

Cúirt na Coiribe, Galway, Co. Galway

Natura Impact Statement

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Purpose

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Abbreviations

AA	Appropriate Assessment
DoEHLG	Department of Environment, Heritage and Local Government
EC	European Communities
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information Systems
IROPI	Imperative Reasons of Over-riding Public Interest
NBDC	National Biodiversity Data Centre
NIS	Natura Impact Statement
NOx	Nitrogen oxides
NPWS	National Parks and Wildlife Service
PM	Particulate matter
QI	Qualifying Interest
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SPA	Special Protection Area
WFD	Water Framework Directive
ZoI	Zone of Influence

1 Introduction

1.1 Background

JBA Consulting Ireland Ltd. was commissioned by Exeter Ireland Property III Limited to undertake a Natura Impact Assessment (NIS) in relation to the extension of Cúirt na Coiribe Student Accommodation, Galway, Co. Galway.

A screening for Appropriate Assessment has already been carried out (JBA, 2019). The area of works lies within 0.38km of the Lough Corrib SAC and within 1.0km of both the Galway Bay Complex SAC and Inner Galway Bay SPA. Likely significant effects on the qualifying interests of all three sites were identified in the screening stage.

The Zone of Influence within which potential impacts from any proposed project must be considered for significance, depends a variety of factors. This includes the nature, location and extent of the proposed works, the ecological receptors present within the Natura 2000 sites within the area and the potential for in combination impacts (DoEHLG, 2009).

The Natura 2000 site identified as occurring within the Zone of Influence of the development is:

- Lough Corrib SAC (000297)
- Galway Bay Complex SAC (000268)
- Inner Galway Bay SPA (004031)

This Natura Impact Statement (NIS) provides the results of the assessment conducted for the proposed extension of Cúirt na Coiribe Student Accommodation, Galway, Co. Galway in accordance with Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora).

1.2 Summary of the Screening Assessment

Following initial screening and based upon best scientific judgement it is concluded that there are likely significant effects from the project on Lough Corrib SAC (000297), Galway Bay Complex SAC (000268) and Inner Galway Bay SPA (004031). Full details of the Natura 2000 sites are given in Section 4. The likely significant effects screened into the NIS are:

Designated QIs of Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA, which may impact on following the potential release of construction pollutants into the surface water and groundwater pathways:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Potential Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Sea Lamprey (*Petromyzon marinus*) [1095]
- Brook Lamprey (*Lampetra planeri*) [1096]
- Atlantic Salmon (*Salmo salar*) [1106]
- Otter (*Lutra lutra*) [1355]
- Harbour Seal (*Phoca vitulina*) [1365]
- Great Northern Diver (*Gavia immer*) [A003]

- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Shoveler (*Anas clypeata*) [A056]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

1.3 Legislative Context

The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) aims to maintain or restore the favourable conservation status of habitats and species of community interest across Europe.

The requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of the Habitats Regulations, 1997 (S.I. No. 94 of 1997) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 / 2011).

Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. In Ireland the network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), and also candidate sites, which form the Natura 2000 network.

Article 6(3) of the Habitats Directive requires that, in relation to European designated sites (i.e. SACs and SPAs that form the Natura 2000 network), "any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to **appropriate assessment** of its implications for the site in view of the site's conservation objectives".

A competent authority (e.g. Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned.

Under article 6(4) of the Directive, if adverse impacts are likely, and in the absence of alternative options, a plan or project must nevertheless proceed for imperative reasons of overriding public interest (IROPI), including social or economic reasons, a Member State is

required to take all compensatory measures necessary to ensure the overall integrity of the Natura 2000 site. The European Commission have to be informed of any compensatory measures adopted, unless a priority habitat type or species is present. In which case an opinion from the European Commission is required beforehand (unless for human health or public safety reasons, or of benefit to the environment).

1.4 Appropriate Assessment Process

Guidance on the Appropriate Assessment (AA) process was produced by the European Commission in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of Environment, Heritage and Local Government (DEHLG) (2009). These guidance documents identify a staged approach to conducting an AA, as shown in Figure 1-1.

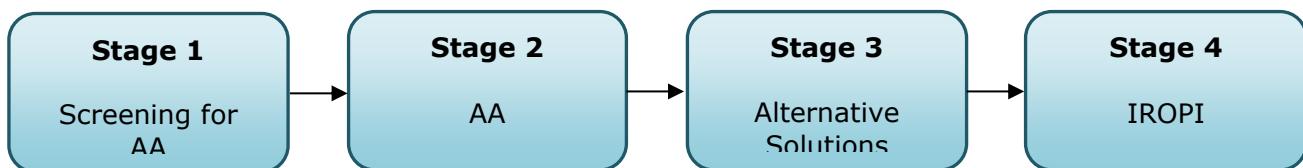


Figure 1-1: The Appropriate Assessment Process (from: Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities, DEHLG, 2009)

1.4.1 Stage 1 - Screening for AA

The initial, screening stage of the Appropriate Assessment is to determine:

- whether the proposed plan or project is directly connected with or necessary for the management of the European designated site for nature conservation
- if it is likely to have a significant adverse effect on the European designated site, either individually or in combination with other plans or projects

For those sites where potential adverse impacts are identified, either alone or in combination with other plans or projects, further assessment is necessary to determine if the proposals will have an adverse impact on the integrity of a European designated site, in view of the site's conservation objectives (i.e. the process proceeds to Stage 2). Following the ECJ ruling (C-323/17 People Over Wind and Peter Sweetman v Coillte - June 2018) reduction measures (including standard environmental mitigation) can only be considered in Stage 2.

1.4.2 Stage 2 - AA

This stage requires a more in-depth evaluation of the plan or project, and the potential direct and indirect impacts of them on the integrity and interest features of the European designated site(s), alone and in-combination with other plans and projects, taking into account the site's structure, function and conservation objectives. Where required, mitigation or avoidance measures will be suggested.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, and where mitigation cannot be achieved, then alternative solutions will need to be considered (i.e. the process proceeds to Stage 3).

1.4.3 Stage 3 - Alternative Solutions

Where adverse impacts on the integrity of Natura 2000 sites are identified, and mitigation cannot be satisfactorily implemented, alternative ways of achieving the objectives of the plan or project that avoid adverse impacts need to be considered. If none can be found, the process proceeds to Stage 4.

1.4.4 Stage 4 - IROPI

Where adverse impacts of a plan or project on the integrity of Natura 2000 sites are identified and no alternative solutions exist, the plan will only be allowed to progress if imperative reasons of overriding public interest (IROPI) can be demonstrated. In this case compensatory measures will be required.

The process only proceeds through each of the four stages for certain plans or projects. For example, for a plan or project, not connected with management of a site, but where no likely significant impacts are identified, the process stops at stage 1. Throughout the process, the precautionary principle must be applied, so that any uncertainties do not result in adverse impacts on a site.

1.5 Methodology

The Natura Impact Statement has been prepared with reference to the following documents:

- DoEHLG (2009, 2010 revision) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government.
- European Communities (EC) (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.
- EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.
- Fossitt, J. (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.
- Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal, Second Ed. (Chartered Institute of Ecology and Environmental Management, 2016); and
- NPWS (2008). The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS (2013a). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessment Volume 2. Version 1.1. Unpublished Report, National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- NPWS (2013b). The Status of EU Protected Habitats and Species in Ireland. Species Assessment Volume 3. Version 1.0. Unpublished Report, National Parks

and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

- European Court Judgement (ECJ) (June 2018) People over Wind and Sweetman [Online] Available at:
<http://curia.europa.eu/juris/document/document.jsf?docid=200970&doclang=EN>

This report has been produced on currently available information, with the most up-to-date versions available at the time of issue used.

1.6 Desktop Survey

A desktop survey was conducted of available published and unpublished information, along with a review of data available on the NPWS and National Biodiversity Data Centre (NBDC) web-based databases, in order to identify key habitats and species that may be present within relevant 1km grid squares, in particular those protected by European and national legislation. The data sources below were consulted for the desktop study;

- NPWS website (<https://www.npws.ie/>), where site synopses, Natura 2000 data forms and conservation objectives were obtained.
- National Biodiversity Data Centre (NBDC) Maps (<http://maps.biodiversityireland.ie/#/Map>)
- Environmental Protection Agency (EPA) maps website (<https://gis.epa.ie/EPAMaps/>)
- River Basin Management Plans (RBMP) (www.wfdireland.ie)
- Galway County Council planning website (<http://www.galway.ie/en/services/planning/onlineplanningsystems/>)

1.7 Competent Persons

The assessment has been carried out by William Mulville. He is an ecologist with JBA and has undertaken numerous Appropriate Assessment Screening and NIS assessments. The assessment has been reviewed by Niamh Burke with over 10 years' experience in undertaking assessments under the Habitats Directive.

1.8 Limitations and Constraints

The NIS assessment necessarily relies on some assumptions and it was inevitably subject to some limitations. These would not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Information on the works and conditions on site are based on current knowledge at the time of writing. Changes to the site since surveys were undertaken cannot be accounted for.
- Some slight variation in the works methodology may occur, but these will only be minor changes. Where changes to methodology could impact on ecological features, an ecologist will be consulted to determine if the project needs reassessment.
- Adverse weather can cause delays to the schedule and alter the timing of works. This has been accounted for using a worst-case scenario where necessary.
- The NIS addresses issues around European designated sites and does not exempt works from responsibilities related to habitats and species covered under separate national legislation.
- The ecological survey was restricted to the proposed site only and did not take in any area of the screened-in Natura 2000 sites.

2 Project Description

2.1 The 'Project'

The proposed development meets the criteria of a 'Project' as defined in the Habitats Directive and is not directly connected with or necessary to the management of any Natura 2000 site. Therefore, the Project is subject to the requirements of the Appropriate Assessment process.

2.2 Site location

The proposed development is an existing set of student accommodations buildings in Terryland area, Galway, Co. Galway. The site is located directly adjacent of the Terryland River (at its southern most boundary) and Terryland Forest Park and 130m west of the Headford Road (N6) (Figure 2-1). The Terryland River joins the River Corrib approximately 500m west of the site. Other notable landmarks in local environs includes Deacy Park located 250m west of the proposed site.

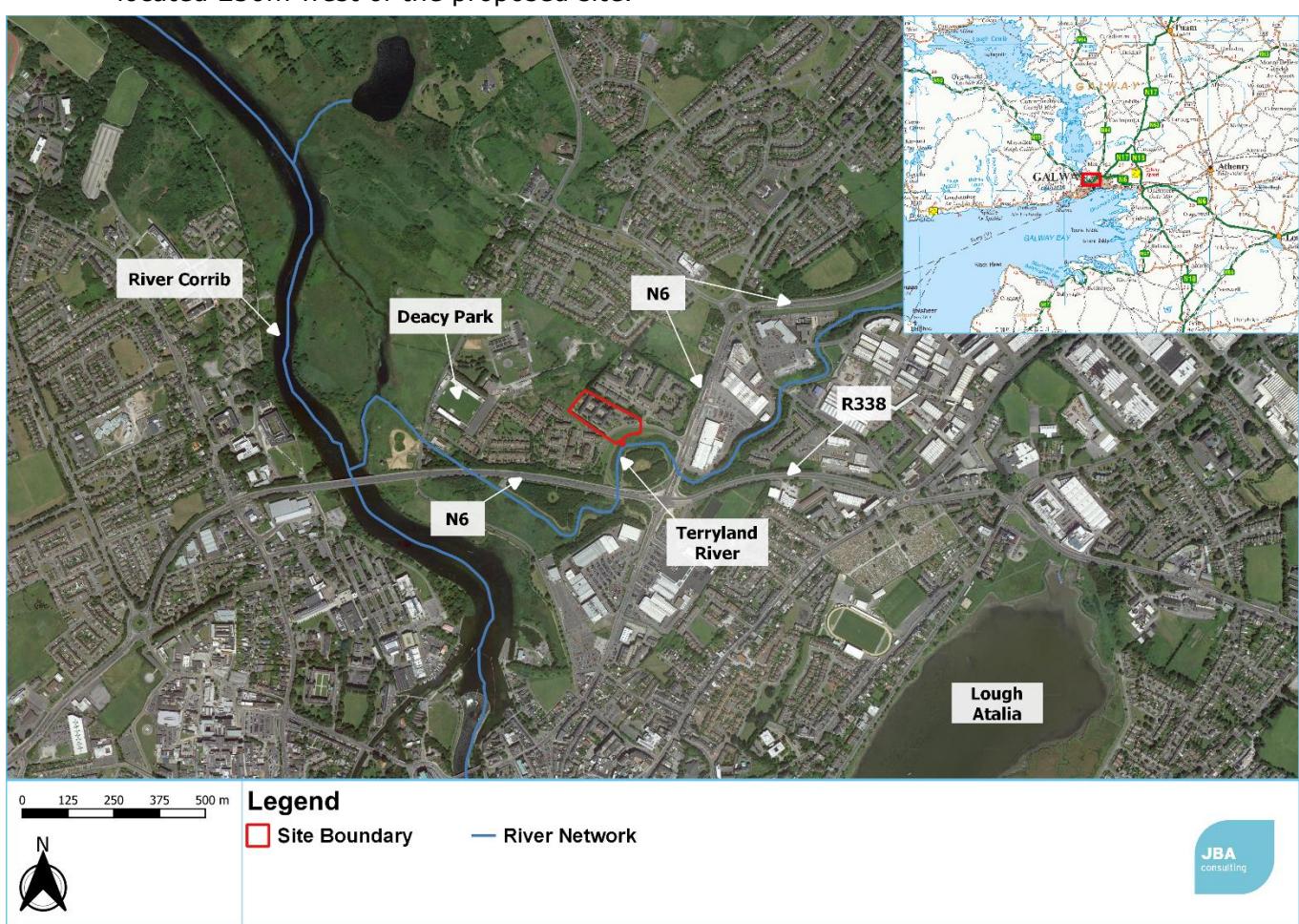


Figure 2-1: Site location

2.3 Project Description

Exeter Ireland Property III Limited intend to apply for a strategic housing development at the Cúirt na Coiribe complex, Dún Na Coiribe Road, off Headford Road, Galway on a site measuring 1.414 Ha. The proposed development will consist of: the demolition of the two storey building (582 sq m) at the entrance to the scheme towards the eastern boundary of the site and the removal of the fifth storey (attic) level (1,123 sq m) of the main building;

and the provision of horizontal and vertical additions to and extensions of the main existing building providing 920 No. bedspaces (an additional 515 No. student accommodation bedspaces) in 868 No. bedrooms; ancillary student accommodation spaces at basement and ground floor level measuring 1,688 sq m and including gym/fitness studio, games room, library/study spaces, multi-functional spaces, café/restaurant, and student lounge spaces; all provided in a single building in 9 No. linked blocks ranging in height from 2 No. to 6 No. storeys (gross floor space of 24,521 sq m plus basement car-parking and plant (2,615 sq m)). The scheme comprises a total floor area above ground of 22,180 sq m over a basement of 4,956 sq m. The scheme also proposes 59 No. car-parking spaces (43 No. basement and 16 No. surface spaces); 656 No. cycle parking spaces; 5 No. motorcycle parking spaces; external student amenity spaces; hard and soft landscaping; boundary treatments; plant; diversion of services and all associated works above and below ground.

2.3.1 Duration of the Works

The construction of the proposed site will last approximately 15 months.

2.3.2 Machinery to be used on site

The following construction machinery likely to be used during the construction phase of the proposed site:

- Excavators
- Teleporters
- Forklifts
- Dump trucks
- Vans
- Pick-up trucks

2.4 Project Zone of Influence

The project will primarily affect the site only, but a wider zone of influence is used for impacts relating to noise disturbance (1km), air pollution (5km), surface water, groundwater (5km) and any supporting habitat for SAC/SPA species (5km). The proposed site lies within 0.38km of the Lough Corrib SAC and within 1.0km of both the Galway Bay Complex SAC and Inner Galway Bay SPA.

2.5 Project Summary

Table 2-1 in overleaf presents a summary of the elements of the Project that are relevant for ecology- (derived from the Screening for Appropriate Assessment report [JBA, 2019]).

Table 2-1: Summary of project elements relevant to ecology of the three Natura 2000 sites.

Project Elements	Comment
Size and scale	Exeter Ireland Property III Limited intend to apply for a strategic housing development at the Cúirt na Coiribe complex, Dún Na Coiribe Road, off Headford Road, Galway on a site measuring 1.414 Ha. The proposed development will consist of: the demolition of the two storey building (582 sq m) at the entrance to the scheme towards the eastern boundary of the site and the removal of the fifth storey (attic) level (1,123 sq m) of the main building; and the provision of horizontal and vertical additions to and extensions of the main existing building providing 920 No. bedspaces (an additional 515 No. student

Project Elements	Comment
	<p>accommodation bedspaces) in 868 No. bedrooms; ancillary student accommodation spaces at basement and ground floor level measuring 1,688 sq m and including gym/fitness studio, games room, library/study spaces, multi-functional spaces, café/restaurant, and student lounge spaces; all provided in a single building in 9 No. linked blocks ranging in height from 2 No. to 6 No. storeys (gross floor space of 24,521 sq m plus basement car-parking and plant (2,615 sq m)). The scheme comprises a total floor area above ground of 22,180 sq m over a basement of 4,956 sq m. The scheme also proposes 59 No. car-parking spaces (43 No. basement and 16 No. surface spaces); 656 No. cycle parking spaces; 5 No. motorcycle parking spaces; external student amenity spaces; hard and soft landscaping; boundary treatments; plant; diversion of services and all associated works above and below ground.</p> <p>(See Appendix A).</p>
Land-take	There will be no land take from the SACs and SPAs.
Distance from Natura 2000 site or key features of the site	<p>The Natura 2000 site of closest proximity to the proposed site is at a distance of approximately 0.38km – Lough Corrib SAC.</p> <p>Other Natura 2000 sites within the Zone of Influence are present within the range of 1.0km - 2.5km. Galway Bay Complex SAC (1.0km) and Inner Galway Bay SPA (1.0km).</p>
Resource requirements (water abstraction etc.)	There will be no groundwater abstraction.
<p>Emissions (disposal to land, water or air)</p>	<p>Temporary Impacts:</p> <p>Water Quality</p> <p>In the absence of any mitigation the water quality-based emissions and/or pollution events from the project could potentially result in a significant negative impact via surface water and groundwater pathways on the Lough Corrib and Galway Bay Complex SACs, as well as the Inner Galway Bay SPA.</p> <p>Air Quality</p> <p>In the absence of any mitigation the air quality-based emissions from the project would not result in a negative impact on any Natura 2000 site. In addition to this, in order to safeguard air quality during the works of the proposed project, works will be undertaken according to best practice guidance.</p> <p>Permanent Impacts:</p> <p>Air Quality</p> <p>Excavations at the site will produce loose top and sub soil, and emissions may arise from working machinery. However, this is not anticipated to have a significant impact on habitats or species of qualifying interest. In the absence of any mitigation, the emissions from the project would not result in a negative impact on any of the Natura 2000 sites.</p>

Project Elements	Comment
	<p>Water Quality</p> <p>The surface water drainage of the proposed site will pass through a petrol interceptor as it leaves the vicinity of the residential buildings. The surface water will then be piped through to an attenuation wetland depression (277m³), which will collect and settle out any excessive sediment loadings. This attenuation depression is located across the road from residential area within the open amenity grassland. Here it will pool and slowly drain into the Terryland River via the hydrobrake manhole, which will restrict flow to 9.0 l/s through the outfall pipe.</p> <p>The foul water drainage of the proposed site will have a wastewater storage tank (145m³) and involve a small diversion of the current foul water system in close proximity to the residential units but will proceed to connect back to the existing foul water drainage system in Terryland area. Ultimately, the foul waste is treated at the Mutton Island WWTP [D0050-01] which services the Galway city area.</p> <p>Surface water and wastewater drainage plans are detailed in Appendix B. The site-specific foul water drainage system will connect to the existing foul water system for Terryland, Galway city area.</p>
Excavation requirements	<p>Construction phase approximate excavation cut volumes are as follows:</p> <ul style="list-style-type: none"> - 3,550m³ - accounts for the footprints of the 3 new escape stairs that go to the basement, the new basement area for block 7, the new basement area for block 8 (minus the volume of existing basement to be demolished that crosses over with this area) and the new foul water tank near the entrance to the development.
Transportation requirements	<p><i>Temporary Impacts:</i></p> <p>Levels of traffic to the site during the construction phase will increase traffic to the Dun na Coiribe area. Given the distance to the Natura 2000 sites and the size and scale of the proposed project, transportation requirements are not anticipated to affect the SACs or SPAs within the ZoI.</p> <p><i>Permanent Impacts:</i></p> <p>Traffic to and from the proposed project will be on pre-existing roads. Given the distance to Natura sites and the size and scale of the proposed project, transportation requirements during the operational phase will not affect Natura 2000 sites.</p>
Duration of construction, operation, decommissioning etc.	Construction will last approximately 15 months and will be carried out across two phases. Operation will be permanent, and no decommissioning is anticipated.
Other	None

3 Natura Sites

This section provides baseline information on the Natura 2000 sites within the Zone of Influence (5km) of the proposed works. A short description of the Natura 2000 sites is provided, along with details of the qualifying interest/special conservation interests, conservation objectives, the attributes used to define favourable conservation status and site vulnerabilities.

The Natura 2000 sites identified as occurring within the Zone of Influence of the proposed development are:

- Lough Corrib SAC (000297)
- Galway Bay Complex SAC (000268)
- Inner Galway Bay SPA (004031)

The site location is within 0.38km of the Lough Corrib SAC and within 1.0km of both the Galway Bay Complex SAC and Inner Galway Bay SPA.

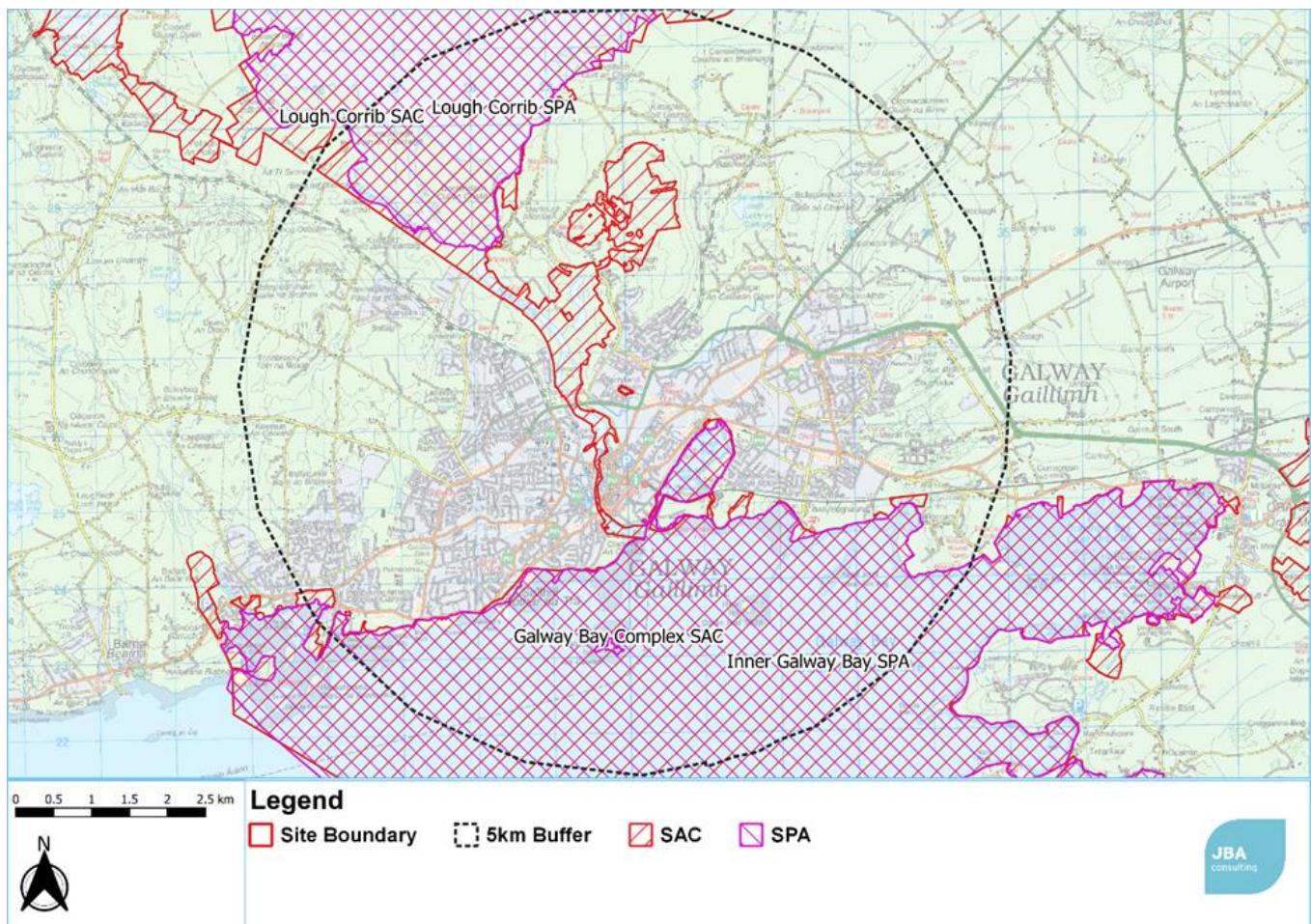


Figure 3-1: Natura 2000 sites and site location.

3.1 Lough Corrib SAC (000297)

Lough Corrib is situated north of Galway city and is the second largest lake in Ireland. The lake supports extensive *Chara* beds, many wooded islands and large areas of swamp and fen in the shallow south-east section which lies on limestone. The north-west part is deeper, wider and more oligotrophic. Shore is mainly karst, bog and small areas of callow. Most of the main rivers and their tributaries which flow into the lake are included within the site, including the Abbert, Clare, Cong, Cornamona, Dalgan, Drimeen, Grange, Owenwee, Owenriff and Sinking rivers. The River Corrib flows from the southern point of the lough into the sea at Galway city (NPWS, 2017a).

The site is of immense importance for the occurrence of scarce and specialised habitats, as well as animal and plant species. Lough Corrib is the second largest oligotrophic lake in the country and is a superb example of a hardwater system. The site holds 14 Annex I habitats, 6 of these are priority Annex I habitats of the EU Habitats Directive and 5 Red Data Book plant species. The SAC also supports Slender Green Feather-moss (*Drepanocladus vernicosus*); Otter (*Lutra lutra*); a rare chironomid (*Corynoptera ambigua*); good populations of Freshwater Pearl Mussel (*Margaritifera margaritifera*); White-clawed Crayfish (*Austropotamobius pallipes*); Sea Lamprey (*Petromyzon marinus*) and Brook Lamprey (*Lampetra planeri*). The site also supports an important population of Atlantic Salmon (*Salmo salar*). Additionally, the site is also important for wintering and breeding birds with Greenland White-fronted Goose (*Anser albifrons flavirostris*), Common Tern (*Sterna hirundo*) and Artic Tern (*Sterna paradisea*) populations occurring within the site (NPWS, 2017a).

3.1.1 Qualifying Interests

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes) (NPWS, 2017b):

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Active raised bogs [7110]
- Degraded raised bogs still capable of natural regeneration [7120]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Alkaline fens [7230]
- Limestone pavements [8240]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Bog woodland [91D0]

- Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]
- White-clawed Crayfish (*Austropotamobius pallipes*) [1092]
- Sea Lamprey (*Petromyzon marinus*) [1095]
- Brook Lamprey (*Lampetra planeri*) [1096]
- Atlantic Salmon (*Salmo salar*) [1106]
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]
- Eurasian Otter (*Lutra lutra*) [1355]
- Slender Green Feather-moss (*Drepanocladus vernicosus*) [1393]
- Slender Naiad (*Najas flexilis*) [1833]

Of these species and habitats, only Sea Lamprey; Brook Lamprey; Atlantic Salmon and Otter have the potential to be connected to the proposed site via surface and groundwater pathways and are all dependent on clean, unpolluted waterways for the health of local populations; local spawning areas (Sea Lamprey) and their respective prey items.

3.1.2 Conservation Objectives

The conservation objectives for Lough Corrib SAC below are taken from the NPWS Conservation Objectives Document (NPWS, 2017b).

'To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected'.

The conservation objectives document outlines specific objectives for the individual QIs within the ZoI and their respective attributes, measure and target aspects. These aspects are detailed in Table 3-1.

Table 3-1: Conservation objectives for Lough Corrib SAC QIs within the ZoI.

Sea Lamprey (<i>Petromyzon marinus</i>) [1095]		
To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC, which is defined by the following list of attributes and targets:		
Attribute	Measure	Target
Distribution: extent of anadromy	Percentage of river accessible	Greater than 75% of main stem length of rivers accessible from estuary
Population structure of juveniles	Number of age/size groups	At least three age/size groups present
Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density at least 1/m ²
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart

Brook Lamprey (*Lampetra planeri*) [1096]

To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Distribution	Percentage of river accessible	Access to all watercourses down to first order streams
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present
Juvenile density in fine sediment	Ammocoetes/m ²	Mean catchment ammocoete density of brook/river lamprey at least 5/m ²
Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive

Atlantic Salmon (*Salmo salar*) [1106]

To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling
Out-migrating smolt abundance	Number	No significant decline
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA

Otter (*Lutra lutra*) [1410]

To maintain the favourable conservation condition of Otter in Lough Corrib SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Distribution	Percentage positive survey sites	No significant decline
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1,054ha along river banks/lake shoreline/around ponds
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 314.2km
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 4,178ha
Couching sites and holts	Number	No significant decline
Fish biomass available	Kilograms	No significant decline
Barriers to connectivity	Number	No significant increase

3.1.3 Site Vulnerability

There is a range of habitats (within the developments ZoI) associated with the freshwater to brackish waters within Lough Corrib SAC, including depositing / lowland rivers, fringing reed swamp and estuarine waters.

Threats, pressures and activities with impacts on the habitats of Lough Corrib SAC are listed in Table 3-2. From looking at the table and taking into account the habitats, species, soil depth and bedrock characteristics recorded on the site visit, it appears that surface water and is the most important threat to Lough Corrib SAC from the proposed site, with groundwater pollution being secondary.

Table 3-2: Threats and pressures posed to Lough Corrib SAC (NPWS, 2017a).

Threats and pressures	Rank: Low (L) Moderate(M) High (H)	Source: Inside (i) Outside (o) Both (b)
Agricultural intensification	H	b
Invasive non-native species	H	i
Piers / tourist harbours or recreational piers	M	i
Continuous urbanisation	M	o
Forest planting on open ground	M	b
Infilling of ditches, dykes, ponds, pools, marshes or pits	M	i
Sand and gravel extraction	L	o
Abandonment of pastoral systems, lack of grazing	M	i
Diffuse pollution to surface waters due to household sewage	H	o

and waste waters		
Other human induced changes in hydraulic conditions	M	b
Roads, paths and railroads	M	i
Other human intrusions and disturbances	H	i
Removal of hedges and copses or scrub	M	i
Mechanical removal of peat	H	i
Disposal of household / recreational facility waste	L	i
Fertilisation	M	b
Dispersed habitation	M	i

3.1.4 Other Designations

Lough Corrib and the River Corrib within upper Galway city (i.e. the section of Lough Corrib SAC within the ZoI) environs also has been designated as a Proposed Natural Heritage Area (pNHA). No other area or species-specific designations are associated with Lough Corrib and the river.

3.2 Galway Bay Complex SAC (000268)

The Galway Bay Complex is a very large, marine-dominated, site situated on the west coast of Ireland. Subsidiary bays and inlets add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Visean) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, with complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Other habitats which occur in small amounts include lagoon, fen, turlough, dry grassland, wet grassland and deciduous woodland (NPWS, 2017c).

The site has very important and good quality examples of large shallow inlets and bays, intertidal mud and sandflats, and reefs. The area has the country's only recorded example of the littoral community characterized by Serrated Wrack (*Fucus serratus*) with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. Sublitorally, the area has Ireland's only reported piddock bed, an extensive maerl bed of *Phymatolithon calcareum*, an oyster bed, and seagrass beds. A host of rare marine organisms occur, including the Purple Sea Urchin (*Paracentrotus lividus*), the sponge (*Mycale contarenii*), the Hand leaf Bearer algae (*Phyllophora sicula*) and *Rhodymenia delicatula*. Of especial importance are the rare karstic rock lagoons, of which the site holds all but one of the examples known from the mainland of Ireland. Good quality salt marshes of both Atlantic and Mediterranean types are well represented and occur along with perennial vegetation of stony banks. A very good, though limited, example of calcareous grassland rich in orchids occurs, and there are examples of alkaline fen and Common Juniper (*Juniperus communis*) scrub of moderate quality. Two Red Data Book stoneworts occur, Bearded Stonewort (*Chara canescens*) and Foxtail Stonewort (*Lamprothamnium papulosum*), and also two Red Data Book vascular plants – Sea Kale (*Crambe maritima*) and Henbane (*Hyoscyamus niger*). The site has one of the largest populations of Harbour Seal (*Phoca vitulina*) in the country and provides optimum habitat for Eurasian Otter. Galway Bay is a very important ornithological site, with an internationally important wintering population of Light-bellied Brent Goose (*Branta bernicla hrota*) and regular nationally important populations of a further 16 bird species (NPWS, 2017c).

3.2.1 Qualifying Interests

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes) (NPWS, 2013a):

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Turloughs [3180]
- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Alkaline fens [7230]
- Limestone pavements [8240]
- Eurasian Otter (*Lutra lutra*) [1355]
- Harbour Seal (*Phoca vitulina*) [1365]

Of these species and habitats, Mudflats and sandflats not covered by seawater at low tide; Coastal lagoons; Large shallow inlets and bays; Reefs; Potential Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); Otter; and Harbour Seal have the potential to be connected to the proposed site via surface and groundwater pathways and are all dependent on clean, unpolluted waterways for the overall health of their respective local populations and key indicator species.

3.2.2 Conservation Objectives

The conservation objectives for Galway Bay Complex SAC below are taken from the NPWS Conservation Objectives Document (NPWS, 2013a).

'To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected'.

The conservation objectives document outlines specific objectives for individual QIs within the ZoI and their respective attributes, measure and target aspects. These aspects are detailed in Table 3-3.

Table 3-3: Conservation objectives for Galway Bay Complex SAC QIs within the ZoI.

Mudflats and sandflats not covered by seawater at low tide [1140]		
To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:		
Attribute	Measure	Target
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; and Intertidal sand community complex.

Coastal lagoons [1150]		
To restore the favourable conservation condition of Coastal lagoons in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:		
Attribute	Measure	Target
Habitat area	Hectares	Area stable, subject to slight natural variation. Favourable reference area 76.7ha
Habitat distribution	Occurrence	No decline, subject to natural processes
Salinity regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural ranges
Hydrological regime	Metres	Annual water level fluctuations and minima within natural ranges
Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management
Water quality: Chlorophyll a	µg/L	Annual median chlorophyll a within natural ranges and less than µg/L
Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Annual median DIN within natural ranges and less than 0.15mg/L
Depth of macrophyte colonisation	Metres	Macrophyte colonisation to at least 2m depth
Typical plant species	Number and m ²	Maintain number and extent of listed lagoonal specialists, subject to natural variation
Typical animal species	Number	Maintain listed lagoon specialists, subject to natural variation
Negative indicator species	Number and % cover	Negative indicator species absent or under control

Large shallow inlets and bays [1160]

To maintain the favourable conservation condition of Large shallow inlets and bays in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
Community extent	Hectares	Maintain the extent of the <i>Zostera</i> -dominated community complex and the maërl-dominated community, subject to natural processes
Community structure: <i>Zostera</i> density	Shoots per m ²	Conserve the high quality of <i>Zostera</i> -dominated communities, subject to natural processes
Community structure	Biological composition	Conserve the high quality of the maërl-dominated community, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; Intertidal sand community complex; Fine to medium sand with bivalve community complex; Sandy mud to mixed sediment community complex; Mixed sediment dominated by <i>Mytilidae</i> community complex; Shingle; Fucoid-dominated community complex; <i>Laminaria</i> -dominated community complex; and Shallow sponge-dominated community complex.

Reefs [1170]

To maintain the favourable conservation condition of Reefs in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Distribution	Occurrence	The distribution of reefs is stable or increasing, subject to natural processes
Habitat area	Hectares	The permanent habitat area is stable, subject to natural processes
Community extent	Hectares	Maintain the extent of the <i>Mytilus</i> -dominated reef community, subject to natural processes
Community structure: <i>Mytilus</i>	Individuals per m ²	Conserve the high quality of the

density		<i>Mytilus</i> -dominated reef community, subject to natural processes
Community structure	Biological composition	Conserve the following community types in a natural condition: Fucoid-dominated community complex; <i>Laminaria</i> -dominated community complex; and Shallow sponge-dominated community complex

Potential Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Barna House - 2.33ha, Seaweed Point - 1.41ha, Roscam West and South - 3.30ha, Oranmore North - 4.24ha, Kilcaimin - 6.82ha, Tawin Island - 53.85ha, Tyrone House-Dunbulcaun Bay - 9.83ha, Kileenaran - 15.37ha, Kinvara West - 13.33ha, Scanlan's Island - 4.13ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of =subcommunities with typical species listed in SMP
Vegetation structure:	Hectares	There is currently no common

negative indicator species - <i>Spartina anglica</i>		cordgrass (<i>Spartina anglica</i>) in this SAC. Prevent establishment of cordgrass
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Otter (*Lutra lutra*) [1355]

To restore the favourable conservation condition of Otter in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Distribution	Percentage positive survey sites	No significant decline
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 262ha above high-water mark (HWM); 14ha along river banks/around ponds
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 2040ha
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 4km
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 21ha
Couching sites and holts	Number	No significant decline
Fish biomass available	Kilograms	No significant decline
Barriers to connectivity	Number	No significant increase

Harbour Seal (*Phoca vitulina*) [1365]

To maintain the favourable conservation condition of Harbour Seal in Galway Bay Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use
Breeding behaviour	Breeding sites	Conserve breeding sites in a natural condition
Moulting behaviour	Moult haul-out sites	Conserve moult haul-out sites in a natural condition
Resting behaviour	Resting haul-out sites	Conserve resting haul-out sites in a natural condition
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site

3.2.3 Site Vulnerability

There is a wide range of habitats associated with the brackish to marine waters and wetlands within Galway Bay Complex SAC, including intertidal sediments; rocky terraces; sandy beaches with rock; sand dunes; saltmarshes and meadows; shingle and stony beaches; soft coastal cliffs; calcareous grasslands coastal lagoons; turloughs; limestone pavements; as well as alkaline and calcareous fens. The above habitats are all utilised by the QI faunal species for which the SAC is designated.

Threats, pressures and activities with impacts on the habitats of Galway Bay Complex SAC are listed in Table 3-4 below. From looking at the table and taking into account the habitats, species, soil depth and bedrock characteristics recorded on the site visit, it appears that surface water and is the most important threat to Galway Bay Complex SAC from the proposed site, with groundwater pollution being secondary.

Table 3-4: Threats and pressures posed to Galway Bay Complex SAC (NPWS 2017c)

Threats and pressures	Rank: Low (L) Moderate (M) High (H)	Source: Inside (i) Outside (o) Both (b)
Reclamation of land from sea, estuary or marsh	M	i
Disposal of inert materials	L	i
Agricultural intensification	M	i
Shipping lanes, ports, marine constructions	H	i
Non-motorized nautical sports	L	i
Non-intensive sheep grazing	M	i
Golf course	L	i
Slipways	L	i
Diffuse pollution to surface waters due to household sewage and waste waters	H	b
Modification of water flow (tidal & marine currents)	L	b
Paths, tracks, cycling tracks	L	i
Diffuse pollution to surface waters due to agricultural and forestry activities	H	b
Marine and freshwater aquaculture	M	b
Invasive non-native species	M	b
Sand and gravel extraction	M	i
Hunting, fishing or collecting activities not referred to above	M	i
Bait digging / collection	L	i
Estuarine and coastal dredging	L	i
Pipe lines	M	i
Removal of beach materials	M	i
Industrial ports	H	i

Sea defence or coast protection works, tidal barrages	H	i
Non-intensive cattle grazing	M	i

3.3 Inner Galway Bay SPA (004031)

Galway Bay SPA is a very large, marine-dominated, site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poulnacloough, Auginish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The long shoreline is noted for its diversity, with complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. Seagrass beds lie off Finavarra Point. A number of small islands composed of glacial deposits are included, such as Deer Island, along with some rocky islets (NPWS, 2017d).

It supports internationally important wintering populations of Great Northern Diver (*Gavia immer*) and Light-bellied Brent Goose and regularly occurring nationally important populations of an additional 16 species, most notably Red-breasted Merganser (*Mergus serrator*) (6.7% of national total), Ringed Plover (*Charadrius hiaticula*) (3.3% of total), Shoveler (2.9% of total) and Bar-tailed Godwit (*Limosa lapponica*) (2.5% of total). It supports the largest and the most regular population of Black-throated Loon (*Gavia arctica*) in the country. The bay is an important wintering site for gulls and is of national significance for at least Common Gull. Breeding birds of note are Cormorant (*Phalacrocorax carbo*), Sandwich Tern (*Sterna sandvicensis*) and Common Tern. The site provides both feeding and roost sites for most of the species, though some birds commute to areas outside of the site (NPWS, 2017d).

3.3.1 Qualifying Interests

The site is a Special Protection Area (SPA) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes) (NPWS, 2013b):

- Great Northern Diver (*Gavia immer*) [A003]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Shoveler (*Anas clypeata*) [A056]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]

- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

All of these bird species and the wetland habitat have the potential to be connected to the proposed site via surface and groundwater pathways and are all dependent on clean, unpolluted waterways for the overall health of their respective local populations and their respective prey items and floral species on which they graze.

3.3.2 Conservation Objectives

The conservation objectives for Inner Galway Bay SPA below are taken from the NPWS Conservation Objectives Document (NPWS, 2013b).

'To maintain the favourable conservation condition of the wetland habitat at Inner Galway Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it'.

The conservation objectives document outlines specific objectives for individual QIs within the ZoI and their respective attributes, measure and target aspects. These aspects are detailed in Table 3-5.

Table 3-5: Conservation objectives for Inner Galway Bay SPA QIs within the ZoI.

Great Northern Diver (<i>Gavia immer</i>) [A003]		
To maintain the favourable conservation condition of Great Northern Diver in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:		
Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by Great Northern Diver, other than that occurring from natural patterns of variation

Cormorant (<i>Phalacrocorax carbo</i>) [A017]		
To maintain the favourable conservation condition of Cormorant in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:		
Attribute	Measure	Target
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
Productivity rate	Mean number	No significant decline
Distribution: breeding	Number; location; area	No significant decline

colonies	(hectares)	
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant decline
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding Cormorant population
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by Cormorant, other than that occurring from natural patterns of variation

Grey Heron (*Ardea cinerea*) [A028]

To maintain the favourable conservation condition of Grey Heron in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing and intensity of use of areas used by Grey Heron, other than that occurring from natural patterns of variation

Brent Goose (*Branta bernicla hrota*) [A046]

To maintain the favourable conservation condition of Light-bellied Brent Goose in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing and intensity of use of areas by Light-bellied Brent Goose, other than that occurring from natural patterns of variation

Wigeon (*Anas penelope*) [A050]

To maintain the favourable conservation condition of Wigeon in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target

Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Wigeon, other than that occurring from natural patterns of variation

Teal (*Anas crecca*) [A052]

To maintain the favourable conservation condition of Teal in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Teal, other than that occurring from natural patterns of variation

Shoveler (*Anas clypeata*) [A056]

To maintain the favourable conservation condition of Shoveler in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Shoveler, other than that occurring from natural patterns of variation

Red-breasted Merganser (*Mergus serrator*) [A069]

To maintain the favourable conservation condition of Red-breasted Merganser in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing and intensity of use of areas by Red-breasted Merganser, other than that occurring from natural patterns of variation

Ringed Plover (*Charadrius hiaticula*) [A137]

To maintain the favourable conservation condition of Ringed Plover in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Ringed Plover, other than that occurring from natural patterns of variation

Golden Plover (*Pluvialis apricaria*) [A140]

To maintain the favourable conservation condition of Golden Plover in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Golden Plover, other than that occurring from natural patterns of variation

Lapwing (*Vanellus vanellus*) [A142]

To maintain the favourable conservation condition of Lapwing in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Lapwing, other than that occurring from natural patterns of variation

Dunlin (*Calidris alpina alpina*) [A149]

To maintain the favourable conservation condition of Dunlin in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable

		or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by Dunlin, other than that occurring from natural patterns of variation

Bar-tailed Godwit (*Limosa lapponica*) [A157]

To maintain the favourable conservation condition of Bar-tailed Godwit in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the range, timing or intensity of use of areas by Bar-tailed Godwit, other than that occurring from natural patterns of variation

Curlew (*Numenius arquata*) [A160]

To maintain the favourable conservation condition of Curlew in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the range, timing or intensity of use of areas by Curlew, other than that occurring from natural patterns of variation

Common Gull (*Larus canus*) [A182]

To maintain the favourable conservation condition of Common Gull in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by the Common Gull, other than that occurring from natural patterns of variation

Redshank (*Tringa tetanus*) [A162]

To maintain the favourable conservation condition of Redshank in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the range, timing or intensity of use of areas by Redshank, other than that occurring from natural patterns of variation

Turnstone (*Arenaria interpres*) [A169]

To maintain the favourable conservation condition of Turnstone in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the range, timing or intensity of use of areas by Turnstone, other than that occurring from natural patterns of variation

Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

To maintain the favourable conservation condition of Black-headed Gull in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the range, timing and intensity of use of areas used by Black-headed Gull other than that occurring from natural patterns of variation

Sandwich Tern (*Sterna sandvicensis*) [A191]

To maintain the favourable conservation condition of Sandwich Tern in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
Productivity rate: fledged young per breeding pair	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (Hectares)	No significant decline
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding Sandwich Tern population

Common Tern (*Sterna hirundo*) [A193]

To maintain the favourable conservation condition of Common Tern in Inner Galway Bay SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
Productivity rate: fledged young per breeding pair	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (Hectares)	No significant decline
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding Common / Little Tern population

Wetlands and Waterbirds [A999]

To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Attribute	Measure	Target
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 13,267ha, other than that occurring from natural patterns of variation

3.3.3 Site Vulnerability

There is a wide range of habitats associated with the brackish to marine waters and wetlands within Inner Galway Bay SPA including, bedrock shore, shingle beach, sandy beach, fringing salt marshes; intertidal sand and mudflats; small islands; and rocky islets. The above habitats are all utilised by the QI bird species for which the SPA is designated.

Threats, pressures and activities with impacts on the habitats of Inner Galway Bay SPA are listed in Table 3-6 below. From looking at the table and taking into account the habitats, species, soil depth and bedrock characteristics recorded on the site visit, it appears that surface water and is the most important threat to Inner Galway Bay SPA from the proposed site, with groundwater pollution being secondary.

Table 3-6: Threats and pressures posed to Inner Galway Bay SPA (NPWS 2017d)

Threats and pressures	Rank: Low (L) Moderate (M) High (H)	Source: Inside (i) Outside (o) Both (b)
Discharges	H	i
Walking, horse-riding and non-motorised vehicles	M	i
Marine and freshwater aquaculture	M	i
Leisure fishing	M	i
Nautical sports	M	i
Urbanised areas, human habitation	H	o
Roads, motorways	M	o
Industrial or commercial areas	M	o
Hunting	L	i
Reclamation of land from sea, estuary or marsh	H	i
Fertilisation	M	o
Grazing	L	i
Dykes, embankments, artificial beaches, general	M	i

3.4 Summary of Natura 2000 sites Qualifying Interests in Zone of Influence

The following list contains all the QIs (31 in total) from the Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA that are considered to be within the ZoI of the proposed project, via surface water and groundwater impact pathways:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Potential Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Sea Lamprey (*Petromyzon marinus*) [1095]
- Brook Lamprey (*Lampetra planeri*) [1096]
- Atlantic Salmon (*Salmo salar*) [1106]
- Otter (*Lutra lutra*) [1355]
- Harbour Seal (*Phoca vitulina*) [1365]
- Great Northern Diver (*Gavia immer*) [A003]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Shoveler (*Anas clypeata*) [A056]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

4 Environmental Baseline

4.1 Site survey

Baseline conditions are based on an ecological walkover survey carried out by Ecologists William Mulville and Malin Lundberg of JBA Consulting on 30th October 2019.

The site is an existing student residential complex with adjacent green, transport and pedestrian areas. The southern section of the proposed site extends into a publicly accessible amenity grassland area, with a small section at its southern most point extending into the bankside vegetation of the Terryland River.

4.1.1 Methodology

Habitats were surveyed following standard methodology (Heritage Council, 2011), and were classified under the national habitat classification system of Fossitt (2000). Nomenclature for higher plants principally follows Parnell and Curtis (2012). Habitat boundaries were recorded with the aid of aerial images of the site while in the field.

4.2 Habitats

The survey results outlined in this section are illustrated as a habitat map in Figure 4-1 and Appendix C. Habitats recorded in the area are listed in Table 4-1.

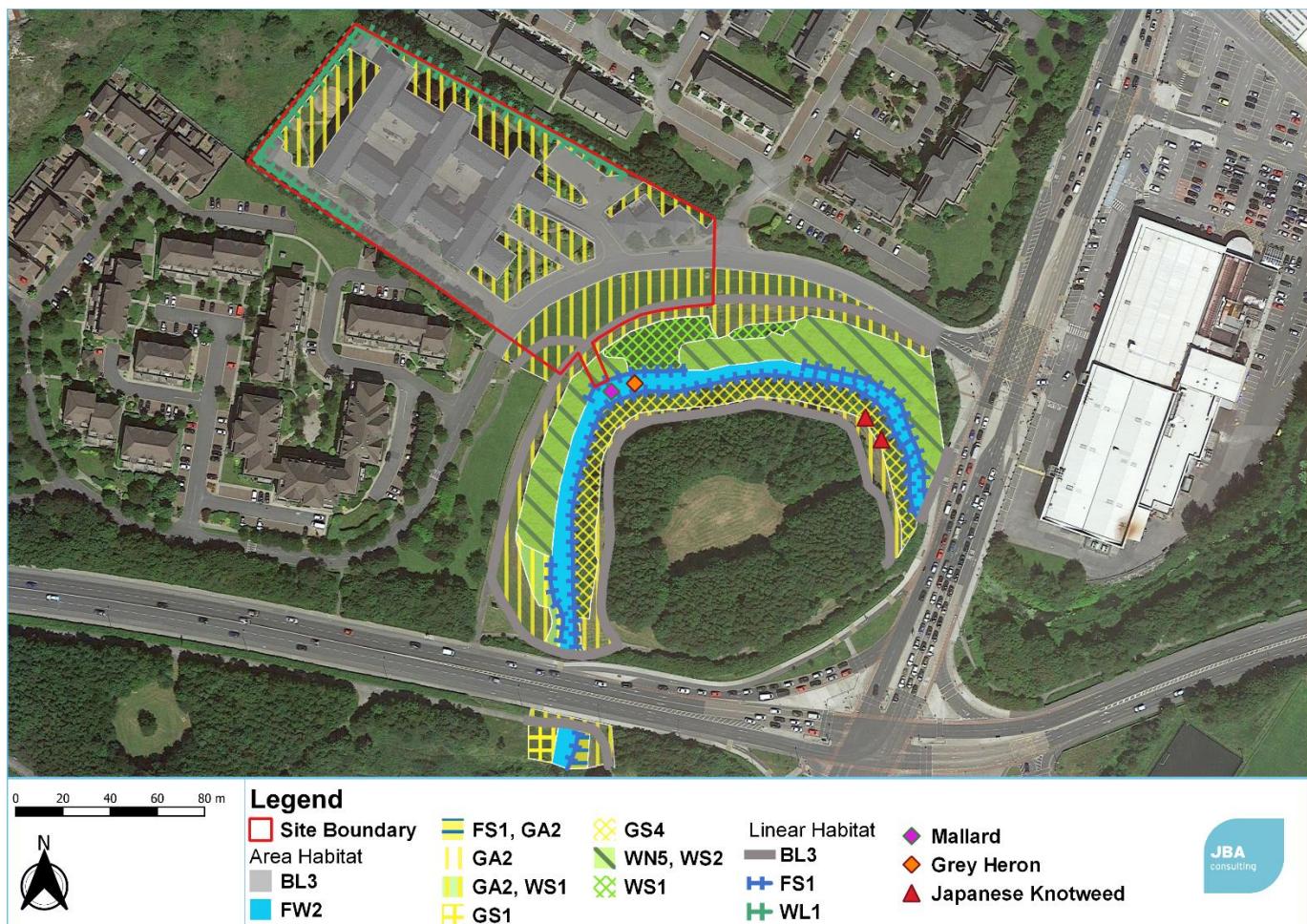


Figure 4-1: Habitat Map.

Table 4-1: Habitats recorded on the site visit (Fossitt classifications).

Habitat	Fossitt Code
Buildings and artificial surfaces	BL3
Reed and large sedge swamps	FS1
Matrix: Reed and large sedge swamps / Amenity grassland (improved)	FS1 / GA2
Amenity grassland (improved)	GA2
Matrix: Amenity grassland (improved) / Scrub	GA2 / WS1
Depositing / lowland rivers	FW2
Dry calcareous and neutral grassland	GS1
Wet grassland	GS4
Hedgerows	WL1
Matrix: Riparian woodland / Immature woodland	WN5 / WS2
Scrub	WS1

4.2.1 Buildings and artificial surfaces (BL3)

This habitat includes the existing residential student complex, local pedestrian and roadway infrastructure, as well as the Terryland Forest Park pathways.

4.2.2 Reed and large sedge swamps (FS1)

This reed and large sedge swamp habitat occurred mainly in linear strips along the banks of the Terryland River (Figure 4-2). This habitat was dominated by Common Reed (*Phragmites australis*), with occasional Yellow Iris (*Iris pseudacorus*); Willowherb (*Epilobium* sp.) and young sapling Willows (*Salix* sp.).



Figure 4-2:Reed swamp fringing the banks of the river (80m downstream of site).

4.2.3 Reed and large sedge swamps / Amenity grassland (improved) (FS1 / GA2)

In a small area along the left bank of the Terryland River (south of the N6), reed swamp and unmaintained amenity grassland have formed a matrix habitat. Floral species present in this matrix habitat include Common Reed; Willowherb; Willow saplings; Nettle (*Urtica dioica*); Hedge Bindweed (*Calystegia sepium*); Creeping Buttercup (*Ranunculus repens*) and Perennial Rye-grass (*Lolium perenne*).

4.2.4 Amenity grassland (improved) (GA2)

This habitat predominately occurred in the maintained amenity areas located adjacent to the resident and park walkways (Figure 4-3). Species diversity in this habitat was limited to Perennial Rye-grass; Ribwort Plantain (*Plantago lanceolata*); and Dock (*Rumex* sp.).



Figure 4-3: Amenity grasslands present between the residential complex and river.

4.2.5 Amenity grassland (improved) / Scrub (GA2 / WS1)

This matrix habitat is a small area located on the right bank of the Terryland River, just south of the immature riparian woodland. This habitat appears to be unmaintained amenity grassland which is now being colonised by the scrub species present in the immature riparian woodland to the north. Species recorded in this habitat include Perennial Rye-grass; Dock; Nettle; Creeping Buttercup; Willowherb and Bramble (*Rubus fruticosus*).

4.2.6 Depositing / lowland rivers (FW2)

The Terryland River along this reach is slow flowing, with a glide flow type, and depositing in function (Figure 4-4 in overleaf). The river habitat in this reach supports a number of in-stream species, as well as emergent floral species which were growing in areas where sediment had built-up behind in-stream debris (e.g. large fallen branches). Species recorded included Fool's Watercress (*Apium nodiflorum*); Duckweed (*Lemna* sp.); Water Starwort (*Callitricha* sp.); Common Reed; and Willow. The occasional dense mats of Duckweed would suggest a degree of eutrophication is present in the Terryland River. Mallard (*Anas platyrhynchos*) and Grey Heron were recorded in-stream, in close proximity to the proposed wetland outlet pipe area.



Figure 4-4: The Terryland River 100m downstream of the proposed outlet area.

4.2.7 Dry calcareous and neutral grassland (GS1)

A small area of dry calcareous / neutral grassland is present 130m downstream from the site, along the right bank of the Terryland River (Figure 4-5 in overleaf). The grassland, possibly once an amenity area, has now naturalised (semi-natural) and given the relatively shallow soils and underlying limestone bedrock it now supports a range of calcareous / neutral grassland species. The floral assemblage is comprised of Quaking grass (*Briza media*); Sweet Vernal grass (*Anthoxanthum odoratum*); Yellow Rattle (*Rhinanthus minor*); Common Knapweed (*Centaurea nigra*); Red Clover (*Trifolium pratense*); Ribwort Plantain; Creeping Buttercup; and Vetch (*Vicia* sp.).



Figure 4-5: Naturalised (semi-natural) calcareous / neutral grassland.

4.2.8 Wet grassland (GS4)

Along the left bank of the river, beyond the reed swamp fringe, a wet grassland strip lies between the river and the maintained area of the Terryland Forest Park. Floral species present in this habitat included Nettle; Dock; Common Reed; Creeping Buttercup; Water Mint (*Mentha citrata*); Bittersweet (*Solanum dulcamara*); Meadowsweet (*Filipendula ulmaria*); Narrow-fruited Water-cress (*Nasturtium microphyllum*); Hedge Bindweed; Willow; Yellow Iris; Rush (*Juncus* sp.); Prickly Sowthistle (*Sonchus asper*); Butterbur (*Petasites hybridus*); and Redshank (*Persicaria maculosa*).

4.2.9 Hedgerows (WL1)

A planted mature Leyland cypress (*Leylandii* sp.) hedgerow runs along the north-western border of the site. The south-western and north-eastern boundaries of the site mirrors this with a similar mature Leyland cypress hedgerow running parallel to a strip of amenity grassland. This hedgerow does not extend into the southern car park area.

4.2.10 Riparian woodland / Immature woodland (WN5 / WS2)

The immature riparian woodland (3.5m maximum canopy heights) dominants the riparian zone along the right bank of Terryland River within the surveyed section (Figure 4-6 in overleaf). This immature woodland is comprised of dense Willow growth with an undergrowth of Bramble; Common Reed; Willowherb and Nettle. Local bird species recorded to be utilising this woodland included Great Tit (*Parus major*) and Goldfinch (*Carduelis carduelis*). The outlet pipe from the proposed attenuation wetland will pass through a small section (approx. 69m²) of this immature riparian woodland and fringing reed swamp.



Figure 4-6: Immature riparian woodland along the right bank of Terryland River.

4.2.11 Scrub (WS1)

Two patches of scrub habitat can be found in close proximity to the site boundary (within 15m). These scrubland patches inhabit the unmaintained riparian area yet to be fully colonised by the local riparian Willow species, though a number of saplings (1m height) can be seen throughout the scrub. The most frequent species recorded within this habitat included Bramble; Nettle; Willowherb; Perennial Rye-grass; and Dock.

4.3 Protected species

There are no recordings of protected floral or faunal species within the proposed site from the National Biodiversity Datacentre (NBDC, 2019). Two protected bird species were recorded during the ecological walkover survey, namely Mallard and Grey Heron, the latter of which is QI species for the Inner Galway Bay SPA. See habitat map (Appendix C) for species locations.

4.4 Invasive Non-native Species

There are no recordings of invasive non-native floral or faunal species within the proposed site from the National Biodiversity Datacentre (NBDC, 2019). However, the ecological walkover revealed that there were two stands of Japanese Knotweed approximately 100m upstream of the pipe outlet section of the site; and the opposite (left) bank of river. This species is stated to be a High impact species (NBDC, 2019), which is listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011. See habitat map (Appendix C) for Japanese Knotweed locations.

4.5

Waterbodies within the Vicinity of the Proposed Site

The site lies within the Water Framework Directive (WFD) sub-catchment of Corrib_SC_010 (EPA, 2019a). Figure 4-7 outlines the watercourses close to the proposed development. The Terryland is located directly adjacent to the southernmost section of the proposed site and flows in a westerly / south-westerly direction. The Terryland River feeds into the River Corrib approximately 525m west of the proposed site. The River Corrib then flows south and into Inner Galway Bay approximately 1.6km south, south-west of proposed development (EPA, 2019a).

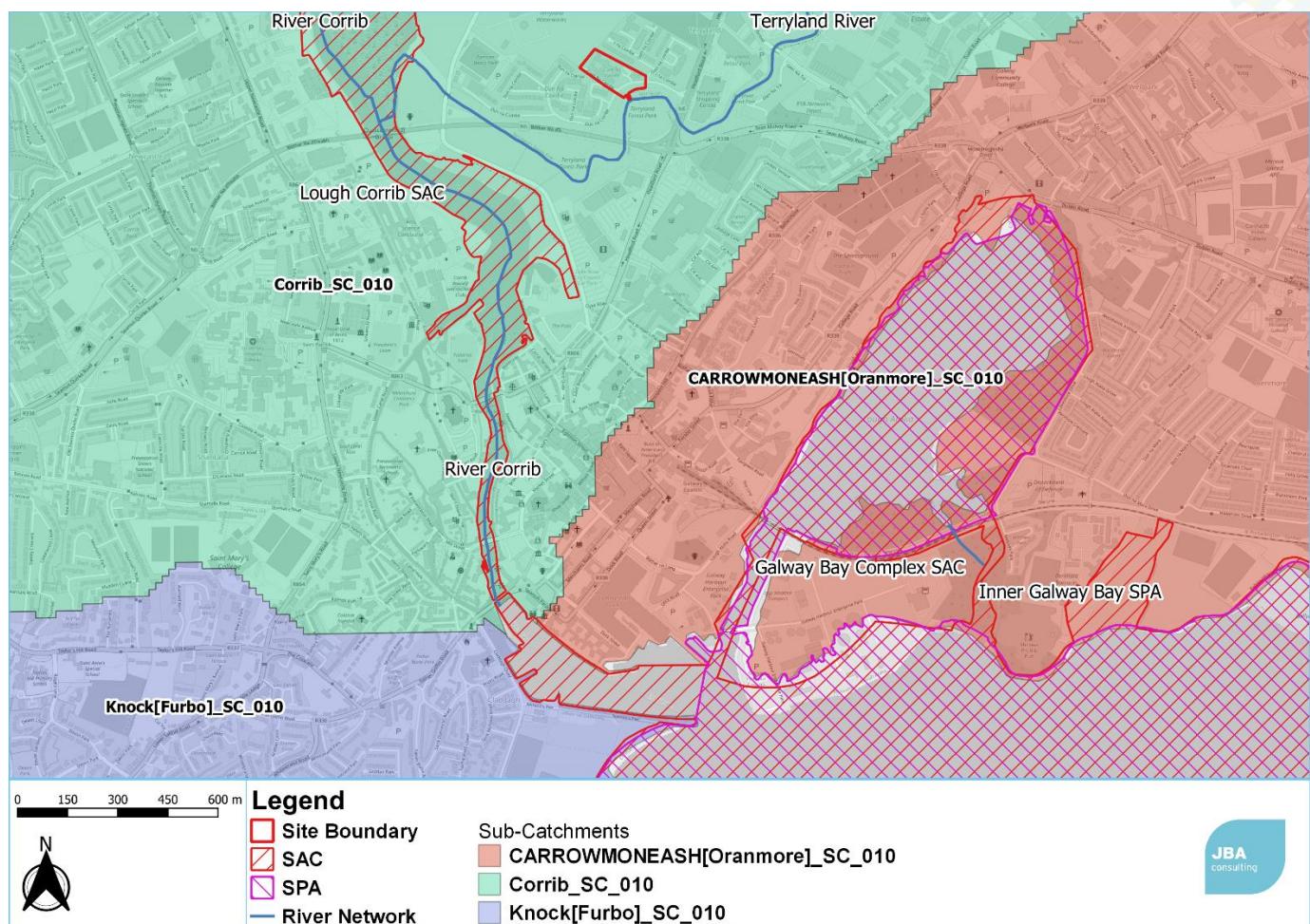


Figure 4-7: Rivers and surface water catchment within the vicinity of the proposed site; and hydrologically connected to the Natura 2000 sites.

4.6

Groundwater / Aquifer Vulnerability

All three of Natura 2000 sites lie within the same groundwater body aquifer as the proposed project site, which means there is the potential for pollutants to be transported via the groundwater pathway to the designated sites (Figure 4-8 in overleaf). However, the bedrock characteristics, i.e. the strike (southerly) and dip (10°), would only allow the potential pollutants to navigate towards the Galway Bay Complex SAC and Inner Galway Bay SPA. This bedrock orientation means pollution events would pass the boundary of Lough Corrib SAC, making it unlikely that this Natura 2000 site will be impacted by potential groundwater pollution events. The aquifer vulnerability in the area of the proposed site is ranked as 'High'; adding to the likelihood of pollutants penetrating into the groundwater table (Figure 4-9 in overleaf). Further excavations that are yet to be carried

out include, but are not limited, the installation of the proposed surface water drains and attenuation wetland (277m³), petrol interceptor, wastewater storage tank (145m³) and associate drainage and the foundations for new buildings on-site. The total overall excavation cut volume is c. 3,550m³ for the entire site. The petrol and system and attenuation wetland will ensure no pollutants are transported to other nearby groundwater vulnerable areas, thus safeguarding Natura 2000 sites via combined surface water and groundwater pathways.

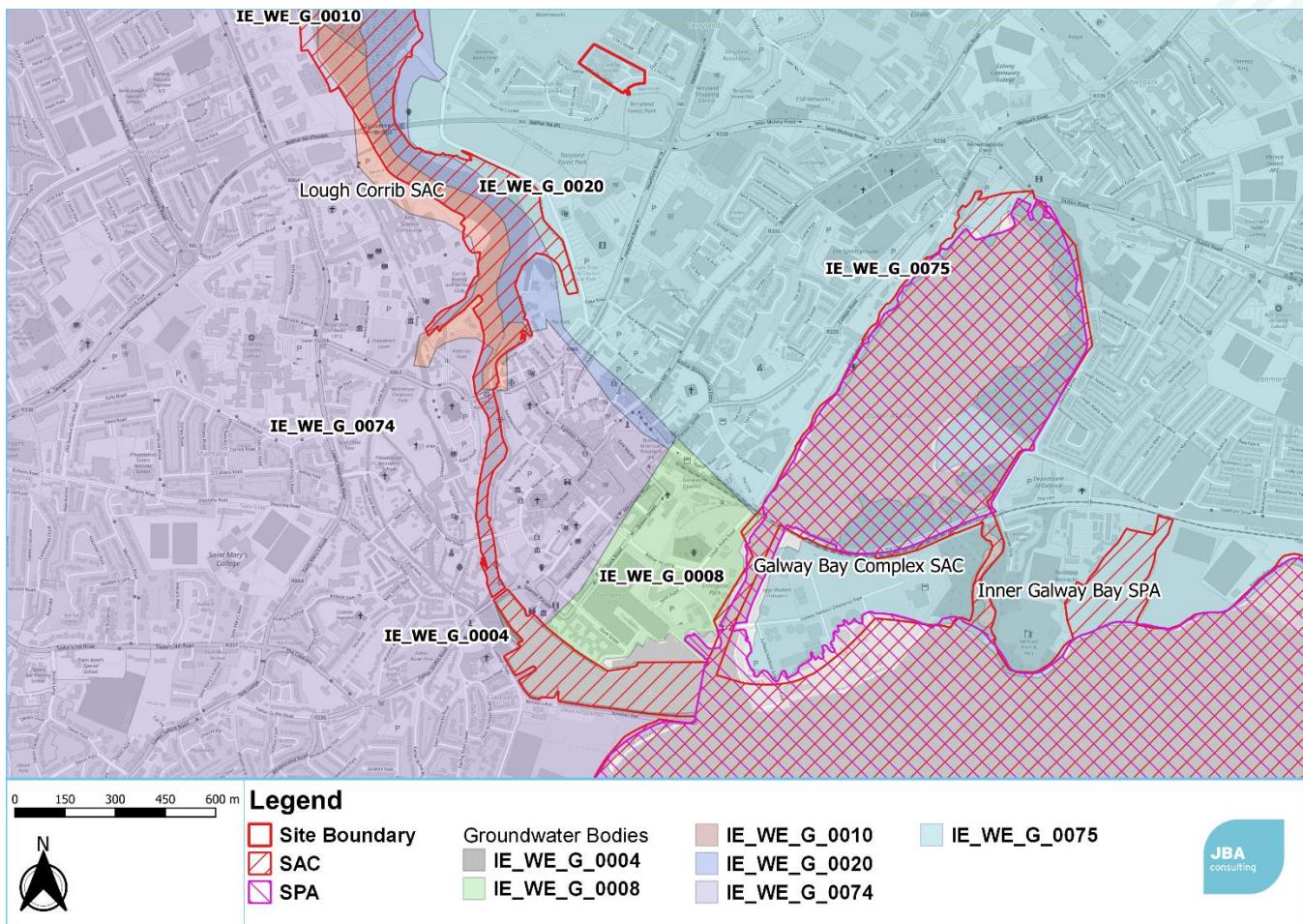


Figure 4-8: Location of proposed site and Natura 2000 sites, with groundwater body connectivity.

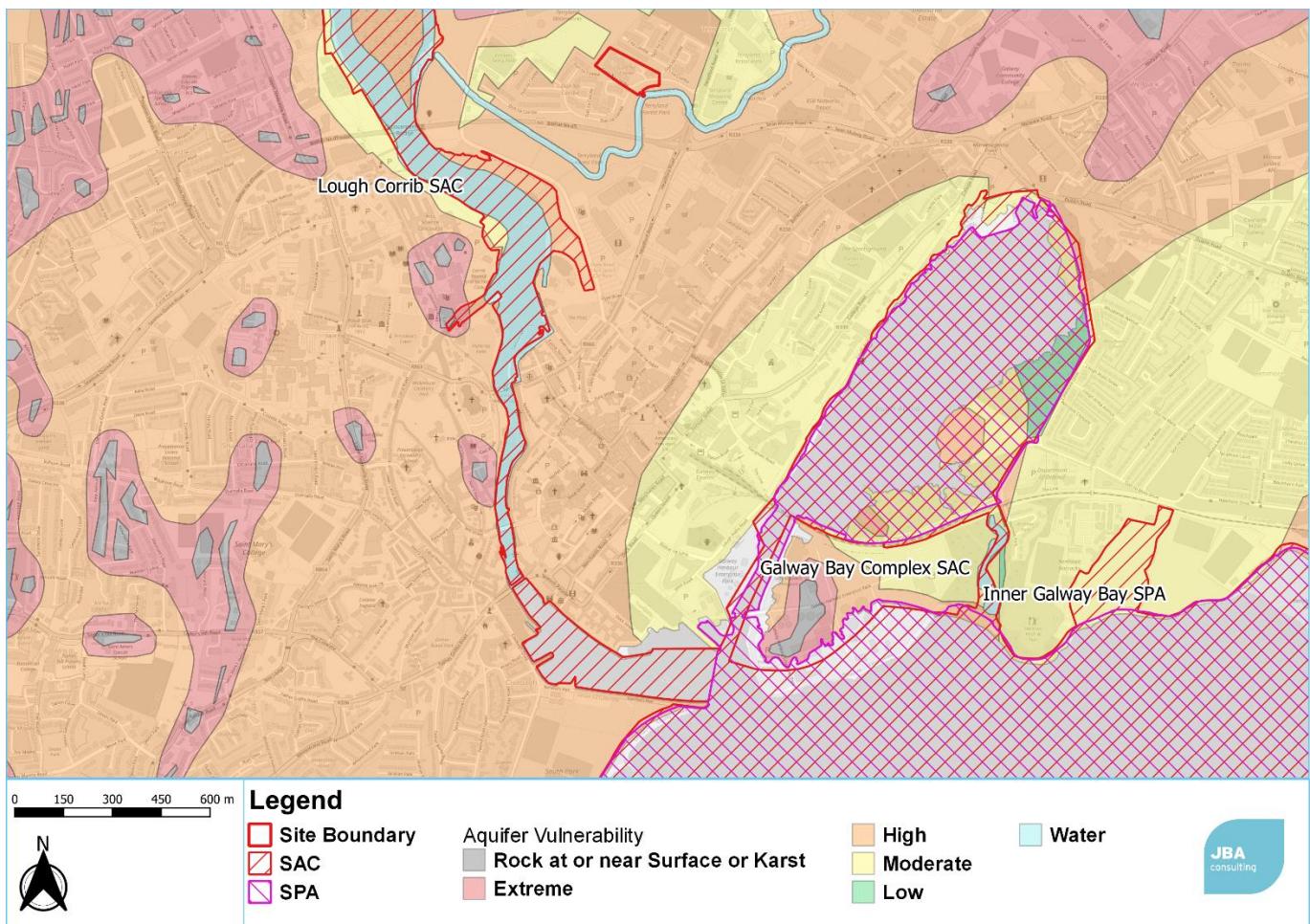


Figure 4-9: Aquifer vulnerability of proposed site and Natura 2000 sites within the ZoI (EPA, 2019).

4.7 Ecology of the Rivers Terryland and Corrib; Lough Atalia and the Inner Galway Bay (Corrib Estuary)

The headwaters of the Terryland River rise in the easternmost extent of the Terryland Forest Park located approximately 2.05km north-east of the proposed site. It then generally flows into south-westerly direction, passing under the N6 on two occasions, until it reaches its confluence with the River Corrib, 525m west of the site location. The River Corrib then flows south through Galway city till it reaches Inner Galway Bay and the seaward extent of Lough Atalia, 2.15km south, south-east of the confluence.

4.7.1 Water Quality

The Terryland River [Terryland_010] has a WFD classification status (2015) of 'Poor' and considered to be 'At Risk' (EPA, 2019a), whereas River Corrib [Corrib_020] has been classified as 'Good' (2015) and is considered to be 'Not at Risk' (EPA, 2019a).

Macroinvertebrates are used widely as biological indicators for water quality as they are sensitive to water quality conditions within a river. The macroinvertebrate Q-rating system is used nationally by the Environmental Protection Agency (EPA) to report the water quality of Irish rivers to the EU. The EPA's Biological Quality Surveys of the Terryland River from 2018, stated that

'Unsatisfactory conditions persist at this site but a slight improvement in ecological quality from Poor to Moderate was noted in 2018' (EPA, 2019b).

Lough Atalia and area of Inner Galway Bay by the mouth of the River Corrib, i.e. the Corrib Estuary [IE_WE_170_0700], has been classified as 'Good' under the WFD and is considered to be 'Not at Risk' (EPA, 2019a).

The ecological status for transitional Corrib Estuary, including Lough Atalia, has been assessed using data from 2010 to 2015, as many of the biological assessments are undertaken over a six-year period. Chemical is also assessed in compliance with environmental standards for priority substances and priority hazardous substances that are listed in the WFD (Annex X) and the Environmental Quality Standards (EQS) Directive (2008/105/EC). These priority substances and priority hazardous substances include metals, pesticides and various industrial chemicals. The following ecological aspects were classified for the Corrib Estuary: Bio Status (High); Invertebrate Status (high); and Phytoplankton Status (High). The following chemical aspects were classified for the Corrib Estuary: Chemical SW Status (Good); Dissolved Oxygen Saturation (Good); Nutrient Conditions (High); Other Nutrient Conditions (High); Oxygenation Conditions (Good); Other Oxygenation Conditions (High); Specific Pollutant Conditions (Pass) and Supporting Chemistry Conditions (Good).

4.7.2 Qualifying Interests present within the ZoI

There are seven QIs that have been mapped by NPWS as being present within the ZoI, which is comprised of the Terryland River; the River Corrib at and downstream of confluence with the Terryland River; the River Corrib Estuary (2km radius from the mouth of the river into the marine environment); and Lough Atalia. They are as follows:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- *Potential* Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Eurasian Otter (*Lutra lutra*) [1355]
- Harbour Seal (*Phoca vitulina*) [1365]

The remaining 24 unmapped QIs all have the potential to occur within the ZoI and as such are included within this Appropriate Assessment.

4.7.3 Non-Qualifying Interest, Protected Species within the ZoI

There are numerous internationally protected species which have the potential to be present within the proposed project's ZoI but are not QIs of the three Natura 2000 sites. See Table 4-2 in overleaf for a list of potential non-QI protected species within the ZoI which have been recorded within the last 10 years.

Table 4-2: Non-QI, Protected Species potentially present within the ZoI.

Species	Protection Designation
Little Grebe (<i>Tachybaptus ruficollis</i>)	AEWA
Mute Swan (<i>Cygnus olor</i>)	AEWA
Whooper Swan (<i>Cygnus cygnus</i>)	Annex I BD; Amber List; AEWA
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	Annex I, II, III BD; Amber List; AEWA

Species	Protection Designation
Shelduck (<i>Tadorna tadorna</i>)	Amber List; AEWA
Gadwall (<i>Anas strepera</i>)	Annex II BD; AEWA
Mallard (<i>Anas platyrhynchos</i>)	Annex II, III BD; AEWA
Greenshank (<i>Tringa nebularia</i>)	AEWA
Little Egret (<i>Egretta garzetta</i>)	Annex I BD; AEWA
Tufted Duck (<i>Aythya fuligula</i>)	Annex II, III BD; Amber List; AEWA
Scaup (<i>Aythya marila</i>)	Annex II, III BD; Amber List; AEWA
Goldeneye (<i>Bucephala clangula</i>)	Annex II BD; Amber List; AEWA
Long-tailed Duck (<i>Clangula hyemalis</i>)	Annex II BD; AEWA
Common Scoter (<i>Melanitta nigra</i>)	Annex II, III BD; Red List; AEWA
Grey Plover (<i>Pluvialis squatarola</i>)	Amber List; AEWA
Oystercatcher (<i>Haematopus ostralegus</i>)	AEWA
Wood Pigeon (<i>Columba palumbus</i>)	Annex II, III BD
Twite (<i>Carduelis flavirostris</i>)	Red List
Red-throated Diver (<i>Gavia stellata</i>)	Annex I BD; Amber List; AEWA
Little Gull (<i>Larus minutus</i>)	Annex I BD; Amber List; AEWA
Herring Gull (<i>Larus argentatus</i>)	AEWA
Great Black-backed Gull (<i>Larus marinus</i>)	AEWA
Lesser Black-backed Gull (<i>Larus fuscus</i>)	AEWA
Slavonian Grebe (<i>Podiceps auratus</i>)	AEWA
Coot (<i>Fulica atra</i>)	Annex II, III BD; Amber List; AEWA
Moorhen (<i>Gallinula chloropus</i>)	AEWA
Water Rail (<i>Rallus aquaticus</i>)	Amber List; AEWA
Great Crested Grebe (<i>Podiceps cristatus</i>)	Amber List; AEWA
Red Knot (<i>Calidris canutus</i>)	Amber List; AEWA
Snipe (<i>Gallinago gallinago</i>)	Annex II, III BD; Amber List; AEWA
Black-tailed Godwit (<i>Limosa limosa</i>)	Amber List; AEWA
Jack Snipe (<i>Lymnocryptes minimus</i>)	Annex II, III BD; Amber List; AEWA
Common Sandpiper (<i>Actitis hypoleucos</i>)	AEWA
Arctic Tern (<i>Sterna paradisaea</i>)	Annex I BD; Amber List; AEWA
Gannet (<i>Morus bassanus</i>)	AEWA
Grasshopper Warbler (<i>Locustella naevia</i>)	Amber List
Common Frog (<i>Rana temporaria</i>)	Annex V HD; WA
European Eel (<i>Anguilla anguilla</i>)	IUCN Red Status – Critically Endangered; OSPAR Convention

AEWA = African-Eurasian Migratory Waterbird Agreement

HD = Habitats Directive

WA = Wildlife Act (Amendment 2000)

BD = Birds Directive

5 Other Relevant Plans and Projects

5.1 Cumulative effects

5.1.1 Galway City Development Plan 2017-2023

The overarching Core Strategy of the Plan supports the strategies, policies and objectives for the protection of protected national and Natura 2000 sites. As a result of the Appropriate Assessment process a number of policies have been introduced and existing policies and objectives amended to strengthen the protection afforded to Natura 2000 sites. Strategies, policies and objectives contained in the Plan are proposed to ensure ecological connectivity within the Plan area is maintained or improved, (which will in turn improve the coherence of the Natura 2000 network); and measures are contained to avoid or reduce the potential for impacts of the Plan, either alone or in-combination with any other plans or projects, which cannot be predicted at the Development Plan level, will be subject to separate assessment procedures in accordance with all applicable Directives, Regulations and Legislation. These measures will ensure the AAs are carried out and that lower tier plan and project level effects will be subject to separate assessment procedures when further details of design and location are known (GCC 2017a; 2017b).

In conclusion, Galway City Council have determined that having incorporated mitigation measures, the GCDP 2017-2023 will not have a significant adverse effect on the integrity of Natura 2000 sites either alone or in-combination with other plans and projects. This is based best scientific knowledge, including the nature of potential impacts that may arise the and the implementation of mitigation measures proposed therein.

5.1.2 River Basin Management Plan for Ireland 2018-2021

The River Basin Management Plan for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018a). Changes from previous River Basin Management Plans is that all River Basin Districts are merged as one national River Basin District. The Plan provides a more coordinated framework for improving the quality of our waters — to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

It is important to note that the Terryland River is current considered to be 'At Risk', while the River Corrib is considered to be 'Not at Risk'. Regarding their WFD Status; the Terryland River has been assessed as Poor status, whereas the River Corrib status is currently evaluated as 'Good' (EPA, 2019). The potential effects leading to further degradation of these river bodies will be considered in this Appropriate Assessment.

5.1.3 Groundwater Directive (GWD) 2006/118/EC

This Directive established a regime which sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. The directive established quality criteria that takes account of local characteristics and allows for further improvements to be made based on monitoring data and new scientific knowledge. The directive thus represents a proportionate and scientifically sound response to the requirements of the Water Framework Directive (WFD) as it relates to assessments on chemical status of groundwater and the identification and reversal of significant and sustained upward trends in pollutant concentrations. Member States, including Ireland should have established standards at the most appropriate level and have taken into account local or regional conditions.

5.1.4 Other Projects

Other projects in the surrounding area are commercial development. As of January 2016, the projects listed below (Table 5-1) which are not retention applications, home extensions and/or internal alterations, have been granted planning permission in the Terryland / Galway city area (GCC, 2019).

Table 5-1: Pertinent development projects for assessment of cumulative effects.

Planning Application Reference	19107
Development address	Dyke Road, Terryland, Galway
Description: Description: Permission for development which comprises of a new raw water intake works located on the east bank of the River Corrib, 100m downstream of Quincentenary Bridge; associated pipework to transfer raw water from the new intake works to the existing intakes works , which in turn supplies Terryland Water Treatment Plant (WTP); and a new treated water rising main extending between Terryland WTP and existing rising main on the east bank of the River Corrib. The works comprises: New Intake Works. a) Underground inlet works chamber and associated equipment; b) Control building; c) Compound security fencing and gates, safety fencing, drainage, lighting, hard - standing areas and landscaping, ducting and water supply connection; d) Access road from Dyke Road with new entrance and gates; e) Floating boom system offset 5m into the river from proposed headwall of the intake works. Slipway. f) A new slipway, including a new public access road from Dyke Road. The slipway will be located on the east bank of the River Corrib, circa. 140m downstream of the Quincentenary Bridge. Transfer Mains. g) 215m of 1200mm diameter underground transfer gravity main passing under Terryland parkland, the Quincentenary Bridge eastern approach road (N6) and Terryland River. This will connect the new intake works to the existing raw water mains, which supply Terryland WTP. Works will include 2 no. chambers along the transfer main (north and south of the N6 Road) and 1 no. chamber for connection to the existing raw water mains at the existing intake site; h) Modifications to the existing intake works in Terryland (decommissioning and civil works). Rising Main. I) 535m of 600mm diameter ductile iron underground rising main from Terryland WTP of the eastern bank to the River Corrib, including a pipe - bridge over the Terryland River, to connect to the existing 450mm diameter ductile iron rising main upstream of the River Corrib crossing. Surge Vessel. j) 1 no. 35m ³ surge vessel tank at Terryland WTP for the proposed rising main. A Natura Impact Statement has been submitted.	
Final Decision on Application	Further Information (On Hold)
Decision Date	Not confirmed (On Hold)
Planning Application Reference	17117
Development address	Maldron Hotel, Sandy Road, Headford Road, Galway
Description: Permission for modifications to the development permitted, but not yet constructed, under Reg. Refs. 16/280 and 16/339 which provide for the redevelopment of the Maldron Hotel. The proposed modifications to the permitted scheme will consist of alterations to the configuration of floor space to provide the following: Ground Floor: 6 no. meeting rooms, associated breakout space and circulation corridor, 13 no. additional bedrooms, dry gym, ancillary stores and reconfigured kitchen/bar areas; First Floor: 1 no. additional bedroom, 1 no. linen store, 1 no. store and 1 no. office; Second Floor: 1 no. linen store. Third Floor: 1 no. store. Fourth Floor: 2 no. additional bedrooms and 1 no. linen store. In addition, changes to the external elevations are proposed at the ground floor (new cladding) and fourth floor (new fire exit door). All other aspects of the development permitted under application register references 16/280 and 16/339 will be unaffected. The proposal will result in the provision of a total of 165 no. bedrooms at the hotel, an increase of 16 on those already permitted.	

Final Decision on Application	Permission (conditional)
Decision Date	20/06/2017
Planning Application Reference	18290
Development address	Galway Retail Park, Headford Road, Galway
Description:	Permission for works to existing Drive Thru Restaurant. New extensions totalling 16 square metres which includes 5 square meter glazed entrance lobby extension to replace existing internal lobby, 3 square meter extension to east elevation and 8 square meter extension to yard corral alteration to kitchen and counter area, alterations to freezer and chiller and removal of existing store room. Alterations to existing Drive Thru Lane entrance, new bollards, new road markings, new pedestrian crossing, and associated site works.
Final Decision on Application	Permission (conditional)
Decision Date	31/10/2018

5.1.5 Summary

The County Development Plan, RBMP, Groundwater Directive and projects RBMP, GWD and projects near the proposed project are considered in combination with the currently proposed project in the Appropriate Assessment section below.

6 Appropriate Assessment

6.1 Introduction

This section presents a detailed assessment of the potential impact of the proposed project on the qualifying interests of the Lough Corrib SAC (000297), Galway Bay Complex SAC (000268) and Inner Galway Bay SPA (004031). The screening report identified surface water and groundwater pollution as the potential impacts on qualifying interests of the Natura 2000 sites.

Section 6.2 assesses the screened-in Natura 2000 sites in more detail and examines where potentially adverse impacts may arise from the sources of impact identified (i.e. surface water, land and air, or groundwater pathways). Where potentially adverse impacts are identified, avoidance and mitigation measures are proposed. These are discussed in Section 6.3.

6.2 Potential Sources of Impact via Surface Water and Groundwater Pathways

The AA screening determined that pathway of impact existed between the proposed site and the relevant Natura 2000 sites. This section further examines the source > pathway > receptor chains that could potentially result in adverse impacts arising within Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA.

Habitats and species, and their attributes, likely to be impacted by surface water and groundwater pollution are listed in Table 6-1; Table 6-2; and Table 6-3.

6.2.1 Construction Phase - Direct impacts

Spill or leakage incidents may lead to pollutant materials entering the Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA. There is potential for impacts on the water-dependent qualifying interests to occur during the construction phase of the proposed project.

The construction phase of the project will entail the demolition of the two-storey building at the entrance to the scheme and the removal of the fifth storey (attic) level of the main building; the provision of horizontal and vertical additions to and extensions of the main existing building; and the implementation of hard and soft landscaping. Excavation of topsoil and sub-soil (total = 3,550m³) will be necessary to create the foundations of these new extensions and the basement slab; as well as the placement of the wastewater storage tank, attenuation wetland and petrol interceptor within the surface water and foul water drainage systems. The generation of dust during these excavations is not considered to be significant; and does not pose a threat to the QI species of the Natura 2000 sites as outlined in the Screening for Appropriate Assessment report (JBA, 2019).

The construction phase will involve the temporary clearance of immature riparian woodland and its scrub undergrowth and fringe in order to install the outfall pipe from the attenuation wetland. This temporary loss of habitat via vegetation removal by machinery may potentially disturb QI species, such as Grey Heron, which has recorded utilising the area in close vicinity to proposed outfall pipe area.

The possible entry of pollutants, such as diesel, oil, paint, solvents, cleaners; leaking into the surface water network and/or groundwater table on-site have the potential to degrade the surface water and groundwater quality. This degradation of surface water and groundwater can in turn impact the Natura 2000 sites' QIs via surface run-off and groundwater contributions to the Terryland River (up to 80-90% contribution (EPA, 2006) given that site and the river are present within a regionally important, productive karstified aquifer). These pollutants may cause effects such as increased turbidity; changes in pH levels; and introduction or increase in toxic chemicals. These potential effects may impact on the floral communities of the Annex I habitats present within the Natura 2000 sites, potentially resulting in decreased distribution of these communities, and ultimately

resulting in a percentage loss of the designated habitats. Additionally, these pollutants could directly impact the mammal, bird and fish QI species of the SACs and SPA through contact with the fur, feathers and gills respectively, which will ultimately degrade the physical condition of these biological features. Furthermore, these pollutants may be ingested through the grooming / preening the affected fur / feathers, or while feeding within the aquatic environment.

For each Natura 2000 site, the potential direct impacts on QIs from the construction phase are outlined in Table 6-1; Table 6-2; and Table 6-3.

Table 6-1: Potential direct impacts on the attributes of the designated features of Lough Corrib SAC within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Sea Lamprey (<i>Petromyzon marinus</i>) [1095]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect extent of anadromy during the project's construction phase.
	Population structure of juveniles	Number of age/size groups	Impacts on water quality from pollutant discharges may temporarily affect the health of multiple juvenile groups during the project's construction phase.
	Juvenile density in fine sediment	Juveniles/m ²	Impacts on water quality from pollutant discharges may temporarily affect the density of juveniles in fine sediment during the project's construction phase.
	Extent and distribution of spawning habitat	m ² and occurrence	Impacts on water quality from pollutant discharges may temporarily affect the extent and distribution of spawning habitat during the project's construction phase.
	Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	Impacts on water quality from pollutant discharges may temporarily affect the availability of juvenile habitat during the project's construction phase.
Brook Lamprey (<i>Lampetra planeri</i>) [1096]	Distribution	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect overall distribution during the project's construction phase.
	Population structure of juveniles	Number of age/size groups	Impacts on water quality from pollutant discharges may temporarily affect the

Qualifying Interest	Attribute	Measure	Potential Impacts
			health of multiple juvenile groups during the project's construction phase.
	Juvenile density in fine sediment	Ammocoetes/m ²	Impacts on water quality from pollutant discharges may temporarily affect the density of juveniles/ammonoctes in fine sediment during the project's construction phase.
	Extent and distribution of spawning habitat	m ² and occurrence	Impacts on water quality from pollutant discharges may temporarily affect the extent and distribution of spawning habitat during the project's construction phase.
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	Impacts on water quality from pollutant discharges may temporarily affect the availability of juvenile habitat during the project's construction phase.
Atlantic Salmon (<i>Salmo salar</i>) [1106]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect extent of anadromy during the project's construction phase.
	Adult spawning fish	Number	Impacts on water quality from pollutant discharges may temporarily affect the spawning of adult Salmon during the project's construction phase.
	Salmon fry abundance	Number of fry/5 minutes electrofishing	Impacts on water quality from pollutant discharges may temporarily affect the Salmon fry abundance during the project's construction phase.
	Out-migrating smolt abundance	Number	Impacts on water quality from pollutant discharges may temporarily affect the out-migrating smolt abundance during the project's construction phase.
	Number and distribution of redds	Number and occurrence	Impacts on water quality from pollutant discharges may temporarily affect the

Qualifying Interest	Attribute	Measure	Potential Impacts
			number and distribution of redds during the project's construction phase.
	Water quality	EPA Q value	Impacts on water quality from pollutant discharges may temporarily affect the EPA Q-value rating of the Terryland and Corrib Rivers during the project's construction phase.
Otter (<i>Lutra lutra</i>) [1355]	Distribution	Percentage positive survey sites	Impacts on riparian habitat and water quality from vegetation clearance and pollutant discharges may temporarily affect Otter population distribution through direct impact, during the project's construction phase.
	Extent of terrestrial habitat	Hectares	Impacts on riparian habitat from vegetation clearance may temporarily affect the extent of terrestrial habitat available for Otter through direct impact, during the project's construction phase.
	Extent of freshwater (river) habitat	Kilometres	Impacts on water quality from pollutant discharges may temporarily affect the extent of freshwater (river) habitat available for Otter through direct impact, during the project's construction phase.
	Extent of freshwater (lake) habitat	Hectares	Impacts on water quality from pollutant discharges may temporarily affect the extent of freshwater (lake/lagoon) habitat available for Otter through direct impact, during the project's construction phase.
	Couching sites and holts	Number	Impacts on riparian habitat from vegetation clearance may temporarily affect the extent of couching and holt sites available for Otter through direct impact, during

Qualifying Interest	Attribute	Measure	Potential Impacts
			the project's construction phase.
	Fish biomass available	Kilograms	Impacts on water quality from pollutant discharges may temporarily affect the fish biomass available for Otter through direct impact, during the project's construction phase.
	Barriers to connectivity	Number	Impacts on riparian habitat and water quality from vegetation clearance and pollutant discharges may temporarily create connectivity barriers for Otter through direct impact, during the project's construction phase.

Table 6-2: Potential direct impacts on the attributes of the designated features of Galway Bay Complex SAC within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Mudflats and sandflats not covered by seawater at low tide [1140]	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase.
	Community distribution	Hectares	Impacts on water quality from pollutant discharges may temporarily affect the community distribution through direct impact, during the project's construction phase.
Coastal lagoons [1150]	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase.
	Habitat distribution	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect the habitat distribution through

Qualifying Interest	Attribute	Measure	Potential Impacts
			direct impact, during the project's construction phase.
	Salinity regime	Practical salinity units (psu)	Impacts on water quality from pollutant discharges may temporarily affect the salinity regime through direct impact, during the project's construction phase.
	Hydrological regime	Metres	No direct impacts anticipated.
	Barrier: connectivity between lagoon and sea	Permeability	No direct impacts anticipated.
	Water quality: Chlorophyll <i>a</i>	µg/L	Impacts on water quality from pollutant discharges may temporarily affect levels of Chlorophyll <i>a</i> through direct impact, during the project's construction phase.
	Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Impacts on water quality from pollutant discharges may temporarily affect levels of Molybdate Reactive Phosphorus through direct impact, during the project's construction phase.
	Depth of macrophyte colonisation	Metres	Impacts on water quality from pollutant discharges may temporarily affect the depth of macrophyte colonisation through direct impact, during the project's construction phase.
	Typical plant species	Number and m ²	Impacts on water quality from pollutant discharges may temporarily affect the population and total percentage cover of typical plant species through direct impact, during the project's construction phase.
	Typical animal species	Number	Impacts on water quality from pollutant discharges may temporarily affect the population of animal species through direct impact, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Negative indicator species	Number and % cover	Impacts on water quality from pollutant discharges may temporarily benefit the population of negative indicator species through direct impact on typical and positive indicator species, during the project's construction phase.
Large shallow inlets and bays [1160]	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase.
	Community extent	Hectares	Impacts on water quality from pollutant discharges may temporarily affect the community extent through direct impact, during the project's construction phase.
	Community structure: <i>Zostera</i> density	Shoots per m ²	Impacts on water quality from pollutant discharges may temporarily affect <i>Zostera</i> community structure through direct impact, during the project's construction phase.
	Community structure	Biological composition	Impacts on water quality from pollutant discharges may temporarily affect general community structure through direct impact, during the project's construction phase.
	Community distribution	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community distribution through direct impact, during the project's construction phase.
Reefs [1170]	Distribution	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect general distribution through

Qualifying Interest	Attribute	Measure	Potential Impacts
			direct impact, during the project's construction phase.
	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase.
	Community extent	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community extent through direct impact, during the project's construction phase.
	Community structure: <i>Mytilus</i> density	Individuals per m ²	Impacts on water quality from pollutant discharges may temporarily affect <i>Mytilus</i> density through direct impact, during the project's construction phase.
	Community structure	Biological composition	Impacts on water quality from pollutant discharges may temporarily affect general community structure through direct impact, during the project's construction phase.
<i>Potential Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]</i>	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase.
	Habitat distribution	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect habitat distribution through direct impact, during the project's construction phase.
	Physical structure: sediment supply	Presence/absence of physical barriers	No direct impacts anticipated.
	Physical structure: creeks and pans	Occurrence	No direct impacts anticipated.
	Physical structure: flooding regime	Hectares flooded; frequency	No direct impacts anticipated.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Vegetation structure: zonation	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect vegetation structure and zonation through direct impact, during the project's construction phase.
	Vegetation structure: vegetation height	Centimetres	Impacts on water quality from pollutant discharges may temporarily affect vegetation structure and height through direct impact, during the project's construction phase.
	Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Impacts on water quality from pollutant discharges may temporarily affect vegetation structure and total percentage cover through direct impact, during the project's construction phase.
	Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Impacts on water quality from pollutant discharges may temporarily affect the percentage cover of typical species composition through direct impact, during the project's construction phase.
	Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	Impacts on water quality from pollutant discharges may temporarily benefit negative indicator species, i.e. <i>Spartina anglica</i> , through directly impacting the typical positive indicator species, during the project's construction phase.
Otter (<i>Lutra lutra</i>) [1355]	Distribution	Percentage positive survey sites	Impacts on riparian habitat and water quality from vegetation clearance and pollutant discharges may temporarily affect Otter population distribution through direct impact, during the project's construction phase.
	Extent of terrestrial habitat	Hectares	Impacts on riparian habitat from vegetation clearance may temporarily affect the

Qualifying Interest	Attribute	Measure	Potential Impacts
			extent of terrestrial habitat available for Otter through direct impact, during the project's construction phase.
	Extent of marine habitat	Hectares	Impacts on water quality from pollutant discharges may temporarily affect the extent of marine habitat available for Otter through direct impact, during the project's construction phase.
	Extent of freshwater (river) habitat	Kilometres	Impacts on water quality from pollutant discharges may temporarily affect the extent of freshwater (river) habitat available for Otter through direct impact, during the project's construction phase.
	Extent of freshwater (lake/lagoon) habitat	Hectares	Impacts on water quality from pollutant discharges may temporarily affect the extent of freshwater (lake/lagoon) habitat available for Otter through direct impact, during the project's construction phase.
	Couching sites and holts	Number	Impacts on riparian habitat from vegetation clearance may temporarily affect the extent of couching and holt sites available for Otter through direct impact, during the project's construction phase.
	Fish biomass available	Kilograms	Impacts on water quality from pollutant discharges may temporarily affect the fish biomass available for Otter through direct impact, during the project's construction phase.
	Barriers to connectivity	Number	Impacts on riparian habitat and water quality from vegetation clearance and pollutant discharges may temporarily affect create connectivity barriers for Otter through direct impact, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
Harbour Seal (<i>Phoca vitulina</i>) [1365]			
	Access to suitable habitat	Number of artificial barriers	No direct impacts anticipated.
	Breeding behaviour	Breeding sites	No direct impacts anticipated.
	Moulting behaviour	Moult haul-out sites	No direct impacts anticipated.
	Resting behaviour	Resting haul-out sites	Impacts on water quality from pollutant discharges may temporarily affect the overall condition of resting sites for Harbour Seal through direct impact, during the project's construction phase.
	Disturbance	Level of impact	Impacts on water quality from pollutant discharges may temporarily disturb the local Harbour Seal population through direct impact, during the project's construction phase.

Table 6-3: Potential direct impacts on the attributes of the designated features of Inner Galway Bay SPA within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Great Northern Diver (<i>Gavia immer</i>) [A003]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Great Northern Diver through direct impact, during the project's construction phase.
Cormorant (<i>Phalacrocorax</i>	Breeding population	Number	No direct impacts anticipated.

Qualifying Interest	Attribute	Measure	Potential Impacts
carbo) [A017]	abundance: apparently occupied nests (AONs)		
	Productivity rate	Mean number	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect populations' productivity rate through direct impact, during the project's construction phase.
	Distribution: breeding colonies	Number; location; area (hectares)	No direct impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect available prey biomass through direct impact, during the project's construction phase.
	Barriers to connectivity	Number; location; shape; area (hectares)	No direct impacts anticipated.
	Disturbance at breeding site	Level of impact	No direct impacts anticipated.
	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Number and range of areas used by waterbirds	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the range of areas utilised by the local Cormorant population through direct impact, during the project's construction phase.
Grey Heron (<i>Ardea cinerea</i>)	Population trend	Percentage change	Impacts on riparian vegetation and water quality

Qualifying Interest	Attribute	Measure	Potential Impacts
<i>cinerea)</i> [A028]			from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Grey Heron through direct impact, during the project's construction phase.
Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Brent Goose through direct impact, during the project's construction phase.
Wigeon (<i>Anas penelope</i>) [A050]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Wigeon through direct

Qualifying Interest	Attribute	Measure	Potential Impacts
			impact, during the project's construction phase.
Teal (<i>Anas crecca</i>) [A052]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Teal through direct impact, during the project's construction phase.
Shoveler (<i>Anas clypeata</i>) [A056]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Shoveler through direct impact, during the project's construction phase.
Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Red-breasted Merganser through direct impact, during the project's construction phase.
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Ringed Plover through direct impact, during the project's construction phase.
Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Golden Plover through direct impact, during the project's construction phase.
	Population trend	Percentage change	Impacts on riparian vegetation and water quality

Qualifying Interest	Attribute	Measure	Potential Impacts
Lapwing (<i>Vanellus vanellus</i>) [A142]			from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Lapwing through direct impact, during the project's construction phase.
Dunlin (<i>Calidris alpina alpina</i>) [A149]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Dunlin through direct impact, during the project's construction phase.
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Bar-tailed Godwit through

Qualifying Interest	Attribute	Measure	Potential Impacts
			direct impact, during the project's construction phase.
Curlew (<i>Numenius arquata</i>) [A160]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Curlew through direct impact, during the project's construction phase.
Common Gull (<i>Larus canus</i>) [A182]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Common Gull through direct impact, during the project's construction phase.
Redshank (<i>Tringa tetanus</i>) [A162]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Redshank through direct impact, during the project's construction phase.
Turnstone (<i>Arenaria interpres</i>) [A169]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Turnstone through direct impact, during the project's construction phase.
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Population trend	Percentage change	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population trends through direct impact, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect the population distribution of Black-headed Gull through direct impact, during the project's construction phase.
	Breeding population abundance:	Number	No direct impacts anticipated.

Qualifying Interest	Attribute	Measure	Potential Impacts
Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	apparently occupied nests (AONs)		
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population's productivity rate through direct impact, during the project's construction phase.
	Distribution: breeding colonies	Number; location; area (Hectares)	No direct impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect available prey biomass through direct impact, during the project's construction phase.
	Barriers to connectivity	Number; location; shape; area (Hectares)	No direct impacts anticipated.
	Disturbance at breeding site	Level of impact	No direct impacts anticipated.
Common Tern (<i>Sterna hirundo</i>) [A193]	Breeding population abundance: apparently occupied nests (AONs)	Number	No direct impacts anticipated.
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect population's productivity rate through direct impact, during the project's construction phase.
	Distribution: breeding colonies	Number; location; area (Hectares)	No direct impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may

Qualifying Interest	Attribute	Measure	Potential Impacts
			temporarily affect available prey biomass through direct impact, during the project's construction phase.
	Barriers to connectivity	Number; location; shape; area (Hectares)	No direct impacts anticipated.
	Disturbance at breeding site	Level of impact	No direct impacts anticipated.
Wetlands and Waterbirds [A999]	Habitat area	Hectares	Impacts on riparian vegetation and water quality from vegetation clearance and pollutant discharges may temporarily affect total habitat area through direct impact, during the project's construction phase

6.2.2 Construction Phase – Indirect impacts

Impacts to the Natura 2000 sites could impact the food chain for QI mammals, birds and fish, i.e. fish, macro-invertebrates and flora species (also within the supporting habitat of outside of the Natura 2000 sites), which the faunal QI species of Natura 2000 sites depend upon; and are of particular importance for the wintering bird species which need to optimise their foraging in order obtain the energy reserves they need to make their return migration.

For each Natura 2000 site, the potential indirect impacts on QIs from the construction phase are outlined in Table 6-4; Table 6-5; and Table 6-6.

Table 6-4: Potential indirect impacts on the attributes of the designated features of Lough Corrib SAC within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Sea Lamprey (<i>Petromyzon marinus</i>) [1095]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on the local food chain from pollutant discharges may temporarily affect the extent of anadromy during the project's construction phase.
	Population structure of juveniles	Number of age/size groups	Impacts on the local food chain from pollutant discharges may temporarily affect the health of multiple juvenile groups during the project's construction phase.
	Juvenile density in fine sediment	Juveniles/m ²	Impacts on the local food chain from pollutant discharges may temporarily

Qualifying Interest	Attribute	Measure	Potential Impacts
			affect the density of juveniles in fine sediment during the project's construction phase.
	Extent and distribution of spawning habitat	m ² and occurrence	No indirect impacts anticipated.
	Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	No indirect impacts anticipated.
Brook Lamprey (<i>Lampetra planeri</i>) [1096]	Distribution	Percentage of river accessible	Impacts on the local food chain from pollutant discharges may temporarily affect the distribution of local sub-populations during the project's construction phase.
	Population structure of juveniles	Number of age/size groups	Impacts on the local food chain from pollutant discharges may temporarily affect the health of multiple juvenile groups during the project's construction phase.
	Juvenile density in fine sediment	Ammocoetes/m ²	Impacts on the local food chain from pollutant discharges may temporarily affect the density of juveniles/ammonoctes in fine sediment during the project's construction phase.
	Extent and distribution of spawning habitat	m ² and occurrence	No indirect impacts anticipated.
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	No indirect impacts anticipated.
Atlantic Salmon (<i>Salmo salar</i>) [1106]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on the local food chain from pollutant discharges may temporarily affect the extent of anadromy during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Adult spawning fish	Number	No indirect impacts anticipated.
	Salmon fry abundance	Number of fry/5 minutes electrofishing	Impacts on the local food chain from pollutant discharges may temporarily affect the Salmon fry abundance during the project's construction phase.
	Out-migrating smolt abundance	Number	Impacts on the local food chain from pollutant discharges may temporarily affect the out-migrating smolt abundance during the project's construction phase
	Number and distribution of redds	Number and occurrence	No indirect impacts anticipated.
	Water quality	EPA Q-value	No indirect impacts anticipated.
Otter (<i>Lutra lutra</i>) [1355]	Distribution	Percentage positive survey sites	Impacts on the local food chain from pollutant discharges may temporarily affect the distribution of the local Otter population during the project's construction phase.
	Extent of terrestrial habitat	Hectares	No indirect impacts anticipated.
	Extent of freshwater (river) habitat	Kilometres	No indirect impacts anticipated.
	Extent of freshwater (lake) habitat	Hectares	No indirect impacts anticipated.
	Couching sites and holts	Number	No indirect impacts anticipated.
	Fish biomass available	Kilograms	Impacts on the local food chain from pollutant discharges may temporarily affect the fish biomass available for the local Otter population during the project's construction phase.
	Barriers to connectivity	Number	No indirect impacts anticipated.

Table 6-5: Potential indirect impacts on the attributes of the designated features of Galway Bay Complex SAC within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Otter (<i>Lutra lutra</i>) [1355]	Distribution	Percentage positive survey sites	Impacts on the local food chain from pollutant discharges may temporarily affect the distribution of the local Otter population during the project's construction phase.
	Extent of terrestrial habitat	Hectares	No indirect impacts anticipated.
	Extent of marine habitat	Hectares	No indirect impacts anticipated.
	Extent of freshwater (river) habitat	Kilometres	No indirect impacts anticipated.
	Extent of freshwater (lake/lagoon) habitat	Hectares	No indirect impacts anticipated.
	Couching sites and holts	Number	No indirect impacts anticipated.
	Fish biomass available	Kilograms	Impacts on the local food chain from pollutant discharges may temporarily affect the fish biomass available for the local Otter population during the project's construction phase.
	Barriers to connectivity	Number	No indirect impacts anticipated.
Harbour Seal (<i>Phoca vitulina</i>) [1365]	Access to suitable habitat	Number of artificial barriers	No indirect impacts anticipated.
	Breeding behaviour	Breeding sites	No indirect impacts anticipated.
	Moulting behaviour	Moult haul-out sites	No indirect impacts anticipated.
	Resting behaviour	Resting haul-out sites	No indirect impacts anticipated.
	Disturbance	Level of impact	Impacts on the local food chain from pollutant discharges may temporarily disturb levels of prey biomass available for the local Harbour Seal population

Qualifying Interest	Attribute	Measure	Potential Impacts
			during the project's construction phase.

Table 6-6: Potential indirect impacts on the attributes of the designated features of Inner Galway Bay SPA within the zone of influence of the proposed project.

Qualifying Interest	Attribute	Measure	Potential Impacts
Great Northern Diver (<i>Gavia immer</i>) [A003]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Great Northern Diver through indirect food chain-based impacts, during the project's construction phase.
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Breeding population abundance: apparently occupied nests (AONs)	Number	No indirect impacts anticipated.
	Productivity rate	Mean number	Impacts on the local food chain from pollutant discharges may temporarily affect the productivity rate of the local Cormorant population through indirect impacts, during the project's construction phase.
	Distribution: breeding colonies	Number; location; area (hectares)	No indirect impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on the local food chain from pollutant discharges may temporarily affect the prey biomass available for the local Cormorant population through indirect impacts, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Barriers to connectivity	Number; location; shape; area (hectares)	No indirect impacts anticipated.
	Disturbance at breeding site	Level of impact	No indirect impacts anticipated.
	Population trend	Percentage change	Impacts on the local food chain from pollutant discharges may temporarily affect the population trend of the local Cormorant population through indirect impacts, during the project's construction phase.
	Distribution	Number and range of areas used by waterbirds	Impacts on the local food chain from pollutant discharges may temporarily affect the distribution of the local Cormorant population through indirect impacts, during the project's construction phase.
Grey Heron (<i>Ardea cinerea</i>) [A028]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Grey Heron through indirect food chain-based impacts, during the project's construction phase.
Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of

Qualifying Interest	Attribute	Measure	Potential Impacts
			Brent Goose through indirect food chain-based impacts, during the project's construction phase.
Wigeon (<i>Anas penelope</i>) [A050]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Wigeon through indirect food chain-based impacts, during the project's construction phase.
Teal (<i>Anas crecca</i>) [A052]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Teal through indirect food chain-based impacts, during the project's construction phase.
Shoveler (<i>Anas clypeata</i>) [A056]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Shoveler through indirect

Qualifying Interest	Attribute	Measure	Potential Impacts
			food chain-based impacts, during the project's construction phase.
Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Red-breasted Merganser through indirect food chain-based impacts, during the project's construction phase.
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Ringed Plover through indirect food chain-based impacts, during the project's construction phase.
Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Golden Plover through indirect food chain-based

Qualifying Interest	Attribute	Measure	Potential Impacts
			impacts, during the project's construction phase.
Lapwing (<i>Vanellus vanellus</i>) [A142]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Lapwing through indirect food chain-based impacts, during the project's construction phase.
Dunlin (<i>Calidris alpina alpina</i>) [A149]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Dunlin through indirect food chain-based impacts, during the project's construction phase.
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Bar-tailed Godwit through indirect food chain-based

Qualifying Interest	Attribute	Measure	Potential Impacts
			impacts, during the project's construction phase.
Curlew (<i>Numenius arquata</i>) [A160]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Curlew through indirect food chain-based impacts, during the project's construction phase.
Common Gull (<i>Larus canus</i>) [A182]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Common Gull through indirect food chain-based impacts, during the project's construction phase.
Redshank (<i>Tringa tetanus</i>) [A162]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Redshank through indirect food chain-based impacts,

Qualifying Interest	Attribute	Measure	Potential Impacts
			during the project's construction phase.
Turnstone (<i>Arenaria interpres</i>) [A169]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Turnstone through indirect food chain-based impacts, during the project's construction phase.
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through indirect food chain-based impacts, during the project's construction phase.
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect the population distribution of Black-headed Gull through indirect food chain-based impacts, during the project's construction phase.
Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	Breeding population abundance: apparently occupied nests (AONs)	Number	No indirect impacts anticipated.
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on water quality from pollutant discharges may temporarily affect the productivity rate of Sandwich Tern population through indirect food chain-based impacts, during the project's construction phase.

Qualifying Interest	Attribute	Measure	Potential Impacts
	Distribution: breeding colonies	Number; location; area (Hectares)	No indirect impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on water quality from pollutant discharges may temporarily affect the prey biomass for the Sandwich Tern population through indirect food chain-based impacts, during the project's construction phase.
	Barriers to connectivity	Number; location; shape; area (Hectares)	No indirect impacts anticipated.
	Disturbance at breeding site	Level of impact	No indirect impacts anticipated.
Common Tern (<i>Sterna hirundo</i>) [A193]	Breeding population abundance: apparently occupied nests (AONs)	Number	No indirect impacts anticipated.
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on water quality from pollutant discharges may temporarily affect the productivity rate of Common Tern population through indirect food chain-based impacts, during the project's construction phase.
	Distribution: breeding colonies	Number; location; area (Hectares)	No indirect impacts anticipated.
	Prey biomass available	Kilogrammes	Impacts on water quality from pollutant discharges may temporarily affect the prey biomass for the Common Tern population through indirect food chain-based impacts, during the project's construction phase.
	Barriers to connectivity	Number; location; shape; area (Hectares)	No indirect impacts anticipated.
	Disturbance at breeding site	Level of impact	No indirect impacts anticipated.

6.2.3 Operational Impacts

The operational surface water drainage of the proposed site will include an attenuation wetland (140m³), which also act as a natural silt trap; and a Klargest Type NSBE025 Bypass Separator (hydrocarbons), thus preventing sediment and hydrocarbon-based pollution events impacting on the Terryland River, which hydrologically connects the proposed site via surface water run-off to the three Natura 2000 sites. As all surface entering the attenuation wetland will be free from hydrocarbon-based pollutants, groundwater seepage from this new wetland area will be free from any biological harmful agents.

The foul water drainage of the proposed site will involve a small diversion of the current foul water system in close proximity to the residential units but will proceed to connect back to the existing foul water drainage system in Terryland area. Ultimately, the foul waste is treated at the Mutton Island WWTP [D0050-01] which services the Galway city area.

Therefore, there is no anticipated operational impacts to the Natura 2000 sites, in regard to surface water or groundwater quality.

Operational emissions from the site will not notably increase and as such are not anticipated to have a significant impact on the designated QIs. In the absence of any mitigation, the emissions from the project would not result in a negative impact on any of the Natura 2000 sites (JBA, 2019).

Therefore, there is no anticipated operational impacts to the Natura 2000 sites, in regard to physical disturbance and air quality.

6.2.4 Do Nothing Impact

If the proposed project does not go ahead there will be no impact from construction or operations on the Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA.

6.2.5 Significance of Cumulative and In-combination Impacts

There are a number of other project developments planned for the Galway city area (Section 5). As the Mutton Island WWTP has the capacity to accommodate the additional foul waste outputs of these other developments, there will be no in-combination cumulative effects on the QI habitats and species designated for the Natura 2000 sites.

6.3 Mitigation for Project Construction Phase

The activities of the project for the construction phase shall remain within the boundary of the proposed site. Within this area, the mitigation measures outlined below shall be implemented.

- A Construction and Environment Management Plan (CEMP) will be submitted to Galway County Council for agreement prior to site works commencing. This CEMP will incorporate the mitigation measures listed here.
- The CEMP will also strictly adhere to best practice environmental guidance including but not limited to the following:
 - CIRIA Guidance C532 Control of water pollution from construction sites. Guidance for consultants and contractors. (CIRIA, 2019 - www.ciria.org);
 - CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org);
 - CIRIA Guidance C750D: *Groundwater control: design and practice* (Preene et al., 2016; CIRIA, 2019 - www.ciria.org);
 - Inland Fisheries Ireland 2016 *Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters*;

- Construction method statements will be submitted to Galway County Council for agreement prior to site works commencing.

6.3.1 Site Compound

- The site compound shall be located within the site boundary.
- The compound will be located north of the exist local road and its respective drainage system, whilst remaining within the area of the proposed site. This will safeguard the surface water and groundwater pathways from potential pollution events within the compound.
- Only plant and materials necessary for the construction of the works will be permitted to be stored at the compound location.
- Site establishment by the Contractor will include the following:
 - Site offices;
 - Site facilities (canteen, toilets, drying rooms, etc.);
 - Office for construction management team;
 - Secure compound for the storage of all on-site machinery and materials;
 - Temporary car parking facilities;
 - Temporary fencing;
 - Site Security to restrict unauthorized entry;
 - Bunded storage of fuels and refuelling area. Bunds shall be 110% capacity of the largest vessel contained within the bunded area.
 - A separate container will be located in the Contractors compound to store absorbents used to contain spillages of hazardous materials. The container will be clearly labelled, and the contents of the container will be disposed of by a licenced waste contractor at a licenced site. Records will be maintained of material taken off site for disposal.
 - A maintenance programme for the bunded areas will be managed by the site environmental manager. The removal of rainwater from the bunded areas will be their responsibility. Records will be maintained of materials taken off site for disposal.
 - The site environmental manger will be responsible for maintaining all training records.
 - The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use.
 - Drainage collection system for washing area to prevent run-off into surface water system.
 - All refuelling of vehicles will be carried out at the fuel stores within the main site compound and only ADR trained personnel will be permitted to operate fuel bowsers.

6.3.2 Water Quality

Relevant legislation and best practice guidance that have been considered includes but not limited to the following:

- CIRIA C532 Control of water pollution from construction sites. Guidance for consultants and contractors (CIRIA, 2019 - www.ciria.org)

- CIRIA C515 Groundwater control – design and practice, 2nd ed. (CIRIA, 2019 - www.ciria.org)
- CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org)
- Inland Fisheries Ireland 2016 *Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters*
- Adoption of a surface water / groundwater plan including appropriate barrier controls to prevent any seepage of potentially polluted surface water from the site into the groundwater table below (e.g. geotextile barriers).
- At no point should there be storage of any materials or vehicles/machinery within 50m of the Terryland River.
- Oil booms and oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal.
- Fail-safe site drainage and bunding through drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water.
- Adoption of a surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe, to prevent any uncontrolled flow of surface water (with high sediment loading) from the site into the Terryland River (e.g. trenches, silt fence).

6.3.3 Pollution Control and Spill Prevention

Spill kits containing absorbent pads, granules and booms will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site foremen's vehicles will carry large spill kits at all times. Absorbent material will be used with pumps and generators at all times and used material disposed of in accordance with the Waste Management Plan. All used spill materials e.g. Absorbent pads will be placed in a bunded container in the contractor's compound. The material will be disposed of by a licenced waste contractor at a licenced facility. Records will be maintained by the environmental site manager.

Regular inspections and maintenance of plant and machinery checking for leaks, damage or vandalism will be made on all plant and equipment.

In the event of a spill the Contractor will ensure that the following procedure are in place:

- Emergency response awareness training for all Project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spills kits for immediate use will be kept in the cab of mobile equipment.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum;
- Absorbent granules;
 - Absorbent mats/cushions;
 - Absorbent booms

- Spill kits will contain gloves to handle contaminated materials and sealable disposal sacks.
- Track-mats, geotextile material and drain covers.
- All potentially polluting substances such as oils and chemicals used during construction will be stored in containers clearly labelled and stored with suitable precautionary measures such as bunding within the site compound.
- All tank and drum storage areas on the site will, as a minimum, be bunded to a volume not less than the following;
- 110% of the capacity of the largest tank or drum within the bunded area, or
- 25% of the total volume of substances which could be stored within the bunded area.
- The site compound fuel storage areas and cleaning areas will be rendered impervious and will be constructed to ensure no discharges will cause pollution to surface or ground waters.
- Designated locations for refuelling are within Site Compound.
- Potentially contaminated run off from plant and machinery maintenance areas will be managed within the site compound surface water collection system.
- Damaged or leaking containers will be removed from use and replaced immediately

6.4 Mitigations for disturbance/removal of immature riparian woodland/scrub habitat

Any clearance vegetation required to permit works and access should be carried out outside of the bird breeding season (i.e. avoiding March to September inclusive), as QI and non-QI (though protected) bird species may nest within this vegetation. If works are proposed for the bird breeding season, or if following initial clearance, it becomes apparent that some further de-vegetation is necessary during the bird breeding season, an experienced ecologist should first check all areas for the presence of nesting birds. Should any nests be found they would have an exclusion zone put in place to safeguard the nests until the chicks have fledged. The vegetation to be cleared should also be checked for Otter or Otter couching sites immediately prior to the commencement of works by a qualified ecologist. Once the outfall pipe is installed, natural recolonization of riparian vegetation will be allowed to occur unhindered.

6.5 Residual Impacts

Table 6-7, Table 6-8 and Table 6-9 summaries the potential impacts on the attributes of the designated QIs of the Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA along with the mitigation measures and residual impacts.

Table 6-7: Pathways of impact on the attributes of the designated features of Lough Corrib SAC.

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Sea Lamprey (<i>Petromyzon marinus</i>) [1095]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect extent of anadromy via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers/ estuaries).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Population structure of juveniles	Number of age/size groups	Impacts on water quality from pollutant discharges may temporarily affect population structure of juveniles via direct and indirect impacts, during the project's construction	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			phase.		surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Juvenile density in fine sediment	Juveniles/m ²	Impacts on water quality from pollutant discharges may temporarily affect juvenile densities in fine sediment via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Extent and distribution of spawning habitat	m ² and occurrence	Impacts on water quality from pollutant discharges may temporarily affect extent and distribution of	Impacts on water quality from surface water run-off and diffuse groundwater contribution to	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions,	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			spawning habitat via direct impacts, during the project's construction phase.	surface water network (rivers).	<p>ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	Impacts on water quality from pollutant discharges may temporarily affect availability of juvenile habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Brook Lamprey (<i>Lampetra planeri</i>) [1096]						
	Distribution	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect general distribution via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Population structure of juveniles	Number of age/size groups	Impacts on water quality from pollutant discharges may temporarily affect population structure of juveniles via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Juvenile density in fine sediment	Ammocoetes/m ²	Impacts on water quality from pollutant discharges may temporarily affect juvenile / ammocoetes densities in fine sediment via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Extent and distribution of spawning habitat	m ² and occurrence	Impacts on water quality from pollutant discharges may temporarily affect extent and distribution of spawning habitat	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			via direct impacts, during the project's construction phase.	network (rivers).	<p>pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	Impacts on water quality from pollutant discharges may temporarily affect availability of juvenile habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Atlantic Salmon (<i>Salmo salar</i>) [1106]	Distribution: extent of anadromy	Percentage of river accessible	Impacts on water quality from pollutant discharges may temporarily affect extent of anadromy via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers/ estuaries).	Strict adherence to: <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Adult spawning fish	Number	Impacts on water quality from pollutant discharges may temporarily affect adult spawning fish via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers/ estuaries).	Strict adherence to: <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Salmon fry abundance	Number of fry/5 minutes electrofishing	Impacts on water quality from pollutant discharges may temporarily affect extent of anadromy via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Out-migrating smolt abundance	Number	Impacts on water quality from pollutant discharges may temporarily affect the out-migrating smolt abundance via direct and indirect impacts, during the project's	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			construction phase.	(rivers/ estuaries).	<ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Number and distribution of redds	Number and occurrence	Impacts on water quality from pollutant discharges may temporarily affect the number and distribution of redds via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Water quality	EPA Q-value	Impacts on water quality from pollutant discharges may temporarily affect	Impacts on water quality from surface water run-off and diffuse	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			the EPA Q-value via direct impacts, during the project's construction phase.	groundwater contribution to surface water network (rivers/ estuaries).	<ul style="list-style-type: none"> - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
Otter (<i>Lutra lutra</i>) [1355]	Distribution	Percentage positive survey sites	Impacts on water quality from pollutant discharges may temporarily affect general distribution via direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	
	Extent of terrestrial habitat	Hectares	Impacts on water quality from pollutant discharges may affect the extent of terrestrial habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	No adverse effects
	Extent of freshwater (river) habitat	Kilometres	Impacts on water quality from pollutant	Impacts on water quality from surface	Strict adherence to:	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			discharges may affect the extent of freshwater (river) habitat via direct impacts, during the project's construction phase.	water run-off and diffuse groundwater contribution to surface water network (rivers).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Extent of freshwater (lake) habitat	Hectares	Impacts on water quality from pollutant discharges may affect the extent of freshwater (lake) habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					- Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Couching sites and holts	Number	Impacts on water quality from pollutant discharges may affect couching sites and holts via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	No adverse effects
	Fish biomass available	Kilograms	Impacts on water quality from pollutant discharges may temporarily affect fish biomass availability via direct and indirect	Impacts on water quality and food chains from surface water run-off and diffuse groundwater	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			impacts, during the project's construction phase.	contribution to surface water network (rivers).	<p>pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Barriers to connectivity	Number	Impacts on water quality from pollutant discharges may create barriers to connectivity via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Table 6-8: Pathways of impact on the attributes of the designated features of Galway Bay Complex SAC.

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Mudflats and sandflats not covered by seawater at low tide [1140]	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Community distribution	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community distribution via direct impacts, during the project's construction	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries /	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			phase.	loughs).	<ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
Coastal lagoons [1150]	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Habitat distribution	Occurrence	Impacts on water quality from pollutant	Impacts on water quality from surface	Strict adherence to:	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			discharges may temporarily affect habitat distribution via direct impacts, during the project's construction phase.	water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Salinity regime	Practical salinity units (psu)	Impacts on water quality from pollutant discharges may temporarily affect the salinity regime via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					- Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Hydrological regime	Metres	N/A	N/A	N/A	N/A
	Barrier: connectivity between lagoon and sea	Permeability	N/A	N/A	N/A	N/A
	Water quality: Chlorophyll a	µg/L	Impacts on water quality from pollutant discharges may temporarily affect the levels of Chlorophyll a via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Impacts on water quality from pollutant discharges may temporarily affect levels of Molybdate	Impacts on water quality from surface water run-off and diffuse groundwater contribution to	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions,	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			Reactive Phosphorus via direct impacts, during the project's construction phase.	surface water network (rivers / estuaries / loughs).	<p>ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Depth of macrophyte colonisation	Metres	Impacts on water quality from pollutant discharges may temporarily affect the depth of macrophyte colonisation via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Typical plant	Number and m ²	Impacts on water	Impacts on	Strict adherence to:	No adverse

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	species		quality from pollutant discharges may temporarily affect typical plant species via direct impacts, during the project's construction phase.	water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	effects
	Typical animal species	Number	Impacts on water quality from pollutant discharges may temporarily affect typical animal species via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Negative indicator species	Number and % cover	Impacts on water quality from pollutant discharges may temporarily benefit negative indicator species via direct impacts on typical positive indicator species, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			phase.	estuaries / loughs).	50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Community extent	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community extent via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Community structure: <i>Zostera</i> density	Shoots per m ²	Impacts on water quality from pollutant discharges may	Impacts on water quality from surface water run-off	Strict adherence to: - The CEMP and all the best practice	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			temporarily affect <i>Zostera</i> densities via direct impacts, during the project's construction phase.	and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Community structure	Biological composition	Impacts on water quality from pollutant discharges may temporarily affect community structure via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					methods, detailing suitable spill kit equipment and management on site	
	Community distribution	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community distribution via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Community extent	Hectares	Impacts on water quality from pollutant discharges may temporarily affect community extent	Impacts on water quality from surface water run-off and diffuse groundwater	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			via direct impacts, during the project's construction phase.	contribution to surface water network (rivers / estuaries / loughs).	<ul style="list-style-type: none"> - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Community structure: <i>Mytilus</i> density	Individuals per m ²	Impacts on water quality from pollutant discharges may temporarily affect <i>Mytilus</i> densities via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	Community structure	Biological composition	Impacts on water quality from pollutant discharges may temporarily affect community structure via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
<i>Potential Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]</i>	Habitat area	Hectares	Impacts on water quality from pollutant discharges may temporarily affect total habitat area via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Habitat distribution	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect habitat distribution via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Physical structure: sediment supply	Presence/absence of physical barriers	N/A	N/A	N/A	N/A
	Physical structure: creeks and pans	Occurrence	N/A	N/A	N/A	N/A
	Physical	Hectares	N/A	N/A	N/A	N/A

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	structure: flooding regime	flooded; frequency				
	Vegetation structure: zonation	Occurrence	Impacts on water quality from pollutant discharges may temporarily affect vegetation zonation via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Vegetation structure: vegetation height	Centimetres	Impacts on water quality from pollutant discharges may temporarily affect vegetation height via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Impacts on water quality from pollutant discharges may temporarily affect vegetation cover via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Impacts on water quality from pollutant discharges may temporarily affect the composition of typical species and sub-	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			communities via direct impacts, during the project's construction phase.	network (rivers / estuaries / loughs).	<p>pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	Impacts on water quality from pollutant discharges may temporarily benefit <i>Spartina anglica</i> via direct impacts on typical positive indicator species, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Otter (<i>Lutra lutra</i>) [1355]						
	Distribution	Percentage positive survey sites	Impacts on water quality from pollutant discharges may temporarily affect general distribution via direct and indirect impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	No adverse effects
	Extent of terrestrial habitat	Hectares	Impacts on water quality from pollutant discharges may affect the extent of terrestrial habitat via direct impacts, during the project's	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			construction phase.	(rivers / estuaries / loughs).	<p>machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	
	Extent of marine habitat	Hectares	Impacts on water quality from pollutant discharges may affect the extent of marine habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	Extent of freshwater (river) habitat	Kilometres	Impacts on water quality from pollutant discharges may affect the extent of freshwater (river) habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>methods, detailing suitable spill kit equipment and management on site</p> <p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects
	Extent of freshwater (lake/lagoon) habitat	Hectares	Impacts on water quality from pollutant discharges may affect the extent of freshwater (lake) habitat via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Couching sites and holts	Number	Impacts on water quality from pollutant discharges may affect couching sites and holts via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Pre-vegetation clearance check for Otter presence (individuals & couching sites) within the undergrowth of the immature riparian woodland by a qualified ecologist 	No adverse effects
	Fish biomass available	Kilograms	Impacts on water quality from pollutant	Impacts on water quality from surface	Strict adherence to:	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			discharges may temporarily affect fish biomass availability via direct and indirect impacts, during the project's construction phase.	water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Barriers to connectivity	Number	Impacts on water quality from pollutant discharges may create barriers to connectivity via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					- Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
Harbour Seal (<i>Phoca vitulina</i>) [1365]						
Harbour Seal (<i>Phoca vitulina</i>) [1365]	Access to suitable habitat	Number of artificial barriers	N/A	N/A	N/A	N/A
	Breeding behaviour	Breeding sites	N/A	N/A	N/A	N/A
	Moult behaviour	Moult haul-out sites	N/A	N/A	N/A	N/A
	Resting behaviour	Resting haul-out sites	Impacts on water quality from pollutant discharges may temporarily affect resting behaviour via direct impacts, during the project's construction phase.	Impacts on water quality from surface water run-off and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	No adverse effects
	Disturbance	Level of impact	Impacts on water quality from pollutant discharges may	Impacts on water quality from surface water run-off	Strict adherence to: - The CEMP and all the best practice guidance therewith	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			temporarily disturb the availability of prey biomass via direct and indirect impacts, during the project's construction phase.	and diffuse groundwater contribution to surface water network (rivers / estuaries / loughs).	<ul style="list-style-type: none"> - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	

Table 6-9: Pathways of impact on the attributes of the designated features of Inner Galway Bay SPA.

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Great Northern Diver (<i>Gavia immer</i>) [A003]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Breeding population abundance: apparently occupied nests (AONs)	Number	N/A	N/A	N/A	N/A
	Productivity rate	Mean number	Impacts on water quality from pollutant discharges may temporarily affect productivity rates through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution: breeding colonies	Number; location; area (hectares)	N/A	N/A	N/A	N/A
	Prey biomass available	Kilogrammes	Impacts on water quality from pollutant discharges may temporarily affect prey biomass availability through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					suitable spill kit equipment and management on site	
	Barriers to connectivity	Number; location; shape; area (hectares)	N/A	N/A	N/A	N/A
	Disturbance at breeding site	Level of impact	N/A	N/A	N/A	N/A
	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	Distribution	Number and range of areas used by waterbirds	Impacts on water quality from pollutant discharges may temporarily affect distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>breeding season (i.e. avoiding March to September inclusive)</p> <p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects
Grey Heron (<i>Ardea cinerea</i>)	Population trend	Percentage change	Impacts on water quality from pollutant discharges may	Impacts on water quality and food chains from surface	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
[A028]			temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs)	<p>practice guidance therewith</p> <ul style="list-style-type: none"> - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs)	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>prevention methods, detailing suitable spill kit equipment and management on site</p> <ul style="list-style-type: none"> - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Wigeon (<i>Anas penelope</i>) [A050]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>conducted outside of the bird breeding season (i.e. avoiding March to September inclusive)</p> <p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects
Teal (<i>Anas</i>	Population trend	Percentage change	Impacts on water quality from pollutant	Impacts on water quality and food	Strict adherence to:	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
crecca) [A052]			discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
				/estuaries/ loughs).	(chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive)	
Shoveler (<i>Anas clypeata</i>) [A056]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
Ringed Plover (<i>Charadrius hiaticula</i>) [A137]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts,	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
			during the project's construction phase.	surface water network (rivers /estuaries/ loughs).	<p>potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Lapwing (<i>Vanellus vanellus</i>) [A142]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
<i>alpina alpine)</i> [A149]			discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
				/estuaries/ loughs).	(chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive)	
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls,	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Curlew (<i>Numenius arquata</i>) [A160]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					conducted outside of the bird breeding season (i.e. avoiding March to September inclusive)	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects
Common Gull (<i>Larus canus</i>)	Population trend	Percentage change	Impacts on water quality from pollutant discharges may	Impacts on water quality and food chains from surface	Strict adherence to:	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
[A182]			temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>machinery) are kept at minimum of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Redshank (<i>Tringa tetanus</i>) [A162]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>prevention methods, detailing suitable spill kit equipment and management on site</p> <ul style="list-style-type: none"> - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Turnstone (<i>Arenaria interpres</i>) [A169]	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect population trends through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>breeding season (i.e. avoiding March to September inclusive)</p> <p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	No adverse effects
Black-headed Gull <i>(Chroicocephalus</i>	Population trend	Percentage change	Impacts on water quality from pollutant discharges may temporarily affect	Impacts on water quality and food chains from surface water run-off and	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
<i>ridibundus)</i> [A179]			population trends through direct and indirect impacts, during the project's construction phase.	diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>practice guidance therewith</p> <ul style="list-style-type: none"> - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
	Distribution	Range, timing and intensity of use of areas	Impacts on water quality from pollutant discharges may temporarily affect general distribution through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site - Vegetation clearance being conducted outside of the bird breeding season (i.e. avoiding March to September inclusive) 	
Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	Breeding population abundance: apparently occupied nests (AONs)	Number	N/A	N/A	N/A	N/A
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on water quality from pollutant discharges may temporarily affect productivity rates through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>of 50m away from the Terryland River</p> <ul style="list-style-type: none"> - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
Distribution: breeding colonies	Number; location; area (Hectares)	N/A	N/A	N/A	N/A	N/A
Prey biomass available	Kilogrammes	Impacts on water quality from pollutant discharges may temporarily affect prey biomass availability through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	Strict adherence to: <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when 	No adverse effects	

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site	
	Barriers to connectivity	Number; location; shape; area (Hectares)	N/A	N/A	N/A	N/A
	Disturbance at breeding site	Level of impact	N/A	N/A	N/A	N/A
Common Tern (<i>Sterna hirundo</i>) [A193]	Breeding population abundance: apparently occupied nests (AONs)	Number	N/A	N/A	N/A	N/A
	Productivity rate: fledged young per breeding pair	Mean number	Impacts on water quality from pollutant discharges may temporarily affect productivity rates through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	Strict adherence to: - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					<p>including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe</p> <ul style="list-style-type: none"> - Pollution control and spill prevention methods, detailing suitable spill kit equipment and management on site 	
	Distribution: breeding colonies	Number; location; area (Hectares)	N/A	N/A	N/A	N/A
	Prey biomass available	Kilogrammes	Impacts on water quality from pollutant discharges may temporarily affect prey biomass availability through direct and indirect impacts, during the project's construction phase.	Impacts on water quality and food chains from surface water run-off and diffuse groundwater contribution to surface water network (rivers /estuaries/ loughs).	<p>Strict adherence to:</p> <ul style="list-style-type: none"> - The CEMP and all the best practice guidance therewith - Site compound layout instructions, ensuring that potential sources of pollution (chemical storage and machinery) are kept at minimum of 50m away from the Terryland River - Water quality controls, including the surface water plan including appropriate erosion and silt controls, including step-wise removal of sediment when digging trenches for attenuation wetland outlet pipe - Pollution control and spill prevention methods, detailing 	No adverse effects

Qualifying Interest	Attribute	Measure	Potential Impacts	Cumulative Impacts	Mitigation Measures	Residual Impact
					suitable spill kit equipment and management on site	
	Barriers to connectivity	Number; location; shape; area (Hectares)	N/A	N/A	N/A	N/A
	Disturbance at breeding site	Level of impact	N/A	N/A	N/A	N/A

6.5.1 Additional Note on Non-QI, Protected Species potentially present within the ZoI

The mitigation measures outlined in the above sections and tables will also ensure that none of the internationally protected species (listed in Table 4-2) potentially present in the ZoI will experience any adverse impacts, either direct or indirect, as a result of the works carried during the construction or operational phases of the proposed project.

7**Conclusions**

JBA Consulting Ireland Ltd. was commissioned by Exeter Ireland Property III Limited to undertake a Natura Impact Assessment (NIS) in relation to the extension of Cúirt na Coiribe Student Accommodation, Galway, Co. Galway.

The proposed project is identified as occurring within the Zone of Influence of the following Natura 2000 sites:

- Lough Corrib SAC
- Galway Bay Complex SAC
- Inner Galway Bay SPA

The proposed development site is located within 0.38km of the Lough Corrib SAC and within 1.0km of both the Galway Bay Complex SAC and Inner Galway Bay SPA. The Terryland River is located along the southernmost boundary of the proposed site and flows in a westerly direction towards the River Corrib and Lough Corrib SAC; as well as the Galway Bay Complex SAC and Inner Galway Bay SPA further downstream. Therefore, the proposed site is connected to all three Natura 2000 sites via the surface water pathway. Furthermore, the site lies within the same groundwater body as the three Natura 2000 sites, linking potential on-site groundwater pollution events to these protected sites.

The qualifying interests within the Zone of Influence are: Mudflats and sandflats not covered by seawater at low tide [1140]; Coastal lagoons [1150]; Large shallow inlets and bays [1160]; Reefs [1170]; Potential Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]; Sea Lamprey (*Petromyzon marinus*) [1095]; Brook Lamprey (*Lampetra planeri*) [1096]; Atlantic Salmon (*Salmo salar*) [1106]; Otter (*Lutra lutra*) [1355]; Harbour Seal (*Phoca vitulina*) [1365]; Great Northern Diver (*Gavia immer*) [A003]; Cormorant (*Phalacrocorax carbo*) [A017]; Grey Heron (*Ardea cinerea*) [A028]; Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]; Wigeon (*Anas penelope*) [A050]; Teal (*Anas crecca*) [A052]; Shoveler (*Anas clypeata*) [A056]; Red-breasted Merganser (*Mergus serrator*) [A069]; Ringed Plover (*Charadrius hiaticula*) [A137]; Golden Plover (*Pluvialis apricaria*) [A140]; Lapwing (*Vanellus vanellus*) [A142]; Dunlin (*Calidris alpina*) [A149]; Bar-tailed Godwit (*Limosa lapponica*) [A157]; Curlew (*Numenius arquata*) [A160]; Redshank (*Tringa totanus*) [A162]; Turnstone (*Arenaria interpres*) [A169]; Black-headed Gull (*Chroicocephalus ridibundus*) [A179]; Common Gull (*Larus canus*) [A182]; Sandwich Tern (*Sterna sandvicensis*) [A191]; Common Tern (*Sterna hirundo*) [A193]; and Wetland and Waterbirds [A999].

The potential impact from the proposed project is posed during construction and relates to potential pollution of surface water and groundwater caused by accidental spillage of pollutants, such as diesel and oil, which could impact on the designated QI habitats and species.

Mitigation measures have been proposed for the area of the proposed site and for inclusion in pollution control measures, ensuring that no adverse effects in relation to surface water pollution, groundwater pollution or physical land-based disturbance occur.

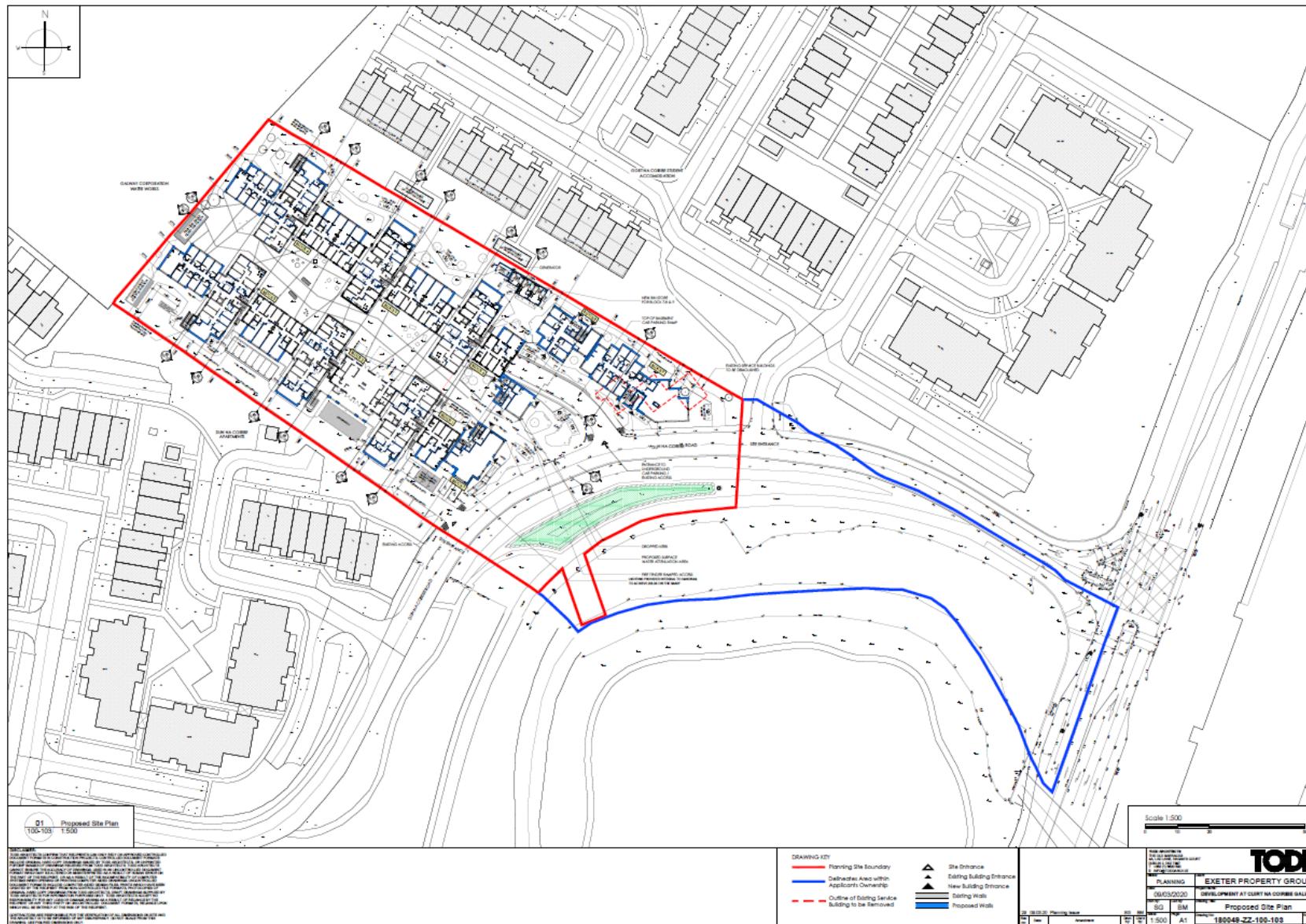
It is concluded that provided that the mitigation measures outlined are strictly adhered to, adverse effects are not likely to occur from the works involved with the proposed the extension of Cúirt na Coiribe Student Accommodation, Galway, Co. Galway; in-combination with other projects and plans on the following Natura 2000 sites:

- Lough Corrib SAC
- Galway Bay Complex SAC
- Inner Galway Bay SPA

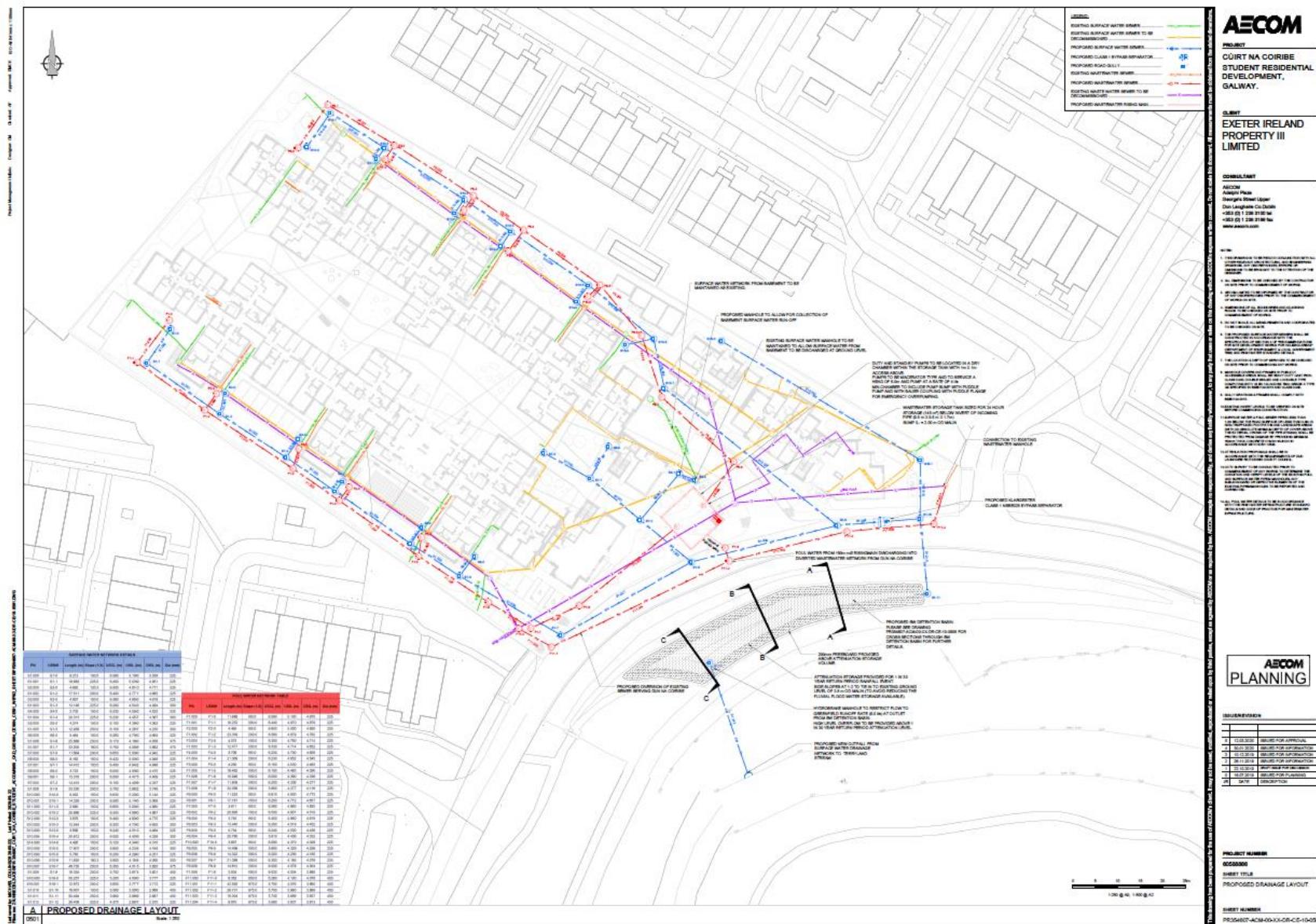
Appendices

JBA
consulting

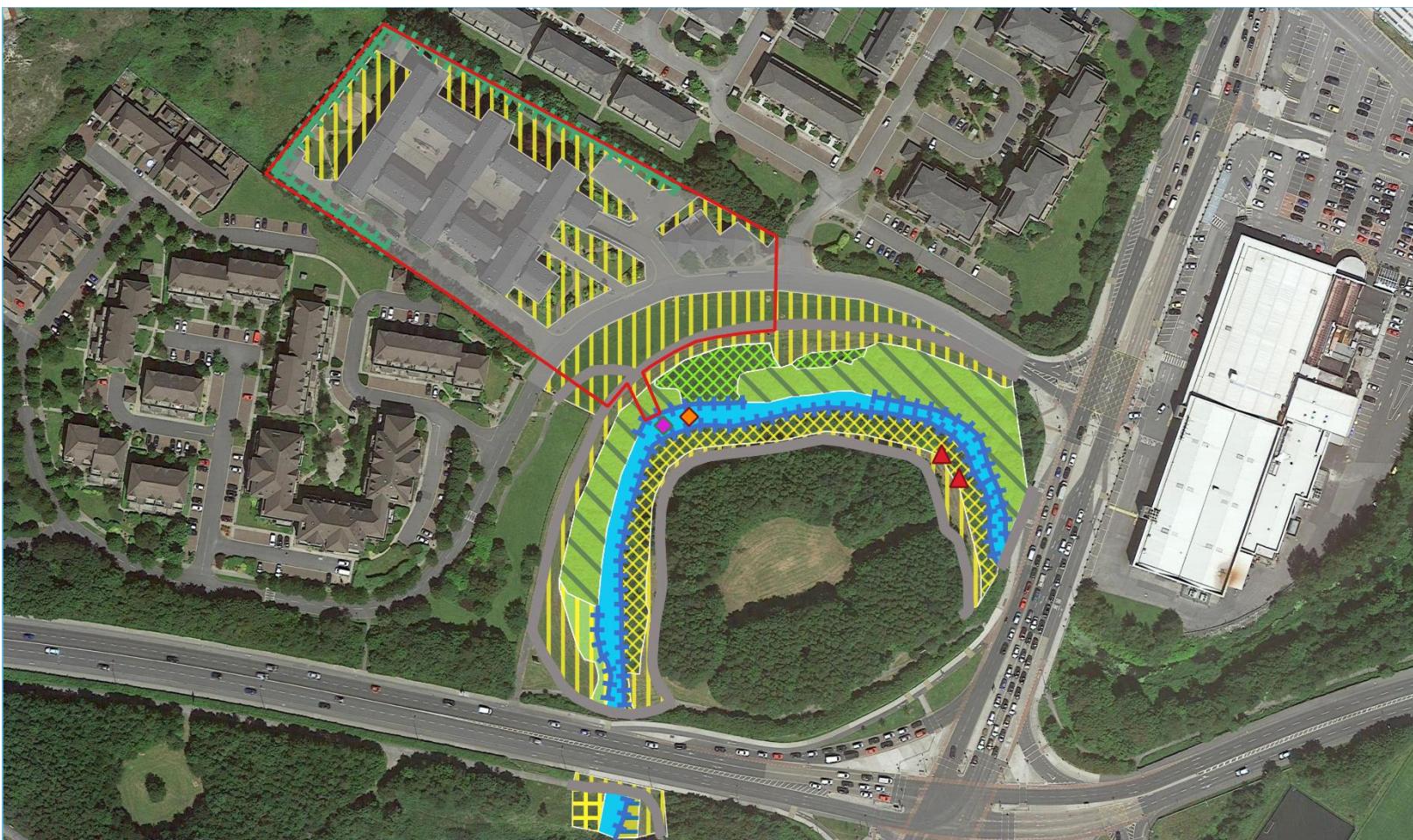
A Site Plan



B Site Drainage Plans



C Habitat Map



0 20 40 60 80 m



Legend

Site Boundary	FS1, GA2	GS4	Linear Habitat	Mallard
Area Habitat	GA2	WN5, WS2	BL3	Grey Heron
BL3	GA2, WS1	WS1	FS1	Japanese Knotweed
FW2	GS1		WL1	

D Natura 2000 sites synopses

D.1 Lough Corrib SAC [00297] (NPWS, 2015a)

Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland, with an area of approximately 18,240 ha (the entire site is 20,556 ha). The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south, and a larger, deeper basin, underlain by more acidic granite, schists, shales and sandstones to the north. The surrounding lands to the south and east are mostly pastoral farmland, while bog and heath predominate to the west and north. A number of rivers are included within the SAC as they are important for Atlantic Salmon. These rivers include the Clare, Grange, Abbert, Sinking, Dalgan and Black to the east, as well as the Cong, Bealanabrack, Failmore, Cornamona, Drimneen and Owenriff to the west. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site.

The shallow, lime-rich waters of the southern basin of Lough Corrib support one of the most extensive beds of stoneworts (*Charophytes*) in Ireland, with species such as *Chara aspera*, *C. hispida*, *C. delicatula*, *C. contraria* and *C. desmacantha* mixed with submerged pondweeds (*Potamogeton perfoliatus*, *P. gramineus* and *P. lucens*), Shoreweed (*Littorella uniflora*) and Water Lobelia (*Lobelia dortmanna*). These Chara beds are an important source of food for waterfowl. In contrast, the northern basin contains more oligotrophic and acidic waters, without Chara species, but with Shoreweed, Water Lobelia, Pipewort (*Eriocaulon aquaticum*), Quillwort (*Isoetes lacustris*), Alternate Water-milfoil (*Myriophyllum alternifolium*) and Slender Naiad (*Najas flexilis*). The last-named is listed under the Flora (Protection) Order, 2015, and is an Annex II species under the E.U. Habitats Directive.

Large areas of reedswamp vegetation, dominated by varying mixtures of Common Reed (*Phragmites australis*) and Common Club-rush (*Scirpus lacustris*), occur around the margins of the lake. Reedswamp usually grades into species-rich marsh vegetation characterised by Slender Sedge (*Carex lasiocarpa*), Water Mint (*Mentha aquatica*), Water Horsetail (*Equisetum fluviatile*) and Bogbean (*Menyanthes trifoliata*). Of particular note are the extensive beds of Great Fen-sedge (*Cladium mariscus*) that have developed over the marly peat deposits in sheltered bays, particularly in the southeast corner of the lake.

Alkaline fen vegetation is more widespread around the lake margins and includes, amongst the typically diverse range of plants, the Slender Cottongrass (*Eriophorum gracile*), a species protected under the Flora (Protection) Order, 2015. Wet meadows dominated by Purple Moor-grass (*Molinia caerulea*) occur in seasonally flooded areas close to the lake shore. These support species such as Sharp-flowered Rush (*Juncus acutiflorus*), Jointed Rush (*J. articulatus*), Carnation Sedge (*Carex panicea*), Devil's-bit Scabious (*Succisa pratensis*), Creeping Bent (*Agrostis stolonifera*) and Tormentil (*Potentilla erecta*), amongst others.

This large site contains four discrete raised bog areas and is selected for active raised bog, degraded raised bog, Rhynchosporion and bog woodland. Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, Sphagnum lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge.

At Addergoole, on the eastern shores of Lough Corrib, there is an important area of western raised bog. This bog area is one of the most westerly, relatively intact raised bogs in the country. There are also other substantial areas of raised bog along various tributaries of the Corrib in east Co. Galway, namely Slieve Bog, Lough Tee Bog and Killaclogher bog. The active parts of these bogs mostly correspond to the wettest areas, where there are well-developed surface features with hummocks, lawns and pools. It is in such areas that Rhynchosporion vegetation is best represented. The dominant species is the aquatic bog moss *Sphagnum cuspidatum*, which is usually accompanied by Bogbean, White Beak-sedge, Bog Asphodel, Common Cottongrass (*Eriophorum angustifolium*), Bog Sedge (*Carex limosa*) and Great Sundew (*Drosera anglica*). Brown Beak-sedge, a locally rare plant of wet bog pools, has been recorded from a number of the bog areas within the site. At Addergoole a substantial bog lake or soak occurs and this is infilling with large rafts of Rhynchosporion vegetation at present. This area is associated with an important area of wet bog woodland dominated by Downy Birch (*Betula pubescens*).

The largest part of the uncut high bog comprises degraded raised bog. Degraded bog is dominated by a raised bog flora which tends to be rather species-poor because of disturbance and/or drying-out. The most conspicuous vascular plant species are usually Carnation Sedge, Heather (*Calluna vulgaris*), Cotton grasses, Cross-leaved Heath (*Erica tetralix*), Bog Asphodel and Deergrass. Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccus*), two species indicative of raised bog habitat, are frequent on both degraded and active areas of raised bog. Sphagnum cover is generally low within degraded areas due to a combination of drying-out and frequent burning.

Limestone pavement occurs along much of the shoreline in the lower Corrib basin, and supports a rich and diverse flora, including Herb-Robert (*Geranium robertianum*), Bloody Crane's-bill (*G. sanguineum*), Carline Thistle (*Carlina vulgaris*), Spring Gentian (*Gentiana verna*), Wild Thyme (*Thymus praecox*), Rustyback (*Ceterach officinarum*), Wood Sage (*Teucrium scorodonia*), Slender St. John's-wort (*Hypericum pulchrum*), Quaking-grass (*Briza media*) and Blue Moor-grass (*Sesleria albicans*). Areas of Hazel (*Corylus avellana*) scrub occur in association with exposed limestone pavement and these include species such as Hawthorn (*Crataegus monogyna*), Buckthorn (*Rhamnus catharticus*), Spindle (*Euonymus europaeus*), with occasional Juniper (*Juniperus communis*). Three Red Data Book species are also found in association with limestone scrub - Alder Buckthorn (*Frangula alnus*), Shrubby Cinquefoil (*Potentilla fruticosa*) and Wood Bitter-vetch (*Vicia orobus*), the latter is also protected under the Flora (Protection) Order, 2015.

Open areas of orchid-rich calcareous grassland are also found in association with the limestone exposures. These can support a typically rich vegetation, including many orchids such as Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Early-purple Orchid (*Orchis mascula*), Frog Orchid (*Coeloglossum viride*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Greater Butterfly-orchid (*Platanthera chlorantha*) and Irish Lady's-tresses (*Spiranthes romanzoffiana*). The latter is protected under the Flora (Protection) Order, 2015.

The Hill of Doon, located in the north-western corner of the lake, is a fine example of a Sessile Oak (*Quercus petraea*) woodland. The understorey is dominated by Sessile Oak, Holly (*Ilex aquifolium*) and occasional Juniper. There are occasional Yew (*Taxus baccata*) and Ash (*Fraxinus excelsior*), and a well-developed ground layer dominated by Bilberry (*Vaccinium myrtillus*), Hard Fern (*Blechnum spicant*) and Wood Rush (*Luzula sylvatica*). Woodland also occurs on some of the islands in the lake.

A number of the rivers in the site support submerged and floating vegetation of the Ranunculion fluitantis and Callitricho-Batrachion, including mosses. For example, in the River Corrib species such as Shining Pondweed (*Potamogeton lucens*), Perfoliate Pondweed (*Potamogeton perfoliatus*), Small Pondweed (*P. berchtoldii*), Yellow Waterlily (*Nuphar lutea*), White Water-lily (*Nymphaea alba*) and stoneworts (*Chara* spp.) occur.

The rare and Annex II-listed Slender Green Feather-moss (*Drepanocladus [Hamatocaulis] vernicosus*) is found at the fen at Gortachalla, north-east of Moycullen. Here it is widespread around the margins, and this constitutes a large and significant population in the national context. A very large population of another rare moss, *Pseudocalliergon trifarium*, is also found in this area.

The lake is rated as an internationally important site for waterfowl. Counts from 1984 to 1987 revealed a mean annual peak total of 19,994 birds. In the past a maximum peak of 38,281 birds was recorded. The lake supports internationally important numbers of Pochard (average peak 8,600) and nationally important numbers of the following species: Coot (average peak 6,756), Mute Swan (average peak 176), Tufted Duck (average peak 1,317), Cormorant (average peak 110) and Greenland White-fronted Goose (average peak 83). The latter species is listed on Annex I of the E.U. Birds Directive. The Coot population is the largest in the country and populations of Tufted Duck and Pochard are second only to Lough Neagh. Breeding pairs of Common Scoter on the lake number 30-41 (1995 data), as well as breeding populations of Arctic Tern and Common Tern. Other bird species of note recorded from or close to the lake recently include Hen Harrier, Whooper Swan, Golden Plover and Kingfisher. All of these species are listed on Annex I of the E.U. Birds Directive.

Otter and Irish Hare have been recorded regularly within this site. Both of these species are listed in the Red Data Book and are legally protected by the Wildlife Act, 1976. Otter is also listed on Annex II of the E.U. Habitats Directive. Lough Corrib is considered one of the best sites in the country for Otter, due to the sheer size of the lake and associated rivers and streams, and also the generally high quality of the habitats. Atlantic Salmon (*Salmo salar*) use the lake and rivers as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E.U. Habitats Directive. Lough Corrib is also a well-known fishing lake with a very good Trout (*Salmo trutta*) fishery. The lake has a population of Sea Lamprey (*Petromyzon marinus*), a scarce, though probably under-recorded species listed on Annex II of the E.U. Habitats Directive. Brook Lamprey (*Lampetra planeri*), also listed on Annex II, are also known from a number of areas within the site.

A population of Freshwater Pearl Mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs within the site. White-clawed Crayfish (*Austropotamobius pallipes*), also listed on Annex II, is well distributed throughout Lough Corrib and its in-flowing rivers over limestone. A summer roost of Lesser Horseshoe Bat, another Annex II species, occurs within the site - approximately 100 animals were recorded here in 1999.

The main threats to the quality of this site are from water polluting activities resulting from intensification of agricultural activities on the eastern side of the lake, uncontrolled discharge of sewage which is causing localised eutrophication of the lake, and housing and boating development, which is causing the loss of native lakeshore vegetation. The raised bog habitats are susceptible to further degradation and drying out due to drainage and peat cutting and, on occasions, burning. Peat cutting threatens Addergoole Bog and already a substantial area of it has been cut away. Fishing and shooting occur in and around the lake. Introduction of exotic crayfish species or the crayfish fungal plague (*Aphanomyces astaci*) could have a serious impact on the native crayfish population. The bat roost is susceptible to disturbance or development.

Despite these ongoing issues, however, Lough Corrib is one the best examples of a large lacustrine catchment system in Ireland, with a range of habitats and species still well represented. These include 15 habitats which are listed on Annex I of the E.U. Habitats Directive, six of which are priority habitats, and nine species which are listed on Annex II. The lake is also internationally important for birds and is designated as a Special Protection Area.

D.2 Galway Bay Complex [000268] (NPWS, 2015b)

Situated on the west coast of Ireland, this site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. There are numerous shallow and intertidal inlets on the eastern and southern sides, notably Muckinish, Auginish and Kinvarra Bays. A number of small islands composed of glacial deposits are located along the eastern side. These include Eddy Island, Deer Island and Tawin Island. A diverse range of marine, coastal and terrestrial habitats, including several listed-on Annex I of the E.U. Habitats Directive, occur within the site, making the area of high scientific importance.

Galway Bay South holds a very high number of littoral communities (12). They range from rocky terraces, to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid amphipod zone in the upper shore gives way to an intertidal, mid shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, *Lanice conchilega*, are common on the surface. Nereid and cirratulid polychaete worms (*Hediste diversicolor*, *Arenicola marina*), small crustaceans and bivalves (*Angulus tenuis*, *Cerastoderma edule* and *Macoma balthica*) are present. The area has the country's only recorded example of the littoral community characterized by *Fucus serratus* with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. This community has very high species richness (85 species), as do the sublittoral fringe communities on the Finavarra reef (88 species). The rare Purple Sea Urchin *Paracentrotus lividus* and the foliose red alga *Phyllophora sicula* are present at Finavarra, whereas the red alga *Rhodymenia delicatula* and the rare brown alga, *Ascophyllum nodosum var. mackii*, occur in Kinvarra and Muckinish Bays.

Sublitorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock (bivalve mollusc) bed thrives in the shallows of Auginish Bay. The rare sponge, *Mycale contarenii*, is also found here. There is further interest in an extensive maerl bed of *Phymatolithon calcareum* which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvarra Bay (*Lithothamnion coralliooides*, *Lithophyllum dentatum* and *Lithophyllum fasciculatum*). An oyster bed in Kinvarra Bay and seagrass (*Zostera* spp.) beds off Finavarra Point are also important features. Other significant habitats which occur include secondary maerl beds and communities strongly influenced by tidal streams.

Saltmarshes are frequent within this extensive coastal site, with both E.U. Habitats Directive types, 'Atlantic Salt Meadow' and 'Mediterranean Salt Meadow' well represented. Most of the saltmarshes are classified as the bay type, with the substrate being mud or mud/sand. There is one lagoon type and one estuary type. Lagoon saltmarshes are the rarest type found in Ireland. The best examples of saltmarsh are located in inner Galway bay, east of a line running between Galway city and Kinvarra. In this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive saltmarsh development. Common saltmarsh species include Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*), Lax-flowered Sea-lavender (*Limonium humile*), Common Saltmarsh-grass (*Puccinellia maritima*), Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*Juncus maritimus*). On the lower levels of the saltmarshes and within pans there occurs Glasswort (*Salicornia europaea* agg.). A noteworthy feature of the saltmarsh habitat within this site is the presence of dwarfed brown seaweeds in the vegetation. These are also known as "turf fucoids" and typical species include *Fucus* spp., *Ascophyllum nodosum* and *Pelvetia canaliculata*. A number of locally rare vascular plant species also grow in saltmarsh areas within the site. These include Reflexed Saltmarsh-grass (*Puccinellia distans*) and Sea-purslane (*Halimione portulacoides*), which are both relatively rare in the western half of the country.

Shingle and stony beaches can be found throughout the site, with the best examples along the more exposed shores to the south and west of Galway city and to the north and east of Finavarra, Co. Clare. In general, these shingle shorelines are sparsely vegetated and frequently occur interspersed with areas of sandy beach and/or bedrock shore. The associated flora is dominated by plant species of frequently disturbed maritime habitats. To the south and west of Galway city, typical plants include Curled Dock (*Rumex crispus*), Common Couch (*Elymus repens*), Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris* subsp. *maritima*), Sea Mayweed (*Matricaria maritima*), Silverweed (*Potentilla anserina*) and Oraches (*Atriplex* spp.). Two rare plant species are associated with the habitat: Henbane (*Hyoscyamus niger*), a threatened species listed in the Irish Red Data Book, grows on shingle beach to the south of Lough Atalia; there are also old records for the threatened plant species Seakale (*Crambe maritima*).

Soft coastal cliffs reaching heights in excess of 10m occur at Rusheen. These support coastal grassland with very sparse vegetation cover. Species recorded include Sea Plantain (*Plantago maritima*), Creeping Bent (*Agrostis stolonifera*), False Oat-grass (*Arrhenatherum elatius*), Cock's Foot (*Dactylis glomerata*), Red Fescue, Common Bird's foot-trefoil (*Lotus corniculatus*), and the lichens *Ramalina* sp. and *Xanthoria parietina*. They are considered highly representative of the rarer soft type of sea cliffs in Ireland.

An excellent range of lagoons of different types, sizes and salinities occurs within the site. This habitat is given priority status on Annex I of the E.U. Habitats Directive. One unusual type of lagoon, karstic rock lagoon, is particularly well represented. This type of lagoon is common on the Aran Islands, but on mainland Ireland, all but one are confined to this site. Additionally, the best example of all karstic lagoons in the country, Lough Murree, is found at this site. The flora of the habitat is rich and diverse, reflecting the range of salinities in the different lagoons. It is typically brackish, with two species of Tasselweed (*Ruppia* spp.), two Red Data charophytes *Chara canescens* and *Lamprothamnion papulosum*, and *Chaetomorpha linum*, an alga (all lagoonal specialists). The fauna of the lagoon is also rich, diverse and lagoonal. At least 10 lagoonal specialist species were recorded in 1996 and 1998 from the combined habitat of all the lagoons, which is one of the highest number for any lagoonal habitat in the country. Many of the species appear to be rare. The lagoons within this site are excellent examples of the habitat type and of high conservation importance.

Other terrestrial habitats within this site which are of conservation importance include Great Fen-sedge (*Cladium mariscus*)-dominated fen and Black Bog-rush (*Schoenus nigricans*)-dominated alkaline fen at Oranmore, a turlough of moderate size at Ballinacourty, limestone pavement at Ballyconry, Gleninagh North and Newquay, dry calcareous grassland with orchids (best examples occurring west of Salthill), Juniper (*Juniperus communis*) scrub formations at Oranmore, wet grassland and an area of deciduous woodland at Barna. The orchid-rich grassland occurs on a series of small drumlin hills found to the west of Galway City, and is largely confined to the sides of the hills. Calcicolous species such as Kidney Vetch (*Anthyllis vulneraria*), Harebell (*Campanula rotundifolia*), Spring Gentian (*Gentiana verna*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Lesser Twayblade (*Listera ovata*), Pyramidal Orchid (*Anacamptis pyramidalis*), Yellow-wort (*Blackstonia perfoliata*) and Greater Knapweed (*Centaurea scabiosa*) are found here, among others. Juniper is also found in this area.

Areas of alkaline and Cladium fen as best represented near Oranmore, and species such as Great Fen-sedge, Common Reed (*Phragmites australis*), Purple Moor-grass (*Molinia caerulea*), Bogbean (*Menyanthes trifoliata*) and Long-stalked Yellow-sedge (*Carex lepidocarpa*) are found along with the usually dominant, Black Bog-rush. The turlough at Ballinacourty floods to about 25 ha in winter and has vegetation with a typical zonation. Wetland species such as Amphibious Bistort (*Polygonum amphibium*), Common Marsh-bedstraw (*Galium palustre*) and Marsh Cinquefoil (*Potentilla palustris*) are found near the swallow-hole, with species of wet grassland close to the flood limit (e.g. Silverweed,

Potentilla anserina, Water Mint, *Mentha aquatica* and Creeping Bent, *Agrostis stolonifera*). Sedges (*Carex spp.*) dominate in between.

Inner Galway Bay provides extensive good quality habitat for Common Seal (maximum count of 317 in the all-Ireland survey of 2003). This species is listed on Annex II of the E.U. Habitats Directive. The seals use a range of haul-out sites distributed through the bay - these include inner Oranmore Bay, Rabbit Island, St. Brendan's Island, Tawin Island, Kinvarra Bay, Aughinish Bay and Ballyvaughan. The site provides optimum habitat for Otter, also an Annex II-listed species.

Galway Bay is a very important ornithological site. The shallow waters provide excellent habitat for Great Northern Divers (35), Black-throated Divers (28), Scaup (39), Long-tailed Duck (27) and Red-breasted Merganser (232). (Figures given are peak average maxima over the 3 winters 1994/95 to 1996/97). All of these populations are of national importance. The intertidal areas and shoreline provide feeding and roosting habitat for wintering waterfowl, with Brent Goose (517) having a population of international importance and a further 11 species having populations of national importance. Four of the regular wintering species are listed on Annex I of the E.U. Birds Directive - Golden Plover, Bar-tailed Godwit and the two diver species. Breeding birds are also of importance, with significant populations of Sandwich Terns (81 pairs in 1995) and Common Terns (99 pairs in 1995), both also being listed on Annex I of the E.U. Birds Directive. A large Cormorant colony (approx. 300 pairs in 1989) occurs on Deer Island.

Fishing and aquaculture are the main commercial activities within the site. A concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities. Reef and sediment communities are vulnerable to disturbance or compaction from tractors accessing oyster trestles. The *Paracentrotus lividus* populations have been shown to be vulnerable to over-fishing. Extraction of maerl in Galway Bay is a threat. Owing to the proximity of Galway city, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities. Eutrophication is probably affecting some of the lagoons and is a continued threat. Drainage is a general threat to the turlough and fen habitats. Bird populations may be disturbed by aquaculture activities.

This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the E.U. Habitats Directive, four of which have priority status (lagoon, Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and saltmarshes found within this site are amongst the best in the country. The site supports an important Common Seal colony and a breeding Otter population (Annex II species), and six regular Annex I E.U. Birds Directive species. The site also has four Red Data Book plant species, plus a host of rare or scarce marine and lagoonal animal and plant species.

D.3 Inner Galway Bays SPA [004031] (NPWS, 2014e)

Inner Galway Bay SPA is a very large, marine-dominated site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poulnacloough, Auginish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Northern Diver, Cormorant, Grey Heron, Light-bellied Brent Goose, Wigeon, Teal, Shoveler, Red-breasted Merganser, Ringed Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Inner Galway Bay supports an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and waders all well represented. There are internationally important wintering populations of Great Northern Diver (88) and Light-Bellied Brent Goose (676) and nationally important wintering populations of an additional sixteen species i.e. Cormorant (266), Grey Heron (102), Wigeon (1,168), Teal (700), Shoveler (88), Red-breasted Merganser (249), Ringed Plover (335), Golden Plover (2,030), Lapwing (3,969), Dunlin (2,155), Bar-tailed Godwit (447), Curlew (697), Redshank (505), Turnstone (182), Black-headed Gull (1,941) and Common Gull (1,066) - all figures given are five year mean peaks for the seasons 1995/96 to 1999/2000. Of note is that the populations of Red-breasted Merganser and Ringed Plover represent 6.8% and 2.3% of the respective all-Ireland totals. Other species which occur in notable numbers include Black-throated Diver (36), Little Grebe (35), Long-tailed Duck (21), Scaup (44) and Herring Gull (216). In addition, the following species also use the site: Great Crested Grebe (16), Mallard (200), Common Scoter (87), Oystercatcher (576), Grey Plover (60), Black-tailed Godwit (46), Mute Swan (150) and Great Black-backed Gull (129). The site provides both feeding and roost sites for most of the species. Little Egret, a species which has recently colonised Ireland, also occurs at this site.

The site has several important populations of breeding birds, most notably colonies of Sandwich Tern (81 pairs in 1995) and Common Tern (98 pairs in 1995 on Green Island and 46 pairs in 2001 on Mutton Island). A large Cormorant colony occurs on Deer Island - this had 200 pairs in 1985 and 300 pairs in 1989.

Inner Galway Bay SPA is of high ornithological importance with two wintering species having populations of international importance and a further sixteen wintering species having populations of national importance. The breeding colonies of Sandwich Tern, Common Tern and Cormorant are also of national importance. Also, of note is that six of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Black-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit, Sandwich Tern and Common Tern. Inner Galway Bay is a Ramsar Convention site and part of the Inner Galway Bay SPA is a Wildfowl Sanctuary.

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