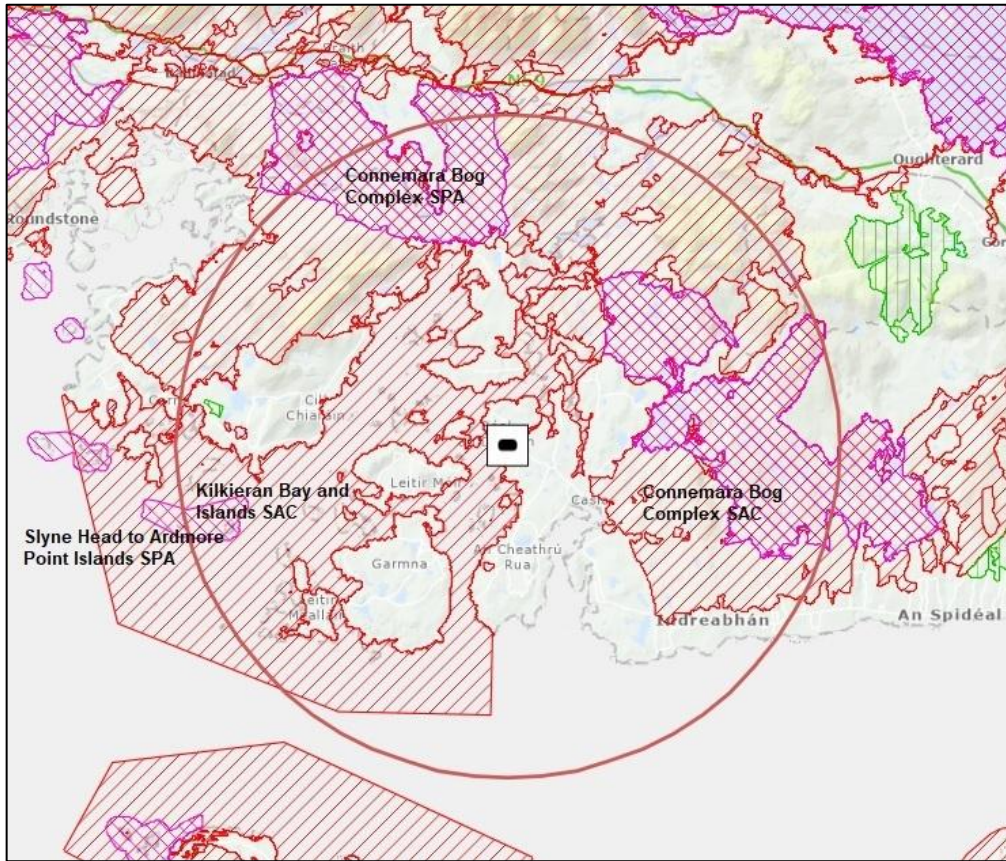


Figure 5.3 Natura 2000 sites within a 15km radius of the project site.

Table 5.1 Natura 2000 sites within a 15km radius of the proposal site

Site Name	Code	Designation	Proximity
Kilkieran Bay and Islands SAC	002111	SAC	Immediately adjacent and transecting the site to the north and east
Connemara Bog Complex SAC	002034	SAC	3.93 km
Connemara Bog Complex SPA	004181	SPA	5.65km
Slyne Head to Ardmore Point Islands SPA	004159	SPA	11.97km

5.2.2 Sites of National Importance

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act of 2000 and cover areas of unique natural beauty, significant biodiversity, and important habitats. These areas are recognised for their flora, fauna, and distinct landscapes, and many also hold cultural and historical value, often reflecting Ireland’s rich archaeological and geological history.

Once designated, NHAs receive legal protection (Under the Wildlife Acts) to preserve their ecological integrity.

In addition to the designated National Heritage Areas (NHAs), Ireland has a number of proposed NHAs (pNHAs). These sites have been identified by the National Parks and Wildlife Service (NPWS) as areas of significant ecological, geological, or cultural value, but they have not yet received full legal protection under the Wildlife (Amendment) Act. Many of these proposed sites are in the process of being reviewed for potential designation, but in the meantime, they benefit from a level of recognition and informal protection.

There are no NHAs within 15km of the site; however, there are 7 pNHA as detailed in Table 5.2

Table 5.2 Proposed National Heritage Area (pNHA)

Site Name	Site Code	Proximity to the pNHA site.
Kinvarra Saltmarsh	002075	c.2 km east
Oilean Na Ngeabhrog	000314	c 2.5km Southwest
Geabhrog Island	000269	c.3.5km west
Connemara Bog	002034	c.6km east
Ardmore Point	001126	c.11 km west
Finish Island Machair	001266	c.13 km west
Inishmuskerry	001974	c.14.5 km west

5.3 Records of Protected Species and Habitats

A review of previously recorded protected fauna and flora and invasive species within the study area has been undertaken and is summarised hereunder.

5.3.1 National Biodiversity Data Centre Data

A search of the NBDC database was carried out to identify protected flora and fauna and species listed under the Third Schedule of the Birds and Natural Habitats Regulations (2011). Two areas were included [2km grid squares L92J and L93F], which encompass the proposed development site. See Table 5.3

Table 5.3: Previous Records of Protected Fauna and Flora Species recorded

Species name	Designation
Common Frog (<i>Rana temporaria</i>)	Protected Species: EU Habitats Directive Annex V. Protected Species: Wildlife Acts
European Otter (<i>Lutra lutra</i>)	Annex II , Annex IV Wildlife Acts
Common Kestrel (<i>Falco tinnunculus</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Common Linnet (<i>Carduelis cannabina</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Common Sandpiper (<i>Actitis hypoleucos</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Common Snipe (<i>Gallinago gallinago</i>)	Protected Species: Wildlife Acts, Protected Species: EU Birds Directive ; Annex II, Section I. Protected Species: EU Birds Directive Annex III, Section III Bird Species . Birds of Conservation Concern - Amber List
Common Starling (<i>Sturnus vulgaris</i>)	Protected Species: Wildlife Acts . Birds of Conservation Concern - Amber List
Common Tern (<i>Sterna hirundo</i>)	Protected Species: Wildlife Acts. Protected Species: EU Birds Directive Annex I. Birds of Conservation Concern - Amber List
Common Wood Pigeon (<i>Columba palumbus</i>)	Protected Species: Wildlife Acts. Protected Species: EU Birds Directive Annex II, Section I EU Birds Directive Annex III, Section I
European Eel (<i>Anguilla anguilla</i>)	Threatened Species: Critically Endangered
Great Cormorant (<i>Phalacrocorax carbo</i>)	Protected Species: Wildlife Acts . Birds of Conservation Concern - Amber List
House Sparrow (<i>Passer domesticus</i>)	Protected Species: Wildlife Acts . Birds of Conservation Concern - Amber List
Lesser Noctule (<i>Nyctalus leisleri</i>)	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Little Grebe (<i>Tachybaptus ruficollis</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List

Species name	Designation
Mallard (<i>Anas platyrhynchos</i>)	Protected Species: Wildlife Acts. Protected Species EU Birds Directive Annex II, Section I, Protected Species: EU Birds Directive Annex III, Section I
Mew Gull (<i>Larus canus</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Mute Swan (<i>Cygnus olor</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Northern Wheatear (<i>Oenanthe oenanthe</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Sky Lark (<i>Alauda arvensis</i>)	Protected Species: Wildlife Acts. Birds of Conservation Concern - Amber List
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	Protected Species Wildlife Acts, EU Habitats Directive Annex IV
<i>Ventrosia ventrosa</i>	Threatened Species: Vulnerable
West European Hedgehog (<i>Erinaceus europaeus</i>)	Protected Species: Wildlife Acts

Note: Only bird species protected by the EU Birds Directive or species listed as either Red or Amber under the Birds of Conservation Concern have been listed.

5.3.2 National Biodiversity Data Centre Bat Landscapes Tool

A search of the NBDC database was carried out to examine the suitability of the proposed site for bat species found in Ireland. The Bat suitability index from the NBDC ranges from 0 to 100, with 0 showing least favourable conditions and 100 most favourable for bats. The results of the search and bat species associations with building roosts are shown in Table 5.4.

Table 5.4 NBDC bat suitability index data and bat roost associations.

Species	Common Name	Bat Suitability Index
All Bats		24.56
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	49
<i>Plecotus auritus</i>	Brown Long-Eared Bat	36
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	34
<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	11
<i>Nyctalus leisleri</i>	Leisler's Bat	35
<i>Myotis mystacinus</i>	Natterer's Bat	3
<i>Myotis daubentonii</i>	Daubenton's Bat	29
<i>Pipistrellus nathusii</i>	Nathusius's Pipistrelle	2
<i>Myotis nattereri</i>	Natterer's Bat	22

5.4 Habitats

Habitats within and adjacent to the application site have been classified using three complementary frameworks:

- A Guide to Habitats in Ireland (Fossitt, 2000) Level 3 classification for all habitats
- The EU Habitats Directive Interpretation Manual (European Commission, 2013) for Annex I attribution and qualifying status determination
- National Vegetation Classification (Rodwell, 1991–2000) for community-level botanical characterisation supporting SSCO attribute assessment.

5.4.1 Level 3 Classification

Habitats have been classified in accordance with Level 3 of A Guide to Habitats in Ireland (Fossitt, 2000). These habitats are denoted in the text along with their Fossitt habitat code. Habitat mapping was carried out following surveys in October 2024 and May 2025.

The main habitats on and surrounding the works site are:

- ‘Buildings and Artificial Surfaces’ (BL3),
- Salt Marsh (CM),
- Lagoons and Saline Lakes (CW1)
- With some smaller areas of
- Lowland Blanket Bog (PB3),
- Wet Grassland (GS4) and
- Exposed Siliceous Rock (ER1).

Habitat Map with Fossitt codes and description presented in figure 5.4 below

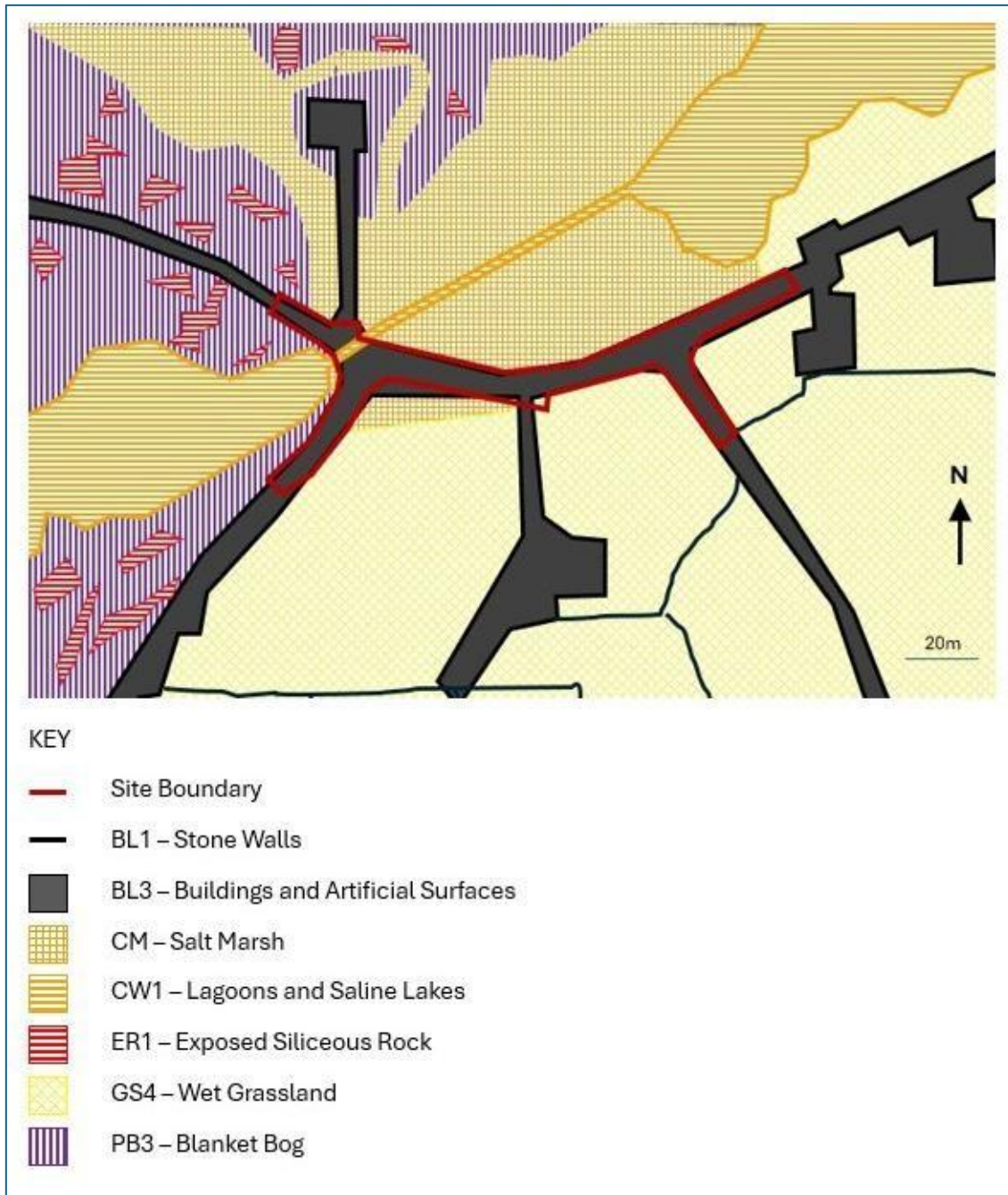


Figure 5.4 Habitat Map with Fossitt codes and description.

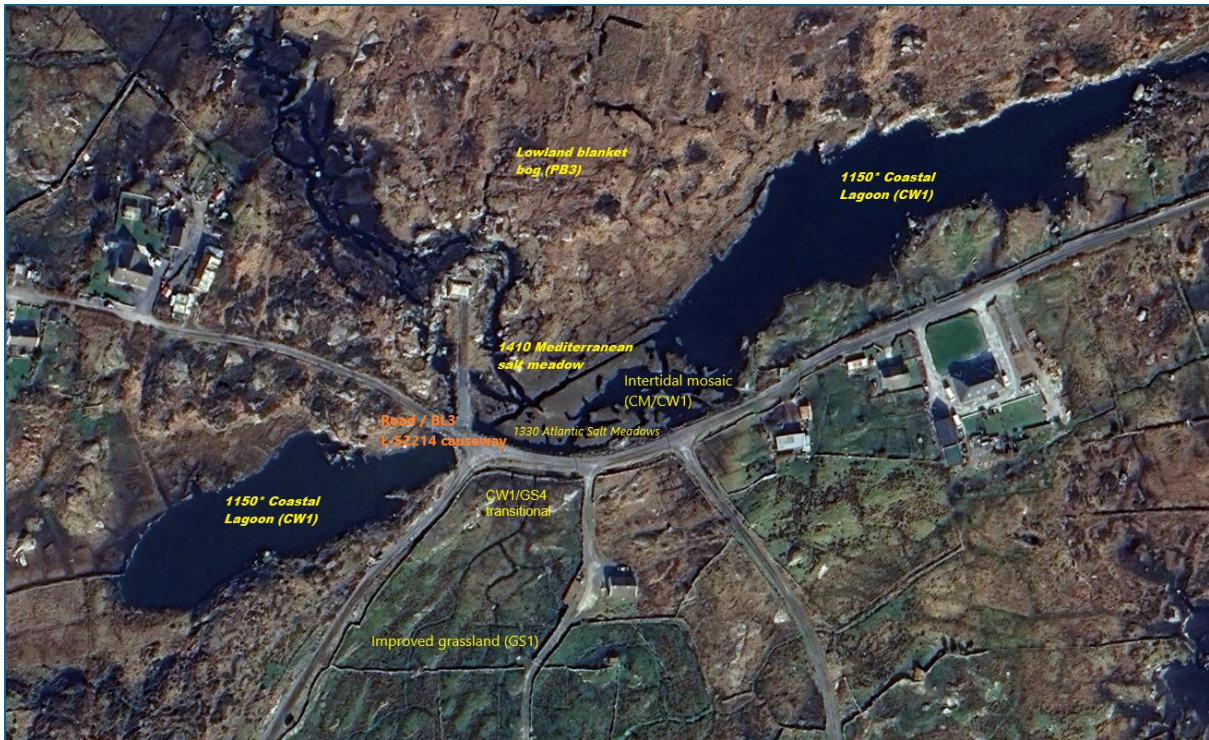


Figure 5.5 Habitat Map

Buildings and Artificial Surfaces (BL3)

The road surface and associated hard standing of Local Road L-52214 constitute the Built and Artificial Surfaces habitat type (BL3). The existing road surface is a tarred carriageway of approximately 4 m width, with verge areas on both sides. The road functions as a causeway across a tidal lagoonal system, an engineering history that is directly relevant to the ecological character of the site. The road itself has negligible botanical interest but its structure and the culverts passing beneath it are the primary determinant of the hydrological regime of the adjacent Annex I habitats.



Plate 5.1 Road surface



Plate 5.2 Road surface

Salt Marsh (CM)

Saltmarsh habitats (Fossitt CM) occupy the ground to the north and northwest of the road, extending from the road edge northward into the SAC. The saltmarsh forms part of the broader Bealadangan saltmarsh sub-site of the Kilkieran Bay and Islands SAC and contains two Annex I qualifying interest communities Mediterranean Salt Meadow (1410) and Atlantic Salt Meadow (1330) described in full in below.

The saltmarsh at this site is of the fringe type, developed on a peat substrate characteristic of the Connemara coastal system. The peat substrate is a defining feature of the site most saltmarsh in the Kilkieran Bay SAC occurs on peat, giving rise to a nationally significant saltmarsh type. The saltmarsh is under active sea level rise pressure, with extensive areas of bare peat at the vegetated margin indicating ongoing colonisation of former blanket bog. This active expansion is ecologically significant and is considered in the impact assessment in Section 6.2.1.

Salt marshes habitats, characterised by the presence of salt-tolerant plants, play a key role in flood control, nutrient cycling, and supporting a variety of bird species.



Plate 5.3



Plate 5.4

Wet Grassland (GS4): Wet grasslands are low-lying areas, often found in floodplains or near wetlands, where the soil remains waterlogged for much of the year. They support a variety of grass species and are important for breeding waders and other wetland wildlife.

To the south of the road L-52214, there are fields of wet grassland with stone wall and post and wire fence boundaries.



Plate 5.5 CW1/CS4 transitional

Lowland Blanket Bog (PB3) and Exposed Siliceous Rock (ER1)

Areas of lowland blanket bog (PB3) with protrusions of exposed granite bedrock (ER1) are present to the west and northwest of the scheme, forming the terrestrial matrix surrounding the coastal habitats. The blanket bog supports *Molinia caerulea*, *Calluna vulgaris*, *Schoenus nigricans*, and associated bog flora typical of the Connemara lowland system. *Schoenus nigricans* and *Calluna vulgaris* persist within the transitional zone between the blanket bog and the saltmarsh, recording the progressive landward retreat of the bog community (Goodwillie, 2026).

The blanket bog catchment provides the hydrological context for the lagoon system, delivering low-nutrient, peat-stained freshwater that maintains the characteristic water chemistry within which *Ruppia* and the lagoonal specialist fauna thrive. Maintenance of this catchment in an unmodified condition is a prerequisite for long-term compliance with the SSCO water quality targets for IL054.

The granite rock outcrops throughout the site support a diverse epilithic lichen flora including *Xanthoria parietina*, *Ochrolechia* sp., and crustose species of *Lecanora* and *Ramalina*. Coastal granite outcrops in this region support nationally significant lichen assemblages that are sensitive to physical disturbance, dust deposition from road surfaces, and nitrogen enrichment from construction activity.



Plate 5.6



Plate 5.7 Exposed Siliceous Rock (ER1)

5.4.2 Qualifying Interest Habitat

Qualifying Interest Habitats Confirmed Within and Proximate to the Scheme Boundary

The 2026 field survey confirms the presence of three Annex I qualifying interest habitats within and immediately adjacent to the scheme boundary:

- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Atlantic salt meadows (*Glaucopuccinellietalia maritimae*) [1330]
- Coastal lagoons [1150]

5.4.2.1 Annex I Habitat: Mediterranean Salt Meadows (*Juncetalia maritimi*) [1410]

The dominant saltmarsh community north of the road qualifies as Mediterranean Salt Meadow (Annex I habitat 1410, Fossitt CM1). The community is dominated by *Juncus maritimus* (Sea Rush), consistent with the NPWS site synopsis statement that stands of *Juncus maritimus* in the Kilkieran Bay SAC correspond to the Mediterranean salt meadow type.

The full species complement of the 1410 community at this site, recorded across the botanical surveys (May 2025) and the Goodwillie targeted survey (March 2026), comprises: *Juncus maritimus* (dominant), *Festuca rubra*, *Agrostis stolonifera*, *Triglochin maritimum*, *Plantago maritima*, *Armeria maritima*, *Carex extensa*, *Cochlearia danica*, *Plantago coronopus*, *Glaux maritima*, *Puccinellia maritima*, *Juncus gerardii*, *Bolboschoenus maritimus*, *Schoenoplectus lacustris* ssp. *tabernaemontani*, and *Phragmites australis*. The community corresponds to NVC community SM18 (*Juncus maritimus* salt marsh).



Plate 5.8 Saltmarsh

The saltmarsh is actively expanding onto former blanket bog peat at the landward margin (Goodwillie, 2026), with extensive areas of bare peat being colonised by pioneer saltmarsh species. This expansion is driven by sea level rise and is ecologically significant it confirms that the primary driver of saltmarsh dynamics at this site is natural and ongoing, independent of the proposed scheme.

The current conservation status of the 1410 habitat at the Bealadangan sub-site is Unfavourable–Bad, primarily due to severe overgrazing by sheep (NPWS, 2014b). The mapped sub-site area is 0.29 ha.

5.4.2.2 *Annex I Habitat: Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae) [1330]*

Smaller patches of Atlantic Salt Meadow (Annex I habitat 1330, Fossitt CM1) are present within the broader saltmarsh system north of the road, particularly in the lower and mid-marsh zones and in the transitional zone between the lagoon margin and the Mediterranean salt meadow community. The 1330 community is defined by a species complement including *Puccinellia maritima*, *Salicornia* sp., *Glaux maritima*, *Juncus gerardii*, *Armeria maritima*, and *Cochlearia officinalis*, corresponding to NVC communities SM13 (*Puccinellia maritima* salt marsh) and SM16 (*Festuca rubra* salt marsh).

Although the extent of 1330 within the immediate scheme influence zone is small, it includes the pioneer saltmarsh communities most sensitive to changes in tidal inundation regime. These communities are structurally the most recently established and occupy the lowest inundation zone any reduction in tidal delivery frequency or duration would affect 1330 before 1410. Their presence is therefore ecologically diagnostic of the current tidal inundation regime and functionally significant as a sensitivity indicator for assessing the hydrological impacts of the proposed works.

The current conservation status of the 1330 habitat at the Bealadangan sub-site is Unfavourable–Bad, driven by the same overgrazing pressure as 1410 (NPWS, 2014b). The mapped sub-site area is 3.46 ha.

5.4.2.3 Lagoons and Saline Lakes (CW1) 1150* Coastal Lagoon (Priority Habitat)

The water body to the north of the road causeway, corresponding to Loch Fhada Upper Pools (lagoon unit IL054 as mapped in Oliver, 2007), is classified under Fossitt as Lagoons and Saline Lakes (CW1) and qualifies as a 1150* Coastal Lagoon priority Annex I habitat under the EU Habitats Directive.

The road section at Cuan na Loinge functions as a causeway, having been constructed over an extensive saltmarsh system after 1845, as confirmed by pre-road Ordnance Survey mapping. The impoundment created by this causeway is classified by Healy and Oliver (1998) as an artificial saline lake. The EU Habitats Directive Interpretation Manual (European Commission, 2013) explicitly provides that salt basins and salt ponds may be considered as lagoons where they had their origin on a transformed old natural lagoon or saltmarsh and are characterised by only minor exploitation impact. Both conditions are satisfied at this site: the water body originated on a transformed saltmarsh, and the site is subject to only minor exploitation. The broader Loch Fhada complex (lagoon units IL053–IL066) is classified as coastal lagoon habitat within the Kilkieran Bay and Islands SAC.

Physical Character

The lagoon water body referred to in the literature as the western pool of IL054 is shallow and clear, with a peat and granite substrate. Salinity recorded in 1998 ranged from 12.4 to 29.5 psu (Oliver, 1999), classifying the water body as polyhaline. The water body is separated from the tidal system to the north by the road causeway, with tidal connectivity maintained through the five existing culverts beneath the road. The current conservation status of IL054 is Unfavourable–Inadequate (Oliver, 2007).

The tidal channel network to the north of the road infiltrates the saltmarsh system and connects with the lagoon, mediating salinity delivery to both the lagoon and the adjacent saltmarsh communities. These channels are functionally dependent on the hydraulic regime maintained through the road structure and its culverts. Any works that alter channel geometry, block channel flow, or reduce culvert connectivity would directly impair lagoon and saltmarsh function.

Submerged Flora

The March 2026 targeted survey (Goodwillie, 2026) confirmed the presence of *Ruppia cf. maritima* (Beaked Tasselweed) in the lagoon water body, observed being actively grazed by mute swans (*Cygnus olor*) at the time of survey. Hydrobia snails were also recorded. This confirms continuity of the lagoonal submerged flora documented in the 1998 survey (Roden, 1999), when *Ruppia sp. and Chaetomorpha linum* were recorded as the sole floral species. The 2026 identification of *Ruppia cf. maritima* provides a provisional species-level determination not achieved in 1998, when *Ruppia* could not be identified to species in the absence of flowering material.

The northern shore of the lagoon supports a sward of *Juncus maritimus* (Sea Rush) and *Festuca rubra* (Red Fescue) mixed with *Phragmites australis* (Common Reed).

Phragmites becomes more frequent towards the western end of the lagoon, consistent with declining salinity in that direction. *Molinia caerulea* (Purple Moor-grass) marks the transition to terrestrial heath vegetation at the landward margin.

Lagoonal Fauna

The 1998 faunal survey (Oliver, 1999) recorded seven faunal lagoonal specialist species at IL054, including *Jaera forsmanni* (nationally rare isopod), *Littorina "tenebrosa"*, *Idotea chelipes*, *Hydrobia ventrosa* (*Ventrosia ventrosa*), and *Cerastoderma glaucum* (lagoon cockle). Oliver (2007) assessed the site as of high conservation value based on its faunal lagoonal specialist assemblage. The March 2026 survey (Goodwillie, 2026) confirmed the current presence of *Hydrobia* snails, demonstrating continuity of the faunal assemblage. An otter (*Lutra lutra*, Annex II species) path was also recorded at the lagoon margin.



Plate 5.9 Coastal lagoon



Plate 5.10 Loch fhada pool south of the raod

5.4.3 Habitats Providing a Supporting Function to Annex I Features

The following habitats do not themselves qualify as Annex I features but perform essential ecological functions that maintain the structure and integrity of the 1150*, 1410, and 1330 habitats. They are identified here because scheme works that affect these habitats could produce indirect effects on the qualifying Annex I features.

Tidal channel and saltmarsh creek network:

The network of tidal channels north of the road mediates salinity delivery to both the 1150* lagoon and the 1410/1330 saltmarsh communities. These channels are functionally dependent on hydraulic connectivity through the road culverts. *Juncus maritimus* tussock fringe vegetation stabilises peat margins and prevents sediment input to the lagoon. Any works that alter channel geometry or obstruct channel flow would directly impair lagoon and saltmarsh function.

Saline ground

The Wet Grassland south of the road shows signs of saline influence (Fossitt CW1/GS4 transitional), in which *Ruppia cf. maritima* and *Triglochin maritimum* have been recorded in the field drain (Goodwillie, 2026). This demonstrates active saline connectivity through the existing road drainage system. This zone supports lagoonal and halophytic species dependent on maintained saline influence.

Peat substrate and causeway embankment

The deep fibrous peat underlying the pool islands, saltmarsh, and road embankment acts as a slow-release freshwater reservoir moderating salinity fluctuations within the lagoon. It provides the physical substrate for both the 1150* and 1410/1330 communities and is characteristic of the rock/peat lagoon type noted as rare in Europe and specifically identified as a conservation feature of the Kilkieran Bay SAC. Disturbance to peat during embankment works risks both direct habitat loss and hydrological destabilisation of the water balance within the lagoon system.

Road drainage ditch (inland verge)

The drainage ditch on the southern (inland) verge of the road collects run-off from the surrounding pasture and heath. Its water enters the lagoon system via sub-road percolation and contributes to the freshwater balance of IL054. The vegetation present (*Agrostis stolonifera* sward, *Juncus spp.*, *Carex panicea*) is transitional between freshwater and brackish communities. Construction phase management of this ditch to prevent contaminated run-off reaching the lagoon system is ecologically critical and is addressed in the mitigation measures in Section 7.

Atlantic blanket bog and wet heath catchment

The surrounding landscape of *Molinia caerulea*-dominated wet heath and blanket bog provides the hydrological catchment delivering low-nutrient, peat-stained freshwater to the lagoon system. This maintains the characteristic low-turbidity, oligotrophic-to-mesotrophic water chemistry within which *Ruppia* and the lagoonal specialist fauna persist. Maintenance of the catchment in an unmodified condition is a prerequisite for

long-term water quality compliance with the SSCO chlorophyll a, MRP, and DIN targets for IL054.

5.4.4 Habitats of Biodiversity Value Beyond Natura Designations

The following habitats and communities of biodiversity value, not directly qualifying as Annex I features, were recorded within and proximate to the scheme footprint .

Brackish emergent swamp community:

The co-occurrence of *Bolboschoenus maritimus* (Sea Club-rush), *Schoenoplectus lacustris* ssp. *tabernaemontani* (Grey Club-rush), and *Phragmites australis* (Common Reed) at the lagoon margin, confirmed in the May 2025 survey defines a brackish swamp community (NVC S21) of national conservation interest. Both *Bolboschoenus maritimus* and *Schoenoplectus tabernaemontani* are lagoonal associate species recorded at Irish coastal lagoons. This community performs sediment trapping, bank stabilisation, and primary productivity functions within the lagoon system and is sensitive to changes in the salinity regime and water level.

Lagoonal fringe saltmarsh-granite mosaic:

The heterogeneous microhabitat mosaic of peat islands, *Juncus maritimus* tussocks, shallow polyhaline pools, and exposed granite outcrops constitutes a habitat type biogeographically restricted to the western Atlantic seaboard of Ireland. The nationally rare isopod *Jaera forsmanni*, documented at IL054 in 1998, is dependent on this mosaic. This assemblage has no direct Annex I designation, but its maintenance is contingent on the continued ecological function of the 1150* lagoon habitat.

Coastal granite rock outcrop lichen community:

The Connemara granite boulders and outcrops throughout the site support a diverse epilithic lichen flora confirmed to include *Xanthoria parietina*, *Ochrolechia* sp., and crustose species of *Lecanora* and *Ramalina*. Coastal granite outcrops in this region support nationally significant lichen assemblages sensitive to physical disturbance, dust deposition from road surfaces, and nitrogen enrichment. Existing rock outcrops within or adjacent to the works footprint should be protected during construction.

Nationally scarce vascular plant populations:

Carex extensa (Long-bracted Sedge) has been confirmed at the site in both the May 2025 and the March 2026 surveys. This species is nationally scarce in Ireland and is a strong diagnostic indicator of high-quality Atlantic and Mediterranean salt meadow in the Irish west coast context.

5.5 Flora

The following floral species were observed and recorded in the surrounding habitat:

- Birds-foot trefoil (*Lotus corniculatus*)
- Bramble spp. (*Rubus fruticosus*)

-
- Buck's-horn Plantain (*Plantago coronopus*)
 - Carnation Sedge (*Carex panicea*)
 - Common Reed (*Phragmites australis*)
 - Common Saltmarsh-grass (*Puccinellia maritima*),
 - Common Scurvy-grass (*Cochlearia officinalis*)
 - Creeping Bent (*Agrostis stolonifera*)
 - Glasswort (*Salicornia sp.*)
 - Grey Sea-rush (*Schoenoplectus lacustris spp. tabernaemontani*)
 - Long-bracted Sedge (*Carex extensa*)
 - Purple-Moor-grass (*Molinia caerulea*),
 - Red Fescue (*Festuca rubra*)
 - Saltmarsh Rush (*Juncus gerardii*)
 - Sea Arrowgrass (*Triglochin maritimum*)
 - Sea Club-rush (*Bolboschoenus maritimus*)
 - Sea Milkwort (*Glaux maritima*),
 - Sea Pink (*Armeria maritima*)
 - Sea Plantain (*Plantago maritima*)
 - Sea Rush (*Juncus maritimus*)
 - Silverweed (*Potentilla anserina*),
 - Spike-Rush (*Eleocharis sp.*)
 - Tormentil (*Potentilla erecta*)
 - White Clover (*Trifolium repens*)
 - Beaked/Spiral Tasselweed (*Ruppia cf. maritima*)
 - *Chaetomorpha linum*;
 - Long-bracted Sedge (*Carex extensa*)

5.6 Birds

During the walkover survey 7 species of bird were observed using the habitat surrounding the site and flying overhead. Swan faeces were found on the grassed area of the saltmarsh.

- Common Tern (*Sterna hirundo*)
- Cormorant (*Phalacrocorax carbo*)
- Mallard (*Anas platyrhynchos*)
- Mute Swan (*Cygnus olor*)
- Common Gull (*Larus canus*)
- Common Starling (*Sturnus vulgaris*)
- Common Linnet (*Carduelis cannabina*)

5.7 Invasive Species

No invasive species were recorded on the site visit carried out.

5.8 Fauna

5.8.1 Otter

The otter survey conducted in February 2025 recorded no spraints, tracks, holts, couches, or slides within the survey area at the time of the survey.

The surrounding habitat was assessed as suitable for otter foraging and commuting use, consistent with the wider distribution of otter throughout the SAC. The absence of definitive signs at the time of survey does not preclude the use of the site. It was deemed based on the suitability of the habitat that otter occupation was highly likely.

The targeted ecological survey conducted in March 2026 recorded an otter path at the lagoon margin, in the immediate vicinity of the road causeway.

5.8.2 Bats

The NBDC bat suitability index for the site indicates moderate suitability for Soprano Pipistrelle (*Pipistrellus pygmaeus*, Annex IV) at 49/100 and for Leisler's Bat (*Nyctalus leisleri*, Annex IV) at 35/100.

No bat roosts were identified within the zone of influence during the field surveys.

5.8.3 Common Frog (*Rana temporaria* Annex V and Wildlife Acts)

Common Frog is recorded in the wider area. The scheme footprint does not encompass any standing freshwater feature suitable as breeding habitat for Common Frog.

5.8.4 European Eel (*Anguilla anguilla* Critically Endangered)

European Eel is recorded from the wider catchment. The lagoonal and tidal channel system may be used by eels as a migratory corridor and foraging habitat.

5.9 Ecological Evaluation

Ecological resources/receptors are evaluated based on the importance of the ecological resource/receptor in a geographic context.

The following geographic frame of reference is used when determining value:

- International importance
- National importance
- County importance (or vice-county in the case of plant or insect species)³
- Local importance (higher value)
- Local importance (lower value)

Table 5.5 Ecological Evaluation

Receptor	Basis Evaluation
Internationally Important	
Kilkieran Bay and Islands SAC (site code 002111)	Designated SAC under the EU Habitats Directive. Immediately adjacent to and encompassing the scheme location. Appropriate Assessment has identified this site as the only Natura 2000 site within 15 km potentially vulnerable to the proposed development. Four qualifying interests are screened in for Stage 2 assessment [1150* Coastal Lagoon, 1410 Mediterranean Salt Meadow, 1330 Atlantic Salt Meadow, and 1355 Otter]. The full AA assessment is presented in the accompanying NIS (FWE, 2026).
1150* Coastal Lagoon : Loch Fhada Upper Pools (IL054)	Priority Annex I habitat under the EU Habitats Directive. Current conservation status Unfavourable/Inadequate (Oliver, 2007). IL054 is classified as a saltmarsh lagoon of the rock/peat type: a habitat type rare in Europe and specifically identified as a conservation feature of the Kilkieran Bay SAC. Confirmed lagoonal specialist flora (<i>Ruppia cf. maritima</i> , <i>Chaetomorpha linum</i>) and fauna (<i>Jaera forsmanni</i> - nationally rare isopod, <i>Cerastoderma glaucum</i> , <i>Hydrobia ventrosa/Ventrosia ventrosa</i> , <i>Littorina "tenebrosa"</i> , <i>Idotea chelipes</i>) confirm high conservation value. Active use by mute swan and otter confirmed in 2026.
1410 Mediterranean Salt Meadows (<i>Juncetalia maritimi</i>)	Annex I habitat under the EU Habitats Directive. Present as the dominant saltmarsh community north of the road (Bealadangan sub-site, 0.29 ha). Current conservation status Unfavourable/Bad, primarily due to overgrazing (NPWS, 2014b). Actively expanding onto former blanket bog peat (Goodwillie, 2026). Supports nationally scarce <i>Carex extensa</i> and NVC SM18 species complement.

Receptor	Basis Evaluation
1330 Atlantic Salt Meadows (<i>Glaucopuccinellietalia maritimae</i>)	Annex I habitat under the EU Habitats Directive. Present in patches in the lower and mid-marsh zones and in the transitional zone between the lagoon margin and the 1410 community (Bealadangan sub-site, 3.46 ha). Current conservation status Unfavourable/Bad (NPWS, 2014b). Pioneer communities most sensitive to changes in tidal inundation regime.
Otter (<i>Lutra lutra</i>)	Annex II and Annex IV species. Qualifying interest of Kilkieran Bay and Islands SAC. Otter path confirmed at lagoon margin (Goodwillie, 2026), consistent with habitat suitability assessment and February 2025 survey. Active use of road culvert as movement corridor between the lagoon and the tidal system to the north is indicated by the path location.
<i>Ruppia cf. maritima</i> (Beaked Tasselweed)	Lagoonal specialist submerged macrophyte. Confirmed in IL054 water body by Goodwillie (2026). Characteristic indicator species of the 1150* Coastal Lagoon qualifying interest. Evaluated at international importance as a defining component of a priority Annex I habitat.
Lagoonal specialist fauna assemblage-IL054	Seven lagoonal specialist faunal species were recorded at IL054 in 1998 (Oliver, 1999), including <i>Jaera forsmanni</i> (nationally rare isopod). <i>Hydrobia</i> snails confirmed present in 2026. Assessed by Oliver (2007) as of high conservation value based on faunal assemblage. Evaluated at international importance as the defining faunal assemblage of a priority Annex I habitat of Unfavourable/Inadequate status.
National Importance	
Salt Marsh (CM) Bealadangan sub-site	Saltmarsh on peat substrate, characteristic of the Connemara coastal system. The Kilkieran Bay SAC is considered to contain one of the largest areas of saltmarsh on peat in Ireland (NPWS site synopsis). The fringe saltmarsh at this site forms part of this nationally significant resource. Encompasses both the 1410 and 1330 Annex I communities.
Lagoons and Saline Lakes (CW1): IL054	As described above under 1150*: evaluated here additionally under the national Fossitt classification. Lagoonal habitats of the rock/peat type are rare nationally as well as in a European context.
Lowland Blanket Bog (PB3)	Lowland Atlantic blanket bog of the Connemara type. Evaluated at national importance as a component of the nationally significant blanket bog resource of the Kilkieran Bay and Islands SAC and the adjacent Connemara Bog Complex SAC. Actively receding at the landward margin of the expanding (Goodwillie, 2026).
<i>Carex extensa</i> (Long-bracted Sedge)	Nationally scarce vascular plant (Wyse Jackson et al., 2016). Confirmed at the site in both the May 2025 and the Goodwillie survey (March 2026). Strong diagnostic indicator of high-quality Atlantic and Mediterranean salt meadow in the Irish west coast context.

Receptor	Basis Evaluation
Brackish emergent swamp community (NVC S21)	Co-occurrence of <i>Bolboschoenus maritimus</i> , <i>Schoenoplectus lacustris</i> ssp. <i>tabernaemontani</i> , and <i>Phragmites australis</i> at the lagoon margin define a brackish swamp community of national conservation interest. Both <i>Bolboschoenus maritimus</i> and <i>Schoenoplectus tabernaemontani</i> are lagoonal associate species. Sensitive to changes in the salinity regime and water level.
Lagoonal fringe saltmarsh-granite mosaic	Heterogeneous microhabitat mosaic of peat islands, <i>Juncus maritimus</i> tussocks, shallow polyhaline pools, and granite outcrops. Biogeographically restricted to the western Atlantic seaboard of Ireland. Supports <i>Jaera forsmanni</i> (nationally rare).
Common Tern (<i>Sterna hirundo</i>)	Annex I Birds Directive species. Amber list Birds of Conservation Concern. Recorded using the site during surveys. Lagoon water body confirmed as a foraging habitat for waterbirds, including this species.
County Importance	
Wet Grassland (GS4) / Saline ground: Zone B	Ground south of the road showing saline influence (Fossitt CW1/GS4 transitional), in which <i>Ruppia</i> cf. <i>maritima</i> and <i>Triglochin maritimum</i> have been recorded in the field drain (Goodwillie, 2026). Demonstrates active saline connectivity through the existing road drainage system. Relatively localised at county scale but of functional ecological significance as supporting habitat for lagoonal and halophytic species.
Atlantic blanket bog and wet heath catchment matrix	The surrounding landscape of <i>Molinia caerulea</i> -dominated wet heath and blanket bog provides the hydrological catchment delivering low-nutrient freshwater to the lagoon system. Of county importance as part of the wider Connemara blanket bog resource. Functionally critical to the long-term water quality maintenance of IL054.
<i>Jaera forsmanni</i>	Nationally rare: evaluated at county importance in the context of this EclA given that its known Irish distribution is largely confined to western coastal lagoons of the Connemara type. Its continued presence at IL054 is dependent on the maintenance of the polyhaline salinity regime.
Local Importance (Higher Value)	
Exposed Siliceous Rock (ER1) with lichen community	Connemara granite boulders and outcrops support a diverse epilithic lichen flora including <i>Xanthoria parietina</i> , <i>Ochrolechia</i> sp., and crustose species of <i>Lecanora</i> and <i>Ramalina</i> . Distinctive in the local context and important for local biodiversity.
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	Annex IV species. NBDC bat suitability index 49/100 for this location. No roosts identified within the works footprint. Evaluated at local higher value given confirmed suitability of the wider habitat and the Annex IV protection status of the species.
Common Frog (<i>Rana temporaria</i>)	Annex V and Wildlife Acts species. Recorded in the wider area. Habitat within and adjacent to the works footprint offers suitable terrestrial habitat. No breeding habitat within the direct works footprint. Evaluated at local higher value given Wildlife Acts protection and the general ecological context.

Receptor	Basis Evaluation
Local Importance (Lower Value)	
Buildings and Artificial Surfaces (BL3)	Road surface and associated hard standing of negligible botanical interest. May be considered of greater importance from a cultural heritage perspective: the area is characterised by traditional stone walls and cottages contributing to the cultural landscape of Ceantar na nOileán. Evaluated at local lower value for ecological purposes. Note that the road structure itself is of high indirect ecological significance as the causeway controlling the hydrological regime of IL054: this functional significance is captured in the 1150* and supporting habitat evaluations above rather than in the BL3 receptor evaluation.
Improved and semi-improved road verge vegetation	Road verge grassland of limited species diversity. Of local lower value. Subject to minor disturbance during embankment works but not of sufficient ecological value to warrant specific mitigation beyond general good practice.

6.0 Impact Assessment

This section assesses the potential ecological impacts of the proposed road elevation works at during both the construction and operational phases. The assessment is structured around the ecological receptors identified and evaluated in Section 5, considers direct, indirect, and cumulative impacts, and addresses both temporary and permanent effects. Impact significance is assessed using the methodology described in Section 4.0, with reference to the geographic importance of each receptor established in the ecological evaluation.

Where potential impacts engage the conservation objectives of the Kilkieran Bay and Islands SAC, a full assessment against the site-specific conservation objectives (SSCOs) is provided in the accompanying Natura Impact Statement (FWE, 2026), to which this section cross-refers. The EclA impact assessment addresses the broader ecological context beyond the AA framework, including protected species, biodiversity value habitats, and cumulative effects.

The following impact types were identified through the assessment process:

- Direct habitat loss from embankment works
- Hydrological impacts on the lagoon and saltmarsh system from culvert works and road raising
- Construction phase water quality deterioration from sediment, hydrocarbon, and cement contamination
- Disturbance and displacement of fauna during construction
- Invasive species introduction or spread during construction
- Operational phase impacts from road drainage and maintenance

Designated Sites

Four Natura 2000 sites are located within 15 km of the scheme. Three Connemara Bog Complex SAC, Connemara Bog Complex SPA, and Slyne Head to Ardmore Point Islands SPA are screened out from further assessment. There are no direct hydrological connections between the scheme and these sites, and at distances of 3.93–11.97 km any disturbance impacts would be negligible. The full screening rationale is provided in the accompanying NIS (FWE, 2026).

The Kilkieran Bay and Islands SAC (site code 002111) is immediately adjacent to and encompasses the scheme location. The scheme is located entirely within the SAC boundary. This site is assessed in full in Section 6.2 and in the accompanying Natura Impact Statement (NIS)⁴.

⁴ FWE, 2025. Natura Impact Statement to inform Appropriate assessment as amended March 2026

6.1.Potential Construction Phase Impacts

Construction phase impacts are limited in spatial extent and duration and are primarily associated with temporary disturbance and potential mobilisation of sediments or pollutants. In the absence of mitigation, these impacts could give rise to short-term deterioration in water quality; however, no permanent alteration of habitat structure or function is predicted

6.1.1 Habitat Loss

The scheme has been designed to remain entirely within the existing road and embankment footprint: the proposed embankment toe does not extend beyond the existing embankment toe on the northern (lagoon/SAC) side at any point along the 150 m scheme length. The proposed site layout plan (Figure 2.3) confirms that the proposed road edge does not cross or extend beyond the SAC boundary at any point. Subject to acceptance of this engineering confirmation, no direct loss of 1150*, 1410, or 1330 Annex I habitat occurs.

6.1.2 Hydrological Impacts

The primary risk during construction relates to temporary deterioration in surface water quality arising from sediment mobilisation or accidental pollutant release. Given the direct hydrological connectivity between the site and the lagoon system, this represents the principal pathway for potential indirect effects on designated habitats.

The proposed like-for-like renovation of all five culverts preserves the existing pipe diameter, invert level, alignment, and gradient at each location. The hydraulic capacity of the culvert network is therefore preserved before and after the renovation works. The invert-at-bed-level design, with 150 mm embedment below the natural bed, ensures bidirectional tidal exchange on every tidal cycle across the full range of normal water levels. The culvert does not function as a flow restriction sill at any state of tide.

The proposed renovation restores all five culverts to full-bore flow. The tidal exchange capacity serving IL054 following the proposed works will therefore be equal to or greater than that currently prevailing.

The regular bidirectional culvert-mediated tidal exchange on each tidal cycle is the primary mechanism maintaining the polyhaline salinity regime within the lagoon.

The median annual salinity and the tidal water level dynamics within IL054 are maintained.

Significance of hydrological impact on IL054: Neutral to positive no adverse effect

Saltmarsh tidal flooding regime

The saltmarsh north of the road receives tidal water through the channel network connected to the lagoon and culvert system, primarily through Culvert 1. The like-for-like

renovation of Culvert 1 preserves and enhances tidal delivery to the saltmarsh channel network at its current designed level. The tidal flooding regime of the 1410 and 1330 saltmarsh communities' inundation frequency, depth, and duration is unchanged. The active saltmarsh expansion documented by Goodwillie (2026) is driven by the regular tidal inundation regime through the channel network, which is fully preserved.

Significance of hydrological impact on saltmarsh: No adverse effect

Saline ground south of road

The saline influence on the ground south of the road, supporting *Ruppia cf. maritima* and *Triglochin maritimum* in the field drain (Goodwillie, 2026), is maintained by sub-road percolation and culvert connectivity. The like-for-like culvert renovation preserves this connectivity. Construction phase management of the southern verge drainage ditch is specified as a mitigation requirement to prevent contaminated run-off entering the lagoon via sub-road percolation pathways during the works period.

Significance of hydrological impact on saline ground south of road: No adverse effect with mitigation

Construction phase temporary tidal disruption

During the renovation of each culvert, tidal exchange through that culvert will be temporarily interrupted. For Culvert 1 the primary lagoon connection this temporary interruption represents the most significant construction phase hydrological risk. The duration of disruption will be minimised by phased working (one culvert at a time), bypass pumping at Culvert 1, and tidal window working timed to low tide periods. The temporary reduction in tidal exchange during works at Culvert 1 will be of short duration, measured in hours to days per culvert, and is not predicted to produce a lasting change in salinity or water level within IL054.

Significance of construction phase tidal disruption: Slight adverse, short-term, reversible with mitigation

Water Quality

Construction phase activities earthworks, road layer construction, concrete works, and culvert renovation present standard risks of suspended sediment, hydrocarbon, and cement contamination entering the adjacent lagoon and tidal channel systems. Given the immediately adjacent position of IL054 and the direct hydrological connection via the culverts, even a brief pollution event could affect the water quality SSCO targets for the lagoon (chlorophyll a <5 µg/L; MRP <0.1 mg/L; DIN <0.15 mg/L) and potentially the lagoonal specialist fauna.

These risks are assessed as manageable through the construction phase mitigation measures specified in Section 7.2, which include silt fencing, hydrocarbon spill kits, pre-cast concrete preference, weather monitoring, ECW oversight, and specific protection of the lagoon water body during culvert renovation works. Provided these measures are fully implemented, construction phase water quality impacts are assessed as short-term,

managed, and not constituting a significant adverse effect on the water quality SSCO attributes.

During the operational phase, fuel and oil interceptors are specified as part of the road drainage design, representing a positive improvement in water quality management relative to the current situation in which road runoff enters the adjacent water bodies without treatment.

Significance of water quality impact: Slight adverse during construction, manageable with mitigation; neutral to positive during operation

6.1.3 Invasive Plant Species

Construction works that do not implement appropriate biosecurity measures have the potential to spread this species to other locations. Invasive species that spread through fragmentation can quickly spread further downstream using the river as a pathway and colonise habitats and outcompete natural species at a faster rate.

6.1.4 Impacts on Fauna

Otter (Lutra lutra Annex II and IV)

Otter is confirmed as actively using the site. An otter path was recorded at the lagoon margin during the March 2026 targeted survey (Goodwillie, 2026). The lagoon water body is a confirmed otter foraging habitat.

The proposed works do not reduce the area of the lagoon water body available to otter as foraging habitat. The open water body, its salinity regime, and its lagoonal specialist prey fauna are all maintained by the like-for-like culvert renovation. Construction phase noise and disturbance will cause temporary displacement of otter from the immediate works area. This is assessed as a short-term, reversible impact of slight adverse significance provided works are managed to avoid the otter breeding season where possible and noise mitigation is implemented as specified in Section 7.

A pre-construction otter survey is required before works commence to update the assessment of current holt and activity locations, as specified in Section 7.1.

Significance of impact on otter: Slight adverse during construction, temporary and reversible with mitigation; no adverse effect during operation

Lagoonal specialist fauna

The lagoonal specialist fauna of IL054 Jaera forsmanni (nationally rare isopod), Littorina "tenebrosa", Idotea chelipes, Hydrobia ventrosa (Ventrosia ventrosa), and Cerastoderma glaucum are associated with the open water body, soft sediment, and algal/macrophyte beds. Their continued presence is dependent on the maintenance of the polyhaline salinity regime. The salinity regime is preserved and enhanced by the culvert renovation. Construction phase water quality risks are managed through the specified mitigation. No

direct physical disturbance to the lagoon water body, sediment, or submerged macrophyte beds occurs as part of the proposed works.

Significance of impact on lagoonal specialist fauna: No adverse effect with mitigation

Birds

Six species of bird were recorded using the site during the walkover surveys: Common Tern (*Sterna hirundo*, Annex I Birds Directive), Cormorant, Mallard, Mute Swan, Common Gull, Common Starling, and Common Linnet. Mute swans were observed actively grazing *Ruppia cf. maritima* in the lagoon during the March 2026 survey (Goodwillie, 2026), confirming the ecological functionality of the lagoon as a foraging resource for waterbirds.

Common Tern is the species of highest conservation concern recorded at this site listed on Annex I of the Birds Directive and the Amber list of Birds of Conservation Concern. Construction phase noise and disturbance have the potential to cause temporary displacement of breeding or foraging birds from the immediate works area. Works are of short duration (four to six weeks) and noise mitigation is specified in Section 7.2. High-noise activities will be restricted to standard working hours. The lagoon water body, as a foraging resource for Common Tern and Mute Swan, is maintained in its ecological functionality by the culvert renovation.

Significance of impact on birds: Slight adverse during construction, temporary and reversible with mitigation; no adverse effect during operation

Bats

The NBDC bat suitability index for the site indicates moderate suitability for Soprano Pipistrelle (*Pipistrellus pygmaeus*, Annex IV) at 49/100 and for Leisler's Bat (*Nyctalus leisleri*, Annex IV) at 35/100. No bat roosts were identified within the zone of influence during the field surveys. The proposed works do not involve the removal of any built structure, mature tree, or rock feature that could support a bat roost. The works are limited to road surface, embankment, and culvert works, none of which provide roost habitat. Construction phase lighting, if required, should avoid illumination of the lagoon margin and saltmarsh edge in accordance with bat-sensitive lighting guidance. Given the absence of roosts within the works area and the short duration of works, impacts on bats are assessed as negligible.

Common Frog (Rana temporaria Annex V and Wildlife Acts)

Common Frog is recorded from the wider area. The scheme footprint does not encompass any standing freshwater feature suitable as breeding habitat for Common Frog. The road verge and embankment may provide terrestrial habitat. Construction phase disturbance to verge vegetation is localised and of short duration. Impacts on Common Frog are assessed as slight adverse and temporary.

Significance of impact on Common Frog: Slight adverse, temporary

European Eel (Anguilla anguilla Critically Endangered)

European Eel is recorded from the wider catchment. The lagoonal and tidal channel system at Cuan na Loinge may be used by eel as a migratory corridor and foraging habitat. The like-for-like culvert renovation with invert at bed level and 150 mm embedment ensures that the culverts do not function as barriers to eel passage at normal water levels. The renovation, therefore, preserves and potentially improves eel passage relative to the current collapsed-culvert condition. Construction phase bypass pumping at Culvert 1 maintains flow continuity. No adverse effect on European Eel passage is predicted.

6.2 Potential Operational Phase Impacts

6.2.1 Water Quality

Road drainage

The operational road surface generates runoff containing hydrocarbons, suspended solids, and de-icing salts that drain toward the adjacent lagoon and tidal channel system. The specification of fuel and oil interceptors as part of the road drainage design (Section 7.3) addresses hydrocarbon runoff. This is a positive improvement relative to the existing situation.

Culvert maintenance:

The long-term ecological integrity of IL054 is contingent on the five renovated culverts remaining functionally operational throughout the operational life of the scheme.

Disturbance from traffic:

The road serves up to 17 residences and carries low traffic volumes. The proposed elevation does not increase road capacity or traffic volume. No significant increase in disturbance to the adjacent habitats and species from traffic is predicted.

7.0 Mitigation

The mitigation measures presented in this section are designed to avoid, reduce, and, where necessary, remedy the potential ecological impacts identified in Section 6.0. They are organised into three phases: pre-construction surveys, construction phase control measures, and operational phase measures. All mitigation measures are mandatory requirements of the scheme and are recommended as conditions of any grant of permission. The mitigation measures relating specifically to the Kilkieran Bay and Islands SAC and its qualifying interests are developed in full in the accompanying Natura Impact Statement (FWE, 2026) and are cross-referenced below. The EclA mitigation framework addresses the broader ecological context, including protected species, biodiversity value habitats, and construction environmental management.

7.1 Pre-construction Survey Requirements

7.1.1 Otter Survey

A targeted Otter Survey will be conducted prior to works commencing to assess the use of the site by Otter and identify any additional mitigation for the protection of this Annex II and Annex IV species. The survey will be conducted in accordance with standard Irish otter survey methodology and will cover a minimum of 250 m on either side of the scheme along the lagoon margin and tidal channel network.

Survey results will inform any additional mitigation required for the protection of this species during construction and will determine whether work timing restrictions relative to the otter breeding season are necessary.

7.1.2 Invasive Species

An Invasive Species Survey will be conducted prior to works commencing to confirm the presence or absence of schedule 3 species listed under the European Communities (Birds and Natural Habitats) Regulations 2011.

Should invasive species be identified, an Invasive Species Management Plan will be required to inform the Construction Environmental Management Plan (CEMP).

7.2 Mitigation for the Construction Phase

7.2.1 General good practice and pre-commencement measures

The appointed construction contractor will be made aware of the ecological sensitivity of the site and the mitigation measures required to protect habitats, groundwater, and surface water quality prior to commencement of any works on site. All measures will be implemented from initial site works until the completion of all construction and demobilisation from the site.

Prior to the commencement of works, the site engineer and all contractors must be made aware of the ecological sensitivity of the site, its location within the Kilkieran Bay and Islands SAC, and its direct hydrological connection to Loch Fhada Upper Pools (IL054), a priority 1150* Coastal Lagoon habitat of high conservation value. A site-specific environmental briefing will be delivered to all site personnel by the Environmental Clerk of Works (ECW) before any works commence.

Given the environmental sensitivity of the site location and the Annex I habitats, it is a requirement that the contractor employs a suitably qualified Environmental Clerk of Works (ECW). The ECW will be present on site throughout all works in close proximity to the lagoon and culvert locations, will implement and oversee all stipulated mitigation measures, and will have authority to direct a work pause if any risk of environmental impact is identified. The ECW will maintain a daily site environmental log for the duration of the works.

Site preparation and construction must be confined to the road works site only. Work areas will be kept to the minimum area required to carry out the proposed works and will be clearly marked out in advance. No works, materials storage, plant movement, or vehicle access will occur within the SAC boundary beyond the existing road and embankment footprint.

Guidelines in the following best practice documents will be adhered to throughout:

- CIRIA (2005). Environmental Good Practice on Site (C692)
- CIRIA (2001). Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (C532)
- IFI (2016). Guidelines on the Protection of Fisheries during Construction Works in and Adjacent to Water
- IFI (2020). Planning for Watercourses in the Urban Environment
- CIRIA (2000). Environmental Handbook for Building and Civil Engineering Projects (C512)

The guidelines published by Inland Fisheries Ireland on the protection of fisheries during construction works in and adjacent to waters should be referred to when drafting construction procedures/method statements (Refer to [www.fisheriesireland.ie/Construction Guidelines](http://www.fisheriesireland.ie/Construction%20Guidelines)).

The IFI guidelines identify potential construction-related impacts and measures to mitigate them. The guidelines set out requirements specific to bridges and culverts and emphasise the necessity for these structures to be constructed and maintained in a manner that allows unhindered movement of aquatic species.

7.2.2 Mitigation Measures during culvert renovations

The renovation of the existing culverts is highlighted as a high-priority, ecologically sensitive element of the proposed construction works.

Before commencement of culvert renovation works, a pre-works inspection of each culvert should be undertaken to:

- Confirm existing pipe diameter, invert level, and structural condition at each location
- Record existing water levels on both sides of the embankment at each culvert
- Confirm tidal exchange is occurring through each culvert and document the tidal cycle characteristics at Culvert 1
- Photograph the existing condition of each culvert inlet and outlet for baseline record and as-built comparison
- Confirm that the bypass pumping arrangement for Culvert 1 is in place and operational before any works commence at that location

Phased Working Programme

Culvert renovation works will be strictly phased to ensure that tidal connectivity is maintained throughout the construction programme:

- No more than one culvert will be under active construction at any one time
- Tidal flow will be confirmed as passing freely through each culvert before works commence at the next location
- Culvert 1 (primary lagoon connection, ref Figure 2.3 above) will be treated as the highest ecological priority location. Works at Culvert 1 will be scheduled during a period of settled weather and will not commence if significant storm surge or extreme high tide conditions are forecast within the working period

Bypass Pumping

To maintain tidal exchange through Culvert 1 during headwall construction, a bypass pumping arrangement will be installed prior to any excavation at that location. The bypass system will:

- Provide continuous bidirectional flow capacity equivalent to the existing culvert flow during the period of active headwall works
- Be designed and specified by the scheme engineer to ensure hydraulic equivalence with the culvert capacity
- Be inspected by the ECW at the start and end of each working day and following any storm or tidal surge event
- Remain in place until the headwall works are complete, the culvert has been backfilled and reinstated, and tidal flow through the renovated culvert has been confirmed

Tidal Window Working

Where practicable, works will be timed to coincide with low tide periods to minimise the hydraulic head differential across the embankment during active working. The ECW will monitor tidal predictions and direct construction timing accordingly.

Protection of Lagoon Water Body During Culvert Works

The following measures will be implemented to prevent disturbance to the IL054 lagoon water body and its lagoonal specialist species assemblage during culvert renovation works:

- Silt barriers will be deployed on the lagoon face of the embankment at Culvert 1 prior to any excavation, to intercept any sediment mobilised during headwall construction before it enters the open water body
- Exclusion zone will be established on the lagoon side of the embankment at Culvert 1, extending a minimum of 5 m into the water from the embankment face, within which no plant, machinery, or materials will be permitted during active works
- Excavated material from headwall trenching will be removed immediately from the working area and will not be stockpiled within the tidal or lagoonal zone
- The ECW will monitor water clarity in the lagoon during excavation and construction. If significant turbidity is observed in the lagoon water body, work will pause until clarity is restored
- No in-situ concrete will be poured in conditions where concrete or cement slurry could enter the lagoon water body. Pre-cast concrete will be used wherever practicable to eliminate this risk. Where in-situ concrete is required, sealed shuttering will be used, and pours will take place only in dry weather conditions

Post-Renovation Confirmation at Each Culvert

On completion of renovation works at each culvert location, the ECW will conduct a post-works inspection to confirm:

- The renovated culvert pipe is clear and unobstructed through its full length
- Tidal flow is passing freely through the culvert in both directions
- The headwalls are structurally sound and properly tied into the embankment
- No construction material, spoil, or debris remains within or adjacent to the water body

7.2.3 Measures to protect surface water integrity

The primary ecological risk during the construction phase is compromise of water quality in the lagoon and tidal channel systems. The following measures will be implemented throughout the construction period.

Silt and Sediment Management

- Silt fencing and sediment traps will be installed around all works areas prior to commencement of any earthworks, with particular attention to the northern (lagoon) side of the scheme

- All machinery will be checked for oil leaks before entering the site each day
- Works will be carried out in dry conditions wherever practicable. Weather forecasts will be monitored daily by the ECW. Works involving significant excavation or earthmoving will not commence if sustained rainfall is forecast within the working period
- Suitably sized plant and machinery will be selected to minimise disturbance to the embankment and adjacent ground
- Excess spoil from excavations will be removed from the site immediately to a suitably licensed facility. No excess soil will be stockpiled on site

Hydrocarbon and Fuel Management

- Fuel will be delivered to the site as required rather than stored on site. Refuelling will take place at a designated impermeable area located a minimum of 50 m from any water body
- An effective spillage procedure will be in place before works commence, with all staff briefed. Any waste oils or hydraulic fluids will be collected, stored in appropriate containers, and disposed of off-site by a registered waste contractor
- Hydrocarbon spill kits of appropriate capacity for the contaminants in use will be maintained on site throughout the construction period
- A hydrocarbon oil boom will be available on site for immediate deployment in the event of any spillage adjacent to the water body

Concrete and Cement Management

- Pre-cast concrete will be used for all headwall construction wherever practicable, eliminating the risk of wet concrete or cement leachate entering the water bodies
- Where in-situ concrete is unavoidable, all pours will be undertaken in dry conditions with sealed shuttering, fully isolated from any watercourse or tidal zone
- No direct discharge to water will be made where there is potential for cement or concrete residues
- Designated impermeable cement washout areas will be provided at a minimum of 50 m from any water body
- All concrete washings will be collected and disposed of off-site

Temporary diversion of watercourse:

For any temporary works in or adjacent to watercourses, the following measures will apply:

- Unnecessary vegetation clearance will be avoided. Site clearance will be phased to avoid exposing large areas of ground simultaneously
- Buffer zones of a minimum of 5 m will be established around all watercourses and around the lagoon water body prior to works commencing, clearly delineated by fencing or barrier tape

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- Temporary flow barriers and diversion structures will be inspected by the ECW at the start and end of each working day and following any storm event
 - No works in or immediately adjacent to any watercourse will proceed if significant rainfall or tidal surge is imminent

Prior to works commencing, buffer zones around watercourses and protected habitats/species should be established and suitably isolated from works using fences, barriers, screens and signage.

The watercourses should be protected to prevent debris from falling into the water.

Further guidance is available in:

- CIRIA Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (2001).
- NRA Guidelines (2006) NRA Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

7.2.4 Management of Waste

All construction waste must be removed from the site by a registered contractor to a registered site. Evidence of the movement and safe disposal of the construction waste must be retained and presented to the Local Authority upon request.

The applicants and construction contractors will be responsible for the safe removal of any construction waste generated on site.

There must be no disposal of construction waste or topsoil in any designated site.

Stockpile areas for gravel or other such construction materials will be kept to a minimum size, well away from all waterbodies and watercourses.

Peat Management

Any excavated peat from the embankment works zone will be stripped, stored separately from mineral fill material, and retained on site for use in verge reinstatement on the northern side of the road

Peat stripping will be carried out in dry conditions where feasible. Stockpiled peat will be covered during prolonged wet weather to prevent erosion and sediment runoff

No peat will be disposed of to landfill; any surplus will be retained on site or transferred to a suitable receptor site with the agreement of the Local Authority

7.2.5 Biosecurity

In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to prevent the introduction and translocation of invasive species.

The appointed contractor must have a biosecurity statement. The biosecurity statement should take cognisance of:

- The Inland Fisheries guidance document on invasive species and their management, available at: <http://www.fisheriesireland.ie/Research/invasive-species.html>.
- The IFI Biosecurity Protocols, including: 'IFI Biosecurity Protocol for Field Survey Work (December 2010)'.

Biosecurity measures must be strictly adhered to throughout the proposed works. Measures must be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working in-stream, staff footwear and PPE should be inspected on daily completion of the works and vegetation or debris should be removed.

- All PPE and machines entering the water will be power-washed before entry to the site and sprayed with a suitable disinfectant (e.g., 1% virkon aquatic solution or another proprietary disinfection product).
- Visually inspect all equipment that has come in contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This will be carried out before leaving the site.

7.2.6 Noise

To minimise disturbance, construction noise will be controlled in accordance with the guidance and procedures set out in BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

Noise control will be implemented through a combination of best practicable means (BPM), including but not limited to:

- Selection of quiet plant and equipment: Prioritising the use of equipment with low-noise emissions or fitted with effective silencers, mufflers, or acoustic covers.
- Operation scheduling: Limiting high-noise activities to standard daytime hours (typically 08:00–18:00, Monday to Friday; 08:00–13:00 on Saturdays), with no work on Sundays or public holidays unless otherwise agreed.
- Operator training: Ensuring all operatives are trained in noise reduction practices and adhere to established protocols for switching off equipment when not in use.

7.2.7 Measure to protect fauna

Otter

If the pre-construction otter survey identifies active holts within or immediately adjacent to the works footprint, a licensed otter mitigation scheme will be implemented before works commence. Where no active holt is present within the works footprint, the following precautionary measures will apply:

Bats

No permanent artificial lighting will be installed within 50 m of the lagoon margin or the tidal channel network as part of the scheme

Where temporary construction lighting is required during the works period, it will be directed downward and away from the lagoon, saltmarsh edge, and adjacent blanket bog, in accordance with bat-sensitive lighting principles (Bat Conservation Trust, 2023)

Common Frog

Works involving excavation of verge soil or peat on the northern side of the road will be carried out using a watching brief methodology, with hand searches of excavated material during the amphibian active season (February–October) to identify and relocate any Common Frog individuals before machinery advances

7.3 Mitigation for the Operational Phase

7.3.1 Culvert Maintenance

The five renovated culverts beneath the provide the essential hydrological connections between Loch Fhada Upper Pools (IL054) and the tidal system that maintains the polyhaline salinity regime on which the 1150* Coastal Lagoon qualifying interest depends. The long-term ecological integrity of IL054 is contingent on these connections remaining functional throughout the operational life of the scheme. Culverts, therefore, should be routinely inspected and maintained post project completion.

7.3.2 Road Drainage Interceptors

Fuel and oil interceptors should be part of the road drainage design to avoid pollutants from vehicles using the road from entering the ecologically sensitive waters adjacent to the road. This represents a positive improvement in water quality management relative to the existing situation in which road runoff enters the adjacent water bodies without treatment. Infrastructure must be inspected routinely and maintained in good working order.

7.4 Post-Construction Ecological Monitoring

A post-construction ecological monitoring programme is specified to verify that the predicted outcomes of the ecological assessment are realised in practice, and to provide the early warning information necessary to trigger remediation if any unanticipated ecological change occurs within IL054 following completion of the scheme. The monitoring programme is designed to assess performance against the specific SSCO attributes and targets for the 1150* Coastal Lagoon qualifying interest.

The monitoring programme will be carried out by a suitably qualified ecologist and the results reported to NPWS and to Galway County Council as road authority. All monitoring reports will be made available to An Coimisiún Pleanála upon request.

7.5 Residual Impacts

Following the implementation of the prescribed mitigation measures, no significant residual ecological effects are predicted. All potential impacts are reduced to a level that is not significant in ecological terms, and no adverse effects on the integrity of any ecological receptor are anticipated.

8.0 Conclusions

This Ecological Impact Assessment has been prepared to assess the potential ecological impacts of the proposed road elevation works on Local Road L-52214 at Cuan na Loinge, Ceantar na nOileán, Co. Galway.

The proposed development consists of the elevation of a c. 200 metre stretch of Local Road L-52214, including its junctions with two side roads, to alleviate recurrent coastal flooding affecting access to up to 17 residences.

The scheme is located entirely within the Kilkieran Bay and Islands SAC (site code 002111) and in immediate proximity to Loch Fhada Upper Pools (IL054), a designated 1150* Coastal Lagoon priority habitat of high conservation value.

Key Findings

- Three Annex I qualifying interest habitats have been confirmed within and immediately adjacent to the scheme boundary (1150* Coastal Lagoon, 1410 Mediterranean Salt Meadow and 1330 Atlantic Salt Meadow.
- The targeted botanical survey (Goodwillie, March 2026) confirmed *Ruppia cf. maritima* in the lagoon water body
- The saltmarsh system is in active natural expansion (Goodwillie, 2026)).
- Otter (*Lutra lutra*, Annex II and IV) has been confirmed as actively using the site.
- The lagoon water body supports a lagoonal specialist fauna assemblage of high conservation value, including *Jaera forsmanni* (nationally rare isopod), *Hydrobia ventrosa* (*Ventrosia ventrosa*), *Cerastoderma glaucum*, *Littorina "tenebrosa"*, and *Idotea chelipes*, with *Hydrobia* snails confirmed present in 2026.
- Common Tern (*Sterna hirundo*, Annex I Birds Directive) was recorded using the site.
- *Carex extensa* was confirmed in both the 2025 and 2026 surveys.
- No bat roosts, otter holts, or invasive species were recorded within the works footprint.

Habitat Loss

The scheme has been designed to remain entirely within the existing road and embankment footprint: the proposed embankment toe will not extend beyond the existing embankment toe on the northern (SAC) side at any station. No direct loss of 1150*, 1410, or 1330 Annex I habitat occurs

Hydrology

The proposed culvert works consist of the like-for-like renovation of five existing culverts. The renovation restores all culverts to full hydraulic capacity, preserving the existing pipe diameter, invert level, alignment, and gradient at each location.

The tidal exchange serving IL054 following the proposed works will be equal to or greater than that currently prevailing.

Potential construction phase impacts, such as temporary tidal disruption during culvert works, water quality deterioration from sediment and hydrocarbon contamination, and disturbance to otter and birds, are all assessed as manageable through the mitigation measures specified in Section 7. With full implementation of these measures, no significant residual adverse effects on any ecological receptor are predicted.

European Eel passage is maintained and potentially improved by the invert-at-bed-level culvert design. Operational phase impacts are neutral to positive, with the road drainage interceptors representing an improvement in water quality management relative to the current situation.

Natura Impact Statement:

A full Stage 2 Appropriate Assessment has been conducted and is presented in the accompanying NIS (FWE, 2026). The NIS concludes that the proposed works will not adversely affect the integrity of the Kilkieran Bay and Islands SAC, either individually or in combination with other plans or projects. All SSCO attributes and targets for the screened-in qualifying interests 1150* Coastal Lagoon, 1410 Mediterranean Salt Meadow, 1330 Atlantic Salt Meadow, and 1355 Otter are maintained.

Provided all mitigation measures specified in Section 7.0 are fully implemented and enforced during construction, and the post-construction monitoring programme is carried out, the proposed road elevation works will not give rise to significant residual ecological effects at local, national, or international scale. The development is compatible with the protection and conservation of the ecological environment at this location, including the qualifying interests of the Kilkieran Bay and Islands SAC, and with the conservation objectives established by NPWS for those interests.

It is concluded that, following the implementation of mitigation measures, the proposed development will not result in any significant adverse effects on ecological receptors. Furthermore, and as demonstrated in the accompanying Natura Impact Statement, the proposed development will not adversely affect the integrity of the Kilkieran Bay and Islands SAC, either alone or in combination with other plans or projects

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- EU Water Framework Directive (2000/60/EC)
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- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272/2009)
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Appendices

Appendix 1: Aerial Imagery of the site 2025







